



2022-2023
GENERAL TARIFF APPLICATION
TO THE
ALBERTA UTILITIES COMMISSION

APPLICATION

APRIL 30, 2021
AMENDED SEPTEMBER 3, 2021

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- Appendix 5 Interest/Spreads and Other Costs Associated With Short Term Debt (“OCASTD”)
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- Appendix 7 Lead/Lag Study
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- Appendix 23 2020 Deferral Accounts Reconciliation Application

FORWARD-LOOKING INFORMATION ADVISORY

1. This 2022-2023 General Tariff Application (the Application or 2022-2023 GTA) and any document incorporated or deemed to be incorporated by reference herein contains or may contain certain statements or disclosures that may constitute forward-looking information under applicable securities laws. All statements and disclosures, other than those of historical fact, which address activities, events, outcomes, results or developments that AltaLink Management Ltd. (AltaLink) anticipates or expects may, or will occur in the future (in whole or in part) should be considered forward-looking information. In some cases, forward-looking information can be identified by terms such as “anticipate”, “believe”, “contemplate”, “continue”, “could” “enable”, “expect”, “forecast”, “future”, “intends”, “may”, “plan”, “potential”, “will” or other comparable terminology. Forward-looking information presented in such statements or disclosures may, without limitation, relate to: applications to the Alberta Utilities Commission (AUC or Commission) for approval of, among other things, AltaLink’s Revenue Requirements (including deferral and reserve accounts; capital structure and return-on-equity; financing plans; treatment of costs for applicable Test Periods including income taxes, operating expenses, depreciation, capital costs for Direct Assign (DA) projects and maintenance programs, financing costs related to long-term debt and short-term borrowing, and projected growth in AltaLink’s Rate Base and assets under construction); transmission system expansion forecasts; the anticipated direct assignment of transmission development projects to AltaLink from the Alberta Electric System Operator (AESO) as defined in AltaLink’s Annual Information Form (AIF) for the year ended December 31, 2019¹ or any new AIF filed with applicable securities regulatory authorities for a subsequent financial year of AltaLink during the Test Period of the Application pursuant to approved Need Applications (as defined in the AIF) or, in the case of Critical Transmission Infrastructure (as defined in the AIF), AltaLink’s eligibility to submit Facility Applications (as defined in the AIF) pursuant to designations by the Government of Alberta or competitive bidding processes; the timing and development of transmission projects and the anticipated capital costs of such projects; business strategy, plans and objectives of management for future operations; forecast business results; the achievement of certain operational and performance measures and the resulting effect on compensation of executive officers; and anticipated financial performance or condition of AltaLink.
2. Various factors or assumptions are typically applied in drawing conclusions or making the forecasts or projections set out in forward-looking information. These factors and assumptions include, but are not limited to:
 - no changes in the legislative and operating framework for Alberta’s electricity market that are adverse to AltaLink (for example refer to “*Regulated Tariff Revenue*” and “*Overview of Electricity Industry in Alberta*” in AltaLink’s Management’s Discussion and Analysis (MD&A) of financial condition and results of operations dated March 1, 2021 for the year ended December 31, 2020² or any new annual management discussion and analysis filed with applicable securities regulatory authorities for a subsequent financial year of AltaLink corresponding to a test year of the Application (the Annual MD&A) and “*The Transmission Business*” in the AIF;

¹ Appendix 6-B1.

² Appendix 6-C.

- decisions from the AUC concerning outstanding tariff and other applications that are consistent with past regulatory practices and decisions and are obtained in a timely manner (for example, refer to “*Regulated Tariff Revenue*”, “*Overview of Electricity Industry in Alberta*” and “*Major Capital Projects*” in the Annual MD&A and “*General Development of the Transmission Business*”, “*The Transmission Business – Tariff Regulation*”, and “*The Transmission Business – Transmission System Planning and Development*” in the AIF);
 - approved rate of return and deemed capital structures of AltaLink’s transmission business that are sufficient to foster a stable investment climate (for example, refer to “*Regulated Tariff Revenue*”, “*Overview of Electricity Industry in Alberta*” and “*Major Capital Projects*” in the Annual MD&A and “*General Development of The Transmission Business*”, “*The Transmission Business – Tariff Regulation*”, and “*The Transmission Business – Transmission System Planning and Development*” in the AIF);
 - a stable competitive environment;
 - AltaLink obtaining sufficient capital on acceptable terms to finance its transmission system expansion; and
 - no significant event occurring outside the ordinary course of business such as a natural disaster or other calamity.
3. These assumptions and factors are based on information currently available to AltaLink including information obtained by AltaLink from third-party industry analysts. In some occurrences, material assumptions and factors are presented or discussed elsewhere in the Application, or in other documents incorporated or deemed to be incorporated by reference herein, in connection with the statements or disclosure containing the forward-looking information. AltaLink cautions readers and prospective investors that the foregoing list of material factors and assumptions is not exhaustive.
4. The forward-looking information in statements or disclosures in the Application, or in other documents incorporated or deemed to be incorporated by reference herein, is based (in whole or in part) upon factors which may cause actual results, performance or achievements of AltaLink to differ materially from those contemplated (whether expressly or by implication) in the forward-looking information. These factors are based on information currently available to AltaLink including information obtained by AltaLink from third-party industry analysts. Actual results may differ materially from those predicted by such forward-looking information. While AltaLink does not know what impact any of these differences may have, its business, results of operations, financial condition and its credit stability may be materially or adversely affected. Factors that could cause actual results or outcomes to differ materially from the results expressed or implied by forward-looking information includes, among other things:
- the risks associated with being subject to extensive regulation including risks associated with AUC action or inaction;
 - the risk that the AUC does not provide specific levelization to sustain AltaLink’s credit metrics over a growth period characterized by large multi-year transmission facility projects;
 - the risk that transmission projects are not directly assigned to AltaLink by the AESO or that AltaLink is not designated for filing a facility application;
 - the risk that AltaLink is not able to arrange sufficient, cost-effective financing to repay maturing debt and to fund capital expenditures and other obligations;
 - the risk that system expansion plans are delayed;

- the risks that the actual costs of completing a transmission project significantly exceed estimated costs;
 - the risks to AltaLink's facilities posed by severe weather, other natural disasters or catastrophic events and AltaLink's limited insurance coverage for losses resulting from these events;
 - the potential for service disruptions and increased costs if AltaLink fails to maintain and improve its aging asset base; and
 - the risks associated with forecasting AltaLink's Revenue Requirements and the possibility that AltaLink could incur operational, maintenance and administrative costs above those included in AltaLink's approved Revenue Requirement.
5. AltaLink cautions that the above list of risk factors is not exhaustive. Other factors, which could cause actual results, performance or achievements of AltaLink to differ materially from those contemplated (whether expressly or by implication) in the forward-looking statements or other forward-looking information, are disclosed in AltaLink's publicly filed disclosure documents, which may be incorporated or deemed to be incorporated by reference in this Application, including those disclosed under "*RISK MANAGEMENT*" in i) the current annual MD&A,³ or ii) AltaLink's MD&A of financial condition and results of operations for a subsequent interim period of AltaLink that is filed with applicable securities regulatory authorities during the Test Period of this Application and "*RISK FACTORS*" in AltaLink's current AIF. Risk factors that could lead to such differences include legislative and regulatory developments that could affect costs or revenues, the speed and degree of competition entering the market, global capital markets conditions and activity, timing and extent of changes in prevailing interest rates, currency exchange rates, inflation levels and general economic conditions in geographic areas where AltaLink operates, results of financing efforts, changes in counterparty risk and the impact of accounting standards issued by standard setters.
6. All forward-looking information herein is given as of the date of the Application. AltaLink is not obligated to update or revise any forward-looking information, whether as a result of new information, future events or otherwise, except as required by applicable laws. Because of these risks, uncertainties and assumptions, readers and prospective investors should not place undue reliance on such forward-looking information or statements. Any forward-looking information contained in the Application, or in other documents incorporated or deemed to be incorporated by reference herein, is expressly qualified by this statement.

³ Appendix 6-C.

1. INTRODUCTION

7. Section 1 of AltaLink's Application addresses the following:
 - 1.1 Application Overview
 - 1.2 Overview of Revenue Requirement
 - 1.3 Overview of Key Aspects of Application
 - 1.4 Tariff/Rate Applied For
 - 1.5 2019-2021 General Tariff Application
 - 1.6 Other Approvals (Deferral and Reserve Accounts) Requested
 - 1.7 Organizational Structure
 - 1.8 Forecasting Methodology/Process and Key Assumptions
 - 1.9 Labour Overview and Compensation Forecast
 - 1.10 Operational Performance
 - 1.11 Business Improvements
 - 1.12 Major Issues and Policy Changes
 - 1.13 Terms and Conditions

1.1 Application Overview

8. In 2017, AltaLink committed to providing certainty and stability to customers with respect to their rates over the next five years. AltaLink's 2019-2021 GTA successfully delivered the first three years of the AltaLink's five year commitment to customers to maintain tariffs flat at 2018 levels (Flat for Five). AltaLink's 2022-2023 GTA completes the commitment to customers during a sudden and unexpected pandemic and economic shut down that has impacted all Albertans and all businesses.
9. AltaLink in its capacity as General Partner of AltaLink, L.P., applies⁴ to the Commission for approval of a general tariff rate for the 2022-2023 test years (the Test Period) consisting of:
 - Revenue Requirements of \$877.9M and \$895.5M in 2022 and 2023, respectively;
 - Transmission Tariffs (net of tariff relief) of \$811.5M and \$835.5M in 2022 and 2023, respectively, as set out in Section 1.4;
 - AltaLink's deferral accounts for the Test Period as requested in Section 31.6; and
 - AltaLink's reserve accounts for the Test Period as requested in Section 31.5.

1.1.1 Developing the Revenue Requirement for the 2022-2023 Test Period

10. When developing AltaLink's revenue requirement for the 2022-2023 Test Period, all teams within the company were instructed to continue with AltaLink's commitment and to put customers first by continuing to deliver the Flat for Five for the 2022-2023 GTA. To achieve this goal, all groups were specifically instructed to start with a zero based budgeting and forecasting approach, in much the same manner as in previous GTAs, build it up in detail, challenge their budgets, and keep the overall tariff to no more than the 2018 approved revenue requirement amount of \$904M.
11. At the same time, while striving to achieve the Flat for Five revenue requirement objective, AltaLink teams were also challenged to:
 - retain the same or better level of system reliability and safety;
 - ensure required project spending is not deferred to a future period;
 - maintain fair payments to landowners who host AltaLink facilities;
 - advance engagement and shared working opportunities with Indigenous partners;
 - promote the diversity culture at AltaLink, and return to market median pay for non-union employees by including a wage and salary increase towards market median pay, based on Mercer's market data; and
 - explore and bring forward mechanisms to address any rate increases driven by new capital expenditures, both those required to maintain AltaLink's existing system as well as any new AESO system projects.
12. In the 2022-2023 GTA, AltaLink is absorbing half, or 1%, of the projected general inflation rate of 1.8% and 2.0% respectively (excluding deferral and reserve accounts).⁵ Therefore, a 1.0% inflation rate has been applied to contract manpower, vegetation management, and G&A expenses.

⁴ Pursuant to Part 9, Division 2 of the Electric Utilities Act, S.A. 2003, c E-5.1.

⁵ Section 1.8.6 of the Application and **Appendix 2-F**, page 44.

1.1.2 Tariff Refund to Customers - Accumulated Depreciation Surplus Refund

13. On March 15, 2021, the Commission issued Decision 26248-D01-2021⁶ approving a 2021 tariff refund of \$230M. The approved \$230M consisted of refunding \$150M of prefunded FIT balance and \$80M of accumulated depreciation surplus. Based on a fully complete 2019 Depreciation study completed by Mr. Larry Kennedy, AltaLink is proposing to refund \$120M to customers in the 2022-2023 Test Period. The results and principles of Decision 26248-D02-2021 continue to apply to this proposed refund.
14. In Decision 26248-D02-2021, the Commission stated that it required a completed depreciation study.⁷ AltaLink provides a complete 2019 Depreciation Study (“2019 Depreciation Study”) that was developed by Mr. Kennedy of Concentric, and this document can be found at **Appendix 8-A**. This study confirms a \$200M accumulated depreciation surplus and provides for a remaining accumulated depreciation surplus of approximately \$100M that is within a 5% tolerance limit to provide a buffer for potential future adjustments. These details are further explained in Section 6 of this Application, and attached in **Appendix 8-A**.
15. In developing this GTA, AltaLink is proposing to refund the balance of the \$120M of accumulated depreciation surplus by refunding \$60M in 2022 and 2023 while targeting an 11.1% FFO/Debt Ratio in order to maintain its current A level credit rating.⁸
16. AltaLink’s submissions from proceeding 26248 continue to apply to this Application. The \$120M is not required as demonstrated by AltaLink’s 2019 Depreciation Study. In accordance with Decision 26248-D02-2021, the amount should be returned to customers who contributed to the surplus to fairly treat current and future customers. Current customers are shouldering a disproportionate amount of the costs related to the largely undepreciated rate base arising from the big build that occurred to meet the long term needs of the AIES. The accumulated depreciation surplus refund allows the new depreciation rates to more accurately and fairly match depreciation charges to the consumption of assets in the provision of utility service.
17. As directed by the Commission, in its Reply Argument in proceeding 26248, AltaLink detailed how the proposed tariff refund improves intergenerational equity in both the near term and the long term.⁹ Those submissions continue to apply and support the refund of the \$120M back to customers.
18. Parties such as the UCA stated that it is “very concerned that the consumers it represents are facing significant economic pressures and their need for immediate and effective relief is urgent.”¹⁰ ADC and IPCAA “are very concerned for the Alberta economy in general and for industries that have been hit particularly hard by the COVID-19 pandemic”, and “support these hard-hit electricity customers receiving the help they need during these difficult economic times.”¹¹ The AESO “supports the provision of relief to ratepayers given the unprecedented economic and health-related circumstances in Alberta.”¹² Even the CCA “accepts that Albertans are in a precarious position” and acknowledges “there is no disputing that current ratepayers

⁶ Decision 26248-D01-2021, AltaLink Management Ltd., 2021-2023 Tariff Refund, March 15, 2021 (Decision 26248-D01-2021).

⁷ Decision 26248-D02-2021, AltaLink Management Ltd., 2021-2023 Tariff Refund, April 15, 2021, para 33, pdf 10.

⁸ Decision 22570-D01-2018, 2018 Generic Cost of Capital, August 2, 2018 (Decision 22570-D01-2018), para 743 pdf 154 and Table 13, pdf 163 and Table 14, pdf 164.

⁹ Exhibit 26248-X0089, AML Reply Argument, para 54-75, pdf 21-29.

¹⁰ Exhibit 26248-X0084.01, UCA Argument, para 7, pdf 3.

¹¹ Exhibit 26248-X0081, ADC and IPCAA Argument, para 2, pdf 2.

¹² Exhibit 26248-X0085, AESO Argument, para 2, pdf 1.

could benefit from rate relief”.¹³ AltaLink is continuing to provide relief by refunding \$120M during the 2022 and 2023 Test Period.

19. AltaLink’s proposed refund reflects a principled approach that requires the refund to proceed. These principles include:
- closely aligning the principle of **cost causation**, which was recognized by the Commission as the guiding principle in rate design. By definition, AltaLink’s surplus depreciation, which was collected from previous generations of customers, represents a divergence from AltaLink’s current actual asset consumption, whether consumption is determined in accordance with AltaLink’s approved depreciation parameters or the updated parameters reflected in AltaLink’s Application. As long as AltaLink holds the surplus, future customers will pay less than the amount of depreciation corresponding to their use of the transmission system, contrary to the principle of cost causation;¹⁴
 - follow the principles of **gradualism and moderation** by retaining roughly \$100M accumulated depreciation surplus that is within a 5% approved tolerance providing a cushion against short-term fluctuations in its depreciation expense and small changes in service life estimates. As the UCA correctly points out, refunding these amounts now will align AltaLink’s depreciation expense with the actual consumption of its assets, and will maximize the chance that the customers receiving the refund are the same customers who contributed those amounts in the first place – consistent with cost causation. The longer AltaLink holds the amounts, the more remote this chance becomes;¹⁵ and
 - furthers the principle of **intergenerational equity**, by providing needed relief to hard-hit current customers and by more fairly allocating the costs of AltaLink’s assets among the future generations of customers who will benefit from them. Approving AltaLink’s proposal would not constrain the Commission from responding to future circumstances as they arise.¹⁶
20. Refer to Section 6 of this Application for further details regarding the proposed refund of accumulated depreciation surplus.
- 1.1.3 2022-2023 Generic Cost of Capital**
21. On August 2, 2018, the Commission issued Decision 22570-D01-2018 concerning the 2018 GCOO proceeding. This decision was established on a final basis that a fair return for AltaLink in the years 2018, 2019 and 2020 consists of an approved ROE of 8.50% and a capital structure with a deemed equity thickness of 37%.
22. The scope of this proceeding also included a consideration of income tax methods and whether the Commission should direct all utilities to adopt one standard methodology, flow-through or FIT. In its decision, the Commission did not direct the adoption of one standard methodology, and instead, it directed AltaLink and other utilities who use the flow-through method to also include their unfunded FIT liability balances in their Rule 005 reports.¹⁷ The Commission advised that this additional reporting would assist in assessing the level of potential credit metric levelization that may be available if a utility were to apply to adopt the FIT method.

¹³ Exhibit 26248-X0082, CCA Argument, para 33, pdf 15.

¹⁴ Exhibit 26248-X0089, AML Reply Argument, para 10, pdf 6 [footnotes omitted].

¹⁵ Exhibit 26248-X0089, AML Reply Argument, para 10, pdf 6-7 [footnotes omitted].

¹⁶ Exhibit 26248-X0089, AML Reply Argument, para 11, pdf 7 [footnote omitted].

¹⁷ Decision 22570-D01-2018, para 102, pdf 26.

23. On October 13, 2020, the Commission issued Decision 24110-D01-2020 concerning the 2021 GCOC proceeding. This decision extended the currently approved ROE and equity thickness from Decision 22570-D01-2018 for the duration of 2021.¹⁸
24. Being mindful of the uncertainty arising from the COVID-19 pandemic, on December 22, 2020, the Commission initiated the 2022 GCOC proceeding.¹⁹ Before establishing any process for this proceeding, the Commission canvassed all registered parties for comments on a number of alternatives including whether there were sufficient grounds to extend the currently approved ROE and equity ratios for a further period of time. Subsequently, on March 4, 2021, the Commission, in Decision 26212-D01-2021, approved AltaLink's deemed capital structure and ROE at 37%, and 8.5% respectively for 2022. These parameters for 2022, along with deemed equity ratio of 37% and ROE of 8.5% as placeholders for 2023, are reflected in this Application.
25. This 2022-2023 GTA maintains AltaLink's flow-through income tax method and establishes the revenue requirement for AltaLink in the 2022 and 2023 test years using a ROE of 8.50% and an equity thickness of 37% on a final basis for 2022 and on a placeholder basis for 2023.

1.1.4 2022-2023 General Tariff Application

26. Table 1.1.4-1 below summarizes AltaLink's Revenue Requirement and Transmission Tariff for the 2022-2023 Test Period.

¹⁸ Decision 24110-D01-2020, at para 20, pdf 9.

¹⁹ Proceeding 26212.

Table 1.1.4-1 - Applied for Revenue Requirement and Transmission Tariff 2022-2023

	2019 Actual	2020 Actual	2021 MU	2022 Test Year 1	2023 Test Year 2
Revenue Requirement					
Operating expense	162.9	158.7	164.3	167.0	170.4
Return - Equity	240.4	236.7	229.4	238.8	241.7
Return - Debt	184.5	183.5	183.0	183.8	185.3
Depreciation	292.0	289.7	291.8	296.9	306.2
Revenue Offsets	(7.6)	(8.6)	(9.1)	(8.5)	(8.2)
Income Taxes	(0.0)	0.0	0.0	0.0	(0.0)
Total Revenue Requirement	872.2	859.9	859.5	877.9	895.5
Refunds					
Settlement SIR Balance and Other Customer Refund	(4.3)	-	-	(2.7)	-
Settlement of Hearing Costs				(3.8)	-
Refund Depreciation Tariff		-	(80.0)	(60.0)	(60.0)
Refund FIT Tariff Relief	-	-	(150.0)	-	-
Refund Depreciation Surplus	-	-	(10.4)		
Transmission Tariff	867.8	859.9	619.1	811.5	835.5
Capital Structure					
Equity Ratio	37%	37%	37%	37%	37%
Debt Ratio	63%	63%	63%	63%	63%
Subordinated Debt Ratio	0%	0%	0%	0%	0%
Total Capital	100%	100%	100%	100%	100%
Return on Equity	8.73%	8.63%	8.27%	8.50%	8.50%
FFO/Debt	11.0%	11.0%	10.6%	10.8%	10.9%

1.1.5 Depreciation on Property Plant and Equipment (PP&E) – Overview

27. As explained above, the 2022-2023 GTA includes a new 2019 Depreciation Study prepared by Mr. Kennedy of Concentric Energy Advisors. Mr. Kennedy prepared previous depreciation studies on AltaLink's depreciable assets for past GTA applications.
28. The new 2019 Depreciation Study includes AltaLink's asset transactions and balances up to December 31, 2019. AltaLink is seeking Commission approval to apply the depreciation rates developed in the 2019 Depreciation Study to the 2022-2023 GTA period.
29. AltaLink's depreciation expense on PP&E is forecast to increase from the \$267.3M approved for 2021 in the 2019-2021 GTA, to \$268.6M in 2022, and \$276.8M in 2023. The 2022 amount is \$1.3M higher than the 2021 amount due to a \$5.3M increase arising from higher gross plant and offset by a (\$4.0)M reduction due to lower depreciation rates; the 2023 amount is \$9.5M higher than 2021 amount due to a \$13.2M increase arising from higher gross plant and offset by a (\$3.7)M reduction due to lower depreciation rates. Refer to Section 6 for more details.

1.1.6 Salvage Transition - Overview

30. Decision 25870-D01-2020 approved AltaLink's approach to salvage cost recovery. AltaLink continues to implement its salvage methodology by capitalizing salvage costs related to replacement projects and expensing those salvage costs which are related to pure asset removals (Capitalize and Expense Salvage Method). This change in salvage collection

methodology is being phased in over a reasonable period of time to support AltaLink’s credit metrics as more fully detailed in this Application.

31. During the 2022-2023 Test Period phase-in, AltaLink is targeting to maintain its FFO-to-Debt ratios at 11.1%. AltaLink has maintained the approved 2021 salvage collection amount of \$30.3M for both the 2022 and 2023 Test Periods to support its credit metrics in order to provide the much needed customer refunds approved by the Commission in Decision 26248-D01-2021 and the proposed \$120M of accumulated depreciation surplus in this GTA. The new salvage approach is expected to be phased in over a projected five to six year period until AltaLink can begin to capitalize salvage costs. AltaLink is forecasting an 11.0% FFO/Debt ratio in its 2023 Test Period and is expected to achieve the 11.1% target the following year, assuming the current 8.5% ROE and 37% equity ratio cost of capital.
32. Under the new approved salvage method, only salvage costs related to those assets being retired and not replaced would be expensed. For other assets where the asset retirement is more than likely to be followed by a replacement asset, the actual costs incurred in removing the asset retired from rate base will be added to the cost of the replacement asset and amortized/depreciated over the estimated useful life of the new asset. Capitalizing the actual costs incurred in removing an asset and amortizing/depreciating this cost over the estimated useful life of the new asset, is consistent with how all other costs attributed to the asset are capitalized.
33. A new Net Salvage Reserve Account is an integral part of the transition to the Capitalize and Expense Salvage Method. With the Net Salvage Reserve Account, the salvage dollars collected now accumulate into this account and all salvage related costs incurred during this GTA would be withdrawn from this account. This account balance is treated as no cost capital and it offsets rate base in the same way that the pre-collected net salvage dollar amounts have been treated in the past for rate making purposes. Table 1.1.6-1 below illustrates the determination and continuity of the salvage cost account balances. For the purpose of this GTA, the forecast balance in the net salvage reserve account regarding the accumulated salvage account balance as at December 31, 2021, is increased by all salvage amounts collected, and reduced by all salvage costs incurred, as projected in Table 1.1.6-1 below.

Table 1.1.6-1 – Net Salvage Reserve Account (\$M)

	2022F	2023F
Salvage Amount collected	\$30.3	\$30.3
Salvage Expenditures	\$29.8	\$28.5
Year-end Net Salvage Reserve Account Balance	\$214.3	\$216.1

34. AltaLink’s approved salvage method provides a reduction of approximately \$86.6M²⁰ over the 2019-2021 Test Period, and is expected to provide approximately \$60M reduction over the 2022 and 2023 Test Period compared to the amounts that would have been collected with the previously approved net salvage rates. At the same time, the newly approved Net Salvage Reserve Account is expected to have a balance of approximately \$216.1M by the end of 2023. AltaLink is of the view that this amount is sufficient to fund with a reasonable tolerance the forecast salvage related spending over the next five to six years.

²⁰ Exhibit 25870-X0019, AML-AUC-2020SEP23-004 Attachment 5 (Summary of Changes to Revenue Requirements), 3-yr Total Tab, line 3.

35. Refer to Sections 6 and 29 of this GTA for further details regarding the new approved salvage method and net salvage reserve account respectively.

1.1.7 PiikaniLink L.P. and KainaiLink L.P 2022-2023 GTAs

36. In Proceeding 22612, the Commission approved the transfer, subject to conditions, of certain transmission assets situated on the Reserve Lands of the Piikani First Nation and the Blood First Nation to PiikaniLink L.P. (PLP) and KainaiLink L.P. (KLP) respectively. The transmission assets on the Piikani Nation Reserve Lands were transferred to the PLP on June 1, 2019 and approved by the Commission in Decision 24757-D01-2019. The transmission assets on the Blood First Nation Reserve Lands were transferred to the KLP on January 1, 2020 and approved by the Commission in Decision 25307-D01-2020.
37. Due to delays in the final asset transfers, these transmission assets were included in AltaLink's 2019-2021 forecast rate bases. Similarly, the cost of providing transmission services in relation to these assets were included in AltaLink's forecast 2019-2021 revenue requirements. The PLP and KLP assets and costs to provide transmission services were removed from AltaLink's assets and revenue requirement in AltaLink's 2019-2021 GTA compliance filing and approved by the Commission in Decision 25627-D01-2020 which was issued on July 21, 2020.²¹
38. PLP's and KLP's 2022-2023 GTAs are filed along with AltaLink's 2022-2023 GTA.

1.1.8 AltaLink – Overview

39. AltaLink is the largest TFO in Alberta's electricity industry, representing approximately half of the total kilometres of transmission lines used in Alberta's high-voltage electricity transmission system. AltaLink's transmission system is interconnected and operates synchronously (i.e. on the same phase and frequency) with the North American Western Interconnected Electrical System. The transmission business serves approximately 226,000 square kilometres in the southern half of Alberta and includes approximately 13,200 kilometres of high-voltage transmission lines and approximately 308 substations, transmitting electric energy at voltages up to 500 kV from generation plants to the major load centres, cities and large industrial plants throughout central and southern Alberta. AltaLink's transmission facilities are used to supply electricity to most major urban centres in Alberta, serving approximately 85% of Alberta's population. More information about Alberta's electricity industry and AltaLink's transmission business is available in the AIF, attached as **Appendix 6-B1**.

1.1.9 Technical Aspects of the Application

40. The capitalized words and phrases used throughout this Application have the meanings ascribed to them in the Glossary and Abbreviations of Terms in **Appendix 20**, unless otherwise defined herein.
41. This Application includes tables and schedules containing numbers that may not add up to the exact totals indicated within the tables due to rounding.

²¹ Decision 25627-D01-2020, AltaLink Management Ltd., 2019-2021 Transmission Facility Owner General Tariff Application Compliance Filing to Decision 23848-D01-2020, July 21, 2020. The revenue requirement was updated in Proceeding 25870 (Net Salvage Proposal) and approved by the Commission in 25870-D01-2020 which was issued on November 19, 2020.

1.2 Overview of Revenue Requirement

1.2.1 Revenue Requirement

42. This section provides an overview and brief explanation of the key factors driving the changes in AltaLink's forecast revenue requirement for the 2022-2023 Test Period.
43. Throughout this Application, AltaLink refers to both its revenue requirement and its transmission tariff in the context of the changes and tariff levelization that AltaLink has proposed in this Application. The transmission tariff is provided to customers in the form of both changes to AltaLink's revenue requirement and its transmission tariff. For clarity, AltaLink's revenue requirement is included on line 13 of MFR Schedule 3-1, while AltaLink's transmission tariff is included on line 21 of MFR Schedule 3-1.
44. AltaLink continues to apply for a tariff that does not exceed the 2018 approved revenue requirement amount of \$904M. To achieve this goal:
- a. AltaLink's 2019-2021 tariffs were set at \$854.0M, \$848.8M and \$848.2M respectively;
 - b. AltaLink's forecast tariffs for the 2022-2023 Test Period are \$811.5M and \$835.5M respectively. In order to achieve this low level of tariff:
 - i. AltaLink is limiting the escalation of all O&M spending to 1%, which is less than the expected general inflation of 2%, with the exception of wages and salaries.
 - ii. At the same time, AltaLink's salvage methodology approved by the Commission in Decision 25870-D01-2020 results in approximately \$60M reduction in salvage collection over the 2022-2023 test years.
 - iii. AltaLink is also proposing to refund \$120M of surplus accumulated depreciation, or \$60M in 2022 and 2023. In Proceeding 26248, AltaLink applied to refund \$350M to customers comprising \$150M of pre-collected FIT and \$200M of accumulated depreciation surplus. In Decision 26248-D01-2021, the Commission approved \$150M of FIT and \$80M of the accumulated depreciation surplus to be applied as a reduction to AltaLink's 2021 tariff. In the 2022-2023 test period, AltaLink applies to refund the remaining \$120M accumulated depreciation surplus reflecting the principles from the Commission's approval as a reduction to the 2022 and 2023 tariffs at \$60M a year.
45. Table 1.2.1-1 below, shows the year-to-year changes in AltaLink's revenue requirement over the 2022-2023 Test Period, and Table 1.2.2-1 provides further context for the factors driving these changes. Section 1.3 further discusses the key aspects of AltaLink's applied for transmission tariff.

Table 1.2.1-1 -Overview Forecast Changes in Revenue Requirement for 2019 to 2023 (\$M)

	2019 Actual	2020 Actual	2021 MU	2022 Test Year 1	2023 Test Year 2
Revenue Requirement					
Operating expense	162.9	158.7	164.3	167.0	170.4
Return - Equity	240.4	236.7	229.4	238.8	241.7
Return - Debt	184.5	183.5	183.0	183.8	185.3
Depreciation	292.0	289.7	291.8	296.9	306.2
Revenue Offsets	(7.6)	(8.6)	(9.1)	(8.5)	(8.2)

	2019	2020	2021	2022	2023
Income Taxes	(0.0)	0.0	0.0	0.0	(0.0)
Total Revenue Requirement	872.2	859.9	859.5	877.9	895.5

46. As shown in the above table:

- AltaLink’s 2021 revenue requirement forecast of \$859.5M represents a decrease of \$0.5M (0.1%) over the 2020 actual revenue requirement as modified in this Application;
- AltaLink’s 2022 revenue requirement forecast \$877.9M represents an increase of \$18.4M (2.1%) over the 2021 revenue requirement forecast level; and
- AltaLink’s 2023 revenue requirement forecast of \$895.5M represents an increase of \$17.6 (2.0% over the 2022 revenue requirement forecast level.

47. With the exception of labour costs which are subject to market based escalation, AltaLink has limited the escalation of all other non-deferral account O&M spending to 1%, which is less than the expected general inflation of 2% as explained in Section 1.8 below. As a result, total operating expenses in 2021 are forecast at \$164.3M which represents an increase of \$5.6M (3.5%) compared to 2020, and in the subsequent test year period O&M expenses are forecast to be \$167.0M in 2022 and \$170.4M in 2023. Refer to Section 5 and 25 for further details regarding operating expenses.

48. Capital expenditures by AltaLink in the 2022-2023 period continue to reflect reduced capital spending compared to 2015 which was the last year of the “Big Build”. As the company settles into a phase marked by lower capital spending related to expansion and relatively stable amounts related to capital maintenance, total capital spending is forecast at \$269.5M in 2021, \$317.2M in 2022 and \$364.5M in 2023. These forecast amounts are consistent with capital spending in the three previous years: \$290.1M in 2018, \$311.9M in 2019, and \$290.5M in 2020.

49. Table 1.2.2-1 below, sets out additional detail regarding changes to AltaLink’s revenue requirement and provides a breakdown of the various cost groupings for the 2022-2023 Test Period.

1.2.1.1 Labour Resourcing

50. Despite the many challenges created by the COVID-19 pandemic and the associated restrictions, AltaLink continued to effectively operate its business. AltaLink is proud of all of our employees who continued working throughout the pandemic, including the 143 employees who were deemed essential workers. AltaLink employees have dealt with extremely heavy workloads and the complexities created by the pandemic, yet they have still effectively delivered on their responsibilities. With the expectation that the vaccine rollout will start to ease the pandemic and associated restrictions in 2021, AltaLink will fill the vacancies in 2021 that existed at the end of 2020, and then keep the number of FTEs essentially flat in 2022 and 2023.

51. AltaLink continues to improve and optimize the use and allocation of resources in order to perform the overall operations functions, in particular, the use of internal versus external labour in managing both capital project and operating expense activities. AltaLink assesses and considers its total labour requirements and the most suitable work for employees and contracted manpower based on the nature and frequency of the work and the skills and competencies required. The FTE levels presented in this GTA reflect the base level of internal resources required in order for AltaLink to efficiently meet its obligations as a TFO. This GTA forecast supports and continues to align with AltaLink’s return to be an operations focused company as compared to the significant growth that occurred during the “Big Build”.

52. There is not a linear relationship between the forecast level of capital expenditures and AltaLink’s FTE forecast. This is due to several factors. Firstly, AltaLink employees are not dedicated to support only one work activity. Employees are utilized to support both operating and capital work activities as required, including Direct Assign, CRU, IT or Facilities capital investments, and O&MA activities. This provides for the most efficient utilization of staff. Therefore, FTE forecasts will not be linearly impacted by forecast changes in capital activities, such as DA projects. Secondly, capital FTEs will not directly correlate with capital expenditures as project activities, such as; planning, stakeholder engagement, permitting, project management, and field construction are required on nearly every project irrespective of the project size. To illustrate, the planning, management and execution activities of ten small sized customer connection projects can be equal to or greater than a single large project with comparable total expenditures. In the past few years AltaLink has seen an increasing amount of smaller projects as compared to prior periods in support of customer interconnection requests.
53. AltaLink has expected, planned and executed a 13% reduction in FTEs as required in various departments by optimizing resource plans over the last several years as AltaLink anticipated the reduction in capital project activities after the “Big Build”. AltaLink has focused on reducing reliance on contractors filling internal positions to complete projects, where the functional transferability permits, thereby maintaining a consistent decreased FTE level as shown in Figure 1.2.1.1-1.

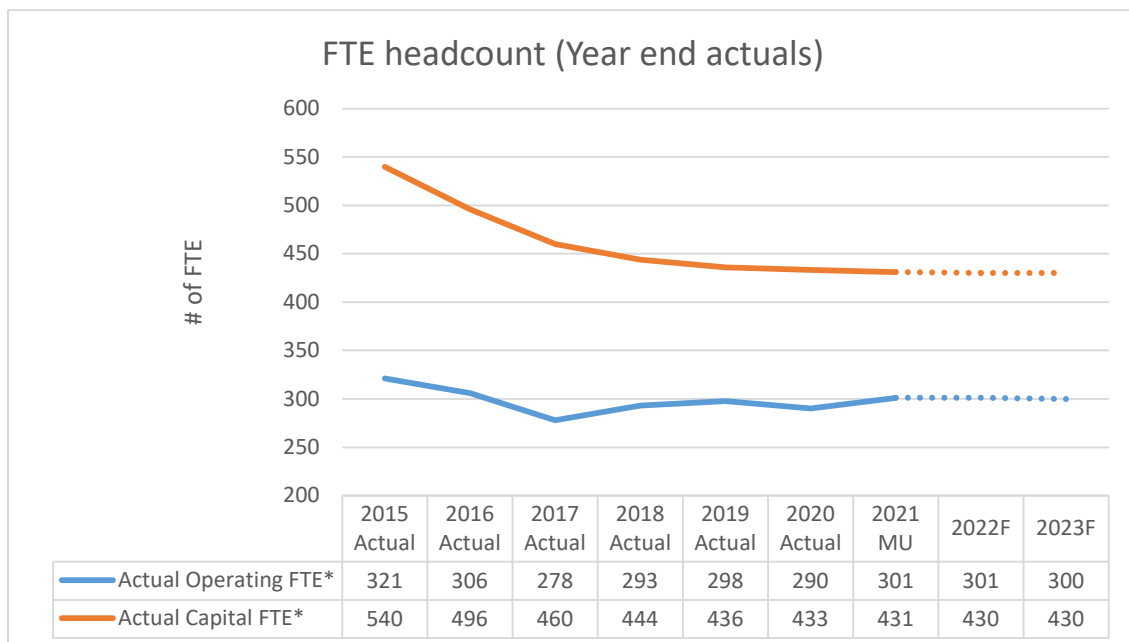


Figure 1.2.1.1-1 - AltaLink Total Actuals Operating and Capital FTE

*Note: The 2015-2020 actual FTE levels reflect the December 31 numbers of that particular year and are not reflective of vacant positions that were in the process of being hired in the following year. Therefore, the 2021MU and 2022 and 2023 forecast FTE numbers shown in the graph above have been reduced by the applied for 2% vacancy rate to the gross FTE numbers. This allows for a consistent comparison against actual FTE results from prior period year end actual numbers.

54. Between 2015 and 2017, AltaLink’s net mid-year rate base increased 36.4% from \$5,393.6M in 2015 to \$7,354.8M in 2017. By the end of this Test Period, AltaLink’s rate base is forecast to be \$7,686.1M in 2023 which represents a further increase of only 4.5% compared to 2017. Figure 1.2.1.1-1 above shows that over the 2017-2023 period, AltaLink’s operating level of FTEs have

remained relatively flat averaging approximately 297 FTEs per year. Given the minimal growth in rate base and operating FTEs over the 2017 to 2023 period, Figure 1.2.1.1-2 below shows that AltaLink’s ratio of net mid-year rate base per operating FTE has also remained relatively flat over this same period. In 2023, AltaLink is forecasting a ratio of rate base per operating FTE of \$25.6M which is virtually unchanged from the average of \$25.4M for the prior 5-year 2017-2021 period.

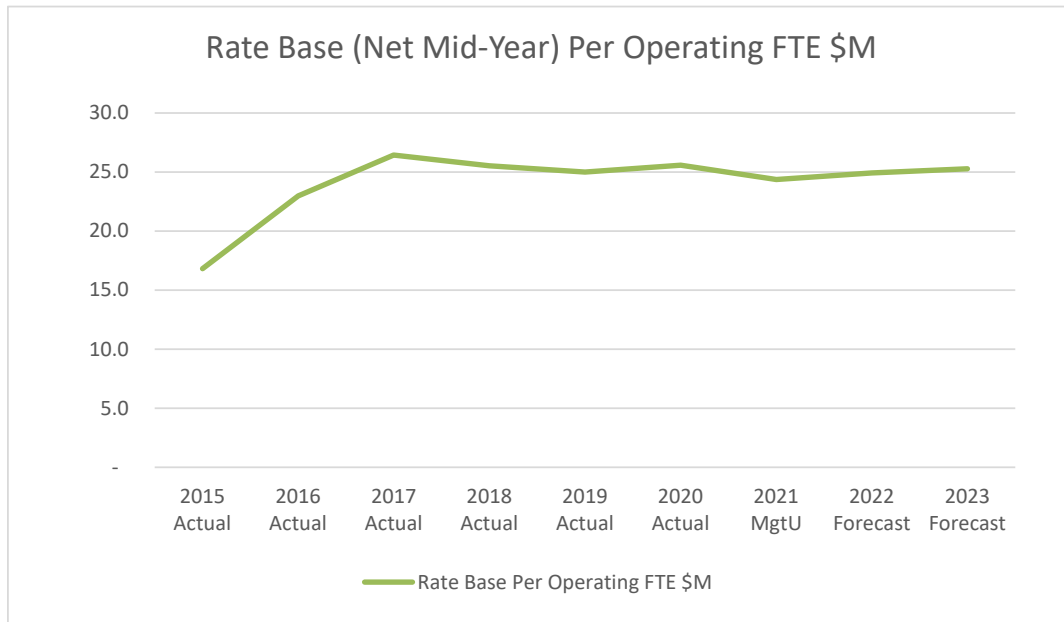


Figure 1.2.1.1-2 - AltaLink Net Mid-Year Rate Base Per Operating FTE

Capital Projects

55. AltaLink, through its functional organization, strives to keep a base level of capital FTEs to support Capital project governance and delivery and flexes numbers through use of contractors and term employees for peak work load activities. The volume of resources required for project delivery is also managed by the use of an outsourced EPC model for specific Direct Assigned work and selected use of contract resources for certain engineering, procurement and construction activities for DA, CRU and IT projects. This approach mitigated the cost risk of hiring full time staff with respect to severance related costs.
56. AltaLink has continued to evolve the organization towards a flexible project delivery model, where internal project staff execute a baseload of capital projects. This approach allows AltaLink to retain core experience and knowledge and leverage the capacity and capability of the internal team members and leverage external contractors where appropriate to help manage the timing and staffing requirements that can be experienced in the potentially variable requirements within delivering the Direct Assign capital project portfolio.

Operating Activities

57. AltaLink has minimized the amounts of contractor and/or external labour contract resources and is relying on its internal resource levels to efficiently manage its projected workloads associated with operating and maintaining its large asset base relative to historical levels.
58. The baseline FTE levels from 2015 to 2023 supports and aligns with AltaLink’s return to be more of an operations based company compared to a growth company. In this regard, AltaLink has

minimized the amounts of contractor and/or external labour contract resources and is relying on its internal resource levels to efficiently manage its projected workloads associated with operating and maintaining its larger asset base relative to historical levels. The internal resource requirements are directly related to efforts to operate and maintain the amount and complexity of the transmission facilities combined with asset aging and wear out, and to support evolving industry rules and standards such as increasing amounts of ISO rules and security requirements. The focus and execution of efficiency and processes improvements, as details in Section 1.11, help to offset the increasing industry requirements such as new compliance reporting, security, or maintenance requirements thereby enabling AltaLink's consistent forecast of FTEs.

59. AltaLink assesses and considers its total labor requirements and the most suitable work for employees and contracted manpower based on the nature and frequency of the work and skills and competencies required. AltaLink primarily uses contracted manpower for specialized services and peak work load management for operating activities outlined in Section 5 and 25 of the Application. The work performed by contractors historically and in the Test Period is primarily specialized work with specialized skills and in most cases not full time in nature. As such, there is limited ability to perform these specialized tasks with current complement AltaLink staff. Examples of the specialized contracted manpower services in operating activities involve and are not limited to:

- Specialized equipment maintenance and repair – HVDC, specialized equipment inspections, insulator washing, pole testing and treatment;
- Aerial patrols;
- Vegetation management – herbicide application, vegetation removal, mow and trimming services; and
- Corporate support functions such as audits, property tax expertise, and IT help desk services.

60. Further details on AltaLink's operating labor and forecasts for contracted manpower is provided in Section 5 and 25 of the Application.

61. With respect to projected FTE levels and appropriate levels of compensation being projected aligns with the economic forecasts, (refer to Section 1.9.1 and **Appendix 2-E** Alberta Treasury Branch Economic Outlook March 18 2021; **Appendix 2-F** Government of Alberta 2021 to 2024 Fiscal Plan February 25 2021; **Appendix 2-M** RBC Provincial Outlook, March 10, 2020), Alberta's economy is expected to rebound significantly in 2021, and further in 2022 and 2023. Therefore, in order to attract and retain employees during the Test Period, it will be critical that AltaLink provides employees with market average compensation, as included in this Application.

1.2.2 System Growth and Maintenance – Capital Additions

62. While the above discussion focuses on the main initiatives underlying AltaLink's revenue requirement objective, this section examines the year-to-year changes in revenue requirement over 2022-2023 by focusing on changes in capital spending and operating costs related to system growth and maintenance.

63. In the current year and Test Period, total capital additions are forecast to be \$302.1M in 2021, \$250.6M in 2022, and \$407.4M in 2023, respectively. These forecast capital additions are primarily driven by the capital costs associated with two types of capital-related activities. The first is the work associated with the AESO's DA projects necessary to meet Alberta's need for additional transmission system capacity; and the second is the work necessary to maintain

AltaLink's existing transmission assets. Refer to Section 10 for further details and explanations regarding AltaLink's capital forecasts.

64. Table 1.2.2-1 below shows the year-to-year changes in revenue requirement over the 2022-2023 Test Period as driven by changes in AltaLink's System Growth and Maintenance costs which, in turn, reflect changes in capital additions and relating operating costs. These operating costs related to system capital are linked to the assets and include Taxes Other Than Income Tax, ASPs, insurance costs, and brushing (VM costs). Operating Costs Related to System Capital are explained in Section 5 and Section 25 of this Application.
65. The forecast changes in system capital related to system expansion and maintenance are forecast to account for approximately \$15.8M or 1.8% of the forecast increase in the 2022 revenue requirement compared to the 2021 forecast revenue requirement. In addition to this increase, changes in the operating costs component of system capital and changes in system support operating costs also contribute to the year over year increase. Specifically, changes in operating costs related to system capital account for a further increase of \$1.1M or 0.1% in revenue requirement, and changes in system support operating costs account for a forecast increase of \$2.2M or 0.3% in revenue requirement. As shown in Table 1.2.2-1, the combined effect of changes related to system expansion and maintenance, and system support costs results in an overall increase of \$19.0M or 2.2% in revenue requirement in 2022 compared to the current 2021 forecast.
66. The 2023 forecast revenue requirement increase over the 2022 forecast amount is primarily driven by higher system growth and higher system maintenance capital spending which result in a combined revenue increase of approximately \$13.8M or 1.6% compared to 2022. Additionally, higher operating costs related to system capital and higher system support operating costs result in further increases in revenue requirement of \$0.6M (0.1%) and \$3.1M (0.4%), respectively, compared to the forecast revenue requirement in 2022. As shown in Table 1.2.2-1, the combined effect of changes in system capital and system support operating costs results in an overall net increase of \$17.6M or 2.0% in revenue requirement in 2023 compared to the 2022 forecast.

Table 1.2.2-1 - Overview Forecast Changes in Revenue Requirement for 2022 to 2023 (\$M)

			% Chg
Revenue Requirement - 2021 MU		858.9	
Provision for Deferral Accounts		0.0	
2021 Management Update - Adjusted Revenue Requirement		858.9	
Refund Depreciation and FIT Tariff Relief		(230.0)	
Refund Depreciation Surplus		(10.4)	
Total Transmission Tariff 2021 Management Update		618.5	
<u>2022 Forecast: Revenue Requirement changes due to:</u>			
System Growth & Maintenance			
System Capital			
System expansion	0.8		
Existing system maintenance	15.0		
Change in System Capital		15.8	1.8%
Operating costs related to System Capital			
Taxes other than income tax	1.1		
Annual Structure Payments	0.1		
Self Insurance Reserve and insurance premiums	(0.2)		
Brushing	0.1		
Change in Operating costs related to System Capital		1.1	0.1%
System Support Operating Costs			
Labour	1.7		
Contractor services	0.1		
Hearing Cost Reserve	(1.4)		
Other expenses	1.8		
Change in System Support Operating Costs		2.2	0.3%
Change in Revenue Requirement from 2021 levels		19.0	2.2%
Total Revenue Requirement - 2022 Forecast		877.9	
Refund Depreciation Tariff Relief and Account Settlements		(66.5)	
Total Transmission Tariff 2022 Forecast		811.5	31.2%
<u>2023 Forecast: Revenue Requirement changes due to:</u>			
System Growth & Maintenance			
System Capital			
System expansion	6.0		
Existing system maintenance	7.8		
Change in System Capital		13.8	1.6%
Operating costs related to System Capital			
Taxes other than income tax	0.6		
Annual Structure Payments	0.0		
Self Insurance Reserve and insurance premiums	0.0		
Brushing	0.1		
Change in Operating costs related to System Capital		0.6	0.1%
System Support Operating Costs			
Labour	1.5		
Contractor services	0.2		
Hearing Cost Reserve	0.0		
Other expenses	1.5		
Change in System Support Operating Costs		3.1	0.4%
Change in Revenue Requirement from 2022 levels		17.6	2.0%
Total Revenue Requirement - 2023 Forecast		895.5	
Refund Depreciation Tariff Relief		(60.0)	
Total Transmission Tariff 2023 Forecast		835.5	3.0%

1.2.3 2019-2021 GTA – Approved versus Actuals

67. In order to provide greater context and continuity to the current 2022-2023 GTA Application, Table 1.2.3-1 below sets out additional detail and provides a breakdown of the various cost groupings from the previous 2019- 2021 GTA.

Table 1.2.3-1 – 2019-2021 GTA Revenue Requirement – Approved GTA versus Actuals (\$M)

Revenue Requirement	2019 Approved	2019 Actual	2019 Variance	2020 Approved	2020 Actual	2020 Variance
Operating Costs	164.4	162.9	(1.6)	159.6	158.7	(0.9)
Depreciation	292.4	292.0	(0.4)	289.1	289.7	0.5
Return on Rate Base	420.1	424.9	4.8	418.8	420.2	1.4
Revenue Offsets	(8.2)	(7.6)	0.6	(8.3)	(8.6)	(0.3)
Income Tax Expense	0.0	(0.0)	(0.0)	0.0	0.0	0.0
Total	868.8	872.2	3.4	859.2	859.9	0.8

Table 1.2.3-2 – 2019-2021 GTA Revenue Requirement – Approved GTA versus Actuals (\$M)

Revenue Requirement	2021 Approved	2021 MU	2021 Variance
Operating Costs	161.6	164.3	2.7
Depreciation	287.7	291.8	4.1
Return on Rate Base	417.8	412.4	(5.4)
Revenue Offsets	(8.4)	(9.1)	(0.7)
Income Tax Expense	0.0	0.0	0.0
Total	858.6	859.5	0.9

Table 1.2.3-3 – 2019-2021 GTA Operating Expenses – Approved GTA versus Actuals (\$M)

Operating Costs	2019 Approved	2019 Actual	2019 Variance	2020 Approved	2020 Actual	2020 Variance
Net Salaries and Wages	49.5	48.1	(1.5)	49.0	47.7	(1.3)
Contracted Manpower	21.5	22.0	0.5	19.9	20.6	0.7
Administrative & General	24.2	24.1	(0.1)	23.6	23.9	0.3
Total Costs before Reserve & Deferral Accounts	95.2	94.2	(1.0)	92.5	92.2	(0.3)
Taxes Other Than Income Tax	48.9	51.5	2.6	49.3	50.0	0.8
Self-Insurance Reserve	1.1	0.1	(1.0)	1.1	-	(1.1)
Hearing Costs	3.9	1.7	(2.2)	1.4	1.5	0.1
Annual Tower Payments	15.3	15.4	0.1	15.3	15.0	(0.3)
Total Reserve & Deferral Operating Costs	69.2	68.7	(0.5)	67.1	66.5	(0.5)
Total Operating Costs	164.4	162.9	(1.5)	159.6	158.7	(0.9)

Totals may not add due to rounding.

Table 1.2.3-4 – 2019-2021 GTA Operating Expenses – Approved GTA versus Actuals (\$M)

Operating Costs	2021 Approved	2021 MU	2021 Variance
Net Salaries and Wages	49.9	49.3	(0.6)
Contracted Manpower	20.8	20.4	(0.4)
Administrative & General	23.8	26.7	2.9
Total Costs before Reserve & Deferral Accounts	94.5	96.4	1.9
Taxes Other Than Income Tax	49.3	50.0	0.7
Self Insurance Reserve	1.1	1.1	0.0
Hearing Costs	1.4	1.4	0.0
Annual Tower Payments	15.3	15.4	0.1
Total Reserve & Deferral Operating Costs	67.1	67.9	0.8
Total Operating Costs	161.6	164.3	2.7

68. As shown in Table 1.2.3-1 above, the 2019 actual revenue requirement is \$872.2M which is \$3.4M higher than the approved amount of \$868.8M. This variance is primarily due to prior year adjustment of \$3.1M consisting of a \$9.6M recovery of carrying costs relative to the 2014-2015 deferral account true-up balances, net of the 2017-2018 GTA Negotiated Settlement sharing of savings of \$6.5M.
69. In 2019 the actual return on rate base is \$424.9M which is \$4.8M higher than the approved amount of \$420.1M. This variance is largely due to the \$3.1M net adjustment as noted above. Excluding the two prior-year items, the actual return on equity for 2019 would be 8.6%.
70. In 2019, operating costs were \$162.9M which is \$1.6M less than the approved amount of \$164.4M. This variance is mainly due to the following:
- Lower wage and salary costs in 2019 are mainly related to higher vacancies than expected throughout the year. In 2019 AltaLink's actual year-end FTE count was 27.0 positions less than the approved number of 761.2 FTEs;
 - Higher Taxes Other than Income Tax expense in 2019 was more than offset by lower Commission expenses and self-insurance reserve costs.
71. For the year 2020, Table 1.2.3-1 above shows that actual revenue requirement is \$859.9M, which is \$0.8M more than the approved amount of \$859.2M. In 2020 a \$0.9M decrease in operating costs coupled with a \$0.3M increase in revenue offsets more than offset increases of \$0.5M in depreciation expense and \$1.4M in return on rate base. Return on rate base is higher than applied mainly due to a \$2.8M recovery of carrying costs on 2017 deferral account true-up balances. Excluding the prior-year recovery of carrying costs, the actual return on equity would be 8.53%.
72. For the year 2021, Table 1.2.3-1 above shows that forecast revenue is \$859.5M which is \$0.9M higher than the approved amount of \$858.6M, due to recovery of expenses under deferral accounts being higher than approved. In 2021, the forecast return on rate base is \$5.4M lower than approved, which is primarily due to lower equity return as a result of higher depreciation from higher capital additions and higher operating expenses.

1.2.4 System Growth and Maintenance - Rate Base Impact

73. System growth and maintenance primarily captures the cost associated with DA projects, driven by the identification of the need for future transmission projects. This category also captures those costs associated with the maintenance and network related costs that are directly attributable to AltaLink's existing assets. Largely due to higher no cost capital resulting from the establishment of the salvage reserve, the 2019 net mid-year rate base is now reported to be \$7,442.2M. This rate base amount represents a decrease by \$37.7M or 0.5% compared to the net mid-year rate base of \$7,479.9M in 2018.
74. Similarly in 2020 the actual net mid-year rate base is \$7,410.4M, an amount which is \$31.8M or 0.4% less than 2019. This decrease in 2020 is due to lower capital additions combined with small increases in no cost capital and customer contributions. By 2021, the net mid-year rate base is forecast at \$7,481.7M. This rate base amount for 2021 represents an increase of \$71.3M or 1.0% compared to 2020 due to an increase in capital additions and a forecast reduction in no cost capital.
75. In the 2022-2023 Test Period, AltaLink is forecasting a mid-year rate base (after adjustments) of \$7,592.3M and \$7,686.1M in 2022 and 2023, respectively. These forecast amounts represent:
- an increase of \$110.6M in 2022 compared to the 2021 forecast rate base of \$7,481.7M; and
 - an increase of \$93.8M in 2023 compared to the 2022 forecast rate base of \$7,592.3M.
76. Increases to rate base in 2022 and 2023 are primarily driven by increases in NBVs resulting from capital spending programs in the prior, current and forecast years, and partially from the refund of \$80M accumulated depreciation surplus refund in 2021.
77. For further details with respect to the impact of system growth on rate base, refer to Section 10, Schedule 10-1. Refer to Section 31, Schedule 31.2-A for a summary of the amounts comprising AltaLink's total rate base.
78. AltaLink's revenue requirement forecast is detailed in Section 3.

1.3 Overview of Key Aspects of Application

79. The key aspects of the Application which are discussed in this section include:
- Revenue Requirement Overview;
 - Cost Containment Measures used to Level Revenue Requirement;
 - 2019 Depreciation Study;
 - Salvage Transition Overview;
 - Refund of Depreciation Surplus Overview;
 - Operating Costs Overview;
 - Capital Spending;
 - Consolidated FTE Forecasts;
 - Wildfire Mitigation;
 - Line Clearance Mitigation; and
 - Security and Information Technology.

1.3.1 Revenue Requirement Overview

80. In this GTA, AltaLink is continuing its commitment to customers and is providing additional tariff relief by requesting Commission approval for the following annual revenue requirement amounts:

- 2022 test year: \$877.9M; and
- 2023 test year: \$895.5M.

After taking into account the tariff relief measures, AltaLink is requesting approval for the following annual tariff amounts:

- 2022 test year: \$811.5M; and
- 2023 test year: \$835.5M.

1.3.2 Revenue Requirement

81. To offset revenue requirement increases driven by required capital spending, in the 2019-2021 GTA, AltaLink received Commission approval to abandon the traditional method of collecting cost-of-removal and only collects an annual amount sufficient to maintain AltaLink's FFO/Debt ratios at 11.1%. When AltaLink's FFO/Debt ratio reaches above 11.1% without the collection of cost-of-removal, AltaLink will capitalize the actual costs incurred in relation to the removal of assets retired from rate base that are replaced by new replacement assets. This measure reduced AltaLink's 2019-2021 salvage pre-collection amounts by \$86.6M.

82. In the current 2022-2023 GTA, as explained below, the 2022 and 2023 Test Periods will reflect a 1% annual escalation rather than the expected general inflation of closer to 2%, with the exception of salaries and wages, which is subject to market based escalation.

83. In the current 2022-2023 GTA, AltaLink is also proposing to refund \$60M of accumulated depreciation surplus per year over both Test Periods. This proposed refund is related to the \$200M accumulated depreciation tariff refund²² that AltaLink applied for and that the Commission subsequently approved \$80M of the proposed refund in Decision 26248-D01-2021 on March 15, 2021. As explained above, AltaLink has provided a new 2019 Depreciation Study to support the \$120M additional accumulated depreciation refund as part of this GTA. To support its credit metrics in light of the approved \$230M 2021 Tariff Refund (\$150M FIT and \$80M accumulated depreciation surplus)²³ and the additional \$120M of accumulated depreciation surplus proposed within this GTA, AltaLink is proposing to continue pre-collecting \$30.3M over both Test Periods based on the amount that was approved in the 2021 year. The new salvage method results in a cumulative reduction of revenue requirement attributable to salvage by approximately \$60M over the Test Period compared to what it otherwise would have been under the traditional method. Refer to Section 6 for further details.

84. This 2019-2021 GTA will continue to provide customers with approximately \$90M per year of tariff reduction related to the change from the future income tax method to the flow-through tax method starting in 2016.

²² AML 2021-2023 Tariff Refund, January 18, 2021.

²³ AUC Decision 2624-D01-2021, March 15, 2021 and AUC Decision 2624-D02-2021, April 15, 2021.

1.3.3 Operating Costs Overview

85. O&M over the 2022-2023 Test Period will be based on a 1% annual escalation rather than the expected general inflation of closer to 2%, with the exception of salaries and wages, which is subject to market based escalation. Total O&M spending are forecast to be:
- 2022 test year: \$167.0M; and
 - 2023 test year: \$170.4M.
86. As shown, total O&M spending in 2022 is forecast at \$167.0M which represents an increase of \$2.6M or 1.6% compared to 2021 O&M expenses which are forecast at \$164.3M, and in 2023 total O&M expenses are forecast at \$170.4M which represents an increase of \$3.5M or 2.1% compared to 2022.
87. Over the 2022-2023 Test Period, and in order to move to the market median, AltaLink's non-union salaries and wages are forecast to increase 3.0% per annum, based on data from Mercers.
88. Operating expenses are further explained in detail in Section 5 and Section 25.

1.3.4 Capital Spending

89. Capital expenditures by AltaLink in the 2022-2023 period continue to reflect reduced capital spending compared to 2015 which was the last year of the "Big Build". As the company settles into a phase marked by lower capital spending related to expansion and relatively stable amounts related to capital maintenance, total capital spending in this GTA is forecasted at \$317.2M in 2022 and \$364.5M in 2023. In comparison, in the three previous years, capital spending totalled \$311.9M in 2019, \$290.5M in 2020, and \$269.5M in 2021.
90. The trend of reduced capital spending in recent prior years and this current GTA period is shown in Figure 1.3.4-1 and Figure 1.3.4-2 below. As shown, AltaLink is forecasting total capital expenditures of \$269.5M in 2021, \$317.2M in 2022 and \$364.5M in 2023, and total capital additions to rate base on \$302.1M in 2021, \$250.6M in 2022 and \$407.4M in 2023. The impact on revenue requirement attributed to these levels of capital expenditures and additions is summarized in Section 1.2.2 (Table 1.2.2-1 under the heading System Capital) and described in Section 10. Refer to Schedule 31.2-B for a summary of AltaLink's total forecast capital expenditures and capital additions during the Test Period.

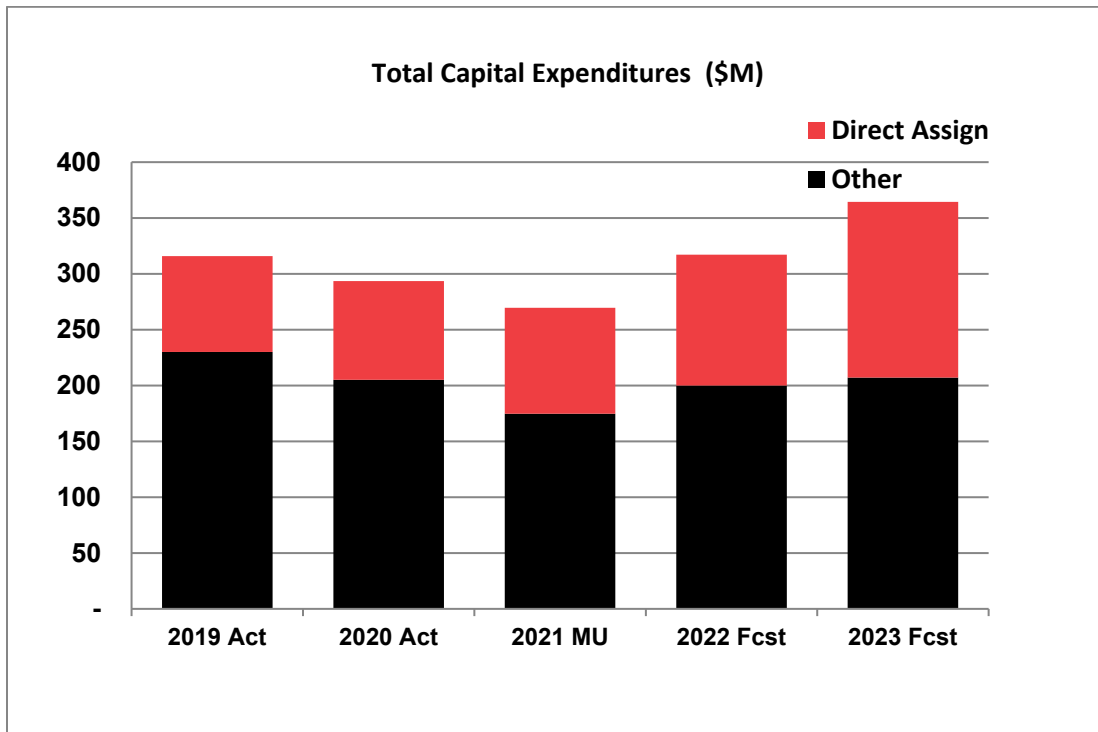


Figure 1.3.4-1 - Total Capital Expenditures 2019-2023 (\$M)

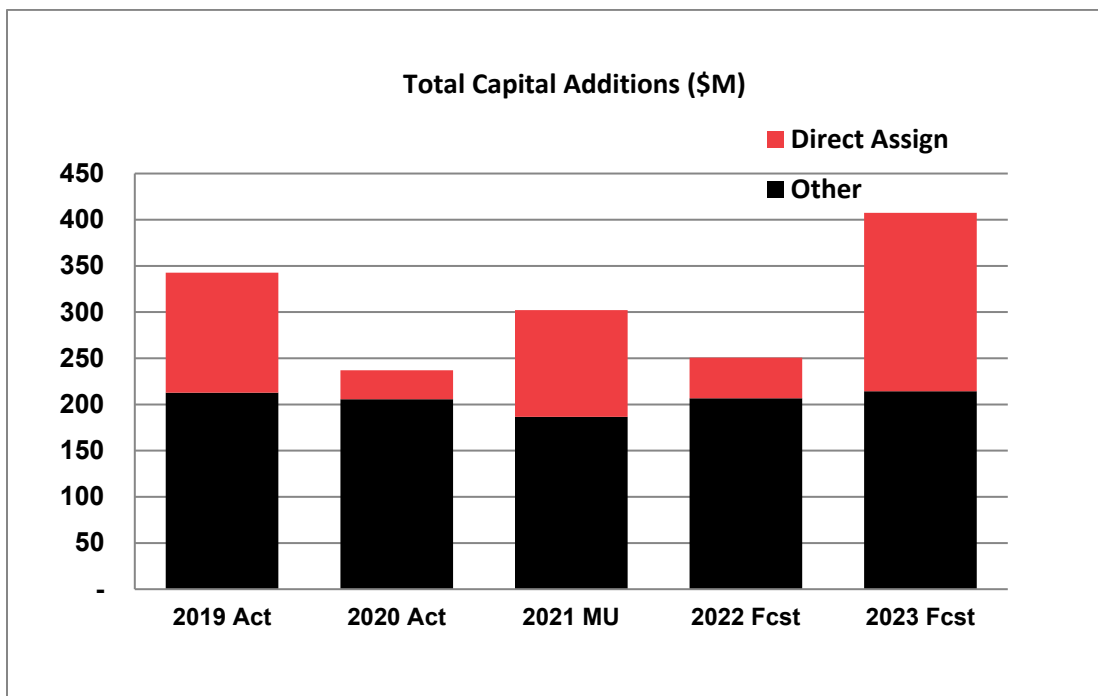


Figure 1.3.4-2 - Total Capital Additions 2019-2023 (\$M)

1.3.5 Consolidated Full Time Equivalent Forecasts

91. At year-end 2015, AltaLink had a total of 861 FTE's, 540 capital and 321 operating. As of year-end 2020, AltaLink had reduced the number of FTE's by 16% or 138 positions. At year-end 2020, AltaLink had a total of 723 FTE's, 433 Capital and 290 Operating. AltaLink anticipated the need to

reduce the number of FTE's due to reductions in capital work and ongoing efficiencies. AltaLink was able to achieve this FTE reduction without any layoffs by a combination of hiring term employees and careful scrutiny of any vacant positions before refilling the position. Where possible, AltaLink would either not refill a position or fill it with an internal hire and not backfill the position vacated by the internal transfer, thus reducing FTE's. Achieving reduced FTE's without layoffs accomplished three very important things: 1) reduced both the capital and operating headcount resulting in ongoing cost savings; 2) reduced the number of FTE's without incurring costs associated with severances; and 3) AltaLink's culture was positively impacted as employees appreciated management's foresight to reduce the FTE's in a planned manner without layoffs.

92. In 2020, AltaLink finished the year with 723 FTE's. Due to the impact of the COVID-19 pandemic AltaLink delayed filling some vacant positions but it is clear that AltaLink does not have sufficient resources. Throughout this challenging time, AltaLink continued to deliver on its obligations as a TFO. However, the current resources situation is simply not sustainable. 143 AltaLink employees were deemed essential workers, and they continued to come to work every day to keep the transmission system operating. The rest of AltaLink employees have also continued working through this time period, most often from home. During this time AltaLink employees have been under extreme stress and many are working extremely long hours. While AltaLink employees were able to manage through this in the short term, it is not sustainable to have AltaLink employees continue to work long hours. It is AltaLink's objective to fill this resource gap in 2021, by filling these 24 vacant positions to get to 747 FTE's by year end 2021. Starting in 2021, AltaLink began filling these much needed 24 vacancies. As of April 15, 2021, AltaLink has already filled 13 of those 24 positions and the other 11 positions are in the recruiting process.
93. Once AltaLink hires the remaining vacant positions in 2021, it is AltaLink's intention to keep the number of FTE's essentially flat during the Test Period in 2022 and 2023, going from 747 FTE's in 2021, to 746 in 2022, to 745 in 2023.
94. AltaLink has provided an operating FTE breakdown by USA (**Appendix 2-A**), and on a company functional basis AltaLink has provided both operating and capital FTEs in **Appendix 2-C**.
95. The Application also includes descriptions of business needs for transmission and corporate operating FTE additions by USA Activity Code (Section 5 and Section 25).

1.3.6 Wildfire Mitigation

96. In AltaLink's 2019-2021 GTA, the Commission approved AltaLink's Wildfire Mitigation Plan. In January 2020, AltaLink completed its first wildfire risk map of its entire service territory to identify HRFAs. The wildfire risk maps identified a large scope of work in HRFAs consisting of: component and structure replacements; line rebuilds; right-of-way improvements; and installation of weather stations and cameras. In the 2022-2023 Test Period, AltaLink will continue to utilize the same approach and prioritization method to complete work identified from the wildfire risk maps to reduce wildfire ignition risk. Refer to **Appendix 22** for further detail.

1.3.7 Line Clearance Mitigation

97. AltaLink identified approximately 2,300 line spans with deficiencies as part of its Line Clearance Mitigation program in the 2019-2021 GTA. In the 2022-2023 Test Period, AltaLink is forecasting to continue to address the next 325 highest risk under-build spans with deficiencies in the Test

Period, utilizing the same risk and prioritization methodology established in the 2019-2021 GTA compliance filing. Refer to **Appendix 13-A32** for further detail.

1.3.8 Security and Information Technology

98. AltaLink is decreasing average annual actual capital expenditures in the forecast in comparison to 2019-2021 Test Period for all categories except lifecycle sustainment. AltaLink is proposing a \$6.3M increase in IT average annual expenditures in 2022-2023 to start the transition to a new ERP (Enterprise Resource Plan) system as vendor support for the current system ends in 2027.
99. As a result, AltaLink must migrate to a cloud based replacement ERP system by 2026. AltaLink is proposing to commence the planning and design stage of the ERP upgrade program, including upgrades to Customer Experience modules in 2022 and upgrades to the Capital Project Management modules in 2023.
100. During 2020, BHE procured a new ERP system with Oracle, and then similarly offered AltaLink the opportunity to take advantage of BHE's buying power, but with AltaLink having a standalone Canadian contract that addresses Canadian legislative (e.g. data, privacy) requirements.
101. AltaLink needs to complete the migration to the new Oracle solution one full financial year before SAP support ends in 2027, in order to allow sufficient schedule contingency in the event of IT project delivery slippage. AltaLink forecasts that a migration of this size and complexity will take four years to complete.
102. Other areas of AltaLink's IT investment include process improvement expenditures as well as requirements for Regulatory and Legislative compliance. Refer to **Appendices 13-B2, 13-B3 and 13-B4** for further detail on AltaLink's IT investments.
103. The Canadian Centre for Cyber Security identified eight attributes that can increase an organization's cyber security risk. As a TFO, AltaLink has seven of the eight risk factors identified. There are two primary vectors by which cyber attackers compromise an organization: Malicious Phishing email and Software Vulnerabilities. In 2021, AltaLink's reported potential phishing malicious emails continue trending in line with the previous highest peak year (2020). After investigation, 9.2% of the reported emails in 2021 contain NEW malicious links or attachments not detected by AltaLink's technical firewalls, which could trigger a ransomware event as experienced by Northwest Territory Power Corporation in 2020. Vulnerabilities are exposures in: software applications; and operating systems that allow an attacker to penetrate systems, ransom or exfiltrate data. Since 2017 there has been a 25% increase in NEW vulnerabilities.
104. AltaLink must investigate, contain and remediate to protect Customers and the AIES from increasing and evolving cyber threat. Refer to **Appendix 13-B1** for further detail on AltaLink's security investment.

1.4 Tariff/Rate Applied For

105. AltaLink is applying for transmission tariffs that reflect the revenue requirement and tariff relief forecast for the 2022-2023 Test Period as follows:
 - the 2022 transmission tariff is forecast at \$811,455,700; and
 - the 2023 transmission tariff is forecast at \$835,491,500.
106. The tariffs, if approved by the Commission as filed in the Application, would translate into 12 equal monthly billings to the AESO as follows:

- 2022: \$67,621,308; and
- 2023: \$69,624,292.

1.5 Deferral Account Reconciliation

107. AltaLink applies to the Commission for approval and reconciliation of its 2020 completed projects, all 2020 trailing costs, and all other deferral account balances for 2020.
108. The total 2020 Deferral Account reconciliation includes a tariff adjustment total of approximately \$2.2M receivable from the AESO consisting of the following:
- DA projects – Total gross capital additions of 26.2M, and net of customer contributions results in \$8.0M of system investment;
 - reconciliation of DA projects results in an adjustment of \$1.3M refund from the AESO;
 - three customer projects that were a direct result of a SASR to the AESO by a customer requiring transmission service;
 - one project which was transferred to AltaLink after it has been constructed in accordance with the market participant choice (MPC) process;
 - The balance of the deferral accounts amount to the following tariff adjustments:
 - Property Taxes: \$0.7M receivable from AESO.
 - LTDDA: \$1.3M refund to AESO.
 - ASPs: \$0.3M refund to AESO.
109. AltaLink's 2020 Deferral Account Reconciliation application is attached as **Appendix 23**.

1.6 Other Approvals (Deferral and Reserve Accounts) Requested

1.6.1 List of Deferral and Reserve Accounts Being Requested

110. AltaLink is requesting the continuation of five previously approved deferral accounts.
111. In Section 31.7, AltaLink requests continued deferral account treatment during the Test Period for:
- Taxes Other Than Income Tax;
 - ASP;
 - Long-term Debt;
 - DA Capital; and
 - IFRS to the extent that future Canadian Accounting Standards Board pronouncements may impact upon the Commission's Rule 026.
112. In Section 31.6, AltaLink requests that reserve account treatment be continued during the Test Period for:
- Commission Expenses (Hearing Costs);
 - PRB Plan and Supplemental Pension Liability;
 - Injuries and Damages (SIR); and
 - Salvage Expense.

113. In Decision 2013-407,²⁴ the Commission confirmed its previous findings²⁵ in relation to the Rainbow & Capitalized G&A Tax reserve. Accordingly, AltaLink is not requesting funding of the Rainbow & Capitalized G&A Tax reserve account in the Test Period.

1.6.2 Reconciliation of Existing Reserve Accounts

114. In Section 31.6, AltaLink is requesting, as part of the Application, the reconciliation and disposition of the following two reserve accounts with respect to adjustments for actual results and forecast funding/expense requirements in the Test Period:

- SIR as per Section 25.2.12; and
- HCR as per Section 25.2.14.

1.6.3 Approval of AltaLink 2020 Deferral Accounts

115. As explained above, AltaLink is also applying as part of this GTA for the reconciliation and approval of its 2020 deferral accounts. Refer to **Appendix 23** for the details.

1.7 Organizational Structure

1.7.1 AltaLink Ownership Structure

116. Refer to **Appendix 1-A** for AltaLink's current ownership structure.

1.7.2 AltaLink Organizational Structure

117. Refer to **Appendix 1-B** for the organization charts as of January 1, 2021, for vice presidents and above, and their direct reports.

1.8 Forecasting Methodology/Process and Key Assumptions

1.8.1 Forecast Overview

118. In Decision 2011-453, at paragraph 124, the Commission expressed concern with AltaLink's use of its MU forecast as the baseline for its requested test year forecasts, suggesting that AltaLink would be best to develop its forecasts from an assumed zero-base, which seeks to re-assess the resources and costs required to fulfill its statutory duties on an annual basis, without assuming that costs are simply incremental to the actual costs of the preceding year.
119. AltaLink has presented the forecast for the Application in a manner that it believes is clear, understandable, is consistent with the USA/MFR Consensus document, and accords with the direction in paragraph 124 of Decision 2011-453.
120. For this Application, AltaLink continued to utilize a zero-based approach to develop its forecasts. Each department assessed all activities required to be performed in order to meet the objectives necessary to fulfill statutory duties and business obligations during the Test Period. The departmental re-assessments established the FTE and contractor levels required to carry out the forecast workloads, as well as the GOE. These levels then formed the basis for the forecast portion of this Application.
121. The impact of activity drivers was specifically assessed for each department. The specific activities that will have to be undertaken during the Test Period, as a result of the drivers, were considered along with the need duration (short-term or on-going) and type (FTE or contractor).

²⁴ AUC Decision 2013-407, AltaLink Management Ltd., 2013-2014 General Tariff Application, November 12, 2013 (Decision 2013-407), paras 1131-1133.

²⁵ AUC Decision 2012-221, AltaLink Management Ltd., Refiling Pursuant to Decision 2011-453 and Decision 2011-474, August 17, 2012 (Decision 2012-221), para 131.

The amount of resources required to perform the identified activities were also quantified so that the causal relationship between the specific activity drivers and the need for resources within each department could be determined. Explanations of the need for all forecast FTE additions for each department are included in Sections 5.2 and 25.2.

122. The forecasts for the Test Period are described in the Application by USA Activity Codes.

1.8.2 2022 Labour Escalation

123. **Non-Union Employees Below Executive** – As per Table 1.9.5-7, AltaLink forecast a 2.95% increase. This reflects the Mercer market salary escalation forecast of 2.6% and an additional increase of 0.35% to partially catch up to market. AltaLink non-union employees below executive are currently 0.7% below market. AltaLink is proposing to catch up to market median by the end of this Test Period. As a result, AltaLink non-union employees are forecast to be at market by the end of this Test Period.

124. **Executive Employees** – As per Table 1.9.5-12, AltaLink forecast a 5.15% increase. This reflects the Mercer market salary escalation forecast of 2.6% and an additional increase of 2.55% to partially catch up to market. AltaLink executive employees are currently 10.2% below market. For executive employees, AltaLink is proposing to catch up to market median over two Test Periods rather than catch up to market by the end of this Test Period. As a result, AltaLink executive employees are forecast to be 5.10% below market by the end of this Test Period.

125. **Union Base Pay Increases** – As per Table 1.9.5-4 and Table 1.9.5-5, AltaLink forecasts a 2.2% increase. This reflects the Mercer market salary escalation forecast of 2.1% and a reduction of .4% to partially achieve market median. This reflects a 1.7% annual structure increase. In addition, as per the collective agreement, employees are entitled to progression/step increases which equates to a cost of 0.5%. The total increase for union employees is forecast at 2.2%. As a result, AltaLink union employees are forecast to be at market by the end of this Test Period.

1.8.3 2023 Labour Escalation

126. **Non-Union Employees Below Executive** – As per Table 1.9.5-8, AltaLink forecast a 2.95% increase. This reflects the Mercer market salary escalation forecast of 2.6% and an additional increase of 0.35% to partially catch up to market. AltaLink non-union employees below executive are currently 0.7% below market. AltaLink is proposing to catch up to market median by the end of this Test Period. As a result, AltaLink non-union employees are forecast to be at market by the end of this Test Period.

127. **Executive Employees** – As per Table 1.9.5-13, AltaLink forecast a 5.15% increase. This reflects the Mercer market salary escalation forecast of 2.6% and an additional increase of 2.55% to partially catch up to market. AltaLink's executive employees are currently 10.2% below market. For executive employees, AltaLink is proposing to catch up to market median over two Test Periods rather than catch up to market by the end of this Test Period. As a result, AltaLink executive employees are forecast to be 5.10% below market by the end of this Test Period.

128. **Union Base Pay Increases** – As per Table 1.9.5-4 and Table 1.9.5-5, AltaLink forecasts a 2.2% increase. This reflects the Mercer market salary escalation forecast of 2.6% and a reduction of .3% to partially achieve market median. This reflects a 1.7% annual structure increase. In addition, as per the collective agreement, employees are entitled to progression/step increases which equates to a cost of 0.5%. The total increase for union employees is forecast at 2.2%. As a result, AltaLink union employees are forecast to be at market by the end of this Test Period.

1.8.4 General Assumptions

129. AltaLink's revenue requirement forecast for the Test Period is based on the assumptions outlined in Table 1.8.4-1 below.

Table 1.8.4-1 - AltaLink's Forecast Rate Assumptions

Assumption	2022 Forecast	2023 Forecast
Blended Salary Escalation	2.64%	2.64%
Non-union below Executive	2.95%	2.95%
Executive	5.15%	5.15%
Union	2.20%	2.20%
Contractor	1.00%	1.00%
General Inflation	1.00%	1.00%
Capital Escalation ²⁶	2.40%	2.40%
Vacancy	2.00%	2.00%
Interest Rates	Refer to Section 28.3	Refer to Section 28.3
Long-Term	Refer to Section 28.3	Refer to Section 28.3
Short-Term (Mid-year)	Refer to Section 28.3	Refer to Section 28.3

130. The forecasts in Table 1.8.4-1 above were prepared by each department using constant 2021 Canadian dollars. Inflationary increases for net salaries and wages were subsequently added to the forecasts by the budgets and forecasts group. In the current Application, AltaLink proposes to absorb approximately half of the inflationary increases related to contracted manpower and GOE which would amount to approximately \$1.2M over the Test Period. The general inflation rate is forecasted at 1.8% in 2022 and 2.0% in 2023 based on the Government of Alberta Budget 2021, Fiscal Plan 2021-2024, Alberta (published March 2021) for the test years as described in Section 1.8.6.

131. Escalation factors have been specifically forecast for the following expenses: salaries, benefits, insurance, property taxes, ASP and capital projects as described below:

- salary and benefits escalation is based on analysis which is discussed in Section 1.9;
- ASP and details of escalation can be found in Section 5.3.8 and in **Appendix 12-1**;
- property taxes are escalated based on industry specific rates, as described in **Appendix 9, Attachments 1 to 3**;
- insurance policy rates were forecast by AltaLink's insurance broker and described in **Appendix 3**; and
- capital project forecasts were escalated as provided in Table 1.8.4-1 above based on an escalation study by PowerAdvocate.²⁷

1.8.5 Forecasting Methodologies

132. As described in Section 1.8.1, AltaLink assessed all activities required to be performed in each department in order to meet its objectives over the Test Period. Activities and associated costs were forecast within the following departments:

- CEO;
- Chief Financial Officer;

²⁶ Appendix 19-D, page 3, 5-Year CAGR.

²⁷ Appendix 19-D.

- Operations;
 - Projects;
 - Government and Commercial Relations;
 - Customer and Corporate Services;
 - Compliance, Law and Regulatory; and
 - Human Resources.
133. Departments were provided guidelines by the finance department to ensure that common forecasting processes and methodologies were followed, including the consistent and appropriate use of USA Activity Code numbers. An overview of these guidelines is provided in Section 1.8.5.3. No other written guidelines were provided.
134. When departments provided their forecasts, the roll-up for the overall company was then reviewed and challenged to validate expenditure levels.
135. After forecasts from each department were developed and submitted to the Budgets and Forecasts group, the department forecasts were adjusted to include certain corporate costs, such as benefits, vacancy and escalation, if any.
136. The Budgets and Forecasts group performed a review to provide consistency, completeness and to eliminate errors or duplication.
137. Every year, an integrated long-range business plan is developed in the fall for its parent company. The fall 2020 long-range forecast was used as the basis for the 2021 Management Update and the 2022-2023 GTA. It was updated to reflect 2020 actuals and trickle-down consequences. It was developed using zero-base budgeting with the objective of keeping contracted manpower and GOE below inflation for the Test Period. In the fall of 2020, a long-term capital forecast was developed based on the current economic situation and further adjusted in Q1 2021 to reflect known changes. As a result, FTEs for the period 2021 to 2023 were re-evaluated and challenged by the executive for each department. The resulting reductions and related impacts have been reflected in the 2022-2023 GTA and form the basis for AltaLink's 2021 MU and the 2022-2023 GTA. A series of face-to-face meetings were held with departments to ensure understanding of the budgeting process. In addition, a series of face-to-face meetings were held with the Executive Team (CEO Department) to obtain sign-off of various inputs and outputs, such as FTEs, capital expenses, operating expenses and revenue requirement.
138. Each department forecast the overall level of activity in the Test Period using a zero-base and considered the capital activity and FTE levels (after reductions). Departments are not simply taking actuals from a previous year but looking at each department on a line item by line item basis, estimating the amount of work in 2022-2023, if any, and forecasting staffing, contracted manpower and general operating expenses necessary to fulfill the work. Departments also reviewed the capitalization of every position considering the long-range capital forecast.
- USA Activity Code Definitions**
139. For the purpose of preparing the departmental forecasts, the activities were forecast corresponding to a USA Activity Code number based on the definitions in the USA Consensus Documents that accompanied the Alberta Energy and Utilities Board's (EUB/Board) Bulletin 2006-25.

140. Each department identified the different activities to be performed in the undertaking of AltaLink's business by USA Activity Code.

Forecasting by USA Activity Codes

141. In order to confirm the reasonableness of its forecast, AltaLink reviewed its forecast for the Test Period in comparison to the 2019 and 2020 actuals and the 2021 MU, in which costs had been captured by USA Activity Code. The operating expenses in the 2021 MU are consistent with the amounts rigorously negotiated with customer groups and approved by the Commission in the 2019-2021 GTA. AltaLink also performed basic ratio analysis, such as the percentage increase/decrease, excluding escalation, if any, as well as the change in capitalization ratios of cost centres over previous years, to determine whether the forecast differences from year to year are reasonable taking into consideration any anticipated increase or decrease in forecast activities.
142. AltaLink analyzed its forecasts, as described by USA Activity Code, by comparing the level of forecast costs for specific USA Activity Codes in each test year to the overall operating costs for each test year in order to test the reasonableness of its forecast. Department heads responsible for departmental forecasts compared their forecasts for each USA Activity Code change year to year and provided explanations for increases and decreases in costs for different USA Activity Codes based on anticipated changes in activity levels.

Forecasting Capital Costs

143. Once the activities in the Test Period were forecast, the activities were assessed to determine which activities were capital costs in accordance with the Capitalization Policy.
144. All directly attributable internal labour costs and costs in support of capital projects were included in the capital program in accordance with the Capitalization Policy. No indirectly attributable internal labour costs or costs in support of capital projects were included in the capital program in accordance with the Capitalization Policy and in accordance with IFRS. Operating labour reflects only labour that is operating expense related.

Testing the Reasonableness of the Forecast

145. The general reasonableness of the USA-based 2022-2023 forecasts was tested against the background of the 2019 and 2020 actuals and 2021 MU.
146. AltaLink identified the level of expenditures attributed to each USA Activity Code compared to the total operating expenses for each test year as a means to assess consistency and range of reasonableness.

1.8.5.1 Operating Cost Forecast Preparation

147. AltaLink forecasted general operating expense line items as reflected in the MFR Schedules 5 and 25.
148. The departmental labour, contracted manpower and supporting costs forecasts for this Test Period were developed by considering the activities expected to be undertaken by USA Activity Code.
149. As identified in Section 1.2, a number of external and internal factors operated as activity drivers for this Test Period resulting in forecasted resource requirements. Examples of activity drivers include:

- the large increase in assets that occurred from 2014–2016 (big build) which requires base operating and maintenance activities including inspections and maintenance;
- efforts to operate and maintain the amount and complexity of the transmission facilities and their interoperability as technology changes;
- the installed asset base continues to age and wear due to exposure to the elements and ongoing operations requiring incremental maintenance activities;
- increasing amounts of ISO rules including ARS and CIP standards which came into effect over the past several years, coupled with increasing cyber-security risks and threats which require incremental operating activities to deliver upon and demonstrate compliance and meet audit requirements; and
- the financial accounting standards including regulatory requirements which must be followed and maintained.

150. While these activity drivers generally require increased labour resources due to increased O&M costs activities, the current economic conditions in Alberta continue to be a challenge. In keeping with AltaLink’s objective of a flat tariff for customers for five years, AltaLink is focused on opportunities for improving efficiencies and offset these needs. Sections 5 and 25 contain descriptions of how various cost drivers will impact the number of FTEs required in the USA-specific subsections.

1.8.5.2 Capital Forecast Preparation

151. AltaLink’s forecast capital expenditures include:

- costs in respect of AESO DA projects and projects forecast to be assigned by the AESO (detailed in Section 10.2);
- CRU, detailed in Section 10.3; and
- general capital expenditures, including those related to IT and facilities, detailed in Section 10.4 and Section 10.5.

152. Consistent with the process for forecast development through 2013 to 2021 GTA test years, AltaLink continues to prepare individual project plans for DA capital expenditures that include the best timing estimate of the project, giving consideration to all known project activities with associated costs and schedules. For the 2022-2023 Test Period revenue requirements, the aggregation of these individual project plans forms AltaLink’s DA capital expenditures and additions forecast.

153. Capital expenditures are comprised of those charges that are directly attributable to the capital projects and AFUDC. Costs that are directly attributable to capital projects are either charged to the project via SAP timesheets or work orders or are charged indirectly via E&S accounting. E&S accounting involves pooling IFRS compliant costs that are directly attributable to capital projects but are not directly charged to projects and allocating this E&S pool across all capital projects.

154. Section 10 outlines the process for the preparation of the capital forecast.

155. AltaLink’s capital cost escalation rates used within the capital forecast are in Table 1.8.4-1 above.

156. AFUDC is calculated in accordance with Commission requirements.

1.8.5.3 Forecast Guidelines

157. This section discusses guidelines and parameters that were applied from an overall corporate perspective for the Application. The AUC USA Definitions document was utilized in the development of the Test Period forecast. The objective of these parameters was to ensure consistency across the organization. These are discussed in face-to-face meetings to ensure understanding. Written guidelines are not provided. The guidelines consisted of the following:
- forecast costs are to be recorded in the same cost elements as are used to record current actuals;
 - benefits are forecasted separately through the Human Resource department and loaded into the forecast of each department by the Finance department;
 - there was a 1% general inflation applied to contracted manpower and general operating expenses, which is lower than the Government of Alberta forecasted inflation. Departments were required to absorb the additional inflation;
 - labour:
 - use current 2021 base salaries and escalate as per assumptions defined in Table 1.8.4-1 above for the Test Period;
 - for vacancies, assume a salary comparable to similar current positions or similar market positions;
 - overall, there are no new FTEs requested in 2022-2023. Operating FTEs presented in **Appendix 2-B** are vacancies on December 31, 2020, which have been subsequently filled or are in recruitment. FTE reductions are assumed to take place mid-year; and
 - employees who are replacing those who retire, should the position be retained, are not to be considered as new employees but replacements;
 - general internal office supplies were forecasted through the facilities department and not in individual departments;
 - building and station utility costs and furniture requirements were forwarded to the facilities department and were not forecasted in individual departments. The facilities department assessed the requests and developed a consolidated forecast;
 - all electronic equipment, software needs and upkeep were provided to the IT department where it was assessed and forecasted;
 - freight and courier charges for field maintenance work were forecasted in applicable departments;
 - any affiliate charge-outs were captured at the corporate level through miscellaneous revenue and takes into account higher affiliate revenue as a result of the corporate re-organization (refer to Section 1.9.3). Miscellaneous revenue is forecasted by the Operations, Government and Commercial Relations and Finance departments;
 - staff retirements:
 - accounted for retirements and succession planning;
 - forecasted retirement based on conversations with potential retirees; and
 - treated retirements as replacements and not as new staff using the mid-year rule to maintain consistency with other hiring assumptions;
 - staff expenses – departments forecast for specific items and expenditures;
 - Regulatory Commission expenses – reflects the funding forecast requirements related to HCR;

- all external legal costs, including those forecast for inclusion in the Regulatory HCR, will be forecast by the Law and Regulatory department. This will include specific department legal issues, land and general litigation;
- small damage claims (up to \$100,000 per annum) will be forecast in the finance department;
- VM – costs associated with VM are forecast in terms of specific activities, trimming, mowing, slashing/removal, and application of herbicide; and
- contracted manpower – contracted manpower forecasts are prepared by each department.

In summary, AltaLink is conveying that it is not taking actuals from a previous year and applying an escalation factor, but looking at each department on a line by line basis, estimating the amount of work in 2022-2023, if any, and estimating staffing, contracted manpower and general operating expenses necessary to fulfill the work.

1.8.5.4 Forecast Consolidation and Review

158. Once the departmental reviews were completed, the forecasts were consolidated and submitted for review by the Executive Team (CEO Department).
159. The overall review of the consolidated forecast was focused on looking at changes year over year. The forecasts were challenged to see if there were areas where the departments could further reduce costs and FTEs in their forecasts. Activity drivers that resulted in an increase or a decrease in resource requirements were assessed and industry developments were considered.
160. In addition, as transmission assets age, there is an increased amount of maintenance required. Aging assets continues to be an activity driver for AltaLink and are further discussed in Section 10.3.
161. The executive review was thorough and resulted in the forecast submitted within the Application.

1.8.6 Economic Parameters

162. AltaLink's general inflation rate forecast during the Test Period is based on the Government of Alberta Budget 2021, Fiscal Plan 2021-2024, Alberta (published March 2021) as per **Appendix 2-F** (page 44).²⁸
- 2022: 1.8%; and
 - 2023: 2.0% (compounded 3.8%).
163. AltaLink has proposed to absorb approximately half of the increases related to inflation, by using 1% instead of 1.8% and 2.0% respectively for 2022 and 2023, for contracted manpower and GOE which amount to savings of approximately \$1.2M over the Test Period.
164. In accordance with Commission Decision 2011-453, paragraph 133, using the Government of Alberta's Economic Outlook is reasonable as forecast factors have been developed by independent third party resources. As shown by the table below, the Government of Alberta forecasts have been reasonably close to the actual inflation rate in Alberta.

²⁸ Appendix 2, pdf 88.

	Actual CPI	Government of Alberta Forecast CPI	<i>Note:</i>
2016	1.1%	1.1%	1
2017	1.6%	1.6%	2
2018	2.4%	2.1%	3
2019	1.8%	1.9%	3
2020	1.1%	2.0%	3
2021		1.4%	4
2022		1.8%	4
2023		2.0%	4

1. Government of Alberta Budget 2017- 2020 Fiscal Plan Published March 16, 2017 - page 9 Table Energy and Economic Assumptions²⁹
2. Government of Alberta Budget 2018- 2021 Fiscal Plan Published March 22, 2018 - page 14 Table Energy and Economic Assumptions³⁰
3. 2017-2018 First Quarter Fiscal Update and Economic Statement - August 23, 2017 -page 14 Key Energy and Economic Assumptions³¹
4. **Appendix 2-F**, Government of Alberta Budget 2021 - 2024 Fiscal Plan published February 25, 2021 -page 44 Key Energy and Economic Assumptions (**Appendix 2**, pdf 88).

165. Table 1.8.4-1 above summarizes AltaLink’s forecast capital escalation rates.

1.9 Labour Overview and Compensation Forecast

1.9.1 Alberta Labour Market Environment

166. In 2020, Alberta experienced a severe economic contraction. However, the economy is already starting to rebound in 2021. Independent experts forecast a continued recovery in 2021 and further economic recovery during the Test Period.

Alberta 2020 Economic Challenges

167. In 2020, Alberta endured unprecedented times, including the impact of the COVID-19 pandemic health crisis and the collapse in oil prices. Alberta experienced one of the biggest health crises of the century and one of the largest global economic contractions since the Great Depression. A state of public health emergency was declared on March 17, 2020.

168. Due to the ongoing COVID-19 pandemic and increasing cases, the government imposed tighter health restrictions on people and businesses which significantly impacted the economy and resulted in job losses as well as business closures. These have been difficult times for Alberta that have not been experienced since the Great Depression, with a rapid drop in economic activity and a rise in unemployment.

169. Despite the global COVID-19 pandemic all AltaLink employees, including 143 employees designated as essential, continued important work throughout the COVID-19 pandemic. AltaLink continued to deliver high quality, reliable service to its customers and continued delivery of capital work.

²⁹ Available from: <https://open.alberta.ca/dataset/aa40ded0-75b3-48fe-9bbf-ea33802b8825/resource/da23ee3c-b79c-4971-8f75-e28ab7684983/download/fiscal-plan-complete.pdf>.

³⁰ Available from: <https://open.alberta.ca/dataset/8beb5614-43ff-4c01-8d3b-f1057c24c50b/resource/68283b86-c086-4b36-a159-600bcac3bc57/download/2018-21-fiscal-plan.pdf>.

³¹ Available from: <https://open.alberta.ca/dataset/9c81a5a7-cdf1-49ad-a923-d1ecb42944e4/resource/d805fedc-63cb-4f62-aba8-92bbaf604fc5/download/2017-18-1st-Quarter-Fiscal-Update.pdf>.

170. AltaLink launched its emergency response team to responsibly and diligently respond to the COVID-19 pandemic, and create a pandemic safety action response plan. This included working long hours by dedicated employees in the field, office and control centres. Employees were scheduled in cell structures to protect the health and safety of our employees, customers and assets to ensure the continued operation of the AIES.
171. Due to Alberta's mandated restrictions, AltaLink took swift measure to mobilize a work from home model for suitable positions. When restrictions were eased, AltaLink activated a return to office model which included scheduled rotations compliant with provincial restrictions.
172. All necessary safety and PPE protocols were implemented including a physical safety implementation plan, COVID-19 safety modifications to the worksites, a "return to office" manual and training, and employee accommodations.
173. The price of oil, which was already relatively low, fell further due to the demand destruction created by the COVID-19 pandemic, shutting down economic activity in the province and around the world.

Alberta Economic Recovery

174. In 2021, Alberta has already begun to see the start of an economic recovery. As per the three independent expert forecasts below, this recovery is expected to further strengthen in 2021 and continue throughout the Test Period. Following are the economic forecasts from Alberta Treasury Branch Financial; the Alberta Government, and the Royal Bank of Canada.

Alberta Treasury Branch (ATB) Financial - Alberta Economic Outlook

175. With the distribution of vaccines in 2021, ATB Financial predicts the economy will make up a large portion of the ground it lost in 2020 due to the COVID-19 pandemic and oil price crash. ATB is forecasting real GDP growth of 4.1% in 2021 followed by 2.6% in 2022 and 2.2% in 2023. This is a significant recovery from GDP at -7.1% in 2020. At this pace, ATB predicts annual economic output will surpass its pre-pandemic level in 2023. ATB Financial forecasts that unemployment rate will drop from 11.4% in 2020 to 10.1% in 2021, and continue to drop to 9.5% in 2022 and 8.6% in 2023 respectively. In turn, employment is forecast to increase substantially by 3.9% in 2021, 2.8% in 2022 and 2.1% in 2023. Refer to **Appendix 2-E** for the full report.

Alberta Government Economic Outlook

176. The Alberta Government Economic Outlook forecasts that employment is anticipated to see a full recovery by 2022. Once the COVID-19 pandemic is under control, service sector employment is poised to return to 2019 levels. This will be accompanied by a pickup in goods sector employment, which will benefit from accelerating growth in business investment and solid activity in residential construction. Employment is forecast to expand 4.2% in 2021; 2.9% in 2022; and 2.5% in 2023. Real GDP growth is forecast to increase by 4.8% in 2021; 3.7% in 2022; and 3.3% in 2023. As the economy moves from recovery to expansion, rising exports will be accompanied by a pickup in business investment. Expansions in sectors outside of oil and gas will also contribute to growth. As government income supports wind down and the economy reopens, consumer spending and housing activity will become increasingly driven by a strengthening labour market and accelerating population growth. Refer to **Appendix 2-F** for the full report.

Royal Bank of Canada (RBC) Outlook

177. RBC says “We have made significant upward revisions to our provincial growth forecast from coast to coast”³². They said, “We expect pent-up demand, high household savings, and government support and stimulus measures to provide substantial thrust to all provincial economies.”³³ RBC forecasts Alberta Real GDP will grow 5.7% in 2021 and 4.7% in 2022. They forecast employment will grow 4.9% in 2021 and 2.4% in 2022, and the unemployment rate will decrease from 11.4% in 2020 to 9.4% in 2021 and decrease further in 2022 to 6.5%.” Refer to **Appendix 2-M** for the full report.
178. Although the above forecast figures differ marginally, the story is similar. The economy is expected to continue its recovery in 2021, and rebound to closer to normal economic conditions in 2022-2023.
179. As Alberta returns to more normal economic conditions in the Test Period, it is critical that AltaLink provides market average target total direct compensation (TTDC) so that it is able to attract and retain qualified high performing employees. Through the highs and lows of any economic cycle, AltaLink recognizes the importance of modifying salary increases to reflect economic conditions, which AltaLink has done. AltaLink further believes in adhering to the long standing AUC principle of market average TTDC.

1.9.2 Compensation Approach

180. AltaLink’s compensation included in this Application is forecast to result in market average TTDC for non-union employees below executive and union employees by the end of the Test Period. For executive employees, AltaLink’s compensation included in this Application is forecast to result in below market average TTDC. This is a temporary measure to lessen the increase amount in one Test Period. It is AltaLink’s intent to achieve market average TTDC by the end of the following Test Period.
181. Other elements to AltaLink’s approach to employee compensation is unchanged from previous test years, as described in points A, B and C below.
- A. Attract and retain qualified employees by providing market competitive compensation at market average.
182. Salary increase determination to achieve market average TTDC- AltaLink has three groups of employees: executive, non-union below executive, and union.
183. AltaLink will determine the salary increase forecast for each of the three groups depending on their market situation outlined as follows:
- if a group is at market, AltaLink will forecast the market salary escalation projections as per **Appendix 2-H – 2020 Non-Unionized Employee Compensation Review, February 24, 2021**. This is intended to achieve market average TTDC by the end of the Test Period. For union employees, other union settlements in AltaLink’s peer group in Alberta will also be considered;
 - if a group is below market, AltaLink will forecast the market salary escalation projection as per **Appendix 2-H – 2020 Non-Unionized Employee Compensation Review, February 24, 2021**, plus half of the percentage the group is below market for a two year Test Period. This is intended to achieve market -average TTDC by the end of the Test Period. For union

³² **Appendix 2**, pdf 309.

³³ **Appendix 2**, pdf 309.

employees, other union settlements in AltaLink's peer group in Alberta will also be considered;

- exception: Given the significant amount that the executives are below market and the current challenging economic environment, AltaLink is proposing an exception to the above approach for executives, which results in a lower salary forecast for this Test Period. AltaLink's intention is to be at market average TTDC and is proposing to move half in this Test Period, and the remaining half in the next Test Period; and
 - if a group is above market, AltaLink will forecast the market salary escalation projection as per **Appendix 2-H – 2020 Non-Unionized Employee Compensation Review**, February 24, 2021, minus half of the percentage the group is above market. This is intended to achieve market average TTDC by the end of the Test Period. For union employees, other union settlements in AltaLink's peer group in Alberta will also be considered.
- B. Create a performance-based culture by designing programs that motivate employees to perform at high levels.
- C. Develop a compensation system that is responsive to market forces while focusing on customer needs and benefits such as reliability, safety, cost and customer satisfaction.

Focus on Target Total Direct Compensation

184. In Decision 2009-151, the Commission stated “the Commission agrees with CG [Consumer Group] that its focus should be on total compensation and not on the details of the individual components.”³⁴ As well, the Commission stated “[t]he Commission also considers that a utility must retain some flexibility in its ability to tailor its total compensation to attract and retain skilled labour so that it can provide safe and reliable service and meet customers’ needs.”³⁵ AltaLink's interpretation of these statements was that in order to achieve market median TTDC, AltaLink could choose to have slightly higher base pay and lower incentive pay than the market, or slightly lower base pay and higher incentive pay than the market, as long as the total compensation was at market median. However, in Decision 3524-D01-2016, the Commission said “[s]ince the evidence also shows base salaries at 2.0 per cent above the market median, the Commission will reduce the 3.0 per cent escalation for 2015 by the 2.0 per cent that base salaries are above the median”.³⁶ AltaLink's interpretation of this decision is that the decision was based on the details of the individual components of total compensation not on total compensation. AltaLink's submission in this Application is based on the principle of a focus on total compensation. AltaLink believes the focus on total compensation, not the individual elements, is the appropriate approach. However, if the Commission chooses to focus on the individual elements of total compensation, then AltaLink requests that total dollar increase applied for in base pay is approved in additional incentive pay rather than base pay so that AltaLink can still attract and retain employees with total compensation that is at market average.

Market Average Aggregate Compensation

185. As Mercer stated in the supporting documents for the 2019-2021 GTA, the 2017-2018 GTA, the 2015-2016 GTA, and in many previous GTAs and supported by AltaLink, individual compensation

³⁴ Decision 2009-151, AltaLink Management Ltd. And TransAlta Corporation, 2009 and 2010 Transmission Facility Owner Tariffs, October 2, 2009 (Decision 2009-151), para 96, pdf 24.

³⁵ Decision 2009-151, para 96, pdf 24.

³⁶ Decision 3524-D01-2016, AltaLink Management Ltd., 2015-2016 General Tariff Application, May 9, 2016, para 110, pdf 34.

within + or – 10% of market may be considered competitive.³⁷ This allows for employees who are early in their career at that level, or who are not strong performers to be paid up to 10% below the market average. This also allows for employees who have been at their current level for a long time and who are strong performers, to be paid up to 10% above the market average. This compensation structure, which is quite common in the marketplace, allows for proper pay differentiation based on experience and performance.

186. In past GTAs, some interveners have misinterpreted this concept to suggest that aggregate compensation within + or – 10% of the market average is acceptable. AltaLink does not agree with this misinterpretation. The Commission has stated that target total market average TTDC is appropriate, and AltaLink agrees. In order to have a proper functioning compensation system that allows for pay below and above the market average, based on experience and performance, and that enables the attraction and retention of employees, aggregate compensation needs to be at the market average.
187. AltaLink’s compensation, including base pay, STIP, LTIP, pension and benefits, and executive compensation is described in further detail in the following sections. It is AltaLink’s intention to achieve market average TTDC.

Compensation Overview

188. **Pension**– AltaLink wound up the Defined Benefit (DB) Plan, effective December 31, 2013, eliminating the cost and risk of a DB Plan to ratepayers. All eligible employees are members of the Defined Contribution (DC) Plan. AltaLink is not proposing any changes to the DC pension plan. The DC plan remains 8% employer contribution, 2% employee contribution. AltaLink’s forecast pension is set out in Section 1.9.7.
189. With the elimination of the DB Plan, which helped attract and retain employees, AltaLink continues to focus on providing market average TTDC, specifically base pay, STIP, LTIP, perquisites and benefits.
190. **Base Pay** - As of 2021, AltaLink’s TTDC for union employees is 0.75% above market. The base pay increases of 1.7% in 2022; and 1.7% in 2023 are forecast to result in union employees being paid at market average at the end of the Test Period. In aggregate union employees also receive a 0.5% in progression increases as per the Collective Agreement.
191. As of 2021, AltaLink’s TTDC for non-union below executive employees is .70% below market. The base pay increases of 2.95% in 2022; and 2.95% in 2023 are forecast to result in non-union below executive employees being paid at market average TTDC at the end of the Test Period.
192. As of 2021, AltaLink’s TTDC for executive employees is at 10.2% below market. The base pay increases of 5.15% in 2022; and 5.15% in 2023; are forecast to result in executive employees being paid 5.1% below market average TTDC at the end of the Test Period.
193. AltaLink is forecasting an overall blended base pay budget increase for union, non-union below executive, and executive employees of 2.64% for 2022; and 2.64% for 2023. AltaLink’s forecast for Base Pay is set out in Section 1.9.5
194. **STIP** – AltaLink is not forecasting any changes for the 2022-2023 Test Period. In 2019 AltaLink implemented a new STIP design to align with AltaLink’s focus on operational excellence and to enhance employees’ line of sight to customer goals. The STIP goals are Customer Satisfaction,

³⁷ For example, see Exhibit 23848-X0005, **Appendix 2-H**, pdf 264 and Exhibit 21341-X0003, **Appendix 2-L**, pdf 101.

Reliability, Safety, Cyber and Gross OM&A spend before capitalization. In addition, for non-union employees, the design creates greater differentiation based on individual performance. STIP forms part of total direct compensation and is designed to achieve market average target total direct compensation for all employees. AltaLink's forecast STIP is set out in Section 1.9.5

195. **LTIP** – AltaLink is not forecasting any changes in the 2022 – 2023 Test Period. AltaLink's LTIP aligns with AltaLink's focus on operational excellence and enhances employees' line of sight to customer goals. The customer component goals are "Reliability" and "Flat for Five". AltaLink's forecast LTIP is set out in Section 1.9.5.
196. Executive Compensation - Net executive compensation is forecast to reduce by over \$1.0M from 2019 and 2020 actuals, a reduction of more than 30%. This is due to the re-organization described later in the Application. AltaLink's executive base pay increases included in this Application, are forecast to result in AltaLink Executive employees 5.1% below market at the end of the Test Period. It is AltaLink's intention to increase executive compensation in the following Test Period in order to achieve market average TTDC. Other than base pay increases, AltaLink is not forecasting any other executive compensation changes during the Test Period. AltaLink's forecast for Executive Compensation is set out in Section 1.9.5.

Benefits

197. AltaLink is not proposing any changes to benefits in this Application. In 2021 AltaLink did increase the maximum for Psychologists and Social Workers as further described in Section 1.9.7. AltaLink's forecast benefits are also set out in Section 1.9.7.

Total Remuneration

198. In February 2021, AltaLink had a pension/savings, benefits and time-off review completed by Mercer (refer to **Appendix 2-J** pension/savings, benefits and time-off Review, February 24, 2021). The study concludes that AltaLink non-union below executive employees are 8.9% below market for pension/saving, benefits and time off.³⁸ When combined with the current TTDC review; the total remuneration for AltaLink non-union employees below executive are 2% below market.³⁹
199. Given the timing of the results of this study, AltaLink did not determine the changes required for pension/savings, benefit and time-off provisions for this Test Period. AltaLink will look in depth at the results of the study, complete further analysis, and determine how it will achieve market average total remuneration.

Other Labour Related Staffing Costs

200. Other labour related staffing costs include Wellness Fund, Outstanding Contribution Awards, severance, relocation, and safety bonus. AltaLink is not proposing any structure or design changes for such costs for the Test Period. In 2021 AltaLink did increase the Wellness fund as described in AltaLink's other labour related costs are set out in Section 1.9.8.

1.9.3 Executive Organizational Change

201. In January 2021, AltaLink reorganized its executive to allow for the initial sharing of two senior officers with AltaLink's indirect parent corporation, BHE Canada Holdings Corporation and certain of its subsidiaries (the "Non-Utility Affiliates"). The sharing of officers is similar to the executive services model for shared executive officers used by other Alberta utilities. The shared

³⁸ **Appendix 2-J**, page 10 (**Appendix 2**, pdf 289).

³⁹ **Appendix 2-H**, page 10 (**Appendix 2**, pdf 258).

officers are the Chief Executive Officer (CEO), and Senior Vice President, Government Relations and Commercial (SVP GRC) of AltaLink who are appointed to new officer roles with the Non-Utility Affiliates to fulfill corporate governance, policy and strategic direction responsibilities of a corporate group of businesses as a whole.

202. To support compliance with AltaLink’s Inter-Affiliate Code of Conduct, the shared officer initiative reflects a change in executive officer roles at AltaLink. AltaLink has appointed its Chief Operating Officer (COO) as President of AltaLink with responsibilities to manage and conduct the business and affairs of the Utilities directly, and separately from the Non-Utility Affiliates. The shared officers remain as officers of AltaLink but their roles adjust to corporate governance, policy and strategic direction responsibilities rather than the day-to-day operating matters for the Utilities. The shared officer initiative reflects a managed evolution of these new roles over the next few years as the shared Officers transition to an increased focus on broader corporate group responsibilities. The CEO is forecast to continue to devote approximately 60% of his time to the Utilities in 2021, decreasing to 50% in 2022, and 40% in 2023, while the SVP, GRC is expected to devote approximately 30% of his time to the Utilities in 2021, decreasing to 15% thereafter.
203. To ensure that customers are not harmed by the shared officer initiative, AltaLink has set transfer pricing between the Utilities and the Non-Utility Affiliates for the officer sharing based on an hourly fair market value rate for actual time spent, which is intended to provide customers with a sharing of benefits from the shared officer arrangements that cost-recovery transfer pricing would not provide. In AUC Decision 2005-019, the EUB (now the AUC) ordered AltaLink to use a two times multiplier for affiliate services. On page 56 of the Decision, in Section 5.15, Miscellaneous Revenues, the Board ordered as follows:
- “... the Board is particularly concerned with the charge out rates AltaLink has proposed to apply to affiliate companies. The Board finds that charging little more than base salary will not even cover AltaLink’s cost. The Board also finds this to be a breach of the AltaLink Code of Conduct. For future affiliate billings, AltaLink is directed to calculate charges based upon two times the base salary of the individual providing the service. The Board notes this is the current practice for payments to SNC Lavalin by AltaLink and absent any evidence to the contrary, considers this amount to serve as a reasonable proxy for establishing fair market value for the services.” (emphasis added)⁴⁰
204. In light of the organizational changes effective January 1, 2021, AltaLink completed a review of the two times multiplier for affiliate services for executive employees. The conclusion of the review was that for executive employees, excluding the CEO, a 2.2 times multiplier is required to charge at rates which exceed AltaLink’s allocated costs to ensure no harm to Alberta rate payers. This is because executive compensation, like comparable positions in the market, provides a higher proportion of total compensation in the form of variable pay at risk compared to base pay. The analysis of AltaLink’s cost for the CEO position, concluded that a 2.7 time multiplier is required to charge at rates which exceed AltaLink’s allocated costs to ensure no harm to Alberta ratepayers. Therefore, effective January 1, 2021, AltaLink will use a 2.2 times

⁴⁰ Decision 2005-019, AltaLink Management Ltd. And TransAlta Utilities Corporation, 2004-2007 General Tariff Application, March 12, 2005, page 56, pdf 62.

multiplier for affiliate services, for executive employees excluding the CEO. For the CEO position, effective January 1, 2021, AltaLink will apply a 2.7 times multiplier for affiliate services.

1.9.4 Vacancy

205. Prior to 2017-2021, AltaLink, and all other regulated Utilities in Alberta, completed a full GTA process, resulting in a decision by the AUC. The AUC decision approved each expense item, including the number of approved Operating FTEs. The Approved Operating FTEs were compared to the Actual Operating FTEs to determine the historical vacancy rate.
206. AltaLink became the first regulated transmission utility in Alberta to reach an NSA with interveners, which was approved by the AUC. Two NSAs were reached, impacting the years 2017-2021. As a result, there was not an approved level of Operating FTEs for these years.
207. The NSA process did not determine an approved level of FTEs, (or any other specific expense item). Rather, through the NSA process, AltaLink and the interveners agreed to the revenue reductions shown in Table 1.9.4-1 below.

Table 1.9.4-1 - Negotiated Settlement Operating cost Revenue Reduction

Year	Revenue Reduction
2017	\$ 7.8M
2018	\$ 7.7M
2019	\$ 4.6M
2020	\$ 8.9M
2021	\$ 9.0M

208. Given these operating cost revenue reductions, it was AltaLink’s responsibility to determine which operating expenses would be reduced to achieve the agreed to revenue reductions.
209. Labour, Net Salaries and Wages, represents approximately 50% of controllable operating expenses. In order to achieve the magnitude of operating cost reductions agreed to in the NSA, AltaLink concluded that a significant portion of that reduction would come from reductions in labour. In order to achieve the reduction in labour, and meet our regulatory obligations agreed to through the NSA process, AltaLink decided to manage the FTE level 4% below the applied for level. The “Managed FTE level” following a NSA, is equivalent to the approved FTE level in an AUC decision. AltaLink’s Managed Operating FTE numbers are reflected in the Table 1.9.4-2 below.

Table 1.9.4-2 - Managed Operating FTE levels

Year	Applied for FTE	AltaLink Managed percent Reduction	Managed FTE level
2017	317	4%	304.3
2018	310	4%	297.6
2019	304	4%	290.3
2020	305	4%	292.8

210. In Decision 2011-453, “The Commission has concluded that a longer term average should be used for the O&M vacancy rate estimates, but that allowances should be made for anomalous results observed in specific years.”⁴¹

⁴¹ Decision 2011-453, AltaLink Management Ltd., 2011-2013 General Tariff Application, November 18, 2011, para 153, pdf 35.

211. Therefore, AltaLink has used a longer term average vacancy rate, five years, to be used for the vacancy rate estimate.
212. AltaLink’s historical operating vacancy rate is shown below in Table 1.9.4-3 below.

Table 1.9.4-3 - Actual Operating Vacancy Rate

	Approved/Managed Operating FTEs Mid-year (note 1)	Actual Operating FTEs Mid-year	Vacancy Rate
2016 Mid-year	324	313	3.4%
2017 Mid-year	304.3	292	4.05%
2018 Mid-year	297.6	286	3.90%
2019 Mid-year	290.3	295	-1.61%
2020 Mid-Year	292.8	294	-0.41%
Five Year Average	301.8	296	1.86%

Note: 2016 reflects approved FTEs. 2017 – 2020 reflects Managed FTEs.

213. AltaLink’s average operating vacancy rate over the last five years, 2016-2020, has been 1.86%. Consistent, with AltaLink’s other forecasts in this Application, AltaLink is forecasting economic conditions will return closer to more normal conditions compared to 2019 and 2020. Therefore, AltaLink is forecasting a vacancy rate of 2%. This is an increase in the vacancy rate for 2022 and 2023, compared to 2019 and 2020, but in line with the longer term (five year average) vacancy rate of 1.86% as noted in Table 1.9.4-3 above.
214. AltaLink will need to continue to manage with a low vacancy rate, because the applied for level of FTE’s will result in AltaLink being significantly resource constrained to deliver on its TFO obligations. AltaLink is able to manage with a low vacancy rate, through rigorous hiring practices such as:
- anticipating vacancies where possible, such as retirements, and starting the hiring process so that in some cases the new employee is hired with some overlap for the retiring person, and therefore having a negative vacancy for a short period of time;
 - the hiring process is a priority for AltaLink, so vacant positions are assessed and filled as soon as possible;
 - continuous improvements to AltaLink’s applicant tracking processes has enabled faster candidate shortlisting and selection; and
 - employees are asked to provide as much notice as possible when they intend to leave, so that the hiring process can be started before they leave.

1.9.5 Base Pay

215. AltaLink is forecasting a blended base pay increase for all employees of 2.64% for 2022 and 2023. These base pay increases are forecast to result in AltaLink union employees and non-union below executive employees being paid at market average TTDC at the end of the Test Period. Executive employees are forecast to be 5.1% below market average TTDC at the end of the Test Period. In response to the current economic conditions in Alberta and the cost pressures that customers continue to face, rather than addressing the full gap in market compensation for executives, AltaLink is proposing to address half of the gap for this group over

the Test Period. It is AltaLink's intention to achieve market average TTDC in the following Test Period.

216. The following factors were taken into consideration when calculating the forecasted blended base pay increase for all employees to achieve market average TTDC:
- the current competitive position of AltaLink for executive and non-union below executive, as described in **Appendix 2-H – 2020 Non-unionized Employee Compensation Review**, February 24, 2021;
 - the binding collective agreement that continues to December 31, 2021, with the UUWA, which covers 95% of AltaLink's union workforce. AltaLink forecasts the same increase with the IBEW;
 - Mercer's salary escalation projections of 2.6% for 2022-2023, as described in **Appendix 2-G 2021-2023 Salary Escalation Projections**, January 29, 2021;
 - AltaLink's forecast salary increases during the Test Period include both an annual structure increase and normal course progression;
 - Align Human Resource Consulting's market analysis of the union as market competitive in the Alberta Utility Industry for 2020, **Appendix 2-I AltaLink's Union Compensation Market Analysis**, January 25, 2021; and
 - normally AltaLink forecasts salary escalation to achieve market average TTDC at the end of the Test Period. Currently, union employees are above market, so AltaLink is forecasting lower than market increases to achieve market average compensation at the end of the Test Period. Currently, non-union employees below executive are below market, which requires higher than market increases in order to achieve market average TTDC. Executive employees are also below market, however, in order to lessen the cost impact for the Test Period, AltaLink has forecast half of the required additional salary escalation for the executive to achieve market average compensation. Therefore, executive employees are forecast to have below market average TTDC at the end of this Test Period. It is AltaLink's intention to achieve market average TTDC for executive employees in the following Test Period.

Union Base Pay Increases

217. AltaLink has a binding Collective Agreement with the UUWA that expires on December 31, 2021, which covers 95% of AltaLink's unionized workforce. Negotiations with the UUWA are expected to start in Q4 2021. AltaLink has a binding collective agreement with the IBEW that expires on December 31, 2020. Negotiations commenced in February 2021.
218. As per **Appendix 2-I**, Align Consulting, completed a compensation market analysis and concluded that compared to the Alberta Utility Industry, AltaLink is approximately 0.4 percent above market; and compared to the Alberta General Industry, AltaLink is 1.3% above market.⁴² AltaLink used an average of these two comparisons to determine that it is 0.85% above market in 2020.
219. As per **Appendix 2-I**, the 2021 market forecast for the Top Ten Alberta Utilities is at 2.5%; the five largest Alberta municipalities is at 1%; and the Alberta Public Sector is at 1.2%.⁴³ As per

⁴² **Appendix 2-I**, page 1 (**Appendix 2**, pdf 277).

⁴³ **Appendix 2-A**, page 2 (**Appendix 2**, pdf 278).

Appendix 2-G the market forecast for 2021 is at 2.2%.⁴⁴ AltaLink has used the average of these four data points (2.5%; 1%; 1.2%; 2.2%) to forecast a market average increase of 1.73% for 2021.

Table 1.9.5-1 – 2021 Current Target Total Direct Compensation Market Position Union

Market Position above market as of 2020	0.85%
AltaLink 2021 actual increase	1.5%
2021 Forecasted increases	(1.6)
Total Percentage Above Market	0.75%
Reduced Increase per year to achieve market average at the end of the two year Test Period	0.3%

Table 1.9.5-2 – 2022 Calculation of Union Base Pay Annual Increase

Mercer Market Salary Escalation Projection	2.1%
Reduced annual increase per year to achieve market average TTDC (.6% above market divided by divided by 2 equals 0.3% per year) as per Table 1.9.5-1 above.	(0.4)%
Total annual increase	1.7%

Table 1.9.5-3 – 2023 Calculation of Union Base Pay Annual Increase

Mercer Market Salary Escalation Projection	2.1%
Reduced annual increase per year to achieve market average TTDC (.6% above market divided by divided by 2 equals 0.3% per year) as per Table 1.9.5-1 above.	(0.4)%
Total annual increase	1.7%

220. Table 1.9.5-4 and Table 1.9.5-5 below reflect the financial terms of the union settlements. The increases are forecasted to result in unionized employees being paid at total target direct market average compensation at the end of the Test Period.
221. AltaLink's most recent settlement with the IBEW covered the period January 1, 2019, to December 31, 2020. Table 1.9.5-4 below shows the financial terms of previous agreements and 2021-2023 which represent AltaLink's forecast.

Table 1.9.5-4 - 2019-2023 IBEW Base Pay Increases

Component	2019 Agreement	2020 Agreement	2021 Forecast	2022 Forecast	2023 Forecast
Annual Structure Increase	1.65%	1.65%	1.5%	2.3%	1.7%
Normal Progression Increase ¹	0.5%	0.5%	0.5%	0.5%	0.5%
Total Budget	2.15%	2.15%	2.0%	2.8%	2.2%

¹ The "normal" progression budget reflects step increases which is included in the collective agreement. This is a standard approach for managing progression in the utility industry and with most collective agreements in Alberta.

222. AltaLink's most recent settlement with the UUWA covered the period January 1, 2020, to December 31, 2021. Table 1.9.5-5 below shows the financial terms of previous agreements and 2022-2023 which represent AltaLink's forecast.

⁴⁴ Appendix 2-G, page 2 (Appendix 2, pdf 244).

Table 1.9.5-5 - 2019-2023 UUWA Base Pay Increases

Component	2019 Agreement	2020 Agreement	2021 Agreement	2022 Forecast	2023 Forecast
Annual Structure Increase	3.0%	1.0%	1.5%	2.3%	1.7%
Normal Progression Increase ¹	0.5%	0.5%	0.5%	0.5%	0.5%
Total Budget	3.5%	1.5%	2%	2.8%	2.2%

¹ The “normal” progression budget reflects step increases which is included in the collective agreement. This is a standard approach for managing progression in the utility industry and with most collective agreements in Alberta.

223. In the last UUWA negotiations, the parties were unable to agree on the terms of a renewed Collective Agreement. In February 2020, the parties jointly applied for mediation.
224. Through mediation the Parties ratified a Collective Agreement in July, 2020.
225. There has been an insufficient number of union settlements that cover the time period 2022-2023. Therefore, AltaLink has relied on the Mercer salary escalation forecast of 2.6%, as per **Appendix 2-G**,⁴⁵ for 2022 and 2023, as the forecast for salary escalation in 2022 and 2023.
226. AltaLink is forecasting unionized employees TTDC to be at market at the end of the Test Period.

Non-Union Below Executive Base Pay Increases

227. AltaLink is forecasting increases of 2.95% per year for the 2022-2023 Test Period. As further described below, this is forecast to result in AltaLink non-union below executive being at TTDC at the end of the Test Period as determined by the following two factors below:
- as per **Appendix 2-H**, non-union below executive TTDC is at market.⁴⁶ In 2021, AltaLink’s increase of 1.5% was below the actual market increase resulting in 0.7% below market going into 2022, as per Table 1.9.5-6 below; and
 - as per **Appendix 2-G**, the average annual aggregate salary increases for non-unionized employees will range from 2.5% to 2.7% per year for 2022-2023.⁴⁷ AltaLink has used the midpoint of this range, 2.6%, in order to forecast the 2022-2023 increase.

⁴⁵ **Appendix 2-G**, page 4 (**Appendix 2**, pdf 246).

⁴⁶ **Appendix 2-H**, page 8 (**Appendix 2**, pdf 256).

⁴⁷ **Appendix 2-G**, page 4 (**Appendix 2**, pdf 246).

Table 1.9.5-6 - Current Target Total Direct Compensation Market Position Non-union Below Executive

Market Position ¹	0%
AltaLink 2021 actual increase	1.5%
2021 Forecasted increases ²	(2.2%)
Total Percentage Below Market	(0.7%)
Additional Increase per year to achieve market average at the end of the two year Test Period	0.35%

¹ Appendix 2-H – 2020 Non-Unionized Employee Compensation Review, February 24, 2021, page 4.

² Appendix 2-G - 2021-2023 Salary Escalation Projection, January 29, 2021, page 4.

Table 1.9.5-7 - 2022 Calculation of Non-Union Base Pay Annual Increase

Mercer Market Salary Escalation Projection ¹	2.6%
Additional annual increase per year to achieve market average TTDC (0.7% below market divided by divided by 2 equals 0.35% per year) as per Table 1.9.5-6 above	0.35%
Total annual increase	2.95%

¹ Appendix 2-G– 2021-2023 Salary Escalation Projection, January 29, 2021, page 4.

Table 1.9.5-8 - 2023 Calculation of Non-Union Base Pay Annual Increase

Mercer Market Salary Escalation Projection ¹	2.6%
Additional annual increase per year to achieve market average TTDC (.7% below market divided by divided by 2 equals 0.35% per year) as per Table 1.9.5-6 above.	0.35%
Total annual increase	2.95%

¹ Appendix 2-G– 2021-2023 Salary Escalation Projection, January 29, 2021, page 4.

228. AltaLink’s non-union below executive compensation is set out in Table 1.9.5-9 below.

Table 1.9.5-9 - 2022-2023 Non-Union Below Executive Total Base Pay Change

	2022 Forecast	2023 Forecast
Annual Budget	2.95%	2.95%

229. AltaLink’s salary escalation reflects AltaLink’s overall base pay increases. However, individual increases for non-union employees will vary with the employee’s relative performance, experience, and specific salary compared to market.
230. The above applied for increases are forecast to result in non-union employees below executive level paid in aggregate at market
231. In addition to the need to pay competitive in the market, AltaLink has a serious concern with the amount of compression between union and non-union employees. In fact, in some cases union employees are paid more than their manager. The compression issue was exacerbated over the last few years with non-union employees receiving salary increases significantly less than union employees.
232. AltaLink is forecasting non-union employees below executive TTDC to be at market at the end of the Test Period however, as per **Appendix 2-J**, AltaLink’s non-union non-executive total pension, benefits and time off provisions are 8.9% below market.⁴⁸

⁴⁸ Appendix 2-J, page 10 (Appendix 2, pdf 289).

233. As per **Appendix 2-H**, AltaLink’s non-union below executive total remuneration is at 2% below market.⁴⁹ It is AltaLink’s intention to adjust total remuneration during the next Test Period in order to achieve market average total remuneration.
234. As described earlier in Section 1.9.2, Compensation Approach, AltaLink has applied for base pay increases, which is forecast to result in executive being paid below market average TTDC. However, AltaLink’s interpretation of Decision 2009-151, was that the Commission’s decision related to base pay was made on a base pay to base pay comparison rather than a focus on total compensation, which had been AltaLink’s understanding prior to Decision 2009-151. AltaLink’s submission in this Application is based on the principle of a focus on total compensation. AltaLink believes the focus on total compensation, not the individual elements, is the appropriate approach. However, if the Commission chooses to focus on the individual elements of total compensation, then AltaLink requests that total dollar increase applied for in base pay gross labour, \$2.8M for 2022 and \$5.7M for 2023, is approved in additional Incentive Pay, rather than base pay.

Executive Base Pay Increases

235. AltaLink’s net total executive compensation included in the Revenue Requirement in the Test Period, 2022 and 2023 is forecast to reduce by over \$1.0M from 2019 and 2020 actuals, a reduction of more than 30%.

Table 1.9.5-10 – 2019-2023 Net Executive Total Compensation (\$M)

Net Executive Total Compensation	2019 Actual	2020 Actual	2021 MU	2022 GTA	2023 GTA
Executive cost centre	4.39	4.26	4.12	4.27	4.39
Less non-executives	(0.48)	(0.44)	(0.51)	(0.53)	(0.62)
Revenue offset charges from Executives	(0.20)	(0.17)	(1.06)	(1.28)	(1.42)
Net Executive Total Compensation	3.71	3.65	2.55	2.47	2.35

236. The reduction in net total executive compensation is a result of the executive re-organization described in Section 1.9.3 Executive organizational change. The re-organization resulted in an increase to forecast charges to Miscellaneous Revenue, which is an offset to executive compensation. As a result the net executive compensation in the revenue requirement declines significantly from 2019 and 2020 actuals.
237. AltaLink is forecasting a 5.15 % base pay increase in 2022 and 2023 Test Period as further described below, which is forecast to result in AltaLink executive employees being 5.1% below market at the end of the Test Period as determined as follows:
- as per **Appendix 2-H**, executive employees’ target total direct compensation is 8% below market at the end of 2020;⁵⁰
 - as per **Appendix 2-G**, Mercer’s salary escalation projections letter, the average annual aggregate salary increases for non-union employees is 2.2% for 2021.⁵¹ In response to the COVID-19 pandemic and economic conditions in the Province, AltaLink executive employees received a 0% base pay increase in 2021; and

⁴⁹ **Appendix 2-H**, page 10 (**Appendix 2**, pdf 258).

⁵⁰ **Appendix 2-H**, page 8 (**Appendix 2**, pdf 256).

⁵¹ **Appendix 2-G**, page 8 (**Appendix 2**, pdf 246).

- AltaLink recognizes the difficult challenges for many individuals and businesses in the current economic conditions. As a result, AltaLink is not proposing executive pay increases to achieve TTDC during the Test Period. Rather, AltaLink is forecasting base pay increases that will close half of the gap between Executive TTDC and Market TTDC.

Table 1.9.5-11 - Current Target Total Direct Compensation Market Position Executives

Market Position ¹	(8%)
AltaLink 2021 actual increase	0%
2021 Forecasted increases ²	(2.2%)
Total Percentage Below Market	(10.2%)
Additional Increase per year to achieve half of the market average gap at the end of the two year Test Period ($10.2\%/2(\text{half the gap}) = 5.10\%$; $5.10\%/2 \text{ Year Test period} = 2.55\%$ per year)	2.55%

¹ Appendix 2-H – 2020 Non-Unionized Employee Compensation Review, February 24, 2021, page 8.

² Appendix 2-G – 2021-2023 Salary Escalation Projection, January 29, 2021, page 4.

Table 1.9.5-12 - 2022 Calculation of Executive Base Pay Annual Increase

Mercer Market Salary Escalation Projection ¹	2.6%
Additional annual increase per year to achieve market average TTDC (as per Table 1.9.5-11 above)	2.55%
Total annual increase	5.15%

¹ Appendix 2-G – 2021-2023 Salary Escalation Projection, January 29, 2021, page 4.

Table 1.9.5-13 - 2023 Calculation of Executive Base Pay Annual Increase

Mercer Market Salary Escalation Projection ¹	2.6%
Additional annual increase per year to achieve market average TTDC (as per Table 1.9.5-11 above)	2.55%
Total annual increase	5.15%

¹ Appendix 2-G – 2021-2023 Salary Escalation Projection January 29, 2021, page 4.

238. AltaLink’s executive compensation is set out in Table 1.9.5-14 below.

Table 1.9.5-14 - 2022-2023 Executive Total Base Pay Change

	2022 Forecast	2023 Forecast
Annual Budget	5.15%	5.15%

239. Prior to the above forecasted increase, AltaLink executive employees were 10.2% below market. As per Table 1.9.5-15 below, AltaLink is forecasting executive TTDC will be 5.1% below market at the end of the Test Period.

Table 1.9.5-15 - Executive Market Position

Executive compensation below market at the start of the Test Period, as per Table 1.9.5-11 above	10.2%
AltaLink forecast increase during the Test Period (5.15% for 2022 plus 5.15% for 2023), as per Table 1.9.5-12 and Table 1.9.5-13 above.	10.3%
Forecast market increases (2.6% for 2022 plus 2.6% in 2023), as per Table 1.9.5-12, Table 1.9.5-13 and Appendix 2-G 2021-2023 Salary Escalation Projection, Janaury 29, 2021, page 4.	5.2%
Executive TTDC Forecast position below market at the end of the Test Period (10.2%-10.3+5.2%= 5.1%)	5.1%

240. It is AltaLink’s intent to increase executive compensation in the following Test Period in order to achieve market average compensation.
241. Other than the Base Pay increase forecasts above, AltaLink is not forecasting any other Executive Compensation changes during the Test Period.
242. Table 1.9.5-16 below is the blended salary increase calculation.

Table 1.9.5-16 - Blended Salary Increase Calculation

	Weighting ¹	2022 Forecast	2023 Forecast
Non-Union Below Executive	47%	2.95%	2.95%
Executive	3%	5.15%	5.15%
Union	50%	2.2%	2.2%
Total Blended Increase	100%	2.64%	2.64%

¹ Reflects the percent of total labour.

1.9.6 STIP

243. AltaLink is not asking for any changes during the Test Period for STIP. In 2019 AltaLink implemented a new STIP plan, with goals designed to reflect a transition from a period of high capital build to a greater focus on ongoing operations and maintenance. The STIP goals starting in 2019 are Customer Satisfaction (20% weighting), Reliability (20% weighting), Safety (20% Weighting), Cyber (20% weighting), and Gross OM&A Spend before Capitalization (20% weighting).
244. For non-union employees - STIP will be a function of corporate results multiplied by individual results, which AltaLink refers to as a multiplicative plan. This will increase the degree of differentiation between low and high performers, reinforcing the performance based culture. Corporate results may range from 0 – 160%. Individual results may vary from 0 to 125%. Corporate results are multiplied by individual results to determine the payout.
245. For all employees a Net Income Trigger has been added. If Net Income is below target, then the maximum corporate result is target.
246. As STIP target payout levels remain unchanged during the Test Period, year over year changes reflect staffing levels and base compensation.
247. AltaLink’s 2019 actual expense, 2020 Actual, and 2021–2022 forecast are provided in Table 1.9.6-1 below.

Table 1.9.6-1 - STIP (\$M)

	2019 Actual	2020 Actual	2021 MU	2022 Forecast	2023 Forecast
STIP	12	12	9	9.2	9.5

STIP Payout Levels

248. Table 1.9.6-2 below sets out AltaLink's STIP target payout levels as of 2021 and the Test Period

Table 1.9.6-2 - STIP Pay Levels – As a Percent of Base Pay

Pay levels	Target*
Executive (SVP's, EVP, President and COO, CEO)	30-100%
Management/Functional Expert/Senior Management	15%
Entry to First Level Supervision/Specialist level	10%
Administrative	7.5%
Union (UUWA/IBEW)	7.5%

*Prior to the Test Period certain AltaLink executive employees received an increase to their STIP target level either because of a promotion or because of market adjustments. There were no other changes to target levels.

STIP Goals and Plan Design

249. Shown in Table 1.9.6-3 below is AltaLink's 2021 STIP Corporate Goals.

Table 1.9.6-3 - AltaLink 2021 STIP Corporate Goals

Goal	Weight	Minimum	Target	Maximum
Customer Satisfaction	20%	8.73	9.00	9.27
Reliability	20%	0%	20%	40%
Safety	20%	0.45	0.30	0.15
Cyber	20%	99.90%	99.94%	99.98%
Gross OM&A spend before Capitalization	20%	\$189.6M	\$184.6M	\$179.6M
Total	100%			

STIP Goal Mechanics

250. AltaLink's objectives in setting STIP goals include:

- establishing goals that best capture customer interests;
- keeping the goals simple, measurable, and limited in number to minimize complexity;
- providing employees with a line of sight to see how they influence the results;
- creating an environment in which employees work together to achieve common goals; and
- the target level for each goal is set to be achievable with some stretch. Payout at the target level is designed to provide compensation at the market average.

251. The resulting STIP goals, as described further below, meet the above mentioned objectives.

Customer Satisfaction Goal

252. The customer satisfaction goal was introduced in the 2014 STIP to recognize the value in feedback from customers. AltaLink's leadership has taken many steps to increase customer focus and it is AltaLink's intent that by continuing with the customer satisfaction goal, it further reinforces with employees the priority AltaLink places on customer satisfaction.

253. The customer metric is based on the customer response to the question: On a scale of 0 to 10 where 0 means not at all satisfied and 10 means very satisfied, "Overall how satisfied are you with AltaLink's services?" Consistent with AltaLink's mission to provide enhanced customer satisfaction, the metric will be the average of customers rating AltaLink an 8, 9 or 10 on the question above.

254. The customer satisfaction metric is based on customer feedback from customers directly connected to, or connecting to AltaLink's transmission system (Direct Customers).

Reliability Goal

255. AltaLink's reliability goal, measured by SAIDI, is established to reflect the fact that transmission system reliability is important to customers. The SAIDI index was chosen as the reliability measure over which employees have the most influence.

256. The STIP reliability goal includes load interruptions caused by the bulk electric system as per the guidelines of the CEA. During a service disruption, this goal focuses employees on returning service to the customers as quickly as possible. The less frequent and shorter the duration of power interruptions to customers, the better the reliability result. SAIDI measures the average the number of minutes of interruption for a delivery point in a year.

257. SAIDI is calculated as the total duration of load interruptions (in minutes)/total number of delivery points monitored. The SAIDI targets are set based on minimum being the five year average; maximum as an improvement on the best result ever and midpoint as the middle of min and max.

258. SAIDI performance is measured for each of three supply connection types, as defined by the CEA, based on the differences in power system connection and design: multiple circuit supplied, single circuit radial supplied, and single circuit networked. The performance of each of the categories are weighted based on their relative count in the delivery point population and summed up to determine the overall STIP reliability goal result.

Safety Goal

259. AltaLink implemented the STIP safety goal because a safe working environment is absolutely critical in this industry. It is also in the interest of all stakeholders and positively impacts employee productivity. The safety goal, defined by AltaLink's TRIF (Total Recordable Injury Frequency Rate), is a measure of the number of medical aid, lost time accidents and restricted work injuries. This goal focuses employees on practices that will reduce injuries and accidents. TRIF is calculated as: medical aid injuries + lost time injuries+ restricted work injuries x200,000 hours/total exposure hours worked, and includes measurement of AltaLink employees and contractors.

Gross Operating Maintenance and Administration (OM&A) Spend Before Capitalization Goal

260. The Gross OM&A spend before capitalization was a new STIP goal introduced in 2019. It is the gross OM&A expenditures before capitalization; includes ALP controllable expenses only and excludes reserve accounts, deferral accounts, third-party capital services and non-regulated expenses.

261. In order to achieve these targets, AltaLink needs to engage the whole organization in managing controllable costs that impact both the capital and operating spend. This intent of this goal is to drive increased efficiencies which will financially benefit customers on an on-going basis.

Cyber Goal

262. Because of the risks of a cyber-attack impacting the transmission system, AltaLink created the cyber goal in 2019. The cyber goal is the percentage of AltaLink employees and contractors who have not clicked on simulated phishing emails. The measure reflects the vigilance of the organization in identifying phishing emails. The intent of this measure is to help ensure that all employees are aware of, and do their part towards cyber security.
263. For information purposes, Table 1.9.6-4 below provides AltaLink's 2020 STIP final results.

Table 1.9.6-4 - AltaLink 2020 STIP Final Results

Goal	Weight	Minimum	Target	Maximum	Final Results
Customer Satisfaction	20%	8.25	8.75	9.23	9.13
Reliability	20%	0%	20%	40%	15.2%
Safety	20%	0.65	0.45	0.25	0.16
Cyber	20%	99.85	99.90	99.95	99.95
Gross OM&A spend before Capitalization	20%	\$189.3M	\$184.3M	\$174.3M	\$182.7M
Total	100%				

264. AltaLink designs its STIP targets to be at a reasonable level of stretch for employees. In the last five years, AltaLink's STIP payout for non-union employees has averaged 130%, based on target individual results. STIP paid out, 160.6% in 2016 and 92.5% in 2017, 123.9% in 2018; 141.6% in 2019; and 132% in 2020. Achieving STIP target level goals with some stretch is intended to result in market average pay. If overall target level goals are not reached, such as in 2017, employee total direct compensation is intended to be below average. STIP is designed so that if the stretch level target goals are exceeded, employee total direct compensation is above market average. The cost of STIP payout above target is paid by the shareholders. STIP is designed so that maximum payout requires a significant stretch. AltaLink has never had a STIP payout at maximum.
- STIP Payout Calculations**
265. **Union Employees** - there are three variables that contribute to STIP payout calculations: base pay, target payout levels and corporate results. STIP results for union employees are calculated one of two ways:

Example:

Eligible Earnings (Base Pay) = \$100,000

Payout – Minimum = 0, Target = 7.5%, Maximum = 10%

- Results are less than or equal to 100% of target:

If the total result is less than or equal to 100% (E.g. 95%) then:

Base Pay X target Payout X STIP Result = STIP Payout

$\$100,000 \times 7.5\% \times 95\%$

$\$100,000 \times 7.125\%$

\$7,125

- Results are greater than 100% of target:

If the total result is greater than 100% (e.g. 110%) then:

(Base Pay) X target payout + ((Result – 100%) X (2.5%)) = STIP Payout

$\$100,000 \times (7.5\% + ((110\% - 100\%) \times (2.5\%)))$

$\$100,000 \times (7.5\% + (10\% \times 2.5\%))$

$\$100,000 \times 7.75\%$

\$7,750

266. **Non-Union Employees** - there are four variables that contribute to STIP payout calculations: base pay, target payout levels, corporate results (with non-union conversion) and individual results. STIP results for non-union employees are calculated as follows:

267. **Non Union Conversion:** One of the key objectives of the STIP plan is to increase differentiation. As a result there is an individual performance multiplier for non-union employees. To avoid a cost increase to the program and to maintain the maximum payout at 200%, the corporate result is converted for any result above 100% as per below. The individual multiplier increases differentiation and thus supports a performance based culture, but it does not change the target level STIP amount applied for in this application.

$100\% + ((\text{Corporate Result} - 100\%) \times .60) = \text{Non Union Conversion}$

Example: $100\% + ((110\% - 100\%) \times .60) = 106\%$

Base Pay X Target Payout X Corporate result (with non-union conversion) X Individual result

Example:

Eligible Earnings (Base Pay) = \$100,000

Payout Level: Minimum = 0, Target = 10%, Maximum = 20%

Corporate Result with Non-Union Conversion = 106%

Individual Result = 105%

$\$100,000 \times 10\% \times 106\% \times 105\% = \$11,130$ Payout

LTIP

268. AltaLink is not asking for any changes during the Test Period for LTIP. In 2019 AltaLink implemented changes to reflect a transition from a period of high capital build to a greater focus on ongoing operations and maintenance. The LTIP customer component goals are Reliability, and a Flat for Five goal.

269. LTIP is critical to provide employees with competitive compensation to effectively operate the business and meet AltaLink’s customer commitments. AltaLink continues to be of the opinion that LTIP as a whole is designed to achieve and maintain market average TTDC and should therefore be included in the revenue requirement at 100% of target. However, in accordance with the AUC Decision 2009-151, AltaLink’s 2022-2023 revenue requirement forecast includes only those expenditures related to LTIP goals that are 100% customer focused. Such expenditures account for 50% of AltaLink’s forecast 2022-2023 LTIP costs and are provided in Table 1.9.6-5 below.

Table 1.9.6-5 - LTIP (\$M) Costs Included in the Revenue Requirement

	2019 Actual	2020 Actual	2021 MU	2022 Forecast	2023 Forecast
LTIP ¹	1.2	1.3	1.0	1.1	1.1

¹ Excludes forecast LTIP costs incurred by AltaLink shareholders.

270. The remaining cost of LTIP, which is attributable to goals that benefit both the shareholder and customers, will be paid by the shareholder. Table 1.9.6-6 below includes the total and actual forecast costs.

Table 1.9.6-6 - Actual Total Costs Including Cost Incurred by Shareholder¹ (\$M)

	2019 Actual	2020 Actual	2021 MU	2022 Forecast	2023 Forecast
LTIP	2.4	2.6	2.1	2.2	2.3

¹ 50% of total forecast cost excluded from AltaLink revenue requirement incurred by Shareholder.

LTIP Goals and Plan Design

271. AltaLink has two LTIP customer goals, Reliability and Flat for Five as shown in Table 1.9.6-7 below.

Table 1.9.6-7 - LTIP Customer Goals

Goal	Weight	Customer Benefit
Reliability	25%	Identified as a key customer priority. 100% customer benefit.
Flat for Five	25%	Leadership will focus on the controllable operating expenses and costs related to capital investment not subject to deferral account treatment.
Revenue Requirement portion of total LTIP costs	50%	

272. AltaLink’s LTIP goal that benefits both the shareholder and the customer is net income. Although net income has a wide ranging benefit to both the shareholder and to customers, and LTIP at 100% is part of competitive compensation, the cost of this goal will be paid by the shareholder for the Test Period.

Table 1.9.6-8- Shareholder/Customer Goal

Goal	Weight	Customer Benefit	Shareholder Benefit
Net Income	50%	Provides incentive to employees to achieve operational efficiencies that benefit customers by maintaining or lowering costs relative to workload. Also helps to ensure a financially viable TFO, which impacts ability to raise capital at lowest possible rates to deliver on customer needs.	Benefits shareholder through increased profitability.
Shareholder portion of Total LTIP Costs	50%		

LTIP Plan Summary

273. Eligible senior leaders will be issued phantom share units, with an initial target value of \$1 per unit. The number of units granted to a participant will be based on organizational level. The value of the units granted will be paid out (in cash less applicable taxes) after three years. The value of phantom share units at the time of payout will be based on results achieved in reliability, flat for five and net income. Participation in LTIP will include the CEO, SVPs, VPs and Directors. In addition, an annual LTIP pool of \$0 will be granted in additional phantom share units to select employees.

Plan Payout Target Levels

274. LTIP target levels are as per below. Target levels are provided in Table 1.9.6-9 below.

Table 1.9.6-9 - LTIP Target Levels

AltaLink Organization Level	LTIP Target as a percentage of Base Pay
Executive (SVP's, EVP, President and COO, CEO)	30-70%
VP	15%
Director	15%

275. The LTIP pool of \$0.4M annually, is a lower cost method to retain key individuals rather than increasing the LTIP Target levels for all LTIP eligible employees in order to reduce or eliminate the amount LTIP eligible employees are below market average.
276. Consistent with previously approved LTIP, AltaLink is applying for 50% of this cost, or \$0.2M annually in the revenue requirement. On an annual basis, the CEO, with approval from the Human Resource and Governance (HRG) committee of the Board, approves which employees will be given additional LTIP grants from this pool. This enables AltaLink to target select employees to further motivate and retain, while achieving a lower cost increase compared to having higher LTIP target levels for all employees. This LTIP pool will not result in LTIP eligible employees being paid at market average overall, but it will close the gap somewhat. Including the impact of this LTIP pool, executive employees total target compensation will be 10.2% below market average at the start of the Test Period, and non-union below executive total target compensation will be 0.7% below market average.

Plan Mechanics

277. LTIP participation and eligibility will be reviewed annually by the HRG Committee of AltaLink's Board of Directors and approved each year for the following plan period (i.e. a new LTIP will be started each year, running for three years).

278. The initial per unit target value for each plan period is \$1 per unit. The unit's value will be determined at the end of each three year plan period, according to the performance valuation table approved for that plan period by the Governance Committee. At the end of the third year of each plan period, the share units will vest subject to policy vesting provisions and the value of those units (less applicable taxes) will be paid to participants in cash.

Customer Goals**Reliability Goal**

279. The reliability goal reflects a key customer priority as identified by AltaLink's customers and customer representatives. The LTIP reliability goal is a derivative of SAIFI that includes sustained interruption frequency (SAIFI) for all delivery points and momentary interruption frequency for the delivery points that feed industrial customers and is measured over a three year timeframe.
280. The conventional SAIFI measure includes all outages to all delivery point types with industrial customers or with commercial and residential customers as per the guidelines of the CEA.
281. The SAIFI modified for LTIP goal includes sustained outages (i.e., duration of greater than 1 minute), to all customers and momentary outages (i.e., less than 1 minute duration), to industrial customers. Generally speaking momentary outages of residential and commercial customers have much less of an impact than they do for industrial. Improvements in the number of outages typically require long-term initiatives to be implemented over several years (i.e., changes in system design, addition of redundancy, changes in material selection or condition monitoring, etc.). The duration of these efforts makes SAIFI very applicable for a long-term incentive.
282. Results are determined based on the objective measurement of reliability results.

Flat for Five

283. AltaLink has committed not to file for any rate increases in its GTA over a five year period. This commitment is designed to provide customers with certainty regarding AltaLink's tariff levels for the 2019 to 2023 period. This goal is to incent employees to effectively manage costs and find cost savings and efficiencies to meet or exceed the Commission approved transmission tariff levels during the 2022-2023 GTA period. It also includes principled regulatory tariff recovery proposals that would levelize the tariff so that both current and future customers pay their fair share of transmission costs particularly in light of the recent large transmission build cycle that was in large part to meet the needs of future growth.
284. Results are based upon the sum of the achieved (actual) controllable operating expenses and costs related to capital investment not subject to deferral account treatment of the AltaLink transmission tariff over the two year GTA Test Period.

Shareholder/Customer Goal

285. **Net Income Goal** - The weighting on the net income goal of 50% reflects AltaLink's focus on ongoing Operation and Maintenance expenses. The biggest impact most employees have on the net income goal is to achieve operational efficiencies, resulting in lower operating costs. This benefits customers in the long-term.

1.9.7 Pension and Benefits

286. AltaLink is not proposing any changes to pension and benefits for the Test Period. In 2021, AltaLink combined the psychology and social work benefit and increased the maximum to \$1,500 per year per employee, as described further below.

287. AltaLink had not completed a total benefit analysis for a number of years, therefore AltaLink requested Mercer to compare AltaLink pension, benefits and time off provisions to the market. As per **Appendix 2-J**, Pension/Savings, Benefits and Time-Off Review, February 24, 2021, the study determined that AltaLink was 8.9%, or \$3,300 per employee, below market average for pension, benefits and time off provisions combined. Although the combined Pension, Benefits, and Time Off Provisions reflect below market average, AltaLink is not applying for any additional funds during this Test Period.
288. Given the timing of the results of this study, this application does not include changes required for pension/savings, benefit and time-off provisions to be at market average. Prior to the next application, AltaLink will look in depth at results of the study, complete further analysis and determine how it will achieve market average total remuneration.
289. Over the last few years most companies have seen a general increase in the understanding and importance of focusing on employees' mental health. As the COVID-19 pandemic affected the nation, there was a marked focus on employees' mental health and wellness. To adjust to the increased need AltaLink sought opportunities to support employees' mental health such as: increasing employee communications and awareness of the Employee and Family Assistance Program (EFAP). In addition, to respond to the increased need, a decision was made to combine the psychology and social work categories of benefits and increase the claims maximum to allow for improved utilization and employee support. The standard psychology maximum was \$500; the social work standard maximum was \$500. The new combined maximum, effective January 1, 2021, is \$1,500. The forecasted cost of this combined change is \$40K annually.
290. The change in psychology and social work benefit was not included in the benefit study because the change was made after AltaLink submitted its benefits data to the Mercer's survey, but before AltaLink received the results of the study. The average cost of this change was \$55 per person. If this change had been included in the Mercer study, AltaLink's weighed cost per employee would have been \$3.25k below market rather than \$3.3k below market. The percentage difference would be 8.8% below market rather than 8.9% below market as per Table 1.9.7-1 below and as per **Appendix 2-J**, Pension/Savings, Benefits and Time-Off Review, February 24, 2021.
291. AltaLink's benefit package includes pension, disability coverage, life insurance, medical/dental, wellness, and time off provisions.
292. With the applied for salary increases in this application, AltaLink is forecast to be at market for TTDC for union employees and non-union below executive employees; and below TTDC for executive employees at the end of this Test Period. Since the pension, benefits and time off provisions are below market average, the total market remuneration is forecast to remain below market. Therefore it is crucial that the applied of salary increases for this Test Period are approved in order to attract and retain quality employees.
293. All changes in the pension and benefit expenses will be commensurate with inflation or benefit specific escalation, staff levels and/or compensation increases. AltaLink's 2020 employer-provided benefit coverage is 8.9% below the market average for non-union employees, as described in Table 1.9.7-1 below.

Table 1.9.7-1 – AltaLink versus Market Employer Provided Value of Pension, Benefits and Time off provisions

Compensation Element	Weighted Average (in 000s)		\$ Difference	% Difference
	AltaLink	Market		
Pension	\$11.8	\$14	-\$2.2	-15.8%
Benefits	\$9.5	\$9	\$0.5	5.1%
Time Off	\$12.2	\$13.7	-\$1.5	-11.0%
Total	\$33.4	\$36.7	-\$3.3	-8.9%

294. AltaLink's 2019-2020 actual expense, 2021 MU, and 2022-2023 forecast are detailed in Table 1.9.7-2 below.

Table 1.9.7-2 – 2019- 2023 Benefit and Other Compensation Costs by Component (\$M)

Description	2019 Actual	2020 Actual	2021 MU	2022 Forecast	2023 Forecast
Base Benefits(1)	7.7	7.4	8.3	8.7	9.0
DC Plan (2)	7.9	7.9	7.9	8.0	8.3
SPP	0.2	0.2	0.2	0.2	0.3
PRB	1.1	0.6	0.7	0.7	0.7
Other Labour related Staffing Costs (3)	1.1	1.2	1.4	1.9	1.9
Perquisites	0.4	0.3	0.4	0.4	0.4
STIP	12.0	12.0	9.0	9.2	9.5
LTIP ⁴	1.2	1.3	1.0	1.1	1.1
Targeted Retention	0.1	0.0	0.0	0.1	0.1
Total Benefit and Other Compensation Loading	31.6	31.1	29	30.4	31.3

Totals may not add due to rounding.

1. Base Benefits include Government Benefits, company provided benefits and benefit administration expense.
2. DC Plan includes DC Plan contribution and Pension Administration expense.
3. Other Labour Related Staffing Costs include Wellness Fund, Outstanding Contribution Awards, severance, relocation and safety bonus.
4. LTIP reflects the 50% (customer component) of LTIP at target payout.

295. A description of pension and benefit cost elements are provided below.

Pension

296. AltaLink is not proposing any changes to its DC Plan during the Test Period. The DC Plan remains an 8% employer, 2% employee contribution. AltaLink's 2022-2023 revenue requirement forecast reflects changes to DC Plan costs that arise from staffing and compensation changes only.

Base Benefits

297. Base benefits include the government-required benefits and company provided benefits described below.

Government Benefits

- CPP;
- Employment Insurance (EI); and
- WCB benefits.

298. AltaLink has forecast 2022-2023 government benefits to reflect staffing changes and general inflation.

Company Provided Benefits

299. AltaLink's 2022-2023 company provided benefits forecast reflect staff changes and inflation increases as described below:

300. **Dental** - AltaLink is using the 2019 Actuals as starting point to forecast future costs as due to the COVID-19 pandemic there were reduced claims activity in 2020. Increases were forecast at 6.5% for 2020 as per **Appendix 2-J- Anticipated Health and Dental Cost Trends**, January 17, 2018 in the 2019-2021 GTA,⁵² as per **Appendix 2-K Health and Dental Benefit Cost Trends**, December 18, 2020, the inflation trend factor for dental is forecast to be 5-7% per year, plus an additional margin of 2-5% for potential increases to the fee guides during the Test Period.⁵³ AltaLink has used the midpoint of the trend factor forecast of 6% for 2021 and added the lower end of the fee guide forecast of 2% for a total of 8% for 2021 for dental cost escalation. The dental cost escalation forecast for 2022 and 2023 is 6%, the midpoint of the inflation trend factor.

301. **Extended Health** - AltaLink is using the 2019 Actuals as starting point to forecast future costs as due to the COVID-19 pandemic, there were reduced claims activity in 2020. Increases were forecast at 10% for 2020 as per **Appendix 2-J- Anticipated Health and Dental Cost Trends**, January 17, 2018 in the 2019-2021 GTA.⁵⁴

302. As per **Appendix 2-K Health and Dental Benefit Cost Trends**, December 18, 2020, page 3, the inflation trend factor for extended health is forecast to be 6-8% per year, with an additional margin of 1% to 2% for 2021 due to the impact of the COVID-19 pandemic related expenses during the Test Period. AltaLink has used the midpoint of the trend forecast, 7%, and the lower end, 1%, of the additional COVID-19 expenses, for a total of 8% for 2021. The extended health cost forecast escalation for 2022 and 2023, is 7%, the midpoint of the inflation trend factor for extended health.

- Health Spending Account – changes reflect staffing levels;
- Wellness Flex Credits – changes reflect staffing levels;
- Life Insurance – changes reflect staffing levels and general inflation; and
- Education Assistance – changes reflect staffing levels and general inflation.

Supplemental Pension Plan (SPP)

303. AltaLink's SPP is a defined contribution plan provided to employees that exceed the Income Tax Act limits on maximum pension contributions.

⁵² Exhibit 23848-X0005, 2019-2021 GTA **Appendix 2-J**, pdf 294.

⁵³ **Appendix 2-K**, page 4 (**Appendix 2**, pdf 305).

⁵⁴ Exhibit 23848-X0005, 2019-2021 GTA **Appendix 2-K**, pdf 294.

304. AltaLink is not proposing any changes to its SPP design in the Test Period. AltaLink’s contribution remains at 8%. AltaLink’s 2019-2020 actual expense, 2021 MU, and 2022-2023 forecast are detailed in Table 1.9.7-3 below.

Table 1.9.7-3 - Supplemental Pension Plan (\$M)

	2019 Actual	2020 Actual	2021 MU	2022 Forecast	2023 Forecast
SPP	0.2	0.2	0.2	0.2	0.3

Post-Retirement Benefits (PRB)

305. AltaLink’s 2019-2020 actual expense, 2021 MU, and 2022-2023 forecast are detailed in Table 1.9.7-4 below.

Table 1.9.7-4 - Post Retirement Benefits (\$M)

	2019 Actual	2020 Actual	2021 MU	2022 Forecast	2023 Forecast
PRB	1.1	0.6	0.7	0.7	0.7

306. PRB include extended health care and dental benefits for retirees until age 65. PRB cost forecast is described in **Appendix 2-L – Post Retirement Benefits Expense Forecast for 2021-2023**, February 16, 2021. AltaLink has not made any changes to its PRB design; year to year variances reflect staffing levels and the actuarial report in **Appendix 2-L**.

Perquisites and Signing Bonus (PSB)

307. Perquisite levels have been adjusted for inflation of 2% and staffing levels. Perquisites are included in the TTDC comparisons in **Appendix 2-H – 2020 Non-unionized Employee Compensation Review**, February 24, 2021. As the economy returns to normal market conditions, AltaLink anticipates the need for signing bonuses for the 2022-2023 Test Period and has been forecast, (rounded), at \$0.0M/year. AltaLink’s 2019-2020 actual expense, 2021 MU, and 2022-2023 forecast are detailed in Table 1.9.7-5 below.

Table 1.9.7-5 - Perquisites and Signing Bonus (\$M)

	2019 Actual	2020 Actual	2021 MU	2022 Forecast	2023 Forecast
PSB	0.4	0.3	0.4	0.4	0.4

Executive Pension and Benefits

308. AltaLink’s pension and benefits for executive employees are the same as all other employees including, union and non-union employees. Refer to Section 1.9.7, Pension and Benefits.
309. It should be recognized that many other companies provide their executive employees with enhanced levels of pension and base benefits compared to non-executives, while AltaLink does not. AltaLink provides the same level of pension and base benefits (e.g. post-retirement benefits, dental and health care) to executives as it does to all other employees.

Attraction and Retention Bonus

310. AltaLink’s 2019-2020 actual expense, 2021 MU, and 2022-2023 forecast are detailed in Table 1.9.7-6 below.

Table 1.9.7-6 - Attraction and Retention Bonus Expense (\$M)

	2019 Actual	2020 Actual	2021 MU	2022 Forecast	2023 Forecast
Attraction and Retention Bonus	0.1	0.0	0.0	0.1	0.1

311. As the economy returns to closer to normal market conditions, AltaLink expects there will be some positions that will be difficult to recruit for or to retain due to market conditions. AltaLink anticipates the need for retention bonuses for the 2022-2023 Test Period. It is AltaLink's belief that retention bonuses are appropriate in certain situations. Rather than building these costs into base pay for specific positions that are experiencing a hot market, AltaLink believes it is better to address this through separate retention payments that are temporary in nature, and therefore resulting in lower costs over the long term.

1.9.8 Other Labour Related Staffing Costs

Wellness Spending Account (WSA - previously referred to as the Wellness Fund)

312. As a result of the COVID-19 pandemic there was a requirement for employees to work from home due to the government imposed restrictions. AltaLink responded to this need by adding a category to the WSA that would allow for employees to utilize the WSA for home office work equipment such as: a desk; desk chairs; webcam; office supplies; file storage and ergonomic devices; to align with the demands of the COVID-19 pandemic requiring shifting temporarily from a "work office" to "home office" model.
313. As part of the normal inflationary increases, AltaLink would have increased the WSA for employees from \$900 to \$950 in 2022. Given the urgent demands of the COVID-19 pandemic and the government imposed requirements for working from home, AltaLink increased the WSA on January 1, 2021 from \$900 to \$1,000. The new \$1,000 annual wellness amount for employees was included in the pension, benefits and time off provisions study completed by Mercer as per **Appendix 2-J**, Pension/Savings, Benefits and Time-Off Review, February 24, 2021. This results in an increased forecasted cost of \$37K for 2022 and 2023 which is included in the forecast below in Table 1.9.8-1.

Table 1.9.8-1 – Wellness Spending Account (WSA - previously called Wellness Fund) (\$M)

	2019 Actual	2020 Actual	2021 MU	2022 Forecast	2023 Forecast
Wellness	0.6	0.7	0.7	0.7	0.7

314. AltaLink's WSA delivers benefits to customers by supporting the attraction and retention of employees and increased productivity through an employee directed wellness program. Employees take an active role in tailoring this benefit to meet their individual needs and requirements.

Outstanding Contribution Awards

315. There have been no changes in the structure of outstanding contribution awards. AltaLink's 2019-2020 actual expense, 2021 MU, and 2022-2023 forecast are detailed in Table 1.9.8-2 below.

Table 1.9.8-2 - Outstanding Contribution Awards (\$M)

	2019 Actual	2020 Actual	2021 MU	2022 Forecast	2023 Forecast
Outstanding Contribution Awards	0.3	0.3	0.3	0.3	0.3

316. Changes reflect staffing levels and general inflation. Outstanding contribution awards support the high performance culture at AltaLink. All employees are eligible. An outstanding contribution award recognizes individuals that have achieved results above and beyond what is normally expected. The amount of the award is determined based on the impact on one or more of the following AltaLink key values:

- Reliability;
- Safety;
- Cost Reduction;
- Productivity or Efficiency;
- Project Schedule
- Customer Service; and
- AltaLink Culture and Teamwork.

Severance Costs

317. AltaLink's 2019-2020 actual expense, 2021 MU, and 2022-2023 forecast are detailed in Table 1.9.8-3 below.

Table 1.9.8-3 - Severance Costs (\$M)

	2019 Actual	2020 Actual	2021 MU	2022 Forecast	2023 Forecast
Severance Costs	0.0	0.1	0.1	0.4	0.4

318. In the 2022-2023 Test Period, AltaLink is forecasting severance of \$0.4M per year, based on the five year average (average length of number and length of severance) from 2016–2020. The five year average severance rate is 0.65%. The five year average length of severance is 63% (7.5 months) of one year.

319. AltaLink acknowledges that the last two years have had lower severances than previous years; this is partially due to the challenging change management issues during the COVID-19 pandemic. The organization focus was on adapting to the rapidly changing business situation versus making changes that would disrupt the work environment. AltaLink has used the five year average for both the average length of number and length of severance. The forecast of \$0.4M matches the actual average severance of \$0.4M from 2016 to 2020.

Relocation and Signing Bonus Costs

320. AltaLink's 2019-2020 actual expense, 2021 MU, and 2022-2023 forecast are detailed in Table 1.9.8-4.

Table 1.9.8-4 -Relocation Expense (\$M)

	2019 Actual	2020 Actual	2021 MU	2022 Forecast	2023 Forecast
Relocation Expense	0.0	0.0	0.0	0.1	0.1

321. AltaLink has forecast its 2022-2023 relocation expense based on the ten year average cost of relocation which is \$113k. The signing bonus expense was also based on the ten year average of \$26k per year. The last few years with the economic downturn AltaLink has had lower expenses for relocation and signing bonuses. Previous years when the economy was stronger reflected much higher numbers. There is a forecasted turnover rate of 7% which will generate potential relocation costs. The recent economic forecasts are reflecting returning to closer to normal conditions so AltaLink has chosen to use the ten year average (without inflation) to estimate the forecasted costs for 2022 and 2023.

Safety Bonus

322. AltaLink's 2019-2020 actual expense, 2021 MU, and 2022-2023 forecast are detailed in Table 1.9.8-5 below.

Table 1.9.8-5 - Safety Bonus Expense (\$M)

	2019 Actual	2020 Actual	2021 MU	2022 Forecast	2023 Forecast
Safety Bonus	0.3	0.2	0.4	0.4	0.4

323. AltaLink has used the five year average payout per person of \$497 to forecast the safety bonus expense. AltaLink is committed to establishing and maintaining a work environment with a strong safety culture. For this reason AltaLink has committed to specific key goals that are shared across all BHE Companies as well as a specific safety target rate for AltaLink. AltaLink's safety bonus is based on two goals; a) reducing the overall safety incident rate for all BHE companies; and b) achieving AltaLink's recordable incident rate improvement target.
324. If both goals are met, the safety bonus would be \$625 per employee.

1.10 Operational Performance

325. AltaLink has a continuous improvement focus that seeks opportunities across the organization to bring improvements such as reduced cycle times, improved project estimating accuracy, sustainable operating cost reductions, sustainable capital cost reductions, reduced safety risk, improved reliability performance, and environmental impact reductions.
326. AltaLink continues to utilize various operational performance measures or KPIs as management tools to identify operational performance trends. Longer-term trends in particular are useful as directional indicators. KPIs that are trending in a positive direction provide confidence to AltaLink that related practices, processes, external business factors and overall management decision making are creating positive business results. KPIs that are trending in a negative direction indicate business areas that require heightened investigation to determine if changes to factors under AltaLink's control could shift the negative trend. Efforts to improve KPI trends in one area – such as reliability – may have a negative impact on short-term cost reductions. As a company responsible for the delivery of critical infrastructure services, AltaLink seeks a balance between safety, reliability, environmental responsibility and cost effectiveness in its operations.

327. The CEA produces annual reports on certain composite KPIs based on data supplied by utilities across Canada. AltaLink is including these high-level CEA averages as a peer comparator for information purposes and notes that such comparisons have limited value as each reporting utility operates within varying internal and external business parameters. The ranking of any single entity is, at best, only suggestive of relative performance and is used by AltaLink to determine if AltaLink is trending against the Canadian composite KPI trends. AltaLink is most interested in improving AltaLink’s KPI trends and works toward that end regardless of peer comparisons.
328. AltaLink’s reliability performance measures and improvements are provided hereunder in Section 1.10.1, safety performance measures and improvements are set out in Section 1.10.2, and operational efficiencies are provided in Section 1.10.3.

1.10.1 Reliability

329. Transmission reliability is a function of system planning and design, maintenance and operating practices and expenditures, and of the more immediate environmental conditions such as weather, vegetation, wildlife intervention, vehicular accidents and human operated construction equipment contact. In Alberta, the AESO is accountable for system planning and the transmission utility is responsible for maintenance and operating decisions. AltaLink is cognizant of the duties it must discharge and has established design and maintenance standards to assure the most efficient practice in finding the appropriate balance between cost, safety, reliability and the environment.
330. To illustrate the many factors affecting reliability, Table 1.10.1-1 below describes various reasons for interruptions on AltaLink’s system in 2020.

Table 1.10.1-1 - Significant Outages in 2020 (Top 10 Events Ranked by MW-Minutes Lost)

Date	Cause of Outage	Description
3/24/2020	Adverse Weather	On March 24, 2020, a failed cross-arm caused by wet snow in the area resulting in a transmission line to trip, interrupting 23 MW of load at three substations. Approximately half the load was restored through distribution load transfer after 5 hours and 11 minutes. The cross-arm repair was completed and the remainder of the load was restored at 12 hrs and 55 minutes after the trip.
3/15/2020	Defective Equipment	On March 15, 2020, a fault on a station service switch locked out a transformer, interrupting 6.3 MW of load. The switch was isolated for future repairs and load was restored in 6 hours and 39 minutes.
8/2/2020	Defective Equipment	On August 2, 2020, a transformer tripped and interrupted 17.1 MW of industrial load. The transformer tripped on non-electrical protection, which required an on-site investigation prior to re-energization to verify no damage with the transformer. There was no capability to transfer load or back feed the customer due to the single transformer configuration at the site, in a remote location. The AltaLink substation crew investigated and discovered a faulty gas relay. This relay was replaced and power was restored to the customer in 6 hours and 23 minutes.

Date	Cause of Outage	Description
7/1/2020	Wildlife Interference	On July 1, 2020, a bird contact on a 138 kV transformer caused the bus protection to operate, which tripped five transmission lines and three transformers across three substations, interrupting 32 MW of load. All load was restored via operator action in 2 hours and 13 minutes. The protection was confirmed to have operated correctly and the transformer was re-energized in 6 hours after the field inspection and testing showed no damage.
5/18/2020	Wildlife Interference	On May 18, 2020, a substation locked out from a bird contact on the 138 kV bus, which tripped four transmission lines and three transformers. This resulted in interruption of approximately 52 MW of load and 187 MW of generation. Both load and generation were restored after one hour and 52 minutes when the site inspection confirmed no damage to the substation equipment.
6/12/2020	Customer Disturbance	On June 12, 2020, a concurrent fault on a 25 kV feeder and transmission line caused a transformer lockout, interrupting 17.6 MW of load. The concurrent fault is suspected to be a lightning strike on both the distribution and transmission line. The transformer was re-energized after inspection and all load was restored in 2 hours and 27 minutes.
1/21/2020	Protection Mis-operation	On January 21, 2020, a 138 kV/25 kV transformer tripped and locked out interrupting 9.49 MW of load. The load was restored in 3 hours and 34 minutes through load transfer on the distribution system. After investigation, the cause of the trip was suspected to be protection mis-operation.
9/4/2020	Neighbouring TFO	On September 4, 2020, an ATCO owned transmission line tripped on a fault in ATCO service territory, interrupting 12.7 MW of load at a radial connected AltaLink substation. The auto-reclose was unsuccessful. ATCO initiated a line patrol which did not identify any issues, so the line was re-energized. Load was restored in 2 hours and 45 minutes.
10/15/2020	Foreign Interference	On October 15, 2020, a track hoe contacted an overhead Fortis distribution line which caused a fault. AltaLink's feeder protection operated as designed. During the fault, insulators on the low voltage side of an AltaLink transformer experienced damage. The second transformer nearby also experienced a fault condition on its low voltage connections, resulting in protection systems operating on the transformers to clear the fault. This resulted in a loss of 51 MW of load. 37 MW of that load was restored within 10 minutes through distribution automation and operator action. The event also caused a momentary interruption to 22 MW of an industrial load. Once field inspections confirmed no damage, the transformer was re-energized and the remaining load was restored approximately 4 hours after the event. The damaged insulators were repaired, and the second transformer was restored next day.

Date	Cause of Outage	Description
6/7/2020	System Condition	On June 7, 2020, a lightning strike on BC Hydro’s 500 kV transmission system triggered protection operations that tripped the 500 kV tie line between BC Hydro and AltaLink. The sudden loss of the tie-line caused the system frequency to drop and activate the automated under-frequency load shedding (UFLS) schemes throughout the province to rebalance the power system. Nine AltaLink substations were triggered by the UFLS, which opened 20 feeder breakers and interrupted 62.5 MW of load. In addition, several of AltaLink’s direct connect customers reported load loss because of the frequency excursion. The system frequency recovered within approximately 7 minutes and all of AltaLink’s UFLS impacted delivery points were re-energized within 51 minutes. AltaLink’s investigation confirmed that its UFLS schemes operated correctly given the size and nature of the system disturbance.

331. AltaLink measures its reliability performance by five-year average KPIs common to the industry. These longer-term averages depict general trends in reliability and avoid comparing individual years that may vary widely due to environmental conditions. This Application includes the following reliability indices which show lagging trends in respect of AltaLink’s transmission system reliability. Only forced outages are included. Pre-planned outages for maintenance do not form part of the reliability status reporting at this time.

- SAIFI: System Average Interruption Frequency Index;
- SAIDI: System Average Interruption Duration Index; and
- SARI: System Average Restoration Index.

$$SAIFI = \frac{\text{Total Number of Momentary \& Sustained Interruptions}}{\text{Total Number of Delivery Points Monitored}}$$

$$SAIDI = \frac{\text{Total Duration of All Interruptions (Sustained)}}{\text{Total Number of Delivery Points Monitored}}$$

$$SARI = \frac{\text{Total Duration of All Interruptions (Sustained)}}{\text{Total Number of Sustained Interruptions}}$$

Figure 1.10.1-1 – Reliability Indices

332. AltaLink is also including the CEA Canadian composite reliability indices through 2019 for comparison purposes as Figure 1.10.1-2 below. The CEA’s reporting standard is to report any delivery point interruptions caused by a transmission system problem exclusive of major events. AltaLink’s reliability indices provided herein reflect all transmission system outages excluding major events. The excluded major events are identified below each chart where applicable.

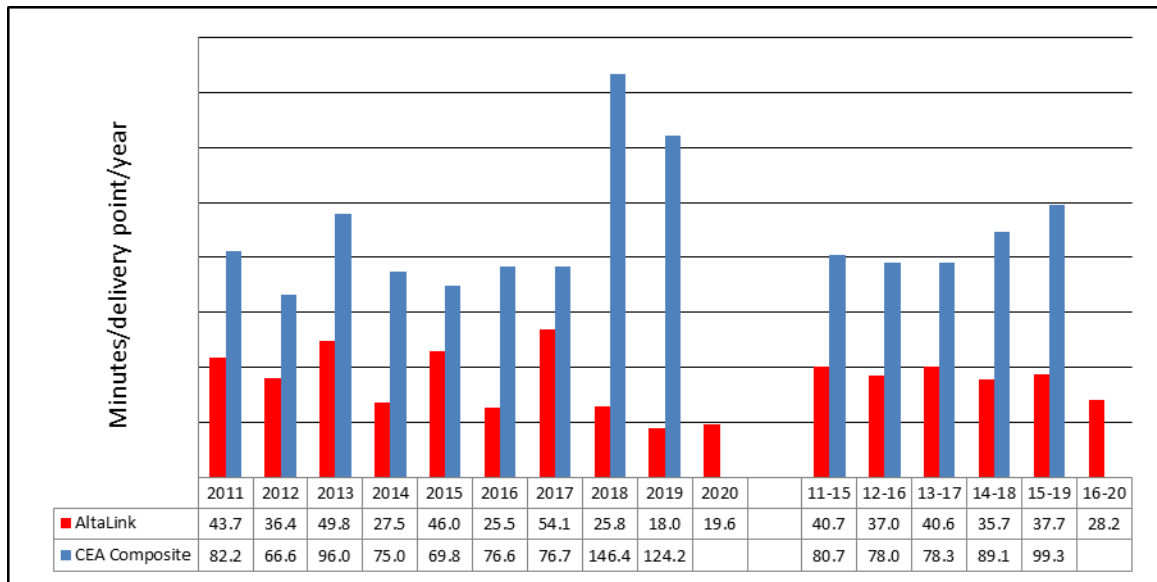


Figure 1.10.1-2 - Transmission Delivery Point Outage Duration

Excluded Major Events: AltaLink – 2014 January 526L Event.

333. AltaLink’s outage duration performance continues to compare favorably with the CEA composite index. The rolling five-year average indicates that the duration of outages is fairly consistent over the past three years. AltaLink attributes this to the combination of operating practices and CRU investments such as the Reliability Improvements listed in this Section and the Asset and System Operations related Business Improvements listed in Section 1.11 offset by some increase in primarily weather and equipment related outages, examples provided above in Table 1.10.1-1 above. AltaLink’s planned improvements continue to help sustain the consistent performance in average duration of outages.

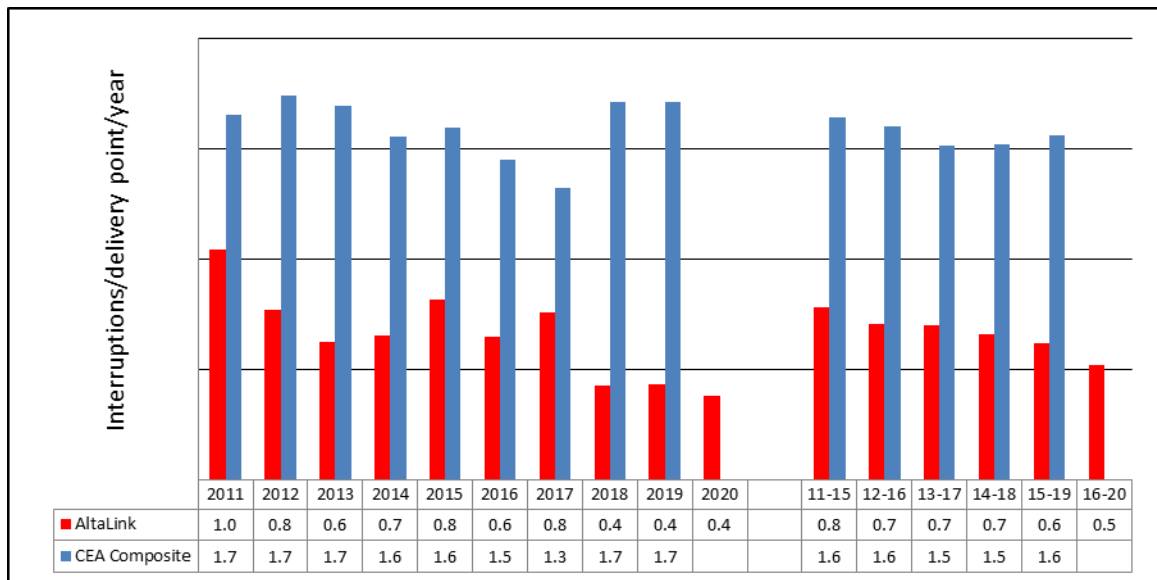


Figure 1.10.1-3 - Transmission Delivery Point Outage Frequency

Excluded Major Events: AltaLink – 2014 January 526L Event.

334. Figure 1.10.1-3 above demonstrates that the number of outages to delivery points resulting from an outage on AltaLink’s transmission system compare favorably with the CEA composite

values. The rolling five-year average indicates that the frequency of outages has improved and stabilized. Similar to AltaLink’s outage duration performance, the improvement can be attributed to a combination of operating practices and CRU investments.

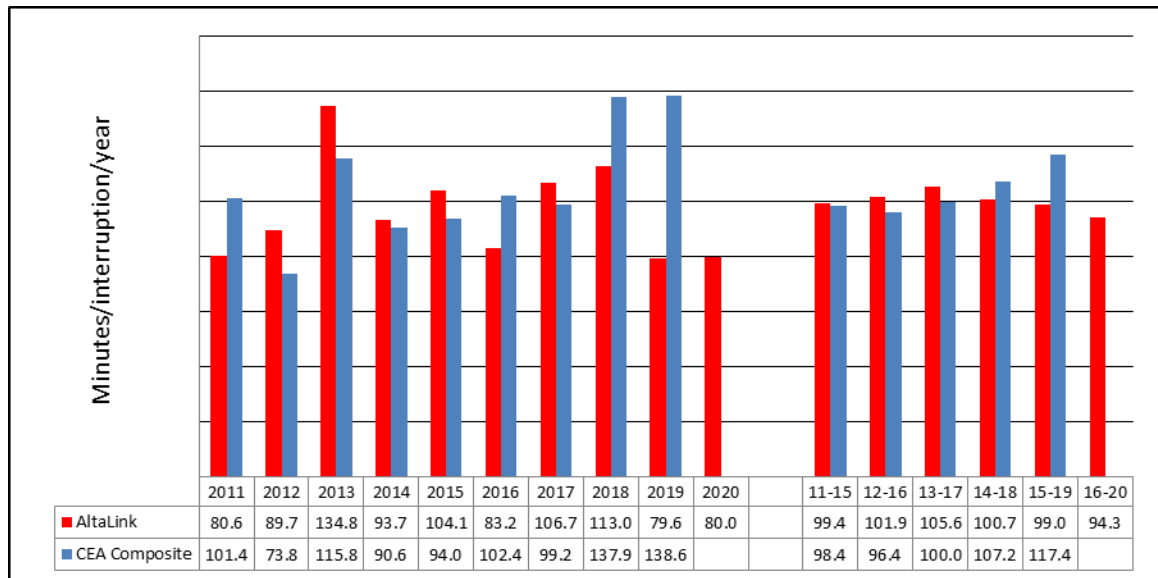


Figure 1.10.1-4 - Transmission Restoration Time

Excluded Major Events: AltaLink –2010 April Storms; 2014 January 526L Event.

335. Figure 1.10.1-4 above illustrates SARI, which is a ratio of total interruption duration over the number of sustained interruptions and is a measure of response time. AltaLink had demonstrated improvements from 2008 to 2011 to close the gap with its peers, however the trend has since flattened. To counteract the trend, AltaLink continues to review its field and system operation practices for opportunities to improve its response time. AltaLink has several CRU programs (for example, Line Airbreaks, **Appendix 13-A04** or Disturbance Analysis Equipment, **Appendix 13-A08**) and Business Improvements (Section 1.11) that are working to enable faster isolation and reduced restoration time for customers. Results of the aforementioned programs are visible in 2019 and 2020 performance that AltaLink’s SARI outperformed the Canadian average. AltaLink strives to sustain this favourable performance by continuing focus on the respective programs.

Reliability Performance Expected Range

336. AltaLink’s reliability expected performance ranges for the Test Period are provided in Table 1.10.1-2 below and are calculated as one standard deviation on either side of the 2016-2020 actuals. Using historical data to set expected performance ranges takes the nature of reliability indices into account, namely:

- SAIDI, SAIFI and SARI are all lagging indicators of past decisions in system design and capital expenditures;
- interruptions can vary widely between years; and
- targets must balance reliability levels with cost.

Table 1.10.1-2 - Reliability Performance and Expected Range

Reliability Targets all kV	2016	2017	2018	2019	2020	2021F	2022-2023 Expected Range	2022-2023 Target
SAIDI	25	54	25	18	20	28	15-44	29
SAIFI	0.6	0.8	0.4	0.4	0.4	0.5	0.4-0.7	0.5
SARI	83	107	113	80	80	93	79-110	94

Reliability Improvements

337. AltaLink has implemented the following initiatives to improve the reliability of its transmission system. Most of these reliability initiatives are intended to minimize environmental damage on transmission equipment as well as protecting wildlife wherever possible.

Partial Discharge (PD) Online Monitoring

338. AltaLink has initiated a new program to install online monitoring to detect early signs of insulation breakdown within equipment by measuring partial discharge. PD causes progressive deterioration of insulating materials, which can lead to a short circuit and complete failure of the equipment.
339. The new monitoring program is to install PD monitors on key transformers after a recent failure experienced on one phase of 520sT1. Analysis of the failure resulted in a recommendation to install permanent PD monitors on similar transformers to enable ongoing condition monitoring.
340. PD monitors will detect failure modes that the other AltaLink online monitoring technologies currently do not provide, giving critical lead time to help prevent an unplanned outage and assess mitigation options. For further details on partial discharge online monitoring refer to **Appendix 13-A06** Condition Monitoring.

Wildlife Mitigation

341. Wildlife cover-up is a unique material that insulates energized electrical equipment to prevent animal and bird related outages and protect wildlife. In a typical year, wildlife related outages account for approximately 33% of all substation caused load interruptions. Since the commencement of the wildlife mitigation program at AltaLink, the average number of wildlife contacts has been declining. However, wildlife contact with substation equipment is still one of the major causes of outage to customers. For further details on wildlife mitigation refer to **Appendix 13-A07** Substation Components.

Indoor Switchgear

342. AltaLink installs indoor metal clad switchgear as standard design for new urban construction and where appropriate, under its 25 kV bus replacement program. The use of indoor switchgear, which is entirely built and tested by the manufacturer, replaces AltaLink's previous practice of building and testing site-specific outdoor switchgear. In addition to being the best economic option for sites with more than two feeders, indoor switchgear improves reliability by reducing weather and wildlife related outages. Economically, the evaluation concluded that metalclad construction had a lower lifetime cost of up to 50% versus outdoor air insulated. In addition, compared to outdoor air insulated alternatives, the switchgear alternative has substantially higher reliability, improved safety, lower environmental impacts, less operational issues and simpler construction.

343. Since 2008, there have been several developments that further enhance the economics of metalclad switchgear for 25 kV construction. They include:
- Fortis having since changed their requirement to an “urban” configuration, which utilizes circuit breakers, not switches, for incoming and bus tie connections. This configuration provides for more economic construction, using metalclad switchgear even when the initial required development is minimalistic; and
 - Since about 2010, AltaLink has successfully applied a modular design to several projects requiring new 25 kV buses. Unlike the stand-alone applications that have indoor metalclad switchgear in a separate building, in the modular design the indoor metalclad switchgear is located in a combined control/switchgear building. This enhanced integration of facilities reduces building costs and it enables all of the control wiring associated with the 25 kV equipment to be completed prior to deployment to site further reducing costs.
344. Metalclad switchgear construction provides advantages when an old 25 kV bus requires replacement. Rather than take extended outages to demolish old outdoor bus work and rebuild it in place, it is advantageous to first install and commission metalclad switchgear in another location at site and then transfer over each feeder one at a time to eliminate the need for extended bus outages impacting customers. For further details on Indoor Switchgear refer to **Appendix 13-A13 25 kV Bus**.
- Dissolved Oil Analysis**
345. AltaLink conducts two DGA programs to measure the combustible gases in transformer main tanks and tap changers to identify and remediate units most likely to fail. AltaLink’s typical costs for the DGA sampling program for all of its main tank and tap-changers of transformers monitored is approximately \$0.1M annually. DGA is the most effective means to discover transformers main tank and tap changer’s incipient failures and helps to avoid related forced outages. AltaLink’s tap changer DGA program tests transformers at varying intervals depending on model of tap changer. In AltaLink’s main tank DGA program, main tanks are sampled once per year. DGA is the most industry accepted method of condition assessment for power transformers and tap changers. As a result, DGA is a fundamental input to AltaLink’s transformer risk assessment framework. Using DGA along with other tests, AltaLink closely watches the units with poor results for trending and any required proactive action. For example:
- in May 2020, the voltage regulator at 525S was removed from service after DGA results indicated a problem in the tap changer. The voltage regulator was removed from service, the burnt connections were replaced and the voltage regulator was put back in service. The DGA program in this case prevented a failure which would have resulted in an unplanned customer outage as well as costly repair or replacement.
 - in October 2020, elevated hot metal gasses in combination with indication from further electrical tests, led to the decision to perform an internal inspection on a transformer at 283S. Upon internal inspection, a poor connection was found on the tap changer board which could have resulted in a costly failure of the transformer if left unaddressed. The connection was repaired and the unit was put back in service.
346. DGA sampling is a cost effective condition monitoring technique designed to identify and address transformer or tap-changer internal issues before physical failure. Tap-changer failures can cause transformer failures, resulting in the need to replace the transformer. Transformer replacements are expensive, typically in the \$1.5M to \$2.5M range with delivery times greater

than nine months if a spare is not available. AltaLink performs its DGA sampling program as part of its site inspection process so the incremental costs are immaterial compared to the significant impact of a transformer or tap-changer failure.

Insulator Washing

347. AltaLink's insulator washing program improves the performance capability of insulators and reduces outages caused by dirty or contaminated insulators. The failure rate for cross-arms due to burn-off as a result of insulator flashovers increases at higher operating voltages, insufficient and degrading insulation qualities and contamination. Moreover, cross-arm fires due to contamination on the underside of insulators may result in a pole fire and loss of the complete structure. Similarly, contamination on substation insulators can also lead to the failure of substation equipment. Therefore, AltaLink also targets substations exposed to contamination for station-wide washing of insulators. The continued proactive use of AltaLink's insulator washing program since 2009 has enabled a reduced number of outages.
348. The criteria used to determine the annual insulator washing program is based on visual observations of contamination levels, historical areas of contaminant accumulation, contamination associated maintenance items, and operational performance (such as forced outage history) as well as structure proximity to identified HRFAs. This program is planned and prioritized utilizing AltaLink field operations and engineering expertise to identify which sections of lines should be targeted for insulator washing in a given year and define the amount and timing of work to be executed. These reviews are done periodically with some lines requiring annual washing based on past operating experience. Commonly encountered contaminants on AltaLink insulators include: dust, dirt, road salt, bird excrement, and industrial pollution/smoke. AltaLink assesses the following key factors when determining the priority for washing a line section:
- the failure rate for cross-arms from insulator flashovers increases with higher operating voltages, older insulation standards, worn insulation and areas with history of contamination;
 - cross-arm fires from contamination of the underside of the insulator typically result in a pole fire and/or loss of the complete structure;
 - contamination on substation insulators may result in failure of substation equipment; and
 - pole fires or cross arm failures can cause grass fires and expose landowners, structures and the public to safety and environmental damages.
349. AltaLink's insulator washing program has enabled a decreasing trend of outages since 2009. The benefits of the insulator washing program are reduced outages for customers and reduction in structure fires and failures causing risk to the public and environment. Sustaining the program of insulator washing is a key component of the overall lines maintenance program to ensuring reliability of the system for known transmission lines which are subject to contamination.

Station-wide Insulator Replacements

350. Substations located close to roadways are susceptible to unplanned power outages from contamination of high voltage insulators. The contamination is a result of buildup caused by seasonal road salting activities after which vehicular traffic causes the de-icing medium to become air-borne and settle on both conductive and insulating electrical components within the substations. This contamination mixed with abnormal weather conditions like heavy fog or excess moisture can lead to voltage tracking and eventual failure of these devices. Other sources

of contamination include aerial discharge at industrial facilities at or near to existing substations. AltaLink's station-wide insulator replacement program replaces all insulators with a contamination resistant model at sites with known contamination issues. This program began in 2011 with one station-wide replacement. Since the program started, there has been no contamination-related load interruption at the substations where the insulators were replaced. For further details on Insulator Replacements, refer to **Appendix 13-A07** Substation Components.

CT/PT Replacement Program

351. AltaLink's ongoing CT/PT replacements program targets units that have reached or surpassed their age thresholds for condition assessment and potential replacement. Where condition information is available through testing methods such as Doble, Infra-Red, PD testing and through visual assessment, AltaLink may opt to replace a CT or PT that is not necessarily among the oldest in inventory or at its age threshold. AltaLink also prioritizes replacement of units containing PCB to comply with environmental regulations. For further details on the Instrument Transformer Replacement Program, refer to **Appendix 13-A12** Substation Major Equipment.

Aerial Mapping

352. Prior to 2019, approximately 20% of the lines that AltaLink operates and maintains had original design-based operating ratings. Aerial mapping technology provides the opportunity to develop detailed engineered line ratings and, on certain lines, results in AltaLink being able to improve existing operating line ratings, raising the capacity of the particular line. Line spans that do not meet line clearance standards can be identified, any safety concerns mitigated, and line ratings re-established.
353. AltaLink's aerial mapping program is further described in the Line Clearance Mitigation business case (refer to **Appendix 13-A32**). In 2017, AltaLink initiated a system-wide aerial mapping survey to complete three dimensional transmission line models to evaluate conductor clearance to ground and all other objects. Through this evaluation, AltaLink identified and is managing line clearance deficiencies. In the 2019-2021 Test Period, AltaLink focused primarily on high risk transmission deficiencies, which include under-build deficiencies with history of flashover. In this Test Period, AltaLink is forecasting to address the remaining identified under-build deficiencies in a staged manner.
354. The deficiencies targeted by the Line Clearance Mitigation program contribute to unplanned outages and reduce transmission line facility ratings on AltaLink's transmission line system. The scope of the program allows AltaLink to maintain power system reliability performance.

Online Transformer Oil Monitoring

355. Transformer online oil monitoring devices allow early detection of internal problems which may occur within a transformer. Interpretation of certain gas values can predict upcoming failures and enable AltaLink to remove equipment from service and perform maintenance during a planned outage instead of an unplanned outage.
356. Transformer online oil condition monitoring is similar to the manual DGA sampling program using a continuous versus periodic monitoring method. The most significant benefit of the monitors over manual sampling is the provision of continuous real time monitoring and alarming when the problem escalates and corrective action is required immediately to prevent equipment damage. As manual sampling is periodic (i.e., once per year) it may fail to detect step increases in the concentration of gases which can increase dramatically in a matter of minutes.

Transformer replacements are expensive, typically in the \$1.5M to \$2.5M range with delivery times greater than nine months if a spare is not available.

Online Transformer Bushing Monitoring

357. Online transformer bushing monitors measure the power factor of bushings, which are a key component of transformers. Transformer bushings are tested as part of AltaLink's regular transformer maintenance program. Online transformer bushing monitoring is similar to manual transformer bushing testing using a continuous versus periodic testing method. There are two significant benefits of the transformer bushing monitors over manual testing, the first is the provision of continuous real time measurements and alarming when the problem escalates and corrective action is required immediately to prevent equipment damage, and the second is the ability to test the bushing at applied system voltage versus at the voltage limited by the offline testing equipment. As manual testing is periodic (i.e., per transformer offline maintenance frequency) it may fail to detect step increases and upward trends in the degradation of bushing conditions in between testing intervals. For more detail on the Online Transformer Bushing Monitoring Program, refer to **Appendix 13-A06** Condition Monitoring.

Conductor Sleeve Thermography

358. AltaLink performs infrared scans on conductor sleeves that are suspected to be faulty. The scan is done when the line is at or near full rating. If the scan results in a "hot" sleeve then that sleeve is deemed faulty and corrective action is taken to prevent unplanned failures. Depending on the number of sleeves found on a specific line it may be determined that the conductor should then be replaced in a particular line segment. This program prevents line trips as a result of faulty sleeves and overheating damages to the main conductors. This improves asset availability and performance.

1.10.2 Safety

359. The health and safety of AltaLink employees and contractors on AltaLink sites is a core value. AltaLink strives to continuously improve safety performance; AltaLink is achieving this through ongoing commitment to improving safety culture and safety management practices. AltaLink monitors progress by using an injury frequency rate that includes employee and contractor performance. AltaLink safety performance statistics include all lost time (LT), medical aid (MA), and restricted work (RW) incidents per exposure hours worked by employees, contractors and sub-contractors. This is demonstrated in Figure below.

360. TRIF: Total Recordable Injury Rate:

$$TRIF = (Medical\ Aid + Lost\ Time + Restricted\ Work\ Injuries) \times \frac{200,000\ Hours}{Exposure\ Hours}$$

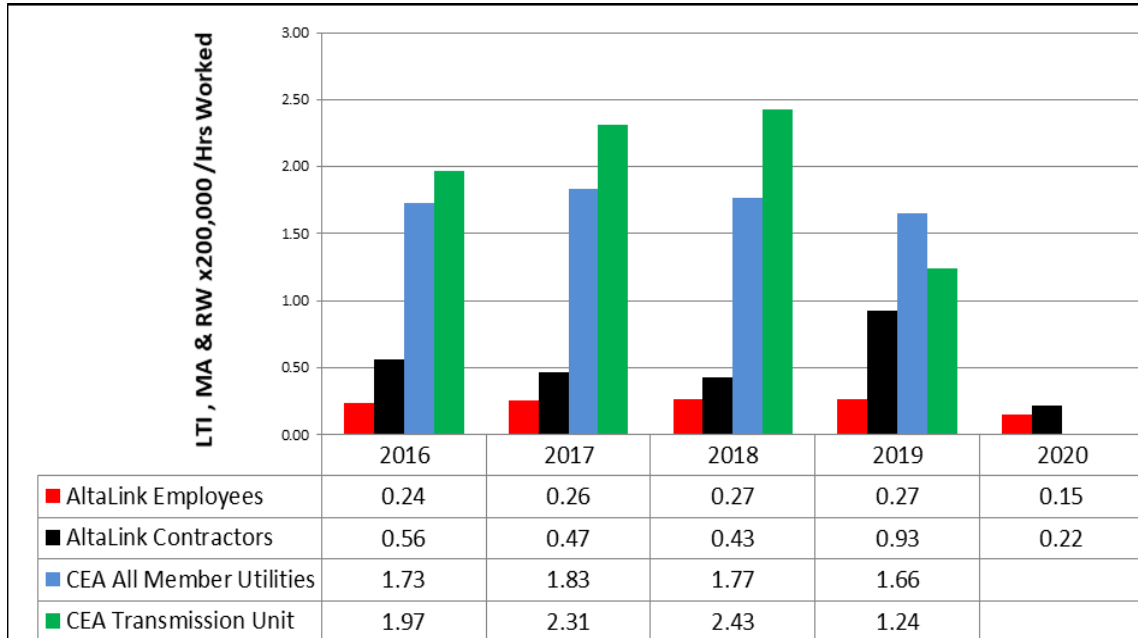


Figure 1.10.2-1 - AltaLink Total Recordable Injury Rate

361. AltaLink safety performance has improved and AltaLink consistently attains strong safety results. Employee and contractor Injury Frequency Rates continue to be better than utility peers in the CEA.

Preventable Vehicle Accidents (PVA)

362. Driving is a common task for AltaLink field and office employees. AltaLink implemented a PVA program that provides tools and a framework for AltaLink employees while they drive fleet or rental vehicles on company business. AltaLink has incorporated steering wheel covers that prompt employees to do a 360 walk-around of their vehicle, and a vehicle trip card which provides a checklist of items to look for when conducting their walk-around. By completing 360 walk arounds, using the steering wheel covers, trip cards, use of spotters and driver training, AltaLink has reduced its number of PVAs. This is demonstrated in Figure 1.10.2-2 below.

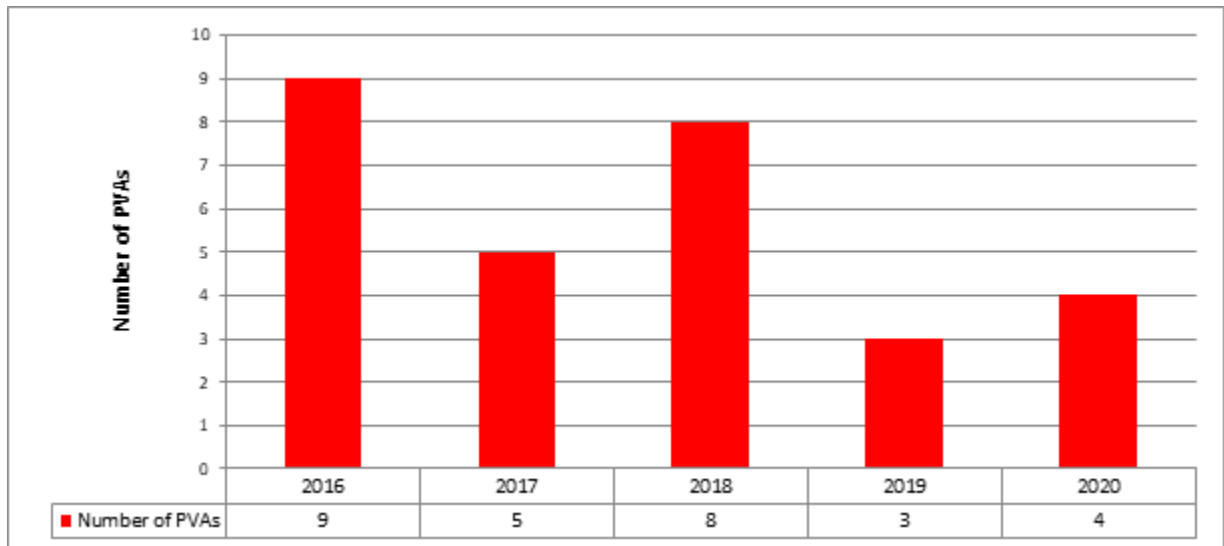


Figure 1.10.2-2 - Preventable Vehicle Accidents

Safety Improvements

363. Safety leadership starts at the top, and key leaders meet monthly to provide guidance and oversight with respect to safety; there is critical engagement and discussion during these meetings. Safety management initiatives encompass all aspects of AltaLink safety systems and focus the organization on safety accountabilities, responsibilities and culture. AltaLink strives to continuously improve safety performance through focused training and ongoing commitment to improving safety culture and safety management processes. AltaLink’s safety program goals and objectives are based on continual improvement. To support these goals, AltaLink has implemented Hazard/Near Miss Reporting, a PVA program, leadership observations, human performance tools and MoveSafe.
364. AltaLink holds safety of employees, contractors, and the public as a key value. AltaLink has established an integrated EH&S management system designed to manage the risks and liabilities associated with the construction, operation and maintenance of its transmission system.

Hazard/Near Miss Reporting

To keep the workplace safe for workers, contractors and the public, AltaLink has a reporting process called Hazard/Near Miss reporting. The primary goal of the program is to have a proactive approach to identifying and reporting hazards/near misses to correct these conditions before they become an incident that has the potential to impact people.

Leadership Observations

365. Leadership observations and interactions provide an excellent opportunity for leaders to connect with the personnel performing the work, understand any challenges with performing the work safely, managing environmental risk and help define potential corrective actions. Leadership observations can have a direct, positive impact on the safety and environmental performance of the work.

Safety Share Meetings

366. The safety of the contractors working on AltaLink sites is just as important as employees. To share learnings and best practices, on a quarterly basis AltaLink hosts a Safety Share Meeting

where contractors and employees meet to learn about incidents, standard updates, and best practices that other contractors have in their organizations.

1.10.3 Efficiencies

367. AltaLink is including the following two operational efficiency measures, defined in accordance with AltaLink's MFR schedules to this Application:

$$\frac{O\&M\ Expense}{Gross\ Fixed\ Assets}$$

$$\frac{O\&M\ Expense + Sustaining\ Capital}{Gross\ Fixed\ Assets}$$

Where:

- O&M expense is defined as AltaLink's total O&M costs less taxes (Schedule 5.1). O&M expense is a direct indicator of the annual cost to operate a utility;
- Sustaining Capital is defined as AltaLink's total capital expenditures less DA capital (Schedule 10.4). Sustaining Capital are those costs necessary to maintain existing facilities. Combining O&M Expense and Sustaining Capital is a comprehensive, long-term view of the annual cost to operate a utility and also accounts for differences in capitalization practices of different utilities; and
- Gross fixed assets are defined as AltaLink's Total Property, Plant and Equipment less computer hardware and voice and data network equipment (Schedule 31.1-B/10-2).

368. These measures are useful indicators of a utility's cost efficiency in operating and maintaining its facilities over time but are influenced in the shorter term by rates of organizational and asset growth and also by current economic factors such as availability and cost of inputs (labour, materials and capital). AltaLink is cognizant of the sensitivities in Decision 2009-151 wherein the AUC stated at paragraph 734:

The Commission notes that because gross plant is comprised of long term assets, the replacement of such assets over time will cause year-to-year increases in the value of gross plant to rise by a faster rate than the rate of inflation. As a result, the fact that O&M/gross plant or O&M plus sustaining capital/gross plant measures are declining is of limited value supporting the reasonableness of AltaLink's O&M or capital maintenance program estimates.

369. AltaLink's performance measures are not intended to be viewed as absolute goals, but rather as indicators of performance taking recent influencing factors into account. Moreover, AltaLink uses such metrics consistent with the Canadian transmission industry to enable comparisons with CEA indices. As with all KPIs, the value of comparisons among utilities is proportional to commonality of included costs.

370. AltaLink's cost to operate and maintain its transmission system, including operating costs and sustaining (non-growth) capital expenditures, is demonstrated in Figure 1.10.3-1 below. Operating costs relative to gross fixed assets is shown in Figure 1.10.3-2 below. Both ratios indicate a stable trend and are forecast to remain relatively consistent.

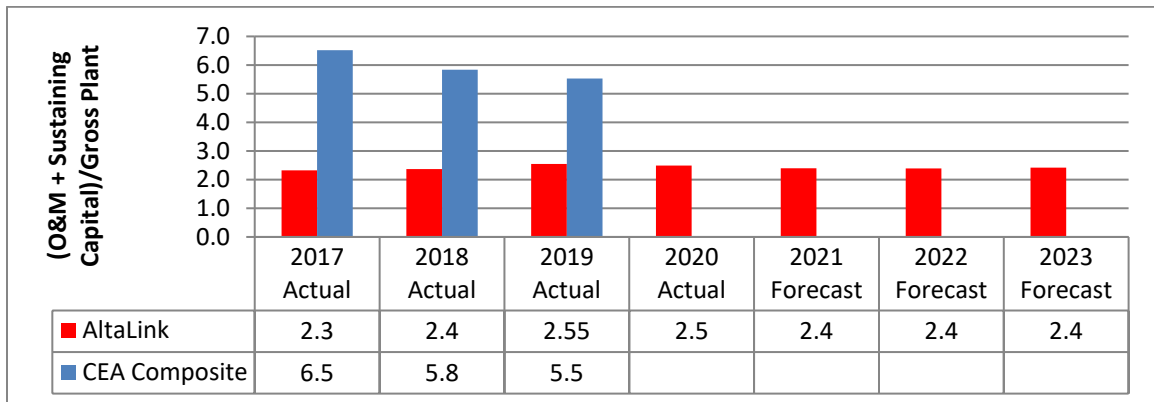


Figure 1.10.3-1 - AltaLink Transmission O&M Expense & Sustaining Capital per Gross Fixed Asset

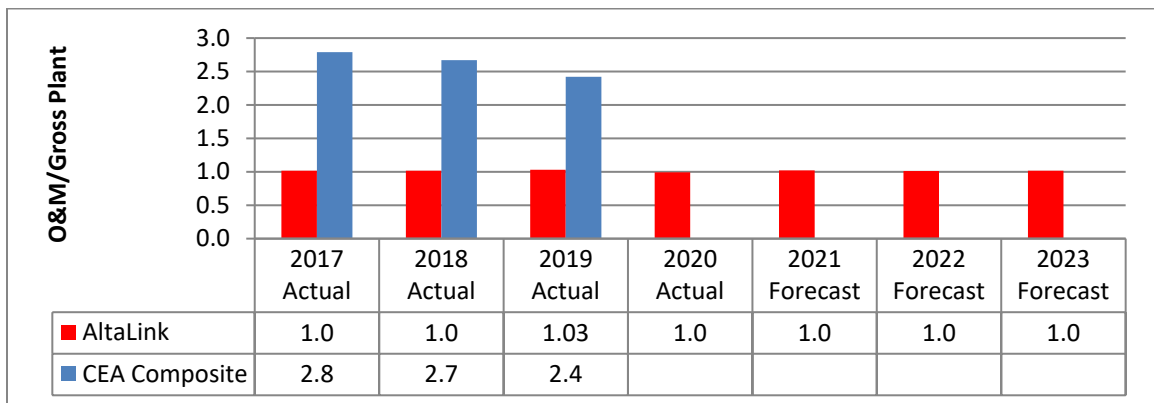


Figure 1.10.3-2 - AltaLink Transmission O&M Expense per Gross Fixed Asset

371. Another measure of AltaLink’s operational performance is provided in Figure 1.10.3-3 below, which shows operating FTEs per \$10M of rate base. This index indicates a stable trend and are forecast to remain consistent for the Test Period.

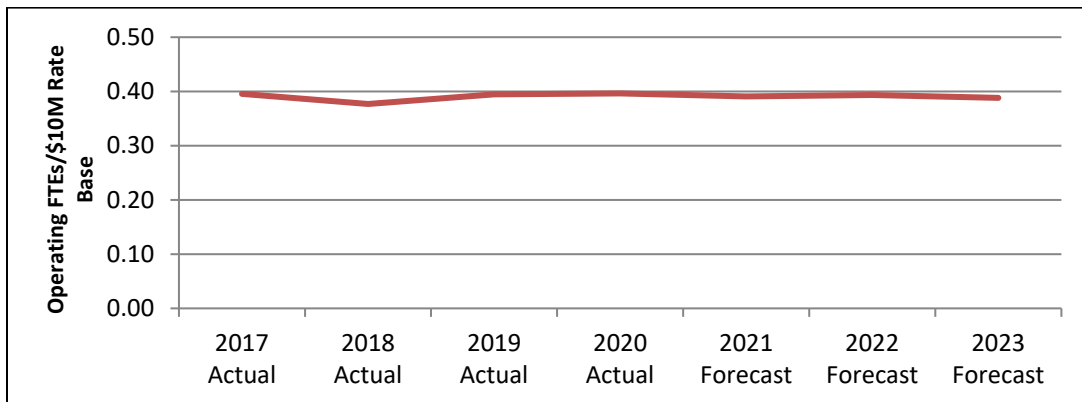


Figure 1.10.3-3 - AltaLink Operating FTEs per \$10M Rate Base (Mid-Year)

1.11 Business Improvements

372. AltaLink encourages employees to examine day-to-day business practices for opportunities to increase effectiveness. Consequently, AltaLink has implemented a number of business improvements over the past years that are now embedded in AltaLink’s normal-course activities. The associated efficiency gains are reflected in actual costs or activities incurred and as such are incorporated into AltaLink’s revenue requirement forecast for the Test Period.

373. Table 1.11-1 to Table 1.11-6 below detail AltaLink business improvements and the related efficiency gains which are identifiable and material, include lower operating cost, lower number of outages, increased productivity and more accurate and readily available information for quicker turnaround cycle times. Consistent with the directions given in paragraph 736 of Decision 2009-151,⁵⁵ AltaLink is not requesting additional funding in respect of such initiatives.

Table 1.11-1 - Business Improvements - System Operations

Delivery Partner Engagement Strategies Implementation: 2015 and ongoing	Benefits
<ul style="list-style-type: none"> • AESO - Collaborated with the AESO on two key initiatives: <ul style="list-style-type: none"> ○ Planning Coordination work has identified efficiency gains through improved alignment between AltaLink’s asset management and operations teams and AESO’s long term planning process. ○ Outage Coordination Improvement Initiative established more proactive and regular engagements with the AESO Operations group on a variety of levels within the organizations to: <ul style="list-style-type: none"> ▪ establish and maintain interfaces between leaders; ▪ review and align short and long term operating plans for both organizations; ▪ resolve/action operational issues; and ▪ improve work coordination. 	<ul style="list-style-type: none"> • Improved alignment of operational plans, procedures and objectives with delivery partners, resulting in greater coordination and optimization in the planning and operations domain and reduced system risk.
Operational Process Improvement Initiative (OPII) with Fortis Implementation: 2011 and ongoing	Benefits
<ul style="list-style-type: none"> • Undertook a formal project with Fortis Operations to integrate FCC centralized operations with ACC operations. • Ongoing process improvements and collaborative modifications to transmission and distribution scheduling. • Supported Fortis’ Distribution Automation program. 	<ul style="list-style-type: none"> • Seamless transition from Fortis distributed Operator in Charge model to centralized Operator in Charge model. • Streamline communications between FCC and ACC. • Reduce system risk and ensure worker safety through refinement of transmission scheduling expectations between FCC and ACC. • Minimizes customer outage durations.

⁵⁵ Decision 2009-151, AltaLink Management Ltd. And TransAlta Corporation, 2009 and 2010 Transmission Facility Owner Tariffs, October 2, 2009, para 736, pdf 132.

Emergency Response Plan (ERP)/Business Continuity Plan (BCP) Updates Implementation: 2012 and ongoing	Benefits
<ul style="list-style-type: none"> • Collaborated with other utilities to share best practices related to emergency response and identified improvement opportunities relevant to AltaLink. • Ongoing enhancements and refinements to further align ERP with business functions and ease the on-boarding of new employees. • Development of an integrated emergency response plan (iERP) that integrates AltaLink’s existing functional standards and utilizes a common Incident Command System. 	<ul style="list-style-type: none"> • Improved emergency response to provide urgent and balanced risk decision making to reduce restoration times for AltaLink’s transmission system and improve customer satisfaction. • Improved alignment with business functions and effective on-boarding ensures highly efficient, effective response and added ease of use in the event of an emergency. • Improved emergency response for multi-factor events (transmission, cyber, physical security, pandemic response, etc).

Table 1.11-2 - Business Improvements - Asset Management

Asset Health Monitoring Implementation: 2010 and ongoing	Benefits
<ul style="list-style-type: none"> • Formalized and implementation of a condition monitoring process to consistently and effectively evaluate the real time condition of assets and monitor asset health scores for key asset groups. 	<ul style="list-style-type: none"> • Reduced man-hours to prepare annual maintenance plans and revisions as necessary (for example, prioritize maintenance on assets showing excessive deterioration). • Improved trending of asset group health. • Reduced equipment failures. • Improved trending of equipment deterioration and identification of related causes. • Improved development of long term CRU investment requirements. • Avoided hundreds of potential asset failures of various transmission system components over past 11 years.
Operational Readiness and Integration Implementation: 2013 and ongoing	Benefits
<ul style="list-style-type: none"> • A planning process to ensure AltaLink is prepared to integrate new transmission facilities and technologies into its power system. 	<ul style="list-style-type: none"> • Ensures AltaLink’s preparedness to operate and maintain new/replacement assets in a safe, reliable and cost effective manner. • Facilitates workload, resource and capital replacement planning.
Mobile Online Transformer Oil Decontamination Unit Implementation: 2018 and ongoing	Benefits

<ul style="list-style-type: none"> Utilization of relocatable online transformer oil decontamination unit. 	<ul style="list-style-type: none"> Improves transformer oil condition thereby improving reliability and extending the life of the asset. Avoidance of outages for customers.
Technical Data and Document Management Business Process Implementation: 2012 and ongoing	Benefits
<ul style="list-style-type: none"> Develop a centralized, standardized and searchable electronic records repository and process. This process manages the acquisition, control, processing, validation and delivery of technical data and documents which result from additions and/or changes to assets as a result of projects or maintenance. Implementation of integrated document management within one information system (Projectwise). 	<ul style="list-style-type: none"> Creates a consistent foundation for fact-based decision making for the management of assets. Ensures documentation required for the safe operation, and maintenance of assets is accurate and readily accessible. Ensures critical documents required for the management, operation, and maintenance of assets are accessible, accurate, shareable, and reportable. Supports reliability compliance efforts which rely heavily on the availability of technical data and documents. Provides AltaLink with a scalable solution to manage the increase in volume of documents due to the larger number of active projects and project types.
Area Protection Coordination Review Implementation: 2014 and ongoing	Benefits
<ul style="list-style-type: none"> Proactively determine which areas of the protection system currently have protection coordination deficiencies and to help assess the amount of risk associated with each deficiency. Automated fault simulations review within each fault clearing group considering numerous scenarios of fault types occurring in various locations under a multitude of contingency conditions. 	<ul style="list-style-type: none"> Increased system reliability as protection coordination deficiencies are resolved proactively before they result in a forced outage. Focus on addressing the protection relay issues that present the most risk. Increased efficiency by helping to plan protection relay mitigation/upgrade work.
Insulator Washing: 2011 and ongoing	Benefits
<ul style="list-style-type: none"> High pressure washing of transmission line insulators with ground based corn and water washing. 	<ul style="list-style-type: none"> Long term reduction in number of insulator contamination outage causes for customers. The decrease and stabilization of yearly average amount of cross-arm fires. Reduction in wildfire initiation risks.

Mobile DC Battery Bank Response Units Implementation: 2015, 2017	Benefits
<ul style="list-style-type: none"> Two mobile DC battery bank trailer response units have been procured and deployed for rapid restoration for the loss of a battery bank, battery charger or station service at a site. 	<ul style="list-style-type: none"> Improved restoration time for loss of a battery bank, battery charger or station service. Standardized connections, tools and procedures for restoration. Also used as a construction aid for battery bank and battery charger replacements to maintain service while these elements are replaced.
Deployable Control Room Implementation: 2016	Benefits
<ul style="list-style-type: none"> Specification for a deployable control room for small single transformer and single source industrials or fuse replacements is complete. One unit procured and utilized. 	<ul style="list-style-type: none"> Cost reduction due to elimination of need for control building footings. Cost reduction in deployment/transportation costs. Environment protection for maintenance personnel and equipment during maintenance and trouble shooting.
Battery Monitoring – Technology Implementation: 2016 and ongoing	Benefits
<ul style="list-style-type: none"> Battery monitoring technology being installed on new battery banks for replacement of time based maintenance. 	<ul style="list-style-type: none"> Replacement of operating/contract work for current time based maintenance to condition based. Compliance with AESO Reliability Standards. Potential for expansion to predictive maintenance with trending capabilities.
Transformer Specification for reduced Maintenance Implementation: 2016 and ongoing	Benefits
<ul style="list-style-type: none"> Recent power transformer purchases are specified with reduced maintenance components. 	<ul style="list-style-type: none"> Allows AltaLink to reduce transformer maintenance outage durations and improve availability.

Circuit Breaker Technology Implementation: 2014 and ongoing	Benefits
<ul style="list-style-type: none"> • Pilot projects for new circuit breaker technologies to validate technology advancements. Pilot projects for new circuit breaker technologies to validate technology advancements. • Further development of vacuum interrupters enabled AltaLink to install two 69 kV vacuum circuit breakers as a pilot project in 2014. • Following the successful pilot in 2014 AltaLink continues to install vacuum technology at 69 kV and is monitoring technical developments at 138 kV. • Piloted 138 kV mixed gas dead tank circuit breakers in 2017. • Piloted dead tank circuit breakers with integrated disconnect switches in 2018. 	<ul style="list-style-type: none"> • Vacuum circuit breaker technology has following advantages: <ul style="list-style-type: none"> ○ increased contact life; ○ no tank heat for Alberta winters; and ○ no greenhouse gas content. • 138 kV mixed gas dead tank circuit breakers provide improved reliability by eliminating tank heaters: <ul style="list-style-type: none"> ○ Integrated disconnect switches provide improved reliability and a reduced footprint/foundation.
Remote Equipment Storage Implementation: 2015	Benefits
<ul style="list-style-type: none"> • Implementation of locations for remote equipment storage where essential repair tools and equipment are stored in secure containers at identified remote sites. 	<ul style="list-style-type: none"> • Improved response times by providing quicker access to equipment in remote parts of the service area. • Field staff can be transported by helicopter to the fault location; or, if field staff are present in the area at the time of an event, they can respond to the fault knowing that the equipment is available.
Enhanced maintenance techniques: 2020	Benefits
<ul style="list-style-type: none"> • Breaker first trip maintenance practice. • Transformer tap-change online and offline vibro-acoustic testing. • Transformer leakage reactance testing. • Performance Based circuit breaker testing to address testing requirements mandated by ARS PRC-005. • Automated Sweep Frequency Response Analysis (SFRA) – analytical tool to analyze Transformer SFRA. 	<ul style="list-style-type: none"> • Improved productivity and efficiency through avoidance of maintenance tasks and opportunity to schedule field crew for multiple breaker maintenance activities in one day. • Reduced outages and avoidance of switching to isolate equipment. • Improved system reliability and voltage quality through mitigation of equipment outages. • Identification of leading indication of failure not detectable by other testing. • Improved diagnostics for maintenance planning and condition assessments. • Non-intrusive maintenance.

	<ul style="list-style-type: none"> • Improved emergency restoration time during maintenance activity. • Representative sampling of similar circuit breakers is a more economical way to address the testing requirements of ARS PRC-005. • SFRA provides earlier identification of leading indications of equipment failure enabling early intervention - preventing failures of transformers.
Digital Substation Implementation: 2017 and ongoing	Benefits
<ul style="list-style-type: none"> • Protection and SCADA was replaced with an integrated solution. • Utilized and leveraged multi-functional products thereby reducing the number of devices used. • Consolidated protective functions into combined relays for each 25 kV feeder. • Conversion of standard design templates into engineered products reducing the engineering time on each project. • Utilization of Padmount Switchgear for a more economical construction where there is need for only 1-2 feeders. 	<ul style="list-style-type: none"> • Increased maintainability provided by equipment diagnostics. • Reduced maintenance requirements. • Increased availability provided by equipment and technology redundancy. • Equipment reduction: <ul style="list-style-type: none"> ○ HMI incorporated into the RTU; ○ SCADA meter eliminated (metering provided by existing relays); and ○ SCADA I/O reduction (I/O provided by existing relays).
Risk Quantification & Economic Analysis Implementation: 2018 and ongoing	Benefits
<ul style="list-style-type: none"> • Enhance relative risk framework within targeted asset classes to enable quantified risk assessment. • Enable comparison of risk between asset types and provide further assessment of customer impacts enhancing the existing method. 	<ul style="list-style-type: none"> • Prediction of risk and performance in future periods. • Enablement replacement/investment cost reduction forecasts with a better understanding of the resultant impact to risk/performance. • Enablement of investment modelling to evaluate options. • Ability to estimate and quantify a given investment impact on customers' performance. • Ability to improve maintenance investment decision making.
Radio Self Sparring Model Implementation: 2018 and ongoing	Benefits

<ul style="list-style-type: none"> • Implementation of a self-sparing model for radios. • Investigation of quantities, statistics of failures and support calls, cost of materials, etc. 	<ul style="list-style-type: none"> • Costs reduction compared to vendor support costs to provide spares.
Telecom Outage Process Improvements Implementation: 2017 and ongoing	Benefits
<ul style="list-style-type: none"> • Implement efficiency gains through alignment between operations teams in Asset Management, Netcom and System Operations. • Establish regular engagements to improve and align short and long term outage plans and improve work coordination. • Streamlined change management and consolidation of change control software for network operations/infrastructure changes. 	<ul style="list-style-type: none"> • Removing the need for blocking relays in certain outage scenarios improving reliability. • Cost reductions through resource optimization.
Capital process improvements Implementation: 2017/2018+	Benefits
<ul style="list-style-type: none"> • Capital planning to field execution process improvements to improve on: <ul style="list-style-type: none"> ○ streamlining work processes; ○ improving handoffs between functional groups; and ○ improve reporting and tracking. • Process improvements for the management acquisition, control, processing, validation and assembly of all MFR documentation and supporting documentation for project DACDA filings. 	<ul style="list-style-type: none"> • Costs improvements through improved processes. • Improved communication and prioritization of work between groups and service providers.

Table 1.11-3 - Business Improvements - EH&S, Training and Fleet

Carbon Footprint Initiative Implementation: 2016 and ongoing	Benefits
<ul style="list-style-type: none"> • Targeted reduction in overall energy consumption by 2% in the areas of electricity and fuel consumption through: <ul style="list-style-type: none"> ○ behavioral changes (turning lights, computers, etc. off); ○ efficiency upgrades (lighting or occupancy sensors, etc.); ○ examining alternative green power energy providers; ○ greening up the fleet; ○ retiring of less efficient vehicles; ○ reducing travel; ○ carpooling; ○ anti-idling campaigns; and ○ reduced speed in all areas. • Monthly idling reports are provided to managers and conversations with operators are occurring regularly. • Implemented pilot project to power outage information on field operator displays. • Implementation of IMD (IED Management Suite) to remotely change device passwords. 	<ul style="list-style-type: none"> • Reduced carbon footprint. • Fuel savings reducing operating costs. • Energy cost savings reducing operating costs. • Reduce emissions wherever possible. Replace end-of-life vehicles with more energy efficient or green vehicles whenever possible. • Reduced driving times to respond to power system trouble. • Reduced travel/dispatch to manage maintenance requirements.
Intalex Incident Management Software Implementation: 2020	Benefits
<ul style="list-style-type: none"> • Incident management software for the tracking, trending and reporting of: <ul style="list-style-type: none"> ○ Hazards; ○ Near Misses; ○ Incidents; ○ Safety Observations; ○ Inspections; ○ Management of Change program to track and manage changes to equipment, processes and standards; and ○ Managing compliance of the integrated management system by tracking action items and compliance items. 	<ul style="list-style-type: none"> • Real time data collection for reporting and trending of incident information. • Capability to track and report on wild fire incidents. • Dash board capability for performance monitoring. • Employee engagement by reporting hazards and near misses. • Ability to identify corrective actions that require follow up. • Tracking and documenting changes to equipment, processes and standards. • Central location for managing management system requirements.

Systematic Approach to Training Implementation: 2019 and ongoing	Benefits
<ul style="list-style-type: none"> • Systematic Approach to Training (SAT) is the process to: <ul style="list-style-type: none"> ○ Identify and document the functions employees complete in their roles; ○ Identify and document training requirements for roles; and ○ Identify and document skill sets for roles. 	<ul style="list-style-type: none"> • Review current processes and update for ongoing improvement. • Formalize mentorship roles between new employees and existing employees. • Formalizing training requirements and skills. • Identify skill sets for career development.
Utilization of FleetWave Implementation: 2020	Benefits
<ul style="list-style-type: none"> • FleetWave is a fleet management tool that is utilized by the Fleet team and operators of fleet equipment. 	<ul style="list-style-type: none"> • Improved prioritization and scheduling of maintenance. • Improved vehicle reliability and availability. • Increased operator and public safety.
Improved vehicle maintenance processes Implementation: 2020	Benefits
<ul style="list-style-type: none"> • Increased maintenance cycles on light and medium duty trucks to align with manufacturers standards. 	<ul style="list-style-type: none"> • Reduction in maintenance costs, as well as reduced fluids disposal amounts and costs. • Increase in vehicle availability while maintaining vehicle reliability.

Table 1.11-4 – Business Improvements – Land

Land Payment System Implementation: 2019	Benefits
<ul style="list-style-type: none"> • Implementation of new Land Payment system for replacement of end-of-life software. 	<ul style="list-style-type: none"> • Ensure timely and accurate payments for stakeholder payees. • Improved audit capability. • Improved business processes.

Table 1.11-5 – Business Improvements – Security & Information Services

Information Security Implementation: 2019-2021	Benefits
<ul style="list-style-type: none"> • Continuous improvement activities ensuring the management of sensitive customer, employee and power system information. • ISO 27001 re-certification. • ISO 27019 – substation security certification. • Expansion of ISMS. 	<ul style="list-style-type: none"> • Reduced risk and impact of a data breach, either a deliberate attack by a malicious agent or as a result of inadvertent action by an employee or contractor.
Industrial Control System Security (ICSS): 2018-2021	Benefits

<ul style="list-style-type: none"> • Implementation of CSC top 20 controls across AltaLink substations, with level of controls implemented according to the risk and impact on customers of a cyber-attack. • Physical security changes to meet standard such as motion sensors, door contacts, locks and door alarms on outdoor cabinets and cameras. • AltaLink controlled laptops for contractor use to ensure integrity of AIES (substation equipment) 	<ul style="list-style-type: none"> • Reduced risk of a prolonged outage to AltaLink’s customers as a result of a targeted nation-state or cyber-criminal attack against the AIES. • Increase physical security at substations. • Reduced inadvertent risk of introducing malware into substations from contractor laptops per CIP standard.
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Table 1.11-6 – Business Improvements – Procurement

eAuctions Implementation: 2017 and ongoing	Benefits
<ul style="list-style-type: none"> • Introduction of procurement tools to enable more efficient procurement process. • Utilizing eAuctions to provide a “best and final offer” pricing within the procurement process. • eAuctions are standard procurement process for all transactions > \$100K. 	<ul style="list-style-type: none"> • Reduction in rates or material pricing. • Improvements in procurement process work efficiency. • 2020 resulted in price reductions of more than 5% over and above the final submitted RFP price.
Procurement Process Continuous Improvement Implementation: 2019 and ongoing	Benefits
<ul style="list-style-type: none"> • Procure to Pay (P2P) Process Improvement: joint initiative with Finance to implement tools, processes and procedures for increased efficiency. 	<ul style="list-style-type: none"> • Creates visibility of end to end process and identifies areas for collaboration, improvement and red tape reduction.
<ul style="list-style-type: none"> • Procurement Exception Monitoring: establishment of various KPIs to monitor and reduce such things as sole source purchases, invoices before Purchase Order (PO) and single bidder eAuctions. 	<ul style="list-style-type: none"> • Establishment of various KPIs to monitor and reduce sole source purchases, invoices before PO and single bidder eAuctions.
<ul style="list-style-type: none"> • Implementation of the Jaggaer suite of supply chain tools: eSourcing, Contracts Management and Spend Analytics. 	<ul style="list-style-type: none"> • Enables automation of sourcing activity including eAuctions.
<ul style="list-style-type: none"> • Implementation of the Celonis process tool. 	<ul style="list-style-type: none"> • Provides data driven analysis and decision making for process improvement.
<ul style="list-style-type: none"> • Implementation of a Supplier Management program. 	<ul style="list-style-type: none"> • Regular performance monitoring (including scorecards) for top suppliers. • Performance metrics include safety, environment, project execution, and subcontractor performance.

1.12 Major Issues and Policy Changes

374. The major issues for this Application are discussed in Sections 1.1 to 1.12.

375. In addition to the MFR, AltaLink includes:

- supplementary information on DA projects in Section 3 and Section 10.2;

- Schedules 31.1 (A-E);
- Schedules 31.2 (A-B); and
- supplementary information on credit metrics in Section 28.1 and 28.2.

376. AltaLink has added two new sections for consideration by the Commission as follows:

- AltaLink's Purchase of Customer Owned Assets – Special Facilities Charge (Section 32); and
- Ammortization of Customer Contributions (Rider I) (Section 33).

1.13 Terms and Conditions

377. AltaLink has adopted the Alberta TFO T&Cs approved in AUC Decision 22073-D01-2017,⁵⁶ effective June 26, 2017.

378. The T&Cs for AltaLink can be found in **Appendix 14** of this Application.

⁵⁶ Decision 22073-D01-2017, AltaLink Management Ltd., Application for Approval of Amendments to Alberta Transmission Facility Owner, Terms and Conditions of Service, June 26, 2017.

2. COMMISSION DIRECTIVES

379. Section 2 contains a table with responses to outstanding Commission directives due at the time of this Application from the following Decisions:

- Decision 2005-082 (2004-2006 GTA);
- Decision 2007-012 (2007-2008 GTA);
- Decision 2011-453 (2011-2013 GTA);
- Decision 2012-221 (2011-2013 GTA Compliance);
- Decision 2013-407 (2013-2014 GTA);
- Decision 2013-417 (UAD);
- Decision 3524-D01-2016 (2015-2016 GTA);
- Decision 3585-D03-2016 (2012-2013 DACDA);
- Decision 21827-D01-2016 (2015-2016 GTA Compliance);
- Decision 22556-D01-2017 (Sale and Transfer of a Portion of Transmission Line 675L Assets);
- Decision 22570-D01-2018 (2018 GCOC);
- Decision 23848-D01-2020 (2019-2021 GTA);
- Decision 25627-D01-2020 (2019-2021 GTA Compliance);
- Decision 25870-D01-2020 (2019-2021 GTA Stage 2 R&V Net Salvage Proposal); and
- Decision 25913-D01-2021 (2019 DACDA).

380. The table provides references to the locations of the responses which:

- are incorporated within the table;
- are incorporated within specific sections of the Application; or
- can be found attached as an Appendix to the Application.

AUC Decision	Decision Reference	Directive Number	Topic	Directive	Response
2005-082	Page 17, pdf 21, Para N/A	2	Required Information	The Board directs the Applicants to incorporate into the preparation of future GTA refiling applications the learning gained in this Refiling about the type and level of information needed by the Board and interveners to properly assess compliance with Board directions.	This table (Section 2) provides the requested information.
2007-012	Page 100, pdf 106, Para N/A	26	Insourcing, Outsourcing	The Board approves AltaLink's proposal to in-source a portion of its small project direct assign project work as described at pp. 6-49 through 6-51 of the Application. However, the Board directs that any future proposals to in-source additional direct assign project EPCM work be fully supported by a business case to be brought before the Board in the appropriate GTAs.	This information is provided in Section 10.2 of the Application.
2011-453	Page 196, pdf 204, Para 1118	40	Performance Indicators	Notwithstanding the limited interest of interveners, to maintain continuity, the Commission directs AltaLink to continue to collect statistics and report upon its performance against generally accepted transmission industry KPIs.	This information is provided in Section 1.10 of the Application.
2012-221	Page 33, pdf 37, Para 164	07	Capital Forecasts	For future GTAs, AltaLink is directed to provide evidence that forecast direct assign project capital expenditures are reasonable and, in particular, that projected in-service dates are based on reasonable targets that reflect AltaLink's historical experience in executing direct assign projects. To assist AltaLink in complying with this direction, the Commission has set out directions for revised minimum filing requirements to accompany future AltaLink direct assign capital expenditure forecasts in future GTAs in the next section as an initial step to address this concern. The Commission may consider directing additional measures	This information is provided in Section 10.2 of the Application.

AUC Decision	Decision Reference	Directive Number	Topic	Directive	Response
				during the course of AltaLink’s next GTA proceeding should these directions be insufficient.	
2012-221	Page 34, pdf 38, Para 169	08	Capital Forecasts	<p>Accordingly, the Commission directs AltaLink to provide additional information in future GTAs to facilitate greater scrutiny of its capital expenditure forecasts as follows:</p> <p>(1) AltaLink does not always use the same name for projects at different points in its GTA. For example, in Section 10.2 of the GTA, the names for a number of projects are different than the names used in schedules 3-2.2011(iii) and 3-2.2012(iii) of its GTA financial schedules. For future GTAs, AltaLink is directed to ensure that consistent project names are used in all parts of its application.</p> <p>(2) AltaLink has adopted the practice of aggregating several smaller projects into a single line item identified as “other” projects in its direct assign project CWIP schedules. The Commission has reviewed the disaggregation of AltaLink’s GTA and refiling application “other” project capital expenditures as provided in AltaLink’s responses to information requests. The total forecast expenditures on “other” projects is significant and forecast expenditures on several individual projects assigned to the “other” category are quite large. As well, for the projects described in Section 10.2 of its GTA, the capital expenditure forecasts for subprojects that appear to comprise AltaLink’s Section</p>	<p>(1) All project numbers are consistent in AltaLink’s 2022-2023 GTA.</p> <p>(2) Refer to Section 10.2 of the Application.</p> <p>(3) Project D.0633 Provost to Edgerton and Nilrem to Vermilion (PENV) Transmission Reinforcement from the 2019-2021 GTA⁵⁷ has been changed to D.0777, D.0778 and D.0779 Provost to Edgerton and Nilrem to Vermilion (PENV) Transmission Reinforcement.</p> <p>(4) Refer to Appendix 19-E. For any projects for which no NID application has been filed, as the AESO is responsible for the filing of the NID, AltaLink has no estimates of when NID applications will be filed.</p>

⁵⁷ Exhibit 23848-X0035, **Appendix 19-A**, pdf 41.

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				<p>10.2 estimate are not shown in the main breakdown in schedules 3-2.2011(iii) and 3-2.2012(iii) and only show up as part of the detail AltaLink provided on the “other” projects noted in those schedules in response to information requests. The attribution portions of project estimates into both the main section and other category of AltaLink’s direct assign project CWIP schedules impair the Commission’s ability to scrutinize AltaLink’s estimates. The Commission directs AltaLink to show the forecast detail for all projects identified at the time of its GTA within its GTA direct assign project CWIP schedules (i.e., no aggregation of projects into an “other” line item) for its next GTA.</p> <p>(3) The Commission’s review of direct assign project capital expenditure forecasts in the current proceeding has also brought to light a concern with the subdivision and subsequent reallocation of forecast or actual expenditures into new subprojects. In the event that AltaLink has changed project identifier numbers (e.g., Yellowhead=D.0030) that it has reported in the current proceeding when it files its next GTA, AltaLink is directed to provide a full account of all such changes in its next GTA.</p> <p>(4) The Commission directs AltaLink to provide the application number and proceeding ID number for the need identification document (NID) or permit and licence (P&L) applications related to the project, if applicable. In addition, for any projects for which no NID application has been filed, AltaLink is directed to provide its current estimates as to when it expects a NID application to be filed.</p>	

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2012-221	Page 23, pdf 27, Para 131	N/A	Income Taxes	The position advanced by AltaLink in the refiling, specifically that the CRA would not accept this deduction, was also advanced and rejected by the Commission as unsupported in Decision 2011-453. AltaLink has not provided any new or additional evidence that the Commission's finding is in contravention of the Income Tax Act. Therefore, the Commission denies AltaLink's proposal to treat the \$14.6 million and \$16.7 million amounts as placeholders and add the amounts of \$1.5 million and \$1.7 million for 2011 and 2012 respectively to a renamed Rainbow and Capitalized G&A Tax Reserve account. Should the CRA at some point disallow the tax treatment, the Commission will consider the impact of any such disallowance in the next AltaLink GTA following the disallowance.	As directed by the Commission, AltaLink has deducted Capitalized G&A in its taxable income calculation in Schedule 7-3. Should the CRA at some point disallow the tax treatment, AltaLink will bring the impact of any such disallowance in the next AltaLink GTA to the Commission.
2013-407	Page 43, pdf 51, Para 249	18	Right-of-way payments	AltaLink is further directed to file copies of all SRB decisions issued between the date of this decision and the filing of the next GTA in respect of right-of-way payments involving all electric transmission utilities in Alberta.	This information is provided in Appendix 12 .
2013-407	Page 53, pdf 61, Para 292	23	Lease Revenue and Other	The Commission acknowledges that the timing of third-party activities can be difficult to forecast. However, the Commission is concerned that there appears to be a consistent trend of under-forecasting in this category. The Commission directs AltaLink to explain in detail any future variances in this category.	AltaLink forecast Lease Revenue and Other, excluding Enbridge/MATL and the First Nations (PiikaniLink, L.P. and KainaiLink, L.P.), of \$2.0M for each of 2019 and 2020. Actuals were \$1.6M for 2019 and \$1.5M for 2020, for variances of approximately \$0.4M for 2019 and \$0.5M for 2020. The variances were mainly due to lower revenues for

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					high load moves as a result of reduced activity as well as reduced revenues for utility right of way billings and road use agreements.
2013-407	Page 182, pdf 190, Para 956	Directive 38	Depreciation	This information should continue to be available to parties in future depreciation studies, and the Commission directs AltaLink to ensure that, in addition to the years 2010 and 2011 being restated for the missing information, subsequent years be treated in a similar manner.	Commission Decision 25870-D01-2020 approved AltaLink new salvage method. As a result, the information referred to in this directive is not required. AltaLink requests the Commission confirm this directive is satisfied and AltaLink will subsequently remove it from future GTAs. Refer to Section 6.6 of this GTA for further information.
2013-417	Page 82-83, pdf 86-87, Para 327	Directive 2	Utility Asset Disposition	In order to give effect to the court’s guidance that the “rate-regulation process allows and compels the Commission to decide what is in the Rate Base, i.e. what assets (still) are relevant utility investment on which the rates should give the company a return,” the Commission directs each of the utilities to review its Rate Base and confirm in its next Revenue Requirement filing that all assets in Rate Base continue to be used or required to be used (presently used, reasonably used or likely to be used in the future) to provide utility services. Accordingly, the utilities are required to confirm that there is no surplus land in Rate Base and that there are no depreciable assets in Rate Base which should be treated as extraordinary retirements and removed because they are obsolete	With the exception of one (1) land parcel being retained for new transmission development, all land parcels previously identified as being no longer required for utility service have been removed from AltaLink’s rate base. Of the remaining twenty-three land parcels originally identified, one parcel was utilized for an expansion of the Johnson Substation for the Red Deer Area Development project, nineteen have been sold, two are being retained as the sale

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				<p>property, property to be abandoned, overdeveloped property and more facilities than necessary for future needs, property used for non-utility purposes, property that should be removed because of circumstances including unusual casualties (fire, storm, flood, etc.), sudden and complete obsolescence, or un-expected and permanent shutdown of an entire operating assembly or plant. As stated above, these types of assets must be retired (removed from Rate Base) and moved to a non-utility account because they have become no longer used or required to be used as the result of causes that were not reasonably assumed to have been anticipated or contemplated in prior depreciation or amortization provisions. Each utility will also describe those assets that have been removed from Rate Base as a result of this exercise. At this time, the Commission will not require the utilities to make additional filings to verify the continued operational purpose of utility assets.</p>	<p>of the lands requires the splitting of titles which is more expensive than the value of the land and one is being retained as there is limited market appeal since the annual taxes are more than the value of the land.</p>
3524-D01-2016	Page 7, pdf 15, para 33	Directive 1	Forecasting methodology - FTEs	<p>The Commission continues to find the information provided in Appendix 1-C of the application to be of assistance and directs AltaLink to continue to provide this information in future GTAs.</p>	<p>Refer to Appendix 2-C of this Application for the list of positions by functional group.</p>
2014-258	Page 4, pdf 8, para 22	Directive 2		<p>No interested parties specifically commented on AltaLink’s response to Directive 1 in argument or reply. This notwithstanding, the Commission makes the following additional findings with respect to AltaLink’s response to Directive 1. First, the Commission finds that the breakdown of FTEs by position by cost centre and showing the O&M versus capital split applied for each position indicated in Attachment B-01 of Section B of the refiling application</p>	

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				complies in full with Directive 1. Second, the Commission finds that the information provided in Attachment B-01 would be of significant assistance in processing future AltaLink GTAs. Accordingly, the Commission directs AltaLink to provide a breakdown of individual job classifications and FTEs, disaggregated by cost centre for each applied-for test year in AltaLink’s next GTA.	
3524-D01-2016	Page 73, pdf 81, para 381	Directive 20	Computer Hardware and Computer Software	With respect to the UCA’s request that a detailed analysis of AltaLink’s computer software account to be filed prior to its next GTA, the Commission finds that information of the type and format provided in response to IRs was useful and would be sufficient for the analytical purposes identified by the UCA. On that basis, AltaLink is directed in its future GTA’s to file with its depreciation study, the historical computer software information found in the referenced IR response.	Amortization of computer software has been addressed independent of the depreciation study since 2013 in MFR Schedule 10-7. The historical computer software information can be found in Appendix 8-C .
3524-D01-2016	Page 74, pdf 82, para 382	Directive 21	Account 391.1 – general plant – computer hardware; and Account 391.2 – general plant – computer software	The Commission finds that the currently approved amortization periods for the three SAP and non-SAP subaccounts within Account 391.2 – computer software remain reasonable estimates and denies the UCA’s request for lengthened service lives. However, the confusion discussed above has arisen, in part, from AltaLink’s irreconcilable evidence regarding the composition of Account 391.2 – computer software – non-SAP and from the inconsistent naming convention used by Mr. Kennedy and AltaLink for its evidence related to Account 391.2. AltaLink is directed in its compliance filing and future filings, to apply consistency in this regard for all its transmission and general accounts, and for the purpose of clarity, to	AltaLink applied consistent naming of all accounts and where applicable indicated the existence of subaccounts in its current application. Refer to MFR Schedule 10-7.

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				indicate where applicable, the existence of subaccounts on a stand-alone basis and by account number and name.	
3585-D03-2016	Page 68, para 331	Directive 14	Capitalized labour and E&S costs	AltaLink, in response to an information request, stated that DAIC studies are performed every two years in conjunction with AltaLink's GTA. The Commission directs AltaLink to file the DAIC study and underlying data in its 2017-2018 GTA filing.	Refer to Appendix 10 for the 2016, 2018 and 2020 DAIC studies.
21827-D01-2016	Page 11, pdf 15, para 60	Directive 1	Revenue offsets	The Commission agrees with the CCA that if more detail is presented regarding revenue offsets, there is a better understanding of the transactions included in revenue offsets and a better ability to test the reasonableness of those transactions. Moreover, the Commission finds the information detailed in Table 1 above to be helpful. Therefore, the Commission directs AltaLink, with respect to revenue offsets, in future GTAs, to provide a level of detail equal to or greater than that provided in Table 1 above.	Refer to Section 8 of the Application.
22556-D01-2017	Page 7, pdf 9, para 36	N/A	Removal of Assets	AltaLink is directed to reflect the removal of the subject assets [Medicine Hat Transmission Line 675L] in any compliance filing to its 2017-2018 GTA or, if no compliance filing is required, AltaLink shall reflect the removal of the subject assets in its next tariff application.	AltaLink removed the subject assets from rate base in May 2018. ⁵⁸ AltaLink requests the Commission confirm this directive is satisfied and AltaLink will subsequently remove it from future GTAs.

⁵⁸ Exhibit 23848-X0089.01, AML-CCA-2018OCT31-051, pdf 181; Exhibit 23848-X0003.01, MFR Schedules Updated, filed April 1, 2019.

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22570-D01-2018	Page 19, pdf 25, para 99	1	Claiming maximum allowable income tax deductions when forecasting income tax expense	The Commission finds that because of the finite life of income tax loss carryforwards, as opposed to the indefinite life of deductions such as capital cost allowance, the conservative practice would be for utilities not to forecast income tax losses, but instead, forecast the use of discretionary deductions such as capital cost allowance in order to reduce forecast taxable income to zero. Accordingly, the Commission directs the utilities, when forecasting income taxes, to only claim allowable deductions that will reduce the taxable income to a maximum of zero	In this Application, AltaLink has claimed sufficient capital cost allowance deductions to reduce forecast taxable income to zero only, as directed by the Commission. Refer to MFR Schedule 7-3.
23848-D01-2020	Page 33, pdf 38, Para 158	2	Targeted component and structure replacements in HRFAs	For these reasons, the Commission will make its decision regarding the forecast expenditures associated with the Whitecourt fire region and the White Zone in the compliance filing to this decision. The Commission directs AltaLink to file the remaining wildfire risk maps for the Whitecourt fire region and the White Zone in the compliance filing to this decision. In addition, AltaLink is directed to update Table 3 with the most up-to-date information in the same compliance filing. While the Commission is satisfied that AltaLink has complied with directions 2 and 3 provided in Decision 23848-D01-2020, and acknowledges that AltaLink is not adjusting its original forecast of \$24.6 million for the Targeted Program in this 2019-2021 test period, the Commission notes that the additional costs that AltaLink requires to complete work related to the Targeted Program beyond this test period (the remaining \$8.3 million) are not under consideration in this proceeding. If AltaLink requires additional capital expenditures to complete this work	Refer to Appendix 22-A2 .
Decision 25627-D01-2020	Page 5, pdf 8, Para 20				

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				beyond the current test period, it must apply for the associated capital amounts as part of its next GTA.	
23848-D01-2020	Page 33, pdf 38, Para 159	3	Targeted component and structure replacements in HRFAs	<p>Regarding the other fire regions, Calgary, Rocky Mountain House, Edson and Lac La Biche, the Commission considers the volume of replacement work to be performed in these regions to be minimal in scope and reasonable, relative to the replacement work forecast for the White Zone. However, the Commission cannot determine whether forecast costs associated with these regions are reasonable because the targeted program costs were provided collectively. In the Commission’s view, a breakdown of the costs, by each specific region, is required in order for it to assess the reasonableness of the work for each region. Therefore, the Commission directs AltaLink to file this information in the compliance filing to this decision, in the form of an updated Table 3, as directed above, with two new columns, showing, for each one of the fire regions (including the Whitecourt fire region and the White Zone), a breakdown of up-to-date forecast costs and a breakdown of actual costs incurred under the targeted program in 2019 and to date in 2020. The Commission will review the forecast costs associated with the Calgary, Rocky Mountain House, Edson and Lac La Biche fire regions under the targeted program in the compliance filing to this decision.</p> <p>While the Commission is satisfied that AltaLink has complied with directions 2 and 3 provided in Decision</p>	Refer to Appendix 22-A2 .

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Decision 25627-D01-2020	Page 5, pdf 8, Para 20			23848-D01-2020, and acknowledges that AltaLink is not adjusting its original forecast of \$24.6 million for the Targeted Program in this 2019-2021 test period, the Commission notes that the additional costs that AltaLink requires to complete work related to the Targeted Program beyond this test period (the remaining \$8.3 million) are not under consideration in this proceeding. If AltaLink requires additional capital expenditures to complete this work beyond the current test period, it must apply for the associated capital amounts as part of its next GTA.	
23848-D01-2020	Page 33-34, pdf 38-39, Para 160	4	Targeted component and structure replacements in HRFAs	AltaLink’s forecast costs for the entire targeted component and structure replacements in the HRFAs program will be reviewed as part of AltaLink’s next opening rate base when actuals are known and can be assessed for prudence. To facilitate the Commission’s review in AltaLink’s next GTA, AltaLink is directed to submit information showing that it has completed the targeted program in a cost effective manner. Some examples of the information that AltaLink could provide at the time of its next GTA, as part of this assessment include, but are not limited to: age and condition of components and structures to be replaced, average service life of these assets, information on criteria for replacement, evidence that assets are not being prematurely retired and explanations of any differences between forecast costs and actual costs of these replacements.	Refer to Appendix 22-A2 .

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23848-D01-2020	Page 36, pdf 41, Para 174	7	Line rebuilds in HRFAs	AltaLink's forecast costs for the line rebuilds program of the WMP will be reviewed as part of AltaLink's next opening rate base when actuals are known and can be assessed for prudence. To facilitate the Commissions review in AltaLink's next GTA, the Commission directs AltaLink to provide information in that proceeding detailing project descriptions, actual unit costs and other relevant information necessary to support the timing, level, scope and costs of the individual line rebuild projects.	Refer to Appendix 22-A3 .
23848-D01-2020	Page 40, pdf 45, Para 192	9	\$20.0M of increased CRU for line clearance mitigation work	Additionally, AltaLink's forecast costs for the incremental \$20 million LCM expenditure will be reviewed as part of AltaLink's next opening rate base, when actuals are known and can be assessed for reasonableness. Accordingly, to facilitate this review, AltaLink is directed to file a comprehensive business case to support its incremental LCM expenditures, at the time of its next GTA.	Refer to Appendix 13-A32 .
23848-D01-2020	Page 49, pdf 54, Para 231	10	Line clearance engineering assessment methodology	Accordingly, the Commission directs AltaLink, at the time of its next general tariff application and as part of its Line Components CRU Business Case, to explain in more detail the nature and extent of its collaboration with the AESO on line rating adjustments. This includes both temporary de-rates, re-rates, and de-energizations. In particular, AltaLink should include a step-by-step example that explains this collaborative process, a list of factors that inform the AESO's and AltaLink's decisions to adjust the line rating of any particular transmission line, and references to all relevant standards, codes and rules with which AltaLink and the AESO are obligated to comply, in respect to this collaborative process. Likewise, AltaLink should clearly identify and delineate the responsibilities of the AESO and AltaLink, respectively, with regard to the line rating	Refer to Appendix 13-A32 Appendix A .

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				adjustment process and the associated determinations of safe operating limits for transmission lines. Further, AltaLink should include an explanation of whether the AESO's N-0, N-1, N-2 and N-1-1 contingencies factor into line rating adjustment discussions, and how system requirements and transmission line design history inform the AESO's and AltaLink's decision to adjust maximum thermal ratings, and maximum allowable load flows	
23848-D01-2020	Page 49-50, pdf 54-55, Para 232	11	Line clearance engineering assessment methodology	Similarly, the Commission considers that it would be helpful to have the AESO's views regarding its role in this collaborative process, specifically with regard to how the AESO exercises its discretion in permitting de-rates, re-rates, de-energizations and alternative mitigation measures. Accordingly, the Commission directs AltaLink to request the AESO to file a submission explaining, from the AESO's perspective, how the line rating adjustment process is carried out between itself and AltaLink, how the AESO determines a posted line rating, how the AESO makes its determination to adjust the line rating of any particular transmission line, what factors are considered therein by the AESO, and any other information that the AESO considers may be of assistance in the circumstances. AltaLink is directed to file the AESO's response at the time of its next general tariff application and as part of its Line Components CRU Business Case.	Refer to Appendix 13-A32 Appendix A.
23848-D01-2020	Page 51, pdf 56, Para 238	12	Line clearance engineering assessment methodology	Accordingly, the Commission directs AltaLink, at the time of its next general tariff application, to file a detailed comparison of LiDAR survey unit costs between the incremental approach and the new system-wide approach, as part of its Line Components CRU Business Case. The unit costs must be broken down into their respective	Refer to Appendix 13-A32, Section 1.4.1.1.

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				component parts, and AltaLink must clearly demonstrate, using the unit cost component breakdown, how the new system-wide survey has reduced LiDAR unit costs, and the source of this reduction.	
23848-D01-2020	Page 51, pdf 56, Para 239	13	Line clearance engineering assessment methodology	AltaLink is further directed to provide an analysis that demonstrates why the system-wide approach to LiDAR and engineering assessments, which seeks to mitigate line clearance deficiencies across all 13,385 km of AltaLink's transmission system within this test period, is more effective than the incremental approach, where AltaLink historically surveyed and assessed approximately 1,100 km of its system per year. Specifically, AltaLink is to explain, with supporting analyses and calculations, how the new system wide approach to LiDAR surveys and engineering assessments is a more effective tool to prioritize and mitigate risks across AltaLink's entire system, over multiple years, while balancing both LiDAR unit costs and overall LCM program costs. AltaLink should also address how the new system-wide approach facilitates more effective coordination and prioritization of resources across AltaLink's system, to ensure that potential public safety and system reliability risks are mitigated, while costs are minimized.	Refer to Appendix 13-A32 , Section 1.4.1.2.
23848-D01-2020	Page 68-69, pdf 73-74, Para 302	15(a)	Alternative LCM strategies	Additionally, AltaLink's forecast costs for the incremental \$13 million LCM expenditure approved in this decision will be reviewed when determining AltaLink's next opening rate base, when actuals are known and can be assessed for prudence, by which time AltaLink will have had a chance to prepare any additional information or analyses that the	Refer to Appendix 13-A32 Appendix B .

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				<p>Commission considers necessary to assess the prudence of the actual LCM spend and any subsequent forecast. Accordingly, AltaLink is directed, at the time of its next general tariff application, to file a comprehensive business case that is informed by fully completed engineering assessments of AltaLink’s entire system, and includes the following:</p> <p>(a) A root cause analysis to explain why AltaLink’s engineering assessments are identifying an historic number of deficiencies across its transmission system.</p>	
23848-D01-2020	Page 68-69, pdf 73-74, Para 302	15(b)	Alternative LCM strategies	<p>(b) A line-by-line analysis that considers site and transmission-line-specific factors (e.g., region, location, terrain, expected damages from clearance issues, likelihood of wire contact with the public or other objects or structures, the associated risk of public safety or system reliability issues materializing, and any additional public safety or system reliability concerns), along with all the relevant standards, codes and rules, to identify whether LCM work was necessary for any particular transmission line. AltaLink should identify why a transmission line was deficient. If AltaLink identified the need to conduct LCM work on a particular transmission line, it should provide a list of all the factors that were considered to arrive at that decision, and explain why the LCM work was necessary. Furthermore, AltaLink should provide a general overview of the total number of transmission line spans that were mitigated, how AltaLink determined which transmission line spans should be prioritized within this current test period, and why LCM work on these transmission line spans was necessary.</p>	Refer to Appendix 13-A32 Appendix C.

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23848-D01-2020	Page 68-69, pdf 73-74, Para 302	15(c)	Alternative LCM strategies	(c) Line-specific costs should be provided, explaining how AltaLink achieved the lowest cost LCM strategy for that particular transmission line. Likewise, AltaLink should provide the average cost per transmission line span, for each transmission line, and explain how this average unit cost was minimized. Furthermore, AltaLink is to provide a list of all alternative line clearance mitigation strategies that it considered, for each transmission line, with explanations, relevant analyses, and calculations that support AltaLink's chosen alternative. With regard to de-rates, AltaLink is to address how it determined the appropriate de-rate period for any particular transmission line, and why other alternatives such as physical barriers were not viable or cost effective/efficient. Furthermore, for circuit-to-circuit line clearance deficiencies, AltaLink is to address which cost solutions were considered between AltaLink and the DFOs.	Refer to Appendix 13-A32 Appendix C.
23848-D01-2020	Page 68-69, pdf 73-74, Para 302	15(d)	Alternative LCM strategies	(d) An explanation that elaborates further on the extent and nature of AltaLink's collaboration with DFOs and third parties. Furthermore, AltaLink is to address, with references to any relevant industry standards, codes, rules, and DFO contracts, why DFOs are not responsible, typically, for any circuit-to-circuit line clearance deficiencies.	Refer to Appendix 13-A32 Appendix D.
23848-D01-2020	Page 68-69, pdf 73-74, Para 302	15(e)	Alternative LCM strategies	(e) An explanation detailing the nature and extent of AltaLink's collaboration with the AESO, with respect to prioritizing LCM work. Specifically, AltaLink is to address ISO Rule 304.6, explaining how AltaLink develops a plan "to restore the transmission facility to its previous limit," what factors are considered therein, and the nature and extent of the AESO's involvement in this process. Likewise, AltaLink is to address when it would consider option (b) of ISO Rule 304.6 2(2). Furthermore, AltaLink is to identify and	Refer to Appendix 13-A32 Appendix A.

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				delineate clearly the responsibilities and authority of the AESO and AltaLink, with regard to choosing a prioritization scheme for mitigating line clearance deficiencies.	
23848-D01-2020	Page 68-69, pdf 73-74, Para 302	15(f)	Alternative LCM strategies	(f) Similarly, the Commission considers that it would be helpful to have the AESO’s view regarding its role in the development of an appropriate prioritization scheme for LCM work. Accordingly, the Commission directs AltaLink to request the AESO to file a submission explaining, in the AESO’s view, how the prioritization process is carried out between itself and AltaLink, how the AESO determines which transmission lines should be prioritized for LCM repair work, how the AESO ranks the different lines that require LCM work, what factors are considered therein by the AESO, and any other information that the AESO considers may be of assistance in the circumstances. Additionally, for all transmission lines that require LCM work in this current test period, the Commission directs AltaLink to request the AESO to file a submission that identifies which lines should, in the AESO’s view, be prioritized for LCM repair work and to provide explanations as to why those lines should be prioritized, and to provide a ranking of these lines based on their priority. AltaLink is directed to file the AESO’s response at the time of its next general tariff application and as part of its Line Components CRU Business Case.	Refer to Appendix 13-A32 Appendix A.

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23848-D01-2020	Page 68-69, pdf 73-74, Para 302	15(g)	Alternative LCM strategies	(g) A narrative with supporting examples, calculations and analyses, explaining how AltaLink’s prioritization scheme for LCM work has effectively, and reasonably, managed and balanced LCM expenditures with clearance deficiency risks and system performance. This narrative is to be provided on both a line-by-line and system-wide basis.	Refer to Appendix 13-A32 Appendix E.
23848-D01-2020	Page 69, pdf 74, Para 304	16	Alternative LCM strategies	Accordingly, the Commission directs AltaLink, at the time of its next general tariff application and as part of its Line Components CRU Business Case, to submit an analysis that investigates how AltaLink may alter its LCM prioritization methodology going forward. AltaLink should specifically refer to ATCO Electric’s prioritization methodology, as filed by the CCA in this proceeding and identified in the prioritization methodology discussion above. If ATCO Electric’s approach is not compatible with, or appropriate for, AltaLink’s transmission system, AltaLink must provide an explanation as to why that is the case. The Commission notes that this direction is strictly in regard to future AltaLink LCM programs, and not the LCM program subject to this test period.	Refer to Appendix 13-A32 Appendix F.
23848-D01-2020	Page 110, pdf 115, Para 525	22	Asset retirements at age-interval zero	Nonetheless, the Commission remains interested in understanding AltaLink’s practice of capitalizing excess materials beyond the instance of the WATL example. AltaLink is directed at the time of its next GTA, to provide an update to its capitalization policy detailing its intended practice in this regard and to include a provision for a threshold, or materiality test, by which AltaLink proposes to determine what constitutes, as a construction cost, a “proper allowance” for unused materials and supplies.	AltaLink has updated its Capitalization Policy, refer to Appendix 17.

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25627-D01-2020	Page 5, pdf 8, Para 21	1	Targeted component and structure replacements in HRFAs	<p>Notwithstanding, the Commission finds the following statement made by AltaLink concerning:</p> <p style="padding-left: 40px;">The most impactful change to Table 3 was realized in the Calgary forest region and is primarily driven by an increase to 388 total notifications (from 170 notifications) in the Calgary Forest Region. The reason is that the line rebuilds for 113L, 150L, 56L and portions of 54L have been delayed because of access and permitting requirements. These lines are part of the regular CRU [capital replacement and upgrades] rebuild program. As a result of the delay, the fire related notifications on these lines have now been included as part of this Wildfire Mitigation Targeted Component and Structures Replacements in HRFAs program to ensure high priority risk areas are addressed in a prioritized manner.</p> <p>AltaLink’s CRU program was part of its 2019-2021 GTA negotiated settlement agreement (NSA). It is the Commission’s understanding that AltaLink intends to address the deficiencies identified in the quote above and originally identified in its NSA, in the Targeted Program of the Wildfire Mitigation Plan. It is not clear to the Commission whether some of the \$8.3 million in costs associated with the remaining work to be completed beyond this 2019-2021 test period, results from this proposed shift in program. It is also not clear whether AltaLink plans to apply a corresponding reduction to its CRU costs, also agreed to in the NSA, as a result of this change. Therefore, AltaLink is directed to clarify in its next GTA whether it intends to apply for additional capital</p>	Refer to Appendix 22-A2 .

AUC Decision	Decision Reference	Directive Number	Topic	Directive	Response
				expenditures to complete work related to the Targeted Program.	
25870-D01-2020	Page 7, pdf 10, para 36	1(i)	Net Salvage Method	<p>As stated earlier, the Stage 2 panel finds that AltaLink’s proposed net salvage method is, on balance, just and reasonable in the circumstances. The Stage 2 panel provides the following clarifications with respect to AltaLink’s proposed net salvage method implementation, tracking and ongoing operation.</p> <p>(i) AltaLink submitted that its proposed net salvage method was intended to be phased in over a reasonable period of time in order to maintain an 11.1 per cent FFO/Debt (floor) ratio, which would be sufficient to protect its A credit rating and keep its borrowing costs at a level commensurate with the public interest.</p> <p>The Stage 2 panel accepts, at this time, that the measure by which AltaLink will determine the amount of net salvage expense to recover through depreciation expense during the period of transition is linked specifically to an FFO/Debt of 11.1 per cent for the test years. However, the Stage 2 panel directs that this measure is subject to testing in future GTAs in terms of both substance (where a different FFO/Debt per cent may be tested) and form (where an alternative measure than FFO/Debt may be examined).</p>	In this GTA, AltaLink is proposing to collect \$30.3M of net salvage reserve funding for each test year 2022 and 2023 in order to maintain an 11.1% FFO/Debt ratio. Refer also to Section 6.6 of this GTA.

AUC Decision	Decision Reference	Directive Number	Topic	Directive	Response
25870-D01-2020	Page 7, pdf 10, para 36	1(ii)	Net Salvage Method	<p>(ii) The Stage 2 panel directs that AltaLink will maintain sufficient information to revert to its traditional net salvage method at any point in the future. The information to be maintained will include ongoing tracking, by uniform system of account, of aged retirements and costs of removal, whether recorded to the net salvage reserve account during the period of transition, capitalized or recorded in association with a terminal asset retirement. The requirement to maintain this information considers the implications of AltaLink’s statement that a return to the traditional method of salvage would be on a prospective basis, where the capitalization of historical salvage amounts would be unchanged.</p> <p>The Commission finds that the ongoing tracking of this information is required because, should AltaLink in the future, request or be directed to return to its traditional net salvage method on a prospective basis, the associated net salvage depreciation rate to be reinstated would be applied to only the capital cost of the new replacement assets, and AltaLink would be prevented specifically from applying a net salvage depreciation rate to the costs of removal capitalized during the time its proposed net salvage method was in place. Therefore, in each future GTA or DACDA, AltaLink is directed to report by uniform system of account, both the forecast and actual costs of removal that have been recorded to the net salvage reserve account during the period of transition, capitalized or recorded in association with a terminal asset retirement.</p>	<p>AltaLink’s record continues to track, by uniform system of account, aged retirements and costs of removal, whether recorded to the net salvage reserve account during the period of transition, capitalized or recorded in association with a terminal asset retirement. The actual and forecast costs of removal are reported in the Net Salvage Reserve Account provided as MFR Schedule 29-8. Refer also to Section 6.6 of this GTA.</p>

AUC Decision	Decision Reference	Directive Number	Topic	Directive	Response
25870-D01-2020	Page 8, pdf 11, para 36	1(iii)	Net Salvage Method	(iii) The Stage 2 panel directs that in the event that the balance in the net salvage reserve account becomes insufficient to meet the anticipated costs of removal associated with terminal asset retirements, AltaLink is to propose the manner and period of collection of those costs in that GTA or DACDA. This is notwithstanding AltaLink's statement that terminal retirements, specifically, "will be subject to a high degree of forecast accuracy," they are nonetheless relatively rare in AltaLink's experience, and therefore little historical information exists currently. AltaLink is directed to provide a continuity schedule for its net salvage reserve account in each future GTA on both a forecast and actual basis.	The Net Salvage Reserve Account continuity is provided as MFR Schedule 29-8. AltaLink expects the balance in the account to be sufficient to meet anticipated costs of removal in the foreseeable future. Refer also to Section 6.6 of this GTA.
25870-D01-2020	Page 8, pdf 11, para 36	1(iv)	Net Salvage Method	(iv) The Stage 2 panel directs that in each future GTA or DACDA, AltaLink will provide sufficiently detailed information for the purposes of testing the prudence of costs of removal whether recorded to the net salvage reserve account during the period of transition, capitalized to the cost of a replacement asset or recorded in association with a terminal asset retirement.	Costs of removal recorded to the net salvage reserve account are provided as MFR Schedule 29-8. AltaLink has provided in the 2020 DACDA application sufficiently detailed information for the purposes of testing the prudence of costs of removal whether recorded to the net salvage reserve account during the period of transition, capitalized to the cost of a replacement asset or recorded in association with a terminal asset retirement. Refer also to Section 6.6 of the GTA.

AUC Decision	Decision Reference	Directive Number	Topic	Directive	Response
25870-D01-2020	Page 8, pdf 11, para 37	2	Net Salvage Method	In view of the above, the Stage 2 panel varies the majority hearing panel’s findings in Section 4.5.1 of Decision 23848-D01-2020. AltaLink is directed to implement its proposed net salvage method commencing with the year 2019, with an effective date, for tariff purposes, of December 1, 2020.	The new net salvage methodology was implemented effective December 1, 2020, commencing with the year 2019. AltaLink requests the Commission confirm this directive is satisfied and AltaLink will subsequently remove it from future GTAs.
25913-D01-2021	Page 6, pdf 9, para 31	2	Affiliate costs	However, to assist the Commission with review of affiliate or non-arm’s-length transactions, the Commission directs AltaLink to include, as part of all future DACDA and GTA applications, a table which provides the following summary information, by test year: <ul style="list-style-type: none"> (i) Affiliate or non-arm’s-length costs included in the application, by project or cost category, a description of the types of cost or service involved by originating year, or (ii) A confirmation that no affiliate or non-arm’s-length transactions are included in that application. 	AltaLink confirms that there are no affiliate or non-arm’s length transactions included for the procurement of goods and service for the construction of transmission facilities in this Application. AltaLink has and will continue to comply with AESO Rule 9.1.5.

3. TRANSMISSION REVENUE REQUIREMENTS

381. Section 3 of AltaLink's Application addresses the following:

- 3.1 Summary
- 3.2 Aggregate Revenue Requirements
- 3.3 Direct Assign Capital Deferral Account Included in Revenue Requirement
- 3.4 Transmission Revenue Requirement Schedules

3.1 Summary

382. This section of the Application describes AltaLink’s revenue requirement forecast for the Test Period, including the DACDA effect for each test year.

3.2 Aggregate Revenue Requirements

383. As outlined in Schedule 3-1, AltaLink is applying to the Commission for approval of total revenue requirements of \$877.9M in 2022, and \$895.5M in 2023. After taking into account tariff relief refunds, the net Transmission Tariff amounts that AltaLink is requesting approval for are \$811.5M in 2022 and \$835.5M in 2023.

3.3 Direct Assign Capital Deferral Account Included in Revenue Requirement

384. In addition to the usual financial schedules from AltaLink’s revenue requirement model, AltaLink is incorporating the financial schedules from the DACDA process for the Test Period. They are marked as: Schedule 3-2.2022 (i), Schedule 3-2.2022 (ii), Schedule 3-2.2022 (iii) for the 2022 forecast year; and Schedule 3-2.2023 (i), Schedule 3-2.2023 (ii), Schedule 3-2.2023 (iii) for the 2023 forecast year.

385. The DACDA schedules treat the income tax effect of all DA projects, whether they are forecast to be in rate base or in CWIP in the test years, on a deferral basis.

386. In this Application, AltaLink is seeking Commission approval of the 2020 DACDA. AltaLink is including the 2020 DACDA application as **Appendix 23**.

3.4 Transmission Revenue Requirement Schedules

Schedule 3-1	Summary of Transmission Revenues and Costs
Schedule 3-2.2016 (i)	Schedule of 2016 DACDA Revenue Requirement
Schedule 3-2.2016 (ii)	Schedule of 2016 DACDA Mid-year Rate Base
Schedule 3-2.2016 (iii)	Schedule of 2016 DACDA CWIP
Schedule 3-2.2017 (i)	Schedule of 2017 DACDA Revenue Requirement
Schedule 3-2.2017 (ii)	Schedule of 2017 DACDA Mid-year Rate Base
Schedule 3-2.2017 (iii)	Schedule of 2017 DACDA CWIP
Schedule 3-2.2018 (i)	Schedule of 2018 DACDA Revenue Requirement
Schedule 3-2.2018 (ii)	Schedule of 2018 DACDA Mid-year Rate Base
Schedule 3-2.2018 (iii)	Schedule of 2018 DACDA CWIP
Schedule 3-2.2019 (i)	Schedule of 2019 DACDA Revenue Requirement
Schedule 3-2.2019 (ii)	Schedule of 2019 DACDA Mid-year Rate Base
Schedule 3-2.2019 (iii)	Schedule of 2019 DACDA CWIP
Schedule 3-2.2020 (i)	Schedule of 2020 DACDA Revenue Requirement
Schedule 3-2.2020 (ii)	Schedule of 2020 DACDA Mid-year Rate Base
Schedule 3-2.2020 (iii)	Schedule of 2020 DACDA CWIP

- Schedule 3-2.2021 (i) Schedule of 2021 DACDA Revenue Requirement
- Schedule 3-2.2021 (ii) Schedule of 2021 DACDA Mid-year Rate Base
- Schedule 3-2.2021 (iii) Schedule of 2021 DACDA CWIP
- Schedule 3-2.2022 (i) Schedule of 2022 DACDA Revenue Requirement
- Schedule 3-2.2022 (ii) Schedule of 2022 DACDA Mid-year Rate Base
- Schedule 3-2.2022 (iii) Schedule of 2022 DACDA CWIP
- Schedule 3-2.2023 (i) Schedule of 2023 DACDA Revenue Requirement
- Schedule 3-2.2023 (ii) Schedule of 2023 DACDA Mid-year Rate Base
- Schedule 3-2.2023 (iii) Schedule of 2023 DACDA CWIP

4. TRANSMISSION FUEL COSTS

NOT APPLICABLE TO ALTALINK'S APPLICATION

5. TRANSMISSION OPERATING COSTS

387. Section 5 of AltaLink’s Application addresses the following:

- 5.1 Overview – Total Company Operating Expenses (O&M and A&G)
- 5.2 Overview – Total Operation & Maintenance Costs
- 5.3 Direct Operation & Maintenance
- 5.4 Allocated Administrative and General
- 5.5 Taxes Other Than Income Tax
- 5.6 Transmission Manpower – Full Time Equivalents
- 5.7 Transmission Operation & Maintenance Schedules

5.1 Overview - Total Company Operating Expenses (O&M and A&G)

5.1.1 Overview

Table 5.1.1-1 - AltaLink Total Company - Operating Expenses (\$M)

Expense	2019 Actual	2020 Actual	2021 MU	2022 Test Year	2023 Test Year
Labour	48.1	47.7	49.3	51.0	52.5
Contracted Manpower	22.0	20.6	20.3	20.5	20.7
Other GOE	41.3	40.4	44.7	44.4	45.6
Total	111.3	108.7	114.3	115.9	118.8

Totals may not add due to rounding.

5.1.2 Labour

Table 5.1.2-1 - AltaLink Total Company - Operating Labour Expenses (\$M)

Operating Labour Expense	2019 Actual	2020 Actual	2021 MU	2022 Test Year	2023 Test Year
Total O&M (Section 5)	28.1	28.1	27.9	29.1	29.9
Total A&G (Section 25)	19.9	19.6	21.4	22.0	22.6
AltaLink Total	48.1	47.7	49.3	51.0	52.5

Totals may not add due to rounding.

Table 5.1.2-2 - AltaLink Total Company - Labour Forecast Increase (\$M)

Forecast Increase	2021 MU versus 2020 Actual	2022 Test Year versus 2021 MU	2023 Test Year versus 2022 Test Year	2 Test Year Average
Inflation	1.0	1.5	1.5	1.5
Other	0.6	0.3	(0.1)	0.1
Total	1.6	1.7	1.5	1.6

Totals may not add due to rounding.

388. AltaLink is forecasting a consistent amount of FTEs, and Labour Expense is forecast to increase on average by \$1.6M in the Test Period primarily due to the impact of inflation assumptions defined in Section 1.8. The increase from 2020 actuals to 2021 MU is due to timing of recruiting to fill vacancies and changes in the timing and requirements for operating and capital activities.

5.1.3 FTEs
Table 5.1.3-1 - AltaLink Total Company - FTEs Year End Summary

Year End FTEs	2019 Actual	2020 Actual	2021 MU	2022 Test Year	2023 Test Year
Total O&M (Section 5)	193.8	183.2	191.8	191.8	190.8
Total A&G (Section 25)	103.8	106.6	115.2	115.2	115.2
Total	297.6	289.8	307.0	307.0	306.0

Totals may not add due to rounding.

389. On a total company basis, AltaLink is forecasting a total of 307 FTEs in 2022 and 306 FTEs in 2023, related to filling year-end vacancies of 16.4 operating FTEs from 2020 year-end. AltaLink is forecasting two FTEs below the 2019 GTA compliance filing of 305.4. On a USA Activity Code basis, for Section 5, O&M, AltaLink is forecasting 192 FTEs in total, a reduction of 6.8 from the compliance filing of 198.8 in 2022; and a further reduction to 191 FTEs in 2023. For Section 25, A&G, AltaLink is forecasting 115.2 FTEs in total from the 2021 compliance amount of 106.6 with a net increase of 8.6 FTEs to address operating activities in that area.
390. The increase in FTEs compared to 2020 actuals is driven entirely by the timing of recruiting activities for vacancies that arose at year-end. Refer to Section 5.3 and Section 25 for details by USA Activity Code as well as **Appendix 2**.

5.1.4 Contracted Manpower
Table 5.1.4-1 - AltaLink Total Company - Contracted Manpower Operating Expenses (\$M)

Contracted Manpower Expense	2019 Actual	2020 Actual	2021 MU	2022 Test Year	2023 Test Year
Total O&M (Section 5)	15.7	14.7	14.7	14.7	14.9
Total A&G (Section 25)	6.3	5.8	5.5	5.7	5.8
AltaLink Total	22.0	20.6	20.3	20.5	20.7

Totals may not add due to rounding.

Table 5.1.4-2 - AltaLink Total Company - Contracted Manpower Forecast Increase (\$M)

Forecast Increase	2021 MU versus 2020 Actual	2022 Test Year versus 2021 MU	2023 Test Year versus 2022 Test Year	2 Test Year Average
Inflation	0.0	0.2	0.2	0.2
Other	(0.3)	0.0	0.0	0.0
Total	(0.3)	0.2	0.2	0.2

Totals may not add due to rounding.

391. On an overall company basis, for the Test Period, AltaLink is forecasting an average increase of \$0.2M for Contracted Manpower, primarily due to the impact of inflation assumptions defined in Section 1.8.
392. The decrease of \$0.3M from 2020 Actuals are primarily driven by improvements in work process and contracting in A&G areas. Refer to Section 25.

5.1.5 Other GOE

Table 5.1.5-1 - AltaLink Total Company - Other GOE Expenses (\$M)

Other GOE	2019 Actual	2020 Actual	2021 MU	2022 Test Year	2023 Test Year
Total O&M (Section 5)	23.6	22.3	23.1	23.5	23.6
Total A&G (Section 25)	17.7	18.1	21.6	20.9	22.0
AltaLink Total	41.3	40.4	44.7	44.4	45.6

Totals may not add due to rounding.

Table 5.1.5-2 - AltaLink Total Company - Other GOE Increase (\$M)

Forecast Increase	2021 MU versus 2020 Actual	2022 Test Year versus 2021 MU	2023 Test Year versus 2022 Test Year	2 Test Year Average
Inflation	0.0	0.4	0.4	0.4
Other	4.4	(0.8)	0.8	(0.0)
Total	4.4	(0.4)	1.2	0.4

Totals may not add due to rounding.

393. On an overall company basis, AltaLink is forecasting an increase of \$0.4M on average over the Test Period, this is primarily due to the impact of inflation assumptions defined in Section 1.8.
394. The increase in 2021 MU from 2020 actuals is driven by multiple factors including changes in SIR; insurance expenses; building operating expenses; ASP compensation rates for landowners; changes in software license fees from rate and volume impacts; as well as, variability in staff expenses due to COVID-19 requirements.
395. Refer to Section 5.3 and Section 25 for a detailed description of the GOE forecasts on an individual USA Activity Code basis.

5.2 Overview – Total Operation & Maintenance Costs

5.2.1 Overview

396. Section 5 provides information with respect to AltaLink's O&M Costs as defined in the USA/MFR requirements documents approved by the Commission.

Table 5.2.1-1 - Operation & Maintenance Expenses (\$M)

Expense	2019 Actual	2020 Actual	2021 MU	2022 Test Year	2023 Test Year
Labour	28.1	28.1	27.9	29.1	29.9
Contracted Manpower	15.7	14.7	14.7	14.7	14.9
Other GOE	23.6	22.3	23.1	23.5	23.6
Total	67.4	65.1	65.8	67.3	68.3

Totals may not add due to rounding.

5.2.1.1 Labour
Table 5.2.1.1-1 - Operation & Maintenance Expenses (\$M)

Expense	2019 Actual	2020 Actual	2021 MU	2022 Test Year	2023 Test Year
Labour	28.1	28.1	27.9	29.1	29.9

Table 5.2.1.1-2 - Operation & Maintenance - Labour Forecast Increase (\$M)

Forecast Increase	2021 MU versus 2020 Actual	2022 Test Year versus 2021 MU	2023 Test Year versus 2022 Test	2 Test Year Average
Inflation	0.6	0.8	0.9	0.9
Other	(0.8)	0.3	(0.1)	0.1
Total	(0.2)	1.2	0.8	1.0

Totals may not add due to rounding.

397. AltaLink is forecasting O&M, Operating Labour Expense, as shown in Table 5.2.1.1-2 above, to increase in the Test Period on average by \$1.0M primarily due to the impact of inflation assumptions defined in Section 1.8. The drivers of the variances in Other relates primarily to the timing of recruiting of 8.4 FTEs in 2021 related to filling vacancies from 2020 (refer to **Appendix 2**); variability in the amount in capital activities requiring support from staff; and timing of requirements to complete evidentiary requirements in support of new ARS rules and preparations for AltaLink's first ARS CIP audit cycle.
398. Refer to Section 5.3 for a detailed description of O&M Labour forecasts on an individual USA Activity Code basis.

5.2.1.2 FTEs
Table 5.2.1.2-1 - Operating & Maintenance - FTE Year End Summary

	2019 Actual	2020 Actual	2021 MU	2022 Test Year	2023 Test Year
Total Year End FTEs	193.8	183.2	191.8	191.8	190.8

399. AltaLink's operation O&M FTEs for the Test Period is forecast to be 8.4 FTEs higher than the 2020 Actual Level. This relates to the timing of recruiting of 8.4 FTEs in 2021 related to filling vacancies at 2020 year-end, (refer to **Appendix 2**).
400. Refer to Section 5.3 for a detailed description of O&M FTE forecasts on an individual USA Activity Code basis.

5.2.1.3 Contracted Manpower
Table 5.2.1.3-1 - Operation & Maintenance - Contracted Manpower Expenses (\$M)

Expense	2019 Actual	2020 Actual	2021 MU	2022 Test Year	2023 Test Year
Contracted Manpower	15.7	14.7	14.7	14.7	14.9

Table 5.2.1.3-2 - Operation & Maintenance - Contracted Manpower Increase (\$M)

Forecast Increase	2021 MU versus 2020 Actual	2022 Test Year versus 2021 MU	2023 Test Year versus 2022 Test Year	2 Test Year Average
Inflation	0.0	0.1	0.1	0.1
Other	(0.0)	(0.1)	0.0	(0.1)
Total	(0.0)	0.0	0.2	0.1

Totals may not add due to rounding.

401. AltaLink is forecasting a \$0.1M average increase in O&M, Contracted Manpower for the Test Period driven by primarily by inflation assumptions, as described in Section 1.8.
402. Refer to Section 5.3 for a detailed description of the Contracted Manpower forecasts on an individual USA Activity Code basis.

5.2.1.4 Other GOE

Table 5.2.1.4-1 - Operation & Maintenance Expenses (\$M)

Expense	2019 Actual	2020 Actual	2021 MU	2022 Test Year	2023 Test Year
Other GOE	23.6	22.3	23.1	23.5	23.6

Table 5.2.1.4-2 - Operation & Maintenance - Other GOE Forecast Increase (\$M)

Forecast Increase	2021 MU versus 2020 Actual	2022 Test Year versus 2021 MU	2023 Test Year versus 2022 Test Year	2 Test Year Average
Inflation	0.0	0.2	0.2	0.2
Other	0.9	0.1	(0.2)	(0.0)
Total	0.9	0.4	0.1	0.2

Totals may not add due to rounding.

403. AltaLink's O&M and Other GOE Expense for the Test Period is forecast to increase, on average, by \$0.2M in the Test Period, primarily due to inflation factors as described in Section 1.8. The increase from 2020 actuals to 2021 MU is primarily driven by lower staff expenses due to COVID-19 requirements and previously approved changes in ASP compensation rates for landowners whose term agreements are up for renewal. In addition, other variances are also driven by changes in software license fees as a result of vendor license rate increases and changes in the volume and timing of licenses.
404. Refer to Section 5.3 for a detailed description of the Other GOE forecasts on an individual USA Activity Code basis.

5.2.2 Changes in Operation

405. There have been no significant changes with respect to AltaLink's operations.

5.3 Direct Operation & Maintenance

5.3.1 Summary of Direct Operating and Maintenance

406. Refer to Schedule 5-1 for a summary of Direct O&M costs. The following pages set out the variances and explanations of the accounts reflected in Schedule 5-1.

5.3.2 USA 560 - Supervision and Engineering

407. This account includes the cost of labour and expenses incurred in the general supervision and direction of the O&M of the transmission system.

408. Staff included in USA 560 are all manager and above roles, including directors and vice presidents. The functional areas include supervision and management in Field Operations, Engineering & Technology, Maintenance Program Delivery, Asset Investment Planning and Standards, Procurement Services, Land and Facilities, and EH&S. The primary activities include:

- direct supervision of daily activities - both field maintenance including safety oversight and office activities;
- departmental management;
- financial oversight and management; and
- direction setting for company alignment and other obligations.

409. AltaLink has assessed its first line of supervision for span of control and based on experience and Corporate Leadership Council information, concluded that a ratio of 10-12 staff per immediate supervisor continues to be reasonable. Based on this review AltaLink is forecasting a reduction of complement to 15 FTEs as shown in Table 5.3.2-4 below for the Test Period. The forecast cost of labour and expenses associated with supervision and direction of the O&M of the transmission system as a whole is provided in the tables below.

Table 5.3.2-1 - USA 560 - Operation & Maintenance Supervision & Engineering (\$M)

Expense	2019 Actual	2020 Actual	2021 MU	2022 Test Year	2023 Test Year
Labour	3.0	2.9	2.9	2.9	3.0
Contracted Manpower	(0.0)	0.0	0.0	0.0	0.0
Other GOE	0.1	0.0	0.1	0.1	0.1
Total	3.1	3.0	2.9	3.0	3.1

Totals may not add to due to rounding.

410. Virtually all of USA 560 is attributable to labour expenses which are forecast on average to be approximately \$3.0M per forecast year. No contractor expenses are forecast for USA 560. GOE (other expenses) are forecast to be approximately \$0.1M in total per year. Operating expenses are expected to remain relatively constant for the Test Period.

Table 5.3.2-2 - USA 560 - Operation & Maintenance Supervision & Engineering Forecast Increase (\$M)

Forecast Increase	2021 MU versus 2020 Actual	2022 Test Year versus 2021 MU	2023 Test Year versus 2022 Test Year	2 Test Year Average
Labour	(0.0)	0.0	0.1	0.1
Contracted Manpower	0.0	0.0	0.0	0.0
Other (GOE)	0.0	0.0	0.0	0.0
Total	(0.0)	0.1	0.1	0.1

Totals may not add to due to rounding.

411. AltaLink forecasts operating expenses to increase \$0.1M on average over the Test Period primarily attributed to inflationary increases and compensation as set out in Sections 1.8, and 1.9, respectively.

Labour
Table 5.3.2-3 - USA 560 - Operation & Maintenance Supervision & Engineering Labour Forecast Increase (\$M)

Forecast Increase	2021 MU versus 2020 Actual	2022 Test Year versus 2021 MU	2023 Test Year versus 2022 Test Year	2 Test Year Average
Inflation	0.1	0.1	0.1	0.1
Other	(0.1)	(0.1)	(0.0)	(0.0)
Total	(0.0)	0.0	0.1	0.1

Totals may not add to due to rounding.

412. As set out in Table 5.3.2-4 below, AltaLink is forecasting no change to FTEs during the Test Period.

Table 5.3.2-4 - USA 560 - Operation & Maintenance Supervision and Engineering FTEs

	2019 Actual	2020 Actual	2021 MU	2022 Test Year	2023 Test Year
Total Year End FTEs	16.0	15.0	15.0	15.0	15.0

Contracted Manpower
Table 5.3.2-5 - USA 560 - Operation & Maintenance Supervision & Engineering Contracted Manpower Forecast Increase (\$M)

Forecast Increase	2021 MU versus 2020 Actual	2022 Test Year versus 2021 MU	2023 Test Year versus 2022 Test Year	2 Test Year Average
Inflation	0.0	0.0	0.0	0.0
Other	0.0	0.0	0.0	0.0
Total	0.0	0.0	0.0	0.0

Totals may not add to due to rounding.

413. AltaLink is forecasting no contracted manpower in USA 560 for the Test Period.

Other GOE
Table 5.3.2-6 - USA 560 - Operation & Maintenance Supervision & Engineering GOE Forecast Increase (\$M)

Forecast Increase	2021 MU versus 2020 Actual	2022 Test Year versus 2021 MU	2023 Test Year versus 2022 Test Year	2 Test Year Average
Inflation	0.0	0.0	0.0	0.0
Other	0.0	0.0	(0.0)	0.0
Total	0.0	0.0	0.0	0.0

Totals may not add to due to rounding.

414. AltaLink is forecasting no material changes to GOE expenses in USA 560 for the Test Period.

5.3.3 USA 561 - Operation & Maintenance Control Centre Operations

415. This account includes the cost of labour, materials used and expenses incurred in ACC operations, which is responsible for all aspects of operating the Alberta transmission system owned by AltaLink. The ACC monitors and controls the power system in a 24-hour, seven days-a-week control centre environment that is staffed by operators working 12-hour shifts. The ACC operation includes a number of engineers, analysts, technologists and management who plan

the power system operations, analyze the system when events occur, manage metering for revenue and other purposes, maintain emergency preparedness and manage the EMS/SCADA system, which is the primary technology used by the ACC to remotely operate and control the power system. The majority of costs associated with this account are related to labour.

Labour:

- executing and directing switching;
- monitoring and controlling system voltages;
- responding to power system trouble events;
- arranging and controlling clearances for construction, maintenance, test and emergency purposes;
- planning the power system operations;
- operating and maintaining the secure EMS/SCADA system;
- analyzing the system when events occur;
- preparing operating and compliance reports and data for billing and budget purposes;
- carrying out compliance activities for ARS, ARS CIP and ISO standards; and
- developing operating procedures and maintaining emergency preparedness.

Expenses:

- EMS/SCADA vendor support;
- meals, traveling and incidental expenses;
- obtaining weather and special events reports; and
- contractor costs.

Table 5.3.3-1 - USA 561 - Operation & Maintenance Control Centre Operations (\$M)

Expense	2019 Actual	2020 Actual	2021 MU	2022 Test Year	2023 Test Year
Labour	5.8	5.9	6.0	6.4	6.6
Contracted Manpower	0.2	0.6	0.2	0.2	0.2
Other GOE	0.9	0.6	0.8	0.9	0.9
Total	6.9	7.1	6.9	7.5	7.7

Totals may not add due to rounding.

416. Approximately 85% of USA 561 is attributable to labour expenses. AltaLink’s forecast for the Test Period is directly related to efforts to operate and maintain the amount and complexity of the transmission facilities combined with asset aging and wear out, and increasing amounts of ISO rules, security and audit requirements. AltaLink’s workload is affected by training and documentation requirements associated with ensuring compliance with evolving and increasing numbers of industry rules and standards, such as ARS and the ARS CIP standards. AltaLink requires continued operating activities to support these practices and processes to ensure compliance, and reliable and secure grid operation.
417. Planning and coordinating the electrical system continues to increase in complexity with the integration of additional transmission and distribution connected generators and an increase in customer coordination requirements for planned outages. In addition, the management and integration of emerging technologies such as HVDC, series compensation, PMU’s, cyber security tools and advanced EMS applications continues to be required to ensure the security and

reliability of the bulk electric system, coordinate with other TFOs and DFOs and meet AESO requirements.

Table 5.3.3-2 - USA 561 - Operation & Maintenance Control Centre Operations Forecast Increase (\$M)

Forecast Increase	2021 MU versus 2020 Actual	2022 Test Year versus 2021 MU	2023 Test Year versus 2022 Test Year	2 Test Year Average
Labour	0.1	0.4	0.2	0.3
Contracted Manpower	(0.4)	0.0	0.0	0.0
Other GOE	0.2	0.1	0.0	0.1
Total	(0.1)	0.5	0.2	0.4

Totals may not add due to rounding.

418. AltaLink forecasts operating expenses to increase by \$0.4M per year on average. Labour, contracted manpower, and other GOEs are discussed in turn below.

Table 5.3.3-3 -USA 561 -Operation & Maintenance Control Centre Operations Labour Forecast Increase (\$M)

Forecast Increase	2021 MU versus 2020 Actual	2022 Test Year versus 2021 MU	2023 Test Year versus 2022 Test Year	2 Test Year Average
Inflation	0.1	0.2	0.2	0.2
Other	(0.0)	0.2	0.0	0.1
Total	0.1	0.4	0.2	0.3

Totals may not add due to rounding.

Labour

419. As shown in Table 5.3.3-4 below AltaLink is forecasting 42 FTEs required for Control Center Operations activities as described above over the Test Period. AltaLink has reviewed the current forecasted workloads, compliance processes, ISO rule and security requirements and grid operation work processes for the Test Period and confirms no changes to FTE levels are required.

Table 5.3.3-4 - USA 561 - Operation & Maintenance Control Centre Operations FTEs

	2019 Actual	2020 Actual	2021 MU	2022 Test Year	2023 Test Year
Total Year End FTEs	42.0	42.0	42.0	42.0	42.0

420. The forecast \$0.3M per year average increase to labour expense is primarily a function of inflationary and compensation assumptions as outlined in Section 1.8 and Section 1.9, respectively. The \$0.1M other increase over the Test Period is primarily driven by increased operational support for ARS CIP audit evidentiary requirements based on AESO audit guidance provided in early 2020. This is the first AltaLink ARS CIP audit cycle since the ARS CIP rules came into effect. The 2020 work requirements were completed by contracted manpower.

Contracted Manpower
Table 5.3.3-5 - USA 561 - Operation & Maintenance Control Centre Operations Contracted Manpower Forecast Increase (\$M)

Forecast Increase	2021 MU versus 2020 Actual	2022 Test Year versus 2021 MU	2023 Test Year versus 2022 Test Year	2 Test Year Average
Inflation	0.0	0.0	0.0	0.0
Other	(0.4)	0.0	(0.0)	0.0
Total	(0.4)	0.0	0.0	0.0

Totals may not add to due to rounding.

421. AltaLink is forecasting no increase in contracted manpower expenditures for the Test Period. The \$0.4M decrease in 2021 MU from 2020 actuals was primarily driven by costs to complete evidentiary requirements in support of ARS CIP audit preparations in 2020, based on AESO audit requirement guidance provided in early 2020. AltaLink anticipates future audit support will be able to be completed by internal operating staff.

Other GOE
Table 5.3.3-6 - USA 561 - Operation & Maintenance Control Centre Operations GOE Forecast Increase (\$M)

Forecast Increase	2021 MU versus 2020 Actual	2022 Test Year versus 2021 MU	2023 Test Year versus 2022 Test Year	2 Test Year Average
Inflation	0.0	0.0	0.0	0.0
Other	0.2	0.1	(0.0)	0.1
Total	0.2	0.1	0.0	0.1

Totals may not add to due to rounding.

422. Other GOE is forecast to increase by \$0.1M in the Test Period on average. The increase in GOEs from 2020 actuals to 2021 MU is primarily driven by invoices for software licensing that were incorrectly accounted for in USA 575 and USA 934 in 2020. In addition, a portion of the variance is related to lower staff and training expenses experienced in 2020, and anticipated to continue in 2021, due to COVID-19 restrictions. AltaLink is forecasting these expenditures to return to historic levels in the Test Period.

5.3.4 USA 562 - Station Equipment Maintenance

423. This account includes the costs incurred in the O&M of transmission substations, HVDC converter stations, switching stations (collectively "Stations") and telecommunication sites; the book cost of which is included in Account 353, Station Equipment.
424. The main work activity designations that make up this account are substation work, HVDC, P&C and telecommunications areas. The costs include all labour, materials and expenses incurred in the O&M of the equipment in these areas. If transmission station equipment is located in or adjacent to a generating station, the expenses applicable to transmission station operations is nevertheless charged to this account.
425. AltaLink's goal is to achieve and sustain its station equipment maintenance programs by employing the most cost effective inspection, maintenance and document management practices while complying with all necessary rules and regulations, maintaining commitments to stakeholders, and ensuring asset reliability and performance for customers.

426. AltaLink’s current and forecast volumes of station assets to be managed during the Test Period are shown in Table 5.3.4-1 below.

Table 5.3.4-1 - USA 562 - AltaLink Station Major Assets Volumes at year-end

Major Assets	2019 Actual	2020 Actual	2021-2023 Additions	2023 Forecast
Stations	308	308	-	308
Transformers	740	730	7	737
Circuit Breakers	2,198	2,236	62	2,298
SVC/SC	4	4	1	5
Capacitor Banks	121	120	5	125
Telecom Sites	99	99	-	99

427. Station maintenance work typically entails managing and completing approximately 4,000 repair work orders each year for equipment. This level of maintenance activity is forecast to increase during the Test Period due to the overall aging of AltaLink’s asset base and increasing amounts of applicable ARS requiring incremental maintenance and evidence collection. As assets wear they typically require more frequent inspections and repairs. The AESO has implemented two ARS rules, PRC-005-AB1-6, including updated PRC-005-AB2-6, and FAC-008-AB-3, in the past period.

428. The main activities undertaken in station maintenance include:

- performing predictive maintenance such as site and equipment inspections in substations, converter stations, switching stations and telecommunication locations;
- performing routine preventative maintenance and testing on substation and converter station breakers, circuit switchers, regulators, transformers, protective relays, meters, control circuitry, SCADA, ATM switches, MPLS, multiplexers, radios, wave guides, antennas and auxiliary equipment to ensure optimal performance;
- performing corrective maintenance and repairs on station buildings and facilities, ground grids, bus work, switches, breakers, circuit switchers, regulators, transformers, protective relays, meters, control circuitry, SCADA, ATM switches, MPLS, multiplexers, radios, wave guides, antennas and auxiliary equipment on an as required basis;
- performing emergency repairs on station bus work, switches, breakers, circuit switchers, regulators, transformers, protective relays, meters, control circuitry, SCADA, ATM switches, MPLS, multiplexers, radios, wave guides, antennas and auxiliary equipment on an as needed basis;
- general station upkeep and maintenance including insulating, gravel maintenance and snow removal; and
- sustainment of current ARS such as FAC-501-WECC, PRC-005, FAC-008 and CIP version 5.1 in effect prior to the Test Period. Future versions of these standards may be introduced prior to/during the Test Period.

429. AltaLink continues to monitor the performance of its HVDC converter stations to further refine future forecasts correlating to how the HVDC link is operated and dispatched by the AESO. For example, if higher frequencies of power reference changes (dispatch) are required there will be a greater number of operating cycles on the equipment. Such operating cycles may accelerate future maintenance requirements in order to maintain required HVDC availability.

430. The overall expense forecast for stations is presented in Table 5.3.4-2 below.

Table 5.3.4-2 - USA 562 - O&M Station Equipment Expense (\$M)

Expense	2019 Actual	2020 Actual	2021 MU	2022 Test Year	2023 Test Year
Labour	8.3	9.0	7.9	8.2	8.4
Contracted Manpower	4.0	4.1	4.4	4.5	4.5
Other GOE	2.7	2.3	2.5	2.4	2.4
Total	15.0	15.3	14.8	15.0	15.3

Totals may not add due to rounding.

431. On average approximately 55% of USA 562 expenses are attributable to labour expenses with an additional 30% attributed to contracted manpower. AltaLink's O&M total expense is forecast to remain consistent with 2020 Actuals during the Test Period, generally offsetting inflation factors as discussed in Section 1.8 and incremental ARS compliance requirements from ISO Rules implemented in the prior period.
432. Forecast year-over-year expense increases during the Test Period are presented in Table 5.3.4-3 below.

Table 5.3.4-3 - O&M Station Equipment Expense Forecast Annual Increases (\$M)

Forecast Increase	2021 MU versus 2020 Actual	2022 Test Year versus 2021 MU	2023 Test Year versus 2022 Test Year	2 Test Year Average
Labour	(1.1)	0.3	0.2	0.3
Contracted Manpower	0.3	0.1	(0.0)	0.0
Other GOE	0.3	(0.2)	0.0	(0.1)
Total	(0.5)	0.2	0.2	0.2

Totals may not add due to rounding.

433. AltaLink forecasts operating expenses to increase by \$0.2M per year on average. Labour, contracted manpower, and other GOE are discussed below.

Table 5.3.4-4 - USA 562 - O&M Station Equipment Expense Labour Forecast Increase (\$M)

Forecast Increase	2021 MU versus 2020 Actual	2022 Test Year versus 2021 MU	2023 Test Year versus 2022 Test Year	2 Test Year Average
Inflation	0.2	0.2	0.2	0.2
Other	(1.2)	0.0	(0.0)	0.0
Total	(1.1)	0.3	0.2	0.3

Totals may not add due to rounding.

434. The forecast \$0.3M per year average increase to the labour expense is primarily due to AltaLink's labour inflation assumptions discussed in Section 1.8, Forecasting Methodology. The driver of the decrease in other variance from 2020 actuals to 2021 MU was primarily driven by requirements to complete incremental stations maintenance activities and to establish changes to maintenance cycles to achieve requirements outlined within ARS PRC-005 that went into effect in 2020.
435. As shown in Table 5.3.4-5 below, AltaLink is not forecasting an increase in FTEs performing station maintenance activities during the Test Period. The increase from 2020 year-end actuals to 2021 MU is due to a vacancy at 2020 year-end that has subsequently been filled in the first

quarter of 2021, and a part-time position that is forecast to return to full-time during the Test Period. For details, refer to **Appendix 2**.

Table 5.3.4-5 - USA 562 - O&M Station Equipment Expense FTEs

	2019 Actual	2020 Actual	2021 MU	2022 Test Year	2023 Test Year
Total Year End FTEs	50.8	50.2	51.8	51.8	51.8

General Station Maintenance Workload Analysis

436. The main work disciplines that make up this account are substation technologists and engineers, SCADA and P&C technologists and telecom technologists. These technologists have diplomas in the following disciplines: Electrical Engineering Technology, Electronics Engineering Technology, Wireless Engineering Technology, and Journeyman Power System Electricians in the substation discipline. Responsibilities for the disciplines include activities to:

- inspect, maintain, and repair power transformers, regulators, instrument transformers, breakers, circuit switches, switches, bus connections, ground grids, ancillary equipment, HVDC equipment and buildings through predictive, preventative, corrective, and emergency maintenance programs and processes;
- inspect, maintain, and repair protective relays, metering, control circuitry, ancillary equipment, SCADA and HVDC equipment through predictive, preventative, corrective, and emergency maintenance programs and processes;
- inspect, maintain, and repair ATM switches, MPLS, multiplexers, radios, wave guides, antennas, SCADA and HVDC equipment through predictive, preventative, corrective, and emergency maintenance programs and processes;
- inspect, test and maintain systems in substations and converter station buildings;
- provide equipment status and recommend improvements or replacements;
- provide technical support and direction and monitoring the condition of HVDC assets; and
- leading failure analyses and analyzing and reporting the performance of the HVDC link to internal and external parties.

437. The amount of station maintenance, P&C and telecom work hours are summarized in Table 5.3.4-6 below.

Table 5.3.4-6 - USA 562 - AltaLink Total Maintenance Hours Forecast

Maintenance Hours (all disciplines)	2019 Actual	2020 Actual	2021 Forecast	2022 Forecast	2023 Forecast
Total Annual Work Identified	112,000	113,000	119,000	121,000	122,000
Available man-hours (based on existing FTEs, including overtime)	71,000	77,000	71,000	72,000	72,000
Contracted Workforce*	18,000	18,000	20,000	21,000	21,000
Constrained Work	22,000	17,000	27,000	28,000	30,000

* Contracted workforce requirements are discussed under Contracted Manpower below. Note that the contracted workforce hours shown includes periodic maintenance work required on HVDC converter station assets and systems as well as PRC-005 and standard battery maintenance.

438. The above maintenance hour projections show the continuing increase in total annual workload resulting from the increasing number of assets to maintain, increased safety requirements,

compliance requirements from ARS rules such as PRC-005, maintenance requirements for HVDC and SCADA systems, and aging assets that require maintenance due to wear out. AltaLink continues to monitor and leverage the balance of workload between AltaLink’s FTEs and contracted manpower.

439. The station maintenance workload forecast shown in Table 5.3.4-6 above can be seen to grow as regularly scheduled inspections and maintenance are identifying an increasing amount of required future maintenance work. This is shown for all disciplines as per the red trend line shown in Figure 5.3.4-1 below. Identified work is prioritized and any lower risk work which is not completed increases the maintenance queue (constrained work). AltaLink manages the amount of constrained work being added in any given year and continuously reviews its resourcing and the equipment risk to ensure high priority work is completed.
440. AltaLink will monitor its ability to execute any increased workload in the Test Period with its current work force, and if the constrained work or compliance requirements change above the forecast levels, AltaLink will adjust its resourcing as required.

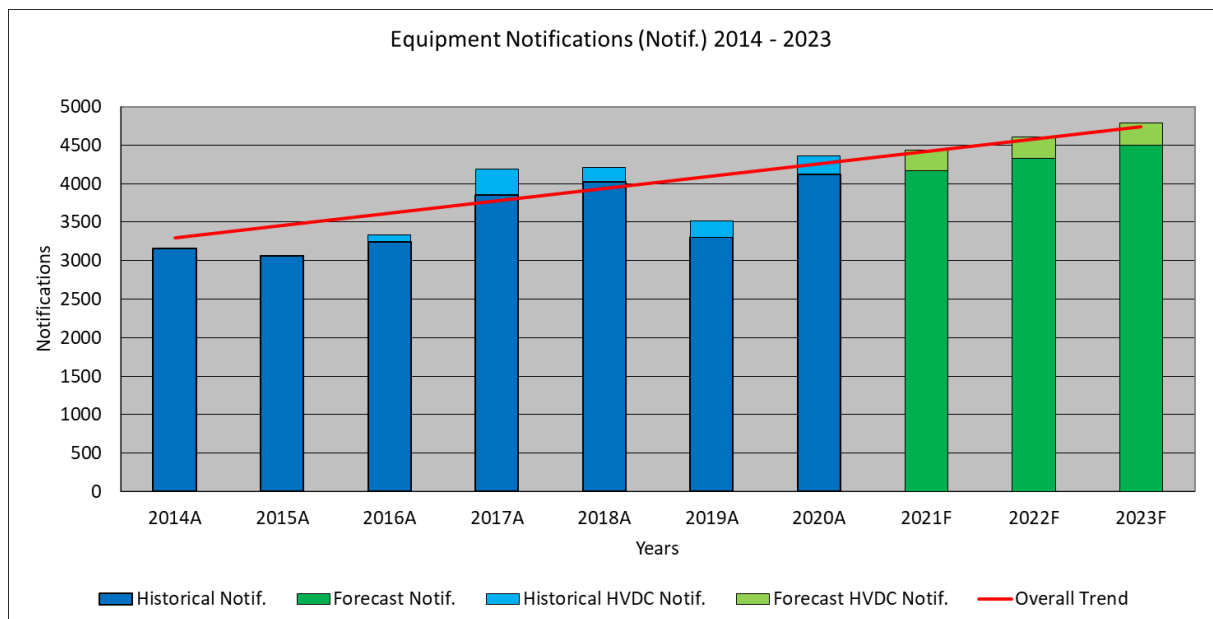


Figure 5.3.4-1 - USA 562 - Substation, Protection and Telecom Equipment Notifications 2014-2023

Contracted Manpower

441. Contractors are utilized at AltaLink to optimize between full time permanent staff and a variable work force to address variable and peak workloads and specialized maintenance tasks. At HVDC converter stations, contractors are used to perform specialized inspection and maintenance work on select HVDC assets and systems. The availability of a contractor work force also allows AltaLink to optimize when to hire full time staff as there is a two to three year lead-time for new staff to be fully qualified for independent fieldwork. AltaLink utilizes contractors to support regularly planned maintenance to ensure the key equipment risks and priority constrained work is completed.
442. AltaLink generally deploys contractors to support the maintenance of the transmission system in the following ways:

- as stand-alone work units to address specifically skilled electrical, mechanical and civil maintenance activities such as battery testing and replacement, HVAC adjustments and filter replacements, and building and site issues such as roof and fence repairs and hantavirus mitigations;
- complete specialized maintenance activities such as transformer, breaker and switch maintenance, equipment testing and inspection, HVDC valve hall work, oil reclaim and trouble response, as required;
- complete unique system maintenance that AltaLink does not have the capability to perform (e.g. fire suppression and deluge systems); and
- complement AltaLink crews for general system maintenance activities when required, to enable crews to maintain a sustainable queue of work within all disciplines.

443. Without contracted manpower to address the specific maintenance requirements, delayed and postponed maintenance could adversely impact transmission system performance, increase the risk of system failures, and make it increasingly difficult to comply with reliability standards and regulations. In addition to reduced transmission system reliability, non-compliance with reliability standards subjects AltaLink to the risk of financial penalties.

444. As shown in Table 5.3.4-7 below, AltaLink is forecasting on average no increase over the Test Period.

Table 5.3.4-7 - USA 562 - O&M Station Equipment Expense Contracted Manpower Forecast Increase (\$M)

Forecast Increase	2021 MU versus 2020 Actual	2022 Test Year versus 2021 MU	2023 Test Year versus 2022 Test Year	2 Test Year Average
Inflation	0.0	0.0	0.0	0.0
Other	0.3	0.1	(0.1)	0.0
Total	0.3	0.1	(0.0)	0.0

Totals may not add due to rounding.

445. As can be seen above, AltaLink is forecasting to keep its contractor manpower expenses consistent during the Test Period. AltaLink’s forecast includes the absorption of contractor inflation as discussed in Section 1.8 Forecasting Methodology.
446. The primary driver of the variance from 2020 to 2021 MU is requirements to support new physical and cyber security equipment installed as part of AltaLink’s Industrial Control System Security project that was completed in the prior period, and additional installations of Substation Security Controls as outlined in **Appendix 13-B1-02** of this Application. These projects invest in physical and cyber security protection of substations by installing additional door contacts, proximity alarms, and video recorders and associated alarms at a number key substations. These devices require ongoing preventative maintenance to ensure their continued functionality.
447. Specialized contractors will continue to be utilized to address high priority maintenance items such as transformer oil leaks, structural inspections for control buildings and minor repairs, air conditioning overhauls, tap changer inspections, rodent management program, battery maintenance and HVDC specialized equipment maintenance and repair.

Other GOE

448. The main expenses and materials in stations are:

- station control building and facility repair expenses;
- operating parts and supplies, such as equipment spare parts, lubricants, and consumable materials;
- test equipment calibration and repairs;
- transportation expenses for travel to and from stations; and
- meals, accommodation and other incidental expenses.

Table 5.3.4-8 - USA 562 - O&M Station Equipment Expense GOE Forecast Increase (\$M)

Forecast Increase	2021 MU versus 2020 Actual	2022 Test Year versus 2021 MU	2023 Test Year versus 2022 Test Year	2 Test Year Average
Inflation	0.0	0.0	0.0	0.0
Other	0.3	(0.2)	(0.0)	(0.1)
Total	0.3	(0.2)	0.0	(0.1)

Totals may not add due to rounding.

449. AltaLink is not forecasting any increase to GOE during the Test Period. The increase from 2020 actuals to 2021 MU is primarily related to impacts of managing the emergency safety requirements of the COVID-19 pandemic, impacting staff expenses. These expenditures are expected to return to historic levels in the Test Period.

5.3.5 USA 563 - Overhead Line Expense

450. This account includes the cost of labour, materials used and expenses incurred in O&M of transmission line plant, the book cost of which is includible in Accounts 354, Towers and Fixtures; 355, Poles and Fixtures; and 356, Overhead Conductors and Devices.

451. USA 563 includes work activities of the following nature:

- aerial patrols;
- ground patrols;
- management/tracking of maintenance items;
- site inspection of maintenance items found on air patrols – i.e. confirmation;
- assisting in trouble identification, assessment and location;
- transferring loads, switching and reconnecting circuits and equipment for maintenance purposes;
- ground clearance checks;
- audits of work performed and crews performing the maintenance work;
- tagging or retagging of structures, installing danger signs, installing flight avoidance markers;
- marking and identification of phasing;
- corrective or urgent maintenance including:
 - splicing or patching of conductors, OHSW or fibre optic cables;
 - replacing of individual insulators in a string;
- overhauling and repairing line cut outs, line switches, line breakers, etc.;
- insulator washing – aerial and ground based;
- retagging, retying, or rearranging position or spacing of conductors;
- installing, repairing and bonding of gates and fences in rural areas;

- bonding of adjacent buildings;
- site investigation of building or road encroachments;
- first call operations for buried cables;
- high loads move facilitation;
- assisting landowners, stakeholders, industrial customers, and developers during activities in proximity to lines; and
- information requests from landowners and stakeholders.

452. AltaLink is forecasting to maintain approximately 13,600 km of transmission circuit length over the Test Period. This figure includes both AC and DC line circuit lengths. Table 5.3.5-1 below provides a summary of the current and forecasted line lengths being maintained.

Table 5.3.5-1 - USA 563 - Transmission Line Circuit kms

	2019 Year-End	2020 Year-End	Additions 2021-2023	2023 Forecast
Lines circuit length (km)	13,155	13,240	330	13,570

453. Table 5.3.5-2 below illustrates the volume and typical types of work activities undertaken within this USA Activity Code over the past several years and forecast through the end of the Test Period.

Table 5.3.5-2 - USA 563 - O&M Transmission Line Work Quantities

	2019 Actual	2020 Actual	2021 Forecast	2022 Forecast	2023 Forecast
Line Patrols	79	83	85	71	95
Emergency Line Patrols	59	90	60	60	60
Emergency Maintenance	36	56	60	60	60

Year to year variances arise due to terrain and time of year and the overall requirements of the defined maintenance plan. Timing and numbers of patrols per year will vary based on the lengths of the specific lines.

454. A key driver of current and future overhead line expenses is a number of standards and practices, such as the AEUC, ISO rules such as ARS FAC-501-WECC-AB2-1 Transmission Maintenance, as well as good electricity operating practices. To comply with these standards and practices, and to maintain a safe and reliable transmission system, AltaLink must patrol and inspect each line on a scheduled basis, and record and develop maintenance plans. Once the plan has been developed AltaLink is required to complete, audit and record the results of that plan. For specific assets subject to ARS requirements, AltaLink is required to report maintenance plans and progress to the AESO.
455. AltaLink's goal is to achieve and sustain its line maintenance program by employing cost effective inspection, maintenance and document management practices, while complying with all necessary rules and regulations, maintaining relations with landowners and stakeholders and sustaining asset reliability and performance.

Table 5.3.5-3 - USA 563 - O&M Overhead Line Expense (\$M)

Expense	2019 Actual	2020 Actual	2021 MU	2022 Test Year	2023 Test Year
Labour	1.2	1.4	1.5	1.6	1.6
Contracted Manpower	2.8	2.7	3.0	2.9	2.9
Other GOE	0.9	0.8	1.0	1.0	1.0
Total	4.9	4.9	5.5	5.5	5.6

Totals may not add to due to rounding.

456. Approximately 29% of USA 563 total expenses is attributable to labour with an additional 52% attributable to contracted manpower.
457. Total expenses for USA 563 are not forecast to materially increase over the Test Period. A breakdown of variances as compared to 2020 actual amounts are as follows:

Table 5.3.5-4 - USA 563 - O&M Overhead Line Expense Forecast Increase (\$M)

Forecast Increase	2021 MU versus 2020 Actual	2022 Test Year versus 2021 MU	2023 Test Year versus 2022 Test Year	2 Test Year Average
Labour	0.1	0.1	0.0	0.1
Contracted Manpower	0.3	(0.1)	0.0	(0.0)
Other GOE	0.2	0.0	0.0	0.0
Total	0.6	0.0	0.1	0.0

Totals may not add to due to rounding.

Labour

Table 5.3.5-5 - USA 563 - O&M Overhead Line Expense Labour Forecast Increase (\$M)

Forecast Increase	2021 MU versus 2020 Actual	2022 Test Year versus 2021 MU	2023 Test Year versus 2022 Test Year	2 Test Year Average
Inflation	0.0	0.0	0.0	0.0
Other	0.1	0.0	(0.0)	0.0
Total	0.1	0.1	0.0	0.1

Totals may not add to due to rounding.

Table 5.3.5-6 - USA 563 - O&M Overhead Line Expense FTEs

	2019 Actual	2020 Actual	2021 MU	2022 Test Year	2023 Test Year
Total Year End FTEs	11.0	7.0	8.0	8.0	8.0

458. As shown in Table 5.3.5-5 above, AltaLink is forecasting on average a \$0.1M increase through the Test Period. This is primarily due to AltaLink's labour escalation assumptions discussed in Section 1.8, Forecasting Methodology. Variances between years are primarily driven by differences in line maintenance requirements arising from line patrols and emergency and operational requirements.
459. As shown in Table 5.3.5-6 above, AltaLink's is forecasting FTE levels for USA 563 to remain consistent during the Test Period. The increase from 2020 year-end actuals is due to vacancy at year-end that has since been filled in the first quarter of 2021. For details, refer to **Appendix 2**. AltaLink has reviewed the current forecasted workloads and work processes for the Test Period

based on its forecast maintenance plans and has confirmed the FTE complement is sufficient to operate and maintain the assets identified in USA 563.

Contracted Manpower

460. Contractor costs in support of overhead line maintenance typically consist of:

- helicopter services in support of aerial patrols (regular and emergency inspections);
- wood pole testing and treatment program;
- insulator washing maintenance program;
- support of high load moves;
- support of underground facility locates;
- land agent support to facilitate landowner access to facilities;
- support for urgent repair and corrective maintenance activities, if required; and
- infrared conductor scanning services to assess conductor sleeve condition.

Table 5.3.5-7 - USA 563 - O&M Overhead Line Expense Contract Manpower Forecast Increase (\$M)

Forecast Increase	2021 MU versus 2020 Actual	2022 Test Year versus 2021 MU	2023 Test Year versus 2022 Test Year	2 Test Year Average
Inflation	0.0	0.0	0.0	0.0
Other	0.3	(0.1)	(0.0)	(0.1)
Total	0.3	(0.1)	0.0	(0.0)

Totals may not add due to rounding.

461. AltaLink is forecasting no increase on average to its contracted manpower during the Test Period. The increase from 2020 actuals is primarily related to incremental helicopter patrol activity being completed as part of AltaLink's Wildfire Mitigation Plan (refer to **Appendix A-22**), a portion of which was rescheduled from 2020 to 2021 due to safety protocol requirements related to the COVID-19 pandemic. In addition, AltaLink experienced a short term reduction in the number of line move requests in 2020 that is not anticipated to continue in 2021.
462. The majority of AltaLink's contracted manpower costs for line maintenance are the costs for helicopter patrols (as forecast in Table 5.3.5-2 above) and pole testing/treatment and insulator washing programs.
463. AltaLink utilizes specialty contractors to execute a wood pole testing and treatment program. Wood poles are treated every seven years to increase the life of the poles starting 15 years after their installation.
464. AltaLink employs contractors to execute the ongoing insulator washing program. This program has avoided increases in the number of outages for AltaLink customers. Sustaining the program of insulator washing is a key component of the overall lines maintenance program to sustain reliability of the system for known transmission lines which are subject to contamination.
465. Table 5.3.5-8 below shows actual and forecast contamination outages due to insulator flashover over a seven year timeframe as a result of the line washing program. The forecast numbers are based on a rolling average calculation.

Table 5.3.5-8 - USA 563 - Outage Due to Contamination of Insulators

	2018 Actual	2019 Actual	2020 Actual	2021 Forecast	2022 Forecast	2023 Forecast
Contamination Outages	63	62	48	58	56	54

466. Alberta Transportation has developed high load corridors throughout the province of Alberta. AltaLink utilizes contractors to confirm routes and load heights; escort loads that are close to or within clearance limits; and, where necessary, make arrangements to lift the conductors. These contractor costs form part of the forecast contracted manpower in this USA account. For escorted moves initiated by third parties AltaLink collects offsetting miscellaneous revenue to cover the cost of facilitating the move. AltaLink is forecasting approximately 30-50 line move requests consistent with past experience and work volumes.

Other GOE
Table 5.3.5-9 - USA 563 - O&M Overhead Line Expense GOE Forecast Increase (\$M)

Forecast Increase	2021 MU versus 2020 Actual	2022 Test Year versus 2021 MU	2023 Test Year versus 2022 Test Year	2 Test Year Average
Inflation	0.0	0.0	0.0	0.0
Other	0.2	0.0	(0.0)	0.0
Total	0.2	0.0	0.0	0.0

Totals may not add to due to rounding.

467. AltaLink is forecasting no increase to GOEs for the Test Period. The \$0.2M other increase from 2020 actuals to 2021 MU is primarily driven by less vehicle utilization for capital activities in line maintenance due to changes in work schedules and power system outages arising from managing the impacts of the COVID-19 pandemic. AltaLink is forecasting to return to historic levels in 2021 and the Test Period.

5.3.6 USA 564 - Underground Line Expenses

468. This account includes the cost of labour, materials used, and expenses incurred in the O&M of transmission, the book cost of which is included in Account 358, Underground Conductors and Devices. If the expenses are not substantial for both overhead and underground lines, these accounts may be combined.

469. Based on AltaLink's small number of underground facilities and relatively recent installation, AltaLink is not forecasting any operating expenses in USA Activity Code 564 Underground Line Expenses, for this Test Period.

5.3.7 USA 566 – Operation & Maintenance Miscellaneous Transmission

470. This account includes the cost of labour, materials used and expenses incurred in engineering, transmission map and record work, transmission office expenses, and other transmission expenses not provided for elsewhere. Refer to Schedule 5-3 attached to this Application.

Labour:

- engineering associated with planning and coordinating maintenance activities;
- compliance activities as they relate to ISO Rules and standards;
- corporate EH&S;

- general records of physical characteristics of lines and stations, such as capacities, etc.;
- land records including the administration of crossing and processing of agreements, planning commission circulations, encroachments and easement inquires or complaints;
- ground resistance records;
- asset records and GIS mapping;
- general clerical work; and
- miscellaneous labour.

Materials and Expenses:

- EH&S electronic manuals and training sites;
- building service supplies;
- map and record supplies;
- transmission office supplies and expenses, printing and stationery;
- first-aid supplies and safety materials coordination; and
- research, development, and demonstration expenses.

471. The staff included in USA 566 are a consolidation of various support functions for AltaLink's compliance with external obligations and requests as well as the continued safe and reliable operation and maintenance of AltaLink's transmission system. The functional areas involved include EH&S (including training); Power Quality and Electrical Effects; Engineering; Maintenance Program Delivery; Document Management; Procurement Services (including Fleet); and Drafting. The primary activities include:

- development, implementation, training, management and oversight of programs, processes and procedures to ensure compliance with external obligations such as *Safety Codes Act*, *Occupational Health and Safety Act*, *Electric Utilities Act*, AEUC, ISO Rules, ARS and AUC Rules;
- engineering analysis, review, and support for external obligations and requests related to above and the O&M of AltaLink's system. Activities include review and approval of encroachment requests; protection system coordination with external interconnecting parties; investigation, analysis, and resolution of external power quality, electrical effects and noise inquiries; development, implementation and sustainment of asset maintenance programs and procedures to ensure compliance with ARS and ISO Rules, development and implementation and sustainment of asset maintenance, replacement and sparing strategies, standards, specifications and procedures to support the O&M of AltaLink's system, and engineering support for both office and field maintenance staff;
- prioritization, planning, scheduling, material and services procurement of maintenance work and management of asset maintenance programs;
- timely response to external party requests for crossing and encroachment;
- management of all technical data, documents, and drawings; and
- management of AltaLink's vehicle fleet to ensure compliance with external obligations such as Alberta Transportation Regulations and *Traffic Safety Act* as well as support the operation and maintenance of AltaLink's system.

Table 5.3.7-1 - USA 566 - O&M Miscellaneous Transmission Expense (\$M)

Expense	2019 Actual	2020 Actual	2021 MU	2022 Test Year	2023 Test Year
Labour	8.2	7.3	7.6	8.1	8.3
Contracted Manpower	0.8	0.8	0.5	0.5	0.5
Other GOE	0.6	0.5	0.3	0.4	0.4
Total	9.7	8.7	8.5	8.9	9.2

Totals may not add due to rounding.

472. AltaLink's forecast for the Test Period is directly related to efforts to operate and maintain aging facilities and new facilities, both with increasingly complex operating requirements and to ensure ongoing compliance with an increasing number of ARS reliability standards including ARS CIP standards.
473. As a regulated TFO in Alberta, AltaLink is required to comply with all applicable legislation, regulations, codes, and standards. Examples include:
- *Safety Codes Act;*
 - *Occupational Health and Safety Act;*
 - *Electric Utilities Act;*
 - *Alberta Electrical Utility Code;*
 - *ISO Rules;*
 - *Alberta Reliability Standards and CIP Compliance;*
 - *AUC Rules;*
 - *Alberta Transportation Regulations;*
 - *Traffic Safety Act;*
 - *Environmental Regulations;*
 - *Alberta Forestry and Wildfire Regulations;*
 - *National Parks Act;*
 - *Code of Conduct;*
 - *Personal Information Protection Act; and*
 - *Bill 198.*
474. Additionally, AltaLink receives a number of external requests each year including:
- crossing and encroachment requests from external parties planning to cross or encroach AltaLink's facilities;
 - AESO data requests;
 - protection system coordination notifications and requests from interconnecting parties to ensure protection systems continue to coordinate as the system grows and changes and to comply with ARS PRC-001-AB-0;
 - coordination with interconnecting parties to ensure customer reliability requirements are sustainable;
 - performance of root cause failure analysis on system events and equipment failures which have impacted customers; and
 - power quality, electrical effects and noise inquiries related to requirements outlined in external rules and or obligations such as AUC Rule 012 – Noise Control.

475. As the industry evolves and Alberta and the transmission system continue to interconnect new generation sources and customers, the external obligations and requests increase in both volume as well as in complexity to evaluate these requests. As a result, AltaLink must ensure the proper resources are in place to sustain compliance to the existing level of obligations as well as address new requirements and customer expectations.

Table 5.3.7-2 - USA 566 - O&M Miscellaneous Transmission Expense Forecast Changes (\$M)

Forecast Increase	2021 MU versus 2020 Actual	2022 Test Year versus 2021 MU	2023 Test Year versus 2022 Test Year	2 Test Year Average
Labour	0.3	0.4	0.3	0.4
Contracted Manpower	(0.2)	(0.1)	0.0	(0.0)
Other GOE	(0.2)	0.1	0.0	0.1
Total	(0.2)	0.5	0.3	0.4

Totals may not add due to rounding.

476. AltaLink forecasts total operating expenses for USA 566 to have an increase on average of \$0.4M over the Test Period as detailed further below.

Labour

Table 5.3.7-3 - USA 566 - O&M Miscellaneous Transmission Expense Labour Forecast Increase (\$M)

Forecast Increase	2021 MU versus 2020 Actual	2022 Test Year versus 2021 MU	2023 Test Year versus 2022 Test Year	2 Test Year Average
Inflation	0.1	0.2	0.2	0.2
Other	0.1	0.2	0.1	0.1
Total	0.3	0.4	0.3	0.4

Totals may not add due to rounding.

477. AltaLink is forecasting an average increase of \$0.4M to labour over the Test Period. \$0.2M is attributable to AltaLink's labour inflation assumptions, which are discussed in Section 1.8 Forecasting Methodology. The other average increase of \$0.1M is primarily attributable to AltaLink anticipating changes in capital activities requiring support from operating staff in this USA over the Test Period. As staff in this USA include functions such as engineering, planning, document management, procurement, etc. they regularly support both operating and capital activities.
478. As such, in 2020, AltaLink experienced an increased amount of support for capital initiatives such as cyber security, training system and information technology upgrades; support of capital planning; CRU and IT business case preparation; and, incremental engineering and procurement support for material procurement involving renewals of contract agreements. AltaLink is forecasting a similar and slightly decreasing volume of capital activities over the Test Period.
479. AltaLink continuously reviews and prioritizes its work activities with staff functions within this USA to ensure critical items are managed between operating and capital support requirements. For example, some engineering studies and specifications, cause failure analysis, updating of maintenance standards, and equipment assessments may be re-scheduled to accommodate priorities. As the staff in this USA are primarily non-union, there is typically no incremental cost for overtime. AltaLink has reviewed the current operating FTE levels associated with the

activities for this USA Activity Code and confirms that current FTE levels are required as detailed in Table 5.3.7-4 below.

Table 5.3.7-4 - USA 566 - O&M Miscellaneous Transmission Expense FTEs

	2019 Actual	2020 Actual	2021 MU	2022 Test Year	2023 Test Year
Total Year End FTEs	66.0	62.0	66.0	66.0	66.0

480. AltaLink is forecasting no increase in FTEs during the Test Period. The increase from 2020 actuals to 2021 MU of four FTEs is due to vacancies at year-end, three of which have been hired in the first quarter of 2021. For more information related to these vacancies refer to **Appendix 2**.

Contracted Manpower

481. AltaLink utilizes contracted manpower to supplement certain activities that cannot be completed by AltaLink staff from a work load perspective or are a specialty service that are not available within the group. Some examples of these activities include the following, and are discussed further below:

- safety and environment qualifications;
- training and certification delivery;
- instructional designer for training material development;
- ARS – CIP compliance requirements;
- safety, AESO or environmental audits and inspections;
- critical incident or a complex investigation(s);
- engineering and technical support;
- GTA preparation support; and
- business process assistance.

482. AltaLink receives hundreds of crossing and/or encroachment requests annually from external parties planning to construct facilities that will cross or encroach upon AltaLink’s transmission system. This volume is forecast to remain consistent during the Test Period in general alignment with the Alberta economy. Refer to Table 5.3.7-5 below.

Table 5.3.7-5 - USA 566 - O&M Third Party Request

2019 Actual	2020 Actual	2021 MU	2022 Forecast	2023 Forecast
851	804	840	840	840

483. As per the requirements of regulations and codes such as the *Safety Codes Act* and the AEUC, AltaLink has a responsibility to review and approve these requests to help ensure these external facilities are constructed at safe distances from the transmission system. Currently AltaLink is utilizing a combination of internal engineering staff, as well as contractors to attempt to keep up with the demand of these requests. AltaLink’s goal is to turnaround these requests within 3-5 weeks from date of receipt, and to continuously look for opportunities to provide better service and response time with external parties. AltaLink utilizes contractors to meet peak request periods to ensure that the 3-5 week response time is met.

484. Worker and public safety and environment are two of AltaLink’s core values; to improve performance in this function AltaLink undertakes an annual Safety, Security & Environment Summit which brings together key leadership from AltaLink and the contractor community to discuss issues and trends and to foster an environment of learning and continuous

improvement. From a learning perspective, AltaLink brings in external parties to present and influence its leadership in the safety and environment areas.

485. STARS Air Ambulance service is another function that is contracted. AltaLink registers worksites with STARS Air Ambulance to enable a quick and effective response to an emergency situation.
486. One of the key aspects of AltaLink’s environmental program is to monitor its worksites to ensure that its operations do not negatively impact the environment. AltaLink employs third party services to complement existing staff by ensuring that environmental aspects comply with environmental regulations and good industry practices.
487. AltaLink also utilizes consultants and contracted manpower for engineering and technical support for a wide variety of activities such as; engineering analysis related to radio and television interference, power quality, electromagnetic fields, audible noise, arc flash, participation in CEA programs, crossing and encroachment analysis, annual double testing fees, and power system modeling support.

Table 5.3.7-6 - USA 566 - O&M Miscellaneous Transmission Expense Contract Manpower Forecast Increase (\$M)

Forecast Increase	2021 MU versus 2020 Actual	2022 Test Year versus 2021 MU	2023 Test Year versus 2022 Test Year	2 Test Year Average
Inflation	0.0	0.0	0.0	0.0
Other	(0.2)	(0.1)	0.0	(0.0)
Total	(0.2)	(0.1)	0.0	(0.0)

Totals may not add due to rounding.

488. AltaLink is not forecasting an increase in contracted manpower over the Test Period. The \$0.2M decrease in 2021 MU from 2020 actuals was primarily driven by one-time costs to complete evidentiary requirements in support of ARS CIP audit preparations based on AESO audit requirement guidance provided in early 2020. This is the first AltaLink ARS CIP audit cycle since the ARS CIP rules came into effect in 2017. AltaLink anticipates future audit support will be able to be completed by internal operating staff.

Other GOE

489. GOE for this account consist of the following:
- staff expenses due to staff complement;
 - professional dues;
 - purchase of training manuals, engineering standards and subscriptions;
 - inventory write downs/adjustments; and
 - education partnership costs.

Table 5.3.7-7 - USA 566 - O&M Miscellaneous Transmission Expense GOE Forecast Increase (\$M) versus Actual

Forecast Increase	2021 MU versus 2020 Actual	2022 Test Year versus 2021 MU	2023 Test Year versus 2022 Test Year	2 Test Year Average
Inflation	0.0	0.0	0.0	0.0
Other	(0.2)	0.1	0.0	0.1
Total	(0.2)	0.1	0.0	0.1

Totals may not add due to rounding.

490. AltaLink is forecasting an increase on average of \$0.1M in GOE expenses during the Test Period. This increase is primarily related to staff and other expenses being lower in 2020 actuals, and anticipated to continue in 2021 due to COVID-19 safety requirements. These costs are expected to return to normal levels during the Test Period. The decrease of \$0.2M in 2021 MU from 2020 actuals is primarily related to forecast changes in the timing and requirements for write-downs of obsolescent inventory recorded from year to year.

5.3.8 USA 567 – Right-of-Way Payments

491. AltaLink is forecasting no increases for ASP rates that effect those landowners whose ASP agreement comes up for renewal in the Test Period. The total annual increase in the Test Period is approximately \$0.1M, due to rate increase in the 2019 -2021 period. An independent study performed in 2021 by Serecon - Annual Structure Payments for Transmission Lines in Alberta (Serecon Report) - provides support for AltaLink’s ASP forecast (refer to **Appendix 12-1**). The Serecon Report provides evidence for the fair annual compensation to landowners as a result of AltaLink transmission facilities being on the landowners’ property. The study results are based on the *Surface Rights Act* compensation components of loss of use and adverse effects (tangible and intangible).
492. In 2022, AltaLink is forecasting approximately a \$0.1M increase over 2021 MU for ASPs included in revenue requirement. The changes are primarily driven by compensation rates for those landowners whose term agreements will be renewed during the Test Period based on the prior period adjustments. The variance in 2020 from 2019 is due to Payment Requests and Prior Year ASP’s paid in 2019 resulting in a \$0.5M decrease.

Table 5.3.8-1 - USA 567 - Annual Structure Payment Expenses (\$M)

Expense	2019 Actual	2020 Actual	2021 MU	2022 Test Year	2023 Test Year
Total	15.4	15.0	15.4	15.5	15.5

493. Similar to prior periods, AltaLink engaged Serecon to produce a report detailing compensation practices within Alberta with respect to landowners allowing structures to be located on their lands. As outlined in the Serecon Report, Serecon refined its report from previous analysis to determine fair compensation for the impacts that landowners face by having structures located on their properties.
494. In examining the types of structures located on landowners’ property, it is clear that transmission infrastructure is a unique infrastructure as it is the only infrastructure that creates an above ground linear overhead disturbance. This unique impact requires fair compensation to address the loss of use, tangible and intangible adverse effects.

495. AltaLink supports the methodology used by Serecon in determining fair compensation for the loss of use, tangible and intangible adverse effects associated with transmission structures.
496. As outlined in the Serecon Report, weed control costs and data have been collected from a number of custom commercial applicator companies that spray around infrastructure such as electrical transmission lines, well sites and other facilities in Alberta. There are a number of tangible costs including labour and spraying under and around the structures.
497. AltaLink has held its ASP rates unchanged with no increases from 2014 to 2019. Serecon’s recommended annual escalation for ASP rates is 1.5%.⁵⁹ Based on this recommendation and the fact there have been no increases in ASP rates for the past five years, AltaLink increased its ASP rates for Structures renewing in 2019-2021 at the proposed escalation of 2% over the prior period, as shown in Table 5.3.8-2 below. The total annual ASP increase for the Test Period due to the rate increase is approximately \$0.1M.
498. AltaLink is proposing to remain flat with its ASP rates as shown in Table 5.3.8-2 for the Test Period.

Table 5.3.8-2 - USA 567 - Annual Structure Payments Compensation Rates

	2019 Total Compensation Rate/ Structure	2020 Total Compensation Rate/ Structure	2021 Total Compensation Rate/Structure	2022 Total Compensation Rate/Structure	2023 Total Compensation Rate/Structure
500 kV Double Circuit	\$1,499	\$1,499	\$1499	\$1499	\$1499
500 kV Single Circuit or 240 kV High Capacity	\$1,474	\$1,474	\$1474	\$1474	\$1474
240 kV Lattice	\$1,224	\$1,224	\$1224	\$1,224	\$122
240 kV/138 kV 2 -pole	\$622	\$622	\$622	\$622	\$622
Single Poles	\$439	\$439	\$439	\$439	\$439

499. AltaLink did not encounter any SRB hearings on review of annual rentals since the 2019-2021 GTA, but did encounter five SRB Compensation Decisions on the Red Deer Area Development Project that also tested the offers of ASPs within each hearing and was successful in each decision that the offer of ASP was satisfactory and no further negotiations were needed in each of these hearings:
- AltaLink Management Ltd. v Beaudoin, 2019 ABSRB 170 (CanLII);⁶⁰
 - AltaLink Management Ltd. v Wagers, 2019 ABSRB 154 (CanLII);⁶¹
 - AltaLink Management Ltd. v Wagers, 2019 ABSRB 175 (CanLII);⁶²

⁵⁹ Appendix 12-1, page 54, pdf 67.

⁶⁰ Appendix 12-2 Attachment 1, pdf 83.

⁶¹ Appendix 12-2 Attachment 2, pdf 85.

⁶² Appendix 12-2 Attachment 3, pdf 87.

- AltaLink Management Ltd. v Wagers, 2019 ABSRB 174 (CanLII),⁶³ and
- AltaLink Management Ltd. v Antler Valley Farm Ltd, 2019 ABSRB 173 (CanLII).⁶⁴

Easements

500. Easement negotiations with landowners generally take place following the filing of the facility application with the Commission on the preferred routes, and once all affected landowners have been notified of the facility application filing, AltaLink will engage with the affected landowners and offer them a compensation package that consists of the following general compensation package:

- easement payment – fair market value will be paid per acre for the total area of the easement that crosses a landowner’s property;
- \$2,500 (minimum) - \$5,000 (maximum) per titled parcel as entry fee payment; and
- \$500,000 minimum general disturbance payment based on transmission structure type.

5.3.9 USA 569 – Operation & Maintenance of Structures

501. This account includes the cost of labour, materials used and expenses incurred in the O&M of structures, the book cost of which is includible in Account 352, Structures and Improvements.

502. AltaLink is not forecasting any expenses in USA 569 O&M of Structures, for this Test Period.

5.3.10 USA 571.1 – Vegetation Management

503. This account includes the cost of labour, materials used and expenses incurred in the O&M of vegetation specifically related to the control of trees, brush and general vegetation which may affect the safe and reliable operation of the transmission system. This account also includes management of the physical aspects of the right-of-way such as access trails, culverts, water crossings, approaches, and erosion control.

504. AltaLink’s mandate is to provide a safe environment for the public and employees and contractors at all times, while accessing the rights-of-way. To fulfill this commitment, AltaLink must remove the risk of vegetation contacts with energized transmission lines. The removal of vegetation, which can grow into the energized transmission lines, and provision of safe access for maintenance and emergency activities, eliminates and/or reduces outage response times and reduces the costs of maintenance activities. Furthermore, removal of vegetation reduces the risk and costs of forest fires and outages related to tree to line contacts.

505. AltaLink must also maintain its rights-of-way through urban areas. AltaLink is required to mow grass and remove snow where necessary to comply with municipal and county by-laws.

506. VM is also conducted within substations, converter stations and telecom tower sites.

507. AltaLink’s goal is to maintain a sustainable integrated VM program by utilizing the most cost effective VM practices while complying with all necessary regulations and maintaining good relations with landowners and other stakeholders.

508. A key driver of current and future vegetation and right-of-way management forecast is the AEUC, the ARS (FAC-003-AB1-1), and applicable Alberta Environment regulations regarding vegetation and herbicide management. To comply with these required standards and practices and to maintain a safe and reliable transmission system, AltaLink must maintain specified

⁶³ Appendix 12-2 Attachment 4, pdf 89.

⁶⁴ Appendix 12-2 Attachment 5, pdf 91.

clearances to any vegetation under or alongside its transmission lines and be able to demonstrate compliance thereto.

509. In order to maintain compliance, AltaLink patrols and inspects each transmission line on a scheduled basis, including those outside forested areas, to ensure areas such as agricultural shelterbelt planted trees, invasive weeds and isolated pockets of vegetation are identified and addressed. AltaLink records the findings of its completed patrols and develops a prioritized annual VM plan. AltaLink completes its transmission line inspections (which include right-of-way and vegetation assessments) based upon the following parameters:
- annual fall air patrols on existing facilities and within a year of energization of new facilities;
 - scheduled detailed ground patrols (DGPs) or detailed air patrols (DAPs) are defined based on the type and location of the facility. Lines through areas of high public access may be patrolled on a more frequent basis;
 - targeted pre-growing season aerial vegetation patrol completed each spring in the Forest Protection Area and on rights-of-way with a higher risk of accidental vegetation contact. This patrol is in addition to the fall air patrols and is part of AltaLink's overall vegetation risk assessment and management. The Green Area Zone is primarily the unsettled portion of the province defined as forest lands not available for agricultural development other than grazing (Provincial Crown lands); and
 - annual ground patrol of locations where air patrols cannot be done due to flight restrictions.
 - LiDAR inspection and vegetation clearance analysis. Growth projections are assessed against available survey data to assess vegetation clearances.
510. AltaLink develops an annual integrated VM program, executes against this plan, records the completion of work and results, and also performs self-audits. The integrated VM program is adjusted based on the results of AltaLink's various patrols, feedback from landowners or the public, LiDAR information, and the actual vegetation growth observed throughout the year. LiDAR is a fast and reliable airborne method of obtaining 3-dimensional data for terrain and vegetation mapping.
511. The integrated VM methodology utilized to complete work activities identified in the VM plan includes a combination of industry practice treatment methods to achieve acceptable control with minimal impact on the environment while ensuring control of the non-compatible vegetation which may create a risk to public safety, fire and system reliability.
512. Treatment methods include:
- Mowing/Mulching – use of larger machines equipped with blades or rotating drums that cut or shred vegetation along the right-of-way;
 - Removals/Slash – typically the use of chainsaws to remove trees or larger brush;
 - Trim – the trimming of branches or stems from trees typically using a chain saw;
 - Herbicide/Spray – use of chemicals to control non compatible vegetation regrowth or weeds; and
 - Socially accepted, physical, behavioral methods which include allowance for gardens, pathways, secondary uses, farming activities, planted compatible vegetation, etc.
513. Further description of key elements of AltaLink's Integrated VM program include assessing the accelerated VM required one to two years after a new transmission line or rebuild construction activity. The accelerated VM requirements are based on the following conditions:

- vegetation growth along the right-of-way may be accelerated due to loosening up of the soil and distribution of seeds. VM may be required in the form of weed mitigation, mowing or application of herbicides;
- new trim sites required due to landowner commitments;
- road or water crossing buffers clearing operations have opened up areas for accelerated growth;
- clearing completed prior to the transmission line construction at times creates low spots and or crossings where clearances found after stringing have resulted in off cycle vegetation maintenance; and
- the VM methods used (herbicide, mow, trim etc.) will be done thereafter on a one to eight year cycle depending on actual growth rates and site conditions.

514. Typical labour and contractor activities for the Integrated VM program include:

- contract management and supervision of multiple contract crews assigned to VM duties and right-of-way maintenance duties;
- maintenance and tracking within established programs for management of reliability requirements;
- planning and compliance management requirements within ARS FAC-003-AB1-1;
- obligations under the Wildfire Management Agreement with Alberta Agriculture and Forestry;
- contractor labour associated with refining the work scopes, reviewing the work scopes with landowners and receiving landowners' consents;
- contract labour associated with trimming, removing/slashing, mowing of trees and brush;
- contract labour associated with the application of herbicides to control weeds in or around substations, switching cubicles or other underground assets;
- contract labour associated with chemical treatment of right-of-way areas, other than the initial application occurring as a result of construction of line;
- contract labour associated with the application of herbicides to control noxious weeds; and
- contract labour associated with grass mowing, snow removal and general maintenance along urban rights-of-way.

515. AltaLink is forecasting to maintain the integrated VM program expenditures generally consistent with historic levels during this Test Period.

516. AltaLink's forecast expenses for USA 571.1 for the Test Period are shown in Table 5.3.10-1 below. Table 5.3.10-3 provides details on the work volumes.

Table 5.3.10-1 - USA 571.1 - Operation & Maintenance of Vegetation Management (\$M)

Expense	2019 Actual	2020 Actual	2021 MU	2022 Test Year	2023 Test Year
Labour	0.5	0.5	0.5	0.5	0.5
Contracted Manpower	7.6	6.4	6.5	6.5	6.6
Other GOE	0.1	0.1	0.1	0.1	0.1
Total	8.2	6.9	7.0	7.1	7.2

Note: Program Management, patrolling and consenting expenses are included in Labour and Contracted Manpower; totals may not add due to rounding.

Table 5.3.10-2 - USA 571.1 - Operation & Maintenance of Vegetation Management Forecast Increase (\$M)

Forecast Increase	2021 MU versus 2020 Actual	2022 Test Year versus 2021 MU	2023 Test Year versus 2022 Test Year	2 Test Year Average
Labour	0.0	0.0	0.0	0.0
Contracted Manpower	0.1	0.1	0.1	0.1
Other GOE	0.0	0.0	0.0	0.0
Total	0.1	0.1	0.1	0.1

Totals may not add to due to rounding.

517. VM expenditures are comprised of:
- internal AltaLink labour, which includes managing the integrated VM program and right-of-way programs, patrolling and landowner consenting activities; and
 - external contracted manpower which includes brushing (mechanical and herbicide) and right-of-way and substation/telecom weed control, right-of-way clean up (urban grass mowing and snow removal), right-of-way maintenance activities, along with external contractors that assist with consenting requirements and GOE which support overall program activities.
518. AltaLink is forecasting an average increase of \$0.1M in operating expenses over the Test Period due to changes in contracted manpower further described below.

Table 5.3.10-3 - USA 571.1 - Operation & Maintenance of Vegetation Management Volumes and Total Costs

	2019 (Actual)			2020 (Actual)			2021 (MU)		
	m2 (000's)	Unit Cost (\$/m2)	\$ M	m2 (000's)	Unit Cost (\$/m2)	\$ M	m2 (000's)	Unit Cost (\$/m2)	\$ M
Trim	122	6.56	0.8	96	7.29	0.7	110	6.45	0.7
Mechanical Mow	691	0.72	0.5	265	0.38	0.1	702	0.69	0.5
Slash/Removals	1,172	3.07	3.6	554	5.23	2.9	730	3.89	2.8
Herbicide/Weed Control	3,554	0.34	1.2	3,484	0.32	1.1	3,500	0.24	0.9
*Other right-of-way management, Substations, Converter Stations, Telecom		N/A	0.3		N/A	0.3		N/A	0.3
*Program Management		N/A	1.8		N/A	1.8		N/A	1.8
Total	5,539		8.2	4,399		6.9	5,042		7.0

* Other right-of-way management includes; grass mowing, snow removal, and garbage cleanup on the right-of-way, near stations and telecom facilities.

*Program Management includes contractor consenting, internal program management, air patrols and growth study.

Totals may not add due to rounding.

	2022 (Forecast)			2023 (Forecast)		
	m2 (000's)	Unit Cost (\$/m2)	\$ M	m2 (000's)	Unit Cost (\$/m2)	\$ M
Trim	110	6.45	0.7	110	6.45	0.7
Mechanical Mow	720	0.69	0.5	720	0.69	0.5
Slash/Removals	740	3.89	2.9	740	4.00	3.0
Herbicide/Weed Control	3,500	0.26	0.9	3,500	0.26	0.9
*Other right-of-way management, Substations, Converter Stations, Telecom			0.3			0.3
Program Management			1.8			1.8
Total	5,070		7.1	5,070		7.2

* Other right-of-way management includes; grass mowing, snow removal, and garbage cleanup on the right-of-way, near stations and telecom facilities.

*Program Management includes contractor consenting, internal program management, air patrols and growth study.

Totals may not add due to rounding.

519. The 2020 growth rate study, completed by Ecological Solutions Inc. (ESI), re-affirmed that growth rates vary across the AltaLink operating territory based on seasonal conditions. As a result, the VM maintenance cycles for trim sites will be maintained at one to three years. The growth rates will continue to be reviewed annually and maintenance cycles adjusted accordingly.
520. Sites that may be approaching the minimum clearances (e.g. priority sites) are identified during the fall air patrols. These sites are field verified prior to the start of the next year’s growing season. The number and trending of priority sites found is used as a leading indicator of the health of the overall vegetation program. The declining trend and stabilizing trend shown in Figure 5.3.10-1 below indicates sufficient expenditure levels successfully managing to minimize the number of priority sites.

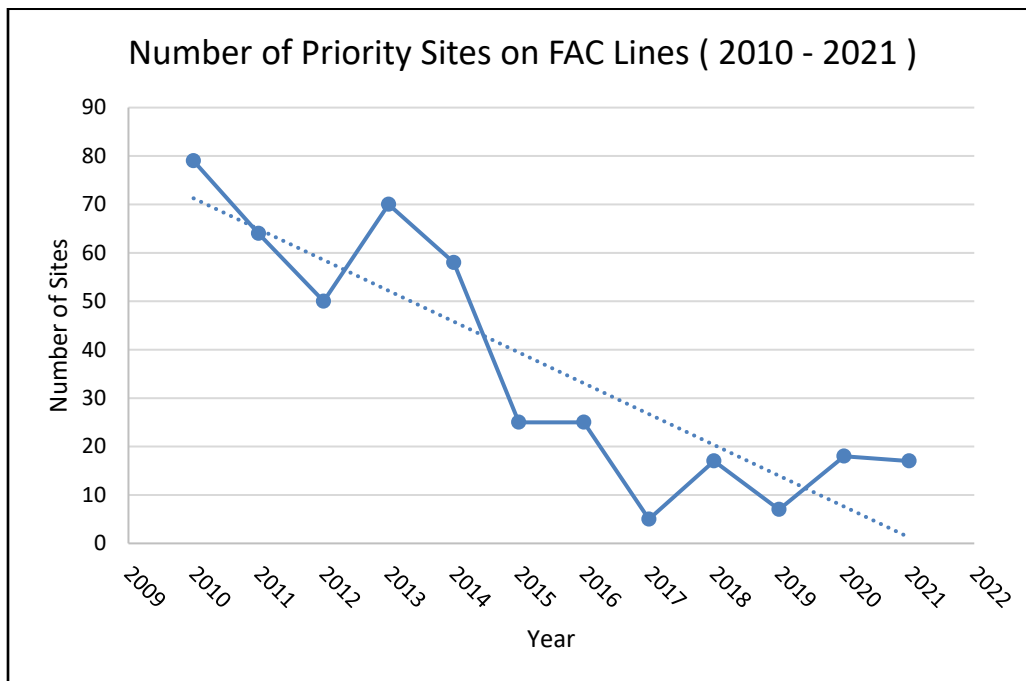


Figure 5.3.10-1 - USA 571.1 - Priority Sites Identified as per Fall Air Patrols – 2010 to 2021

521. AltaLink is forecasting and planning a sustainable integrated VM program after prior years (2005-2021) of investment to reduce vegetation workload liability, and AltaLink will continue to review and adjust the program forecast as required to meet applicable regulations and ensure public safety to maintain the sustainable program. An integrated VM sustainable program results in portions of right-of-way treated through the various VM methods. The amount of right-of-way that will be maintained through the use of herbicides, and the amount of mowing, have been forecast from historic experience and growth studies and are forecast to be consistent for the Test Period as different lines are addressed.
522. AltaLink continues to look for opportunities to prudently manage the application of vegetation control activities to provide the lowest total unit cost. Herbicide is the most cost effective means of VM compared to more costly mow operations. AltaLink manages the risk of herbicide application by only using certified herbicide applicators, approved herbicides (according to provincial regulations, including the *Pest Control Products Act*, the *Environment Quality Act*, the

Pesticides Act and the Pesticides Management Code) and by strict adherence to all manufacturers' recommendations.

523. Unit costs for each activity in any specific year typically change dependent on both the characteristics of the specific locations being managed and the phase of VM program underway at that time.
524. The forecasts are estimated based on the best information available at this time, average historical costs and average historical volumes. Environmental and site conditions are highly variable and this variability impacts site access and also affects tree growth, tree mortality and pest infestations. Actual work types and volumes will change based on actual conditions on site determined through aerial and ground inspections. The total volumes completed each year by work type will change as costs or adjustments are made to future planned work based on these inspections.

Labour

525. AltaLink's internal labour activities focus on maintaining the integrated VM plan and right-of-way programs, performing audits of work and contract crews and monitoring compliance, as well as assisting with standards and quality control. AltaLink has one VM Coordinator looking after the overall VM programs and management of contractors. A VM Specialist assists in program management, audits of work and monitoring of compliance.

Table 5.3.10-4 - USA 571.1 - Operation & Maintenance Vegetation Management Labour Expense Additions (\$M)

Forecast Increase	2021 MU versus 2020 Actual	2022 Test Year versus 2021 MU	2023 Test Year versus 2022 Test Year	2 Test Year Average
Inflation	0.0	0.0	0.0	0.0
Other	0.0	0.0	(0.0)	(0.0)
Total	0.0	0.0	0.0	0.0

Table 5.3.10-5 - USA 571.1 - Operation & Maintenance of Vegetation FTEs

	2019 Actual	2020 Actual	2021 MU	2022 Test Year	2023 Test Year
Total Year End FTEs	2.0	2.0	2.0	2.0	2.0

526. AltaLink has reviewed the current projected workloads and work processes over the Test Period and confirms no changes to required FTE levels to manage the VM program.

Contracted Manpower (Including Brushing)
Table 5.3.10-6 - USA 571.1 1 - Operation & Maintenance of Vegetation Management Contract Manpower Forecast Increase (\$M)

Forecast Increase	2021 MU versus 2020 Actual	2022 Test Year versus 2021 MU	2023 Test Year versus 2022 Test Year	2 Test Year Average
Inflation	0.0	0.1	0.1	0.1
Other	0.1	0.0	0.0	0.0
Total	0.1	0.1	0.1	0.1

Totals may not add to due to rounding.

527. AltaLink is forecasting an average increase of \$0.1M in contracted manpower over the Test Period due to inflationary assumptions outlined in Section 1.8.
528. The other variance between 2021 MU and 2020 actuals is primarily due to AltaLink experiencing lower than forecast requirements for mechanical mow and trim activities in 2020, due to the site conditions and vegetation growth requirements for the sites scheduled for VM and lower regional growth patterns in areas planned for vegetation maintenance in 2020. AltaLink is not forecasting these conditions to reoccur in the Test Period due to variability in vegetation growth and the differences in right-of-way locations being managed from year to year.
529. The VM contracted manpower forecast is composed of two distinct categories based on the type of work performed in the management of AltaLink’s right-of-way. AltaLink’s contracted manpower expenditures and work volumes forecast for the Test Period are shown in Table 5.3.10-7 below.
530. The first category, “Brushing”, is work associated with the actual control methods done to manage the vegetation on AltaLink’s right-of-way, typically outside the urban areas. This work includes:
- spraying herbicide application for control of trees/bushes under the wires and on the right-of-way;
 - mowing, mechanical removal of vegetation;
 - removing (slash or removal) trees where the use of mechanical mowers is not possible or economic (side hills, small sections, shelter belts); and
 - trimming, where the complete removal is not possible due to landowner concerns.
531. The second category “Other Contractor Cost” is work associated with the management of the overall VM program, right-of-way management through urban areas as well as the substation and telecom sites. Activities consist of substation and right-of-way weed control, grass mowing and snow removal, right-of-way cleanup and the patrolling, site inspections, auditing, and landowner consenting and notifications required for the overall VM program.
532. Landowner consenting refers to the activities that need to be completed in advance of the brushing and right-of-way control activities. Specifically, consenting includes:
- confirming the area that needs to be managed or trees that need to be trimmed or removed by examining the specific site;
 - drafting a sketch that is given to the landowner and to the brushing contractor as a part of the construction execution package;

- confirming the brushing work schedule as well as outlining how rights-of-way are to be accessed, including addressing any landowner concerns;
 - obtaining landowner permission to access their lands; and
 - obtaining permits for off right-of-way access and pipeline crossings.
533. There are no fees paid to the landowner for these maintenance activities. Rather, the consenting costs reflect labour in the execution of the consenting/notification process.
534. Consenting is generally done by contractors due to the requirements to work irregular hours to meet the landowners' schedules. There is a large amount of evening and weekend hours required as well as specialized knowledge, history and relationships with regional landowners.
535. The overall VM contracted manpower forecast for the Test Period is driven by the volume of work identified through the annual aerial patrols and the transmission line maintenance information system.
536. The volume of VM work forecast for the Test Period is shown in Table 5.3.10-7 below.

Table 5.3.10-7 - USA 571.1 - Contracted Manpower - Volume of Work by Work Type (000 m2)

Activity	2019 Actual (000 m ²)	2020 Actual (000 m ²)	2021 MU (000 m ²)	2022 Forecast (000 m ²)	2023 Forecast (000 m ²)
Trim	122	96	110	110	110
Mow	691	265	702	720	720
Slash/Remove	1,172	554	730	740	740
Herbicide (Right-of-Way Volumes Only)	3,507	3,374	3,425	3,425	3,425
Total Brushing volume	5,492	4,289	4,967	4,995	4,995
Brushing Cost	\$4.7M	\$3.4M	\$3.7M	\$3.7M	\$3.8M
Other Contractor costs	\$2.0M	\$2.2M	\$2.0M	\$2.0M	\$2.0M
Wildfire VM (Appendix A22)	\$0.8M	\$0.7M	\$0.7M	\$0.8M	\$0.8M
Total Contracted Manpower Costs	\$7.6M	\$6.4M	\$6.5M	\$6.5M	\$6.6M

Other right-of-way management contractor costs include consenting, substation weed control and right-of-way clean up. Totals may not add to due to rounding.

Other (GOE)

537. Typical GOE include:
- system record and report forms associated with vegetation and right-of-way management;
 - meals, traveling and incidental expenses; and
 - materials used in VM.

Table 5.3.10-8 - USA 571.1 – O&M of Vegetation Management GOE Forecast Increase (\$M)

Forecast Increase	2021 MU versus 2020 Actual	2022 Test Year versus 2021 MU	2023 Test Year versus 2022 Test Year	2 Test Year Average
Inflation	0.0	0.0	0.0	0.0
Other	0.0	0.0	(0.0)	0.0
Total	0.0	0.0	0.0	0.0

Totals may not add to due to rounding.

538. There are no material variances in GOE for this Test Period.

5.3.11 USA 575 – Operations and Management IT Support

539. This account shall include the cost of labour, materials used and expenses incurred in O&M of owned or leased IT systems that are assignable to transmission operations and that are not provided for elsewhere. Telecom sites exist at all AltaLink facilities, including 44 stand-alone telecom sites. The scope of this work includes: GIS, drawing support applications, operational network monitoring and management tools and services, Operational Technology environment including server and application support, outage reporting and management systems, data reliability applications, radio support services, mobile dispatch systems, telecom engineering standards and design, and ensuring compliance to applicable government rules and regulations.

540. The network communications (NetCom) area is managing continued demands on AltaLink’s telecommunications infrastructure due to several external factors and continued technology evolution. These factors, specifically the ongoing support of the MPLS technology, managing ISO rule compliance including new CIP requirements, updating cyber security review and analysis based on evolving external threats and good industry practices, and ongoing operational support of the assets drive the forecast for operational costs. Examples of key activities forecast in this account:

- MPLS equipment support, monitoring and maintenance;
- Operational Technology server/storage and application support;
- ARS Standards and compliance – development, maintenance and evidence collection demonstrating compliance to telecommunication and reliability standards (including ISO/IEC 27001/19, and ISO Rules including ARS and CIP);
- ongoing cyber security threat assessments and mediation programs;
- asset management and monitoring development through the NOC;
- cooperation with the AESO to develop consolidated, longer-term capital plans and project identification documents;
- participation in AESO workgroups focusing on SCADA and telecom engineering standards;
- day-to-day troubleshooting and remediation of trouble-tickets and events (e.g. excessive tower twist, MPLS network optimization, microwave radio link performance review, network security assessments, etc.);
- co-ordination, review and planning of third party use of telecom infrastructure by industry partners including independent power producers, distribution partners and community demand for tower co-location space;
- new service offerings including VoIP, SCADA to the AESO and PMU data from IPPs, transported by AltaLink’s telecommunications network;

- supporting and optimizing the network routing paths and reviewing and reporting on network performance; and
- performing software upgrades to maintain telecommunication system operations and security.

Table 5.3.11-1 - USA 575 - Operation & Maintenance IT Support (\$M)

Expense	2019 Actual	2020 Actual	2021 MU	2022 Test Year	2023 Test Year
Labour	1.1	1.1	1.5	1.5	1.4
Contracted Manpower	0.2	0.3	0.1	0.1	0.2
Other GOE	2.9	3.0	3.0	3.1	3.1
Total	4.2	4.3	4.7	4.7	4.8

Totals may not add due to rounding.

541. Approximately 31% of USA 575 is attributable to labour expenses with the remainder primarily made up of GOE directly related to vendor support costs, third-party data and communications charges, and some staff and training related expenses.

Table 5.3.11-2 - USA 575 - Operation & Maintenance IT Support Forecast Increase (\$M)

Forecast Increase	2021 MU versus 2020 Actual	2022 Test Year versus 2021 MU	2023 Test Year versus 2022 Test Year	2 Test Year Average
Labour	0.4	0.0	(0.0)	(0.0)
Contracted Manpower	(0.1)	0.0	0.1	0.0
Other GOE	0.0	0.1	0.0	0.0
Total	0.3	0.1	0.1	0.1

Totals may not add due to rounding.

542. AltaLink forecasts operating expenses to increase by \$0.1M per year on average. Labour, contracted manpower and other GOE are discussed in turn below.

Labour

543. USA 575 includes the following roles: telecom/network/MPLS engineers, technical architects/specialists, maintenance analysts, IP/application specialists and the network operators who run the NOC.
544. Examples of typical activities:
- network communication system-level planning, technology review and integration, annual priority maintenance expenditures, and day-to-day operational support;
 - hands-on engineering support of the programs and events that occur when operating a wide-area network;
 - support the development and upkeep of engineering standards and integration of new technology and equipment into the utility telecom network;
 - planning and support of third party use of the infrastructure such as tower co-locations and IPP interconnections;
 - the IP Network Specialists are responsible for the planning, implementing, and commissioning of transport and routing services related to the daily operation of the routed

network services ensuring business and operational needs are met in a resilient, safe, secure manner compliant with industry standards;

- the Network Engineer is responsible for performance analysis, network optimization, statistics reporting and the day to day support to the NOC and field operations around MPLS issues;
- implementation of network services and infrastructure including network switching hardware, wireless (Wi-Fi networks), network security appliances, and network monitoring tools and software;
- the Network Maintenance Analyst, Planner, and Scheduler is responsible for identifying needed maintenance, prioritizing it, and scheduling field crews day-to-day;
- monitoring and providing telecom services on the network as needed and alerting operations staff when network events occur. The real-time eyes on the network, focused on tracking network services and restoring them as soon as possible after an outage; and
- plan, design, implement and maintain CIP and security compliant processes and architectures in the network communications infrastructure.

Table 5.3.11-3 - USA 575 - Operation & Maintenance IT Support Labour Forecast Increase (\$M)

Forecast Increase	2021 MU versus 2020 Actual	2022 Test Year versus 2021 MU	2023 Test Year versus 2022 Test Year	2 Test Year Average
Inflation	0.0	0.0	0.0	0.0
Other	0.4	(0.0)	(0.1)	(0.1)
Total	0.4	0.0	(0.0)	(0.0)

Totals may not add due to rounding.

545. There are no forecast increases for this USA account in the Test Period attributable to labour. The increase in labour expense in 2021 MU from 2020 actuals is primarily due to extended time required to recruit and fill vacancies in 2020, which have subsequently been filled. In addition, over the Test Period, AltaLink is forecasting increased requirements for operational activities in support of the increase in monitoring, training and implementation of new and changing evidence requirements as part of the ARS CIP, especially as it relates to the Operational Technology server environment and associated software.
546. AltaLink has reviewed the current forecasted workloads and work processes for the Test Period and is forecasting to reduce by one FTE upon the completion of a term role in 2023, refer to Table 5.3.11-4 below. The increase from 2020 actuals to 2021 MU is due to two vacancies at year end, both of which have been filled in the first quarter of 2021. For further information regarding these positions, refer to **Appendix 2**.

Table 5.3.11-4 - USA 575 - Operation & Maintenance IT Support FTEs

	2019 Actual	2020 Actual	2021 MU	2022 Test Year	2023 Test Year
Total Year End FTEs	6.0	5.0	7.0	7.0	6.0

Contracted Manpower
Table 5.3.11-5 - USA 575 - Operation & Maintenance IT Support Contract Manpower Forecast Increase (\$M)

Forecast Increase	2021 MU versus 2020 Actual	2022 Test Year versus 2021 MU	2023 Test Year versus 2022 Test Year	2 Test Year Average
Inflation	0.0	0.0	0.0	0.0
Other	(0.1)	(0.0)	0.1	0.0
Total	(0.1)	0.0	0.1	0.0

Totals may not add to due to rounding.

547. There are no material forecast increases for this USA account in the Test Period attributable to contracted manpower. The decrease in 2021 MU from 2020 actuals was primarily driven by requirements to complete evidence preparation in support of the three year ARS CIP audit in 2020, based on AESO audit requirement guidance provided in early 2020. This is the first AltaLink ARS CIP audit cycle since the ARS CIP rules came into effect in 2017. Over the Test Period, AltaLink anticipates future audit support will be able to be completed by internal operating staff. In addition, increases in support requirements and scope associated with the Operational Technology server environment and associated applications is forecast in 2023 to result in incremental costs associated with specialist contractor support.

Other GOE
Table 5.3.11-6 - USA 575 - Operation & Maintenance IT Support GOE Forecast Increase (\$M)

Forecast Increase	2021 MU versus 2020 Actual	2022 Test Year versus 2021 MU	2023 Test Year versus 2022 Test Year	2 Test Year Average
Inflation	0.0	0.0	0.0	0.0
Other	0.0	0.0	(0.0)	0.0
Total	0.0	0.1	0.0	0.0

548. GOE is not forecasting an increase in average expenses for the Test Period.

5.4 Allocated Administrative and General

549. Refer to Section 25 for the details regarding this item.

5.5 Taxes Other Than Income Tax

5.5.1 USA 408.1: Transmission Linear Property Tax

550. Taxes other than income tax include business, property, and linear taxes paid to various taxation authorities in Alberta. AltaLink engaged AEC International, an international municipal property tax and assessment consulting firm to prepare the property tax forecast for this Application.

551. Based on AEC's review, a copy of which is attached as **Appendix 9**, AltaLink is forecasting the following amounts for taxes other than income tax.

Table 5.5.1-1 - Property and Business Tax Forecast (\$M)

Property Type	2019 Actual	2020 Actual	2021 MU	2022 Test Year	2023 Test Year
Transmission Lines	13.7	13.8	13.9	14.3	14.7
Substations	33.2	31.8	31.2	31.2	31.3
Telecontrol	1.8	1.7	1.7	1.6	1.6
Buildings/Structures	1.2	1.3	1.3	1.9	2.0
Land	1.8	1.8	1.9	2.0	2.0
Property Tax Total	51.7	50.4	50.0	51.0	51.6
Business Tax Total	0.0	0.0	0.0	0.0	0.0
Total	51.7	50.4	50.0	51.0	51.6

Totals may not add to due to rounding.

552. A majority of the forecast growth in property taxes during the Test Period is attributable to capital additions/retirements, as shown in the following Table 5.5.1-2 below.

Table 5.5.1-2 - Property Tax Forecast (\$M)

Description	2019 Actual	2020 Actual	2021 MU	2022 Test Year	2023 Test Year
Total Property Taxes (\$M)	51.7	50.4	50.0	51.0	51.6
Increase in Property Taxes from Prior Year	2.5	-1.3	-0.4	1.0	0.6
Property Taxes on Capital Additions (\$M)	0.3	1.0	0.5	0.6	0.6

553. Consistent with past practice and AUC precedent, AltaLink is seeking deferral account treatment for “Taxes Other Than Income Tax” as indicated in Section 31.7.
554. Deferral account treatment will protect ratepayers and AltaLink from any volatility in the timing and size of capital additions and forecast risk in non-controllable property tax related variables such as the assessment year modifier, mill rates, and cost factors.
555. Refer to Schedule 5-6 for Taxes Other Than Income Tax.

5.6 Transmission Manpower – Full Time Equivalents

556. Refer to Schedule 5-5 for transmission costs included in the transmission function.

5.7 Transmission Operation & Maintenance Schedules

Schedule 5-1	Schedule of Transmission Operation & Maintenance Costs by Account
Schedule 5-2	Schedule of Transmission Operation & Maintenance Costs - Variance Explanations
Schedule 5-3	Details of Miscellaneous Transmission Expenses - Account 566
Schedule 5-4	Schedule of Transmission Costs
Schedule 5-5	Schedule of Transmission Manpower - Full Time Equivalents – Mid-year
Schedule 5-6	Schedule of Transmission Taxes Other Than Income Taxes

6. TRANSMISSION DEPRECIATION & AMORTIZATION

6.1 Overview

557. AltaLink's forecast depreciation and amortization expenses in this GTA reflect the effects of the following factors in addition to the normal course forecast increase in rate base:
- AltaLink's new Depreciation Study incorporating asset transactions up to and including December 31, 2019, and refreshed estimates of survivor curves;
 - In this Application, AltaLink is applying to refund to customers, over the Test Period, \$120M of accumulated depreciation surplus, in two instalments of \$60M in each of 2022 and 2023. This \$120M accumulated depreciation refund is supported by the new 2019 Depreciation Study and takes into account the 2021 \$80M accumulated depreciation surplus refund already having been approved by the AUC in Decision 26248-D01-2021 and Decision 26248-D02-2021. When combined, the \$120M accumulated proposed depreciation surplus refund with the approved \$80M accumulated depreciation surplus refund, it equals to the requested depreciation surplus refund of \$200M in AltaLink's January 18, 2021, 2021-2023 Tariff Refund Application. As further explained and supported in the sections below, the new 2019 Depreciation Study provides updated expert evidence in support of the additional \$120M accumulated depreciation surplus in this GTA; and
 - The Commission's directions in Decision 25870-D01-2020 approving AltaLink's transition away from the traditional method of collecting net salvage towards capitalizing net salvage spending as part of the cost of replacement assets.
558. AltaLink's total depreciation and amortization expenses include five components as follows:
- Depreciation expense in relation to property, plant and equipment;
 - Amortization of software costs including accelerated amortization of SAP;
 - Amortization of Leasehold Improvements;
 - Net Salvage Funding; and
 - Offset by amortization of Customer Contributions.
559. The total depreciation and amortization expenses in AltaLink's 2022-2023 revenue requirement are forecast to increase from \$287.6M approved for the year 2021 to \$296.9M in 2022 and \$306.2M in 2023. Refer to Table 6.1-1 below. The increase is predominantly due to increases in rate base, offset by lower aggregate average depreciation rates. Refer to Section 10 for discussions on increases in rate base.

Table 6.1-1 – Depreciation, Net Salvage Funding and Amortization Expenses

	2019-2021 Actuals and MU			2019-2021 GTA Approved			2022-2023 Forecasts	
	2019	2020	2021	2019	2020	2021	2022	2023
Depreciation on PP&E	256.2	261.0	266.6	256.8	261.2	267.3	268.6	276.8
Amortization of Software	20.1	17.3	19.1	20.1	16.7	15.1	21.5	23.3
Amortization of Leasehold Improvements	2.9	2.5	3.3	2.8	2.9	3.0	3.1	2.9
Net Salvage Funding	36.4	33.7	30.3	37.1	34.5	30.3	30.3	30.3
Amortization of Customer Contributions	(23.7)	(24.8)	(26.8)	(24.4)	(26.2)	(28.0)	(26.5)	(27.1)
Total Depreciation Amortization Expenses¹	292.0	289.7	292.5	292.4	289.1	287.6	296.9	306.2

Totals may not add due to roundings.

6.2 Depreciation Rates and Expenses on Property, Plant and Equipment

560. Depreciation on property, plant and equipment is expected to increase from \$267.3M approved for 2021 in AltaLink's 2019-2021 GTA, to \$268.6M in 2022 and \$276.8M in 2023. Referring to Table 6.2-1 below, the 2022 forecast depreciation expense is \$5.3M higher than the 2021 Approved depreciation, due to higher gross plant and is offset by a (\$4.0)M decrease due to a lower average depreciation rate. The 2023 forecast depreciation expense of \$276.8M is \$9.5M higher than the 2021 Approved depreciation expense arising from a \$13.2M increase due to higher gross plant offset by a (\$3.7)M decrease due to a lower average depreciation rate.

Table 6.2-1 – Depreciation Expense on PP&E: Changes from 2021 Approved \$M

	2021 Approved	2022 Forecast	2023 Forecast
2021 Approved	267.3	267.3	267.3
Increase due to higher Gross Plant		5.3	13.2
(Decrease) due to lower average rate		(4.0)	(3.7)
Annual Depreciation on PP&E	267.3	268.6	276.8
Weighted Average Depreciation Rate	2.42%	2.39%	2.40%

Note that the amounts in this table relate only to assets included in the depreciation study and do not include net salvage funding, amortization of customer contributions, amortization of software costs and amortization of leasehold improvements which together constitute the total depreciation and amortization expenses shown in Table 6.1-1 above.

561. In its 2019-2021 GTA, AltaLink filed a depreciation study prepared by Concentric Energy Advisors (CEA) incorporating asset transactions and balances up to December 31, 2017. This study derived depreciation rates using the straight-line method, incorporating the Equal Life Group (ELG) procedure applied on a whole life basis. AltaLink agreed with customers and interveners to a NSA that included this depreciation study, as well as: -

- a 2-year extension of the depreciation life of Account 355.01 Poles and Fixtures (Steel Poles) (a new account commencing the 2019-2021 GTA period; and
- a \$31.2M refund of accumulated depreciation surplus in relation to Account 354.01 Towers and Fixtures (ISO 502.2 compliant) and Account 355.01 Poles and Fixtures (Steel Poles).

562. The Commission approved AltaLink’s 2019-2021 GTA NSA in Decision 23848-D01-2020.
563. In the present Application, AltaLink is filing a new depreciation study prepared by CEA. The study is attached as **Appendix 8-A**; its results are summarized in Table 6.2-2 below. The new study continues to apply the straight-line method and ELG procedure on a whole life basis in deriving the depreciation rates for this 2022-2023 GTA. The plant included in this study includes all asset transactions up to and including December 31, 2019. All asset classes remain the same as approved in the 2019-2021 GTA. However, the forecast life profiles for the asset classes have changed, resulting in depreciation rates which are on average 0.05% lower than the rates approved in the 2019-2021 GTA (the weighted average depreciation rate for 2021 was 2.42% as compared with 2.37% for the years 2022-2023). AltaLink requests the Commission’s approval to apply the new depreciation rates as shown in Table 6.2-2 below to the 2022-2023 Test Period.

Table 6.2-2 – Depreciation Rates excluding Net Salvage

Depreciation Rates excluding Net Salvage	2019-2021 GTA			2022-2023 GTA (CEA Recommendations)							
	Estimate Survival Curve	Annual Accrual	Annual Accrual including Provision for True-up	Estimate Survival Curve	Annual Accrual	Annual Accrual including Provision for True-up	AccumDep Required \$millions	Available for Refund \$millions	Refund \$millions	AccumDep (surplus) Deficit after Refund \$millions	AccumDep (surplus) Deficit after Refund %
TRANSMISSION PLANT											
350.10 LAND RIGHTS	56-R4	1.89%	1.90%	70-R3	1.61%	1.61%	37.7	(4.9)	(3.0)	(1.9)	-5.00%
352.00 STRUCTURES AND IMPROVEMENTS	50-R2.5	2.38%	2.33%	50-R2.5	2.33%	2.33%	86.5	(11.1)	(6.7)	(4.3)	-5.00%
353.00 STATION EQUIPMENT	47-R2	2.59%	2.49%	47-R2.5	2.43%	2.43%	642.4	(126.9)	(94.8)	(32.1)	-5.00%
353.01 STATION EQUIPMENT (HVDC)	43-R2.5	2.85%	2.83%	43-R2.5	2.78%	2.78%	54.2	(8.2)	(5.5)	(2.7)	-5.00%
353.10 SYSTEM COMMUNICATION AND CONTROL	24-L2	4.78%	4.66%	25-L1.5	4.65%	4.65%	327.6	(29.0)	(12.6)	(16.4)	-5.00%
354.00 TOWERS AND FIXTURES	57-R2.5	1.95%	1.58%	57-R2.5	1.91%	1.91%	154.1	(65.7)	(58.0)	(7.7)	-5.00%
354.01 TOWERS AND FIXTURES (ISO Rule 502.2 Compliant)	67-R2.5	1.86%	1.85%	70-R3	1.63%	1.63%	135.3	(29.6)	(22.9)	(6.8)	-5.00%
355.00 POLES AND FIXTURES	53-R2.5	2.24%	2.41%	52-R1	2.59%	2.59%	189.3	98.3	107.5	(9.3)	-4.90%
355.01 POLES AND FIXTURES (Steel)	67-R2	2.00%	1.94%	70-R3	1.63%	1.63%	65.9	(44.0)	(40.7)	(3.3)	-5.00%
356.00 OVERHEAD CONDUCTORS AND DEVICES	65-R4	1.62%	1.55%	70-R3	1.60%	1.60%	246.3	(74.2)	(61.9)	(12.3)	-5.00%
358.00 UNDERGROUND CONDUCTORS AND DEVICES	50-R5	2.04%	2.01%	55-R5	1.86%	1.86%	7.9	(2.0)	(1.6)	(0.4)	-5.00%
GENERAL PLANT							\$ 1,947.2	\$ (297.2)	\$ (200.0)	\$ (97.2)	
390.00 STRUCTURES AND IMPROVEMENTS	45-R2	2.51%	2.68%	50-R3	2.26%	2.28%				\$ (80.0)	Decision 26248-D01-2021
391.00 OFFICE FURNITURE AND EQUIPMENT	15-SQ	6.67%	6.67%	15-SQ	6.67%	6.67%				\$ (120.0)	2022GTA
391.10 COMPUTER HARDWARE	5-SQ	20.00%	20.00%	5-SQ	20.00%	20.00%				\$ (200.0)	
392.00 TRANSPORTATION EQUIPMENT - FLEET VEHICLES	8-L2.5	12.70%	3.58%	8-L2	13.09%	5.19%					
394.00 TOOLS, SHOP AND LAB EQUIPMENT	10-SQ	10.00%	10.00%	10-SQ	10.00%	10.00%					
396.00 POWER OPERATED EQUIPMENT	25-L2	4.79%	4.85%	20-L1.5	5.92%	6.57%					
Compound weighted average depreciation rate		2.49%	2.42%		2.38%	2.37%					

6.3 Refund of Accumulated Depreciation Surplus

564. In AUC Proceeding 26248, AltaLink applied to refund to the customer \$350M, comprising \$150M of pre-collected income taxes relating to future years (FIT) and \$200M of accumulated depreciation surplus. In Decision 26248-D01-2021, and for the reasons subsequently provided in Decision 26248-D02-2021, the Commission approved a refund of \$230M, including \$80M of accumulated depreciation surplus to be refunded in 2021. This resulted in a \$223,512,791 reduction to AltaLink's 2021 tariff starting April 1, 2021, which the Commission found AltaLink to have implemented.⁶⁵

34. However, the Commission accepts AltaLink's updated accumulated depreciation surplus calculation, which relies on the application of the service life and Iowa curve depreciation parameters submitted by AltaLink in its December 31, 2017, depreciation study. The 2017 depreciation study (as agreed to by parties to AltaLink's negotiated settlement agreement) was approved by the Commission in Decision 23848-D01-2020. In the current proceeding, AltaLink applied the depreciation study parameters from that approved study to its actual 2019 plant in service balances.

35. The Commission finds this exercise has effectively resulted in a technical update, and in a recalculation of both an updated accumulated depreciation balance and a surplus amount for AltaLink's transmission function assets. The technical update calculations show that while the total accumulated depreciation (life) surplus at December 2019 was \$160 million, a 2021-only refund in the amount of \$80 million would leave a remaining balance of \$80 million of accumulated depreciation. The remaining balance of accumulated depreciation (life) of \$80 million is in addition to the required five per cent threshold (\$71 million in aggregate for all transmission accounts) historically used by the Commission to trigger the amortization of reserve differences mechanism for the life portion of accumulated depreciation.

36. Based on the above, the Commission finds that a 2021 tariff refund in the amount of \$230 million, consisting of \$150 million in FIT and \$80 million in accumulated depreciation (life), results in a tariff that is just and reasonable.

37. In Decision 26248-D01-2021, the Commission directed AltaLink to adjust its 2021 tariff by the amount of \$230 million, to effect a net 2021 tariff reduction in the amount of \$223,512,781 to be implemented effective April 1, 2021. AltaLink's compliance with this net tariff reduction resulted in a revised 2021 net monthly tariff of \$45,851,942 for April through December 2021. The Commission finds that AltaLink has complied with this direction and no further action is required on the part of AltaLink.

⁶⁵ Decision 26248-D02-2021, page 8, pdf 11.

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See the "Forward-looking Information Advisory".

565. In Decision 26248-D02-2021, the Commission approved only \$80M of AltaLink’s proposed \$200M refund of accumulated depreciation surplus. AltaLink submits that it would be in the public interest to refund the remaining \$120M of its accumulated depreciation surplus during the Test Period, and proposes to do so in two equal instalments of \$60M in each of 2022 and 2023.
566. The Commission declined to approve the full \$200M, not because the full refund was unjustified in principle or unwarranted by the foreseeable economic pressures on rate payers, but rather because it found that it “could not fully test” the new depreciation study upon which the \$200M proposal was based. AltaLink has filed its new depreciation study as **Appendix 8-A** to this Application, so the Commission now has the benefit of that study in full, to test it and verify that \$200M of accumulated depreciation surplus was in fact available to be refunded.
567. The refund of the remaining \$120M surplus continues to be consistent with regulatory principle. As the UCA recognized in Proceeding 26248, refunding it will align AltaLink’s depreciation expense with the actual consumption of its assets, and will maximize the chance that the customers receiving the refund are the same customers who contributed those amounts in the first place – consistent with the principle of cost causation. The longer AltaLink holds the amounts, the more remote this chance becomes. Refunding the remaining \$120M would also support intergenerational equity, for the reasons previously discussed.
568. The Commission noted that its approved \$80M refund leaves AltaLink with considerably more accumulated depreciation surplus than “the required five per cent threshold”. AltaLink continues to have no need to retain this surplus, and considers, in light of the present and ongoing economic crisis, that customers would benefit more from having it as cash in their respective pockets during 2022 and 2023 than as long-term financing of AltaLink’s assets. As the Commission recognized, Albertans face “exceptional circumstances” in 2021 that include an “economic downturn due to the COVID-19 pandemic, the collapse in the world price of oil and the resulting significant negative impact to Albertans and businesses”. These circumstances are “unique relative to the impacts of other economic downturns that have occurred in recent memory”. The economic downturn, the COVID-19 pandemic, and low oil prices all persist, and rate relief will be as welcome to Albertans while recovering from the downturn as while weathering it. The continuing need for rate relief during 2022 and 2023 is evident from the level of customer support for AltaLink’s original proposal in Proceeding 26248, which proposed a refund of the full \$200M of accumulated depreciation surplus between 2021 and 2023: strong support was received from the UCA as well as a long list of individual customers and customer groups.
569. AltaLink’s present proposal builds on the partial relief approved in Decision 26248-D02-2021 to provide customers with the fullest available support, and AltaLink submits that it is in the public interest. AltaLink includes in this Application all the relevant evidences, arguments, reply argument and conclusions in Proceeding 26248 in supporting the \$120M refund. Some of primary regulatory principles discussed in Proceeding 26248 are summarized below. However, any specific part of the record in Proceeding 26248 not mentioned in the summary should not be taken as indication that AltaLink does not include them.
570. AltaLink’s proposal supports just and reasonable rates irrespective of the current economic headwinds and the refunding of the \$120M surplus accumulated depreciation back to customers:

- a) closely aligns the principle of **cost causation**, which was recognized by the Commission as the guiding principle in rate design. By definition, AltaLink's surplus depreciation, which was collected from previous generations of customers, represents a divergence from AltaLink's current actual asset consumption, whether consumption is determined in accordance with AltaLink's approved depreciation parameters or the updated parameters reflected in AltaLink's Application. As long as AltaLink holds the surplus, future customers will pay less than the amount of depreciation corresponding to their use of the transmission system, contrary to the principle of cost causation;
- b) follows the principles of **gradualism and moderation** by retaining a roughly \$100M accumulated depreciation surplus that is within a 5% approved tolerance provides a cushion against short-term fluctuations in its depreciation expense and small changes in service life estimates. As the UCA correctly points out, refunding these amounts now will align AltaLink's depreciation expense with the actual consumption of its assets, and will maximize the chance that the customers receiving the refund are the same customers who contributed those amounts in the first place – consistent with cost causation. The longer AltaLink holds the amounts, the more remote this chance becomes; and
- c) furthers the principle of **intergenerational equity**, by providing needed relief to hard-hit current customers and by more fairly allocating the costs of AltaLink's assets among the future generations of customers who will benefit from them. Approving AltaLink's proposal would not constrain the Commission from responding to future circumstances as they arise.

571. With respect to the issue of retroactivity or retrospectivity, this \$120M accumulated depreciation surplus refund that is now fully supported by the new 2019 Depreciation Study should be treated on the same basis as the approval of the \$80M depreciation surplus in Decision 26248 -D02-2021. Specifically, the Commission states at paragraph 26 of Decision 26248-D02-2021 as follows:

The Commission therefore finds that it is not prevented from considering AltaLink's requested relief due to principles of retroactivity and retrospectivity.

6.4 Amortization of Software Costs including Accelerated Amortization of SAP

572. In **Appendix 13-B3-03** Enterprise Resource Planning (ERP) Replacement Program, AltaLink describes the need to transition to a cloud or hybrid cloud-based ERP system and the opportunity to replace SAP with Oracle as the least cost alternative for maintaining sustainable critical services to customers. The business plan envisages transitioning out of SAP by 2027, at which time the vendor has indicated support for the current on-site version of SAP employed at AltaLink will be phased out and replaced by a cloud-based version of SAP. Under AltaLink's transition plan, by this date AltaLink will have had the opportunity to test run Oracle and SAP in parallel for at least one year. In this Application, AltaLink seeks the Commission's approval of (1) a reduced level of capital spending in support of the basic functionalities of SAP until it is fully replaced by Oracle, and (2) an accelerated rate of recovering the remaining costs of the old SAP system to match the remaining service life of that system.
573. For the 2022-2023 Test Period and through to the end of 2024, AltaLink forecasts to spend \$0.5M per year for required SAP system enhancements and sustainment requirements to ensure it can maintain security and continue to provide essential services.

574. In order to prudently transition between technologies, a minimized SAP spend and subsequent capital additions are expected between 2021 and 2026. AltaLink's SAP system is coming to end of life in 2027, and is therefore planned to be decommissioned. Refer to the expected additions profile in Table 6.4-1 below. The new ERP system is expected to go live in mid-2025, and therefore the existing SAP system will no longer require capital expenditures as of the end of 2024. AltaLink's ERP system is critical to AltaLink's business and the customers that it serves: having the existing ERP available during the planned stabilization period and to act as a historical source is required until the asset runs out of support in 2027. The forecasted SAP expenditure from 2021 to 2024 has been estimated at \$0.5M per year. These may include Grouped Initiatives, corporate accounting enhancements or small SAP upgrades. Even with the reduced SAP expenditure over this time horizon, the undepreciated amount as of 2027 when the SAP ERP system is expected to be decommissioned would be \$2.1M. Based on AltaLink's current assessment, if the amortization rate is increased by only 1.1% from 10% to 11.1% over the remaining period, AltaLink will end its use of the SAP asset without an undepreciated amount. AltaLink requests the Commission approve this increase to the SAP amortization rate for 2022-2027.

Table 6.4-1 - 2019-2025 SAP Capital Additions (\$M)

SAP Software	2019 Actual	2020 Actual	2021 MU	2022 Forecast	2023 Forecast	2024 Forecast	2025 Forecast	2026 Forecast	2027 Forecast
Gross cost (\$millions)									
Opening Balance	70.4	60.0	58.9	55.9	48.6	41.5	31.1	22.6	15.0
Additions	1.9	1.6	0.3	0.5	0.5	0.5	-	-	-
Retirements	(12.3)	(2.7)	(3.3)	(7.8)	(7.6)	(10.9)	(8.5)	(7.6)	(2.6)
Closing Balance	60.0	58.9	55.9	48.6	41.5	31.1	22.6	15.0	12.3
Accumulated Amortization (\$millions)									
Amortization rate (%)	10.0%	10.0%	10.0%	11.1%	11.1%	11.1%	11.1%	11.1%	11.1%
Opening Balance	(36.1)	(30.3)	(33.5)	(36.0)	(34.0)	(31.4)	(24.5)	(19.0)	(13.5)
Annual Amortization	(6.5)	(5.9)	(5.7)	(5.8)	(5.0)	(4.0)	(3.0)	(2.1)	(1.5)
Retirements	12.3	2.7	3.3	7.8	7.6	10.9	8.5	7.6	2.6
Closing Balance	(30.3)	(33.5)	(36.0)	(34.0)	(31.4)	(24.5)	(19.0)	(13.5)	(12.3)
Unamortized cost (year-end) (\$millions)	\$ 29.7	\$ 25.3	\$ 19.9	\$ 14.6	\$ 10.1	\$ 6.6	\$ 3.6	\$ 1.5	\$ 0.00

6.5 Amortization of Leasehold Improvements

575. During 2019-2021, AltaLink worked with its landlord to address much needed renovations to its 24 year old head office leasehold buildings. No major renovations had been completed to AltaLink Plaza and AltaLink East (the old Devry school building) since AltaLink moved into the buildings in 2005 and 2013 respectively. The work completed included major repairs to the roofs, roof top units (RTUs) and the removal and construction of new walls to update the floor plans. The estimated life of the building assets is in excess of the current 10-year life applied to current leasehold improvements. AltaLink seeks the Commission's approval of a new 20-year asset class for leasehold improvements to align with the expiration of the current leases in 2039. This reflects the useful life of these assets and aligns with the IFRS.

6.6 Net Salvage Funding

576. Pursuant to Commission Decision 25870-D01-2020, AltaLink implemented its net salvage method commencing with the year 2019, with an effective date of December 1, 2020. It has

accordingly begun to transition away from the traditional method of collecting net salvage funding from customers and towards capitalizing net salvage spending as part of the cost of replacement assets.

577. As part of its implementation of the net salvage method, AltaLink has satisfied the various commitments it made in Proceedings 23848 and 25870:
- a) AltaLink has recorded and tracked the costs of removal related to asset retirements, whether capitalized to the cost of a replacement asset or recorded in association with a terminal asset retirement;⁶⁶
 - b) AltaLink has implemented a system to track these two distinct pieces of information, at a cost of less than \$50,000 and requiring minimal effort;⁶⁷
 - c) These changes to AltaLink's processes for the purpose of recording and tracking cost of removal provide sufficient information for AltaLink to return to the traditional method of net salvage on a prospective basis, where the capitalization of historical salvage amounts would be unchanged,⁶⁸ were the Commission to so direct;
 - d) AltaLink has included in its revenue requirement for each year of the 2022-2023 Test Period the ongoing and specific amounts of net salvage to be included in revenue requirement;⁶⁹ and
 - e) AltaLink has presented in the Schedule 29-8 *Net Salvage Reserve Account* of its MFR Revenue Requirement Model the costs of removal it actually incurred for the years 2019-2020 and forecast to incur in the years 2021-2023. AltaLink has not capitalized any cost of removal because it has not reached the threshold FFO/Debt ratio of 11.1% without net salvage funding in its revenue requirement.⁷⁰
578. In response to the Commission's directions to AltaLink in Decision 25870-D01-2020, AltaLink confirms the following:
- a) For the reasons discussed below, the 11.1% FFO/debt ratio remains an appropriate measure for the amount of net salvage expense that AltaLink will recover through depreciation expense during the period of transition;⁷¹
 - b) AltaLink has maintained sufficient information to revert to its traditional net salvage method at any point in the future, on a prospective basis and where the capitalization of historical salvage amounts would be unchanged,⁷² were the Commission to so direct;
 - c) In Schd 29-8 *Net Salvage Reserve Account* of its MFR Revenue Requirement Model, AltaLink has reported, by uniform system of account, both the forecast and actual costs of removal that have been recorded to the net salvage reserve account since December 1, 2020. AltaLink has not capitalized any cost of removal because it has not reached the threshold FFO/Debt ratio of 11.1% without net salvage funding in its revenue requirement;⁷³
 - d) AltaLink has provided in Schd 29-8 *Net Salvage Reserve Account* of its MFR Revenue Requirement Model a continuity schedule for its net salvage reserve account on both a

⁶⁶ Decision 25870-D01-2020 at para. 34(i); Exhibit 25870-X0012.01, AML-AUC-2020SEP23-002(a) and (b), pdf 7.

⁶⁷ *Ibid.*

⁶⁸ Decision 25870-D01-2020 at para. 34(ii); Exhibit 25870-X0012.01, AML-AUC-2020SEP23-002(c) and (e), pdf 7.

⁶⁹ Decision 25870-D01-2020 at para. 34(iii); Exhibit 25870-X0012.01, AML-AUC-2020SEP23-003(a)(i) and (ii), pdf 9.

⁷⁰ Decision 25870-D01-2020 at para. 34(v); Exhibit 25870-X0012.01, AML-AUC-2020SEP23-003(a)(iii) and (iv), pdf 9.

⁷¹ Decision 25870-D01-2020 at para. 36(i).

⁷² Decision 25870-D01-2020 at para. 36(ii).

⁷³ *Ibid.*

- forecast and actual basis. That schedule confirms that the balance in the net salvage reserve account is more than sufficient to meet the anticipated costs of removal associated with terminal asset retirements;⁷⁴ and
- e) AltaLink has provided in its 2020 DACDA Application sufficiently detailed information for the purposes of testing the prudence of costs of removal whether recorded to the net salvage reserve account during the period of transition, capitalized to the cost of a replacement asset or recorded in association with a terminal asset retirement.⁷⁵
579. The 2022-2023 Test Period is a “period of transition” during which the Commission approved AltaLink’s collection of net salvage funding based on meeting an FFO/Debt threshold of 11.1%:
- ...The Stage 2 panel accepts, at this time, that the measure by which AltaLink will determine the amount of net salvage expense to recover through depreciation expense during the period of transition is linked specifically to an FFO/Debt of 11.1 per cent for the test years. However, the Stage 2 panel directs that this measure is subject to testing in future GTAs in terms of both substance (where a different FFO/Debt per cent may be tested) and form (where an alternative measure than FFO/Debt may be examined).⁷⁶
580. AltaLink forecasts \$30.3M per year of net salvage funding (the same amount as approved for 2021 in AltaLink’s 2019-2021 GTA) in AltaLink’s revenue requirements for the years 2022 and 2023. It results in AltaLink’s forecast FFO/Debt ratio for the test year 2022 of 10.9% and increasing to 11.1% in 2023. AltaLink remains confident that it will be able to maintain the approved ratio in the near future.⁷⁷
581. Taking into account the funding of \$30.3M, and deducting AltaLink’s forecast spending of \$29.8M and \$28.5M respectively for the years 2022 and 2023, AltaLink’s Net Salvage Reserve Account is forecast to carry a balance in excess of \$200M at the end of each year of the 2022-2023 Test Periods. Refer to Schedule 29-8, Net Salvage Reserve Account. AltaLink anticipates the reserve is sufficient to cover its cost of removal in the foreseeable future. Should the balance in the net salvage reserve account becomes insufficient to meet the anticipated costs of removal associated with terminal asset retirements, AltaLink will propose in a future GTA the manner and period of collection of those costs.

6.7 Amortization of Customer Contributions

582. AltaLink updated its Customer Contribution Amortization Study to include transactions up to and including December 31, 2019, and to incorporate the new depreciation rates determined in the new depreciation study for this GTA. The updated study results are presented in Table 6.7-2 below. As a result of this update, the forecast amounts of Amortization of Customer Contributions for the years 2022 and 2023 are lower than the amount approved for the year 2021: as shown in Table 6.7-1 below, increases in the amortization amounts corresponding to

⁷⁴ Decision 25870-D01-2020 at para. 36(iii).

⁷⁵ Decision 25870-D01-2020 at para. 36(iv).

⁷⁶ Decision 25870-D01-2020, AltaLink Management Ltd., Stage 2 Review and Variance of Decision 23848-D01-2020, AltaLink Management Ltd. 2019-2021 General Tariff Application, November 19, 2020, para 36(i), pdf 10 [footnote omitted].

⁷⁷ *Ibid.* at paras. 29-32, pdf 8-9.

increases in contributions are more than offset by a decrease in the weighted average amortization rate.

Table 6.7-1 – Amortization of Customer Contributions

	2021 Approved	2022 Forecast	2023 Forecast
2021 Approved	(28.0)	(28.0)	(28.0)
(Increase) due to higher gross Contributions In Aid of Construction (CIAC)		(0.3)	(0.9)
Decrease due to lower Average Rate		1.8	1.8
Annual Amortization of Customer Contributions	(28.0)	(26.5)	(27.1)
Weighted Average Amortization Rate	2.56%	2.40%	2.40%

583. Table 6.7-2 below is the updated Customer Contribution Amortization Study.

Table 6.7-2 – Customer Contribution Amortization Study

USA MFR Code	Name of Asset Class	LTD CC as at Dec 31, 2019	Depreciation Rate	Annual Depreciation
(in millions of dollars)				
350.10	Land Rights	\$ 8.1	1.61%	\$ 0.1
352.00	Structures and Improvements	62.5	2.33%	1.5
353.00	Station Equipment	456.3	2.43%	11.1
353.10	System Communication and Control	103.1	4.65%	4.8
354.00	Towers and Fixtures	54.6	1.91%	1.0
355.00	Poles and Fixtures	103.9	2.59%	2.7
356.00	Overhead Conductors and Devices	76.8	1.60%	1.2
358.00	Underground conductors and conduits	67.1	1.86%	1.2
Total		\$ 932.5		22.4
Average Rate of Depreciation		2.40%		

7. TRANSMISSION INCOME TAXES

584. Section 7 of AltaLink's Application addresses the following:

- 7.1 Summary
- 7.2 Income Tax Rates
- 7.3 Timing/Temporary Differences
- 7.4 Treatment of Engineering and Supervision for Tax Purposes
- 7.5 Transmission Income Tax Schedules

7.1 Summary

585. AltaLink requests the Commission’s approval to continue to include both federal and provincial income tax in its revenue requirement for 2022 and 2023 on a flow-through basis.
586. AltaLink is not currently taxable in 2022 and 2023, and does not expect to be currently taxable in the near term.
587. AltaLink adopted IFRS commencing January 1, 2011.⁷⁸ IAS 12 requires a taxable reporting entity to account for income taxes on the deferred tax basis which means that both the Federal and Provincial FIT should be included in IFRS statements of income, and a corresponding regulatory asset and unfunded FIT liability would be included in the IFRS balance sheet.
588. Table 7.1-1 below illustrates the impact of income taxes in AltaLink’s revenue requirement for the Test Period.

Table 7.1-1 - AltaLink’s Aggregate Income Taxes (\$M)

	2019 Actual	2020 Actual	2021MU	2022 Forecast	2023 Forecast
Income Taxes	0.0	0.0	0.0	0.0	0.0

589. There are no changes to income taxes for the 2022 and 2023 test years, as AltaLink is not taxable using the approved use of the flow-through method of determining income taxes since 2016.

7.2 Income Tax Rates

590. The income tax amounts have been calculated using the following enacted tax rates.

Table 7.2-1 - Income Tax Rates

	2022	2023
Federal Income Tax	15.00%	15.00%
Provincial Income Tax	8.00%	8.00%

7.3 Timing/Temporary Differences

591. Recognition of certain revenues and expenditures under income tax statutes and regulation may differ from regulatory accounting. In most cases, the difference is a matter of the timing when the revenues and expenditures are recognized. For example, the rates and method of accounting depreciation are different from CCA in computing taxable income; and certain expenditures, which are capitalized and amortized for accounting purposes, are deductible period expenses for income tax purposes. This gives rise to accounting income being temporarily different from taxable income. To the extent the flow-through method is used to determine income taxes for regulatory purposes, estimated FIT liability based on cumulative temporary differences will be collected in transmission tariffs in future years when such temporary differences reverse.

⁷⁸ AUC Decision 2011-453, AltaLink Management Ltd., 2011-2013 General Tariff Application, November 18, 2011 (“Decision 2011-453”), paras 115 and 116, pdf 28.

7.4 Treatment of Engineering and Supervision (E&S) Costs for Tax Purposes

592. E&S costs which are DAIC have been fully deducted in the year incurred for income tax purposes. While under IFRS, these E&S costs may only be capitalized for accounting purposes if AltaLink can demonstrate that they are directly attributable to capital projects. Since transitioning to IFRS in 2011, AltaLink has reviewed these E&S costs and the relationship between their incurrence and its capital activities, and determined that almost all of these costs are directly attributable to capital activities, even though they are not directly charged to capital projects. AltaLink's determination has been accepted by its external auditors, who have issued clean audit opinions on AltaLink's IFRS compliant financial statements since 2011. Electricity customers received a significant benefit from this determination, and its acceptance by AltaLink's auditors, as it avoided a significant increase in operating costs that would otherwise have had to be funded by customers in the Test Period.
593. IAS 16 specifically prohibits the capitalization of administration and other general overhead costs. However, IAS 16 also includes the principle that any costs can be capitalized if they can be shown to be directly attributable to capital projects. As noted above, the reviews undertaken by AltaLink during and after the transition to IFRS, enabled E&S costs to be capitalized, which would otherwise not have been allowed under IAS 16, as AltaLink was successful in demonstrating that those costs are directly attributable to capital projects.
594. In the past, the E&S costs were deducted in the year incurred for income tax purposes. AltaLink continues to have the view that as a result of the thorough reviews of E&S costs undertaken during and after the IFRS conversion, which were subsequently vetted and approved by AltaLink's external auditors, these costs are no longer characterized as indirect costs. As a result of being directly attributable to capital projects, the CRA may determine that these costs cannot be deducted for tax purposes in the year incurred, but rather must be capitalized to undepreciated capital cost pools and deducted through annual CCA claims, and therefore reassess AltaLink's owner accordingly. AltaLink continues to perform E&S studies every two years, with one performed in 2020, the summary of which is in **Appendix 10**
595. AltaLink understands the Commission's position that if the E&S costs have been deducted in the past for income tax purposes, they should continue to be deducted in the future. In accordance with the Commission's direction with respect to this issue in Decision 2013-407:
- ...Should AltaLink be reassessed by the CRA, the Commission will review the financial implications and consider what relief, if any, is necessary at that time.⁷⁹
596. AltaLink will bring forward to the Commission for their consideration any reassessments received from the CRA in the future. At the time of filing this Application, AltaLink was not aware of a pending or prescribed assessment with respect to E&S costs.

⁷⁹ Decision 2013-407, para 1133, pdf 228-229.

7.5 Transmission Income Tax Schedules

Schedule 7-1	Schedule of Transmission Income Taxes, Utility Operating Income
Schedule 7-2	Schedule of Transmission Income Taxes
Schedule 7-3	Determination of Federal Taxable Income
Schedule 7-4	Schedule of Transmission Capital Cost Allowance
Schedule 7-5	Schedule of Large Corporations Tax

8. TRANSMISSION REVENUE OFFSETS

597. Section 8 of AltaLink’s Application addresses the following:

- 8.1 Summary
- 8.2 Transmission Revenue Offset Schedules

8.1 Summary

598. AltaLink's Transmission Revenue Offsets are obtained from two main revenue streams: fixed contracts and variable labour contracts, each is described below. AltaLink is forecasting a declining level of revenue offsets over the Test Period for revenue derived from fixed contracts and an increase in its variable labour contracts, refer to Table 8.1-1 below. The forecast basis for each of the areas are provided in the related following sections.

Table 8.1-1 – Summary of Revenue Offset Forecast (\$M)

Summary	2019 Actual	2020 Actual	2021 MU	2022 Forecast	2023 Forecast
Services to Fortis	3.1	3.1	3.0	2.9	2.9
Services to TransAlta	1.0	1.0	1.2	1.0	0.6
Variable Labour Contracts	1.9	2.9	3.2	3.1	3.2
Lease Revenue and Other	1.6	1.5	1.6	1.5	1.5
Total	7.6	8.6	9.1	8.5	8.2

8.1.1 Fixed Contracts

599. AltaLink's transmission revenue offsets predominantly comprise revenue obtained from fixed contracts related to infrastructure services. In its 2002-2004 GTA, AltaLink explained the origin and purpose of its service contracts with Aquila Network Canada (now FortisAlberta) and TransAlta Utilities Corporation. Copies of the contracts were filed as part of AltaLink's 2002-2004 GTA. These contracts maintain operational efficiencies between the companies and provide a direct benefit to Alberta customers through miscellaneous revenue. As detailed below, the subject contracts deal with the provision of services related to transmission poles with distribution attachments, telecommunications facilities, providing communications services, system control centre services, cell tower leases, and third party land leases.

Services to Fortis

600. AltaLink provides the following services to Fortis:

- Telecommunication System Services - these services include the provision of voice communication services capable of operating Fortis' mobile communications assets, such as vehicle mobile radios, office radios, pagers and portable hand held radios;
- Joint Pole Use - this service includes the utilization of AltaLink's transmission structures for the support and attachment of Fortis under strung distribution facilities. As distribution and transmission facilities get rebuilt or upgraded, some of the distribution facilities are being moved to dedicated distribution structures which marginally reduces future revenue; and
- Miscellaneous Services - these services include facilitating high load moves, maintenance of distribution equipment controls, meter data services and ILRAS services.

601. Table 8.1.1-1 below summarizes the forecast transmission revenue offsets AltaLink will receive for the provision of the foregoing services to Fortis.

Table 8.1.1-1 - Fortis Transmission Revenue Offset Forecast (\$M)

Fortis Contracts	2019 Actual	2020 Actual	2021 MU	2022 Forecast	2023 Forecast
Telecommunications Services	0.7	0.7	0.7	0.7	0.7
Joint Use	2.3	2.3	2.2	2.2	2.1
Miscellaneous Service	0.0	0.1	0.0	0.0	0.0
Total	3.1	3.1	3.0	2.9	2.9

Totals may not add due to rounding.

Services to TransAlta

602. AltaLink provides the following general business and transmission services to TransAlta:
- Transmission (First Nations) - this service includes the development and execution of an annual maintenance program for TransAlta's withheld assets located on First Nations lands. AltaLink has issued a Notice of Termination to TransAlta for this agreement with a termination date effective April 29, 2022. AltaLink will provide updates to the Commission as required;
 - Telecommunication Services - this service includes provision of telecommunication channels between TransAlta's generating facilities and head office utilized in the provision of System Control Services and corporate data transfer; and
 - General Business Services:
 - System Control Services - provision of SCADA for TransAlta's generating facilities, including data transfer, device visibility and device control; and
 - Meter Data Services - provision of generation meter data acquisition in order for TransAlta to deliver on the power purchase arrangement obligations.
603. AltaLink's forecast revenues derived from the O&M of TransAlta's withheld assets are a function of the assets located on First Nations lands and AltaLink's forecast operating expense and maintenance programs. Table 8.1.1-2 below summarizes the forecast transmission revenue offsets AltaLink will receive for the provision of the foregoing services to TransAlta.

Table 8.1.1-2 - TransAlta Transmission Revenue Offset Forecast (\$M)

TransAlta Contracts	2019 Actual	2020 Actual	2021 MU	2022 Forecast	2023 Forecast
Transmission (First Nation)	0.5	0.5	0.7	0.2	-
Telecommunications Services	0.1	0.1	0.2	0.2	0.2
General Business	0.4	0.4	0.4	0.5	0.4
Total	1.0	1.0	1.2	1.0	0.6

Totals may not add due to rounding.

8.1.2 Variable Labour Contracts Services to Affiliates

604. Services to Affiliates are divided into three categories: PiikaniLink L.P. (PLP) and KainaiLink (KLP) L.P., Montana-Alberta Tie-Line Canada L.P. (MATL) and other Affiliates.
605. Table 8.1.2-3 below summarizes the forecast transmission revenue offsets AltaLink will receive for the provision of the foregoing services to affiliate companies.
606. PLP and KLP began operations on June 1, 2019 and January 1, 2020, respectively. These subsidiaries were formed to jointly hold the Southwest 240 kV regulated transmission assets

located on First Nations Reserve lands with local First Nation partners. AltaLink owns 49% interest in each of those subsidiaries. As this GTA is being presented on a non-consolidated basis, the revenue outlined in the table below represents the transmission operating and administrative costs charged to PLP and KLP, on a cost recovery basis. This revenue is expected to remain stable over the course of the Test Period. Note that this revenue would be eliminated on consolidation of these subsidiaries.

607. On May 1, 2020, BHE Canada Holdings Corporation acquired MATL. For consistency and ease of understanding, 100% of the revenues from MATL for years 2019 to 2023 are shown in the Table 8.1.2-3 below. The contract relative to MATL was negotiated years before the acquisition as a third-party arm's length contract and no changes to this contract have been subsequently made. Revenue is expected to increase marginally over the Test Period, as per the terms of the contract.
608. AltaLink also provides limited services to AltaLink affiliated companies such as AltaLink Investments, L.P. (AILP), AltaLink Holding, L.P. (AHLP), BHE AltaLink Ltd. (BHEA) and BHE Canada Ltd. (BHEC). AltaLink charges these entities for time spent by AltaLink employees on the affiliate companies' accounting, financing, IT, business development and legal activities. Particulars of the affiliate charge outs are detailed further in Section 1.9 of this Application.
609. During the Test Period, AltaLink is forecasting a recovery of \$0.3M for BHEC usage of systems and general overhead, which is included in USA 931.1, 934 and 921, and \$1.9M in 2022 and \$2.0M in 2023 for employee labour, for a total of \$2.2M and \$2.3M as shown in Table 8.1.2-3 below. The increase in 2020 and future years results from changes in the overall corporate structure as discussed in section 1.9.3 Executive Organizational Change. The forecast amounts expect to remain relatively stable over the Test Period.

Table 8.1.1-3 - Services to Affiliates Transmission Revenue Offset Forecast (\$M)

Services to Affiliates	2019 Actual	2020 Actual	2021 MU	2022 Forecast	2023 Forecast
PLP and KLP	0.3	0.7	0.7	0.7	0.7
MATL	0.2	0.2	0.2	0.2	0.3
Other Affiliates	1.4	2.0	2.3	2.2	2.3
Total	1.9	2.9	3.2	3.1	3.2

610. Sponsorships and charitable donations committed by AltaLink or any of its affiliates have never been included or are not part of the 2022-2023 GTA as per Decision 2003-061⁸⁰ and Decision 2007-012,⁸¹ as these are considered non-utility costs and are not included in regulated revenue requirement.

8.1.3 Lease Revenue and Other

611. As shown in Table 8.1.3-1 below, AltaLink is forecasting approximately \$0.9M per year over the Test Period related to cell tower and land lease. AltaLink is forecasting this program to remain relatively flat. Other revenue is shown in the table and includes O&M services provided to third

⁸⁰ Decision 2003-061, AltaLink Management Ltd. and TransAlta Utilities Corporation, Transmission Tariff for May 1, 2002 – April 30, 2004, August 3, 2003, pages 15-16, pdf 25-26.

⁸¹ AltaLink Management Ltd. and TransAlta Utilities Corporation, 2007 and 2008 Transmission Facility Owner Tariff, February 16, 2007, pages 41-42, pdf 47-48.

parties, utility right-of-way and road use billings based on recent history, and amortization of customer contribution towards operating expenses.

Table 8.1.3-1 - Lease and Other Transmission Revenue Offset Forecast (\$M)

Lease Revenue and Other	2019 Actual	2020 Actual	2021 MU	2022 Forecast	2023 Forecast
Land Lease	0.3	0.3	0.3	0.3	0.3
Tower Leases	0.6	0.6	0.6	0.6	0.6
Utility right-of-way and road use	0.2	0.2	0.3	0.3	0.3
Amortization of customer contributions	0.2	0.2	0.2	0.2	0.2
O&M services to third parties	0.2	0.2	0.2	0.1	0.1
Other	0.1	-	-	-	-
Total	1.6	1.5	1.6	1.5	1.5

Totals may not add due to rounding.

8.2 Transmission Revenue Offset Schedules

Schedule 8-1 Schedule of Transmission Revenue Offsets

9. TRANSMISSION RETURN ON RATE BASE

612. Section 9 of AltaLink's Application addresses the following:

- 9.1 Summary
- 9.2 Capital Structure
- 9.3 Return on Equity
- 9.4 Embedded Cost of Debt
- 9.5 Long-Term Debt Deferral Account
- 9.6 Credit Rating Reports
- 9.7 Transmission Return on Rate Base Schedules

9.1 Summary

613. AltaLink's forecast return on rate base is summarized in Schedule 9-1.
614. AltaLink is forecasting the weighted average rate of return to change from 5.70%, 5.66% and 5.49% in the 2019, 2020 and 2021, respectively, to 5.55% and 5.54% in the 2022 and 2023 test years, respectively. Refer to Schedule 28-1 for more details regarding this component of AltaLink's evidence.

9.2 Capital Structure

615. This Application reflects a capital structure consisting of common equity ratio of 37% approved for 2022⁸² and as a placeholder for 2023.
616. Refer to Section 28 for further details and explanations regarding these items and capital structure related matters.

9.3 Return on Equity

617. AltaLink has use the approved deemed ROE of 8.50% for 2022,⁸³ and as a placeholder for the 2023 test year. For further details on this request refer to Section 28.2.

9.4 Embedded Cost of Debt

618. Schedule 28-2 sets out AltaLink's forecast mid-year embedded cost of debt at 3.82% for 2022 and 3.81% for 2023.
619. For each test year, AltaLink calculated the mid-year embedded cost of debt as follows:
- each debt instrument's gross proceeds are the gross proceeds outstanding at the end of each year;
 - total carrying costs for each debt instrument are calculated as the sum of interest calculated on year-end gross proceeds plus the amortization of financing costs, discount or premium; and
 - the mid-year cost rate for each test year is calculated by dividing the aggregate mid-year carrying costs by the aggregate mid-year gross proceeds.

9.5 Long-Term Debt Deferral Account

620. Due to the significant forecast long term debt issuance required for the current Test Period, as discussed further in Section 31.7, AltaLink is seeking approval from the Commission to continue the LTDDA.

9.6 Credit Rating Reports

621. Refer to **Appendix 4** for recent credit ratings reports issued by S&Ps and DBRS.

9.7 Transmission Return on Rate Base Schedules

- Schedule 9-1 Schedule of Transmission Return on Rate Base
Schedule 9-2 Schedule of Transmission AFUDC

⁸² Decision 26212-D01-2021, 2022 Generic Cost of Capital, March 4, 2021, para 23(2), pdf 9.

⁸³ Decision 26212-D01-2021, 2022 Generic Cost of Capital, March 4, 2021, para 23(1), pdf 9.

10. TRANSMISSION RATE BASE

622. Section 10 of AltaLink's Application addresses the following:

- 10.1 Summary
- 10.2 Capital - Direct Assign
- 10.3 Capital Replacements and Upgrades
- 10.4 Information Technology Capital Costs
- 10.5 Facilities Capital Costs
- 10.6 Transmission Rate Base Schedule

10.1 Summary

623. AltaLink's rate base continuity can be found in Schedules 9-1, 3-2.2022 (i), 3-2.2023 (i), and 31.2-A.
624. AltaLink is forecasting a mid-year rate base (after adjustments) of \$7,592.3M and \$7,686.1M for the years 2022 and 2023, respectively. These forecast amounts represent:
- An increase of \$110.6M in 2022 compared to the 2021 forecast rate base of \$7,481.7M; and
 - An increase of \$93.8M in 2023 compared to the 2022 forecast rate base of \$7,592.3M.
625. Increases to rate base as shown above are primarily driven by increases in NBVs resulting from capital spending programs in the prior, current and forecast years, and partially from the refund of \$80M accumulated depreciation surplus refund in 2021.
626. AltaLink's actual and forecast capital expenditures over the 2019 to 2023 period are summarized below in Table 10.1-1. The expenditures shown are comprised of those charges that are directly attributable to the capital projects and AFUDC, as applicable, and they are grouped into the following three categories:
- DA expenditures which are costs in respect of DA projects directly assigned by the AESO and projects forecast to be assigned by the AESO (a description of DA projects can be found in Section 10.2 of this Application as well as in **Appendix 19-A**);
 - CRU spending; and
 - general capital plant expenditures, all as described throughout Section 10.

Table 10.1-1 - 2019-2021 Forecast Capital Expenditures (\$M)

Capital Expenditures	2019 Actual	2020 Actual	2021 MU	2022 Test Year	2023 Test Year
Direct Assignments	85.8	88.3	94.8	117.2	157.4
Capital Replacement & Upgrades	164.3	164.5	154.1	158.2	164.1
General Plant					
-Security Compliance	5.7	9.1	5.4	13.1	12.9
-Information Technology	20.0	18.8	10.9	24.7	25.5
-Facilities	20.1	1.3	3.5	4.0	4.7
Total General Plant	45.8	29.2	19.8	41.7	43.1
Other Transmission	16.0	8.4	0.9	-	-
Total Non-Direct Assigned	226.1	202.1	174.7	200.0	207.1
Total Capital Expenditures	311.9	290.5	269.5	317.2	364.5

Totals may vary due to rounding.

627. AltaLink's forecast capital expenditures related to DA capital projects are detailed in Schedules 3-2.2022(iii) and 3-2.2023(iii); and a description of these DA projects can be found in Section 10.2 of this Application as well as in **Appendix 19-A**.
628. All other capital expenditure forecasts related to non-DA spending are detailed in Schedule 10-4 and a description of the non-DA spending can be found in Sections 10.3, 10.4 and 10.5 of this Application. Refer to Section 31, Schedule 31.2-B for further details regarding total capital expenditures and additions.

10.2 Capital – Direct Assign

10.2.1 Overview

629. In AltaLink’s 2022-2023 GTA, the DA capital forecast for expenditures and additions is based on individual project plans that were developed on an annual basis as a normal course of business practice. This annual forecast includes the identified Test Period of the GTA as the DA forecast that is representative of best available information at the time of filing, and is a reasonable forecast for revenue requirement purposes associated with DA capital project execution forecast. This approach remains consistent with that used in AltaLink’s 2019-2021 GTA.
630. The aggregation of the individual project plans, also known as AltaLink’s base plan, is aligned with the AESO for forecasted ISD. AltaLink’s DA forecasts reflect the portfolio view of all projects and include the best estimate of the individual projects’ ISDs giving consideration to all known project activities at the time the forecast was developed. Identified risks and mitigation efforts for conditions anticipated in the project life cycle were incorporated at the time of the forecast. Forecasts were updated based on known changes to conditions and then current progress throughout the project life cycle. Through ongoing reporting and dialogue with the AESO, AltaLink informs and updates the AESO through discussions, month end reporting and change proposal processes.
631. While there continue to be unpredictable factors to consider, future forecasts are not expected to experience the significant interaction between projects or the high number of large projects that were present in 2010 to 2017 time period. The majority of future projects are smaller and of lower complexity, with a reduced project volume forecast over the next few years.
632. Consistent with the process for forecast development through 2013 to 2021 GTA test years, AltaLink continues to prepare individual project plans that include the best timing estimate of the project, giving consideration to all known project activities with associated costs and schedules. For the 2022-2023 Test Period revenue requirements, the aggregation of these individual project plans forms AltaLink’s DA capital expenditures and additions forecast.
633. The 2022-2023 GTA forecast is reflective of, but not limited to, the following information as known and understood at the time of this Application:
- broad changes in the Alberta markets;
 - changes reflecting the AESO assumptions of lower load growth over the next five years; and
 - the continued need for and forecast ISDs based on the outcome the AESO and AltaLink project review meetings.

10.2.2 Direct Assign Capital Forecasting Approach

634. AltaLink’s 2022 to 2023 DA forecast in this Application has taken into account projects with varying degrees of complexity (from low complexity to medium/high complexity) and a reduced project volume in the Test Period. Simply, AltaLink has applied its significantly expanded experience and judgement rigorously to a smaller or less complicated group of projects to create the base case forecast for the DA projects in this Test Period.
635. In this Application, AltaLink has put forward the aggregation of the individual project plans (the base plan) as the DA forecast for the Test Period and will continue to strive to achieve the base plan as it reflects mandatory directions received from the AESO. In AltaLink’s view, the 2022-2023 GTA DA forecast is representative of the best available information at the time of the filing,

and is a reasonable forecast for revenue requirement purposes associated with DA capital project development and execution.

636. AltaLink's forecasting process for determining the Test Period revenue requirement incorporates the following key elements as part of the base plan for DA capital expenditures and additions:

- forecasts of annual capital expenditures and additions are prepared on an individual project level;
- identified risks and mitigation efforts are incorporated into the project schedules to present a complete view of current conditions anticipated in the project life cycle. They are however limited by the accuracy of the assumptions made;
- the aggregation of the individual project plans forms the basis of AltaLink's base plan or working plan and is aligned with the AESO forecasted ISDs for projects under direction;
- the basis of an individual project forecast is dependent on the project stage at the time of GTA preparation, more specifically:
 - for projects post permits and licences where the SP has been provided to the AESO and the FA has been submitted to the AUC, the current Forecast at Complete (FAC) is used;
 - for projects pre permits and licences where the SP has been provided to the AESO or is in draft development, the SP supports the forecast;
 - for projects that are early in their lifecycle (pre FA), an order of magnitude estimate is used with best available high level assumptions related to scope, cost and schedule including ISD; and
 - for projects with trailing costs only in the Test Period, forecasts provided are at a higher level reflecting estimates of and assumed schedules for remaining work to be completed.
- to address the potential for extended delay or cancellation of projects, AltaLink has developed a conservative forecast by reducing the expenditure forecasts for the projects that have been on or are anticipated to be on extended hold to zero in the 2022-2023 Test Period;
- generic customer projects (denoted by reference project numbers starting with "G") were included as placeholder forecasts to stand in place of the DA generation and industrial projects, or as potential future projects;
- base plan forecasts for generic customer load (e.g., Fortis) or generation projects have been developed using general assumptions for average life cost, project duration, schedule from SASR to close out, and project starts in a given year. AltaLink has taken this approach on future customer projects because the revenue requirement forecast can be developed far in advance of customer decisions on transmission project needs. In the absence of project details, AltaLink has considered knowledge of historical customer projects and has put forward a conservative forecast of potential future projects;
- behind the fence (BTF) projects typically require minor changes to AltaLink facilities as a result of changes the market participant is making to their facilities. As an example, changes in settings for AltaLink facilities may be necessary or engineering studies may be required. As described in the BTF connection process,⁸⁴ TFOs will be engaged early in a BTF project to confirm there are no reliability impacts or transmission system upgrade requirements and will complete any upgrades as required. An annual generic forecast amount for potential

⁸⁴ Available from: <https://www.aeso.ca/grid/connecting-to-the-grid/connection-process/>.

BTF projects has been included in the Test Period. BTF projects are included under the “Other” category in the **Appendix 19-B** continuity schedules; and

- Contract Capacity Change projects are subject to Section 9 – Changes to System Access Service after Energization⁸⁵ and may result in adjustments to customer contribution determination that was applied to the transmission facility when constructed. AltaLink has no ability to know when or if a contract capacity change will be required and as such has not included any future forecast amounts in the Test Period.

637. In addition, AltaLink has addressed the Commission’s concerns in Decision 2012-221 related to forecast accuracy and up-to-date ISDs,⁸⁶ and has laid out how uncertainty has been accounted for in the 2022-2023 forecast in the following paragraphs.

Potential of project cancellation

638. To address the potential for extended delay or cancellation of projects, beginning with the 2015-2016 GTA update, AltaLink removes the forward forecast for those projects that have been on, or are anticipated to be on extended hold (i.e. projects may remain in the continuity tables due to remaining opening/closing balances, but no new expenditures or additions are included in the annual forecasts). This has the effect of lowering the overall forecast for revenue requirement purposes, but does not presuppose cancellation, deferral or delay for any specific project under development. Any project activities continue and if the project resumes during the GTA Test Period, its actual costs will exceed the forecast of \$0.

Generic customer placeholder projects

639. A reduced number of generic customer placeholder projects have been included as part of the 2022-2023 GTA revenue requirement to stand in place of direct assigned generation connection projects or as potential future Fortis interconnection projects (load customer). No direction has been received for any of the generic projects. Base plan forecasts have been developed using general assumptions for average life cost, project duration, and project starts in a given year. AltaLink has taken this approach on future customer projects because the revenue requirement forecast can be developed far in advance of customer decisions on transmission project needs. In the absence of project details, AltaLink has considered knowledge of historical customer projects and has put forward a conservative forecast of potential future projects.

640. Based on recent history, AltaLink has seen four to six new Fortis interconnection projects initiated annually. The 2022 and 2023 forecasts include three Fortis placeholder projects anticipated to start in each year.

641. Customer projects are initiated within AltaLink via: 1) direction from the AESO; or 2) a request for assistance with development of a SASR from a customer. From the perspective of actual costs, no expenditures will be applied to the generic projects – they are included in the 2022-2023 GTA solely from a forecast placeholder perspective. These generic placeholder projects will be replaced as the direction and/or SASR is received for an actual project. Actual project costs will be attributed to actual approved projects only.

Uncertainty from external factors

642. The move to smaller, less complex projects with fewer interdependencies coupled with the use of generic customer placeholder forecasts has resulted in a significant number of projects in

⁸⁵ <https://www.aeso.ca/rules-standards-and-tariff/tariff/section-9-changes-to-system-access-service-after-energization/>

⁸⁶ Decision 2012-221, AltaLink Management Ltd., Refiling Pursuant to Decision 2011-453 and Decision 2011-474, August 17, 2012, para 164, pdf 37-38 (Directive 7).

earlier stages of the project lifecycle. For projects in an earlier stage of development, project managers have greater ability to adjust for uncertainties that typically occur later in project execution and can implement appropriate mitigation approaches. As examples, mitigation approaches can:

- adjust the sequence of activities in project execution when working in areas where other projects faced environmental restrictions;
- enhance safety procedures and train all workers on revised methods as part of ongoing safety management activities; and
- develop the construction schedule across a group of projects to reduce down time and maintain an experienced construction labour workforce dedicated to AltaLink projects.

643. One remaining uncertainty that has the potential to introduce significant schedule impacts, particularly with large projects, is procedural delay related to project approvals. AltaLink's 2022-2023 GTA revenue requirement forecast includes larger system projects in development stages as detailed below:

- Provost to Edgerton and Nilrem to Vermillion (PENV) Transmission Reinforcement Project includes two developments with forecast ISDs in 2023; the AESO's NID application has been approved, AltaLink has submitted its SP to the AESO and has filed the FAs with the Commission. AltaLink received P&L for the Provost to Edgerton portion in August of 2021 and is expecting a decision on the Nilrem to Vermilion portion in September of 2021. The AESO is performing congestion analysis on the PENV Project, and is expected to share the results of this analysis in September of 2021.
- Central East Transfer Out includes two stages, with the first stage forecast ISD in 2024 the AESO has filed the NID application and AltaLink has filed the FA with the Commission and received P&L in August of 2021. The AESO is completing congestion analysis on the CETO project, and expects to complete the congestion analysis in late 2021.
- Two additional large system projects are also in early development stages (Chapel Rock to Pincher Creek Area and Intertie Restoration Transmission Reinforcement projects). NID and FA applications are anticipated to file in Q2 2021/Q3 2021 for Chapel Rock to Pincher Creek with a decision anticipated in Q3 2022. The AESO has indicated they are reviewing details of the Intertie Restoration project, and NID and FA filings have been delayed as the project has been placed on hold. For clarity, the forecast over the Test Period (2022-2023) for these two projects totals \$3.8M as a minimum forecast at this point in time.

Confirmation of ISDs

644. As a project progresses, AltaLink is in regular contact with the AESO and as part of the ongoing discussions and interactions, and will advise the AESO when an ISD is not achievable due to circumstances not envisioned at the time of the Functional Specification and/or the SP. Through ongoing reporting and dialogue with the AESO, AltaLink informs and updates the AESO through discussions, month end reporting and change proposal processes.

645. AltaLink engages with the AESO in an ongoing and continuous manner to discuss project status and confirm forecasted ISDs. This process entails ongoing communication between AltaLink and AESO project managers as well as monthly meetings with the AltaLink and AESO leadership teams. As part of these meetings, current (at the time of meeting) project progress and status updates across AltaLink's portfolio of projects, interactions between connection requests,

approval processes, construction activities, outage schedules and any impacts on planned ISDs may be discussed.

646. AltaLink continues to prepare individual project forecasts that consider all known project activities at the time of the project forecast, which incorporate identified risks and mitigation efforts, and reflect the best estimate of the ISD aligned with the AESO’s forecasted date. Project schedules and life estimates are point in time assessments and will be refined through project development and execution cycles. AltaLink recognizes that project information changes from time to time, not only as a result of internal factors, but also because of external factors such as changes in the market, competition or changes in customer requirements.
647. AltaLink’s 2022-2023 portfolio of capital projects comprises projects of varying size and complexity. The majority of projects have estimated individual project life costs ranging from under \$0.5M to approximately \$10M, and a small number of projects have estimated individual life costs greater than \$40M. AltaLink’s base plan includes projects with ISDs in or prior to 2021 that may have trailing costs in the Test Period. Refer to **Appendix 19-A** for project scope descriptions. Refer to **Appendix 19-B** for base plan capital expenditures and additions forecasts by project.
648. AltaLink prepares forecasts of annual capital expenditures and additions on an individual project level. The aggregation of the individual project plans form the basis of AltaLink’s base plan or working plan and is aligned with the AESO forecasted ISDs for projects under direction. The AESO, as system planner, assesses and determines the current and future needs for the expansion and enhancement of the transmission system. AltaLink engages proactively and continuously with the AESO on ISDs including the issues of need and cost. AltaLink continues to work with the AESO to align and confirm the ISDs; refer to **Appendix 19-C1** for the AESO’s recent connection project list and **Appendix 19-C2** for the AESO’s project quarterly report as available at the time of preparing the DA forecast. These documents contain the projects in AltaLink’s portfolio and indicate the planned ISD for each. The AESO and AltaLink discuss, among other things, project variances for cost, scope and risks that may impact the execution of the DA projects including confirmation of forecasted ISDs. These discussions occur regularly at weekly or monthly project level planning meetings between AltaLink and AESO project management, and are further supported by leadership discussion on a monthly basis. The focus and objective of these engagements is to provide status updates, review and alignment of progress and planning, identification of execution changes or issues that may affect cost, schedule or ISD of projects under direction.
649. Table 10.2.2-1 below, outlines forecasted capital expenditures and capital additions for the Test Period 2022-2023, as well as 2019 and 2020 actuals with a MU for 2021.

Table 10.2.2-1 - DA Capital Forecast – Base Plan (\$M)

	2019 Actual	2020 Actual	2021 MU	2022	2023
Base Plan DA Capital Expenditures	84.4	88.3	94.8	117.2	157.4
Base Plan DA Capital Additions	129.5	31.4	115.5	43.8	193.2

650. Expenditures are amounts forecasted to be disbursed in any year and have been forecasted for each project on an individual project basis. Additions take place when an asset is deemed used and useful, a concept used by regulators to determine whether an asset should be included in the utility’s rate base. This concept requires that an asset currently provides or is capable of

providing a service to customers. Additions forecasted are the cumulative lifetime expenditures for any capital project.

651. The actuals/MU to the 2019-2021 GTA forecast is shown in Table 10.2.2-2 below.

Table 10.2.2-2 - DA Capital Forecast 2019-2021 GTA

Expenditures	2019	2020	2021
GTA Forecast	114.2	111.2	177.8
Actuals/MU	84.4	88.3	94.8
Additions			
GTA Forecast	120.8	111.2	177.8
Actuals/MU	129.5	31.4	115.5

652. In preparing its forecast, AltaLink incorporates identified risks to schedule or costs and reflects the best estimate of the ISD aligned with the AESO's forecasted date. As the capital forecasts contain a reduced volume of projects relative to previous years with many of the projects less than \$10M, unplanned shifts or changes in the medium to large projects can result in variances to the forecast. AltaLink's 2019-2021 GTA revenue requirement forecast included two large system projects both in early development stages; Intertie Restoration Transmission Reinforcement with a forecasted ISD of 2021, and PENV with forecast ISD in 2023. Due to procedural delays the PENV project delayed execution shifting \$77M out of the 2019-2021 GTA Test Period into subsequent years. In December 2019, the AESO notified AltaLink that it would be reviewing the details of the Intertie project and requested the project be placed on hold. The Intertie project has been on hold since 2020 and AltaLink has removed the forward forecast for this project in the 2022-2023 GTA. Due to procedural delays, and to optimize winter construction, the Fortis Provost Project moved the ISD from 2020 to 2021. AltaLink received notification for cancellation of the Grist Lake projects in November 2019 resulting in the reduction of \$12.4M of expenditures and \$23.8M of additions for the 2019-2021 GTA period. All of the above resulted in an unexpected shift of expenditures and additions within the 2019-2021 Test Period.
653. Throughout its history, and as examined through numerous regulatory proceedings, AltaLink has utilized an outsource EPCm model for a significant number of DA projects. This model has successfully delivered, cost effectively, billions of dollars of projects and value to the ratepayers of Alberta. Part of this value has been the ability of the model to adjust and respond to the volatility of volume and timing of DA projects. The outsourcing model has operated as anticipated when the model was originally put forth in prior proceedings before the Commission.
654. AltaLink continues to utilize an outsource EPCm model to address the forecasted project volume variability in the 2022 to 2023 GTA timeframe and beyond. AltaLink has extended the Relationship Agreement with B&M through to April 30, 2022. As outlined in the survivability clause under the terms of the agreement, any project that commenced prior to the termination of the agreement will continue to be executed under the existing terms.
655. Moving forward, AltaLink is evolving the organization towards a flexible delivery model, where internal project staff will execute a baseload of capital projects. On a project by project basis, using reasonable judgement and experience, a determination will be made to assign projects to

the internal project staff or the EPCm to efficiently and cost effectively deliver the projects. In this Test Period and going forward, AltaLink's project staff will be responsible for the delivery of a significant portion of the projects based on the forecasted work volume, and size, complexity and scope of anticipated projects.

656. Given the Relationship Agreement with B&M expires in mid-2022, AltaLink will explore market opportunities to find an appropriate EPCm (whether incumbent or new) through its regular procurement process. Going to the market will help ensure the most cost-effective model for ratepayers.
657. In general, AltaLink's project staff will manage the delivery of projects which are generally less than \$20M in project size, 138 kV or lower in voltage, and of lower complexity. Smaller projects that are self-managed will continue to use contractors for work activities such as construction management and construction, as well as contractor support as needed for engineering and procurement activities. Further, the limited number of large projects which are generally larger than \$20M in project size, 240 kV and higher in voltage, and of greater complexity will be outsourced to B&M through the extension of the term of the Relationship Agreement.
658. This approach allows AltaLink to retain core experience and knowledge and leverage the capacity and capability of the internal team members who supported the execution during the big build. The baseload of project work enables AltaLink to "self-manage" projects efficiently and more cost effectively than outsourcing all of the planned project work. Limited outsourcing of projects that require additional resource capacity and/or are generally larger than \$20M in project size, 240 kV in scope and more complex enables AltaLink to minimize the overall project delivery costs by optimizing the use of existing skills while managing the timing and staffing volatility of the more complex projects with the more flexible EPCm service provider.
659. It is AltaLink's intent that this flexible delivery model is the approach that best positions the organization to adapt over time as capital project needs continue to evolve. It should be noted that the current capital forecast for the next five to ten years has significantly reduced capital requirements with the average annual DA project (including system and customer projects) at levels of approximately \$100 to \$200M/year in the Test Period, and further reductions in subsequent planning years. Also, the outlook for system projects are more reliability oriented and tend to be simpler, 138 kV projects versus the large 240 kV complex projects.
660. Through the flexible delivery model, AltaLink has been successful in scaling its project delivery according to the size and complexity of the projects. This has been a cost effective approach to ratepayers and customers in executing projects efficiently and effectively.
661. Using reasonable judgement and experience, AltaLink will continue to utilize the flexible EPCm service provider on projects as described above while exploring opportunities to manage certain aspects of complex projects, such as construction management. AltaLink anticipates there may be opportunities for its internal staff to scale up on its capabilities in areas such as construction management with the help of the EPCm. Scaling up capabilities presents an opportunity to obtain more knowledge and experience in this area, and to continue to explore cost efficiencies and manage execution risk during the construction phase of the project. This approach allows AltaLink to continue to retain core experience and knowledge of complex projects, which enables AltaLink to have more flexibility and options to manage projects and reduce outsourced EPCm when the Relationship Agreement with B&M expires in April 2022. As AltaLink explores

scaling up its capabilities in this area, it will provide flexibility and help manage AltaLink’s project execution risk regardless of who the EPCm without increasing costs to ratepayers.

662. In the 2017-2018 GTA NSA, which was approved in Decision 21341-D01-2017, AltaLink committed to identify the EPCm provider for new projects exceeding \$30M in total costs in the next and subsequent GTAs.⁸⁷ This information can be found in Table 10.2.2-3 below.

Table 10.2.2-3 - Identification of EPCm for new Projects

Project	EPCm Provider	Rationale for Choice of Provider
D.0626 Fortis Provost Reliability	B&M	Complex, multi-year line project in excess of \$40M.
D.0777 Nilrem to Vermillion, a component of PENV Transmission Reinforcement ⁸⁸	B&M	Complex, multi-year 240 kV line project in excess of \$100M.
D.0778 Provost to Edgerton South, a component of PENV Transmission Reinforcement	B&M	Complex, multi-year 240 kV line project in excess of \$50M.
D.0779 Provost to Edgerton North, a component of PENV Transmission Reinforcement	B&M	Complex, multi-year 240 kV line project in excess of \$60M.
D.0726 Central East Transfer Out	B&M	Complex, multi-year 240 kV line project in excess of \$150M.
D.0691 Intertie Restoration Transmission Development	B&M	Complex, multi-year 240 kV and 500 kV project in excess of \$90M.
D.0714 Chapel Rock to Pincher Creek Area Transmission Development	B&M	Complex, multi-year 240 kV and 500 kV line project in excess of \$400M.
D.0753 CKPC Petrochemical Project	Self-managed	New Substation project with in-out line connection, approximately \$40M.

⁸⁷ AUC Decision 21341-D01-2017, AltaLink Management Ltd., 2017-2018 General Tariff Application, Negotiated Settlement Agreement, August 30, 2017, para 142, pdf 30 and NSA Section 9(a), pdf 39.

⁸⁸ Project previously included in AltaLink’s 2019-2021 GTA as D.0633 Provost-Edgerton & Nilrem-Vermillion, encompassing D.0777, D.0778 and D.0779 as three developments or components within AESO Reference #1781 Provost to Edgerton and Nilrem to Vermillion (PENV) Transmission Reinforcement.

10.3 Capital Replacement and Upgrades

663. AltaLink's CRU projects cover the transmission asset base including lines, substations, telecommunications, relays, control centers and any tools and equipment and fleet vehicles. CRU projects are the maintenance investments by which AltaLink sustains the safe, reliable and efficient operation of its transmission system over the long-term. AltaLink's forecast CRU capital expenditures for the Test Period are provided in Schedule 10.4 and further detailed below.
664. Customers directly benefit from AltaLink's CRU projects that collectively:
- continue to provide safe and reliable transmission service;
 - reduce the probability of damage to equipment and property;
 - minimize frequency and duration of outages due to equipment failure;
 - address safety and environmental concerns outlined by legislation and regulation;
 - ensure public and worker safety;
 - address increasing wildfire risk in its service area; and
 - restore full asset functionality.
665. AltaLink plans CRU investment on the understanding that there is only one trajectory for existing assets – functional performance degradation due to age, wear and weather. AltaLink cannot reliably and safely operate the power system by waiting for assets to fail before replacing them and meet its obligations; energized assets can fail and jeopardize reliability, public safety or the environment. Maintaining a safe, efficient and reliable transmission system relies on completing CRU investments before asset conditions have eroded to the point of failure resulting in risks and impacts to the public and customers.
666. AltaLink is forecasting CRU investment requirements of \$157.1 M in 2022, and \$162.9M in 2023. Forecast investment in CRU expenditures are required to continue to address deteriorating asset condition, safety, environmental and reliability obligations. The specific basis for AltaLink's CRU forecast varies among the CRU projects and is described in the Capital Maintenance business cases attached in **Appendix 13-A**. AltaLink's Wildfire Mitigation Plan and associated capital business cases are described in **Appendix 22**, Wildfire Mitigation Plan.
667. AltaLink's historical and forecast CRU expenditures are provided in Table 10.3-1 below.

Table 10.3-1 - 2019-2023 CRU Capital Expenditures Actual and Forecast (\$M)

Description	2019	2020	2021	2022	2023
	Actual	Actual	MU	Forecast	Forecast
Transmission Urgent Repair	\$11.8	\$13.5	\$8.9	\$8.5	\$8.6
Transmission Planned Maintenance	\$41.4	\$34.1	\$38.3	\$45.9	\$45.3
Substation Planned Maintenance	\$51.1	\$61.7	\$51.7	\$58.8	\$62.4
Telecom Planned Maintenance	\$12.1	\$11.3	\$11.4	\$12.2	\$12.2
Meter Replacements	\$0.9	\$0.7	\$0.8	\$0.7	\$0.9
System Control Centre Upgrades	\$1.8	\$2.5	\$3.5	\$7.5	\$8.6
Transmission Line Moves	\$1.1	\$3.5	\$3.3	\$3.7	\$3.9
Vehicles	\$2.1	\$1.6	\$3.6	\$2.9	\$4.1
Tools & Instruments	\$1.8	\$1.5	\$1.5	\$2.2	\$1.6
551L Rebuild	\$25.1	\$7.7	\$0.0	\$0.0	\$0.0
Line Clearance Mitigation	\$8.8	\$14.7	\$9.3	\$4.0	\$4.2
Wildfire Mitigation Plan	\$5.5	\$11.7	\$18.0	\$11.9	\$12.2
Transmission Capital Maintenance	\$163.5	\$164.6	\$150.2	\$158.2	\$164.1
Ring Road Project	\$0.1	\$0.1	\$0.0	\$0.0	\$0.0
Capital Maintenance Total	\$163.6	\$164.6	\$150.2	\$158.2	\$164.1
Line Move Customer Contribution	\$0.6	-\$1.3	\$0.6	-\$1.1	-\$1.1
Ring Road Customer Contribution	-\$0.1	-\$0.1	\$0.0	\$0.0	\$0.0
Net Transmission Capital	\$164.1	\$163.3	\$150.8	\$157.1	\$162.9

668. As per Table 10.3-1 above, the two biggest CRU investment amounts are focused on addressing substation planned maintenance and transmission line planned maintenance. The balance of the forecast investment is related to grid operation and includes the following CRU investments: Transmission Urgent Repair, Telecom Planned Maintenance, Meter Replacements, System Control Centre Upgrades, Transmission Line Moves, Vehicles and Tools & Instruments. Investment in these areas is required to maintain the transmission system. The forecast investment breakdown for the 2022-2023 Test Period is shown in Figure 10.3-1 below.

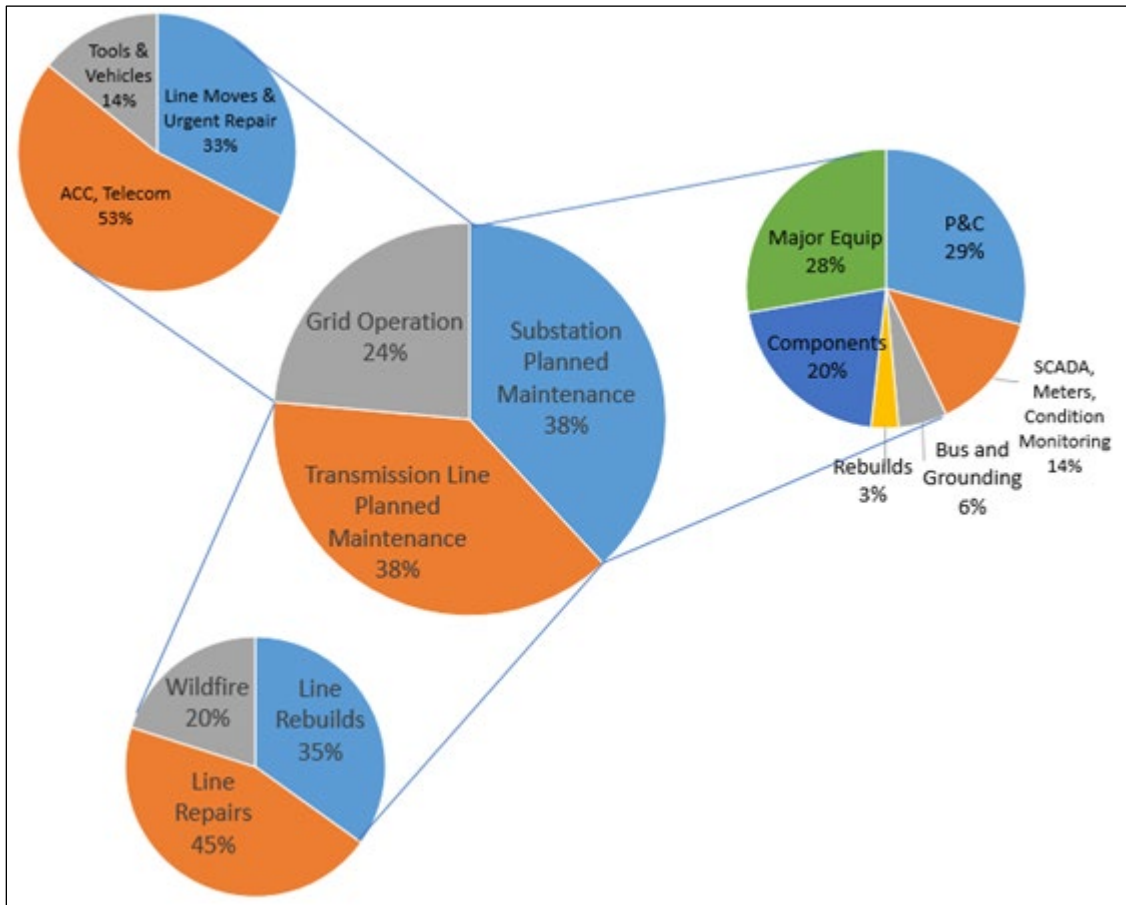


Figure 10.3-1 - 2022-2023 CRU Investment Focus Areas

10.3.1 Actual/Approved Variance

669. AltaLink is forecasting a 1% increase in average annual CRU capital expenditures in the 2022-2023 Test Period relative to the 2019-2021 Test Period.
670. CRU investments are ongoing multi-year capital maintenance investments, which makes it appropriate to compare variances on a cumulative basis. Any year can have variability due to numerous factors, such as customer outage availability, wildlife or environmental requirements, supply chain interruptions impacting material, construction labour, equipment condition and weather. As such, the programs should be considered over the longer term. AltaLink completes the forecast replacements as required to balance these year to year variabilities.
671. AltaLink has compared its cumulative forecast variance to previous approved levels over the past three tariff applications to assess any trends, as some projects can span several years. AltaLink's total CRU expenditures between 2015 and 2020 have tracked to approved levels with a cumulative 1% variance. AltaLink has consistently completed the forecast level of CRU program investments, allowing for some year to year timing variability. A summary breakdown for 2015-2020 is provided in Table 10.3.1-1 below.

Table 10.3.1-1 - 2015-2020 CRU Capital Expenditures versus Approved (\$M)

Description	Total 2015-2020 GTA Approved	Total 2015-2020 Actual	Variance	Average 2015-2020 GTA Approved	Average 2015-2020 Actual
Transmission Urgent Repair	\$40.7	\$66.0	62%	\$6.8	\$11.0
Transmission Planned Maintenance	\$217.8	\$214.6	-1%	\$36.3	\$35.8
Substation Planned Maintenance	\$295.5	\$305.6	3%	\$49.2	\$50.9
Telecom Planned Maintenance	\$70.0	\$75.2	7%	\$11.7	\$12.5
Meter Replacements	\$8.2	\$7.3	-11%	\$1.4	\$1.2
System Control Centre Upgrades	\$15.9	\$15.3	-3%	\$2.6	\$2.6
Mobile Substation	\$3.9	\$4.8	25%	\$0.6	\$0.8
Vehicles	\$25.1	\$21.0	-16%	\$4.2	\$3.5
Tools & Instruments	\$12.8	\$11.4	-11%	\$2.1	\$1.9
551L Rebuild	\$92.0	\$81.7	-11%	\$15.3	\$13.6
Line Clearance Mitigation	\$41.1	\$34.8	-15%	\$6.8	\$5.8
Wildfire Mitigation Plan	\$22.2	\$17.2	-22%	\$3.7	\$2.9
Total	\$845.0	\$855.1	1%	\$140.8	\$142.5
Transmission Line Moves	\$31.1	\$20.8	-33%	\$5.2	\$3.5
Total	\$876.1	\$875.9	0%	\$146.0	\$146.0

Note: The Ring Road project has been excluded from this comparison due to its unique nature.

672. Table 10.3.1-2 below provides a further breakdown of the actual and approved CRU capital expenditures related to the 2019-2021 GTA and the Test Period. Table 10.3.1-2 also displays the variance for the previous GTA period, followed by explanations of any individual material variances.
673. Table 10.3.1-2 below demonstrates the trends for year-over-year CRU projects. This table excludes the line moves associated with the Ring Road. This project is unique and not expected to be repeated in the foreseeable future. In addition, Transmission Line Moves are shown separately; as these expenditures were treated separately under the Negotiated Settlement Agreement in the 2019-2021 period.⁸⁹

⁸⁹ Exhibit 23848-X0204.01, AML 2019-2021 GTA Negotiated Settlement Agreement, para 28, pdf 7.

Table 10.3.1-2 - 2019-2023 CRU Capital Expenditures versus Approved (\$M)

Description	Average 2019-2021 Approved (NSA)	Average 2019-2021 Actual/MU	Variance	Average 2019-2021 Actual/MU	Average 2022-2023	Variance
Transmission Urgent Repair	\$8.3	\$11.4	37%	\$11.4	\$8.6	-25%
Transmission Planned	\$37.9	\$37.9	0%	\$37.9	\$45.6	20%
Substation Planned	\$54.0	\$54.8	2%	\$54.8	\$60.6	11%
Telecom Planned Maintenance	\$12.5	\$11.6	-7%	\$11.6	\$12.2	5%
Meter Replacements	\$0.9	\$0.8	-12%	\$0.8	\$0.8	2%
System Control Centre Upgrades	\$3.0	\$2.6	-13%	\$2.6	\$8.1	212%
Vehicles	\$3.5	\$2.4	-31%	\$2.4	\$3.5	45%
Tools & Instruments	\$1.8	\$1.6	-11%	\$1.6	\$1.9	20%
551L Rebuild	\$11.6	\$10.9	-6%	\$10.9	\$0.0	-100%
Line Clearance Mitigation	\$11.5	\$10.9	-5%	\$10.9	\$4.1	-63%
Wildfire Mitigation Plan	\$11.6	\$11.7	1%	\$11.7	\$12.0	3%
Subtotal	\$156.6	\$156.8	0%	\$156.8	\$157.3	0%
Transmission Line Moves	\$0.0	\$2.6	-	\$2.6	\$3.8	44%
Subtotal	\$156.6	\$159.4	2%	\$159.4	\$161.1	1%

674. As demonstrated in the tables above, AltaLink has consistently completed the forecast level of CRU program investments to effectively manage risk and equipment condition with small variances in any given Test Period, primarily derived from project timing. When AltaLink has experienced unexpected requirements for equipment replacement, for example, within its Urgent Repair Program, AltaLink resolves such activities as required to maintain transmission service.
675. Transmission Urgent Repair – AltaLink is forecasting fewer urgent repairs in the Test Period. For more details refer to Table 10.3.5.1-1 below and the Transmission Urgent Repair business case, **Appendix 13-A01**.
676. Transmission Planned Maintenance – the variance is primarily due to changes in timing of previously forecast transmission line rebuilds due to permitting and stakeholder requirements and increased requirements for Line Component upgrades based on the identified number and type of higher risk notifications. For more details, refer to the Rebuild Wood Pole Lines business case, **Appendix 13-A05**, and the Line Components business case, **Appendix 13-A02**.
677. Substation Planned Maintenance – the variance is primarily due to requirements to address equipment risks identified within substation equipment as compared to the prior period. For instance, AltaLink’s risk assessment of protection and control equipment conditions within substation control buildings requires more sites to be addressed than the previous Test Period. In addition, AltaLink’s HVDC converter sites are requiring HMI upgrades as they are reaching end of vendor support and have cyber security vulnerabilities that need to be addressed. As well, there are increased requirements to replace protection and control equipment, substation components and high voltage major equipment, such as circuit breakers and transformers, based on condition and risk of failure. In addition, AltaLink is forecasting to improve customer reliability in specific substations where customers have experienced repetitive and/or long duration power outages due to power system configuration. For details, refer to the Substations

Components business case, **Appendix 13-A07**; the SCADA Equipment business case, **Appendix 13-A09**; the Substation Major business case, **Appendix 13-A12**; the 25 kV Bus business case, **Appendix 13-A13**; the Protection and Control Equipment business case, **Appendix 13-A15**; and the Protection and Control Major Equipment business case, **Appendix 13-A16**.

678. System Control Center – the primary driver for the variance in the 2022-2023 Test Period is AltaLink forecasting to relocate its current control center due to security and access requirements. Refer to the AltaLink Control Centre Relocation business case, **Appendix 13-A33** and the AltaLink Control Centre business case, **Appendix 13-A20**.
679. Vehicles – the primary driver for the variance is the timing and changes in the type of vehicles requiring replacement in the Test Period. Refer to the Transmission General Capital – Vehicles business case, **Appendix 13-A25**.
680. Transmission Line Moves – As part of the 2019-2021 GTA NSA, AltaLink agreed to remove \$14M of net forecast capital expenditures related to line moves from its 2019-2021 revenue requirement, and instead to include the actual costs of those line moves in the present GTA.⁹⁰ The expenditures AltaLink incurred were based on actual field and work activities in the 2019-2021 period; the net book value of these moved assets needs to be reflected in AltaLink’s rate base. Additionally, AltaLink is forecasting an increase in the number of line moves in the 2022-2023 period. Refer to the Transmission Line Moves business case at **Appendix 13-A24** for details on the prior period actual and Test Period forecast expenditures.
681. The 551L transmission line re-build – this program was completed in 2020.
682. Line Clearance Mitigation (LCM) – AltaLink continues to complete resolution of the line clearance deficiencies identified in the 2019-2021 Test Period. AltaLink is forecasting a smaller volume of deficiencies requiring investment in the Test Period. Refer to the Line Clearance Mitigation business case, **Appendix 13-A32**.
683. Wildfire Mitigation Plan – AltaLink continues to address wildfire risk as part of its WMP utilizing the same, consistent methodology from the 2019-2021 Test Period. AltaLink has applied the same principles and wildfire risk assessment as it has available the fully completed wildfire risk mapping. The drivers of the program in the 2022-2023 Test Period are consistent with that of the previous period, and the forecast reflects the application of same principles and methodology utilized in AltaLink’s 2019 GTA to continue to address identified wildfire ignition risks in HFRAs. Refer to **Appendix 22** Wildfire Mitigation Plan, and the relevant capital business cases:
- **Appendix 22-A1:** Wildfire Situational Awareness;
 - **Appendix 22-A1:** Targeted Component and Structure Replacements in HFRAs;
 - **Appendix 22-A3:** Line Rebuilds in HFRAs; and
 - **Appendix 22-A4:** Transmission Line Rights-Of-Way Upgrades in HFRAs.

10.3.2 CRU Forecast Basis

684. The CRU program forecasts are made two to four years in advance of field construction and are therefore based on the scope, cost and schedule information known and available at that time. The forecast costs are typically based on historical program actual average unit costs with limited to no detailed engineering completed or site visits.

⁹⁰ Exhibit 23848-X0204.01, AML 2019-2021 GTA Negotiated Settlement Agreement, para 28, pdf 7.

685. The CRU program encompasses a large volume (i.e. 500 to 700 annually) of small projects where it is not practical, or ultimately cost effective to complete detailed engineering or site visits several years in advance of the work activities. AltaLink is not staffed to perform this level of detailed planning for CRU programs this far in advance. Further, consistent with good industry practice, detailed engineering and site visits are completed six to nine months in advance to ensure a greater degree of certainty before incurring the planning and engineering effort. CRU programs are effectively managed by completing this detailed design at a time which minimizes the impact of potential changes that items such as site conditions, outages, industry standards, and customer or landowner requirements may require.
686. As a result, the CRU forecast accuracy will reflect the limited engineering completed, uncertainty in the estimate related to the time period between forecast and actual execution timing, and the potential for average actual historic unit costs that may not reflect actual site specific conditions at the time of completion. Therefore, the forecast accuracy of each individual CRU program is expected to be between 20% to 30% of the actual expenditure, depending on the individual nature of the specific replacement or upgrade program. For example, a relay upgrade may have less variability due to its simpler nature (e.g. indoors, control building) than rebuilding a transmission line (e.g. outdoors, variable terrain, and stakeholders). The timing and scope of specific individual program execution will also contribute to the potential variance of forecast to actual. More specifically, the timing and scope of program execution may vary from the forecast, particularly year to year, due to a number of potential execution factors such as, but not limited to: permitting, weather, outages, environmental constraints on construction, supply chain impacts, customer requests, etc.
687. AltaLink forecasts and intends the CRU programs to be executed within the Test Period. At times circumstances can arise that result in delays of a project into a subsequent Test Period. Occasionally a particular CRU program may require execution over several years. As shown in Table 10.3.1-1 and Table 10.3.1-2 above, AltaLink has accurately forecast its actual CRU expenditures over the past six years, with a cumulative variance of 1%. In AltaLink's experience, this CRU forecasting process is the most effective and efficient approach for managing the ongoing investments in the CRU programs due to the investments being ongoing multi-year programs with numerous small risk based individual asset level investments.
688. The variances of actual costs incurred to the approved forecast reflect the requirements at the time the work was executed to meet engineering, stakeholder and regulatory requirements. AltaLink executes these programs to meet operational and stakeholder needs that are ultimately defined through detailed engineering, permitting, and field construction. In addition, the costs to perform the programs represent the market costs at the time the specific program activities are constructed.
689. AltaLink's CRU forecasts are based on historic actual average unit costs to perform replacements of equipment. Therefore, cost estimates represent average design conditions and simplified permitting and consultation requirements based on the nature of 'like-for-like' asset replacement investments. AltaLink considers this "desktop" forecast methodology based on historical unit costs to be an effective process to develop the CRU program forecast, often two to four years in advance of construction, as opposed to investing resources (time, FTEs, and cost) prematurely. As a result of this practice, the historical actual average unit cost inherently leads to forecasts that do not include unique site specific or project specific events or conditions such as, but not limited to:

- unique requirements to consult with indigenous peoples;
- changes in historic public consultation requirements or sensitivities in siting for structure changes or negotiating access required for construction, for equipment such as telecommunication towers or transmission lines;
- unique site design requirements only determined through detailed engineering and site investigation;
- changes in legislation, permitting and filing requirements for infrastructure projects with municipalities;
- changing environmental requirements and expectations from stakeholders/landowners impacting access requirements, crossing requirements, vegetation management, and timing of field construction activities;
- changing safety requirements and expectations;
- increasing detail design considerations of cyber-security requirements and expectations impacting field equipment and communication systems to ensure the security of grid operation;
- new and changing industry standards, such as AESO rules;
- unexpected weather conditions impacting construction, such as warm winter weather or prolonged winter break up/wet spring conditions requiring more access matting to facilitate work activities;
- changing market conditions for materials and labour;
- unexpected customer requirements for uninterrupted supply or shortened outage times; and
- timing issues related to outage availability and volatility based on changing customer needs.

10.3.3 CRU Procurement Basis

690. AltaLink follows industry standard practices and processes in the procurement of materials/equipment and construction services to support the CRU program. More specifically:

- through a market competitive process, as outlined below, AltaLink has established RAs with a group of qualified suppliers for telecom, substation and lines construction services, including agreed upon T&Cs and pricing for fixed terms of typically two or three years;
- the process followed in establishing these RAs with the qualified suppliers is based on industry standard procurement practices, including but not limited to:
 - identifying and creating a scope based on the program requirements;
 - developing and initiating an RFP from potential service providers;
 - evaluating based on established criteria for environment, safety, technical expertise, commercial terms and pricing;
 - awarding, negotiating, and entering into a fixed term RA with successful service providers; and
 - AltaLink following a similar competitive process for the acquisition of material and equipment.

691. This procurement practice ensures AltaLink has obtained market competitive pricing for the required services, material and equipment in support of the delivery of the CRU program. Further, in order for AltaLink to be effective in the specific activities necessary to deliver the required services and materials/equipment, AltaLink will establish agreements that have a term of two to three years when appropriate. This approach is utilized and evaluated to optimize the cost, time, effort of the procurement department, and the negotiating process, as opposed to

creating a specific procurement event for each individual CRU project in the overall program. Conducting an individual procurement process for each individual program or project would be costly, burdensome, cause service provider fatigue, and impact the timely delivery of the overall program. As well, the establishment of these construction services agreements results in efficiency and stability in the execution of the CRU programs, in that AltaLink's suppliers are better able to forecast work force demand and capacity and ensure that resources assigned to AltaLink projects meet technical and safety training requirements (e.g. the workforce assigned to AltaLink jobs are familiar with AltaLink processes and standards).

692. AltaLink monitors the supplier marketplace. If shifts in the market are recognized during the term of the RAs, AltaLink will seek opportunities to re-negotiate pricing and rates as appropriate, as opposed to waiting for the end of the contract term before entering the market in a formal process. AltaLink's most recent competitive bid process for construction services was conducted in 2018-2019, and resulted in cost reductions of 8% to 12% over previous rates with cost certainty through to 2021-2022. AltaLink will be conducting competitive bid processes for various scopes of the CRU construction services over the course of the next several years in order to ensure market competitive rates. AltaLink anticipates rates to be aligned with the labour escalation forecasts for the Test Period. AltaLink has and will continue to assess ways to achieve market competitive rates and cost effective delivery of the CRU program.
693. Through the procurement practices described above, more than 80% of AltaLink's actual CRU program costs reflect externally procured market competitive pricing for material/equipment and construction services. This portion of the cost is reflective of the highest risk, highest dollar value expenditures. The remaining 20% of the costs are generally low risk, low dollar value transactions across a wide supply base and are managed using project management processes.

10.3.4 CRU Project Management and Construction Execution Oversight

694. AltaLink has an established project management and construction execution oversight process to efficiently and cost effectively deliver the CRU program. More specifically, AltaLink's internal resources manage and support the execution of projects, including scoping, environmental review, design, regulatory, project management, and on selected projects, construction. As outlined above, AltaLink is supported by service providers as appropriate in the delivery of the CRU program. This approach allows for the cost effective service provider support that is based on market competitive rates from key service providers and provides the required capacity to respond to urgent or emergency repair situations.
695. The following are the general project management and construction execution practices in place to monitor and manage cost effective delivery of the CRU program:
- as part of the engineering process, AltaLink will develop a Design Based Memorandum (DBM) for those projects about to begin construction. AltaLink will provide the project scope to the appropriate service provider to initiate the construction execution planning;
 - the service provider will develop the execution plan, including: confirming the scope, quantity (units) and pricing at the start of the project. The service provider will execute the project on the agreed scope and project price;
 - the AltaLink Project Manager (PM) oversees the execution of the work with the contractor including; safety, schedule, scope and quality;
 - during the project, the PM meets regularly with the contractor to ensure that work is progressing as planned and that incurred costs are reasonable; and

- throughout the execution of the CRU portfolio, a number of program level variances typically occur as a result of the level of pre-job scoping and the nature of working in brownfield energized facilities. These program level variances could include items such as outages changing to accommodate customer requirements, unknown site conditions, incremental scope and changes as a result of detailed design requirements.

10.3.5 CRU Variances from 2019-2021 Forecast

696. As outlined above, AltaLink has established construction execution and project management practices, supported by industry standard procurement processes, which ensure projects are delivered with market competitive pricing and cost efficient methods to develop the Test Period CRU program forecasts that are based on a desktop method using historical actual costs. AltaLink efficiently and cost effectively delivered the actual costs incurred in the CRU program. In the tables below, AltaLink provides the variance of the reasonably incurred actual costs and the basis for the changes from the initial CRU program forecasts for 2019, 2020 and 2021 MU forecast.

10.3.5.1 Transmission Urgent Repair Variance

Table 10.3.5.1-1 – Transmission Urgent Repair Actual to Approved Variance 2019

Transmission Urgent Repair				
Year	Approved (\$M)	Actual (\$M)	Variance (\$M)	Variance
2019	10.1	11.8	1.7	17%

697. AltaLink experienced two large unanticipated failures of transmission line assets that required unplanned repair or replacement, partially offset by lower than average unplanned repairs on other equipment. Actual costs were based on market rates for replacement and installation equipment of this nature. AltaLink forecasts urgent repairs based on historic actuals normalized for unusual or unique failures as the work performed in this program is unplanned. Historically, AltaLink has not forecast this program to include replacements of this nature and could not have reasonably anticipated the failures at the time of the previous forecast:

- the foundation on a 43 year old double circuit 240 kV steel lattice transmission tower situated directly in the water at Lake Wabamun structurally failed during spring break up in 2018. This failure was noticed during annual maintenance patrols and required the structure to be removed by replacing the two adjacent towers with larger steel structures. The resulting replacement was a two-year project that started in 2018 and required a \$1.7M expenditure to complete the project in 2019;
- a 240 kV underground conductor (cable), originally installed in 2013, failed and needed to be replaced at a cost of \$1.9M; and
- these unique failures were partially offset by lower than forecast unplanned repairs for other equipment.

Table 10.3.5.1-2 – Transmission Urgent Repair Actual to Approved Variance 2020

Transmission Urgent Repair				
Year	Approved (\$M)	Actual (\$M)	Variance (\$M)	Variance
2020	7.3	13.5	6.2	85%

698. AltaLink experienced several unexpected failures that required unplanned repair or replacement. Actual costs were based on market rates for replacement and installation equipment of this nature. AltaLink forecasts urgent repairs based on historic actuals normalized

for unusual or unique failures as the work performed in this program is unplanned. Historically, AltaLink has not forecast this program to include replacements of this nature and could not have reasonably anticipated the failures at the time of the previous forecast.

- relocation of five 240 kV towers and banks stabilization due to sudden river bank erosion causing structural compromise (\$3.9M);
- the foundation on a telecom tower at the 358S Substation failed, requiring a replacement. Repair required the existing tower structure to be dismantled, moved, and reassembled on the new foundation (\$0.4M);
- In addition, AltaLink experienced a higher number of unplanned failures or required larger repair expenditures than previously forecast. In particular, there was an additional transformer failure and a higher number of transmission line structures requiring replacement due to failure from weather or third party damage (\$1.9M). For further details, refer to the Transmission Urgent Repair business case, **Appendix 13-A01**.

Table 10.3.5.1-3 – Transmission Urgent Repair MU to Approved Variance 2021

Transmission Urgent Repair				
Year	Approved (\$M)	MU (\$M)	Variance (\$M)	Variance
2021	7.6	8.9	1.3	17%

699. AltaLink is forecasting a higher amount for 2021 Urgent Repair, based on increases in the average number of unplanned failures that have occurred in recent years as compared to prior historical estimates.

10.3.5.2 Transmission Planned Maintenance Variance

700. Based on the 2019-2021 GTA NSA, and to facilitate the response to AUC Direction 9 from Decision 23848-D01-2020,⁹¹ AltaLink has separated the variances related to LCM and aerial mapping programs from the remainder of the Transmission Planned maintenance programs. Refer to Section 10.3.5.11 below for the LCM variance.

Table 10.3.5.2-1 – Transmission Planned Maintenance Actual to Approved Variance 2019

Transmission Line Planned Maintenance				
Year	Approved (\$M)	Actual (\$M)	Variance (\$M)	Variance
2019	36.8	41.4	4.6	13%

701. AltaLink's actual transmission line planned maintenance requirements were higher than forecast primarily as a result of changes in the scheduling of projects due to stakeholder requirements, changes in asset conditions found from subsequent engineering study, weather and site conditions, changes in the design requirements after site and equipment conditions were defined and actual labour market conditions. The annual variance was primarily driven by changes from the historic unit costs or assumed project scheduling that informed the forecasts for the following programs.

Pipeline Electrical Interference Mitigation

702. AltaLink's actual requirements for pipeline electrical interference mitigation were \$2.3M higher than previously forecast, primarily as a result of requirements to advance pipeline mitigation studies and completion of more pipeline mitigation projects arising from consultation with

⁹¹ Decision 23848-D01-2020, para 192, pdf 45.

pipeline owners. AltaLink was therefore required to complete a larger volume of mitigations than originally forecast.

703. In addition, some mitigation projects cost more than originally forecast, primarily due to wet conditions in Alberta during the spring and summer of 2019 impacting construction site requirements and resultant costs.

Line Component Program

704. AltaLink’s general upgrade/line component replacements cost \$2.6M more than forecast primarily due to required changes in the timing of component replacements and unanticipated site conditions that were not captured in AltaLink’s historical actuals that informed the prior forecast, primarily:

- based on assessments of asset condition, additional component replacement investment was required on three transmission lines (739L, 995L and 892L) resulting in an increased expenditure of \$2.0M;
- due to site conditions and unique access requirements, actual labor and equipment expenditures for planned maintenance on the 84L and 1201L transmission lines were \$0.3M higher than forecast; and
- Due to travel time requirements to access the work site, additional labor costs of \$0.4M were required for component replacement activities on the 879L transmission line.

705. AltaLink prioritizes and takes maintenance action on assets as required to ensure safe and reliable operations of the transmission system. The asset replacements represent the highest risk and required replacements in this period.

Table 10.3.5.2-2 – Transmission Planned Maintenance Actual to Approved Variance 2020

Transmission Planned Maintenance				
Year	Approved (\$M)	Actual (\$M)	Variance (\$M)	Variance
2020	36.6	34.4	-2.2	-6%

706. AltaLink’s actual transmission line planned maintenance requirements were lower than forecast primarily as a result of changes in the scheduling of projects due to stakeholder requirements, changes in asset conditions found from subsequent engineering study, weather and site conditions, changes in the design requirements after site and equipment conditions were defined, and actual labour market conditions. The annual variance was primarily driven by changes from the historic unit costs or assumed project scheduling that informed the forecasts for the following programs.

Line Rebuilds

707. The rebuilds in the Bow Valley region (113L, 56L, 150L, 54L transmission lines) experienced delays due to requirements to change construction and engineering design for regulatory and consultation activities (-\$2.5M). Through consultation, AltaLink has identified numerous stakeholder concerns in the region that need time to address and are anticipated to require facility applications not previously forecast. AltaLink has reforecast the schedule for these rebuild projects as part of this Test Period.

708. The previously forecast the rebuild of the 757L transmission line experienced schedule delays in order to align with Direct Assign project activities in the region (-\$0.4M).

709. The 225L transmission line rebuild experienced increased costs due to an unanticipated requirement to re-route a section of the line based on stakeholder consultation. AltaLink incurred actual costs to complete additional siting and consultation activities as well as construction and material costs (\$1.0M).
710. The above were partially offset by lower actual costs required in the rebuild of the 174L transmission line, primarily due to site access requirements being simpler than originally forecast and AltaLink’s historic experience and some construction activities occurring in 2019 (-\$2.0M).

Airbreak Replacements

711. As part of detailed planning subsequent to the original forecast, it was determined that the three airbreak replacements forecast for replacement in 2020 could be replaced in a future period (-\$1.1M).

Lines General Upgrades

712. AltaLink’s Lines General Upgrades program required an additional \$1.5M in expenditures primarily due to unique site access and design requirements for asset replacements in the general upgrades program. These increased requirements arose primarily due to unique site conditions and outage requirements to enable required replacement of line components in poor condition that were not captured in AltaLink’s historical actuals which informed the prior forecast. For example:
- The upgrades on the 207L transmission line required a structure to be replaced on the edge of a cliff, resulting in difficult access and a re-alignment of the line; and
 - The work on the 892L transmission line required frozen ground to access the site to manage landowner and environmental constraints and there were unique power system outage timing requirements that required construction to be completed in stages, resulting in increased actual expenditures.

Pipeline Electrical Interference Mitigation

713. AltaLink’s actual requirements for pipeline electrical interference mitigation were \$1.5M higher than previously forecast primarily as a result of requirements to advance pipeline mitigation studies and complete more pipeline mitigation projects arising from consultation with pipeline owners. AltaLink was therefore required to complete a larger volume of mitigations than originally forecast.
714. In addition, several specific site mitigations had higher than anticipated unit costs, primarily due to the detailed site design requirements to complete the mitigations exceeding AltaLink’s historic experience which informed the forecasts.

Table 10.3.5.2-3 – Transmission Planned Maintenance MU to Approved Variance 2021

Transmission Planned Maintenance				
Year	Approved (\$M)	MU (\$M)	Variance (\$M)	Variance
2021	40.5	38.3	-2.2	-5%

715. AltaLink’s 2021 transmission line planned maintenance forecast is lower than the compliance forecast. This is primarily due to AltaLink forecasting changes in timing for line rebuilds on the 113L, 150L and 757L transmission lines due to requirements arising from consultation with landowners and timing changes related to permitting processes. In addition, as part of detailed planning, a line component upgrade on the 927L transmission line was re-scheduled to align

planned outages with the 924L transmission line, as these two lines share the same transmission structures. These timing changes are partially offset by forecast cost increases to address an identified pipeline mitigation on the 754L and 671L transmission lines based on an engineering study, and the determined cost allocation between the pipeline owner and AltaLink.

716. AltaLink prioritizes and takes maintenance action on assets as required to ensure safe and reliable operations of the transmission system. The asset replacements represent the highest risk and required replacements in this period.

10.3.5.3 Substation Planned Maintenance Variance

Table 10.3.5.3-1 – Substation Planned Maintenance Actual to Approved Variance 2019

Substation Planned Maintenance				
Year	Approved (\$M)	Actual (\$M)	Variance (\$M)	Variance
2019	52.9	51.2	-1.8	-3%

717. AltaLink’s actual substation planned maintenance requirements were lower than forecast. Individual substation CRU program variances primarily arose due to changes in requirements and costs based on detailed design, site conditions, changes to timing of work to address customer and equipment condition, and actual labour market conditions as further described below.

P&C Equipment

718. AltaLink’s P&C equipment program requirements were \$1.2M lower than forecast primarily due to the following:

- the time required for engineering and design of relay settings was longer than forecast for multiple line protection sync check upgrades, resulting in some scope being completed in 2020 (\$0.5M);
- changes in the timing of engineering reviews related to the P&C protection coordination activities due to unexpected complexities in receiving interconnecting party data requirements (\$0.2M). Work scheduled for completion in 2018 took longer than expected and was completed in 2019. This delayed the start of the next study, which resulted in lower expenditures in 2019; and
- Several P&C component programs experienced lower unit costs due to site design requirements, market conditions or scheduling changes to better align with stakeholders and other project activities (\$0.4M).

SCADA Equipment

719. AltaLink’s SCADA equipment program experienced a \$0.8M decrease from forecast primarily due to changes in project schedules. At one site (28S Substation), unexpected difficulties with coordinating outages caused project activities to delay into early 2020. In addition, at the 489S Substation unique unit cost savings were realized by being able to complete all site cutovers to the upgraded system in one scheduled power outage. AltaLink continues to review the unique construction technique used to assess further sites where it may be applicable.

720. AltaLink prioritizes and takes maintenance action on assets, as required, to ensure safe and reliable operations of the transmission system. The asset replacements represent the highest risk and required replacements in this period.

Table 10.3.5.3-2 – Substation Planned Maintenance Actual to Approved Variance 2020

Substations Planned Maintenance				
Year	Approved (\$M)	Actual (\$M)	Variance (\$M)	Variance
2020	54.1	61.7	7.5	14%

721. AltaLink’s 2020 actual substation planned maintenance requirements were higher than forecast primarily due to changes in requirements and costs based on detailed design, site conditions, changes to timing of work to address customer and equipment condition, and actual labour market conditions as further described below in the following areas.

Substation Components

722. AltaLink experienced lower actual costs (\$0.6M) than previously forecast in the substation components program, primarily driven by changes in timing of work based on equipment condition, customer requirements, and actual costs being lower than historical average unit costs for some programs. The largest contributor to the variance was in planned transformer bushing replacements. For example,

- four bushings were replaced as the result of an unplanned urgent repair project to replace a transformer;
- five bushing replacements were rescheduled to future years as a result of equipment risk reassessment during detailed planning. The actual bushing condition was found to be better than anticipated; and
- actual costs experienced for 18 replacement projects were lower than the historic average unit costs used to inform the prior forecast.

Substation Major Equipment

723. AltaLink experienced increased actual costs than previously forecast (\$2.7M) primarily due to:

- early in 2020, condition assessments on a transformer at the 133S Substation indicated signs of impending functional failure. After consultation with the large industrial customer served by that facility, AltaLink planned and replaced this transformer in 2020 to ensure continued service (\$3.1M);
- in addition, AltaLink experienced increased transformer replacement costs at the 285S and 616S Substations related to weather conditions during construction and unanticipated site design requirements. At the 285S Substation, construction activities occurred in a wetter than normal period for the Camrose area, requiring additional actual costs for hydrovac and ground materials. As well, site design requirements necessitated replacement of the station service transformer to accommodate the load of the upgraded switchgear building. During the detailed design of the transformer replacement at the 661S Substation, a 69 kV switch and structure replacement was required to enable the transformer upgrade with required oil containment due to site constraints (\$1.3M); and
- these transformer replacements actual cost variances were partially offset by reductions in the volume of previously forecast circuit breaker replacements as a result of updated risk reassessments completed during detailed planning (-\$1.5M).

Substation Refurbishment

724. Actual costs for the Clyde 150S Substation were higher than forecast (\$0.6M), primarily as a result of changes in scheduling of work between the three years, including advancing unique construction activities previously forecast in 2021 to be completed in 2020 to reduce power

system outages and risks for customers in the region based on detailed project planning not anticipated in the original forecast. This project is now complete.

Substation Grounding

725. AltaLink experienced higher than expected costs (\$1.0M) for substation grounding, primarily due to changes in the timing of program activities. Some 2019 site remediation activities were completed in 2020 based on work schedules and site access requirements. In addition, grounding studies for future site prioritization were advanced to enable improved site planning in future years.

P&C Equipment

726. AltaLink experienced increased actual costs as compared to forecast in P&C Equipment (\$1.3M) primarily due to:

- unanticipated site design requirements and complexities not part of the historic average unit costs used for the prior forecast. For example, capacitor bank protection installations at the East Calgary 5S Substation and three transformer protection upgrades had unique design requirements due to the complexity of the sites; and
- AltaLink was required to upgrade more units of line protection to upgrade sync check by-pass functionality in order to reduce risk of protection mis-operation for 105 relays.

P&C Major

727. AltaLink experienced higher actual costs than forecast (\$3.1M) primarily due to site-specific design complexities not captured in the historic average unit cost used to inform the forecast at three sites (the 370S, 99S, and 394S Substations) and the requirement to advance detailed planning for 2021 program activities to assess customer and power system outage impacts.

Disturbance Analysis

728. AltaLink experienced lower actual costs as compared to forecast (\$0.8M) as a result of the majority of forecast program activities in 2020 unexpectedly being able to be jointly designed, scheduled and constructed with other site project activities to upgrade site equipment cyber-security. As the cyber-security upgrades are now complete, AltaLink does not expect a similar cost saving in future periods.

729. AltaLink prioritizes and takes maintenance action on assets as required to ensure safe and reliable operations of the transmission system. The asset replacements represent the highest risk and required replacements in this period.

Table 10.3.5.3-3 – Substation Planned Maintenance MU to Approved Variance 2021

Substations Planned Maintenance				
Year	Approved (\$M)	MU (\$M)	Variance (\$M)	Variance
2021	54.9	51.7	-3.2	-6%

730. AltaLink’s 2021 substation planned maintenance MU forecast is lower than the approved amount primarily due to changes in required timing of equipment replacement due to detailed planning and updated equipment risk assessments.

731. For example, substation component replacements, substation major equipment and P&C equipment replacements have been reduced and rescheduled in future periods due to actual equipment condition and risk re-assessment (\$4.1M). The largest changes were in high voltage circuit breakers (\$1.2M), airbreak and switches (\$1.1M), grading capacitors (\$0.4M), lightning arrestors (\$0.3M), secondary station service (\$0.3M), and line protection upgrades (\$0.8M).

732. The above forecast reductions are partially offset by AltaLink identifying a required replacement, as part of the 25 kV Bus program, of switchgear at the 177S Substation as a result of unanticipated poor equipment condition and risk of failure (\$0.9M).

10.3.5.4 Telecom Planned Maintenance

Table 10.3.5.4-1 – Telecom Planned Maintenance Actual to Approved Variance 2019

Telecom Planned Maintenance				
Year	Approved (\$M)	Actual (\$M)	Variance (\$M)	Variance
2019	12.3	12.1	-0.2	-1%

733. AltaLink's total actual telecom planned maintenance expenditures were completed as per the forecast, with no material variance. One radio replacement project and one building upgrade experienced some minor delays, and both of these projects were completed in early 2020. The MPLS program was able to advance some 2020 scope to 2019 and capture a lower per-unit cost.
734. Other programs within the telecom equipment program had actual requirements that offset each other, driven by timing or cost changes related to customer or site conditions not originally forecast.
735. AltaLink prioritizes and takes maintenance action on assets as required to ensure safe and reliable operations of the transmission system. The asset replacements represent the highest risk and required replacements in this period.

Table 10.3.5.4-2 – Telecom Planned Maintenance Actual to Approved Variance 2020

Telecom Planned Maintenance				
Year	Approved (\$M)	Actual (\$M)	Variance (\$M)	Variance
2020	13.2	11.3	-1.8	-14%

736. AltaLink's 2020 actual telecom planned maintenance requirements were lower than forecast primarily due to cost savings in microwave radio replacements and MPLS upgrades.
737. AltaLink was able to complete forecast microwave radio replacements for a lower unit cost due to lower actual market costs for construction activities and more favorable site construction requirements as compared to AltaLink's historic average unit costs used to inform the prior forecast (\$0.5M).
738. The MPLS upgrade program activities were completed for lower unit costs than previously forecast as a result of defining an opportunity in detailed site planning to combine program construction activities with other planned projects reducing overall actual unit costs as compared to historic average (\$1.2M).
739. AltaLink prioritizes and takes maintenance action on assets as required to ensure safe and reliable operations of the transmission system. The asset replacements represent the highest risk and required replacements in this period.

Table 10.3.5.4-3 – Telecom Planned Maintenance MU to Approved Variance 2021

Telecom Planned Maintenance				
Year	Approved (\$M)	MU (\$M)	Variance (\$M)	Variance
2021	12.0	11.4	-0.6	-5%

740. AltaLink is forecasting 2021 MU for telecom planned maintenance to be 5% less than the approved amount. AltaLink re-assessed the requirement to complete the previously forecasted radio replacements, substation LAN upgrades and selected general projects in 2021 based on current equipment condition (\$0.7M).

10.3.5.5 Metering Replacements

Table 10.3.5.5-1 – Metering Replacements Actual/MU to Approved Variance 2019, 2020 and 2021

Metering Replacements				
Year	Approved (\$M)	Actual/MU (\$M)	Variance (\$M)	Variance
2019	0.7	0.9	0.2	28%
2020	0.7	0.7	-0.1	-9%
2021	1.2	0.8	-0.4	-36%

741. In 2019, the expenditure variance is primarily due to two units at the 868S and 866S Substations which had unexpected customer outage coordination requirements, and requirements to install wildlife cover-up on the low voltage components owned by AltaLink inside the substation due to unique meter configuration at the location. AltaLink does not normally require or anticipate wildlife mitigation within the historic unit costs used to inform the approved forecast.
742. There was no material difference between the 2020 forecast and actual expenditures.
743. 2021 MU forecast variances are primarily due to changes in replacement requirements to align with updated customer outage schedules impacting ten previously forecasted site upgrades. AltaLink coordinates with customers to align meter replacement requirements with other planned substation work and customer activities to avoid additional outages for customers.

10.3.5.6 System Control Center Upgrades

Table 10.3.5.6-1 – System Control Center Upgrades Actual to Approved Variance 2019

System Control Center Upgrades				
Year	Approved (\$M)	Actual (\$M)	Variance (\$M)	Variance
2019	2.0	1.8	-0.2	-12%

744. AltaLink experienced unexpected project delays in the implementation of forecasted ACC visibility program activities due to a construction contractor suspending their business. Transferring the work activities to a new vendor delayed implementation into 2020. These impacts were partially offset by increased requirements to complete EMS software and hardware upgrades based on deficiencies in the EMS discovered after the original forecast. These deficiencies directly impacted real time operations, requiring mitigation to continue to ensure effective ACC operation.

Table 10.3.5.6-2 – System Control Center Upgrades Actual to Approved Variance 2020

System Control Center Upgrades				
Year	Approved (\$M)	Actual (\$M)	Variance (\$M)	Variance
2020	2.3	2.5	0.1	6%

745. There was no material difference between the 2020 forecast and actual expenditures.

Table 10.3.5.6-3 – System Control Center Upgrades MU to Approved Variance 2021

System Control Center Upgrades				
Year	Approved (\$M)	MU (\$M)	Variance (\$M)	Variance
2021	4.6	\$3.5	-\$1.1	-24%

746. AltaLink's 2021 system control center upgrades MU forecast is lower than the compliance forecast due to two primary drivers:

- a change in requirements for previously forecast activities to upgrade the PMU data collection and storage. Further engineering assessment has determined that this upgrade can be rescheduled to a future period; and
- a re-assessment of the need and timing of previously forecast EMS and ACC visibility software and hardware upgrades to future periods to better align with future EMS upgrades.

10.3.5.7 Transmission Line Moves

Table 10.3.5.7-1 – Transmission Line Moves Actual/MU to Approved Variance 2019, 2020 and 2021

Transmission Line Moves				
Year	Approved (\$M)	Actual/MU(\$M)	Variance (\$M)	Variance
2019	\$0.0	1.1	1.1	[N/A]
2020	\$0.0	3.5	3.5	[N/A]
2021	\$0.0	3.3	3.3	[N/A]

747. As part of the 2019-2021 GTA NSA, AltaLink agreed to remove \$14M of net forecast capital expenditures related to line moves from its 2019-2021 revenue requirement, and instead to include the actual costs of those line moves in to the present GTA.⁹² The expenditures AltaLink incurred were based on actual field and work activities in the 2019-2021 period; the net book value of these moved assets needs to be reflected in AltaLink's rate base. AltaLink actually did incur requests from Alberta Transportation and Municipal Affairs requiring transmission line relocations to be completed in the Test Period and will continue to do so in the current Test Period.

748. Transmission line relocations are dependent upon the timing and scope of requests from the initiating party and the location of the transmission line. Schedules and costs are determined by the timing of each request and can be affected by AUC permit and license applications, material delivery, construction resources, and outage restrictions. These projects are generally variable in scope and nature because of these reasons.

⁹² Exhibit 23848-X0204.01, AML 2019-2021 GTA Negotiated Settlement Agreement, para 28, pdf 7.

749. AltaLink reasonably incurred the individual line moves requested in 2019 and 2020, and is forecasting expenditures in 2021 MU based on current known activities. Individual project details are provided in the Transmission Line Moves business case, **Appendix 13-A24**.

10.3.5.8 Tools and Instruments

Table 10.3.5.8-1 – Tools and Instruments Actual/MU to Approved Variance 2019, 2020 and 2021

Tools and Instruments				
Year	Approved (\$M)	Actual/MU (\$M)	Variance (\$M)	Variance
2019	1.9	1.8	-0.2	-8%
2020	1.7	1.5	-0.2	-12%
2021	1.7	1.5	-0.2	-15%

750. In 2019 and 2020, AltaLink delayed the purchase of 240 kV/500 kV Line tools and substation tools to better enable evaluation of improved types of new tools and equipment to ensure efficiencies in trouble response and maintenance activities. In addition, safety equipment replacements were reduced after an assessment of the existing equipment showed less wear than anticipated.

751. AltaLink is forecasting its 2021 MU based on current plans and tool condition and life expectancies as outlined in **Appendix 13-A23**.

10.3.5.9 551L Rebuild

Table 10.3.5.9-1 – 551L Rebuild Actual to Approved Variance 2019

551L Rebuild				
Year	Approved (\$M)	Actual (\$M)	Variance (\$M)	Variance
2019	25.2	25.1	-0.1	0%
2020	9.6	7.7	-1.8	-19%
2021	0	0	0	0%

752. In 2019, there was no material difference between the forecast and actual expenditures.

753. In 2020, the 551L transmission line rebuild project was substantially completed. The actual costs were less than previously forecast primarily due to a 1 km (2%) portion of the line being rescheduled for completion in a future period as a result of unexpected land access and permitting requirements in this section residing within Canadian Pacific Railway and Town of Banff lands. Previously unknown to AltaLink, Canadian Pacific has plans to accommodate future development on its lands. AltaLink and Canadian Pacific are negotiating an agreement to facilitate construction on Canadian Pacific's land to accommodate this future planned development.

10.3.5.10 Vehicles
Table 10.3.5.10-1 – Vehicles Actual/MU to Approved Variance 2019, 2020 and 2021

Vehicles				
Year	Approved (\$M)	Actual (\$M)	Variance (\$M)	Variance
2019	2.8	2.1	-0.7	-25%
2020	3.6	1.6	-2.1	-57%
2021	4.0	3.6	-0.5	-11%

754. The 2019 variance is a result of vehicle condition and utilization being better than previously forecast, requiring fewer vehicle replacements, and updated condition assessments of trailers and off-road replacements enabling the rescheduling of replacements to a future period. In addition, the procurement of a Heavy Duty Production Vehicle encountered some delays in delivery from vendors.
755. In 2020, AltaLink experienced procurement delays directly due to the impacts of the COVID-19 pandemic on vehicle manufacturing in North America. Multiple vendors shut down for safety reasons for an extended period. Several vehicles were either delayed or not available in 2020.
756. AltaLink is forecasting cost reductions based on updated projections of vehicle condition and utilization as seen in 2019 for the light and medium duty replacements and production vehicles for (-\$0.9M). This is partially offset by increased anticipated replacement requirements of trailers and off-road vehicles in 2021 (\$0.4M) based on equipment condition.

10.3.5.11 Line Clearance Mitigation (LCM) and Aerial Mapping

757. Based on the 2019-2021 GTA NSA agreement, and to facilitate the response to AUC Direction 9 from Decision 23848-D01-2020,⁹³ AltaLink has separated the variances related to LCM and aerial mapping programs from the remainder of the Transmission Planned maintenance programs.

Table 10.3.5.11-1 – LCM Actual/MU to Approved Variance 2019, 2020 and 2021

Line Clearance Mitigation				
Year	Approved (\$M)	Actual/MU (\$M)	Variance (\$M)	Variance
2019	8.5	8.8	0.3	4%
2020	12.0	14.7	2.7	22%
2021	13.8	9.3	-4.6	-33%
Total	34.4	32.8	-1.6	-5%

758. AltaLink's actual line clearance maintenance requirements were lower than forecast in the compliance filing primarily as a result of determining the ability to re-rate some transmission lines to resolve line clearance deficiencies in the near term after subsequent review with the AESO. Over the three year period, AltaLink is forecasting a reduction in program expenditures primarily due the ability to reschedule more than 60 LCMs through completion of an assessment with the AESO enabling some line clearance deficiencies to be resolved in the near-term through a change to the line rating, or re-rating. In addition, 17 spans previously forecast have been rescheduled to occur at the same time as other planned line rebuilds to avoid multiple disturbances to landowners and power system impacts.

⁹³ Decision 23848-D01-2020, para 192, pdf 45.

759. For more details, refer to **Appendix 13-A32** Line Clearance Mitigation program business case and **Appendix C** of that business case for detailed year-by-year and line-by-line analysis.

10.3.5.12 Wildfire Mitigation Plan

Table 10.3.5.12-1 – Wildfire Actual/MU to Approved Variance 2019, 2020 and 2021

Wildfire Mitigation Plan				
Year	Approved (\$M)	Actual/MU (\$M)	Variance (\$M)	Variance
2019	8.2	5.5	-2.8	-33%
2020	14.0	11.7	-2.2	-16%
2021	12.8	18.0	5.3	41%
Total	34.9	35.2	0.3	1%

760. In 2019 the actual number of units and expenditures were lower than originally forecast, driven primarily by the right-of-way component and structure work being delayed. This was primarily due to the wildfire risk mapping not being fully completed until early 2020 due to unexpected complexities in gathering the required data to complete the wildfire modelling and subsequent scheduling delays in obtaining stakeholder access to right-of-way for construction activities.
761. In 2020, AltaLink experienced schedule delays for program activities in the component and structure replacement program primarily due to unexpected delays in obtaining access and permit approvals for planned upgrades from stakeholders. In addition, one segment of wildfire line rebuild on the 890L transmission line was delayed into 2021 due to unexpected power system outage requirements. These delays were partially offset by successful completion of additional wildfire right-of-way upgrades due to favorable site access and weather conditions.
762. AltaLink is forecasting higher volumes of work in its 2021 MU primarily in order to complete the original forecast program activities by the end of 2021 after the schedule delays in 2019 and 2020 discussed above.
763. For more details, refer to **Appendix 22** and the associated wildfire business cases: Wildfire Situational Awareness business case, **Appendix 22-A1**; the Targeted Component and Structure Replacements in High Risk Fire Areas business case, **Appendix 22-A2**; the Line Rebuilds in High Risk Fire Areas business case, **Appendix 22-A3**; and the Transmission Line Rights-of-Way Upgrades in High Risk Fire Areas business case, **Appendix 13-A4**.

10.3.6 CRU Test Period Forecasting Methodology

764. AltaLink's forecasted CRU programs during the Test Period seek to maintain system functionality and to manage the risks associated with the loss of functionality and component specific failures of equipment, reducing the likelihood and frequency of customer impacts due to power outages, potential risks to public safety or the environment and compliance with applicable rules or requirements.
765. AltaLink plans CRU projects based on numerous inputs, such as field tests, performance history, condition monitoring test results, industry equipment history (including age and manufacturer notifications), asset condition determined through physical inspections, and historical project expenditures. This information amounts to thousands of points of data: through the analysis of this data, AltaLink identifies asset components that have a moderate to high probability of failure and that should be repaired, upgraded or replaced to maintain safe and effective operations. AltaLink also assesses the consequences of failure for these assets in determining

the nature and timing of investment. The consequences of failure range from mild (e.g. an individual telecommunication radio failure) to severe, which could include environmental contamination, widespread power outages impacting multiple customers for long duration or loss of life (e.g. transformer failure and fire).

766. AltaLink's CRU projects fall into one of three general categories:

- sustaining programs that maintain or extend asset life by replacing, upgrading or adding components in lieu of total asset replacement. Some examples of sustaining program activities would be line component replacements, tap-changer rebuilds and ground grid upgrades;
- replacement programs that replace higher risk assets and infrastructure. Breaker replacements are an example of a replacement project; and
- customer reliability improvement programs that provide power system functional improvements at locations on the power system that have been identified where customers may be experiencing more frequent or long duration outages as compared to system averages.

767. Through application of knowledge and experience, together with the risk analysis process described further below, CRU improvements are analyzed and prioritized on the basis of the risk of the improvement to mitigate impacts to the power system and customers, safety, and environment and to ensure compliance with regulations. AltaLink's decision to maintain, replace or upgrade transmission assets and infrastructure is based on these consequences of failure along with the criteria described below.

Criteria to Maintain or Upgrade

- the asset must be maintained or modified using a technology that will not become obsolete before the equipment requires replacement;
- the asset must have exhibited good performance during its useful life to date;
- the cost of maintenance must be less than the cost of replacement; and
- the addition of life extending components (e.g. filters on tap-changers) must result in reduced maintenance costs and/or extend the asset life.

Asset Replacement Criteria

- physical condition of the asset – the physical condition of the asset is assessed using routine inspections and tests and compared to equipment specifications and industry experience. Where the inspection and test data reveal a deteriorating trend in condition and increasing probability of failure, plans for refurbishment or replacement are made;
- obsolescence – the ability to support the asset in service often diminishes with age for many transmission system assets. For example, parts to repair older equipment become expensive or unavailable. The unavailability of spare parts or skilled labour to perform maintenance on older assets contributes to a replacement decision;
- ownership costs – ongoing maintenance of a particular asset or asset class may no longer be cost effective. High maintenance costs of an existing asset, combined with greater reliability or functionality of replacements, will contribute to a replacement decision;
- operation ratings – as the transmission system changes, ratings of older equipment may be inadequate. Operating assets above ratings can accelerate the rate of deterioration and increase the risk of failure and may represent a safety risk;

- asset performance – review of performance trends can indicate performance degradation for specific assets, asset classes or manufacturers contribute to a replacement decision; and
- regulation – asset or subcomponents of an asset may be identified in regulations or ISO rules as requiring replacement. For example, federal PCB regulations require the retirement of components containing PCB levels over 2 ppm before 2025.

Asset Risk Management Process

768. AltaLink’s asset risk management process includes five steps, as shown in Figure 10.3.6-1 below.

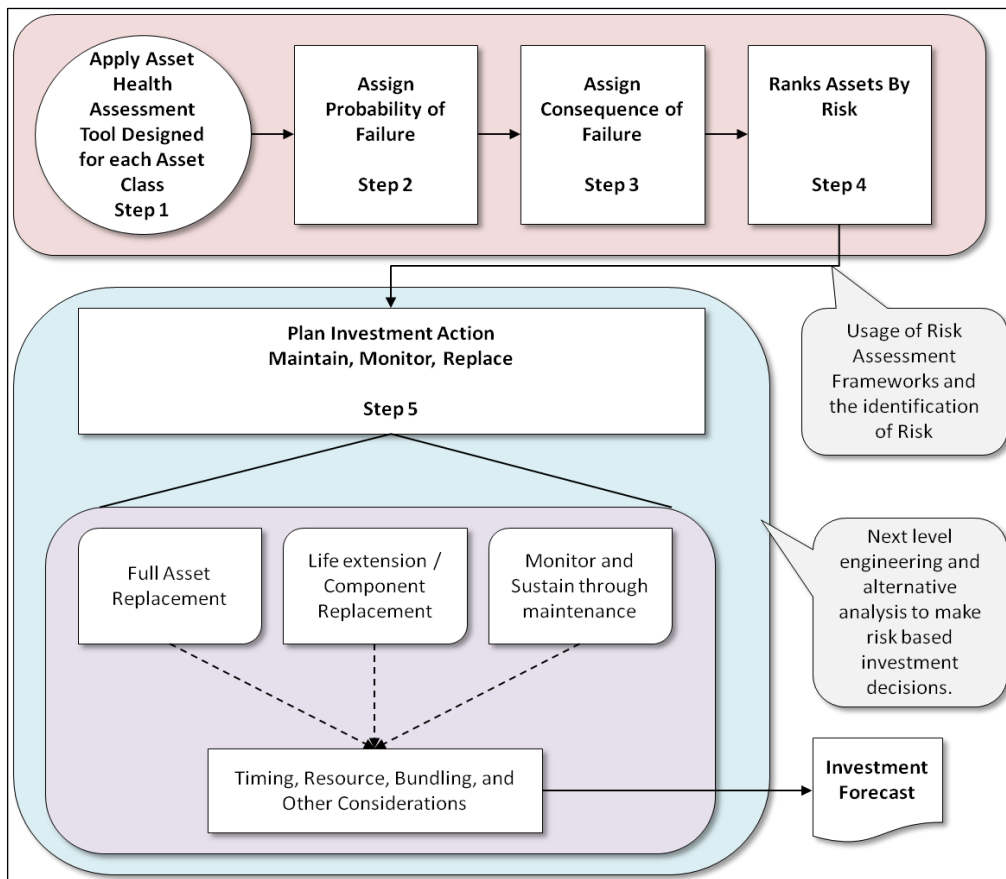


Figure 10.3.6-1 - Asset Risk Management Process

769. Steps one to four are completed through the application of risk assessment frameworks and define the risk associated with the assets. Examples of these frameworks can be found within the CRU business cases in **Appendix 13-A**. The result of steps one to four is a risk prioritized identification of assets requiring potential maintenance investment. Decisions on how much risk to accept and what level of CRU investment is required in the GTA Test Period are determined in step five.
770. Step five involves an engineering review to identify the nature and timing of the investment required to mitigate the risk associated with the prioritized asset. Actions can include the complete replacement of the asset, the life extension of the asset through component replacement, and/or near term increased operational maintenance with continued monitoring. AltaLink also verifies recent maintenance activity, asset health indicators, the timing of other projects and customer activities, and the technical feasibility of investment alternatives.

771. The inputs to the risk assessment framework are periodically reviewed with both engineering and subject matter experts as part of the process that occurs in step five.
772. As an example, Figure 10.3.6-2 below is a risk scatter plot for all of AltaLink’s circuit breakers 69 kV and above. Each dot represents a single breaker, and its relative position with respect to asset health and consequence of failure. The breakers in the top and right areas of the graph present the most risk. This is the type of information created from steps one to four of the asset risk management process.

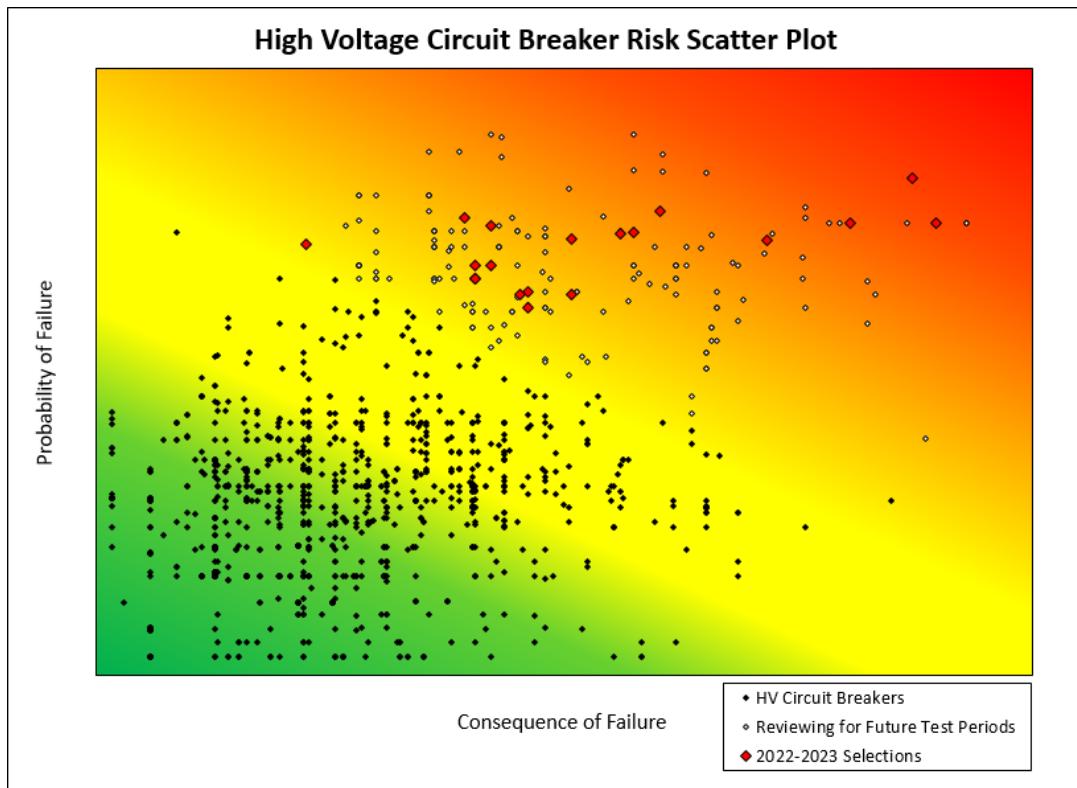


Figure 10.3.6-2 - Risk Identification Example – Circuit Breakers

773. The breakers that are highlighted red correspond to breakers selected for replacement during the Test Period. These breakers are amongst the population with the highest relative risk of failure. Step five of the process (Figure 10.3.6-1 above) identifies these breakers as candidates for replacement in the Test Period and beyond. Similar risk scatter plots are included for other major equipment, such as transformers and wood poles, as part of the CRU business cases included in **Appendix 13A**.
774. In step five AltaLink evaluates the assets and their relative risk to determine the best candidates for replacement. In making this determination, AltaLink considers additional near term factors, such as work optimization due other planned site activities to minimize customer outages, or whether a specific model of breaker is known to have recent operational problems. Through this evaluation, the forecast replacement of assets is determined. For higher risk assets that are assessed to not be replaced in the near term, the risks are managed through either specific component replacement or ongoing monitoring and maintenance activities. This process determines the best overall investment considering factors such as recent maintenance activities, outage timing, other planned work, resourcing, and customer outage coordination.

775. AltaLink determines the appropriate volume of equipment to address in the Test Period by assessing the risk exposure from the continued operation of the entire population of equipment that must be managed over time. As the assets continue to see operational stresses and impacts from adverse environments and weather, the associated risk of failure continues to increase. In the scatter plot example above, the breakers will move upwards as they continue to be in operation and this risk exposure needs to be managed over time to avoid degradation in future power system performance. If the investment level were to decrease, the amount of risk exposure to AltaLink and customers would increase as a higher and higher proportion of the breaker population would move toward the top-right of the graph.
776. As part of AltaLink's overall CRU forecasting method, AltaLink performs three other analyses on the output of its risk assessment process, outlined above, to assess the reasonableness of the Test Period forecast. These approaches are discussed further in the following sections:
- Equipment Deficiency Trend Analysis – Section 10.3.7;
 - Future State Population Profiles – Section 10.3.8; and
 - Customer Benefit Analysis – Section 10.3.9.

10.3.7 CRU Major Programs-Equipment Deficiency Trend Analysis

777. The CRU Program is a vital part of AltaLink's overall maintenance program. Where it no longer makes sense to perform preventative or corrective operating maintenance activities on an asset, AltaLink replaces or refurbishes the asset. Deficiency trends are one leading indicator that AltaLink utilizes to assess the overall health of AltaLink's assets and maintenance investment requirements for the Test Period.
778. Notifications are deficiencies reported for major assets identified through inspections and ongoing operating activities. They provide both an indication of asset condition/performance and a leading indicator for future maintenance or investment requirements. As the frequency or priority of notifications grow, so does the need to manage the associated risk to avoid asset failures that ultimately compromise the safe, reliable operation of the system.
779. Notifications come from multiple sources, including visual inspections, root cause failure analysis, and SCADA alarming. AltaLink categorizes notifications into three categories: high-priority, medium-priority and low-priority. High priority notifications are typically those that result in asset functional failure, equipment lockouts, or imminent failure within the short-term; action is usually required within the current year or the next. Medium and low priority notifications are those that identify medium to longer term deteriorating asset conditions, and are a leading indicator of future investment requirements. Low-priority notifications typically will not require significant action for approximately five years, while medium-priority notifications usually require action in the three to four year timeframe, depending on the asset type.
780. The high-priority notifications are representative of the short-term need for capital replacements. The medium-priority and low-priority notifications represent a leading indicator of deficiencies that will eventually progress into high priority items.
781. An increasing number of high-priority notifications represents increasing risk due to the degrading reliability of the assets. This trending of notifications is an important part of the investment forecasting process, as both an evaluation of the current state and an indication of

deteriorating asset condition and the need for component or full asset replacement over future periods.

782. Current notification and deficiency trends for four major groups of AltaLink’s assets are provided as examples in Figure 10.3.7-1, Figure 10.3.7-2, Figure 10.3.7-3, and Figure 10.3.7-4 below with each followed by a summary discussion.

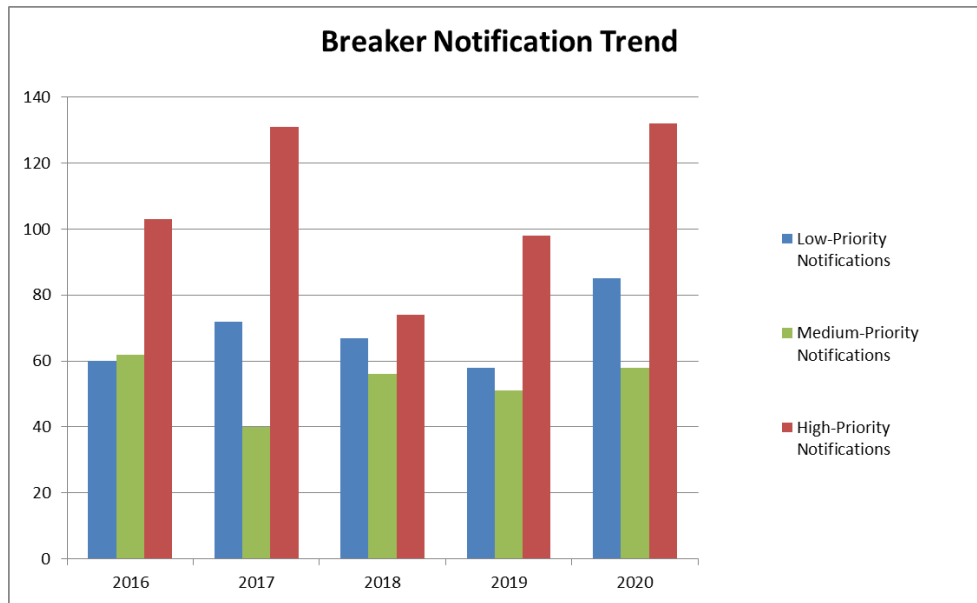


Figure 10.3.7-1 - Circuit Breaker Notification Trend

783. Figure 10.3.7-1 above illustrates that a fairly consistent number of circuit breaker notifications continues to be identified. This sustained level of high-priority notifications confirms that AltaLink’s breaker fleet requires continued investment at similar levels as in past periods. Breakers function to interrupt fault currents, and are exposed to a high degree of stress. Breaker failures are typically catastrophic, with the potential for significant consequential damage to the substation, placing employees and the public at risk if such a failure was to occur. Breakers should therefore be replaced before they fail. Breaker notification trends are a leading indicator of the health of the breaker investment program and the continued need for high voltage breaker replacements. AltaLink has included risk prioritized breaker replacements within the Test Period forecast to continue to address these circuit breaker notification trends. More details about breaker replacements can be found in **Appendix 13-A12** Substation Major Equipment.

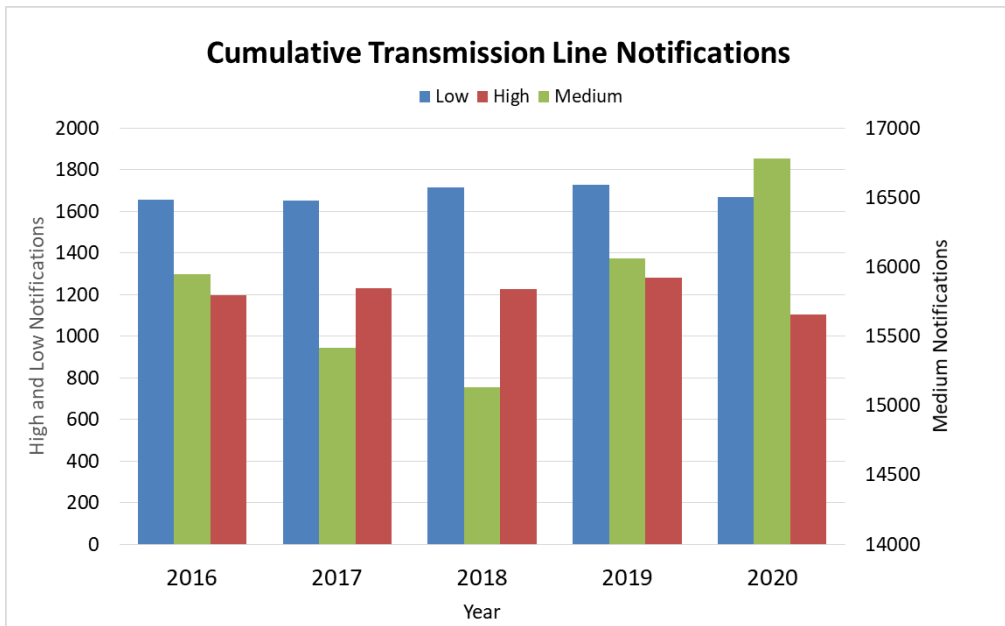


Figure 10.3.7-2 - Transmission Line Deficiencies Trend

784. Figure 10.3.7-2 above shows that the level of outstanding notifications, including high, medium and low priority notifications, continues at a consistent level on AltaLink’s transmission lines. These deficiencies represent a leading indicator of risk of transmission line failures and requirement for AltaLink to continue with its forecasted lines capital investments to address this risk within the Test Period.
785. For more information regarding the transmission line CRU business cases, refer to **Appendix 13-A02** to **Appendix 13-A05**.

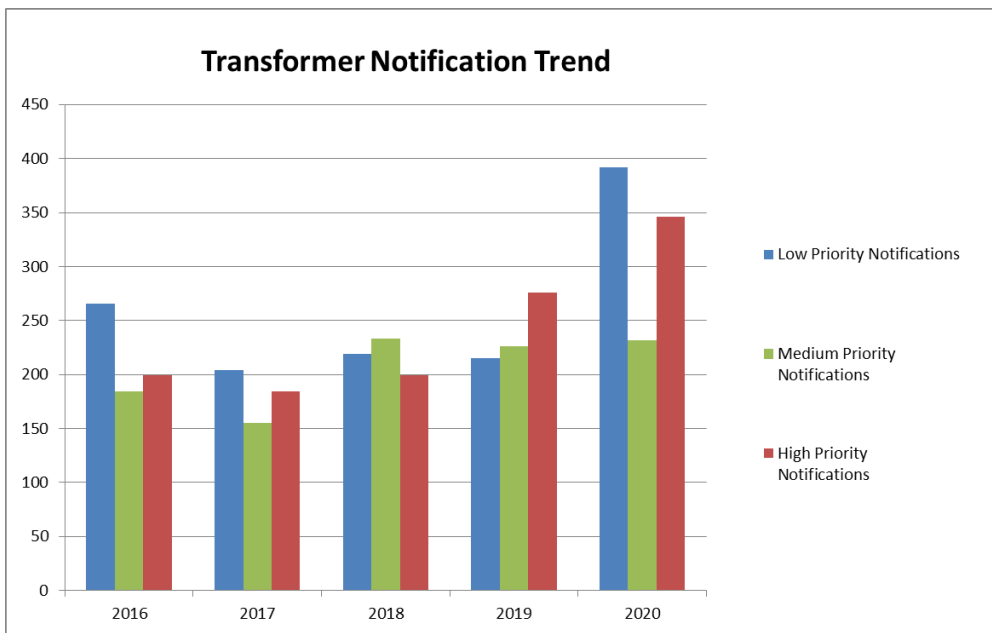


Figure 10.3.7-3 - Transformer Deficiencies Trend

786. Figure 10.3.7-3 above illustrates an increasing trend in high-priority transformer notifications since 2018. This trend of increasing notifications confirms that AltaLink’s transformer fleet continues to deteriorate in condition. AltaLink is forecasting the replacement of three to four transformers per year in this Test Period, along with AltaLink’s monitoring and maintenance programs, to address this notification trend.

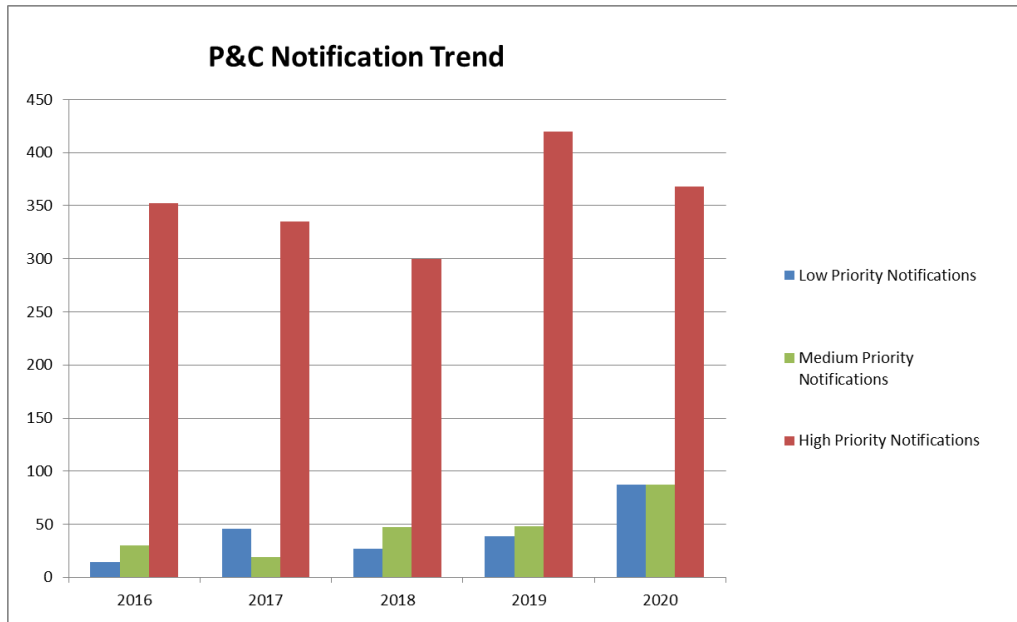


Figure 10.3.7-4 - Protection and Control Notification Trend

787. The trend of P&C high-priority notifications (shown in Figure 10.3.7-4 above) reflects a sustained quantify of high-priority notifications. This reflects the aging population of relays across AltaLink’s transmission network and recorded relay deficiencies year to year. These deficiencies are related to relay condition, performance, or functional failures. AltaLink is forecasting its P&C equipment replacement programs over the Test Period, in part, to address these deficiency trends. Other drivers for P&C equipment replacements include setting requests from external parties, building upgrades, reducing the number of obsolete relays with limited functionality, and ensuring coordination of protection settings. For more details on the P&C capital maintenance programs, refer to **Appendix 13-A15** and **Appendix 13-A16**.

Summary of Notification Trend Analysis

788. The review of notification trends demonstrates that AltaLink will continue to experience risk exposure for a number of asset classes during the Test Period. AltaLink continues to assess future investment requirements and will forecast expenditures to sustain reliability and system performance in order to sustain or reduce the trend of notifications.
789. Early indications of failure or end of life are confirmed through trends of notifications signaling deteriorating conditions within the assets requiring increasing maintenance, component repairs, and ultimately complete replacement. The notification trends support the conclusion that AltaLink’s forecast capital expenditures for the Test Period represent the appropriate CRU investments to mitigate system risk. AltaLink’s risk assessment process assesses both the risk of asset failure and the consequence to customers to ensure the CRU investments are targeted to the right assets to maintain system reliability.

10.3.8 Future State Population Profiles

790. Service life is a key factor influencing asset health, due to many transmission assets being exposed to the wear and tear through ongoing operation, weather and the environment. Analysis of service life is therefore another good indicator to assess current and future equipment replacement requirements. The majority of transmission assets follow a basic bathtub curve of failure rates for assets, as represented in Figure 10.3.8-1 below. As assets remain in service, the probability of failure increases as they wear due to ongoing operation and the elements. At end of life, the asset functionally fails.

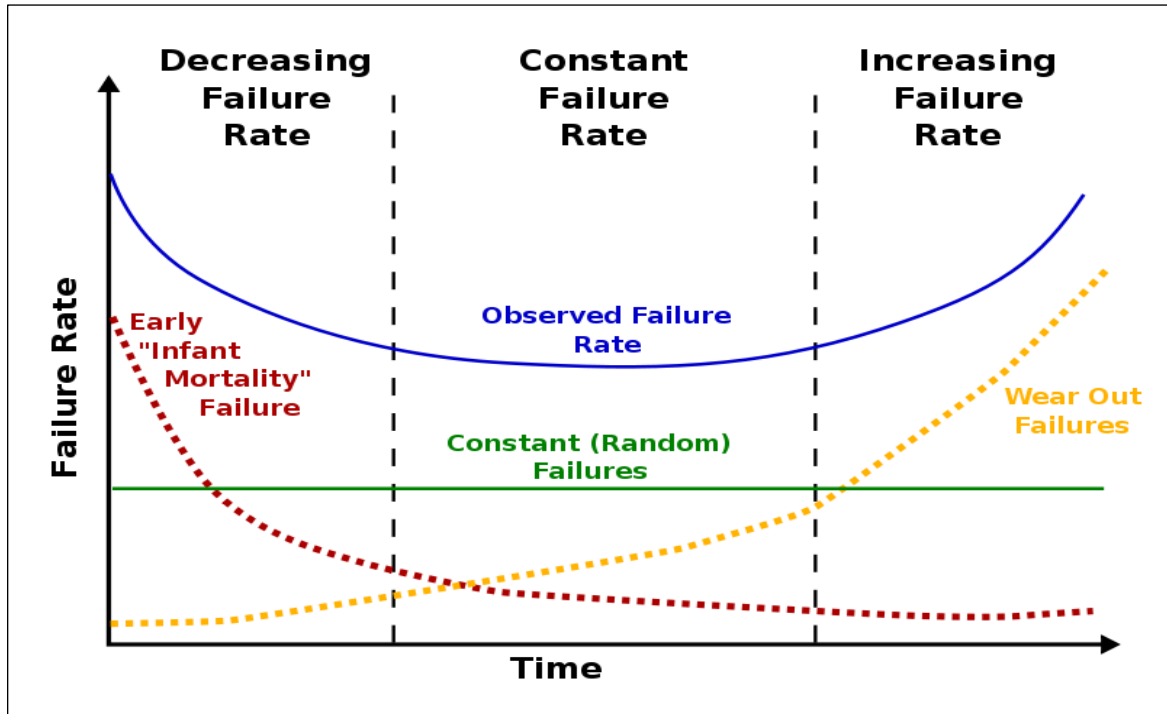


Figure 10.3.8-1 - Bathtub Curve

791. Assets can fail at any time, and failures are more likely to happen as the operational service period of the asset moves toward the right side of the curve – as the service life increases and the asset accumulates wear and tear and functionally fails.
792. Some assets will last longer than expected, while others will fail earlier than expected. An age-based assessment of required future replacements and asset replacement rates is obtained by profiling the total number of assets past the ASL of the asset group. The ASL has been determined by the depreciation study included in **Appendix 8-A**. A large number of assets beyond the ASL indicates an increased likelihood of asset failure. The understanding of asset population profiles therefore assists AltaLink in assessing where current investment levels may or may not be sufficient to maintain current asset performance due to the volumes of equipment past the ASL that may be wearing out. It provides a measure of the overall higher at risk assets in the remaining population based on time in service.
793. The age profiles of AltaLink’s major assets are provided in Figure 10.3.8-2 to Figure 10.3.8-5 below. As can be seen in the figures, there is a significant volume of assets whose age is past the ASL. Assets older than their average service life will have experienced more wear and tear or are more likely to no longer be supported by manufacturers and are typically candidates for CRU

investment. The understanding of asset population profiles assists AltaLink in assessing where current investment levels may or may not be sufficient to maintain current asset performance due to the volumes of equipment past the ASL that may be wearing out.

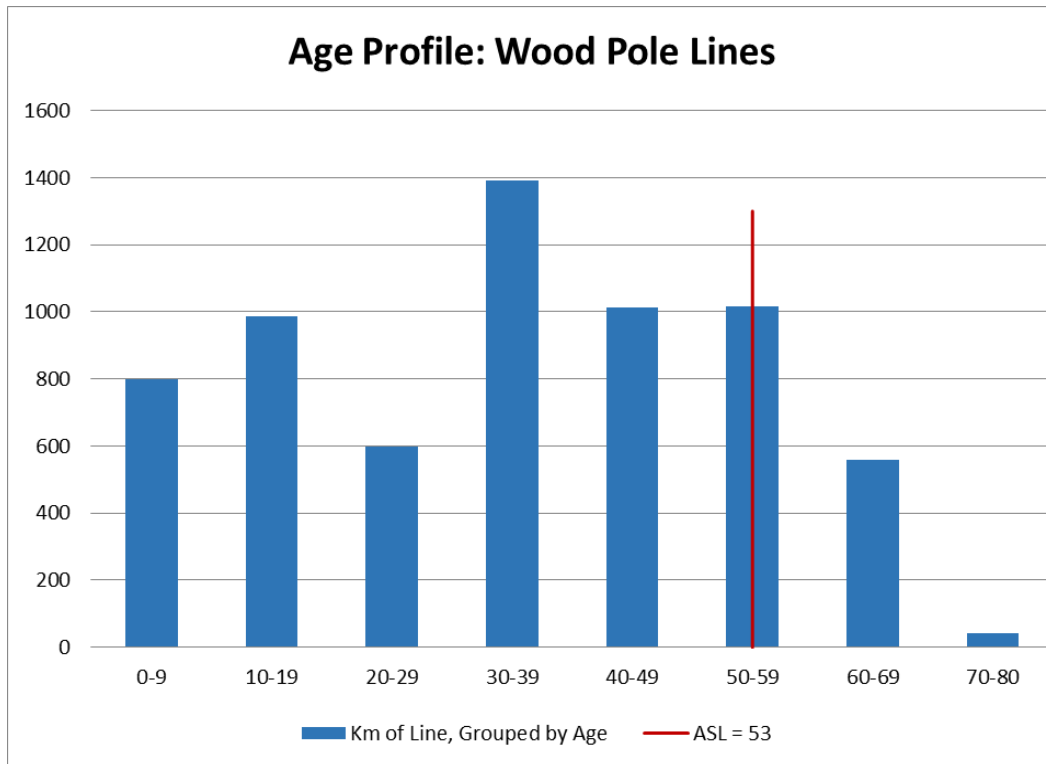


Figure 10.3.8-2 - Age Profile Wood Pole Lines

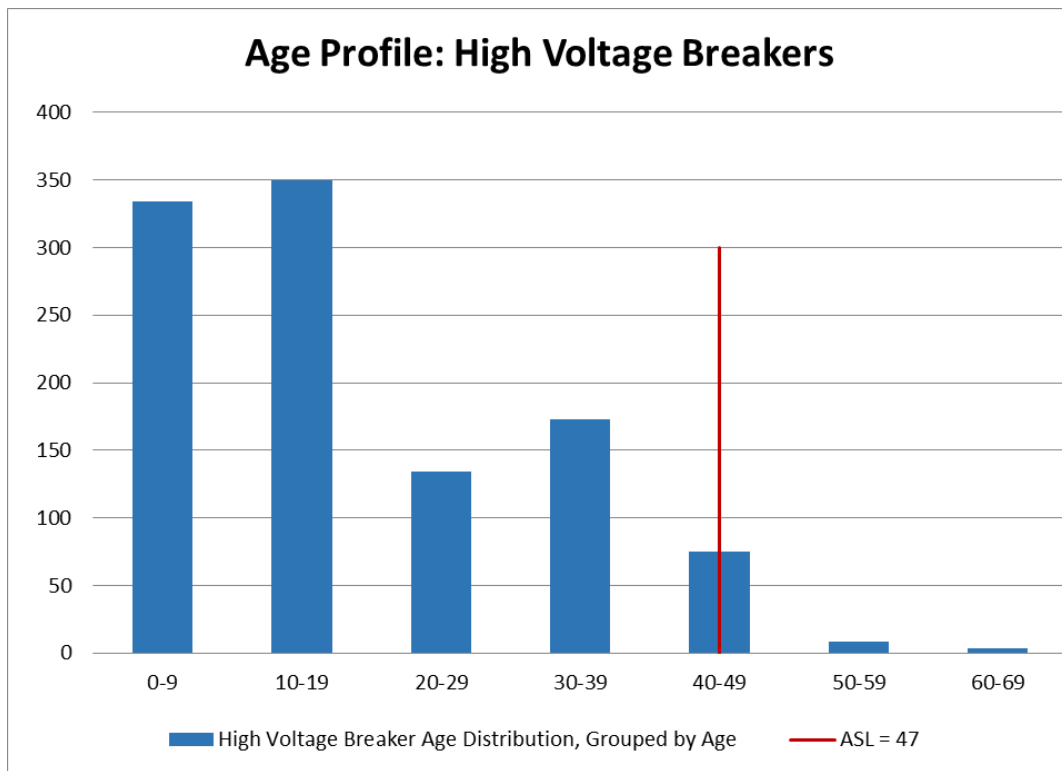


Figure 10.3.8-3 - Age Profile High Voltage Circuit Breakers

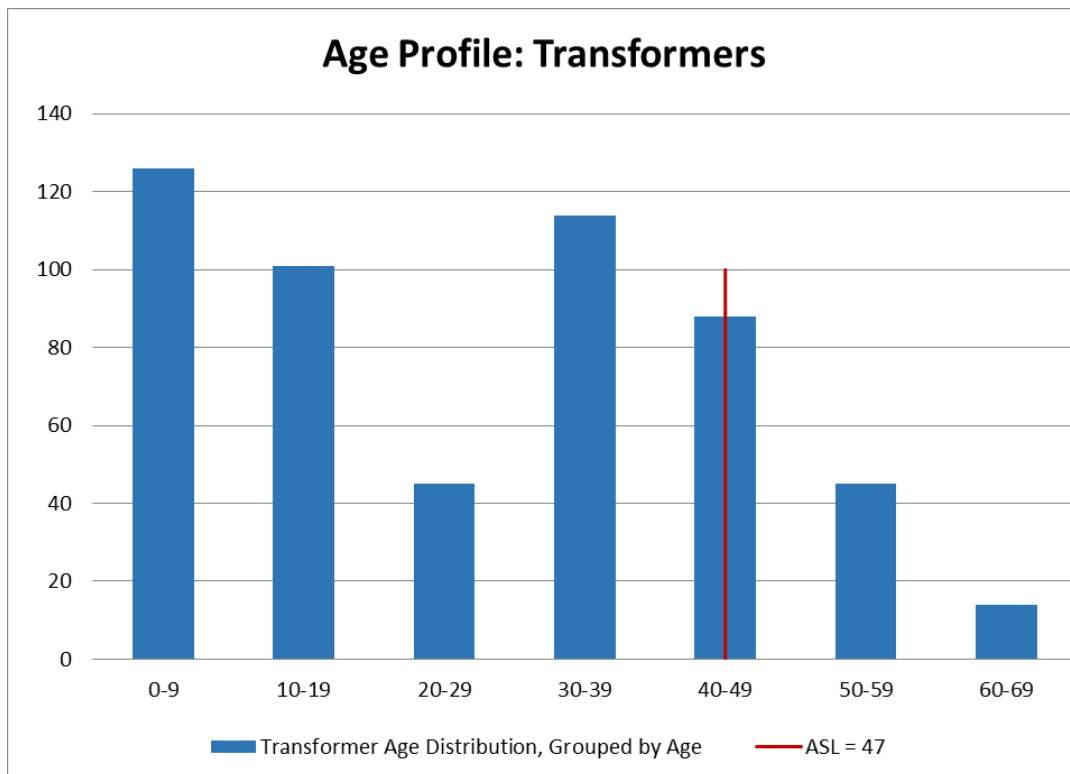


Figure 10.3.8-4 - Age Profile Transformers

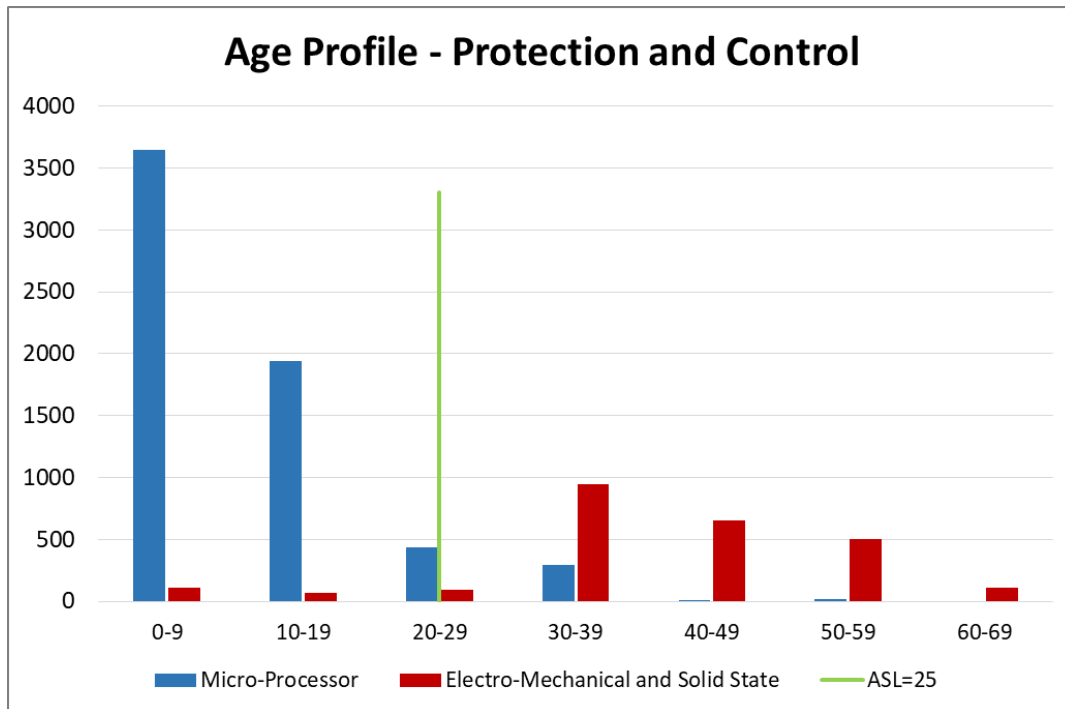


Figure 10.3.8-5 - Age Profile P&C Equipment

794. The following few paragraphs illustrate the volume of major asset replacements (transformer, circuit breaker and wood pole line examples are provided) forecast in the Test Period and the corresponding expenditures that would be required to maintain a constant number (i.e. the current number) of assets past the ASL of the asset group. These three asset classes represent a significant portion of AltaLink’s CRU investment, and provide a representative example of AltaLink’s transmission assets. This analysis provides a comparison of the forecast replacement expenditures to the expenditure required to maintain a consistent level of failure risk, as represented by the population of equipment in service older than its ASL.

Transformers

795. Figure 10.3.8-6 and Figure 10.3.8-7 below show the future transformer age profile in two different future scenarios: three transformer replacements per year and eight transformer replacements per year. Figure 10.3.8-7 below indicates that AltaLink would have to replace eight transformers annually to stabilize the transformer age profile on a going forward basis, if this method was the only approach AltaLink utilized to manage asset performance and risk.

796. AltaLink manages its overall transformer fleet through on-line monitoring of dissolved gases and bushings together with preventative and predictive maintenance and select component replacements. Utilizing these maintenance approaches and its risk assessment process, AltaLink has reviewed the higher risk transformers identified and considered the design, previous performance, condition monitoring data (e.g. dissolved gas analysis) and recent nature and increases in unplanned transformer failures to identify the forecast number of planned transformer replacements. These maintenance practices enable AltaLink to forecast for transformer replacements at three to four per year for the Test Period. AltaLink continues to assess what replacement rate may be required in future periods based on equipment risk. Refer to **Appendix 13-A12**.

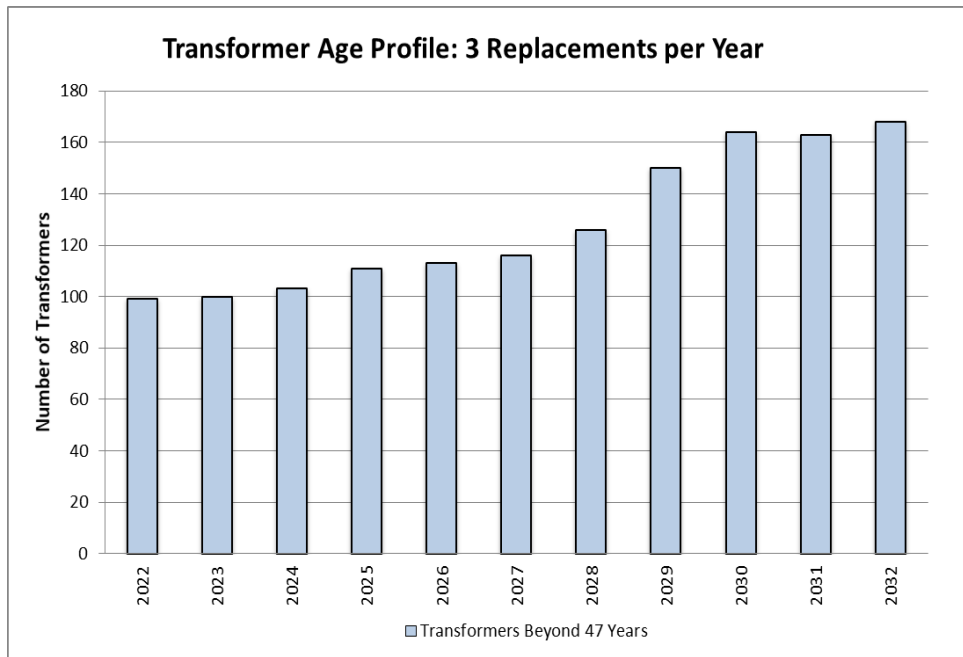


Figure 10.3.8-6 - Transformer Age Profile Current Replacement Rate

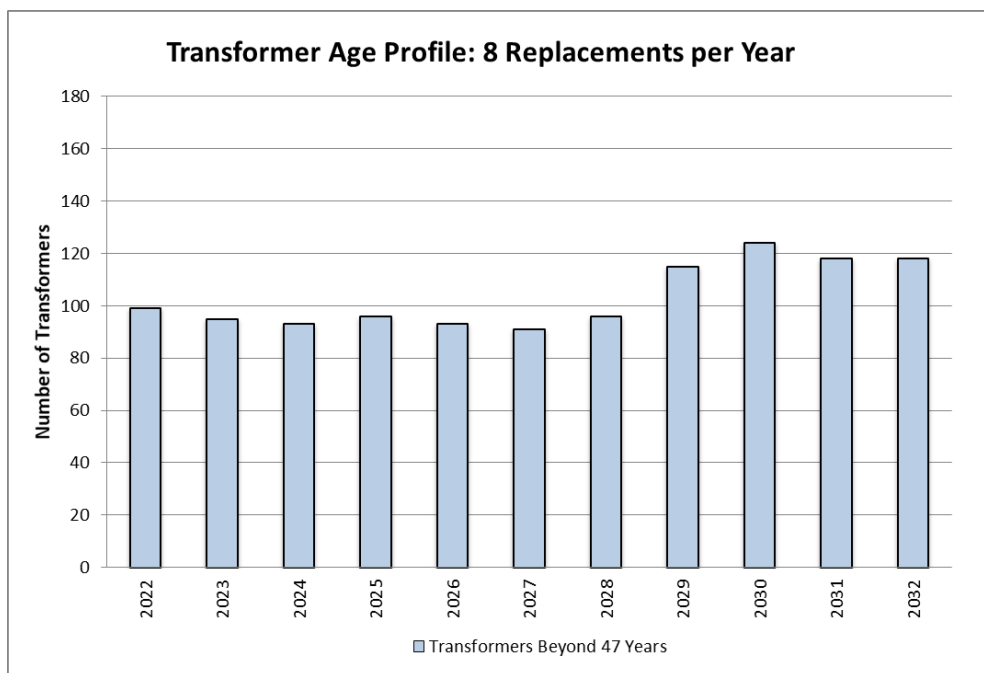


Figure 10.3.8-7 - Transformer Age Profile - 8 Replacements/Year Scenario

Circuit Breakers

797. Figure 10.3.8-8 below provides an age profile analysis regarding high voltage circuit breakers. Figure 10.3.8-8 below demonstrates that the current CRU forecast, the replacement of 10 breakers per year, manages the overall population of breakers past ASL, up to about 2030. The number of breakers past ASL in 2031 is about the same as in 2022. As circuit breakers have many moving parts (involving springs, contacts, and gasses to break the electrical current/arc), they experience mechanical wear due to their function. Breakers also deal with a high degree of

stress as they perform the function to interrupt fault currents. Breaker failures are typically catastrophic, and have the potential for significant consequential damage.

798. Below is a summary of the drivers for replacement of breakers:

- known manufacture model design/defects;
- poor equipment condition and inspection (e.g. leaking oil, leaking SF₆, excessive wear);
- history of slow clearing times;
- insufficient short circuit interruption ratings (i.e. inability to clear);
- high maintenance costs/obsolescence;
- replacement of older models having potential PCB oil contamination; and
- high number of operations.

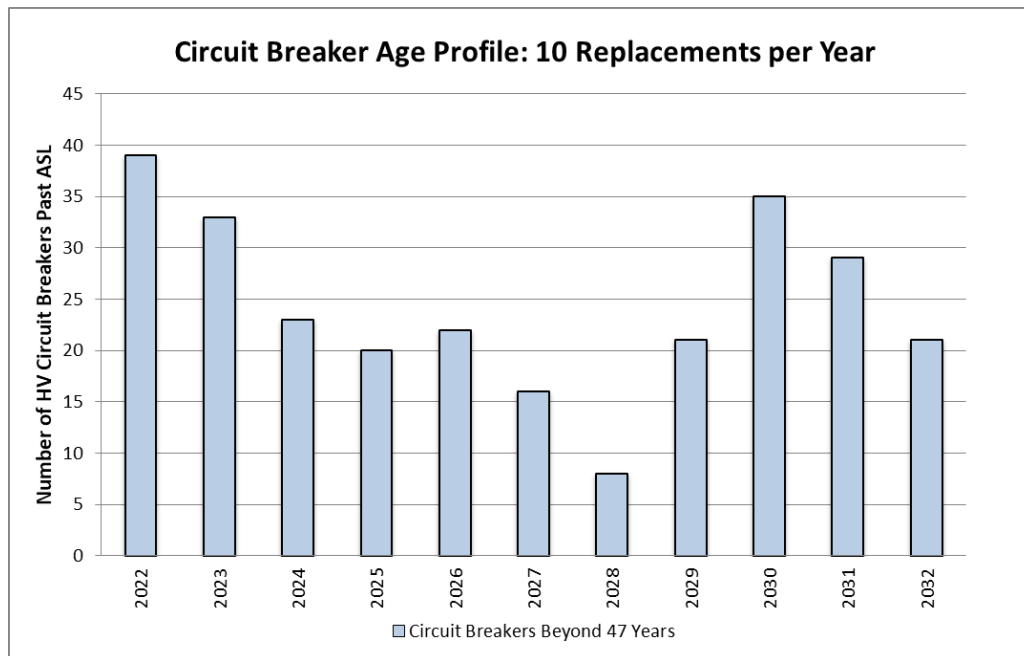


Figure 10.3.8-8 - Circuit Breaker Age Profile - 10 Replacements/Year

Wood Pole Transmission Lines

799. Figure 10.3.8-9 and Figure 10.3.8-10 below show the kilometers of wood pole lines AltaLink operates beyond ASL assuming two different future scenarios: 39 km of rebuilds per year and 100 km of rebuilds per year. The Test Period forecast of approximately 39 km per year represents the investment required to maintain transmission line performance within the Test Period. The second scenario's investment level would be required to stabilize the total amount of wood pole transmission lines operating past ASL over the long term. Failures on transmission lines can be difficult to repair: often there is limited access to the failed structures, and crews have to work expediently in areas that are not normal working areas for heavy-duty equipment. AltaLink cannot allow the population of its wood pole lines past 53 years of age to grow significantly larger than 1500 km, while maintaining present performance levels.

800. AltaLink anticipates the wood pole rebuild investments will require continued increases to ensure asset performance as the overall wood pole line population continues to age. AltaLink manages its overall wood pole lines through its risk assessment process and maintenance programs such as its line component replacements, pole treatment and regular line patrols to

manage the condition of AltaLink’s wood pole transmission lines. Utilizing these maintenance approaches and its risk assessment process, AltaLink has reviewed the higher risk wood pole lines and is forecasting 39 km of transmission line rebuild for the Test Period.

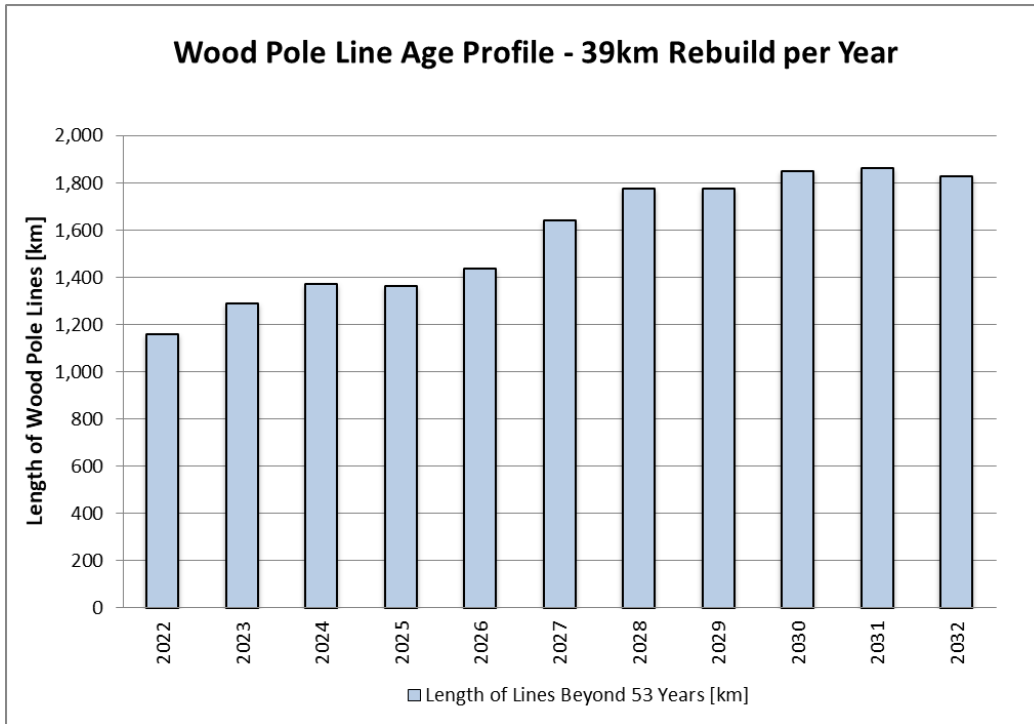


Figure 10.3.8-9 - Wood Pole Line Age Profile - 39 km Rebuild/Year

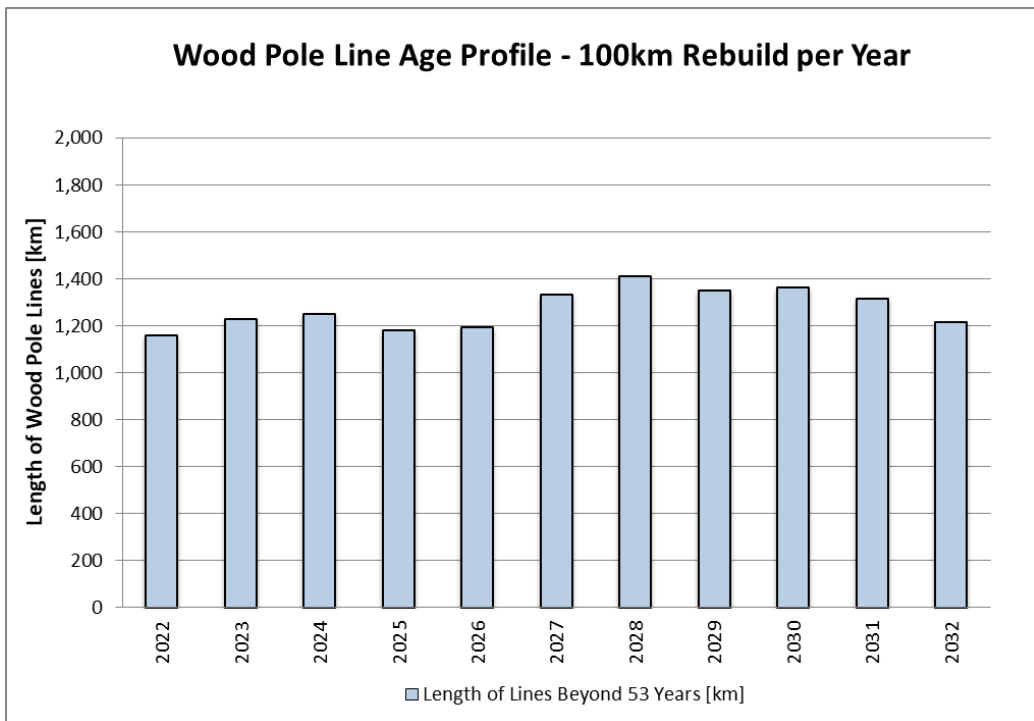


Figure 10.3.8-10 - Wood Pole Line Age Profile - 100 km Rebuild/Year

Summary

801. Table 10.3.8-1 below compares, for each of the three asset classes discussed above, the pace of replacements forecast for the Test Period, the required pace to sustain the current age profile, and the expenditures required for each scenario. AltaLink does not propose to set the pace of replacements to match the “sustain age profile” levels for the Test Period based the application of AltaLink’s asset risk assessment processes derived from asset condition monitoring and AltaLink’s maintenance plans and programs that sustain the performance of these assets. However, as the analysis indicates, the current pace of replacements for wood pole lines and transformers will need to increase in future periods based on the age and overall composition of the assets.

Table 10.3.8-1 - CRU Forecast to Age Profile Comparison Examples

Description	2022-2023 Forecast Average (Units)	2022-2023 Forecast Average (\$M)	Sustain Age Profile Average (Units)	Sustain Age Profile Average (\$M)
Transformers	3	4.3	8	11.5
High Voltage Circuit Breakers	10	3.4	10	3.4
Wood Pole Lines (km)	39	20.9	100	53.7
Total		28.7		68.6

10.3.9 Customer Benefit Analysis

802. AltaLink understands that safety, environment, and system performance are all essential to the provision of transmission service. AltaLink consistently receives feedback on the importance of these factors from stakeholders, including customers, landowners, and municipalities, to list a few. AltaLink’s assessment of the safety, environment, and system reliability consequences to customers is therefore a key part of its CRU forecasting process.
803. System performance impacting customer reliability is the largest CRU investment driver for the 2022-2023 Test Period. Over 60% of the forecasted CRU programs are primarily driven by impacts to power system performance for customers. AltaLink’s forecast CRU investment by primary business case drivers is shown in Figure 10.3.9-1 below. Additionally, many of these investment programs also provide environmental and public safety benefits. For example, an investment to rebuild a transmission line will improve customer reliability through reduced likelihood of power system outage, and will also reduce the risk of the public being exposed to energized conductors coming into contact with the ground if a structure were to fail.

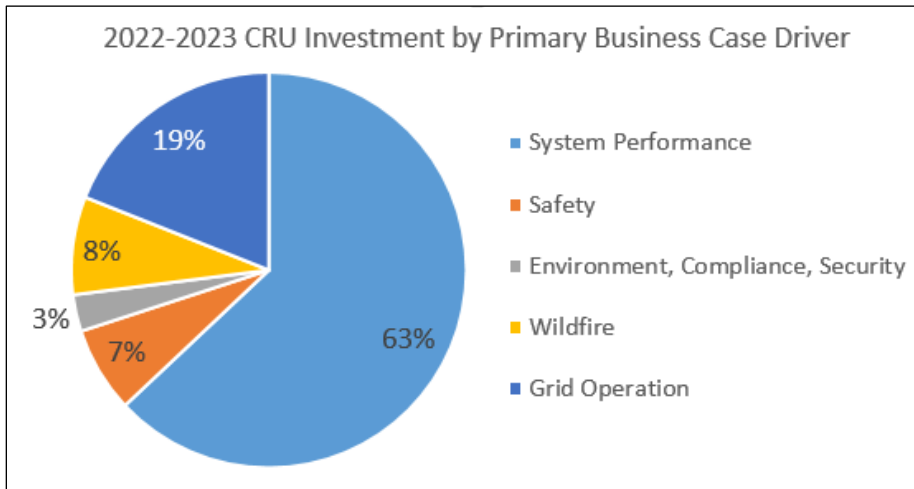


Figure 10.3.9-1 - CRU Forecast by Primary Business Case Driver

804. AltaLink has analyzed the types of customers connected to the lines and stations with forecast CRU investment in the Test Period. As shown in Figure 10.3.9-2 below, 70% of the forecast system performance related investment within AltaLink’s substations and transmission line programs directly impacts Fortis, or directly connected industrial customers.

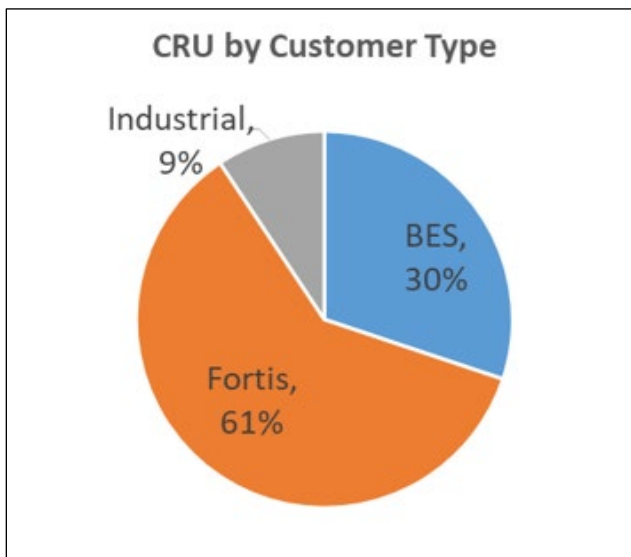


Figure 10.3.9-2 - CRU by Customer Type

- “Bulk Electric System (BES)” improvements represent investments done on core transmission assets within the power system to improve and sustain transmission of electricity across the power system for all types of customers;
 - “Fortis” represents investments that impacts system performance related to distribution customers served by Fortis; and
 - “Industrial” represents work done that impacts customers directly connected to AltaLink’s transmission system. This includes both directly connected industrial load customers and generators.
805. In order to assess the impacts to customers of system performance, AltaLink conducts approximately 100 meetings per year with Fortis and transmission direct connected customers

to confirm AltaLink’s understandings of the impact of outages to their respective businesses and to check in on service levels. Municipalities and DFOs have made clear that AltaLink’s outages can have large impacts to many thousands of their customers, which are primarily residential, commercial and small business customers. Reduction and avoidance of transmission outages is a consistent request.

806. A number of direct connect industrial customers provide data during customer meetings regarding the financial impact of unplanned outages to their operations. Based on these discussions, AltaLink understands the average impact of a one-day outage to be about \$1.5M, with over half of customers valuing outage impacts at over \$1M per day. Many industrial customer interruptions also have cascading impacts to their own customers that are in addition to their direct financial impacts. AltaLink assesses the impact of potential equipment failures on direct connected industrial customers as part of its risk assessment process, to ensure that it invests appropriately to reduce the risk of power interruptions impacting customer businesses. This analysis demonstrates the need for CRU investment focused on avoiding and mitigating industrial customer impacts. The following table summarizes a sample of representative data collected from 10 direct connect industrial customer meetings.

Table 10.3.9-1 - Sample of Customer Feedback

Customer #1	Load	General Manager; Maintenance Superintendent; Chief Steam Engineer; Senior Supervisor, Reliability	June 2019	An unplanned event will cause disruption to two other customers that share product through processes. An unplanned outage takes 24-36 hours to restart one of its two plants and 2-3 days to restart the other plant. The cost of restart is approximately \$2M. A plant shutdown will cause venting and flaring of natural gas and environmental risks if evacuation was required.
Customer #2	Load	Electrician; Site Electrical Engineer	September 2019	Customer #2 site is directly interconnected to Customer #1. This plant requires 48 hours to safely shut down. An unplanned event takes approximately 48 hours to restart its three processing plants but needs customer #1 restarted before it can restart. Will cost the company approximately \$500,000 to restart. This plant requires 48 hours to safely shut down. A hard stop can result in equipment damage and force the plant to be down for a year. This can also result in the release of acid gas.

Customer #3	Load	Operations Supervisor; Manager, Operations	March 2019	An unplanned event has a financial impact of approximately \$1M/day. Storage capacity will fill in about 24 hours and force upstream customers to shut down. Unplanned event will also require plant to flare gas and potential environmental concerns. Plants takes up to 12 hours to restart.
Customer #4	Load	Electrical Run Engineer	October 2019	The operations are highly integrated, so outages at one location in the site will result in shutdown of other parts of the operation. Hard stops to the plant can damage equipment specifically the coils which cost >\$1M per coil. An unplanned outage can cause significant venting and flaring, causing compliance issues with Alberta Environment and raise community concerns. Lost production is measured in the millions of dollars per day. It would take about 12-24 hours to return the plant to service. Safety is a top priority and any process interruption or unstable process creates an increased safety risk.

Customer #5	Load	Engineering Manager; Electrical Engineer; Project Electrical Reliability Engineer	October 2019	An unplanned event results in financial impacts of approximately \$3M/day in lost revenue (excluding cost of potential damaged equipment). A one minute to one hour outage equals a day or greater customer outage; an outage over one hour equates to a week plus outage for this facility. The costs and restart time significantly increase if the catalytic cracker gets damaged. Company may have to vent catalyst and other hazardous gas/steam which puts local residents, businesses and community at risk. It can also result in reputational damage and regulatory intervention. Safety is a core value of this company and there is always an increased risk to safety during process interruptions. Before restarting its refinery, customer needs to reset system to safe-start mode which takes additional time.
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Customer #6	Load	Energy Management Specialist; Area Operations Manager; Sr. Electrical Technologist; Maintenance Team Leader; Outage Planner; Maintenance Services Supervisor	June 2019	An unplanned event for this midstream customer has cascading impacts for its own customers who ship product through their pipe. This network of pipelines ships 3.2 million barrels of crude and liquids daily. An unplanned event at any of the pump and compressor stations feeding multiple pipelines can be very impactful because some sites are remote/unmanned and need to be manually reset. Outage also affects the pressure in the lines and lower pressure creates flow conditions. As product is shipped through pipelines in batches, outages decrease line pressure, which increases blending of the batches and reduces the overall value of the product. Unplanned outages of less than 12 hours equated to a lost revenue of \$380,000 per pipeline.
Customer #7	Load	Plant Manager; Chief Electrical Engineer; Training Advisor	April 2019	This facility is a major supplier of western Canadian gas and diesel markets. Unplanned outages can cause retail service stations to run out of fuel. A sustained outage during colder temperatures can cause equipment to freeze and lost production is measured in the millions of dollars per day and up to 100,000 barrels per day of refining capacity. Hard stops cause damage to the hydrocracker that could be very costly in dollars and downtime. Momentary unplanned outages upset processes and increase the safety risk, including flaring and people working in the dark and confined spaces. Plant start-up sequence takes eight hours to several days and takes three days to get the plant up to full capacity.

Customer #8	Load	Maintenance Instrumentation Supervisor; Electrical Specialist Reliability; Electrical Field Coordinator; Electrical Reliability Engineer; Instrumentation and Electrical Specialist	June 2019	<p>This plant takes about one week to manage and coordinate a safe shutdown. Takes about 1-2 weeks to bring the facility to full capacity after a hard stop. As a result of a hard stop, will need to flare gases in order to protect the vessels. The customer will lose about 140,000 barrels per day of refined products and a one-week outage can cost about \$10M in additional expenses and lost revenue. Shutdowns risk damaging the cracker and electrical equipment failures 1-2 weeks after the trip. This will also result in flaring and impact company reputation and relations with the community. Safety is very important to this customer and process disruptions always increase safety risks. A hard shutdown can impact upstream and downstream pipeline systems.</p>
Customer #9	Load	Site Electrical Specialist; Electrical & Instrumentation Supervisor; Field Supervisor	April 2019	<p>This customer's plants and gas fields are highly interdependent for its processing facilities. An unplanned event can cause between \$100,000 - \$350,000 per day per plant in lost revenue and very costly equipment damage. If equipment freezes, significant damage could occur and require significant investment to repair. Hard stops and force downs result in flaring, which can result in the potential release of hydrogen sulfide (H₂S) gas and environmental regulation interventions. These facilities take between 24 hours to 2-3 days to bring the plant to a safe state.</p>

Customer #10	Load	Electrical Engineer Maintenance Coordinator	May 2019	Reliability is critical to this facility. Without power, this facility cannot upgrade and refine product. An unplanned event will result in lost production of 50,000 barrels per day. Produce and waste can solidify within process pipes and can significantly add to the duration and costs of outages. This also causes the facility to vent and flare to implement a safe shutdown.
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807. To illustrate further, Figure 10.3.9-3 below shows the alignment of AltaLink’s forecast for transmission line planned maintenance, as compared to the probability of equipment failures that directly impact individual direct-connect industrial customers. This chart demonstrates that customers connected to equipment with higher probabilities of failure are supported by the forecast CRU investment in this Test Period.

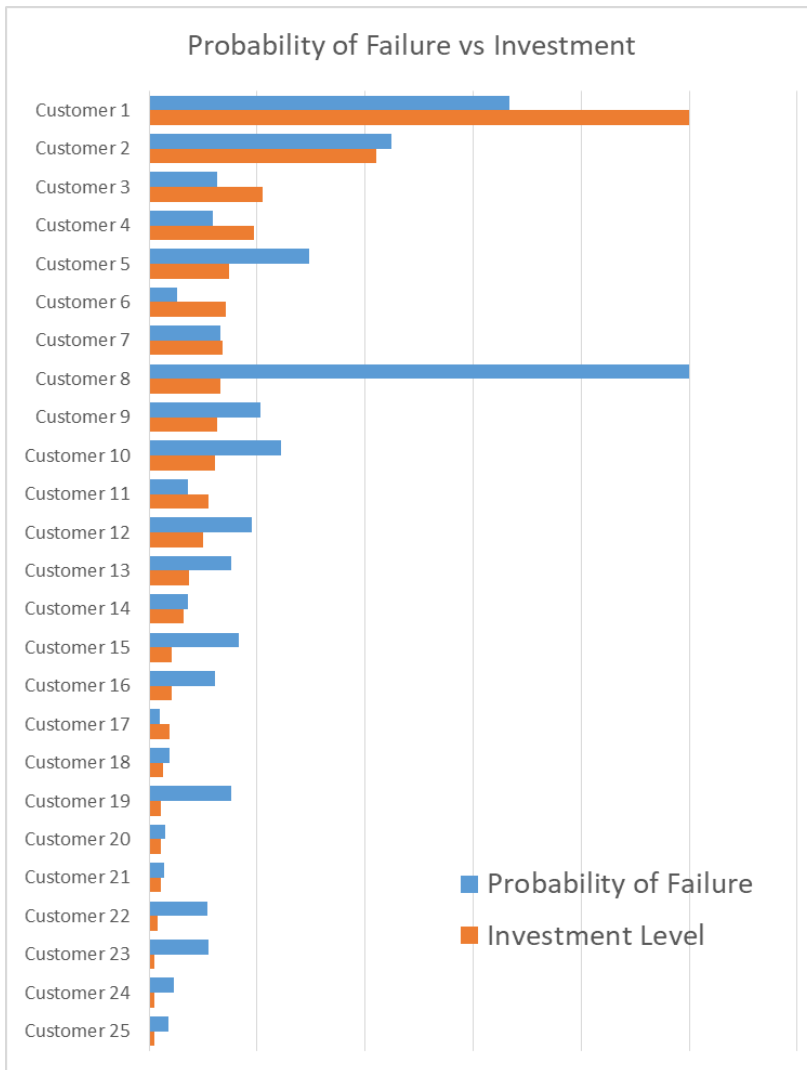


Figure 10.3.9-3 - Probability of Failure compared to CRU forecast investment – Customer Benefit

808. The types of CRU investments required to reduce the probability and duration of a customer failure vary by location, system design and configuration. Therefore, the size of the required investment is not always proportional to the probability of failure. For example, in the case of Customer 8 in Figure 10.3.9-3 above, the probability of failure appears to be disproportionately large compared to the planned investment. In this particular example, there are two lines of supply to this substation. This means that a sustained failure on this particular asset will not cause a sustained interruption to the customer because the secondary supply line can still be used to feed the station.
809. The above customer benefit analysis demonstrates that AltaLink’s Test Period CRU forecast is focused on system performance improvements that directly impact customers with the highest forecast probability of failure.
810. AltaLink’s CRU forecast methodology, utilizing its asset risk assessment framework, combined with reviewing the equipment deficiency trends, assessment of future state population profiles, and customer benefit analysis, demonstrates that AltaLink has considered its CRU forecast from multiple perspectives to ensure a balanced CRU investment forecast for the Test Period.

AltaLink's CRU forecast targets to manage risk to safety and the environment and maintain system reliability levels at the lowest possible cost during the Test Period.

10.3.10 Capital Maintenance Business Cases

811. AltaLink's Capital Maintenance business cases are provided in **Appendix 13-A**. In tables in the Project Costs and Schedule sections of these business cases, AltaLink has set out its forecast CRU capital expenditures as described in Section 1.8 of this Application and has also reported historical units, average cost and total capital expenditures in the same sub-category levels as forecast expenditures in the Test Period. The basis of the average cost calculations is further discussed in Section 10.3.2 CRU Forecast Basis.
812. The 2019 and 2020 actual expenditures by sub-category were derived from AltaLink's accounting system.
813. In these business cases, AltaLink has presented and explained variances between the 2022 forecast capital expenditures and the 2021 MU.
814. All the analysis methods and the risk assessment method described in Section 10.3 demonstrate that AltaLink's current method of CRU risk assessments results in a balanced CRU investment forecast for the Test Period. In addition, AltaLink's CRU investment forecasts directly improve and provide benefits for customers. AltaLink's analysis further demonstrates future risk exposure in certain asset classes that will require increased investment in future periods. AltaLink's forecast capital expenditures for the Test Period represent the required amount of CRU investment to manage power system risks and sustain performance and reliability in this Test Period.

10.4 Security and Information Technology (IT) Capital Costs

815. AltaLink's Security and IT program supports the ongoing operation and effectiveness of AltaLink's assets and workforce in providing services to customers.
816. As supported by the Canadian security agencies assessment, AltaLink and other critical infrastructure providers are facing active threats from Nation-state actors and sophisticated cyber-criminals which in turn risks the current and future reliability of the AIES. AltaLink needs to make urgent capital investments in our security systems, and must ensure that our IT systems are kept up to date to address these threats.
817. More broadly, AltaLink is moving towards a digital utility and the security and IT projects are key to supporting the stability of the electricity network, business functions and field organization through which AltaLink sustains the safe, secure, reliable and efficient operation of its transmission system.
818. The key themes within this capital expenditure application reflect:
- Security expenditures that are urgently needed to maintain the safe, reliable and secure operation of the AIES;
 - IT expenditures needed to meet new regulatory or legislative obligations;
 - IT expenditures are urgently needed to maintain, replace or upgrade current systems which have reached end-of-life, or which are no longer supported by the vendor with security or operational patches; and
 - IT expenditures needed to address new business requirements and process efficiencies.
819. Customers directly benefit from AltaLink's Security and IT program that collectively:
- reduces the probability of electricity service disruption through a malicious cyber or physical attack;
 - enhances service through targeted improvements in information provision to meet customer or business needs;
 - maintains the systems, networks, servers and devices through which AltaLink coordinates and delivers operational support of office and field activities; and
 - enhances IT systems required to meet mandatory regulatory and legislative requirements.
820. There have been many changes to the needs of AltaLink's customers and business for security and IT services since the previous 2019-2021 GTA was submitted in August 2018, including:
- The onset of the COVID-19 pandemic in March 2020, and the public health orders restricting businesses to have employees and contractors working from home;
 - The increasing and evolving security threat against critical infrastructure continues to gather pace, most noticeably the SolarWinds compromise effected by nation-state actors in December 2020;
 - Regulatory requirements continue to increase in both number and complexity of evidential burden, requiring investments in enhanced, integrated and automated systems;
 - Software vendors are increasingly offering their products and services exclusively in a cloud based format (e.g., software as a service); and
 - The opportunities for digital transformation of AltaLink's processes continue as vendors incorporate automation tools and data analytics into their service offerings.

821. AltaLink has continued to group its 26 IT business cases for the 2022-2023 GTA Test Period into the same four categories used in the prior GTA Test Period.
822. There is one security compliance category, and three IT categories for Lifecycle Sustainment, Process Improvement and Regulatory and Legislative Compliance. For execution and control purposes, each business cases may translate into a single project or a program of smaller projects.
823. The four categories of 2022–2023 IT business cases are described as follows:

Security Compliance

- The security compliance business cases in the GTA Test Period urgently addresses the new, increasing, and evolving threats to AltaLink’s corporate IT, EMS and operating technology networks, as well as the replacement, upgrade and enhancement of security systems at AltaLink’s substations;
- Section 10.4.3 Security provides an overview of the increasing and evolving cyber threats, physical, and information security threats, as reported by Canadian and US government security agencies. The security compliance business cases are urgent and critical to prevent active, third party malicious attacks that could lead to loss of service or destruction of AltaLink assets; and
- This category includes business cases for: Alberta Reliability Standards Critical Infrastructure Protection, Cyber Security Systems, Physical Security Systems, ISMS Expansion, and specific business cases for CIP-014 Physical Security Enhancements, Smart Key Conversion, and Substation Security. These business cases and their supporting materials are found in Appendix 13-B1 Security.

Lifecycle Sustainment

- This category includes projects for replacing hardware, security or IT assets or software that is at end-of-life, inoperable, or that may be out of vendor support. Where systems or hardware are out of vendor support, AltaLink does not receive the security or operational patches needed to ensure continued safe and secure operation. Therefore AltaLink must replace or upgrade these systems or hardware;
- Business cases supporting these security and IT projects are found in **Appendix 13-B3** Lifecycle Sustainment;
- Section 10.4.4 Information Technology provides an overview of the needs for AltaLink to replace or upgrade existing systems and hardware to maintain operation of its business and continue to fulfill its service obligations;
- Following a number of high profile cyber security compromises, vendors have been increasing the rate of software and hardware upgrades in order to address vulnerabilities in their systems and to maintain an up to date security posture. AltaLink did not anticipate the increased volume of upgrades required and the increased capital expenditure for this category at the time it filed its 2019-2021 GTA; and
- Lifecycle sustainment capital investment is needed to maintain the current level of network reliability, business operations performance, security resilience, and IT operational effectiveness. Delays or deferrals of the required investment will result in degradation of customer service and regulatory performance, and an increase in business and AIES risk.

Regulatory and Legislative Compliance

- This category includes projects required to meet new regulatory or legislative requirements that are forecast to be mandated during the 2022-2023 GTA Test Period. AltaLink is obligated to comply with these requirements. Business cases supporting these IT projects are found in **Appendix 13-B4** Regulatory and Legislative Compliance.

Process Improvements

- This category includes projects for addressing customer requirements and continuous improvement requirements from AltaLink’s business. Business cases supporting these IT projects are found in **Appendix 13-B2** Process Improvement.
- Process improvement projects are needed to address new customer and/or business requirements, or to address increasing operational workload. Delay or deferral of these projects will result in increasing operational costs, additional headcount requirements and lower business performance.

10.4.1 Summary of Actual/Approved Variance for 2019 - 2021

824. Table 10.4.1-1 below displays a breakdown of the 2019-2021 Security and IT capital expenditures actuals and 2021 forecast against the GTA.

Table 10.4.1-1 - 2019-2021 Security and IT Capital Expenditures versus Approved (\$M)

Category	2019 GTA	2019 Actuals	2020 GTA	2020 Actual	2021 GTA	2021 Foreca	2019-21 GTA Total	2019-21 Actual/ Forecast Total
Security	29.7	21.8	23.3	17.5	5.5	6.3	58.5	45.6
Process	4.8	3.8	2.5	4.9	1.2	2.0	8.5	10.7
Lifecycle	7.3	13.5	6.9	11.7	8.7	7.6	22.8	32.8
Regulatory and Legislative	1.5	2.7	2.0	2.1	1.9	1.3	5.4	6.1
Grand Total	43.3	41.8	34.7	36.3	17.3	17.1	95.2	95.2

The totals may not add due to rounding.

825. AltaLink is forecasting to complete the 2019-2021 GTA Test Period Security and IT capital expenditures at \$95.2M against an approved amount of \$95.2M in the GTA. AltaLink’s Security and IT capital expenditure program is forecast to meet the intentions of the 2019-2021 business case requirements, and AltaLink is within 1% tolerance over the GTA period.

826. Security expenditures over the period are forecasted to be \$45.6M against the GTA approved amount of \$58.5M. The positive variance of \$12.9M is primarily due to \$6.3M lower than planned for the ICSS (Industrial Control System Security) Program due to better prices achieved through competitive bidding for the procurement of security equipment, efficiencies in field construction and reduced project overhead. However, in 2020, progress with AltaLink’s ICSS program was hampered due to COVID-19 limitations on crew size, crews working together, and access to customer sites. This deferred some work into 2021, and some residual substation security work is forecasted into 2022 depending on ongoing COVID-19 restrictions. An explanation of the security variance is included in section 10.4.8.

827. Total expenditures within the three other categories of IT projects are \$49.6M against the GTA approved total of \$36.7M. An explanation of the three IT category variances is included in Section 10.4.8.
- Process Improvement capital expenditures are forecast to be \$2.2M higher than the 2019 – 2021 GTA approval as additional projects were undertaken to automate manual intensive processes, including automation of complex and high volume ARS CIP evidential reporting, to avoid unplanned headcount growth;
 - Lifecycle Sustainment capital expenditures are forecast to be \$10M higher than the 2019-2021 GTA approval as additional projects and upgrades were completed to address: end-of-life or out of support assets or systems, or systems requiring upgrades to address security vulnerabilities; and
 - The Regulatory and Legislative compliance category expenditures are forecast to exceed the 2019-2021 GTA approval by \$0.6M primarily due to the complexity and effort involved to implement the ARS for FAC-008 and PRC-005. Expenditures were \$1.2M higher than originally planned due to the scope of the work to be implemented. Both projects have proven to be more time consuming and complex than what was originally anticipated.
828. Security and IT expenditures are ongoing, multi-year capital investments, which makes it appropriate to compare variances on a cumulative basis. Any one year can have variability due to numerous factors, such as hardware replacement lifecycles, vendor software support schedules, availability of specialist resources, and re-prioritization in order to accommodate new regulatory or business requirements. As such, the programs need to be considered over the longer term.
829. In response to increasing and evolving threats and changing business needs, AltaLink exercised reasonable judgement to accommodate new, unanticipated, higher priority requirements during this period (e.g. response to cyber threats and vulnerabilities), by deferring, cancelling or combining planned projects to efficiently and prudently manage approved IT expenditures within the approved totals for the GTA.

10.4.2 Security and IT Forecast Expenditures for 2022-2023

830. Table 10.4.2-1 below displays a breakdown of the 2022-2023 Security and IT capital expenditures.

Table 10.4.2-1 - 2022-2023 Security and IT Capital Expenditures (\$M)

Category	2022 Forecast	2023 Forecast	2022-2023 Total
Security Compliance	13.1	12.9	25.9
Information Technology	24.7	25.5	50.2
- Process Improvement	3.6	2.1	5.7
- Lifecycle Sustainment	20.1	22.6	42.8
- Regulatory and Legislative Compliance	0.9	0.8	1.7
Grand Total	37.7	38.4	76.1

The totals may not add due to rounding.

831. AltaLink is forecasting IT investment requirements of \$37.7M in 2022 and \$38.4M in 2023. This equates to an annual average of \$38.05M over the 2022-2023 GTA Test Period. This represents

an increase of \$6.3M from the average annual IT capital expenditures during the 2019-2021 Test Period. As shown in Table 10.4.2-2 below, this increase is largely driven by a significant cyclical investment in Lifecycle Sustainment projects, with reductions in average annual capital investment forecast for the other three project categories.

Table 10.4.2-2 - 2019-2023 Security and IT Capital Expenditures Averages (\$M)

Description	Annual Average for 2019-2021 Actuals/Forecast	Annual Average for 2022-2023 Forecast	Variance in Average Annual Expenditure
Security Compliance	15.2	13.0	-2.2
Process Improvement	3.6	2.9	-0.7
Lifecycle Sustainment	11.0	21.4	10.4
Regulatory and Legislative Compliance	2.0	0.8	-1.2
Grand Total	31.8	38.1	6.3

Totals may not add due to rounding.

832. For the Security Compliance category, the reduction of \$2.2M in the annual average spend from the 2019-2021 period to the 2022-2023 GTA Test Period is due to reduced expenditures in substation security following the completion of the Industrial Controls System Security project, offset by increases in expenditure to support increasing and evolving cyber security risks. Refer to Section 10.4.3 below for information on these security risks and the pressing need for additional investment to counter them.
833. For the Process Improvement category, a slight reduction in the forecast average spend of \$3.3M in 2022-2023 is broadly consistent with the 2019-2021 run rate, and reflects resource prioritization on the Enterprise Resource Plan (ERP) upgrade program as part of Lifecycle Sustainment.
834. For the Lifecycle Sustainment category, the increase of \$10.4M annual average spend relative to the 2019–2021 GTA Test Period results from:
- AltaLink commencing the planning and design stage of the ERP upgrade program, including upgrades to the Customer Experience modules in 2022 and upgrades to the Capital Project Management modules in 2023. These investments are required in anticipation of AltaLink’s long-running ERP system reaching end-of-life and losing vendor support. Refer to Section 10.4.4.2 Digital Transformation for an overview of the ERP upgrade program; and
 - Due to the increasing number of security compromises as a result of unpatched vulnerabilities or out of date systems, AltaLink is increasing capital expenditure on patching and upgrading current systems to ensure that they remain secure. Refer to Section 10.4.3.3 SolarWinds Compromise and 10.4.4.1 IT Overview.
835. As noted above, as a result of a number of high profile cyber compromises, vendors have been increasing the rate of software and hardware upgrades in order to address vulnerabilities in their systems and to maintain an up to date security posture. As a result, although classified as Lifecycle Sustainment, capital expenditures within this category provide a dual purpose as they not only include the replacement of hardware, security or IT assets or software that is at end-of-life and/or is inoperable, they also include capital expenditures that are needed to maintain security resilience/compliance. Because AltaLink receives the added benefit of increased

security resilience through its Lifecycle Sustainment program, AltaLink is able to reduce the quantum of security compliance capital expenditures in the 2022-2023 Test Period, as compared to 2019-2021. The significant bulk of the increase in Lifecycle Sustainment capital expenditures is due to the replacement of AltaLink's ERP and ERM systems, as described further below.

836. For the Regulatory and Legislative Compliance category, the forecast reduction of \$1.2M average annual spend in 2022-2023 relative to 2019-2021 reflects an anticipated overall reduction in regulatory requirements. However, the estimate of future expenditures is based upon a number of ARS that are still under development by the AESO, and that like FAC-008 and PRC-005 in 2019, may result in substantial cost increases as the AESO finalizes the standards' requirements.

10.4.3 Security

10.4.3.1 Security Overview

837. AltaLink's cyber, physical and information security strategy is to meet regulatory requirements at a minimum, and to further protect those assets which have the highest impact to the AIES and AltaLink customers in the event of a malicious disruption event.
838. The AESO, as part of ARS, issued the CIP standard version 5⁹⁴ for implementation by October 1, 2017. AltaLink completed implementation by that date. A schedule for the next CIP version requirements has not been released by the AESO. The NERC has released new or revised standards in the U.S.A., and AltaLink considers it likely that the AESO will follow NERC's lead and release similar standards as they have done in the past. Historically, the effective dates of the AESO's ARS have typically been one to four years later than the similar NERC standards.
839. In December 2020, the U.S. FERC issued a Notice of Proposed Rulemaking (NOPR)⁹⁵ that "recognizes that the energy sector faces numerous and complex cybersecurity challenges at a time of both great change in the operation of the transmission system and an increase in the number and nature of attack methods. These ever-expanding risks create challenges in defending the digitally interconnected components of the grid from cyber exploitation". Under this proposal, "incentives would be available for certain investments that voluntarily apply specific CIP Reliability Standards to facilities that are not subject to those requirements and/or implement standards and guidelines from the National Institute of Standards and Technology's (NIST) voluntary Framework for Improving Critical Infrastructure Cybersecurity." AltaLink welcomes FERC's recognition of the scale and breadth of the cybersecurity challenges facing critical infrastructure.
840. Cyber-attacks have continued to increase in frequency and evolve in sophistication, with compromises like the SolarWinds breach in 2020 affecting up to 18,000 SolarWinds customers, including many governments and critical infrastructure providers.
841. AltaLink is working closely with the CEA and the Canadian security agencies to develop security projects that address risks to the AIES.

⁹⁴ This can be found on the AESO Alberta Reliability Standards site: <https://www.aeso.ca/rules-standards-and-tariff/alberta-reliability-standards/>.

⁹⁵ FERC Proposes Incentives for Cybersecurity Investments by Public Utilities, December 17, 2020. Available from: <https://www.ferc.gov/news-events/news/ferc-proposes-incentives-cybersecurity-investments-public-utilities>

842. In this application, AltaLink will present its proposal to continue to enhance security systems needed to protect against these increasing and evolving threats, and to replace and upgrade security systems implemented in prior periods.

10.4.3.2 Increasing and Evolving Cyber Threats against Electricity Transmission

843. The Government of Canada's National Strategy for Critical Infrastructure has defined Critical Infrastructure as follows:

“Critical infrastructure refers to processes, systems, facilities, technologies, networks, assets and services essential to the health, safety, security or economic well-being of Canadians and the effective functioning of government. Critical infrastructure can be stand-alone or interconnected and interdependent within and across provinces, territories and national borders. Disruptions of critical infrastructure could result in catastrophic loss of life, adverse economic effects and significant harm to public confidence.”⁹⁶

844. The strategy classifies the top ten critical infrastructure sectors as follows: energy and utilities, finance, food, transportation, government, information and communication technology, health, water, safety and manufacturing.

845. Commenting specifically on the developing capability of terrorists to target and attack Canadian critical infrastructure, the Canadian Centre for Cyber Security (CCCS) in their National Cyber Threat Assessment, November 2020 (the NCTA report) concluded in their key judgements:⁹⁷

- the number of cyber threat actors is rising, and they are becoming more sophisticated;
- cybercrime continues to be the cyber threat that is most likely to affect Canadians and Canadian organizations;
- AltaLink judges that ransomware directed against Canada will almost certainly continue to target large enterprises and critical infrastructure providers;
- while cybercrime is the most likely threat, the state-sponsored programs of China, Russia, Iran and North Korea pose the greatest strategic threats to Canada; and
- state-sponsored actors are very likely attempting to develop cyber capabilities to disrupt Canadian critical infrastructure, such as the supply of electricity, to further their goals.

846. AltaLink judges that it is very unlikely however, that cyber threat actors will intentionally seek to disrupt Canadian critical infrastructure and cause major damage or loss of life in the absence of international hostilities. Nevertheless, cyber threat actors may target critical Canadian organizations to “collect information, pre-position for future activities or as a form of intimidation”.⁹⁸

847. In December 2020, FireEye, an American cybersecurity company, announced that it had been the subject of a sophisticated cyber-attack that it later determined to be a compromise of the SolarWinds network management software. For more information on the SolarWinds compromise, refer to Section 10.4.3.3 below.

⁹⁶ National Strategy for Critical Infrastructure - <https://www.publicsafety.gc.ca/cnt/rsrscs/pblctns/srtg-crtcl-nfrstrctr/index-en.aspx#s0>.

⁹⁷ Canadian National Cyber Threat Assessment, November 2020, executive summary, Available from: <https://cyber.gc.ca/en/guidance/executive-summary-2>

⁹⁸ Canadian National Cyber Threat Assessment, November 2020, executive summary, Available from: <https://cyber.gc.ca/en/guidance/executive-summary-2>

848. The NCTA report identifies five trends of the evolving cyber threat landscape for Canadians.⁹⁹ At least one of those trends is directly relevant to AltaLink’s role as a critical infrastructure owner:

“More Physical Safety of Canadians is being put at risk

The safety of Canadians depends upon critical infrastructure (e.g. energy, water) ... these infrastructures and goods are susceptible to cyber threat activity, and maintaining their security requires investments over time from manufacturers and owners that can be difficult to sustain.

...We assess that, almost certainly, the most pressing threats to the physical safety of Canadians are to OT [operating technology] and critical infrastructure”.

849. The NCTA report goes on to identify several attributes that can increase an organization’s cyber security risk.¹⁰⁰ Of the eight risk factors identified below, AltaLink has seven:

- uses operational technology;
- employs industrial IoT (Internet of Things) devices;
- manages critical infrastructure;
- holds intellectual property;
- stores personal data;
- possesses financial information;
- operates e-commerce website; and
- encourages remote work.

850. With respect to targeting ICS and critical infrastructure, the CCCS states in its NCTA report:¹⁰¹

“...Especially in the electricity sector, ICS are targeted across the world, mostly by state-sponsored cyber threat actors. In 2019, Russia-associated actors probed the networks of electricity utilities in the US and Canada.... US utility employees have been targeted by Chinese state-sponsored cyber threat actors.

...We assess that ransomware has almost certainly improved its ability to spread through corporate IT networks and threaten adjacent ICS environments [...] We assess that cybercriminals will very likely increase their targeting of ICS in the next two years in an attempt to place increased pressure on critical infrastructure and heavy industry victims to promptly accede to ransom demands”.

851. With regards to the risks to critical infrastructure from a compromised supply chain, the NCTA report states that:¹⁰²

“...Cyber threat actors target the networks of trusted vendors and then leverage the vendors to access the networks of their true targets...Cyber threat actors target these

⁹⁹ Canadian National Cyber Threat Assessment, November 2020, page 12, pdf 14. Available from:

<https://cyber.gc.ca/sites/default/files/publications/ncta-2020-e-web.pdf>

¹⁰⁰ Canadian National Cyber Threat Assessment, November 2020, page 21, pdf 23, Figure 4. Available from:

<https://cyber.gc.ca/sites/default/files/publications/ncta-2020-e-web.pdf>

¹⁰¹ Canadian National Cyber Threat Assessment, November 2020, page 21, pdf 23. Available from:

<https://cyber.gc.ca/sites/default/files/publications/ncta-2020-e-web.pdf>

¹⁰² Canadian National Cyber Threat Assessment, November 2020, Exploiting Supply Chains page 25, pdf 27. Available from:

<https://cyber.gc.ca/sites/default/files/publications/ncta-2020-e-web.pdf>

updates and upgrades because they know they will be downloaded and installed in thousands or millions of times”.

852. The North American bulk electric system, is highly interconnected in design and operation, as is the supply chain which supports transmission and distribution facility operators across Canada and the United States. The threat expressed by the CCCS above mirrors a similar concern expressed by the US Department of Homeland Security in its Homeland Threat Assessment report of October 2020¹⁰³ with respect to supply chain security risks:

“We are especially concerned about adversaries’ exploitations of information and communications technology (ICT) supply chains...Some actors might exploit ICT through “white labelling” – rebranding equipment or altering equipment’s visual appearance to obfuscate the original manufacturer – to get compromised goods into supply chains”.

853. The NCTA report also identifies the increasing threats to privacy as cybercriminals exploit stolen information for financial gain. The Marriott Hotels information security breach in 2018 was linked to state-sponsored hackers and allowed them to collect data including names, addresses, and passport numbers.¹⁰⁴
854. In summary the increasing and evolving threats identified in preceding applications, has turned into active compromises targeting critical infrastructure. The CCCS and the equivalent US government agencies have clearly stated the need to: take active measures to update critical software vulnerabilities and upgrade software and infrastructure systems where required; to address supply chain risks and resiliency, and to take measures to protect confidential and sensitive information.

10.4.3.3 SolarWinds Compromise

855. FireEye¹⁰⁵ is an intelligence-led security company, providing a series of tools and platforms that support its customer’s security operations. FireEye has more than 9,900 customers, supports more than 75% of the Fortune 100 companies, and protects more than 1,000 government and law enforcement agencies worldwide.
856. On December 8, 2020, FireEye disclosed that it had been the victim of a targeted security breach by a highly sophisticated threat actor. FireEye determined that the security breach was through SolarWinds Orion.
857. It was quickly determined that the SolarWinds Orion product was heavily used within industry and government, with the potential for significant global impact. Out of 300,000 SolarWinds customers, upwards of 18,000 customers may have received a software update containing malicious code, which provided an opportunity for the actor to access the customer’s internal networks.
858. SolarWinds was targeted for intelligence gathering because it sits at the nexus of network traffic connectivity and access permissions. SolarWinds has particular insight into the ‘Trust’

¹⁰³ US Department of Homeland Security, Homeland Threat Assessment, October 2020, page 15, pdf 15. Available from: https://www.dhs.gov/sites/default/files/publications/2020_10_06_homeland-threat-assessment.pdf

¹⁰⁴ Canadian National Cyber Threat Assessment, November 2020, Exploiting Supply Chains, page 18, pdf 20. Available from: <https://cyber.gc.ca/sites/default/files/publications/ncta-2020-e-web.pdf>

¹⁰⁵ Fireeye Fast facts, 2021, <https://www.fireeye.com/content/dam/fireeye-www/company/pdfs/fe-fast-facts.pdf>

permissions between on premise and cloud applications, and once compromised allowed the attacker to exfiltrate a substantial amount of data and emails.

859. On December 22, 2020 NERC issued a Level 2 Alert warning of the potential for supply chain compromises by an advanced and persistent threat actor using the SolarWinds Orion platform.
860. Since its discovery, industry security experts have identified a number of sophisticated compromises within the SolarWinds Orion software by a number of malicious actors. Sunburst, discovered in December 2020, utilized the first compromise called Sunspot for payload delivery; its discovery was followed by the identification of other compromises termed Supernova, Teardrop and Raindrop.
861. AltaLink has determined that it was not exposed to the SolarWinds threat. However, the attacks and their aftermath clearly illustrate the potential danger that malicious code hidden in trusted hardware and software could pose to the AIES. AltaLink's Supply Chain Security business case, **Appendix 13-B1-08**, includes measures to respond to this emerging threat.

10.4.3.4 AltaLink's Cyber, Physical and Information Security threats

862. In addition to sophisticated threats like the SolarWinds attacks, AltaLink faces a high volume of day to day attacks on its cyber infrastructure, its physical facilities, and its information systems.
863. The two primary routes for an attacker to gain access to an organization such as AltaLink is through phishing emails or through exploiting vulnerabilities in software, firmware or infrastructure.
864. AltaLink receives 20,000 external emails per week, a high proportion of which contain spam and malware. During 2020, AltaLink experienced an approximate 18% increase (over 2019) in malware, malicious links and phishing emails reported by AltaLink employees. Once a new malware, malicious link or phishing email is identified and inoculated, it is trapped by the updated firewalls and removed from inboxes.
865. Despite the application of these updated controls (inoculations) to the firewalls, malware poses an increasing problem. As shown in Figure 10.4.3.4-1 below, the number of new malware incidents reported has increased six-fold since 2017.

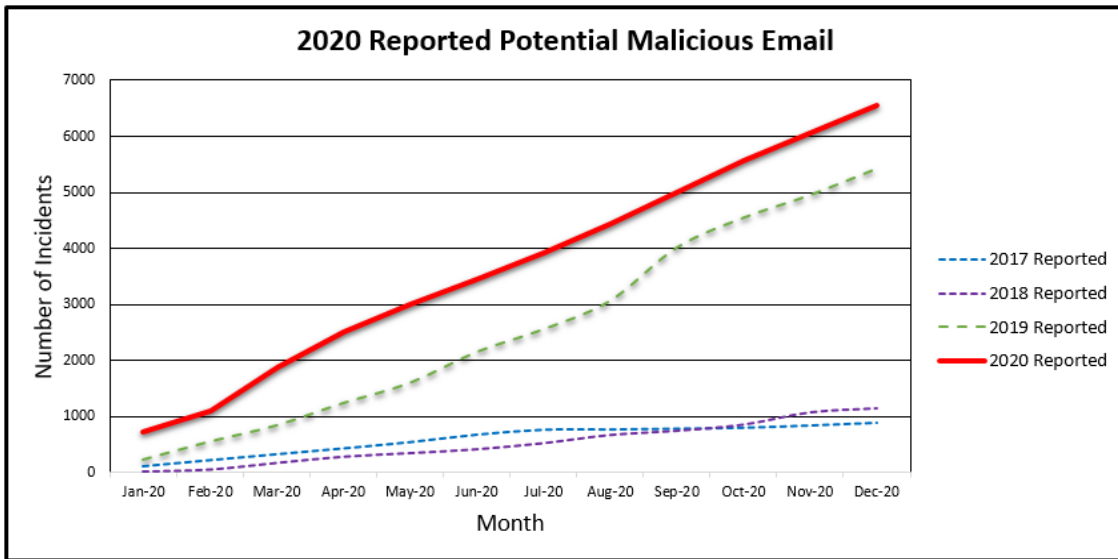


Figure 10.4.3.4-1 – 2017-2020 Cyber Security – New Malware Variant Reports

866. Physical attacks on AltaLink assets, such as vandalism and copper theft, are also on the rise, refer to Figure 10.4.3.4-2. During 2020, AltaLink experienced a 25% increase in the number of physical security attacks on substations and telecom sites relative to 2019. This was the continuation of a trend of increasing physical security incidents, with incident levels in 2020 approximately 30% higher than in 2017.

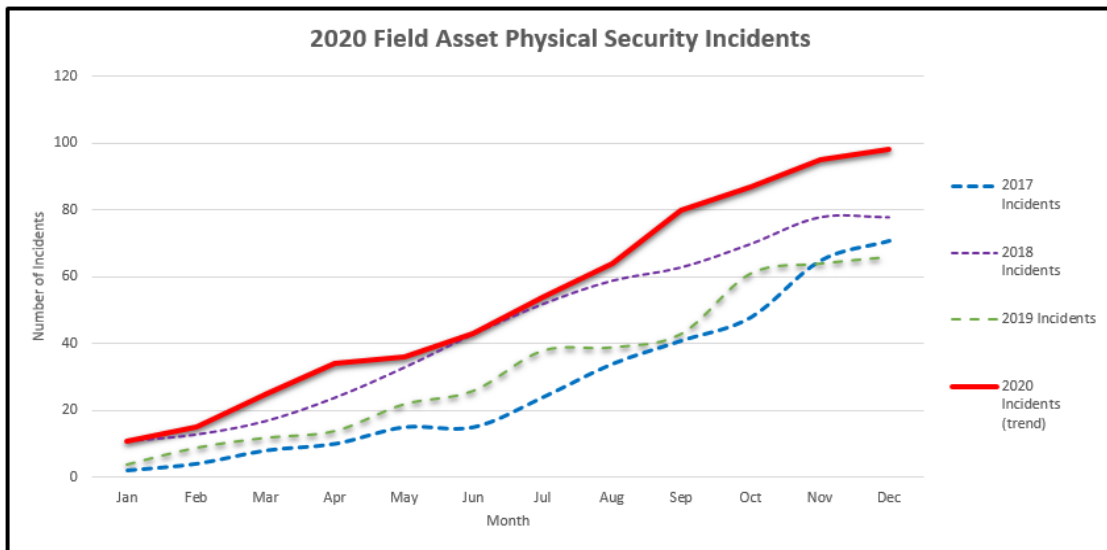


Figure 10.4.3.4-2 – 2017-2020 Physical Security Incidents

867. Each week AltaLink receives on average 120,000 attacks on its external facing firewalls, all of which are seeking to identify vulnerabilities in the security controls which would allow an attacker ingress into the AltaLink systems. Once inside AltaLink’s firewalls, an attacker then further utilizes unpatched or out of date software to navigate AltaLink’s networks.

868. The US NIST publish a repository of vulnerabilities from various software and hardware vendors. Established in 1999, the National Vulnerabilities Database¹⁰⁶ contains over 160,000 vulnerabilities with scores ranging from critical to low depending upon a number of factors. Figure 10.4.3.4-3 below shows the increasing number of vulnerabilities published by vendors and their criticality.

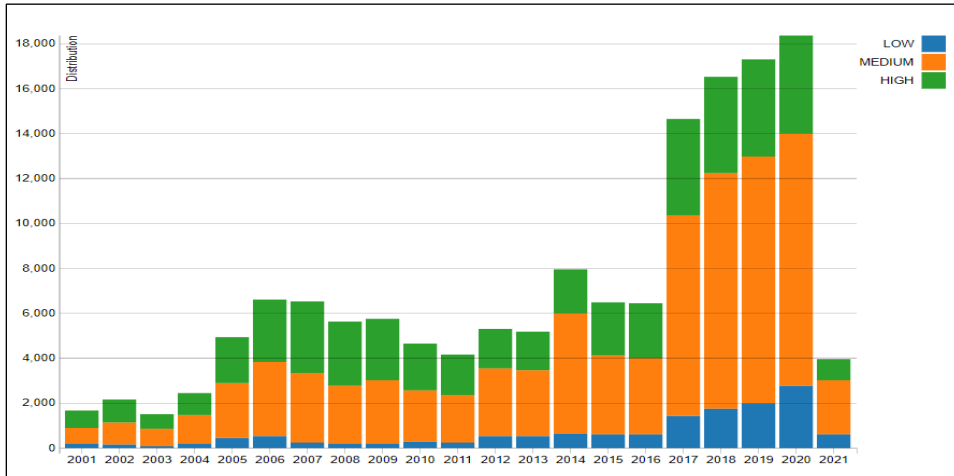


Figure 10.4.3.4-3 – Common Vulnerability Scoring System (CVSS) Severity Over Time¹⁰⁷

869. The increasing trend of vulnerabilities is expected to continue at this rate. Timely patching and management of these vulnerabilities is essential to the safe and secure operation of business. Patching software and infrastructure requires both AltaLink labour resources as well as CMP resources supporting the AltaLink data centers.

870. AltaLink forecasts that increasing activity by malicious agents, combined with the increasing levels of published vulnerabilities, will continue to drive increasing workload for patching and system upgrades.

10.4.3.5 AltaLink’s Security Compliance Program 2022-2023

871. AltaLink’s overarching security compliance strategy is to secure and protect the ongoing and reliable operation of the critical infrastructure assets that provide electrical transmission through the following:

- compliance with, and application of, CIP standards;
- enhancing cyber and physical security requirements where needed to meet AltaLink’s mandatory reliability standards and customer service; and
- implementing strong management systems to ensure that ongoing cyber and physical security risks are managed on an ongoing basis.

872. In formulating its overarching cyber program, AltaLink utilizes the following guidelines, best practices and requirements:

- a. ARS – CIP Version 5;¹⁰⁸

¹⁰⁶ US National Institute of Standards and Technology, National Vulnerability Database. Available from: <https://nvd.nist.gov/>

¹⁰⁷ National Vulnerability Database, CVSS Severity Distribution Over Time. Available from: <https://nvd.nist.gov/general/visualizations/vulnerability-visualizations/cvss-severity-distribution-over-time>

¹⁰⁸ Alberta Reliability Standards – Critical Infrastructure Protection (CIP) Version 5. Available from: <https://www.aeso.ca/rules-standards-and-tariff/alberta-reliability-standards/>

- b. Canadian Security Establishment (Canadian Centre for Cyber Security) – National Cyber Threat Assessment, November 2020;¹⁰⁹
 - c. Public Safety Canada – Resilience to Insider Risk, 8 Recommended Security Actions;¹¹⁰
 - d. International Standards Organization - ISO 27001¹¹¹ and ISO 27019;¹¹²
 - e. National Institute of Standards and Technology;^{113,114}
 - f. National Cybersecurity Centre of Excellence (NCCoE);¹¹⁵ and
 - g. Centre for Internet Security (CIS) Critical Security Controls.¹¹⁶
873. Given the increasing and evolving cyber and physical security threats to which it is exposed, AltaLink has developed ten business cases within the Security Compliance program to address reliability and customer impact risks in the 2022-2023 GTA Test Period. These business cases are presented in **Appendix 13-B1**.
874. The capital expenditure forecasts in AltaLink’s Security Compliance business cases reflect the security compliance requirements that AltaLink currently expects during the Test Period. However, AltaLink is currently undergoing its first tri-annual AESO audit of the ARS CIP regulations, for the period October 1, 2017, to June 30, 2020.

10.4.4 Information Technology

10.4.4.1 IT Overview

875. Underpinning the security and IT projects needed to support the business requirements over the 2022-2023 period, AltaLink identified a number of technology trends that are worthy of note:
- the impact of the COVID-19 pandemic on AltaLink’s ways of working could not have been envisaged at the start of the 2019-2021 GTA Test Period. The public health orders since March 2020 restricting business’ workplace access has demonstrated AltaLink’s need and accelerated the demand for a robust digital utility to support continuing remote business and field operations, while maintaining the safety of AltaLink’s customers, members of the public and employees. In this Application, AltaLink will build upon existing remote collaboration systems and tools, and enhance those digital transformation tools which are necessary to ensure employees are provided a safe, connected, enabled and empowered working environment which supports employee satisfaction, innovation and operation productivity;
 - the migration to cloud-based software systems and infrastructure was accelerated in 2020 with the remote working requirements occasioned by the global COVID-19 pandemic.

¹⁰⁹ Canadian Centre for Cyber Security, National Cyber Threat Assessment, November 2020, Available from: <https://cyber.gc.ca/en/guidance/national-cyber-threat-assessment-2020>

¹¹⁰ Public Safety Canada, Resilience to Insider Risk, June 2019, Available from: <https://www.publicsafety.gc.ca/cnt/ntnl-scr/crtcl-nfrstrctr/rsinc-nsdr-rsk-ctns-en.aspx>

¹¹¹ Information Security Management. Available from: <https://www.iso.org/isoiec-27001-information-security.html>

¹¹² Information technology – Security techniques – information security controls for the energy utility industry. Available from: <https://www.iso.org/standard/68091.html>

¹¹³ NIST Special Publication 800-82 Revision 2, Guide to Industrial Control Systems (ICS) Security, 2015. Available from: <http://nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.800-82r2.pdf>

¹¹⁴ NIST Special Publication 800-53 Revision 4, Security and Privacy Controls for Federal Information Systems and Organizations. Available from: <https://nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.800-53r4.pdf>.

¹¹⁵ NIST Special Publication 1800-7, Situational Awareness for Electric Utilities, 2017. Available from: <https://nccoe.nist.gov/sites/default/files/library/sp1800/es-sa-nist-sp1800-7-draft.pdf>.

¹¹⁶ The CIS Critical Security Controls, 2016. Available from: <https://learn.cisecurity.org/20-controls-download>.

- Vendors are progressively offering cloud solutions that contain the necessary security framework to protect AltaLink’s Confidential Information. AltaLink will progress to a “distributed cloud” approach by 2025 (cloud or on premise system), selecting the solution that best meets the business’ needs;
- the requirement for critical infrastructure companies to maintain supported systems and to be able to implement software patches and upgrades at short notice, was demonstrated in early March 2021 by the HAFNIUM Microsoft exchange server 0-day exploit by cybercriminals assessed to be located in and sponsored by the Chinese state.¹¹⁷ During this event, the CCCS strongly recommended that organizations with unpatched external facing servers immediately disconnect, which would effectively isolate AltaLink from external communication with customers and industry partners.¹¹⁸ According to one industry source, at least 30,000 organizations were compromised.¹¹⁹ AltaLink’s current systems and hardware require capital investment to ensure that they are not exposed to these and similar risks; this investment is presented and justified in the Lifecycle Sustainment business cases presented in **Appendix 13-B2**;
 - as many of AltaLink’s IT systems are approaching their end-of-life or are outside of vendor support, AltaLink is reviewing its ability to collectively procure or share common systems with the other BHE platforms in a way which drives savings for Alberta customers, while at the same time meeting its commitments on data, privacy and management decision making as defined in AltaLink’s Inter-affiliate Code of Conduct (IACC);¹²⁰
 - AltaLink’s current ERP system (SAP) will be unsupported after 2027. In anticipation of this deadline, AltaLink is required to move to a replacement ERP cloud solution which by design will require an “adopt not adapt” approach. Given that AltaLink has heavily enhanced its SAP system since 2002, the transition timeline is expected to be staged across four years with AltaLink commencing the planning and design stage during this Test Period, in 2022; and
 - AltaLink has reviewed cloud-based systems, and for the replacement ERP, will be adopting out-of-box industry best practice business processes to further support long-term reductions in operational costs. AltaLink will use organizational change management to bring forward new business processes that align with the best practice processes inherent within the ERP Cloud solution. AltaLink’s current ERP system has also been heavily modified to support AltaLink’s asset management functionality: a replacement solution that meets the complex needs of AltaLink’s Enterprise-wide Asset Management (EAM) is also under way.

10.4.4.2 Digital Transformation

876. Concurrent with AltaLink’s need to replace its ERP system, a number of electricity utility affiliates within the BHE group are also replacing their ERP systems in the near-term. By

¹¹⁷ HAFNIUM targeting Exchange servers with 0-day exploits, March 2, 2021. Available from:

<https://www.microsoft.com/security/blog/2021/03/02/hafnium-targeting-exchange-servers/>

¹¹⁸ Canadian Centre for Cyber Security, Active Exploitation of Microsoft Exchange Vulnerabilities. Available from:

<https://cyber.gc.ca/en/alerts/active-exploitation-microsoft-exchange-vulnerabilities>

¹¹⁹ Krebs on Security, 5 March 2021, At Least 30,000 U.S. Organizations Newly Hacked Via Holes in Microsoft’s Email Software, Available from: <https://krebsonsecurity.com/2021/03/at-least-30000-u-s-organizations-newly-hacked-via-holes-in-microsofts-email-software/>

¹²⁰ **Appendix 15**, AltaLink Inter-Affiliate Code of Conduct, 2003, pdf 7 and AltaLink Inter-Affiliate Code of Conduct Compliance Plan, pdf 25.

collectively implementing a common system, AltaLink can achieve substantial savings on both the procured software and licence costs, as well as on reduced operating costs going forward.

877. At the start of 2020, AltaLink engaged with BHE affiliates to evaluate potential options for a common ERP and EAM solution to leverage the combined bargaining and buying power of the other BHE platforms.
878. AltaLink benefits by participating in a competitive negotiation process for a replacement ERP system with the greater buying power of the BHE platforms. AltaLink leverages that bargaining power into a Canadian contract and license agreements that protect the interests of Albertans. AltaLink will implement the appropriate data protections and controls to meet the obligations of its IACC.
879. Following a 12-month evaluation and negotiation process, AltaLink selected Oracle Fusion as the replacement for the current SAP ECC (version 6), which has been AltaLink's ERP since 2002. BHE and AltaLink signed their respective contracts with Oracle Americas and Oracle Canada on February 25, 2021, for a 10-year implementation and support agreement. As its EAM, AltaLink selected IBM's Maximo product, which the other BHE affiliates have also chosen as their preferred EAM solution.
880. By leveraging the bargaining power of its BHE affiliates, AltaLink will realize substantial savings for customers compared to the alternative options. This is explained in detail in the business case for the ERP Upgrade program, **Appendix 13-B3-03**.
881. A key part of the implementation of Oracle and Maximo will be the integration between the two solutions. The handling of the master data within the two systems is critical for business operations specifically within Asset Management, Finance, Materials Management, Field Operations, and Supply Chain. Therefore, AltaLink is commencing the design and planning of the systems over the next two years. The integration between the two systems is a standard industry best practice that will continue to provide accurate data ensuring all business processes are streamlined without the need for customization.
882. In total, AltaLink is progressing on its digital transformation journey, by leveraging the end-of-life ERP and EAM replacements and harnessing new and existing performance improvement initiatives. Having an EAM solution integrated with the ERP allows for specialized asset management analytics that AltaLink requires for asset investment planning and forecasting.
883. AltaLink has defined six key business cases supporting AltaLink's digital transformation:
- Enterprise Resource Plan (ERP) Upgrade Program (**Appendix 13-B3-03**);
 - Enterprise Asset Management (EAM) Upgrade (**Appendix 13-B3-12**);
 - Data Analytics and Management Program (**Appendix 13-B2-05**);
 - Workforce Mobility and Collaboration (**Appendix 13-B2-02**);
 - Robotic Process Automation (RPA) (**Appendix 13-B2-03**); and
 - Content Management (**Appendix 13-B3-01**).

10.4.4.3 Cloud Migration

884. The migration of software, infrastructure and to the cloud continued at pace in 2020, particularly in response to work from home requirements resulting from COVID-19 restrictions. Many organizations had already made or accelerated plans to move to cloud-based services such as Microsoft 365, Microsoft Teams, Zoom and Cisco Webex.

885. Gartner, a leading research and advisory company¹²¹ forecasts that by 2022, end-user spending on cloud services will increase by 50% from 2019 levels.¹²² Gartner also forecasts that by 2025, 50% of larger enterprises will have enabled transformational models using a “distributed cloud” (a combination of cloud and on premise solutions, or multiple cloud vendors).
886. For the future security and IT projects within this Application, AltaLink has assumed that new security applications will remain on premise where required to comply with the ARS CIP requirements. This applies to systems that are storing BCSI and any systems that would be designated as Medium or High Impact BES cyber systems (BCS), or medium impact BES cyber assets (BCA), or protected cyber assets (PCA) connected to a high or medium impact BCS. A number of vendors have advised AltaLink that their future IT system offerings will be cloud-based services, and this has been factored into this application. Where vendors have not provided roadmaps of their future offerings, AltaLink has assumed that the remaining security and IT capital projects will be on premises.
887. Under IFRS, cloud-based or on premise IT systems can be accounted for as a capital asset, providing that the following measures are met:
- identifiable: costs are broken down at a detailed level;
 - control: AltaLink has the right to direct the use of the cloud-based or on premise software by having decision-making rights to change how and for what purpose the asset is used through the period of use and restrict others from having access to the benefits of this software;
 - future economic benefit: AltaLink can identify benefits (cost savings or otherwise) from the use of the cloud-based or on premise system which have an enduring benefit; and
 - as AltaLink undertakes the procurement of new or replacement systems during the 2022 – 2023 GTA period, AltaLink will be able to appropriately assign expended costs to capital or operating expenditure depending upon the selected cloud or on premise system.

10.4.4.4 BHE Shared IT Services

888. Coincidental with the need for AltaLink to migrate to a new ERP, a number of the other BHE utilities are also replacing their enterprise asset management and ERP systems in the near and medium term. BHE offers substantial negotiating power with software and hardware vendors for the initial purchases with the additional advantage of sharing common implementation costs that can reduce costs for AltaLink’s customers.
889. AltaLink has been a fully-owned subsidiary of BHE since 2014. Other utilities within the BHE group of companies include PacifiCorp, Nevada Energy, MidAmerican Energy Company, BHE Pipeline Group within the United States, and Northern Powergrid in the UK.
890. In 2019 and 2020, AltaLink was given the opportunity to participate in over \$30M of collective procurement events with the BHE utilities and this has saved Alberta customers \$3.9M through consolidated procurement event and e-auctions.

¹²¹ Gartner provides more than 14,000 enterprises in 100+ countries with information on trusted technology insights, strategic advice and practical tools. Available from: <https://www.gartner.com/en/about>

¹²² Gartner Forecasts Worldwide Public Cloud End-User spending to Grow 18% in 2021. Available from: <https://www.gartner.com/en/newsroom/press-releases/2020-11-17-gartner-forecasts-worldwide-public-cloud-end-user-spending-to-grow-18-percent-in-2021>

891. Within the Security and IT business cases presented within the Test Period, AltaLink has identified a number of projects that propose to migrate to a Cloud solution (e.g. ERP Replacement Project). Where the other BHE utilities are procuring new cloud systems that may be beneficial to AltaLink, AltaLink will consider participating in that procurement where: AltaLink identifies a need that is in the interests of our customers, and where AltaLink's stringent requirements for the integrity and confidentiality of data can be satisfied.

10.4.5 Security and IT Forecast Basis

892. Security and IT project forecasts are made two to three years in advance of execution and are therefore based on the scope, cost and schedule information known and available at that time. The Security and IT program also encompasses a large volume of minor projects where it is not practical or ultimately cost effective to complete functional requirements or technical design several years in advance of the development activities.
893. For Security and IT projects that replace or upgrade existing systems, the forecast costs are broadly based on historical project costs. AltaLink identifies Security and IT equipment and software for replacement or purchase by reviewing the age, use, and maintenance and repair costs of existing systems.
894. AltaLink forecasts future business requirements for security devices, computer devices, hardware storage, cloud storage, network bandwidth, memory and processing power and incorporates these requirements into its hardware replacement plan.
895. AltaLink plans to replace approximately one-quarter of its IT hardware annually in the 2022-2023 Test Period. AltaLink's security devices are replaced in line with their end of asset life depending upon the particular device.
896. For new Security and IT developments, the work scope definition may be at a preliminary stage, given the timing of future regulatory, customer or business requirements. Therefore, the estimate accuracy of the Security and IT business cases within this Application is commensurate with the stage of development for each business case.
897. AltaLink targets to maintain Security and IT program capital expenditures within a narrow band of the approved GTA funded expenditures (+/-5%) over the Test Period.
898. Because Security and IT capital expenditures are forecast two to three years in advance, the overall capital Security and IT forecast accuracy will reflect: the limited design and development for individual business cases completed at the time of the forecast; uncertainty in the timing of when the project will proceed, due to external factors (e.g., timing of new CIP regulatory requirements); and prevailing market conditions at that time. Individual business case cost estimate accuracy may range between +100/-50% for cases in the early conceptual or preliminary stage.
899. AltaLink forecasts and intends Security and IT projects to be executed within the Test Period. At times, circumstances can arise that result in delays of a project into a subsequent Test Period. Occasionally, a particular Security and IT project will require execution over several years, depending upon the complexity of the project or the need to avoid certain schedule constraints (e.g., financial year-end). Variances from year to year are typically driven by AltaLink taking advantage of market conditions or newer technologies or managing resourcing constraints. For instance, **Appendix 13-B3-03** ERP Upgrade Program is one business case that will be addressed over multiple years due to the many business integration points and process complexities.

10.4.6 Security and IT Procurement Basis

900. AltaLink follows industry standard practices and processes in the procurement of Security and IT development, Security and IT support and consultancy services to support the Security and IT program. More specifically, AltaLink:

- has established master service agreements, through a market competitive process as outlined below, with a grouping of qualified suppliers for desktop, servers, infrastructure and Security and IT development services including agreed upon terms and conditions and pricing for a fixed term of typically two or three years; and
- follows a process in establishing the master service agreements with qualified suppliers, based on industry standard procurement practices including but not limited to:
 - defining Security and IT program requirements to create a scope of work;
 - developing and initiating a RFP from potential service providers;
 - evaluating based on established criteria for technical expertise, commercial terms and pricing, and
 - awarding, negotiating and entering into a fixed term master service agreement with successful service providers.

901. This procurement practice ensures that AltaLink has obtained market competitive pricing for the required services in support of the delivery of the Security and IT program. Further, when appropriate, and in order to be effective in the specific activities required to deliver the required services, AltaLink will establish agreements that have a term of two to three years. This approach is utilized and evaluated to optimize the cost, time, and effort of the procurement and negotiating process as opposed to creating a specific procurement event for each individual Security and IT project in the overall program. Conducting an individual procurement process for each individual business case or project would be unnecessarily costly and burdensome, cause service provider fatigue, and impact the delivery of the overall program in a timely fashion.

902. As well, the establishment of these Security and IT master services agreements results in efficiency and stability in the execution of the Security and IT programs in that AltaLink's suppliers are better able to forecast work force demand and capacity and ensure that resources assigned to AltaLink projects meet technical requirements.

903. As part of BHE since 2014, AltaLink has leveraged BHE's buying power to procure goods and services with other utility affiliates in order to drive savings and better value for Alberta customers. AltaLink has met the obligations of the IACC by competitively procuring or negotiating centrally, and then having a separate contract between AltaLink and the vendor which protects the data, privacy and confidentiality obligations while securing the benefits of the centralized procurement effort.

10.4.7 IT Project Management and Execution Oversight

904. AltaLink uses a project management execution process which efficiently and cost effectively delivers Security and IT projects. More specifically, AltaLink uses internal resources to manage and support project executions, including acting as the Security or IT architects, gathering user requirements, scoping, design reviews, and project management. Where AltaLink does not have the required technical project management or design capability, additional sources are engaged. As outlined above, AltaLink is appropriately supported by service providers in the delivery of the Security and IT program. This approach allows for cost effective service provider support that is

based on market competitive rates from key service providers with the appropriate technical expertise.

905. AltaLink uses a project management framework that is based on the Project Management Institute's Project Management Book of Knowledge. Depending upon the complexity of the project involved, AltaLink may implement the following general project management and development execution practices to monitor and manage cost effective delivery of the Security and IT program:
- as part of the inception process, AltaLink will develop a business justification document that defines the conceptual or preliminary business requirement. This is essentially a high-level strategy determining whether an existing system can be upgraded or a new system is required, and a preliminary view of the forecast costs. A project charter and plan are developed documenting how the work will be conducted, resources that will be engaged, governance under which the project will be controlled, and the technology that is going to be used;
 - a service provider (if used) will develop the execution plan, confirming the scope, schedule, reporting quantity and estimated costs for the project. The estimated costs and basis of estimate will be reviewed by the AltaLink PM. The service provider will execute the project within the agreed scope and project price;
 - the AltaLink PM oversees the execution of the work with the vendor, including a review of the project's schedule, scope and quality;
 - during the project, the PM meets regularly with the AltaLink team and service providers to ensure that work is progressing as planned and that incurred costs are reasonable; and
 - throughout the execution of the Security or IT project, a number of risks or changes may manifest on the project related to: incremental scope changes, detailed design requirement changes, unanticipated technology issues, project schedule delays, and changes to the availability of key resources, or inter-dependency with other projects. These changes and risks may result in modification to the overall cost of the project.
906. In AltaLink's 2015-2016 GTA decision, the Commission directed AltaLink to provide additional detail supporting the need for its IT business cases, with more detail on costs and variances.¹²³ AltaLink has taken steps to improve its IT business cases by implementing the following:
- AltaLink has moved from the six business cases submitted as part of the 2017-2018 GTA, to 26 project-specific business cases in the 2022-2023 GTA Test Period that each address project-specific objectives, business drivers and benefits;
 - business cases are grouped into four categories to reflect a common purpose: Security Compliance, Process Improvement, Lifecycle Sustainment and Regulatory and Legislative Compliance;
 - business cases define the business requirement, and will include costs, schedule, assumptions and benefits for each business case, depending upon the development stage of each business case;
 - business cases may be executed as a program, or further sub-divided into projects if the scope and delivery approach warrants;

¹²³ Decision 3524-D01-2016, AltaLink Management Ltd., 2015-2016 General Tariff Application, May 9, 2016, paras 826-845.

- AltaLink has provided NPV calculations and supporting assumptions for projects with a financial cost driver. Business cases in the Process Improvement category may have NPV calculations on the basis of the net capital or operating costs savings;
 - however, business cases within the Security Compliance, Regulatory and Legislative Compliance, and Lifecycle Sustainment categories will not include NPV analysis as these are driven by regulatory requirements, customer requirements or replacing existing end-of-life systems that do not have a financial cost/financial benefit trade-off;
 - where possible, AltaLink has identified and analyzed alternatives to the recommended solution presented in a business case. In some cases alternative solutions could not be provided, for example, expansion or enhancements to existing IT systems; and
 - inter-dependencies between projects (e.g., cyber software deployment driving higher hardware requirements) will be shown within individual business cases, where known, depending upon the development stage of the project.
907. AltaLink's 2022 and 2023 business cases are provided in **Appendix 13-B**. The forecast capital expenditures for each business case in 2022 and 2023 are summarized in Table 10.4.7-1 below.

Table 10.4.7-1 - IT Capital Expenditure 2022 and 2023 Business Case Detail (\$M)

Category/Appendix/Business Case	2022 Forecast	2023 Forecast
Security	13.07	12.86
13-B1.01 2022 ISMS Expansion	0.67	0.44
13-B1.02 2022 Substation Security Controls	3.53	2.70
13-B1.03 2022 Smart Keys	1.72	1.92
13-B1.04 2022 CIP-014 Physical Security Enhancements	0.17	1.09
13-B1.05 2022 Cyber Security System	1.63	1.68
13-B1.06 2022 Physical System Security	1.75	0.88
13-B1.07 2022 Project Lighthouse	0.10	0.40
13-B1.08 2022 Supply Chain Security	0.15	0.65
13-B1.09 2022 Alberta Reliability Standards (CIP)	3.36	3.10
Process Improvement	3.61	2.10
13-B2.01 2022 Workforce Mobility and Collaboration	0.97	0.52
13-B2.02 2022 RPA Program	1.09	1.09
13-B2.03 2022 Vegetation Management System	0.80	0.00
13-B2.04 2022 Data Analytics and Management Program	0.75	0.50
Lifecycle Sustainment	20.15	22.62
13-B3.01 2022 Content Management	1.15	0.50
13-B3.02 2022 System Upgrades	3.10	1.83
13-B3.03 2022 ERP Update Program	5.11	7.27
13-B3.04 2022 Voice System Upgrade	1.02	1.42
13-B3.05 2022 Grouped Initiatives	1.00	1.00
13-B3.06 2022 Data Storage Program	1.59	1.16
13-B3.07 2022 Technology Refresh	1.58	1.58
13-B3.08 2022 Corporate and OT Network and	0.75	1.50
13-B3.09 2022 Learning Content Development	0.35	0.35
13-B3.10 2022 Outage Management Replacement	3.00	0.00
13-B3.11 2022 Enterprise Asset Management Upgrade	1.50	6.00
Regulatory and Legislative Compliance	0.92	0.78
13-B4.01 2022 Alberta Reliability Standards (non CIP)	0.50	0.50
13-B4.02 2022 Capital Accounting Process Enhancements	0.42	0.28
Grand Total	37.75	38.36

The totals may not add due to rounding.

10.4.8 Security and IT Variances from Initial 2019-2021 Forecast

908. Overall, for the 2019-2021 GTA Test Period AltaLink's actual Security and IT capital expenditures (forecast for 2021) are within a 1% tolerance of the GTA forecast. Variances are explained in further detail below.
909. As AltaLink's Security and IT project forecasts were made two to four years in advance of execution, they were based upon the known business priorities at the time the application was submitted. Business priorities for projects were reassessed on a regular basis during the Test Period. This occasionally resulted in re-prioritization of projects under development. For

example, increasing and evolving cyber threats required re-prioritization of AltaLink investment to address asset vulnerabilities.

910. When new and higher priority requirements for Security and IT projects were identified, AltaLink attempted to accommodate them within the approved funding. AltaLink exercised reasonable judgement to defer, cancel or de-scope Security or IT projects in order to meet the higher priority requirements. In some cases, projects that were deferred simply moved into the following year. Others may have been cancelled, if their requirement was addressed by different means (e.g., via a manual workaround or by incorporation into another project), or de-scoped if the requirement was no longer required.
911. As outlined above, AltaLink has established project management and IT development practices that are consistent with, and supported by industry standard procurement processes. AltaLink efficiently and cost effectively delivered the actual costs incurred in the IT program. In the sections below, AltaLink provides the variance of its reasonably incurred actual costs and the basis for the changes from the initial IT program forecasts for 2019, 2020 and 2021.
912. Table 10.4.8-1 below displays a breakdown of the 2019-2021 Security and IT capital expenditures actuals and 2021 forecast against the GTA.

Table 10.4.8-1 – 2019-2021 Security and IT Capital Expenditures versus Approved (\$M)

Category	2019 GTA	2019 Actuals	2020 GTA	2020 Actuals	2021 GTA	2021 Forecast	2019-2021 GTA Total	2019-2021 Actual/ Forecast Total
Security	29.7	21.8	23.3	17.5	5.5	6.3	58.5	45.6
Process Improvement	4.8	3.8	2.5	4.9	1.2	2.0	8.5	10.7
Lifecycle Sustainment	7.3	13.5	6.9	11.7	8.7	7.6	22.8	32.8
Regulatory and Legislative Compliance	1.5	2.7	2.0	2.1	1.9	1.3	5.4	6.1
Grand Total	43.3	41.8	34.7	36.3	17.3	17.1	95.2	95.2

Totals may not add up due to rounding.

913. To summarize the Security and IT capital expenditure variance performance:
- within the four Security and IT business case categories, AltaLink planned a capital expenditure of \$95.2M over the Test Period. AltaLink has completed or forecasts to complete by the end of 2021 capital expenditure of \$95.2M. There is no variance between the expected IT expenditure and the approved IT expenditure for the 2019-2021 period;
 - AltaLink's actual expenditures were \$41.8M in 2019 against the GTA plan of \$43.3M, a positive variance in the year of \$1.5M (3.5%);
 - AltaLink's actual expenditures were \$36.3M in 2020 against the GTA plan of \$34.7M, a negative variance in the year of \$1.6M (4.6%);
 - AltaLink's forecast expenditures are \$17.1M in 2021 against the GTA plan of \$17.3M, an expected positive variance in the year of \$0.2M (1.2%); and
 - AltaLink's 2019-2021 GTA submission applied for Security and IT capital expenditures of \$45.1M, \$38.3M and \$21.8M for the years 2019, 2020 and 2021 respectively. As part of the 2019-2021 NSA, AltaLink reduced these capital expenditures to the profile shown in the

table above. With these changes, the level of capital expenditures forecasted in 2021 became atypical in meeting the business' ongoing investment needs.

914. Further variance explanations are provided below for each of the four business case categories.
915. Table 10.4.8-2 below provides a summary of the Security and IT capital expenditures planned during the 2019-2021 Test Period, showing variances to AltaLink's GTA anticipated expenditures. The table is structured as follows:
- GTA column (A) reflects the expenditures anticipated to meet the functional requirements as filed in the 2019-2021 GTA business cases;
 - Actual/Forecast column (B) shows the project expenditures incurred/forecasted on the anticipated GTA projects as filed and that progressed, i.e., were not deferred or cancelled to accommodate higher priorities;
 - New Requirement column (C) shows the costs incurred for meeting additional high priority requirements that were not anticipated at the time the GTA was filed;
 - Total Actuals/2021 Forecast column (D) shows the expenditures incurred to meet both the anticipated (B) and additional unanticipated requirements (C) after the GTA was established; and
 - Variance is the difference between GTA anticipated expenditures as filed (A) and the Total Actuals/2021 Forecast (D).

Table 10.4.8-2 - 2019-2021 Security and IT Capital Expenditures versus Approved (\$M)

Year	GTA	GTA Actual/Forecast	New Requirement	Total Actual/Forecast	Forecast Variance
	(A)	(B)	(C)	(B+C=D)	(A-D)
2019 Actual	43.3	39.7	2.1	41.8	1.5
2020 Actual	34.7	32.6	3.7	36.3	-1.6
2021 Forecast	17.3	17.3	0.0	17.1	0.2
Grand Total	95.2	89.6	5.8	95.2	0.0

Totals may not add up due to rounding.

916. AltaLink identified new requirements in 2019 and 2020 totalling \$5.8M, which were not envisioned at the time of the 2019-2021 GTA. These additional requirements relate to:
- new requirements in the Security Category for Digital ID Enhancements and Automated Password Rotation;
 - new Requirements in Lifecycle Sustainment for Microsoft M365 Online Deployment, System Operations Support Updates, S&IS Strategy and Microsoft Exchange Upgrade; and
 - new Requirements in Process Improvement for Fleet Management, Automating Updates in GIS, SAT (Systematic Approach to Training) Learning Content Development and RPA.

917. Additional details are outlined in the paragraphs describing expenditures in 2020, below.

10.4.8.1 Security Variances from Initial 2019-2021 Forecast

918. Table 10.4.8.1-1 below provides a summary of the Security capital expenditures planned during the 2019-2021 Test Period, showing variances to AltaLink's GTA anticipated expenditures:

Table 10.4.8.1-1 - 2019-2021 Security Capital Expenditures versus Approved (\$M)

Year	GTA	GTA Actual/ Forecast	New Requirement	Total Actual/ Forecast	Forecast Variance
	(A)	(B)	(C)	(B+C=D)	(A-D)
2019 Actual	29.7	20.9	0.9	21.8	7.9
2020 Actual	23.3	16.4	1.1	17.5	5.8
2021 MU	5.5	5.5	0.8	6.3	(-0.8)
Total	58.5	42.8	2.8	45.6	12.9

Totals may not add up due to rounding.

919. AltaLink is forecasting Security capital expenditures over the 2019-2021 Test Period to be \$45.6M against the \$58.5M planned within the NSA. This is a positive variance over the period of the GTA of \$12.9M (22%).
920. AltaLink's actual expenditures were \$21.8M in 2019 against the GTA plan of \$29.7M, a positive variance in the year of \$7.9M (27%). Expenditures for planned projects were lower than estimated in 2019 due to:
- \$6.3M lower than planned for the ICSS program due to better prices achieved through competitive bidding for the procurement of security equipment, efficiencies in field construction and reduced project overhead;
 - Due to the specialist and complex nature of CIP enhancement work, AltaLink recruited a third party vendor to assist. The vendor was selected and engaged in July 2019, however, their full expected scope was not completed in 2019; and
 - ISMS required less capital than originally anticipated and the ISMS expansion into OT was deferred beyond 2019.
921. AltaLink's actual expenditures were \$17.5M in 2020 against the GTA plan of \$23.3M, a positive variance in the year of \$5.8M (25%). Expenditures for planned projects were lower than estimated in 2020 due to:
- progress with AltaLink's ICSS program in 2020 was hampered due to COVID-19 limitations on crew size, crews working together, and access to customer sites. This deferred some work into 2021, and some residual substation security work is forecasted into 2022 depending on ongoing COVID-19 restrictions; and
 - recognizing these pressures, AltaLink exercised reasonable judgement to rebalance expenditures among other higher priority requirements.
922. AltaLink is forecasting that Security expenditures in 2021 will be \$6.3M against the plan of \$5.5M with new requirements constituting \$0.8M. These additional requirements relate to:
- AltaLink continuing to enhance the CIP program systems and evidence needs to complete mitigation plans related to CIP self-reported contraventions reported to the MSA from 2019 onwards; and
 - the AESO completing AltaLink's tri-annual CIP audit in June 2021, with findings which will need to be addressed as a priority to avoid future contraventions with the ARS. AltaLink did not anticipate the level of change to CIP Programs based on CIP guidance and lessons learned received from the AESO and other market participants over the 2019-2021 period.

10.4.8.2 Process Improvement Variances from Initial 2019-2021 Forecast

923. Table 10.4.8.2-1 below provides a summary of the Process Improvement capital expenditures planned during the 2019-2021 Test Period, showing variances to AltaLink's GTA anticipated expenditures.

Table 10.4.8.2-1 - 2019-2021 Process Improvement Capital Expenditures versus Approved (\$M)

Year	GTA	GTA Actual/ Forecast	New Requirement	Total Actual/ Forecast	Forecast Variance
	(A)	(B)	(C)	(B+C=D)	(A-D)
2019 Actual	4.8	2.8	1.0	3.8	1.0
2020 Actual	2.5	4.5	0.4	4.9	-2.4
2021 MU	1.2	1.2	0.8	2.0	-0.8
Total	8.5	8.5	2.2	10.7	-2.2

Totals may not add up due to rounding.

924. AltaLink is forecasting Process Improvement capital expenditures over the 2019-2021 Test Period to be \$10.7M against the \$8.5M planned within the GTA. This is a negative variance over the period of the GTA of \$2.2M (26%).

925. AltaLink's actual expenditures were \$3.8M in 2019 against the GTA plan of \$4.8M, a positive variance in the year of \$1.0M (21%). Expenditures for planned projects were lower than estimated in 2019 due to:

- Resources directed to higher priority projects in the Regulatory and Legislative Compliance and Lifecycle Sustainment categories;
- \$1.3M in expenditures on IS Helpdesk Enhancement Project was delayed into 2020;
- the Asset Risk Tool program was put on hold, and \$0.8M in expenditures was deferred due to lack of availability of data of the required quality; and
- an additional \$1.1M in capital expenditures was required to deliver on executed projects in 2019.

926. AltaLink's actual expenditures were \$4.9M in 2020 against the GTA plan of \$2.5M, a negative variance in the year of \$2.4M (96%). Expenditures for planned projects were higher than estimated in 2020 due to:

- an opportunity to pursue a number of RPA initiatives to automate manual intensive processes and avoid unplanned headcount growth; and
- Service Management Software license costs were paid in 2020. Costs were reduced in other areas such as Field Mobility to keep total 2020 costs as close to GTA targets as possible.

927. AltaLink is forecasting that Process Improvement expenditures in 2021 will be \$2.0M against the plan of \$1.2M with new requirements of \$0.8M. These additional requirements relate to:

- improved Data Analytics tools and RPA applications to better automate a selection of AltaLink's internal processes and tasks.

10.4.8.3 Lifecycle Sustainment Variances from Initial 2019-2021 Forecast

928. Table 10.4.8.3-1 below provides a summary of the Lifecycle Sustainment capital expenditures planned during the 2019-2021 Test Period, showing variances to AltaLink’s GTA anticipated expenditures.

Table 10.4.8.3-1 - 2019-2021 Lifecycle Sustainment Capital Expenditures versus Approved (\$M)

Year	GTA	GTA Actual/ Forecast	New Requirement	Total Actual/ Forecast	Forecast Variance
	(A)	(B)	(C)	(B+C=D)	(A-D)
2019 Actual	7.3	13.3	0.2	13.5	-6.2
2020 Actual	6.9	9.5	2.2	11.7	-4.8
2021 Forecast	8.7	8.7	-1.1	7.6	1.1
Total	22.8	31.5	1.3	32.8	-9.9

Totals may not add up due to rounding.

929. AltaLink is forecasting Lifecycle Sustainment capital expenditures over the 2019-2021 Test Period to be \$32.8M against the \$22.8M planned within the NSA. This is a negative variance over the period of the GTA of \$9.9M (43%).

930. AltaLink’s actual expenditures were \$13.5M in 2019 against the GTA plan of \$7.3M, a negative variance in the year of \$6.2M (85%). Expenditures for planned projects were higher than planned in 2019 due to:

- added scope and \$0.9M in expenditures to perform additional system upgrades including GIS Upgrade, Tripwire, Ceridian, Exchange and others needed to ensure up to date security for software, compatibility, supportability and for providing up to date reporting capabilities for compliance purposes;
- added scope and \$1.9M in expenditures in the Data Centre Hardware Replacement business case for Hyper-convergent technology (VxRail). In addition, other data center hardware replacements had higher costs than initially planned;
- added scope and \$1.1M in expenditures in Software Replacements – Operations business case primarily for the ASP re-write that carried over from the previous year;
- Data Storage projects had expenditures \$1.1M higher than initially planned, specifically the Data Domain project, which had reached the end of its support period;
- the Corporate Network upgrade had expenditures \$1.0M higher than initially planned;
- added scope and \$0.7M in expenditures to the Technology Refresh Program to modernize working areas by upgrading meeting room technology, printer technology and sound masking, and to replace desktops with laptops; and
- \$0.5M in deferrals and reductions on other Lifecycle Sustainment projects were realized in 2019.

931. AltaLink’s actual expenditures were \$11.7M in 2020 against the GTA plan of \$6.9M, a negative variance in the year of \$4.8M (69%). Expenditures for planned projects were higher than estimated in 2020 due to:

- added scope and \$2.7M in expenditures to perform system upgrades including a number of unplanned upgrades at time of agreement such as IPsoft upgrade, SAP Upgrade, and others required for patch security and software supportability;
- \$0.98M in expenditures on new collaborative systems (Microsoft M365 Deployment) necessary to support employees working from home during the COVID-19 pandemic;
- planned Windows Upgrade costs were higher than expected due to logistics challenges brought on by the COVID-19 pandemic;
- added scope and expenditure of \$1.0M for Software Replacement –operations to address functionality and performance issues in document management;
- Palo Alto licenses support licenses were purchased;
- In Learning Content development, a number of delays in 2019 resulted in project costs in 2020, for an increase in 2020 expenditure of \$0.3M in this category;
- added scope and expenditures of \$0.7M in the Technology Refresh Program to modernize working areas by upgrading meeting room technology, printer technology and sound masking, and replacing desktops with laptops; and
- reductions and deferrals in projects such as the Grouped Initiatives, SharePoint Upgrades, Data Storage Program and VMware Upgrade categories resulted in a total negative variance of \$4.8M.

932. AltaLink is forecasting that Lifecycle Sustainment expenditures in 2021 will be \$7.6M against the plan of \$8.7M. This reduction in expenditures is due to a re-prioritization of planned projects, with a focus in 2021 on:

- IT Sustainment hardware, Corporate and OT Network Refresh and Network Switch Replacement; and
- completing the Microsoft M365 Online deployment is a priority in 2021 to further enable workers who are working from home during the COVID-19 pandemic.

10.4.8.4 Regulatory and Legislative Compliance Variances from Initial 2019-2021 Forecast

933. Table 10.4.8.4-1 below provides a summary of the Regulatory and Legislative Compliance capital expenditures planned during the 2019-2021 test period, showing variances to AltaLink’s GTA anticipated expenditures:

Table 10.4.8.4-1 - 2019-21 Regulatory and Legislative Compliance Capital Expenditures versus Approved (\$M)

Year	GTA	GTA Actual/ Forecast	New Requirement	Total Actual/ Forecast	Forecast Variance
	(A)	(B)	(C)	(B+C=D)	(A-D)
2019 Actual	1.5	2.6	0.0	2.6	-1.1
2020 Actual	2.0	2.1	0.0	2.1	-0.1
2021 MU	1.9	1.9	0.0	1.3	0.6
Total	5.4	6.6	0.0	6.0	-0.6

Totals may not add up due to rounding.

934. AltaLink is forecasting Regulatory and Legislative Compliance capital expenditures over the 2019-2021 Test Period to be \$6.0M against the \$5.4M planned within the NSA. This is a negative variance over the period of the GTA of \$0.6M (11%).

935. AltaLink's actual expenditures were \$2.6M in 2019 against the GTA plan of \$1.5M, a negative variance in the year of \$1.1M (73%). Expenditures for planned projects were higher than planned in 2019 due to:
- FAC-008 and PRC-005 ARS Non-CIP projects had expenditures \$1.2M higher than originally planned. Both projects have proven to be more time consuming and complex than what was originally anticipated.
936. AltaLink's actual expenditures were \$2.1M in 2020 against the GTA plan of \$2.0M, a negative variance in the year of \$0.1M (5%). Expenditures for planned projects were higher than estimated in 2020 due to:
- higher than expected expenditure in ARS (Non-CIP) of \$1.3M due to high costs on FAC-008 and PRC-005. Both projects have proven to be more time consuming and complex than what was anticipated at time of agreement;
 - lower than anticipated expenditures in Enhancements to Financial Reporting and Budgeting as resources planned to work in this area were not available;
 - expenditures proved to be negligible in Recruiting/Onboarding Toolset as a low cost solution was deployed that met program requirements;
 - lower than expected expenditures in System Operations Productivity Enhancements as most spends in this program were in 2019 and not required in 2020; and
 - expenditures in Netcom Enhancements were deferred to a future year in order to keep overall 2020 expenditures close to GTA target.
937. AltaLink is forecasting that Regulatory and Legislative Compliance Expenditures in 2021 will be \$1.3M against the plan of \$1.9M. This reduction in expenditures is due to a re-prioritization of planned projects, with a focus in 2021 on:
- ARS (Non-CIP) and the completion of FAC-008 and PRC-005;
 - EMS and Netcom Change Tool, Salvage Data Quality Process Improvements; and
 - Required software enhancements for the AltaLink Control Center that support compliance requirements.

10.4.9 IT Variance Summary for 2019-2021

938. AltaLink reprioritized and accommodated high priority security and IT requirements within the GTA (across several GTA business cases) to address increasing business needs, systems at end-of-life, vulnerability patching risks and evolving cyber security threats.
939. Overall, AltaLink's Security and IT capital expenditure program met the 2019-2021 business case requirements, and AltaLink is forecasted to complete the Test Period within 1% of the planned tolerance of the GTA estimate.

10.5 Facilities Capital Costs

940. AltaLink’s facilities capital expenditures are driven by ongoing lifecycle building maintenance, replacements and upgrades to maintain its day-to-day transmission operations, and are needed to provide a safe and productive work environment for its employees and equipment and to comply with applicable building codes, fire codes and Occupational Health and Safety Guidelines.
941. AltaLink head office in Calgary is composed of two leased low rise buildings that are located adjacent to each other. The buildings are over 20 years old and combined are approximately 165,018 square feet. On a monthly basis AltaLink’s facility team will meet with the landlord and building operator to assess projects required for the buildings. During this assessment, items that require maintenance to support the operations of the buildings are identified. Items assessed include but are not limited to: mechanical, electrical, plumbing, landscaping (drainage) and the overall building envelope. Leasehold inducements provided by the landlord have been used to undertake necessary Leasehold improvements to update the ageing buildings listed in Table 10.5-1 below. However AltaLink manages capital maintenance requirements that address interior and exterior conditions that are not part of the landlord’s scope. In particular AltaLink capital maintenance focuses on items of office safety, security and workplace efficiency.
942. As would be expected, the age of the building factors into the level of maintenance activity associated with mechanical systems and normal wear and tear for interior and exterior conditions. Table 10.5-1 below captures the specifics of each leased building.

Table 10.5-1 - AltaLink leased head offices

Building	Building Age	Size (Square feet)
AltaLink Plaza	23 yrs	95,225
AltaLink East	24 yrs	69,793

943. AltaLink has eight other field buildings/offices located throughout the province to position field staff and equipment to provide the optimum customer response in the north, central area and south of the province, refer to Table 10.5-2 below. Of the eight buildings, two are leased and six are owned by AltaLink, for a total 201,680 square feet. Much like the Head Offices, AltaLink regularly assess the health of the buildings with the landlords (for the leased buildings) and the facilities team to determine what is required to provide a safe and effective work environment for employees and AltaLink’s transmission equipment and vehicles. All these field buildings are required to ensure our personnel and equipment are providing safe and reliable transmission service to our customers in the most efficient manner possible.

Table 10.5-2 - AltaLink owned field offices and warehouses

Building	Type	Building Age	Size (Sq ft)
Acheson Warehouse	Owned	35 years	20,748
Acheson	Owned	14 years	23,820
Red Deer	Leased	8 years	11,200
Crossings	Owned	5 years	11,870
Sunnybrook	Owned	5 years	12,300
Lethbridge	Leased	4 years	10,000
Janet Service Center	Owned	1 year	75,000
Foothills	Owned	45 years	36,742

944. The Foothills Technical Services Building (FTSB) Relocation and Road Access upgrade was presented in AltaLink’s 2019-2021 GTA, refer to Appendix 18-E.¹²⁴ Following the completion of the relocation to the Janet Services Center in late 2019, AltaLink has been marketing the sale of the facility to third parties.
945. Effective April 5, 2021, AltaLink entered into a conditional offer to purchase, and Interim Agreement (the Offer) to dispose of its property located at 7503-30 Street South East in the City of Calgary (Foothills Service Center). The Offer contains several conditions solely for the benefit of the purchaser, and therefore at this time, it is uncertain whether or not the Offer will proceed to a concluded sale. AltaLink currently utilizes the Foothills Service Center for the provision of utility services, and in the event the transaction does not close, it is AltaLink’s intention to continue to do so. If the Purchaser is able to satisfy its conditions, AltaLink will relocate employees and equipment to other buildings and increase the density of the use of those buildings. This Application does not reflect a disposition of the Foothills Service Center as it is uncertain if the transaction will close. If it does close, AltaLink will reflect the ordinary course disposition in an amendment to its GTA, or as directed by the Commission.
946. With the onset of the global COVID-19 pandemic in March 2020, the FTSB continues to be used by our substation technicians to support a separate and safe work cell during the pandemic, as well as for the storage of equipment and materials used to maintain the transmission system. This supports a safe work team environment while ensuring the continued operation of the AIES.
947. The Langdon and Acheson Material Yards are owned by AltaLink and total approximately 2,466,472 square feet. These yards, located in the south and north of the province, provide secure storage for transmission materials. These yards must be maintained as secure and safe storage areas to manage AltaLink’s spare parts inventory and material for maintenance and capital projects. Efficient parts and material storage is essential to support emergency restoration activity and ongoing transmission system maintenance work.
948. The AltaLink facilities identified above all have to ensure safe operations of the office environment, warehouses and equipment storage facilities, and therefore all have a common requirement for general maintenance as outlined below. AltaLink has three business cases to put forward in this application – General Facilities Maintenance, the Bushing Building Expansion and Acheson Quonset sections of this application. The Bushing building and Quonset were

¹²⁴ Exhibit 23848-X0034.01, AML 2019-2021 GTA - Appendix 18 (FTSB Relocation Update).

deferred from AltaLink’s 2019-2021 GTA, and are now in urgent need to support proper bushing storage and protect current spare parts investments.

949. AltaLink’s historical and forecast capital facilities project expenditures are shown in Table 10.5-3 below.¹²⁵

Table 10.5-3 – 2019-2023 Facilities Capital Expenditures Forecast (\$M)

Description	2019 Actual	2020 Actual	2021 MU	2022 Forecast	2023 Forecast
General Facilities Maintenance	\$2.8	\$4.3	\$3.5	\$3.5	\$3.3
Acheson Drainage	\$1.8	\$0.0	\$0.0	\$0.0	\$0.0
Janet Service Center	\$19.3	\$0.0	\$0.0	\$0.0	\$0.0
Acheson Bushing Building Expansion	\$0.0	\$0.0	\$0.0	\$0.0	\$1.4
Quonset- Field Support	\$0.0	\$0.0	\$0.0	\$0.5	\$0.0
Grand Total	\$24.1	\$4.3	\$3.5	\$4.0	\$4.7

Totals may not add due to rounding.

950. Generally, variations in year-to-year capital expenditures reflect the cyclical nature of upgrading and replacing facilities which are at end-of-life, or out of compliance with statutory requirements or codes.
951. Capital expenditures from 2019 to 2023 reflect the broadly stable capital expenditure requirements across all facilities. An increase of \$0.5M is forecast in 2022 over the 2021 forecast, reflecting the addition of an equipment storage Quonset at Acheson.
952. A further increase of \$0.7M is forecast in 2023 over the 2022 levels for completion of the Bushing Building expansion at the Acheson warehouse yard.
953. For a detailed explanation of the 2022-2023 forecast facility project identified in Table 10.5-3 above, refer to the corresponding business case in **Appendix 13-C1**.

10.5.1 Actual/Approved Variance

954. Overall, for the 2019-2021 GTA Test Period AltaLink’s actual facilities capital expenditures (forecast for 2021) are within a 3% tolerance of the GTA approved amounts. A summary breakdown for AltaLink’s 2019-2021 facilities projects is provided in Table 10.5.1-1 below. Variances are explained in further detail below.
955. AltaLink had previously applied within the 2019-2021 GTA for the Acheson Bushing Building Expansion project as well as the Quonset – Field Support project. During the negotiated settlement process, facility capital investment priorities were reviewed and the decision was made not to execute these projects in 2019-2021, but rather defer the project until the next Test Period of 2022-2023, which is therefore now requested in **Appendix 13-C1**.

¹²⁵ Excludes Substation Buildings and Security cost categories which are now included in Appendix 13-B1.06 Physical Security.

Table 10.5.1-1– 2019-2021 Facilities Capital Expenditures versus Approved (\$M)

Description	2019-2021 Approved	2019-2021 Actuals/ Forecast	Variance (%)	Annual Actual Average 2019-2021	Annual Forecast Average 2022-2023	Variance (%)
General Facilities Maintenance	\$9.9	\$10.6	7%	\$3.5	\$3.4	-3%
Acheson Drainage	\$1.6	\$1.8	13%	\$0.6	\$0.0	
Quonset – Field Support	\$0.0	\$0.0		\$0.0	\$0.5	-
Acheson Bushing Building Expansion	\$0.0	\$0.0		\$0.0	\$1.4	-
Janet Service Centre	\$19.5	\$19.3	-1%	\$6.4	\$0.0	-
Grand Total	\$31.0	\$31.9	3%	\$10.6	\$4.4	-58%

Totals may not add due to rounding.

956. Geotechnical issues were identified during the construction phase of the Acheson Drainage improvement project resulting in an additional \$200k capex in 2019 to remediate the issue. AltaLink incurred a one-time period increase of \$800k of general facilities and maintenance related to leasehold improvements during the 2019-2021 Test Period. AltaLink had a positive variance of \$200k capital expenditures on the Janet Service Centre project. Overall, AltaLink completed the facilities projects for the 2019-2021 GTA period within 3% of the approved expenditures.
957. The forecast annual average general facilities maintenance costs for 2022-2023 are 3% lower than the actual average for the 2019-2021 period.
958. The delayed expansion of the Bushing Building and Quonset addition at AltaLink field offices accounts for the increase in average forecast capital expenditures for 2022 and 2023.
959. AltaLink completed its Janet Service Center (formerly Foothills Technical Services Relocation) in 2019, so no further capital expenditures other than routine general maintenance are forecast for 2022-2023.

10.5.2 Facilities Variance Summary for 2019-2021

960. Overall, AltaLink’s facility capital expenditure program met the 2019-2021 business case requirements, and AltaLink is forecasted to complete the Test Period within 3% of the planned tolerance of the GTA approved amount.

10.6 Transmission Rate Base Schedules

Schedule 10-1 Schedule of Transmission Rate Base

Schedule 10-2 Schedule of Transmission Property, Plant and Equipment

Schedule 10-3 Schedule of Transmission Accumulated Depreciation

Schedule 10-4 Schedule of Transmission Capital Expenditures

Schedule 10-5 Schedule of Transmission Engineering, Services and General

Schedule 10-6 Schedule of Transmission Contributions in Aid of Construction

Schedule 10-7 Schedule of Transmission Computer System Costs

11. TRANSMISSION NECESSARY WORKING CAPITAL

961. Section 11 of AltaLink's Application addresses the following:

- 11.1 Summary
- 11.2 Allowance for Working Capital
- 11.3 Transmission Necessary Working Capital Schedules

11.1 Summary

962. For purposes of this GTA, AltaLink has revised its Necessary Working Capital requirements and provided its updates as **Appendix 7, Lead/Lag Study**.
963. The previous Lead/Lag Study was undertaken by AltaLink in 2017. To ensure that the most up-to-date cash working capital requirements were captured for the Test Period, AltaLink completed a new Lead/Lag Study in 2021. The results of this study demonstrate an overall increase to the cash working capital requirement. Utilizing the 2021 Lead/Lag Study days, as compared to the 2017 Lead/Lag study days, results in an overall increase to the necessary working capital increase of \$16.0M in 2022 and \$2.2M in 2023, with an average increase of \$9.1M per year over the Test Period. For a detailed breakdown, please refer to Table 11.2-2.
964. AltaLink's Lead/Lag Study recommends ratios for the determination of an allowance for working capital with respect to AltaLink's receipt of revenues, payment of operating expenses, income tax payments, Goods and Services Tax (GST) remittances, interest payments, equity distributions, retained earnings and depreciation. The methodology utilized for the 2021 Lead/Lag Study is consistent with the methodology utilized in all of AltaLink's previous Lead/Lag studies, and was most recently approved in AUC Decision 23848-D01-2020.
965. The working capital allowance represents the average amount of capital necessary, beyond that required for Property, Plant and Equipment (PP&E) and other Rate Base items, to bridge the gap between the time expenditures are made to provide service and the time payment is received for that service. The working capital allowance determined via a Lead/Lag Study is indicative of a utility's average daily working capital requirements.
966. AltaLink's 2021 Lead/Lag Study analyzed transactions from January 2020 through December 2020 to determine (i) for each revenue stream, the average number of lag days between the provision of service to customers and the receipt of payment for that service from customers (the revenue lags), and (ii) for each expense (or payment, in the case of GST and equity distributions), the average number of lag days between the provision of service to customers and the date that AltaLink paid for the goods and services that it acquired to provide service (the expense lags).
967. The difference between these two lags is referred to as a net lag or net lead. A net lag occurs when the payment of an expense precedes the collection of its related revenue stream. In this situation, AltaLink's investors must supply capital to finance the expense until receipt of the related revenues. Investor funding is necessitated by the fact that the cash outflows for expenses preceded the cash inflows for the related revenues. The working capital allowance for a net lag is therefore added to Rate Base in order to provide AltaLink with a reasonable opportunity to recover the cost of the related investor-supplied funding. A net lead position occurs in the opposite situation with the opposite impact.
968. Once the revenue lags and expense lags were determined, the calculation of the working capital allowance involved the following steps:
- Step 1 - weight each revenue lag by its related revenue stream, as reported in the 2020 Report on Finances and Operations (Appendix 6-A3), to calculate the total weighted average revenue lag;

- Step 2 - weight each expense lag by its related expense, as reported in the 2020 Report on Finances and Operations (Appendix 6-A3), to calculate the total weighted average expense lag;
- Step 3 - subtract the weighted average expense lag from the weighted average revenue lag to obtain the net (lead)/lag days (please refer to MFR Schedule 11-3); and
- Step 4 - divide the net (lead)/lag by 365 days to obtain the working capital ratio; multiply this ratio by the total expenses to calculate the average amount of working capital required to finance the expenses (please refer to MFR Schedule 11-2).

969. The resulting net (lead)/lag days from the 2021 Lead/Lag Study are summarized and compared to the 2017 Lead/Lag Study in Table 11.2-1 below. In calculating the revenue and expense lags, AltaLink performed a detailed computerized analysis on 100% of revenue receipts and 100% of cash operating expenses.

11.2 Allowance for Working Capital

970. The summary in Table 11.2-1 sets out the Lead/Lag Study Results (please refer to **Appendix 7** for the complete Lead/Lag Study).

Table 11.2-1 - Lead/Lag Study Summary Results

Lead/Lag Study Summary: Net (Lead) / Lag Days			
	2021 Study	2017 Study	Difference
Operating Expenses	30.4 days	34.6 days	(4.2) days
Income Tax Payments	15.6 days	(0.5) days	16.1 days
Depreciation	44.3 days	44.3 days	-
Debt Interest Payments	(47.8) days	(46.5) days	(1.3) days
Retained Earnings	44.3 days	44.3 days	-
Distributions	15.6 days	(0.5) days	16.1 days
Goods & Services Tax Remittances	0.9 days	(15.9) days	16.8 days

971. The results summarized in Table 11.2-1 illustrate that there are a number of changes in Lead/Lag Study components when comparing the 2021 and 2017 Lead/Lag Study results. As noted in Section 11.1, these changes result in an overall average increase to the necessary working capital of \$5.5M per year in the Test Period.

972. The changes in necessary working capital are noted in the table below, along with the related variance explanations. As noted above, the working capital allowance for a net lag is added to Rate Base in order to provide AltaLink with a reasonable opportunity to recover the cost of the related investor-supplied funding.

Table 11.2-2 – Working Capital Dollar Impact of Changes in Lead/Lag Study

Average Increase (Decrease) in Necessary Working Capital (\$M) per year			
	2022 vs 2021 Variance	2023 vs 2022 Variance	Test Period Average
Operating Expense	(1.7)	0.3	(0.7)
Unamortized Computer System Costs ¹	2.9	(1.4)	0.8
Unamortized Financing Fees ²	1.2	(0.5)	0.3
Good & Services Tax	3.5	0.0	1.7
Interest Payments	(0.8)	(0.2)	(0.5)
Retained Earnings & Depreciation	1.1	1.3	1.2
Distributions including Income Taxes	5.2	0.1	2.7
Total (may not add due to rounding)	11.5	(0.5)	5.5

¹ Overall increase due to the change in profile of software costs where more software assets have a useful life of 5 years than in previous periods.

² Overall minor increase in financing fees due to timing and volume of debt issuances.

973. **Operating Expenses (net of revenue offsets)** - Overall, the working capital requirement for operating expenses has decreased, primarily due to a shift in the weighting of individual operating expense items. The respective weighting of individual operating expenses is based on the dollar weighting as per the 2020 Report of Finances & Operations. There was an increase in weighting on expenses with longer lag times, thereby resulting in a decrease to the working capital requirement. This is because the longer an expense lag, or the shorter an expense lead, the lesser amount of time AltaLink is financing the expenses for until the corresponding revenue is received.
974. **Income Tax Payments & Equity Distributions** – AltaLink does not pay income taxes directly. Instead, income tax is paid by its partners and such payments are considered to be included in the monthly equity distributions paid to the partners. As a result, the equity distribution lag is also applied to the income tax payments component. There is an overall increase due to AltaLink increasing the frequency and the value of distributions. Since the previous study performed in 2017 using 2016 data, AltaLink shifted to pay distributions monthly from quarterly in order to more closely align AltaLink’s balance sheet with the AUC approved capital structure. This results in an average dollar impact rounding to \$2.7M per year over the Test Period.
975. **Goods and Services Tax Remittances** - The increase in working capital requirement is due to decreased GST filing lag due to more consistently being in a remittance position in 2020 as compared to 2017. In the previous study, there were more periods of AltaLink being in a refund position. Refunds incur longer processing times. GST remittance is due by the last day of the following month. The shorter the GST filing lag, the greater the impact on working capital requirements.
976. **Interest Payments** – The increase in working capital requirement for interest payments is due to a decreased payment lag on long-term debt interest. The shorter the period of time between when interest expenses are incurred and payments are made, the lesser the overall lag for those payments, and the longer the amount of time that AltaLink is financing the interest expense for until the corresponding revenue is received.
977. **Retained Earnings & Depreciation** – These items are assigned a zero expense lag. There is no change in days from the 2021 study of 44.3 days. Due to growth in existing rate base compared

to the 2017 study, this results in an increase in necessary working capital of \$1.2M per year for the Test Period.

11.3 Transmission Necessary Working Capital Schedules

Schedule 11-1 Schedule of Transmission Necessary Working Capital

Schedule 11-2 Schedule of transmission Necessary Working Capital Calculation

Schedule 11-3 Transmission Lead/Lag Days for Necessary Working Capital

Schedule 11-4 Schedule of Transmission Net Operating Expense Lead/Lag Days

Schedule 11-5 Schedule of Transmission Operating Expense (net of revenue offsets) Lag Days

Schedule 11-6 Transmission GST Impact on Working Capital

12. DISTRIBUTION MFR

NOT APPLICABLE TO ALTALINK'S APPLICATION

13. DISTRIBUTION RETAIL REVENUE

NOT APPLICABLE TO ALTALINK'S APPLICATION

14. DISTRIBUTION COST OF SALES

NOT APPLICABLE TO ALTALINK'S APPLICATION

15. DISTRIBUTION OPERATION COSTS

NOT APPLICABLE TO ALTALINK'S APPLICATION

16. DISTRIBUTION DEPRECIATION

NOT APPLICABLE TO ALTALINK'S APPLICATION

17. DISTRIBUTION INCOME TAXES

NOT APPLICABLE TO ALTALINK'S APPLICATION

18. DISTRIBUTION REVENUE OFFSETS

NOT APPLICABLE TO ALTALINK'S APPLICATION

19. DISTRIBUTION RETURN ON RATE BASE

NOT APPLICABLE TO ALTALINK'S APPLICATION

20. DISTRIBUTION RATE BASE

NOT APPLICABLE TO ALTALINK'S APPLICATION

21. DISTRIBUTION NECESSARY WORKING CAPITAL

NOT APPLICABLE TO ALTALINK'S APPLICATION

22. ISOLATED OPERATING COSTS

NOT APPLICABLE TO ALTALINK'S APPLICATION

23. GENERAL OPERATING AND MAINTENANCE

NOT APPLICABLE TO ALTALINK'S APPLICATION

24. COMMON OPERATIONS

NOT APPLICABLE TO ALTALINK'S APPLICATION

25. CORPORATE ADMINISTRATION AND GENERAL

978. Section 25 of AltaLink’s Application addresses the following:
- 25.1 Overview – Total Administrative and General Expenses
 - 25.2 Administrative and General Expenses
 - 25.3 Corporate Costs
 - 25.4 Corporate Manpower – Full Time Equivalents
 - 25.5 Corporate Administration and General Schedules

25.1 Overview - Total Administrative and General Expenses

25.1.1 Overview

979. Section 25 provides information with respect to AltaLink's A&G expenses as defined in the USA/MFR requirements documents approved by the Commission.

Table 25.1.1-1 - Administrative and General Expenses (\$M)

Expense	2019 Actual	2020 Actual	2021 MU	2022 Test Year	2023 Test Year
Labour	19.9	19.6	21.4	22.0	22.6
Contracted Manpower	6.3	5.8	5.5	5.7	5.8
Other GOE	17.7	18.1	21.6	20.9	22.0
Total	43.9	43.6	48.5	48.6	50.5

25.1.1.1 Labour

Table 25.1.1.1-1 - Administrative and General - Labour Expenses (\$M)

Expense	2019 Actual	2020 Actual	2021 MU	2022 Test Year	2023 Test Year
920 – Admin & General	13.1	13.5	14.4	14.6	15.0
926 - Employee Pensions	3.4	3.2	3.3	3.6	3.7
934 - IT General & Admin	3.1	2.5	3.5	3.7	3.8
935 – General Plant	0.3	0.3	0.2	0.2	0.2
Labour	19.9	19.6	21.4	22.0	22.6

Table 25.1.1.1-2 - Administrative and General - Labour Forecast Increase (\$M)

Forecast Increase	2021 MU versus 2020 Actual	2022 Test Year versus 2021 MU	2023 Test Year versus 2022 Test Year	2 Test Year Average
Inflation	0.4	0.6	0.7	0.7
Other	1.4	(0.1)	(0.0)	(0.1)
Total	1.8	0.5	0.6	0.6

980. A&G labour on average for the Test Period is forecast to increase by \$0.3M primarily due to escalation. As reflected in the 2020 actuals experienced delays in filling vacancies due to internal recruitment and the COVID-19 pandemic, resulting in lower FTEs and lower net salaries and wages. In 2021, AltaLink has or will fill all its vacancies to the full FTE operating complement of 115.2.

981. Refer to Section 25.2.1 for a detailed description of A&G labour forecasts for USA code 920, Section 25.2.20 for USA code 934 and Section 25.2.22 for USA code 935.

Table 25.1.1.1-3 - Administrative and General - FTE Year End Summary

	2019 Actual	2020 Actual	2021 MU	2022 Test Year	2023 Test Year
Operating FTEs					
920 – Admin & General	75.2	78.6	84.2	84.2	84.2
934 - IT General & Admin	25.6	26.0	29.0	29.0	29.0
935 – General Plant	3.0	2.0	2.0	2.0	2.0
Total Year End FTEs	103.8	106.6	115.2	115.2	115.2

982. AltaLink is forecasting FTEs to remain stable in the Test Period with 115.2 operating FTEs. At the end of 2020, there were 5.6 FTE vacancies in USA account 920 and 3 in USA Account 934. The vacancies have or will be filled in 2021. The movement in FTEs from 2020 to 2021 is described in **Appendix 2-B** and corresponding job descriptions in **Appendix 2-D**.

983. Refer to Section 25.2.1 for a detailed description of A&G FTE forecasts for USA code 920, Section 25.2.20 for USA code 934 and Section 25.2.22 for USA code 935.

25.1.1.2 Contracted Manpower

Table 25.1.1.2-1 - Administrative and General - Contracted Manpower Expenses (\$M)

Expense	2019 Actual	2020 Actual	2021 MU	2022 Test Year	2023 Test Year
923 - Outside Services Employed	3.4	2.7	2.6	2.9	3.0
934 - IT General & Admin	2.0	1.8	1.7	1.8	1.8
935 – General Plant	1.0	1.3	1.2	1.0	1.0
Contracted Manpower	6.3	5.8	5.5	5.7	5.8

Table 25.1.1.2-2 - Administrative and General - Contracted Manpower Increase (\$M)

Forecast Increase	2021 MU versus 2020 Actual	2022 Test Year versus 2021 MU	2023 Test Year versus 2022 Test Year	2 Test Year Average
Inflation	0.0	0.1	0.1	0.1
Other	(0.3)	0.1	0.0	0.1
Total	(0.3)	0.2	0.1	0.1

984. AltaLink has forecasted to keep A&G contracted manpower relatively flat over the Test Period with limited inflation. The change in 923 – Outside Services Employed from year to year is mainly related to the operating activities (refer to Section 25.2.11 for added detail). In 935 – General Plant, costs increased in 2020 due to increased cleaning and maintenance related to the COVID-19 pandemic.

985. Refer to Section 25.2.11 for a detailed description of Contracted Manpower forecasts for USA code 923, Section 25.2.20 for USA code 934 and Section 25.2.22 for USA code 935.

25.1.1.3 Other GOE
Table 25.1.1.3-1 - Administrative and General Expenses (\$M)

Expense	2019 Actual	2020 Actual	2021 MU	2022 Test Year	2023 Test Year
921 - Office Supplies	1.7	1.1	1.4	1.8	1.8
924 - Insurance Premiums	3.7	4.1	5.1	6.3	7.3
925 - Injuries & Damages	0.2	0.0	1.2	1.0	1.0
928 - Commission Expenses	1.7	1.5	1.4	0.0	0.0
930.1 - General Advertising	0.0	0.0	0.0	0.0	0.0
930.2 - Misc. General	1.1	1.2	1.3	1.1	1.1
931 - Rent Expense Buildings	0.1	0.1	0.1	0.1	0.1
931.1 - Head Office Rent	1.2	1.1	1.1	1.2	1.2
934 - IT General & Admin	4.9	5.7	6.2	6.2	6.3
935 - General Plant	3.3	3.2	3.6	3.2	3.3
Other GOE	17.7	18.1	21.5	20.9	22.0

Table 25.1.1.3-2 - Administrative and General - Other GOE Forecast Increase (\$M)

Forecast Increase	2021 MU versus 2020 Actual	2022 Test Year versus 2021 MU	2023 Test Year versus 2022 Test Year	2 Test Year Average
Inflation	0.0	0.2	0.2	0.2
Other	3.5	(0.9)	0.9	0.0
Total	3.5	(0.7)	1.2	0.2

986. On average AltaLink has forecast a \$0.2M increase in O&M Other GOE in the Test Period, which is mainly related to higher insurance premiums (Refer to Section 25.2.12 as well as **Appendix 3** for further details), partially offset by decreases in commission expenses.

987. Refer to Section 25.2 for a detailed description of the Other GOE forecasts on an individual USA Activity Code basis.

25.2 Administrative and General Expenses

988. Section 25 relates to corporate and administrative activities that indirectly support the O&M of AltaLink's transmission facilities. As with Section 5, expenses and FTEs are recorded, forecasted, and discussed in order by USA Activity Code. Indirect corporate and administrative activities are summarized as follows:

- A&G Expenses (USA 920): supervision and management of corporate operations not directly attributable to transmission operations, such as customer service and external engagement, corporate finance, law, regulatory and compliance and human resources and communications;
- Administration Corporate/Office Supplies and Expenses (USA 921): general operating activities in support of USA 920, such as training and professional development, business travel, travel expenses associated with training and professional development, and GOE;

- Outside Service Employed (USA 923): contractors and consultants in support of USA 920, such as strategic and management consulting, legal and audit fees, GTA and regulatory issues;
- Insurance Premiums (USA 924): commercial insurance coverage to protect against a number of risks, including damage to property and boiler/machinery, commercial general liability, and excess liability;
- Injuries and Damages (USA 925): payments to and from the SIR, which provides insurance coverage for injuries and damages claims not covered by commercial insurance;
- Employee Pension and Benefits (USA 926): AltaLink’s DC Plan and PRB plans, including pension administration. Employee benefits for active employees are fully attributed to operating and capital functions and included in labour costs for all other USA Activity Codes;
- Commission Expenses (USA 928): all third party expenses related to regulatory proceedings, which are reviewed and approved by the Commission as per the Commission’s Rule 022;
- General Advertising Expenses (USA 930.1): advertising campaigns related to public safety as well as scheduled outages and maintenance work affecting the public;
- Miscellaneous General Expenses (USA 930.2): general management activities that are not otherwise attributable to another USA Activity Code, such as credit facility fees and Board of Directors fees;
- Rents Other Than Head Office (USA 931): office space for the back-up control centre in Calgary and field offices located in Red Deer and Lethbridge;
- Head Office Rent (USA 931.1): office space in two separate buildings all located in the vicinity of 26th Street and 3rd Avenue Southeast in Calgary;
- IT A&G Expenses (USA 934): a number of owned and leased IT systems that support corporate functions such as treasury and accounting applications, document and records management, e-mail, and office furniture tracking systems; and
- General O&M Expenses (USA 935): O&M associated with head office buildings, office furniture and equipment, general computer hardware, general voice and data network equipment, general communication equipment, and all other miscellaneous equipment.

25.2.1 USA 920 - Administrative and General Salaries

989. This account includes the compensation (salaries, bonuses, and other consideration for services, but not including directors’ fees) of officers, executives, and other employees of the utility properly chargeable to utility operations and not chargeable directly to a particular operating function.

Table 25.2.1-1 - USA 920 - Administrative and General Salaries (\$M)

	2019	2020	2021	2022	2023
Expense	Actual	Actual	MU	Test Year	Test Year
Total	13.1	13.5	14.4	14.6	15.0

990. USA 920 is wholly attributable to labour expenses, which are forecast to increase by inflation and by lower capitalization due to the work changing from capital to operating in nature as the bulk of the work will be focused on maintaining the current asset base as well more CIP compliance activities by Regulatory and IT.

Table 25.2.1-2 - USA 920 - Administrative and General Salaries Labour Forecast Increase (\$M)

	2021 MU versus 2020 Actual	2022 Test Year versus 2021 MU	2023 Test Year versus 2022 Test Year	2 Test Year Average
Forecast Increase				
Inflation	0.3	0.4	0.4	0.4
Other	0.6	(0.3)	(0.0)	(0.2)
Total	0.9	0.1	0.4	0.3

991. As per the following Table 25.2.1-3, AltaLink forecasts the following FTE levels in USA 920 during the Test Period.

Table 25.2.1-3 - USA 920 - Administrative and General FTEs by Department

Expense	2019 Actual	2020 Actual	2021 MU	2022 Test Year	2023 Test Year
Corporate Finance	25.6	27.0	29.0	29.0	29.0
CEO	4.0	6.0	5.6	5.6	5.6
Customer Service, Communications & External Engagement, and Other	16.0	14.0	15.0	15.0	15.0
Human Resources	5.0	4.0	4.0	4.0	4.0
Law & Regulatory	24.6	27.6	30.6	30.6	30.6
Total Year End FTEs	75.2	78.6	84.2	84.2	84.2

- a) Corporate Finance: 2020 Actuals did not include two temporary operating vacancies for Budget Analysts that were hired in Q1 2021. The job descriptions are provided in **Appendix 2-D**. This was partially offset by a reduction in 2021 of a more senior capital FTE as a result of the consolidation of the Director Financial Planning and Manager of Treasury positions, resulting in the elimination of the Manager of Treasury position in the first quarter of 2021.
- b) CEO: The changes in the CEO department are as a result of the executive organizational change which took place in January 2021 and are described in Section 1.9.3. It resulted in and the Executive Assistant, CEO, the Director, the CEO and the SVP, Government Relations & Corporate Development moving from full to partial FTEs.
- c) Customer Service, Communications and External Engagement: The increase in one operating FTE in 2021 is related to a vacancy for the Senior Account Representative in Customer Service which is expected to be hired in Q2 2021. The job description is provided in **Appendix 2-D**. This is offset by a reduction in a capital FTE in 2021 as a result of the elimination the Business Process Analyst in Q1 2021.
- d) Law & Regulatory: Law & Regulatory had 38.6 total actual FTES at year-end 2019 and 2020 with two vacancies, the Regulatory Applications Analyst position and the Regulatory Rates Analyst position. For the three-year period 2021-2023, AltaLink is forecasting 39.6 FTEs as AltaLink anticipates filling one of the vacant positions, the Regulatory Applications Analyst, and has replaced the Regulatory Rates Analyst position with a contractor, resulting in a net

reduction of one FTE. The Regulatory Applications Analyst position has been within the department for many years and is an integral part of the development of tariff-related applications. The functions of this position are required for the development, integrity, and continuity of these applications. The vacancy was not filled in 2020 due to the COVID-19 pandemic and is currently under recruitment. There was also a transfer from capital of two operating FTEs in 2021, the Hearing Support Assistant and the Regulatory Coordinator, due to increased activity in matters related to the electricity market framework and its evolution. The job descriptions are provided in **Appendix 2-D**.

992. AltaLink is using a zero-based approach to forecast its required FTE levels in the Application. In line with this approach, the following paragraphs detail the functions of each department and why AltaLink needs the current level of FTEs. The departments in USA 920 reflect the current organizational structure and are:

- Corporate Finance;
 - Accounting;
 - Treasury;
 - Internal Audit and Enterprise Risk Management;
- Human Resources;
- Customer Service Communications and External Engagement;
- Commercial & Government Relations;
- Law, Regulatory and Compliance; and
- CEO.

25.2.2 Corporate Finance

993. The Corporate Finance group departments forecasts 29 operating FTEs in USA 920, remaining at 2021 levels.

994. Accounting – includes:

- Financial Reporting;
- Capital Accounting;
- General Accounting;
- Financial Planning;
- Financial Systems; and
- Payroll and senior administration of the accounting group.

995. **Financial Reporting** – This group is responsible for maintaining the financial records and preparing quarterly and annual formal financial statements of AltaLink L.P., and its general and limited partners. It also prepares financial statements for the partnership’s pension plans and joint ventures. It prepares the backup for the Report on Operations, sections of the AIF, income taxes and other financial information that is reported internally and externally. This includes the provision of monthly management and financial analysis to AltaLink’s managers, executives and owners. This group also reviews and coordinates the implementation of new financial reporting standards issued and contemplated by the IAS Board as well as changes to existing standards.

996. **Capital Accounting** – This group is responsible for overseeing AltaLink’s plant, property and equipment. It does transactional accounting, such as asset retirements, journal entries, oversees the project customer contributions, the calculation of rate base, the calculation of the allowance

for funds used during construction, the calculation of the direct assigned capital asset deferral account, asset account reconciliations as well as management and external capital reporting.

997. **General Accounting** – This group is responsible for processing capital and operating invoices and expense claims, cheque and electronic funds payments, accruals, invoicing, bank reconciliations, GST administration and analysis and monitoring of accounts receivable and payable. There has been a stabilization in the volume of activity handled by this group as shown in Table 25.2.2-1 below. In 2020, there was a one-time increase in A/P transaction volume. Volumes are expected to return to 2018 levels.

Table 25.2.2-1 - Volume of Accounts Payable (A/P) Transactions

Year	2018	2019	2020	2021F	2022F	2023F
Volume of A/P transactions	35,000	33,000	43,000	35,000	35,000	35,000

998. **Financial Planning** – This group is responsible for coordinating the annual budgeting process, quarterly forecast updates, long-range planning, monthly analysis of results, goodwill impairment calculation, scenario analysis for investors and debt rating agencies as well as other quantitative analysis requested by managers or executives. To carry out many of these activities, the group has a financial and revenue model, and it is responsible for updating and maintaining this model.
999. **Financial Systems** – AltaLink continues to review its procedures and systems to identify and implement more efficient practices. AltaLink has a number of system and procedure enhancement initiatives underway during the Test Period and it expects to continue these initiatives during the next few years. Implementing these initiatives requires a significant amount of effort to review existing processes and identify any changes that will be required to enable them to function more efficiently. Time and effort is also required to design and test proposed changes to the impacted processes. The Financial Systems group leads these initiatives within Finance, coordinating the review of existing processes, identifying process improvement alternatives, assisting in the design of new processes, coordinating the delivery of any required system changes, and completing the required pre-implementation testing. Once implemented, the Financial Systems group is responsible for the maintenance of any new configurations when changes are required to AltaLink’s central accounting system. Projects are underway or planned that will address identified system and process improvement opportunities as detailed in the IT business cases section in: **Appendix 13-B2.02** (RPA Program); **Appendix 13-B2.04** (Data Analytics and Management Program); **Appendix 13-B3.03** (ERP Update Program); and **Appendix 13-B4.02** (Capital Accounting Process Enhancements). On an ongoing basis, the Financial Systems group is directly involved in helping resolve any break-fixes, making any required changes to AltaLink’s central accounting system including the addition of tables and assessment cycles, general ledger account maintenance and various modifications required to system generated reports.
1000. **Payroll** – This group ensures that all AltaLink employees are paid accurately and on-time on a bi-monthly basis. This group also ensures that employees leaving the company are paid appropriately and that information with respect to new employees to the company is entered accurately into the payroll system. This group also supports the Human Resources function performing system testing and assisting in process changes during system upgrades, changes to

collective agreements, changes to payroll and tax legislation, the production of tax slips and the implementation of payroll and Human Resources system improvements as well as supporting the management of positions.

1001. **Senior Administration** – This group is responsible for providing overall direction to the Accounting group, carrying out quality assurance of key outputs from the group, establishing accounting policies, attracting and retaining sufficient staff with the appropriate skill sets to carry out the work, developing and training AltaLink staff, implementing controls over financial activities, liaising with AltaLink’s external auditors, resolving accounting issues and providing regulatory information and support.
1002. **Treasury** – The Treasury group’s activities include cash management, cash forecasting, money market borrowing, investment of surplus funds, treasury accounting, covenant compliance, financial statement review, budgeting, bank relationship management including the provision of new credit, capital markets monitoring, placement of long-term debt, debt investor relations, credit rating agency management, pension fund administration and management, and regulatory assistance. In addition to the foregoing the Treasury group also has responsibility for Insurance and Property Tax Management. These activities include the procurement of insurance, insurance administration and claims management, and property tax compliance and management.
1003. **Internal Audit** – The purpose of the Internal Audit group is to provide independent, objective assurance and consulting services designed to add value to, and improve, AltaLink’s operations. The group helps management and employees to accomplish their objectives by using a systematic, disciplined approach to evaluate and improve the effectiveness of their risk management, control and governance processes. The scope of the work of the Internal Audit group is to determine whether AltaLink’s network of risk management, control and governance processes, as designed and represented by management, is adequate and functioning in a manner to ensure that risks are appropriately identified and managed, employees’ actions are in compliance with policies, standards, procedures, and applicable laws and regulations and programs, plans and objectives are achieved. Opportunities for improvement on any other items may be identified during audits and communicated to the appropriate level of management and the Audit Committee.
1004. **Enterprise Risk Management** – AltaLink recognizes that risk is present in business activities and that the effective management of risk benefits its customers and stakeholders and increases the likelihood that AltaLink will achieve its business objectives. AltaLink has implemented an Enterprise Risk Management Program that includes risk assessment, risk treatment, monitoring and review. Risk assessments, trends and treatments are shared with the Audit Committee and the Board on a quarterly basis and an in depth look at top strategic and operational risks is shared annually.

25.2.3 CEO

1005. AltaLink’s CEO department forecasts 5.6 operating FTEs in USA 920, remaining at 2021 levels.
1006. The CEO department consists of AltaLink’s Executive Leadership team and is not expected to change during the Test Period following the executive organizational change which took place in January 2021 and described in Section 1.9.3. The Executive Leadership team is involved in the day-to-day management decisions as well as the implementation of Board and owner decisions as well as short-term and long-term strategic plans. The leadership also oversees all the key

areas of the business including financial oversight, legal and regulatory matters, capital project execution and delivery, operations, external engagement, communications, customer service and human resources.

25.2.4 Commercial and Government Relations

1007. AltaLink's Commercial and Government Relations department forecasts 4 operating FTEs in USA 920, remaining at 2021 levels.
1008. The Government Relations department is responsible for developing AltaLink's government relations strategy and sharing AltaLink information with Alberta's 87 provincial constituencies, including 36 within AltaLink's service territory and an additional 44 including the cities of Edmonton and Calgary, which AltaLink facilities also serve. Also included in the provincial government relations program is the relationship maintenance with all cabinet ministers and their respective departments. AltaLink also works closely with opposition party caucuses to ensure they fully understand AltaLink, its transmission business, and the value and impacts of its operations on Albertans.

25.2.5 Business Development (or Corporate Development)

1009. The Business Development employees were terminated from AltaLink and hired by BHE Canada. They are not included in this Application.

25.2.6 Human Resources

1010. AltaLink's Human Resource department forecasts 4 operating FTEs in USA 920, remaining at 2021 levels.
1011. AltaLink's Human Resources has experienced an increased workload over the last few years, such as increased accommodation requests and grievances, which is expected to continue throughout the Test Period. The Human Resources department is, however, not forecasting an increase in headcount as the department continues to look for ways to take on new challenges as well as efficiently and effectively manage AltaLink's HR processes delivering excellent leadership and support to the organization on a wide variety of Human Resource matters including: Recruitment; Organization Design and Effectiveness; Compensation; Benefits; Labour Relations; and Leadership Development and Coaching.
1012. **Communications and Stakeholder Engagement**
1013. AltaLink's Communications department forecasts 6 operating FTEs in USA 920, remaining at 2021 levels.
1014. This team is required to deliver balanced and accurate information to AltaLink internal and external stakeholders. They contribute to ensuring AltaLink's operations are clearly understood by those who may be impacted by AltaLink's work.
1015. AltaLink has approximately 750 employees in six office locations across Alberta. It is critical that AltaLink's employees are provided with the information they need to effectively operate the business. The Communications team is responsible for delivering information to employees and external stakeholders through AltaLink's communications media, including AltaLink's internet and intranet site, online newsletter, social media and video production. These employees also support AltaLink's business units by providing strategic communications counsel and support for the internal and external audiences. These employees also plan and execute AltaLink's employee events.

1016. The Communications team is also responsible for responding to media to ensure the public has timely and accurate information about AltaLink activities, including planned or unplanned system outages or project and maintenance updates.

25.2.7 Customer Service

1017. The Customer Service and External Engagement department forecasts 5 Operating FTEs in USA 920 for the Test Period.

1018. Overall the role of the Customer Service department is to provide organization wide leadership and facilitation regarding customers' experience with AltaLink, with the aim to enabling strong levels of customer satisfaction. Key focus areas of the Customer Service department's work efforts include:

- leading the development and implementation of a customer-focused culture and business processes;
- defining and enabling segmented customer value propositions and solutions;
- representing and advocating for the "Voice of the Customer" to support AltaLink to consistently deliver on customer expectations;
- monitoring and ensuring customer satisfaction survey results;
- collaborating with customers and market participants to optimize industry processes to meet customer needs; and
- guiding AltaLink's continuous process improvement to its management system, enabling industry-leading results.

1019. The workload drivers in support of this role include the following:

- a) AltaLink has implemented a segmented customer satisfaction survey process which measures perceptions of AltaLink's performance relative to customer needs. The Customer Service department is responsible to develop and operate this process, facilitate identification of associated improvement plans and manage associated internal and external communications. The Customer Service department assists AltaLink in assimilating the feedback into their day to day operations to improve AltaLink's service for customers.
- b) Customer Service continuously works with AltaLink staff and customers to improve AltaLink's service delivery, which is tailored to the unique needs of different customer segments and key accounts.
- c) Guiding connecting customers through the complex, AESO connection process. This work is resource intensive with significant cross industry coordination between the customer, the AESO, the Distribution Company and internal AltaLink delivery teams. Customer contracts and financial transactions associated with new connections are managed by the Customer Service team.
- d) Operational meetings with existing connected customer segment which includes approximately 150 transmission connected customer sites. These meetings provide customers with detailed reviews of reliability, power quality and future maintenance and outage plans. These meetings have been extremely well received by customers. In our 2019 customer satisfaction survey 96% of customers rated AltaLink's overall customer service as >8 on a scale of 0-10 where 10 is highest. Additionally, 95% of customers surveyed provide positive feedback regarding proactive communications, annual meetings, and outage communications. The strengthened relationships with customers have resulted in increased

- demand for ongoing communications, particularly associated with power quality and reliability incidents which are frequently facilitated by Customer Service representatives.
- e) Customer needs continue to centre around delivery of reliable, safe, cost effective and responsibly delivered transmission services, and related communications. Customer Service FTEs work directly with customers, AltaLink service delivery staff, and industry stakeholders on industry wide initiatives which stem from customer interests. Participation on industry work groups and formal processes in the past have related to mitigating the cost of transmission, expanding customer choice and competition, transmission cost management policy, and streamlining customer connections and Project Delivery.
- f) AltaLink's Customer Service department is responsible for leading AltaLink's continuous process improvement, which is designed to systematically improve key elements of AltaLink's management system (e.g. leadership and governance, strategy and planning, people engagement, customer experience, partners and suppliers, process and Project Management) to deliver value to customer and stakeholders. Along with AltaLink's strategic commitment to Customer Service, this commitment represents a significant and important change initiative which will support AltaLink's ability to sustain and improve its performance as an excellent TFO, based on proven objective standards.

25.2.8 Law and Regulatory

1020. The Law & Regulatory department forecasts 30.6 operating FTEs in USA 920, remaining at 2021 levels.
1021. The Law and Regulatory department is required to provide services for all aspects of AltaLink's business. For regulatory matters, the department is integrally involved in all of AltaLink's ongoing matters arising from the regulation of its business.
1022. The non-regulatory legal work includes corporate and commercial matters. With the growth in AltaLink's business and the tightening of the economy, the number and types of commercial and corporate matters has increased. The Compliance group focuses on monitoring compliance as well as collecting and validating compliance evidence. It works with the AESO, the AUC and the MSA on compliance matters. The CIP standards which came into effect on October 1, 2017 moves the FTE work from capital to operations as part of the on-going sustainment work.

25.2.9 USA 921 - Administration Corporate/Office Supplies and Expenses

1023. USA Activity Code 921 includes staff, office, and other expenses associated with general administration that are not directly chargeable to other accounts. USA 921 is attributable to GOE in support of USA 920. This USA code is general operating expenses only and does not include any contracted manpower nor net salaries and wages. The major activities in this USA Activity Code support corporate and facilities staff and mainly include:
- office expenses, such as printing, stationery, and postage/courier;
 - staff expenses which include professional dues, business-related travel (meetings with bankers, investors, rating agencies, peer groups, accounting standards groups and others), travel related to training and professional development and employee events;
 - training and professional development; and
 - other expenses, such as bank fees and other general expenses.

1024. The revenue requirement for 2022 and 2023 does not include any amount for charitable donations nor sponsorships. The views of the Board in Decision 2003-061 (pages 15-16)¹²⁶ and Decision 2007-012 (pages 41-42)¹²⁷ state that the Board considers that donations are non-utility costs and should be removed from revenue requirements.

Table 25.2.9-1 - USA 921 - Office Supplies and Expenses (\$M)

Expense	2019 Actual	2020 Actual	2021 MU	2022 Test Year	2023 Test Year
Office	0.3	0.3	0.3	0.3	0.3
Staff Related	0.9	0.3	0.5	1.0	1.0
Training & Professional Development	0.1	0.0	0.1	0.1	0.1
Other	0.4	0.4	0.7	0.4	0.4
Total	1.7	1.1	1.5	1.8	1.8

1025. 2020 actuals decreased by \$0.6M from 2019 primarily as a result of deferring activities due to the pandemic. Office expenses and other expenses are forecasted to remain flat at 2019 actual levels while staff expenses and training and professional development are forecasted to eventually return to just above 2019 levels (pre-pandemic). 2021 MU is expected to increase by \$0.5M over 2020, with costs remaining flat in the Test Period. During 2020, staff expenses were lower due to the pandemic and the cancellation of all business-related travel as well as all customer and employee events. It is expected that some of the staff related expenses will resume in 2021 and remain marginally below pre-pandemic levels. To improve employee engagement, which has been significantly impacted by the pandemic, certain modest employee events have also returned and in some cases, are partially funded by employees. Training and professional development is a requirement for a number of professionals such as; engineers, lawyers and accountants, in order to maintain their designations. Based on AltaLink's interpretation of the Uniform System of Accounts, AltaLink has consistently included training and professional development expenses for administrative staff in USA code 921 since 2010.

Table 25.2.9-2 - USA 921 - Office Supplies and Expenses Forecast Increase (\$M)

Forecast Increase	2021 MU versus 2020 Actual	2022 Test Year versus 2021 MU	2023 Test Year versus 2022 Test Year	2 Test Year Average
Inflation	0.0	0.0	0.0	0.0
Other	0.5	0.2	(0.0)	0.1
Total	0.5	0.2	0.0	0.1

Totals may not add due to rounding.

¹²⁶ Decision 2003-061, AltaLink Management Ltd. and TransAlta Utilities Corporation Transmission Tariff for May 1, 2002 – April 30, 2004 TransAlta Utilities Corporation Transmission Tariff for January 1, 2002 – April 30, 2002, August 3, 2003, Section 4.5.1 Donations, pdf 25-26.

¹²⁷ Decision 2007-012 AltaLink Management Ltd. and TransAlta Utilities Corporation 2007 and 2008 Transmission Facility Owner Tariff AltaLink Management Ltd. Settlement of Self Insurance Reserve Account for Period May 1, 2004 to December 31, 2005, February 16, 2007, pdf 47-48.

25.2.10 USA 922 - Administrative Expense Transferred - Credit

1026. There are no administrative expenses transferred. USA 920 includes operating administrative and general salaries which does not include salaries attributed to capital charges.

25.2.11 USA 923 - Outside Services Employed

1027. USA Activity Code 923 represents the fees and expenses of professional consultants and others for general services which are not applicable to a particular operating function or to other accounts. USA 923 is wholly attributable to contracted manpower for corporate functions including mainly legal fees, audit fees, strategic and management consulting and does not include any general operating expenses nor any net salaries and wages.

1028. Contractors can be categorized into base or cyclical expenses. Base contractors include recurring basic business functions that are required to run AltaLink. The contractors that fall into this category include general legal fees, audit fees, search firms, leadership development, strategy development, property tax consultants, customer surveys, labour, pension and employment consultants, and rating agency fees. These types of contractors account for most of the contracting dollars.

1029. The use of cyclical contractors varies based upon projects that are one-time events or are due to a multi-year trend that is expected to end after the project is complete. These projects include GTA and other regulatory issues, and litigation.

Table 25.2.11-1 - USA 923 - Outside Services Employed (\$M)

Expense	2019 Actual	2020 Actual	2021 MU	2022 Test Year	2023 Test Year
Audit Fees	0.5	0.4	0.5	0.5	0.6
Legal Fees	1.8	1.1	1.4	1.5	1.5
Consultants	1.1	1.1	0.7	0.9	0.9
Total	3.4	2.7	2.6	2.9	3.0

Table 25.2.11-2 - USA 923 - Outside Services Employed Contracted Manpower Forecast Increase (\$M)

Forecast Increase	2021 MU versus 2020 Actual	2022 Test Year versus 2021 MU	2023 Test Year versus 2022 Test Year	2 Test Year Average
Inflation	0.0	0.0	0.0	0.0
Other	(0.1)	0.3	0.0	0.2
Total	(0.1)	0.3	0.0	0.2

Totals may not add due to rounding.

1030. The changes in USA 923 are addressed by category: Audit fees, Legal fees and Other contractors. Audit fees: The reduction in audit fees in 2020 was the result of fewer accounting standard changes and an approved GTA. During the Test Period, Audit fees are expected to remain relatively flat at \$0.5M to \$0.55M despite increased audit work on issues such as cloud computing, the regulated asset/liability IFRS exposure draft, and new or outstanding regulatory decisions. AltaLink has been able to leverage the negotiating power of its parent company, Berkshire Hathaway Energy, with its external auditors.

1031. Legal fees: AltaLink incurred lower legal fees of \$0.7M in 2020 compared to 2019, mainly related to lower costs associated with commercial disputes and other business matters in 2020, as some of these matters were rigorously managed due to the onslaught of Covid-19 and the economic downturn. The 2021 MU forecasts an increase of \$0.3M over 2020 as a result of a gradual return to normal commercial activity. Moving forward, as the economy continues to recover and normal commercial activity returns on usual timeline, AltaLink is forecasting an increase in legal expense. The \$1.5M in legal costs for the Test Period represents the level of legal fees in the ongoing operation of AltaLink’s business
1032. Other contractors: The 2021 MU is forecasted to decrease by \$0.4M from 2020 Actuals through costs saving efforts partially offset by escalation. For the Test Period, costs are forecast to remain flat at \$0.9M. AltaLink is looking to have its experienced internal resources provide some of these third-party services.

25.2.12 USA 924 - Insurance Premiums

1033. USA Activity Code 924 includes the cost of insurance premiums. AltaLink’s forecast insurance premiums for 2021-2023 are set out in Table 25.1.1-1 below.

Table 25.2.12-1 - USA 924 - Insurance Premiums (\$M)

	2019 Actual	2020 Actual	2021 MU	2022 Test Year	2023 Test Year
Expense					
Total	3.7	4.1	5.1	6.3	7.3

1034. Additional details on insurance coverage, limits, deductibles and insurance market conditions are provided in **Appendix 3**.

25.2.13 USA 925 - Injuries and Damages

1035. USA 925 include the annual cost to protect the utility against injury and damage claims of employees or others, losses of such character not covered by insurance, and expenses incurred in settlement of injuries and damage claims.
1036. Costs found in USA 925 include both SIR and small damage claims. A summary of each can be found in the tables below.
1037. AltaLink is forecasting SIR funding of \$0.9M for each of 2022 and 2023 as per Table 25.2.13-1 below. Claims are forecast at \$0.9M for each of 2022 and 2023. Refer to Schedule 29-2 for the SIR continuity schedule.¹²⁸ The SIR policy can be found in **Appendix 3-C**.
1038. As per Table 25.2.13-2 below small damage claims are forecast at \$0.1M for each of 2022 and 2023.

¹²⁸ MFR Schedules, Schedule 29-2 Schedule of Reserve for Injuries and Damages (SIR).

Table 25.2.13-1 – USA 925 – Self Insurance Reserve (\$M)

Expense	2019 Actual	2020 Actual	2021 MU	2022 Test Year	2023 Test Year
Funding	1.2	1.1	1.1	0.9	0.9
SIR Claims (net of insurance proceeds)	(0.4)	0.0	1.1	0.9	0.9

Table 25.2.13-2 – USA 925 – Small Damage Claims (\$M)

Expense	2019 Actual	2020 Actual	2021 MU	2022 Test Year	2023 Test Year
Funding	0.1	0.1	0.1	0.1	0.1
Small Damage Claims	0.0	0.0	0.1	0.1	0.1

Table 25.2.13-3 – USA 925 – Total Claims (\$M)

Expense	2019 Actual	2020 Actual	2021 MU	2022 Test Year	2023 Test Year
SIR Claims (net of insurance proceeds)	(0.4)	0.0	1.1	0.9	0.9
Small Damage Claims	0.0	0.0	0.1	0.1	0.1
Total Claims	(0.4)	0.0	1.2	1.0	1.0

25.2.14 USA 926 - Employee Pension and Benefits

1039. USA 926 represents the cost of pensions only, as determined by IAS 19 under IFRS. This includes the cost of AltaLink's DC Plan, PRB Plan, and pension administration. Other employee benefits are fully attributed to operating and capital functions and are included in labour costs.

1040. Refer to Section 1.9.7 for a comprehensive write-up of pensions and PRB.

Table 25.2.14-1 - USA 926 - Employee Pensions and Benefits (\$M)

Expense	2019 Actual	2020 Actual	2021 MU	2022 Test Year	2023 Test Year
Total	3.4	3.2	3.3	3.6	3.7

Table 25.2.14-2 - USA 926 - Employee Pensions and Benefits Forecast Increase (\$M)

Forecast Increase	2021 MU versus 2020 Actual	2022 Test Year versus 2021 MU	2023 Test Year versus 2022 Test Year	2 Test Year Average
Inflation	0.1	0.1	0.1	0.1
Other	(0.0)	0.2	(0.0)	0.1
Total	0.0	0.3	0.1	0.2

1041. Employee pension and benefits are lower in 2020 due to higher PRB in 2019, as reflected in the actuarial valuation report provided by a third party. The increase in 2021 is related to inflation. The additional increase in other of \$0.2M in 2022 is the result of lower capitalization due to the

work changing from capital to operating in nature as the bulk of the work will be focused on maintaining the current asset base as well more CIP compliance activities by Regulatory and IT. The inflation increase in 2022 and 2023 is due to salary increases of 2.96% each year as detailed in Section 1.9.4. As detailed in Section 1.9.7, AltaLink does not forecast any changes to its DC Plan and PRB Plan.

25.2.15 USA 928 - Commission Expenses (Hearing Costs)

1042. USA Activity Code 928 includes all third party expenses related to AltaLink's regulatory proceedings. Actual expenses charged to USA 928 are solely a function of hearing expenses reviewed and approved under AUC Rule 022. Forecast expenses are discussed in Section 29.6 as part of the HCR.
1043. USA 928 is a function of both the number and scope of regulatory proceedings that may potentially result in charges to AltaLink's HCR. This account is therefore capable of varying significantly year-over-year depending upon known and anticipated regulatory proceedings.
1044. Schedule 29-7¹²⁹ in this Application includes a listing of the actual/approved and forecast Commission hearing cost expenses for the period 2019 through to 2023. Compared to the previous 2019-2021 GTA (amendment filed on April 1, 2019), the actual and forecast hearing cost expenses for the three-year 2019-2021 period now total \$4.599M. This hearing cost total for 2019-2021 is \$4.206M or almost 48 percent less than the \$8.805M which was forecast on April 1, 2019. The main reasons for the sharp reduction in hearing cost expenses over 2019-2021 include:
- Consolidation of proceedings significantly reduced costs; examples of this include the 2016, 2017 and 2018 deferral account proceedings which were originally forecast as separate proceedings but ended up being consolidated into one proceeding.
 - Cancellation and truncation of forecast proceedings such as the Asset Utilization and the 2020 Generic Cost of Capital proceedings reduced hearing cost expenses over 2019-2021.
 - The 2019-2021 GTA Negotiated Settlement Agreement significantly reduced the forecast expenses for both AltaLink and intervenors with the shortened regulatory process.
1045. In comparison, total forecast hearing cost expenses in the 2022-2023 GTA period, as detailed in Schedule 29-7, only total \$1.550M for the two-year period. Because of this lower level of forecast hearing cost expenditures over 2022-2023 combined with the reduced actual expenses from the prior 2019-2021 GTA period, AltaLink is now forecasting a HCR Settlement Account Adjustment of \$3.760M at the end of 2022. As shown in Schedule 29-7, this adjustment (which is shown on Line 42) will result in the HCR account having a zero dollar closing balance at the end of 2023.
1046. Table 25.1.1-1 below shows at a summarized level, AltaLink's actual and forecast hearing cost funding requirement over the 2019 to 2023 Test Period, and the section which follows below provides detailed forecast hearing cost payment and forecast funding requirement information for the 2022-2023 period.

¹²⁹ MFR Schedules, Schedule 29-7 Schedule of Rate Hearing Costs – Total.

Table 25.2.15-1 - USA 928 - Commission Expense Funding Requirement (\$M)

	2019	2020	2021	2022	2023
Expense	Actual	Actual	MU	Test Year	Test Year
Total	1.7	1.5	1.4	0.0	0.0

1047. As shown below, after taking into account actual and forecast payments over the years 2019 to 2021, and the forecast payments and settlement account adjustment in the 2022-2023 Test Period, the HCR is now forecast to have a zero dollar closing balance at the end of 2023.

2022 Funding Forecast

1048. Due to the anticipated 2022 opening balance of the HCR, AltaLink is forecasting that in 2022 this account will not require any additional funding to cover the following forecast expenses:

- AltaLink 2022-2023 GTA & 2020 Deferral Accounts:
 - AltaLink's expense \$0.800M
 - AltaLink's share of Intervener cost awards \$0.700M
- Settlement Account Adjustment \$3.760M
- Total Forecast Payments \$5.260M
- Less Opening Balance \$5.310M
- Plus Forecast Funding Provision \$0.000M
- Closing Balance at year end 2022 \$0.050M

Totals may not add due to rounding.

2023 Funding Forecast

1049. Similar to 2022, AltaLink is also forecasting that in 2023 the HCR will not require any additional funding to cover forecast expenses. The forecast expenses and closing balance in 2023 is detailed as follows:

- AltaLink 2021 Deferral Accounts:
 - AltaLink's expense \$0.025M
 - AltaLink's share of Intervener cost awards \$0.025M
- Total Forecast Payments \$0.050M
- Less Opening Balance \$0.050M
- Plus Forecast Funding Provision \$0.000M
- Closing Balance at year end 2023 \$0.000M

Totals may not add due to rounding.

AUC Actual Cost Decisions 2019-2021

1050. Table 25.1.1-2 below, provides a list of cost decisions issued by the AUC from January 1, 2019 to March 31, 2021.

Table 25.2.15-2 - USA 928 – Actual Cost Decisions & Expenses

2019 Calendar Year Cost Decisions	Amount
24913-D01-2019 - 2017-2018 GTA NSA Revenue Sharing - AltaLink Expense	0.003
24082-D01-2019 - 2014-2015 DACDA - AltaLink Expense	0.479
24082-D01-2019 - 2014-2015 DACDA - Interveners Expense	0.766
24676-D01-2019 - 2014-2015 DACDA Compliance - AltaLink Expense	0.012
24676-D01-2019 - 2014-2015 DACDA Compliance - Intervener Expense	0.006
Cost Award Advance - 2019-2021 GTA - Intervener Expense	0.407
Total for 2019 Period	1.672
2020 Calendar Year Cost Decisions	Amount
25376-D01-2020-000021 - 2019-2021 GTA NSA - AltaLink Expense	0.673
25376-D01-2020-000021 - 2019-2021 GTA NSA - Intervener Expense Excludes 2019 Cost Award Advance	0.567
25728-D01-2020 2019-2021 GTA Compliance - AltaLink Expense	0.012
26073-D01-2020 - 2021 GCOC - AltaLink Expense	0.232
26073-D01-2020 - 2021 GCOC - Interveners Expense	0.034
Total for 2020 Period	1.519
2021 YTD Calendar Year Cost Decisions	Amount
26098-D01-2021 - 2019-2021 GTA NSA R&V of Decision 23848 - AltaLink	0.022
26098-D01-2021 - 2019-2021 GTA NSA R&V of Decision 23848 - Intervener	0.005
Deferrals 2016-2018 - AltaLink Expense	0.233
Deferrals 2016-2018 - Intervener Expense	0.577
Deferrals 2016-2018 Edm Region - AltaLink Expense	0.181
Deferrals 2016-2018 Edm Region - Intervener Expense	0.125
Total for 2021 YTD Period (January 1, 2021 to March 31, 2021)	1.142

Totals may not add due to rounding.

1051. Table 25.2.15-2 above, shows a 2021 total hearing cost expense amount of \$1.142M. This amount only includes actual hearing cost decisions issued by the AUC to the end of March 31, 2021. As shown in Schedule 29-7,¹³⁰ once anticipated hearing cost decisions over the balance of 2021 are included, the total actual and forecast hearing cost expenses in 2021 are expected to increase to \$1.408M.

25.2.16 USA 930.1 - General Advertising Expenses

1052. USA Activity Code 930.1 includes the cost of advertising and related activities not provided for elsewhere.
1053. USA 930.1 is primarily driven by activities that include media advertising (newspapers, periodicals, billboards, and radio), developing advertising material, and retaining the services of advertising agencies and commercial artists.

¹³⁰ MFR Schedules, Schedule 29-7 Schedule of Rate Hearing Costs – Total.

1054. AltaLink will continue advertising to keep the public informed of operations which may impact their day-to-day lives. Some of these operations will include: construction activities, low-level helicopter flights, scheduled outages or operating maintenance work in their communities. This advertising may include many mediums.
1055. AltaLink is also a member of the JUST, investing into the power line safety awareness campaign. Alberta's electric utilities and the Alberta Government formed JUST to collectively help address the common safety issue of contact with power lines. JUST's mandate is to positively affect change in attitudes and behaviours toward power line safety, to help reduce power line incidents. Through ongoing safety awareness and industry education, JUST is committed to helping breed a long-term "culture of power line safety" in Alberta. This involves everyone working around overhead or underground power lines, including electric utilities, oil and gas, construction, forestry and agricultural industries. AltaLink supports JUST's public education campaigns in multi-media.

Table 25.2.16-1 - USA 930.1 - General Advertising Expenses (\$M)

Expense	2019 Actual	2020 Actual	2021 MU	2022 Test Year	2023 Test Year
Total	0.0	0.0	0.0	0.0	0.0

1056. General advertising expenses are minimal and expected to remain at the same level as shown in Table 25.2.16-1 above, averaging just under \$0.05M annually for the Test Period.

25.2.17 USA 930.2 - Miscellaneous General Expenses

1057. USA Activity Code 930.2 includes the cost of general management not provided for elsewhere. USA 930.2 is primarily related to credit facility fees, trustee fees, Board of Directors fees, and educational partnerships.

Table 25.2.17-1 - USA 930.2 - Miscellaneous General Expenses (\$M)

Expense	2019 Actual	2020 Actual	2021 MU	2022 Test Year	2023 Test Year
Directors Fees	0.6	0.6	0.6	0.6	0.6
Credit Facility	0.3	0.5	0.4	0.3	0.3
Associated Dues & Other	0.2	0.1	0.3	0.2	0.2
Total	1.1	1.2	1.3	1.1	1.1

1058. During the Test Period, these expenses are expected to remain stable at 2020 expenditure levels. No changes are forecasted for Directors' fees. Credit facilities are discussed in detail in Section 28.4. Other expenses are lower in 2020 due to cost savings and delays of educational partnerships and some professional association dues, related to the pandemic. These are forecasted to return in 2021 and beyond.

Table 25.2.17-2 - USA 930.2 - Miscellaneous General Expenses Forecast Increase (\$M)

Forecast Increase	2021 MU versus 2020 Actual	2022 Test Year versus 2021 MU	2023 Test Year versus 2022 Test Year	2 Test Year Average
Inflation	0.0	0.0	0.0	0.0
Other	0.2	(0.2)	(0.0)	(0.1)
Total	0.2	(0.2)	(0.0)	(0.1)

Totals may not add due to rounding.

25.2.18 USA 931 - Rents (Other Than Head Office)

1059. USA Activity Code 931 shall include rents properly includible in utility operating expenses for the property of others used, occupied, or operated in connection with utility operations other than head office rent. This account shall include rents for other offices and field offices.
1060. Non-head office rents include offices for the backup control centre and field offices. The back up control centre operation supplies back up services to AltaLink's main control centre.
1061. Field offices in Red Deer and Lethbridge are where AltaLink crews are housed to support field activities.

Table 25.2.18-1 - USA 931 - Rents (Other Than Head Office) (\$M)

Expense	2019 Actual	2020 Actual	2021 MU	2022 Test Year	2023 Test Year
Other GOE	0.1	0.1	0.1	0.1	0.1
Total	0.1	0.1	0.1	0.1	0.1

1062. As shown in Table 25.2.18-1 above, there are no forecast expenses for labour and contracted manpower in USA Activity Code 931.
1063. The expense recorded in USA Activity Code 931 is attributable to non-head office space requirements of AltaLink staff and prevailing market rates for office space when AltaLink commits to a lease.
1064. AltaLink rents facilities in three locations outside the Head Office complex:
- AESO Facilities (AltaLink Emergency Control Centre – AECC);
 - Red Deer; and
 - Lethbridge.
1065. The AECC contains no AltaLink staff. The AECC facility ensures an alternate site in case of a disaster or AltaLink's primary control centre site is not accessible.
1066. The Red Deer lease affords office, garage, yard and training space to AltaLink staff working out of Red Deer. This location provides effective response times for system trouble in the Alberta Central Area and the associated gas plant facilities in the Red Deer Area.
1067. The Lethbridge facility provides office and yard space for field staff working in the Lethbridge area. This location provides effective response times for system trouble in the southern part of AltaLink's transmission area.

Table 25.2.18-2 - USA 931 - Rents (Other than Head Office) Forecast Increase (\$M)

	2021 MU versus 2020 Actual	2022 Test Year versus 2021 MU	2023 Test Year versus 2022 Test Year	2 Test Year Average
Forecast Increase				
Other GOE	0.0	(0.0)	(0.0)	(0.0)
Total	0.0	(0.0)	(0.0)	(0.0)

1068. As shown in Table 25.2.18-2 above, there are no forecast increases in the Test Period.

25.2.19 USA 931.1 - Head Office Rent

1069. USA Activity Code 931.1 includes rents properly includible in utility operating expenses for the property of others used, occupied, or operated in connection with the Head Office.

Table 25.2.19-1 - USA 931.1 - Head Office Rent (\$M)

	2019 Actual	2020 Actual	2021 MU	2022 Test Year	2023 Test Year
Expense					
Other GOE	1.2	1.1	1.1	1.2	1.2
Total	1.2	1.1	1.1	1.2	1.2

Totals may not add due to rounding

1070. As shown in Table 25.1.1-1 above, there are no forecast expenses for labour and contracted manpower in USA Activity Code 931.1.

1071. The expense recorded in USA Activity Code 931.1 is attributable to office space requirements of AltaLink staff at the committed lease rates.

1072. Currently in 2021, Head Office rent in USA Activity Code 931.1, includes the leases at two office buildings; AltaLink Plaza and the AltaLink East building located in the vicinity of 2611 - 3rd Avenue South East. AltaLink Plaza is a 95,225 square foot building and is 23 year old. AltaLink East building is a 69,793 square foot 2 story low rise building which is 24 year old.

Table 25.2.19-2 - USA 931.1 - Head Office Rent Forecast Increase (\$M)

	2021 MU versus 2020 Actual	2022 Test Year versus 2021 MU	2023 Test Year versus 2022 Test Year	2 Test Year Average
Forecast Increase				
Other GOE	(0.1)	0.1	(0.0)	0.1
Total	(0.1)	0.1	(0.0)	0.1

Totals may not add due to rounding

1073. As shown in Table 25.2.19-2 above, the Head Office rent expenses are forecast to remain stable for the Test Period.

Table 25.2.19-3 - USA 931.1 - Head Office Rent Forecast Increase (\$M)

Forecast Increase	2021 MU versus 2020 Actual	2022 Test Year versus 2021 MU	2023 Test Year versus 2022 Test Year	2 Test Year Average
Inflation	0.0	0.0	0.0	0.0
Other	(0.1)	0.1	(0.0)	0.0
Total	(0.1)	0.1	(0.0)	0.1

Totals may not add due to rounding

1074. As shown in Table 25.2.19-3 above, the GOE for the Test Period is forecast to remain stable for the Test Period.

25.2.20 USA 934 – Security and IT A&G Expenses

25.2.20.1 Security and IT A&G Expenses – Overview

1075. This account includes the necessary operating expenses needed to support AltaLink’s security, asset management, operational, financial and corporate systems which underpin the business functions needed to a reliable AIES.
1076. Included within this account are the: compensation (salaries and expenses) for employees of the IT department related to A&G activities properly chargeable to utility operations for the provision of regular utility services and not chargeable directly to a particular operating function; contracted manpower to support operations of the IT functions; and general operating expenses which include software and licence support costs.
1077. Effective security and IT operations are key to supporting the stability of the electricity network, business functions and field organization through which AltaLink sustains the safe, secure, reliable and efficient operation of its transmission system.
1078. AltaLink is in the process of hiring three FTE resources to support IT vacancies needed to perform current ongoing operations, as well as support and maintain the new systems implemented in 2021 and during the Test Period. During 2020 and 2021, AltaLink has partially backfilled these vacancies through overtime, however AltaLink experienced, and is continuing to experience, delays in cyber vulnerability remediation work.
1079. During the 2019–2021 GTA period, AltaLink has identified and secured \$1.1M of technology operating cost savings as well as \$2.5M of vendor contract procurement costs. These initiatives helped offset some of the cost increase from licence and support costs associated with the new security and IT systems implemented during 2019–2021. Included within the Test Period forecasts for this application in 2022–2023 is an additional \$1.5M of technology cost savings.
1080. Customers benefit from effectively operated and well maintained security and IT systems as:
- Security and IT expenditures are needed to operate the systems that ensure the safe, reliable and secure operation of the AIES;
 - Security and IT expenditures are needed to urgently maintain or patch existing systems which have an: operational fault, security vulnerability or to meet increasing and changing business needs; and

- Security and IT expenditures are needed to support increasing business needs for IT support, or for systems or storage which are provided via a subscription service (cloud).
1081. In the support of a reliable AES, AltaLink must ensure a subsequent level of high reliability performance of IT systems. The main list of IT systems and infrastructure supported under this account are:
- Alberta Reliability Standards Critical infrastructure protection systems¹³¹
 - Customer support systems – connection process¹³²
 - Information security standards and compliance (ISO 27001/19)
 - External consultation and customer communication systems
 - General Ledger and Financial reporting systems
 - Treasury systems
 - Accounts Payable
 - Procurement and materials management
 - Risk management and internal audit
 - HR and Payroll systems
 - Asset Management
 - Work Management
 - Project Management systems
 - Learning management systems
 - Safety and incident management systems
 - Engineering systems
 - Business process & analytics systems
 - GIS and field mobile solutions
 - Document/records management
 - Office productivity tools and systems (email, calendar, Microsoft 365 technologies)
 - Enterprise back office (file servers, print services, remote web access, etc)
 - Technical architecture and design
 - Mobility systems
 - Cyber Security and vulnerability management systems
1082. The change in Operating expenditure activities since the previous 2019–2021 GTA application was submitted in August 2018, include:
- the onset of the COVID-19 pandemic in March 2020, and the public health orders¹³³ requiring businesses to have employees and contractors working from home has increased IT licencing and support costs to support remote working;
 - the increasing number of attacks against Critical Infrastructure supply chain¹³⁴ is requiring: an increasing number of supply chain security audits/reviews; tighter onboarding procedures for new suppliers and vendors; revised contract terms and conditions for cyber

¹³¹ AESO Alberta Reliability Standards <https://www.aeso.ca/rules-standards-and-tariff/alberta-reliability-standards/>

¹³² AESO Connection Process, <https://www.aeso.ca/grid/connecting-to-the-grid/changes-to-the-connection-process/>

¹³³ Government of Alberta, Covid-19 Orders and Legislation, <https://www.alberta.ca/covid-19-orders-and-legislation.aspx>

¹³⁴ Canadian National Cyber Threat Assessment, November 2020, Exploiting Supply Chains page 25, <https://cyber.gc.ca/en/guidance/national-cyber-threat-assessment-2020>

protection and notification; and scrutiny of the vendor performance against these agreements;

- Regulatory requirements continue to increase in both number and complexity of evidential burden, requiring investments in enhanced, integrated and automated systems with the subsequent additional Security and IT operational expenditures;
- AltaLink has increased the frequency and volume of software patching to address the increasing number of software, operating system and hardware vulnerabilities. Whereas AltaLink in prior periods would have patched software on a planned cyclical basis, the increasing number and severity of zero-day vulnerabilities has led to more frequent, more complex patching activities at additional operating cost.

According to an MSSP alert¹³⁵, nearly 70 percent of all attacks involved zero day malware. A zero-day vulnerability is a software security flaw that is known to the software vendor but doesn't have a patch in place to fix the flaw. It has the potential to be exploited by cybercriminals which is then known as zero-day malware. The growth in zero-day malware is an indication that more advanced malware detection engines are required;

- software vendors are increasingly offering their products and services exclusively in a cloud based format (e.g., software as a service) which is driving increasing security risk reviews; and
- the opportunities for digital transformation of AltaLink's processes continue as vendors incorporate automation tools and data analytics into their service offerings.

25.2.20.2 Security and IT A&G Expenses – Forecast Activity Volumes for 2022 - 2023

1083. Over the Test Period, AltaLink is forecasting increases in a number of IT operation and support activities related to:

- Identification, containment, analysis and eradication of cyber threats in response to the increasing number of cyber threats as shown in Section 10.4.3.4.
- Updates and patching required to protect AltaLink's systems, networks and servers from an increasing and evolving cyber security threat.
- Increasing IT data storage in line with the business requirements for: GIS support for Wildfires response, LiDAR records for line clearance requirements, new direct assigned capital projects, as well as increasing evidential requirements for Alberta Reliability Standards (CIP¹³⁶, FAC¹³⁷ and PRC¹³⁸ requirements).

1084. As shown in Section 10.4.3 Security of this Application, AltaLink has identified the increasing and evolving cyber threat specifically targeting critical infrastructure, and which poses a direct threat to the reliability of the AIES. In order to protect AltaLink's systems from a key threat vector, AltaLink must undertake an increasing level of software and firmware patching of vulnerabilities in our assets. Figure 25.2.20.2-1 from the US NIST National Vulnerabilities Database

¹³⁵ MSSP Alert, November 2020, <https://www.msspalert.com/cybersecurity-research/malware-study-watchguard-q2-2020/#:~:text=Despite%20the%20eight%20percent%20decrease,advanced%20detection%20engines%20to%20prevent.>

¹³⁶ AESO Alberta Reliability Standards: Critical Infrastructure Protection standards (CIP); <https://www.aeso.ca/rules-standards-and-tariff/alberta-reliability-standards/>

¹³⁷ AESO Alberta Reliability Standards: Facilities Design, Connections and Maintenance - FAC-008 Facility Ratings; <https://www.aeso.ca/rules-standards-and-tariff/alberta-reliability-standards/fac-008-facility-ratings/>

¹³⁸ AESO Alberta Reliability Standards: Protection and Control - PRC-005 Protection System, Automatic Reclosing, and Sudden Pressure Relaying Maintenance; <https://www.aeso.ca/rules-standards-and-tariff/alberta-reliability-standards/prc-005-protection-system-automatic-reclosing-and-sudden-pressure-relaying-maintenance/>

demonstrates the increase in vulnerabilities published by vendors of their software, firmware and hardware which must be patched or upgraded in order to maintain reliability of the systems supporting the AIES.

- 1085. The increasing level of sophistication of cyber attackers¹³⁹ is also requiring AltaLink to invest in additional, defensive and recovery technologies to address the threat.
- 1086. AltaLink forecasts that increasing and evolving cyber security threats as shown in Section 10.4 will continue to drive increasing workload for patching and system upgrades. The increasing level of patching requires additional labour and CMP resources.

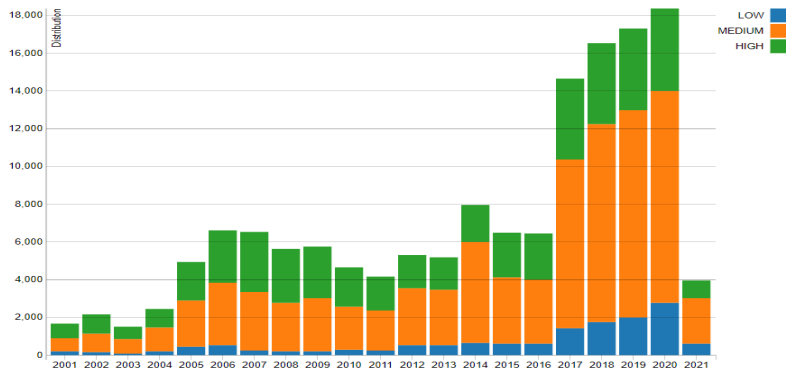


Figure 25.2.20.2-1 – Common Vulnerability Scoring System (CVSS) Severity Over Time¹⁴⁰

- 1087. AltaLink’s data storage requirements have increased by 39% over the period 2019 to 2020. **Appendix 13-B3-06** Data Storage Program demonstrates the actual increases in storage. The associated increase in operating and licence support costs for the additional storage are included within USA 934 IT A&G. Table 25.2.20.2-1 below shows the increase in data storage over the period Q4 2019 to Q4 2020.

Table 25.2.20.2-1 – 1: 12 Months of Data Storage Growth in Terabytes¹⁴¹

Storage Medium	Q4 2019	Q2 2020	Q4 2020
VNX primary	184	214	202
ECS primary	655	762	960
DD primary	416	371	402
VxRail PRD	0	428	368
XIO 540-1	132	62	0
Total	1387	1837	1932

- 1088. Service desk call volumes are forecast to remain stable from 2021 levels over the Test Period as shown in Figure 25.2.20.2-2. The reduction in forecasted call volumes is expected to be achieved with recent IT self-service projects and further deployment of automation in the Test Period.

¹³⁹ CBC news, November 17 2020, Hacking attacks against Governments growing more sophisticated, Intelligence Agency warns. <https://www.cbc.ca/news/politics/hacking-cyber-crime-cse-1.5803881>

¹⁴⁰ US National Institute of Standards and Technology, National Vulnerability Database <https://nvd.nist.gov/general/visualizations/vulnerability-visualizations/cvss-severity-distribution-over-time>

¹⁴¹ A Terabyte is a unit of computer memory or data storage capacity equal to 1,024 gigabytes (2⁴⁰ bytes).

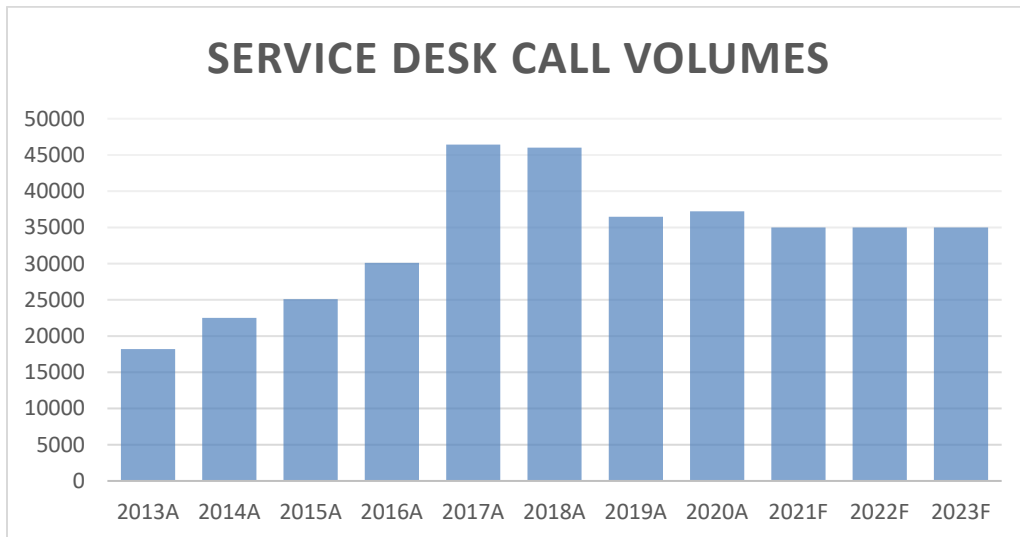


Figure 25.2.20.2-2 – 2013 to 2023 forecast Service Desk Call Volumes (H)

1089. Server support requests are forecast to remain stable for the Test Period. This flattening is attributed to implementation of the multi-year server strategy which has contributed to an infrastructure platform that has reduced support requests. This is shown in Figure 25.2.20.2-3 below.

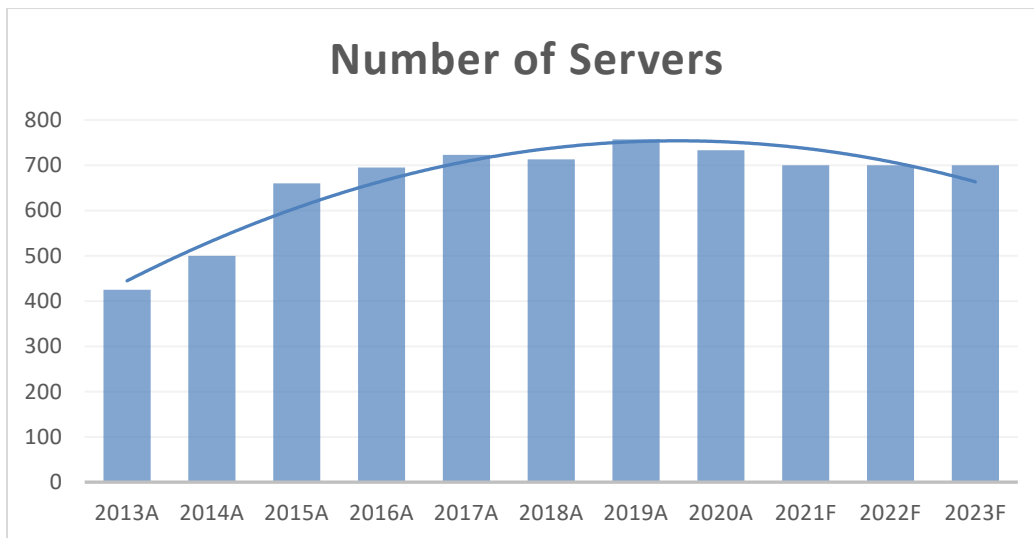


Figure 25.2.20.2-3 - Server Support Requests (H)

25.2.20.3 IT A&G Expenses – Forecast Expenditures for 2022 - 2023

1090. Table 25.2.20.3-1 below displays a breakdown of the 2019–2023 USA 934 - IT A&G Expenses.

Table 25.2.20.3-1 - USA 934 – Security and IT General & Administrative Expense (\$M)

Expense	2019 Actual	2020 Actual	2021 MU	2022 Test Year	2023 Test Year
Labour	3.1	2.5	3.5	3.7	3.8
Contracted Manpower	2.0	1.8	1.7	1.8	1.8
Other GOE	4.9	5.7	6.2	6.2	6.3
Total	9.9	10.1	11.4	11.7	11.9

Totals may not add due to rounding.

1091. Approximately 35% of USA 934 in the 2020 test year is attributable to labour expenses with an additional 15% attributed to contracted manpower. The remainder of this account is attributable to GOE. The forecast increase within USA 934 is directly related to inflation, changes in IT support requirements and increases in software licensing further described below.

Table 25.2.20.3-2 - USA 934 – Security and IT General & Administrative Expense Forecast Increase (\$M)

Forecast Increase	2021 MU versus 2020 Actual	2022 Test Year versus 2021 MU	2023 Test Year versus 2022 Test Year	2 Test Year Average
Labour	1.0	0.1	0.1	0.1
Contracted Manpower	(0.1)	0.0	0.0	0.0
Other GOE	0.4	0.0	0.1	0.1
Total	1.4	0.2	0.2	0.2

Totals may not add due to rounding.

1092. The majority of the effort and expenses within this account are for full time labour, contracted labour, and support and maintenance to deliver the IT service. AltaLink is forecasting an annual average increase of operating expenses over the 2022–2023 Test Period of \$0.8M. Of this, an increase of \$0.5M is attributable to Labour, and an average increase of \$0.3M is attributed to Other GOE. Labour, CMP and Other GOE are discussed below.
1093. Section 25.2.20.1, Security and IT A&G Expenses – Overview, highlights the external and internal business drivers which are increasing activity and expenditure levels for AltaLink’s security and IT teams.
1094. AltaLink must continue to resource and invest in Security and IT operations to ensure the reliability of the AIES against the increasing and evolving threat highlighted in Section 10.4, as well as meet the growing needs of the regulator¹⁴² and the business.

¹⁴² AESO Reliability Standards Work Plan <https://www.aeso.ca/assets/Uploads/March-2021-ARS-Work-Plan.pdf>

25.2.20.4 Labour
Table 25.2.20.4-1 - USA 934 – Security and IT General & Administrative Expense Labour Forecast Increase (\$M)

	2021 MU versus 2020 Actual	2022 Test Year versus 2021 MU	2023 Test Year versus 2022 Test Year	2 Test Year Average
Forecast Increase				
Inflation	0.1	0.1	0.1	0.1
Other	1.0	0.0	0.0	0.0
Total	1.0	0.1	0.1	0.1

Totals may not add due to rounding.

1095. AltaLink forecasts that the underlying rate for labour expenditure over the Test Period will be in line with the 2019 levels adjusted for the impact of Covid-19 and specific cyber security capital projects in the year. Hiring of operating vacancies was delayed during COVID-19 and are being progressed in 2021. In addition, the need to address system upgrades in 2020 for cyber security threats (e.g. Solarwinds) resulted in specialist operating resources supporting capital projects over the year. Further details with respect to Labour are discussed in Section 1.8 Forecasting Methodology.
1096. Labour is expected to increase in the 2022 test year versus 2021 MU by \$0.7M due to: inflation increases of \$0.1M, and \$0.6M due to full year-effect of filling the vacancies from H2 of 2021.
1097. Labour is expected to increase by \$0.1M in 2023 test year versus 2022 test year due to inflation.
1098. AltaLink is forecasting no increase in FTEs during the Test Period and confirms that the forecast FTEs will enable it to deliver all the functional support services identified in this USA during the Test Period. For more information related to these vacancies refer to **Appendix 2B** and **Appendix 2D** of this Application.

Table 25.2.20.4-2 - USA 934 - Operation & Maintenance Security and IT Support FTEs

	2019 Actual	2020 Actual	2021 MU	2022 Test Year	2023 Test Year
Expense					
Total Year End FTEs	25.6	26.0	29.0	29.0	29.0

25.2.20.5 Contracted Manpower

1099. AltaLink’s managed services continue to be required to augment the demand for resourcing and the ability to secure hard to hire skills.
1100. Managed services is the practice of transferring day-to-day related management responsibility as a strategic method for improved, effective and efficient operations. The person or organization that owns or has direct oversight of the organization or system being managed is referred to as the offered, client, or customer. The person or organization that accepts and provides the managed service is regarded as the service provider.
1101. AltaLink remains accountable for the functionality and performance of managed service and does not relinquish the overall management responsibility of the organization or system.
1102. The benefits of a managed service are:

- ramp up and down resource capacity based on growth and technical competencies;
- timely access to a variety of seasoned, senior, certified technical skills;
- reduce dependencies on skills market variability; and
- focus full time staff on high value activities and provide additional on the job training.

1103. Contracted Manpower for this account includes activities for:

- service desk and desk side services;
- response to security events and software and infrastructure patching;
- support and maintenance of servers; and
- select managed services to support business systems.

1104. Contracted manpower in the Test Period includes the forecast costs based on the contract renewal for the managed service for infrastructure and operations. The contract includes service provisions for the continued management of key operations services for the back office. The service desk serves as a front line support group that provides a central service and problem resolution centre for IT issues, which include computer problems, system and hardware, network issues, access to data servers, printing services, software problems and upgrades, including desktop tools, e-mail software and specialized technical tools.

1105. Through automation efficiencies, AltaLink forecasts to absorb the increased IT support (CMP) workload needed to patch security vulnerabilities.

Table 25.2.20.5-1 - USA 934 – Security and IT General & Administrative Expense Contract Manpower Forecast Increase (\$M)

	2021 MU versus 2020 Actual	2022 Test Year versus 2021 MU	2023 Test Year versus 2022 Test Year	2 Test Year Average
Inflation	0.0	0.0	0.0	0.0
Other	(0.1)	0.0	0.0	0.0
Total	(0.1)	0.0	0.0	0.0

Totals may not add due to rounding.

1106. AltaLink is forecasting an increase of \$0.1M on average in Contracted Manpower for USA 934 for the Test Period.

25.2.20.6 Other GOE

1107. AltaLink’s Other General Operating Expenses includes costs for:

- annual software maintenance and support for AltaLink’s currently installed systems, as well as new systems and hardware that will be implemented during the Test Period;
- meal, traveling and incidental expenses; and
- peripheral hardware.

1108. This account will vary over time as AltaLink continues to:

- invest in new systems and hardware to support business requirements per Section 10.4 and the business cases in **Appendix 13-B** Information Services
- review, refine, consolidate or retire software agreements when required; and
- rationalize license agreements with vendors.

Table 25.2.20.6-1 - USA 934 – Security and IT General & Administrative Expense GOE Forecast Increase (\$M)

	2021 MU versus 2020 Actual	2022 Test Year versus 2021 MU	2023 Test Year versus 2022 Test Year	2 Test Year Average
Forecast Increase				
Inflation	0.0	0.1	0.1	0.1
Other	0.4	(0.0)	0.0	(0.0)
Total	0.4	0.0	0.1	0.1

Totals may not add due to rounding.

1109. Annual software vendor licence maintenance costs have typically been in the range of 20% to 22% per year of the initial software purchasing costs. As AltaLink has implemented new capital projects to meet the security and IT business requirements during the 2019– 2021 GTA period, operating costs have correspondingly increased, offset in some part by AltaLink’s efficiencies in the management of hardware, software licences and contractor costs. For cloud based systems (e.g. software as a service), operating costs will increase in line with the usage measures such as the number of users or storage requirements.
1110. AltaLink is forecasting an average annual increase of \$0.3M in Other GOE over the 2022–2023 Test Period. The increase in this category are largely attributed to: \$0.3M of additional licencing and support costs for AltaLink’s Learning Management Systems needed for increased training and delivery of CIP programs per the AESO requirements; \$0.2M of business process analytics software to meet business requirements; \$0.05M of additional maintenance and support costs for service desk software to track software and hardware versions for cyber threat management, and management of IT assets; \$0.05M of additional cyber security software licencing and support costs.

25.2.21 Security and IT A&G Expenses Summary

1111. AltaLink’s Security and IT systems support the ongoing operation and effectiveness of AltaLink’s assets and workforce in providing services to customers.
1112. There have been many changes to the needs of AltaLink’s customers and business requirements for Security and IT services since the previous 2019–2021 GTA application, including: the global COVID-19 pandemic driving working from home and work place restrictions; the substantial increase in patching and upgrades needed to address the continuing cyber security threat; and the regulatory requirements increasing the number and volume of evidence burden.

25.2.22 USA 935 - General O&M Expenses

1113. This account shall include the cost assignable to customer accounts, sales and A&G functions of labour, materials used and expenses incurred in the maintenance of property, where the book cost is included in Account 390 - Structures and Improvements, Account 391 - Office Furniture and Equipment, Account 391.1 - Computer Hardware and Voice and Data Network Equipment, Account 397 - Communication Equipment, and Account 398 - Miscellaneous Equipment. This account includes operating costs and all corporate leases.
1114. AltaLink’s General O&M expenses are primarily directed by the need to ensure that facilities and associated equipment are operating safely and effectively to support all staff operating

requirements. AltaLink is required to comply with the following legislation and regulations in the provision of safe and secure facilities.¹⁴³

Table 25.2.22-1 - USA 935 - Maintenance of General Plant (\$M)

Expense	2019 Actual	2020 Actual	2021 MU	2022 Test Year	2023 Test Year
Labour	0.3	0.3	0.2	0.2	0.2
Contracted Manpower	1.0	1.3	1.2	1.0	1.0
Other GOE	3.3	3.2	3.6	3.2	3.3
Total	4.6	4.9	5.0	4.4	4.5

Totals may not add due to rounding.

1115. Approximately 4% of USA 935 is attributable to labour expenses with an additional 27% attributed to contracted manpower. The remainder of this account is attributable to GOE which are driven primarily by operating costs associated with all head office, field office and material storage space required to accommodate staff, materials and equipment.

Table 25.2.22-2 - USA 935 - Maintenance of General Plant Forecast Increase (\$M)

Forecast Increase	2021 MU versus 2020 Actual	2022 Test Year versus 2021 MU	2023 Test Year versus 2022 Test Year	2 Test Year Average
Labour	(0.1)	(0.0)	0.0	(0.0)
Contracted Manpower	(0.2)	(0.1)	0.0	(0.1)
Other GOE	0.4	(0.4)	0.1	(0.2)
Total	0.0	(0.6)	0.1	(0.3)

Totals may not add due to rounding.

1116. AltaLink forecasts operating expenses to increase on average in USA 935 by \$0.1M over the Test Period due to inflation.
1117. AltaLink has reviewed the current forecasted workloads and work processes for the Test Period and confirmed current FTEs are sufficient.

Labour

Table 25.2.22-3 - USA 935 - Maintenance of General Plant Labour Forecast Increase (\$M)

Forecast Increase	2021 MU versus 2020 Actual	2022 Test Year versus 2021 MU	2023 Test Year versus 2022 Test Year	2 Test Year Average
Inflation	0.0	0.0	0.0	0.0
Other	(0.1)	(0.0)	(0.0)	(0.0)
Total	(0.1)	(0.0)	0.0	(0.0)

Totals may not add due to rounding

¹⁴³ Occupational Health And Safety Act, SA 2017, c O-2.1; Occupational Health And Safety Regulation, , Alta Reg 62/2003, s 1; Occupational Health And Safety Code, Alta Reg 87/2009; OSHA Employer Responsibilities, available from: <https://www.osha.gov/as/opa/worker/employer-responsibility.html>

Table 25.2.22-4 - USA 935 - Maintenance of General Plant FTEs

	2019 Actual	2020 Actual	2021 MU	2022 Test Year	2023 Test Year
Expense					
Total Year End FTEs	3.0	2.0	2.0	2.0	2.0

1118. AltaLink reduced headcount by 1 FTE in 2020, and is forecasting to remain stable for the Test Period.

Contracted Manpower
Table 25.2.22-5 - USA 935 - Maintenance of General Plant Contract Manpower Forecast Increase (\$M)

	2021 MU versus 2020 Actual	2022 Test Year versus 2021 MU	2023 Test Year versus 2022 Test Year	2 Test Year Average
Forecast Increase				
Inflation	0.0	0.0	0.0	0.0
Other	(0.2)	(0.2)	0.0	(0.1)
Total	(0.2)	(0.1)	0.0	(0.1)

Totals may not add due to rounding.

1119. AltaLink is forecasting on average Contracted Manpower expenses to remain stable for the Test Period.

Other GOE
Table 25.2.22-6 - USA 935 - Maintenance of General Plant GOE Forecast Increase (\$M)

	2021 MU versus 2020 Actual	2022 Test Year versus 2021 MU	2023 Test Year versus 2022 Test Year	2 Test Year Average
Forecast Increase				
Inflation	0.0	0.0	0.0	0.0
Other	0.4	(0.4)	0.0	(0.2)
Total	0.4	(0.4)	0.1	(0.2)

Totals may not add due to rounding.

1120. AltaLink is forecasting on average Other GOE expenses to remain stable for the Test Period. The variance from 2020 to 2021 is due to expected increases in operating cost due to employees returning to the AltaLink offices with the additional requirements to increase cleaning and other office hygiene requirements to maintain the new norm for office safety. The variance from 2021 to 2022 is due to the fact that land taxes generally captured in this account have been moved to a deferral account.

25.3 Corporate Costs

1121. Refer to Schedule 25-4.

25.4 Corporate Manpower – Full Time Equivalents

1122. Refer to Schedule 25-5 for FTEs included in the corporate function.

25.5 Corporate Administration and General Schedules

- Schedule 25-1 Schedule of Corporate Administration and General (by Account)
- Schedule 25-2 Schedule of Corporate Administration and General Account
- Schedule 25-3 Schedule of Corporate Administration and General Account
- Schedule 25-4 Schedule of Corporate Costs
- Schedule 25-5 Schedule of Corporate Manpower – Full Time Equivalents – Annual Averages
- Schedule 25-7 Communications Expenditures

26. GENERAL CORPORATE PROPERTY PLANT AND EQUIPMENT

NOT APPLICABLE TO ALTALINK'S APPLICATION

27. COST FUNCTIONALIZATION

NOT APPLICABLE TO ALTALINK'S APPLICATION

28. FINANCING

1123. Section 28 of AltaLink's Application addresses the following:

- 28.1 Credit Metrics
- 28.2 FFO/Debt Ratio
- 28.3 Financing Plan
- 28.4 Credit Facilities
- 28.5 Credit Rating Reports
- 28.6 Financing Schedules

28.1 Credit Metrics

1124. In GCOC Decision 24110-D01-2020,¹⁴⁴ AltaLink’s deemed capital structure and ROE was set at 37% and 8.5% respectively for 2021.
1125. In GCOC Decision 26212-D01-2021,¹⁴⁵ AltaLink’s deemed capital structure and ROE was set at 37% and 8.5% respectively for 2022.
1126. AltaLink has reflected a placeholder equity ratio of 37% and placeholder ROE of 8.5% in its schedules for 2023. In addition, the 2022-2023 schedules continue to target a minimum FFO to debt ratio of 11.1%.
1127. In GCOC Decision 22570-D01-2018, the AUC stated they were “not prepared, at this time, to depart from its historical practice of maintaining credit ratings in the A-range for the affected utilities.”¹⁴⁶
1128. To date, AltaLink has been able to maintain its “A” category credit rating. This has allowed AltaLink to access the market and issue \$3.6 billion worth of long-term debt in the 2013-2020 test years, at very favourable interest rates as demonstrated in Schedule 28.2 of this Application,¹⁴⁷ which translates into significant long-term cost savings for ratepayers.

28.2 FFO/Debt Ratio

1129. Based on the forecast reflected in the 2022-2023 GTA, and utilizing the approved ROE of 8.5% for 2022 and placeholder ROE of 8.5% for 2023, approved deemed equity of 37% for 2022 and placeholder deemed equity of 37% for 2023, AltaLink’s forecast FFO/Debt ratio can be found in Table 28.2-1 below:

Table 28.2-1 - FFO/Debt ratio using current approved deemed GCOC parameters

	2019A	2020A	2021MU	2022F	2023F
Equity Ratio	37%	37%	37%	37%	37%
Actual Return on Equity	8.5%	8.5%	8.5%	8.5%	8.5%
FFO / Debt Ratio ¹	11.0%	11.0%	10.6%	10.8%	10.9%

¹ Source: Schedule 31.1-E of the 2022-2023 GTA MFR Schedules

1130. AltaLink’s credit metrics are below what is required to maintain over the longer term. AltaLink believes that the temporary reduction in its FF/debt ratio will be acceptable and will allow for much needed tariff relief during the current economic times. AltaLink is further of the view, that there can be no permanent deterioration in its credit metrics without detrimental impact to its “A” level credit rating. While AltaLink is forecast not to achieve the target minimum FFO/Debt ratio of 11.1% for 2022 and 2023, assuming the current approved deemed equity ratio and ROE continues, AltaLink’s FFO/Debt ratio rapidly returns to the minimum target level by 2024.

¹⁴⁴ Decision 24110-D01-2020, 2021 Generic Cost of Capital, October 13, 2020, para 20, pdf 9.

¹⁴⁵ Decision 26212-D01-2021, 2022 Generic Cost of Capital, March 4, 2021, para 23, pdf 9.

¹⁴⁶ AUC Decision 22570-D01-2018, para 689, pdf 139.

¹⁴⁷ MFR Schedules, Schedule 28-2 Schedule of Debt Capital Employed and Embedded Cost.

28.3 Financing Plan

28.3.1 2019 – 2021 GTA

1131. The following debt issue was forecast in Schedule 28-2 of the Revised 2019–2021 ALP MFR Schedules.¹⁴⁸

Table 28.3.1-1 - 2019-2021 GTA Forecast Long-Term Debt Issue

Issue Date	Maturity Date	Term in years	Principal amount \$(M)	Government of Canada Bond Yield	Credit Spread	All-in yield	Agency Commission %	Agency Commission \$	Other New Issue Expenses
Sept 17, 2020	Sept 17, 2030	10	150.0	2.140%	1.083%	3.223%	0.40%	\$600,000	\$368,000

1132. Actual long-term debt issuance during the 2019-2021 Test Period was as follows:

Table 28.3.1-2 - 2019-2021 Actual Long-Term Debt Issue

Issue Date	Maturity Date	Term in years	Principal amount \$(M)	Government of Canada Bond Yield	Credit Spread	All-in yield	Agency Commission %	Agency Commission \$	Other New Issue Expenses
Sept 11, 2020	Sept 11, 2030	10	225.0	0.579%	0.930%	1.509%	0.4%	\$900,000	\$746,585

28.3.2 2022-2023 GTA Forecast Financing Plan

1133. AltaLink's forecast long-term debt issues during the Test Period are as follows:

Table 28.3.2-1 - 2022-2023 GTA Forecast Long-Term Debt Issue

Issue Date	Maturity Date	Term in years	Principal amount \$(M)	Government of Canada Bond Yield	Credit Spread	All-in yield	Agency Commission %	Agency Commission \$	Other New Issue Expenses
Nov 28, 2022	Nov 28, 2032	10	350.0	2.010%	0.910%	2.920%	0.40%	\$1,400,000	\$891,250
Nov 6, 2023	Nov 6, 2053	30	550.0	2.450%	1.288%	3.738%	0.50%	\$2,750,000	\$1,076,250

1134. In 2022 and 2023, AltaLink is forecasting the issuance of 10 year and 30 year privately placed notes. The selection of this term to maturity is based on the same principles articulated in the 2015-2016 GTA:

The selection of maturity dates on forecast long-term debt is based on the finance principle that one should finance long term assets with long-term debt. In addition to reducing refinancing risk this practice minimizes the variability of interest costs over time resulting in a reduction in the volatility of transmission costs to customers. AltaLink does issue some shorter term debt (principally ten years to maturity) in order to take advantage of the normally upward sloping yield curve and

¹⁴⁸ Exhibit 25870-X0016, Revised ALP MFR Schedules without FN LPs.

reduce rate-payer costs. In addition, this practice serves to diversify the maturity structure of the debt portfolio and reduce rollover risk.¹⁴⁹

1135. AltaLink’s forecast 10 year privately placed notes in 2022 is expected to qualify as a “Green Bond”. In order to receive this designation, AltaLink must have a minimum of \$350M of capital expenditures over a 5 year period (3 year look-back, 2 year look-forward) which enable wind and/or solar generation. This favourable designation is expected to reduce the coupon rate on the debt issue by 1 basis point while adding \$50,000 in “Other New Issue Expenses” both of which have been reflected in Table 28.3.2-1 above.
1136. Pursuant to Decision 2009-151, and effective January 1, 2009, AltaLink will continue to use the effective interest rate method for calculating the amortization of deferred financing costs on new debt issues. For debt issued prior to 2009, AltaLink will continue to use the straight line method.¹⁵⁰
1137. AltaLink’s forecast and historical long-term debt issues can be found in Schedule 28.2.¹⁵¹ As approved in Decision 2011-453, and beginning in 2011, all of the long-term debt issues are classified as 100% related to regulated operations. Both goodwill and unfunded FIT balances are financed with 100% equity.¹⁵²

28.3.3 Forecast Long-Term Debt Interest Rates

1138. The forecast interest rates on new long-term debt issues are based on estimates of future Government of Canada Bond Yields and AltaLink’s current new issue credit spread. AltaLink’s principal bankers have provided their most recent forecast for Government of Canada bond yields in **Appendix 5 Attachment 1**. Details regarding AltaLink’s current new issue credit spread can be found in **Appendix 5 Attachment 2**.

28.3.4 Forecast Short-Term Borrowing Rates

1139. AltaLink’s forecast short-term debt balances are shown in Schedule 28.2. The interest rates on short-term borrowing are derived in much the same fashion as long-term rates. AltaLink starts with the Government of Canada 90-day Treasury bill rate forecast (refer to **Appendix 5 Attachment 3**), and adds 15 basis points for the current Government of Canada Treasury Bill/Commercial Paper credit spread, and 9 basis points to reflect dealer commission and commercial paper issuance fees. For the purposes of this Application, all short-term borrowing is assumed to be commercial paper, which is AltaLink’s lowest cost debt financing alternative. The forecast short-term borrowing rates are summarized in Table 28.3.4-1 and Table 28.3.4-2 below:

Table 28.3.4-1 - Forecast Short-Term Borrowing Rates (Year-End)

	3 month Treasury Bill Rate	Treasury Bill /CP Spread	Forecast Commercial Paper Rate	Dealer Commission and Note Issuance Fees	“All-in” Short-Term Borrowing Rate
2022	0.70%	0.06%	0.76%	0.09%	0.85%
2023	1.35%	0.06%	1.41%	0.09%	1.50%

¹⁴⁹ Exhibit 3524-X0551, AML 2015-2016 GTA Application Update Oct 24, 2015, para 905, pdf 280.

¹⁵⁰ Decision 2009-151, AltaLink Management Ltd. and TransAlta Corporation 2009 and 2010 Transmission Facility Owner Tariffs, October 2, 2009, para 651, pdf 119.

¹⁵¹ MFR Schedules, Schedule 28-2 Schedule of Debt Capital Employed and Embedded Cost.

¹⁵² Decision 2011-453, AltaLink Management Ltd. 2011-2013 General Tariff Application, November 18, 2011, para 979, pdf 179.

Table 28.3.4-2 - Forecast Embedded Cost of Short-Term Debt (Year-End and Mid-Year)¹

	Embedded Cost of Debt (Year-End)	Embedded Cost of Debt (Mid-Year)
2019A	2.170%	1.849%
2020A	2.250%	2.186%
2021MU	2.250%	2.250%
2022F	0.850%	1.630%
2023F	1.500%	1.201%

¹ Source: Schedule 28-2 of the 2022-2023 GTA MFR Schedules.

28.4 Credit Facilities

28.4.1 2019-2021 GTA

1140. In the 2019-2021 GTA, AltaLink forecast the following credit facility amounts (refer to Table 28.4.1-1 below):

Table 28.4.1-1 – 2019-2021 GTA Forecast and Actual Credit Facility Amounts (\$M)

	2019F	2019A	2020F	2020A	2021F	2021MU
Beginning of Year	575	575	575	575	575	675
End of Year	575	575	575	675	575	575

1141. AltaLink's credit facilities include a \$500.0M commercial paper backstop facility and a \$75.0M operating line which supports AltaLink's day-to-day cash management activities. On April 27, 2020, AltaLink entered into a \$100.0M revolving credit facility to provide additional liquidity during the COVID-19 pandemic, funds relating to the customer contribution issue, and funds for possible tariff relief initiatives. All costs related to the \$100.0M revolving credit facility were borne by AltaLink's shareholder. The \$100.0M revolver matured on April 27, 2021.

1142. The costs associated with the forecast credit facility amounts shown in Table 28.4.1-1 above are shown in Table 28.4.1-2 below:

Table 28.4.1-2 – 2019-2021 GTA Forecast and Actual Credit Facility Costs (\$)

	2019F	2019A	2020F	2020A	2021F	2021MU
Standby Fees	920,000	910,243	920,000	1,132,064	920,000	920,000
Other Fees	325,000	295,136	325,000	453,115	325,000	392,000

28.4.2 2022-2023 GTA Forecast

1143. AltaLink's forecast credit facility amounts for the 2022-2023 GTA are shown in Table 28.4.2-1 below:

Table 28.4.2-1 – 2022-2023 GTA Forecast Credit Facility Amounts (\$M)

	2022F	2023F
Beginning of Year	575	575
End of Year	575	575

1144. The costs associated with the above credit facility amounts are shown in Table 28.4.2-2 below:

Table 28.4.2-2 – 2022-2023 GTA Forecast Credit Facility Costs (\$)

	2022F	2023F
Standby Fees	920,000	920,000
Other Fees	295,000	266,250

Sizing of credit facilities

1145. Credit facilities are necessary to ensure that a short-term liquidity crunch does not lead to potentially disastrous consequences such as bankruptcy. Since 2008 AltaLink has seen its access to the money market (where AltaLink issues its commercial paper) and the term debt markets either restricted or closed at various points in time. AltaLink’s credit facilities protect the company in either of these scenarios by providing ready access to capital when its traditional sources are unavailable. This aspect is the primary determinant for the “sizing” of AltaLink’s credit facilities.

Credit Facilities support commercial paper market access and daily banking operations

1146. AltaLink’s commercial paper backstop credit facility provides support to the CP program. This support is a necessary condition in order to obtain an R-1 low credit rating which is the minimum rating required to access the CP market in Canada. With an authorized CP program limit of \$500M, AltaLink must have credit line support of at least \$500M to obtain the required credit rating (Note: DBRS requires credit support of at least 1:1). An amount lower than this would result in a downgrade of AltaLink’s current R-1 low commercial paper rating. If this were to happen, access to the CP market would be unavailable resulting in significantly higher short term funding costs. The commercial paper backstop credit facility and the commercial paper program limit were both reduced to \$500M in December 2018. For further information on DBRS required liquidity support refer to **Appendix 4-C3**.
1147. In addition to a CP backstop facility, AltaLink requires a credit facility to support day to day cash management operations which includes letters of credit, cheque writing, and overdraft protection. AltaLink has a second credit facility in the amount of \$75M which is used to support cash management operations.

Credit Facilities must be sized to support the credit rating

1148. Credit facilities must be sized to allow for the maximum expected commercial paper outstanding during the year plus a buffer. The buffer provides a cushion should the term debt markets be closed or weak, thereby preventing a term debt issue whose proceeds would be used to pay down the outstanding commercial paper and in the process restore AltaLink’s liquidity under its credit facilities. With forecast new long-term debt issues of \$350M in 2022, and \$550M in 2023, AltaLink needs credit facilities in excess of this amount in order to provide for the possibility that it cannot issue term debt when required due to market access issues.
1149. AltaLink’s liquidity must be sufficient from a rating agency perspective or AltaLink risks a credit rating downgrade.
1150. DBRS liquidity guidelines are reflected in their publication titled “DBRS Morningstar Criteria: Commercial Paper Liquidity Support for Non-Bank Issuers” which can be found at **Appendix 4-C3**. As noted in the paragraph above, “DBRS Morningstar expects CP Issuers to have 100% CP liquidity backup availability in place for their CP programs” (refer to **Appendix 4-C3, page 2, paragraph 2**) and that “bank lines would be available at the necessary level when and if needed (i.e., bank facility usage (loans, letters of credit, etc.) combined with outstanding CP balances

will not exceed the maximum size of the bank facility)” (refer to **Appendix 4-C3, page 2, paragraph 4**).

1151. S&P published guidelines can be found in a December 4, 2019 report entitled, “Methodology and Assumptions: Liquidity Descriptors For Global Corporate Issuers” (refer to **Appendix 4-F2**) and a dedicated regulated utility report with the title of “Key Credit Factors For the Regulated Utilities Industry” dated November 19, 2013 (refer to **Appendix 4-F1**). In the “Key Credit Factors” report (paragraph 84 on page 19),¹⁵³ S&P reduced the minimum requirement for the A/B ratio to 1.1 as the standard for adequate liquidity for those regulated utilities with a business risk profile of at least satisfactory.

1152. Using the published S&P guidelines, the required credit facilities are calculated in **Appendix 5 Attachment 5** and summarized below:

Table 28.4.2-3 - 2022-2023 Forecast Required Credit Facility Amounts using S&P Methodology (\$M)

	2022	2023
Required Credit Facilities	467	741

1153. It is AltaLink’s view that the credit rating agencies are only one factor in the sizing of AltaLink’s credit facilities.

Sizing of credit facilities conclusion:

1154. The “sizing” of AltaLink’s credit facilities is not a simple math exercise. Assessing the amount of required liquidity involves an element of judgement. AltaLink must ensure its liquidity is adequate in the event that capital market access becomes limited. From time to time AltaLink has seen access to the term debt markets effectively closed. Having adequate liquidity in these situations is paramount to avoid the possibility of a liquidity crunch. Based on the considerations noted above, AltaLink feels it can manage at the current credit facility levels for 2022 and 2023.

Credit Facilities Maturity Date:

1155. As noted in paragraph 1053 of the 2019-2021 General Tariff Application,¹⁵⁴ AltaLink extended the term of its credit facilities to December 2022 in April 2018 at no additional cost. On December 14, 2018 the credit facilities were extended for an additional year with the new maturity date being December 14, 2023. On January 24, 2020 they were extended once again to December 14, 2024. AltaLink expects to finalize an additional one year extension to December 15, 2025 on May 17, 2021 at no incremental cost (spread and fees are at pre-pandemic pricing levels). A motivating factor behind all these extensions was to eliminate the risk of higher credit facility costs due to market upset given our Flat for Five commitment. These actions proved to be prescient given the dramatic rise in credit facility costs as a result of the onset of the COVID-19 pandemic in March 2020. Had AltaLink been forced to renew its credit facilities in December 2020 it would have done so at significantly higher spreads and fees.

1156. The sizing of AltaLink’s credit facilities is based on the following considerations:

28.5 Credit Rating Reports

1157. Refer to **Appendix 4** for credit rating reports.

¹⁵³ Appendix 4, pdf p. 367.

¹⁵⁴ Exhibit 23848-X0002.02, AML 2019-2021 GTA Application, para 1053, pdf 395.

28.6 Financing Schedules

Schedule 28-1 Schedule of Capital Structure and Average Cost of Capital

Schedule 28-2 Schedule of Debt Capital Employed and Embedded Cost

Schedule 28-4 Schedule of Subordinated Debt

29. NO COST CAPITAL

1158. Section 29 of AltaLink's Application addresses the following:

- 29.1 Summary
- 29.2 Self Insurance Reserve
- 29.3 Future Income Tax
- 29.4 Pension/Post Retirement Benefit
- 29.5 Rainbow Reserve
- 29.6 Hearing Cost Reserve
- 29.7 Salvage Reserve
- 29.8 No Cost Capital Schedules

29.1 Summary

1159. Schedule 29-1¹⁵⁵ lists the component accounts treated as No Cost Capital included in this Application. In 2021 Management Update and 2022, the No Cost Capital account shows a significant decrease compared to the prior year, 2020. As shown in Schedule 29-1, the mid-year No Cost Capital balance of \$308.6M in 2021 represents a \$71.0M or 18.7% decrease from the 2020 actual. The 2022 mid-year No Cost Capital balance of \$230.9M represents a further decrease of \$77.7M or 25.2% from 2021. The decreases are due to the refund of the previously collected future income taxes of \$150M, which was approved by the AUC on March 15, 2021 in Decision 26248-D01-2021 as detailed below. In 2023, the mid-year No Cost Capital balance will decrease by \$2.6M or 0.1% compared to the 2022 forecast.

29.2 Self Insurance Reserve

1160. A copy of AltaLink's SIR Policy is provided in **Appendix 3-C**. There have been no changes to the SIR policy subsequent to the 2019-2021 GTA.
1161. The general framework for use of the SIR is as follows:
- Funding: AltaLink forecasts funding for the SIR of \$0.9M for each of 2022 and 2023 (to fund individual losses in excess of \$0.1M which meet the SIR eligibility criteria). Refer to Schedule 29-2¹⁵⁶ for further details. Losses are expected to be \$0.9M in each of 2022 and 2023;
 - Charges to SIR: losses which meet criteria for SIR eligibility;
 - Target Balance: the EUB, in Decision 2007-012,¹⁵⁷ directed AltaLink to target a zero balance; and
 - Mechanics: if the balance of the SIR reserve at the end of the year is below negative \$0.5M or above \$0.5M, AltaLink will submit an application to the Commission to have the balance restored to zero at the time of the next GTA.
1162. A threshold of \$5M in losses must be met before a separate application for funds, outside of the GTA process, can be made to bring the balance in the SIR to zero.
1163. AltaLink's SIR continuity schedule is provided as Schedule 29-2.¹⁵⁸

29.3 Future Income Tax

1164. On March 15, 2021, the AUC approved AltaLink's proposal to refund \$150M of previously collected future income taxes as per Decision 26248-D01-2021.¹⁵⁹ The entire \$150M will be refunded in 2021 as shown in Schedule 29-3,¹⁶⁰ with the Future Tax Liability decreasing from \$156.5M to \$6.5M by the end of the year. As a result of the refund, the Future Tax Liability account mid-year balance will decrease to \$81.5M in 2021 and \$6.5M for both 2022 and 2023. While the refund reduces the no cost capital balance and results in a modest increase in

¹⁵⁵ MFR Schedules, Schedule of Mid-Year No Cost Capital.

¹⁵⁶ MFR Schedules, Schedule of Reserve for Injuries and Damages (SIR).

¹⁵⁷ Decision 2007-012, AltaLink Management Ltd. and TransAlta Utilities Corporation 2007 and 2008 Transmission Facility Owner Tariff, Settlement of Self Insurance Reserve Account for Period May 1, 2004 to December 31, 2005, February 16, 2007, pdf 56.

¹⁵⁸ MFR Schedules, Schedule of Reserve for Injuries and Damages (SIR).

¹⁵⁹ Decision 26248-D01-2021, AltaLink Management Ltd. 2021-2023 Tariff Refund, March 15, 2021, para 3, pdf 4.

¹⁶⁰ MFR Schedules, Schedule of Future Income Taxes.

revenue requirement, it provides the much needed rate relief to customers during the Covid-19 pandemic.

29.4 Pension/Post Retirement Benefit

1165. AltaLink's post retirement forecast expense increase reflects FTE changes and additional service provide by employees. These are set out in Schedule 29-4.

29.5 Rainbow Reserve

1166. This Application treats Rainbow Eligible Expenditures in the same manner as AltaLink's 2013-2014 GTA.¹⁶¹ In EUB Decision 2005-019,¹⁶² the Board directed AltaLink not to capitalize the four programs which would otherwise be capitalized as rainbow expenses, but treat them as operating expenses.

29.6 Hearing Cost Reserve

1167. Refer to Schedule 29-7¹⁶³ for the HCR funding. The details for the payments and the funding requirements are provided in Section 25.2.14. A significant balance has been accumulated over the past several years due to two recent negotiated settlements and the Commission's regulatory efficiency initiative. AltaLink proposes to settle the balance in this GTA by refunding the net amount after taking into account forecast hearing costs for 2022 and 2023.

29.7 Salvage Reserve

1168. The salvage reserve account mid-year balances for 2022 and 2023 are relatively stable, with minimal changes, compared to prior years. The inclusion of the Net Salvage Reserve Account in the No Cost Capital Account reflects the approval of AltaLink's new salvage methodology by the AUC on November 19, 2020 as per Decision 25870-D01-2020 for the 2019-2021 GTA.¹⁶⁴ Refer to Schedule 29-1¹⁶⁵ for the Salvage Reserve mid-year balances.

29.8 No Cost Capital Schedules

Schedule 29-1 Schedule of Mid-Year No Cost Capital

Schedule 29-2 Schedule of Reserve for Injuries and Damages (SIR)

Schedule 29-3 Schedule of Future Income Taxes

Schedule 29-4 Schedule of Pension/Post Retirement Benefits

Schedule 29-5 Schedule of Rainbow and Capitalized G&A Tax Reserve

Schedule 29-7 Schedule of Rate Hearing Costs – Total

Schedule 29-8 Schedule of Salvage Provision

¹⁶¹ Exhibit 0003.00.AML-2044, AML 2013-2014 GTA Application Volume 1, pdf 405.

¹⁶² Decision 2005-019, AltaLink Management Ltd. and TransAlta Utilities Corporation, 2004-2007 General Tariff Application

¹⁶³ MFR Schedule, Schedule of Rate Hearing Costs – Total.

¹⁶⁴ Decision 25870-D01-2020, AltaLink Management Ltd. Stage 2 Review and Variance of Decision 23848-D01-2020 AltaLink Management Ltd. 2019-2021 General Tariff Application, November 19, 2020, para 2, pdf 4.

¹⁶⁵ MFR Schedule 29-1, Schedule of Mid-Year No Cost Capital.

30. AFFILIATE TRANSACTIONS

1169. Section 30 of AltaLink's Application addresses the following:

- 30.1 Summary
- 30.2 Affiliate Transaction Schedules

30.1 Summary

1170. AltaLink is not aware of any Inter-Affiliate Code of Conduct compliance issues at this time. AltaLink's Compliance Report for the 2020 reporting compliance period was filed with the Commission on April 28, 2021, and is included in this Application at **Appendix 15**.

30.2 Affiliate Transaction Schedules

1171. Affiliate Transaction Schedules do not apply to AltaLink.

31. SUPPLEMENTARY INFORMATION

1172. Section 31 of AltaLink's Application addresses the following:

- 31.1 Summary
- 31.2 Customer Engagement Process
- 31.3 Annual Report of Finances and Operations
- 31.4 Operational Statistics of Report on Finances and Operations
- 31.5 Accounting Policies
- 31.6 Reserve Accounts
- 31.7 Deferral Accounts
- 31.8 Supplemental Information Schedules

31.1 Summary

1173. This Section provides information with respect to reference and other supplemental material that supports this Application.

31.2 Customer Engagement Process

1174. In April 2021, AltaLink engaged various external parties in order to provide them with a draft cursory high level overview of AltaLink's 2022-2023 GTA. The parties that engaged in such discussions were:

- The UCA (Office of the Utilities Consumer Advocate);
- The ADC (Alberta Direct Connect Consumers Association);
- The IPCAA (Industrial Power Consumers Association of Alberta); and
- The CCA (Consumers' Coalition of Alberta).

1175. The meetings also provided an opportunity for these customers to ask questions and engage in discussions with respect to the high level 2022-2023 GTA drivers presented in the meeting. Refer to **Appendix 16** for a copy of the draft 2022-2023 GTA overview.

31.3 Annual Report of Finances and Operations

1176. Refer to **Appendix 6-A2** for the 2019 and 2020 Report on Finances and Operations.

31.4 Operational Statistics of Report on Finances and Operations

1177. Refer to **Appendix 6-A1**, AltaLink's 2019 Operational Statistics of Report on Finances and Operations.

31.5 Accounting Policies

1178. The following general principles have been summarized as AltaLink's accounting policies in the Notes to AltaLink's Financial Statements.¹⁶⁶

Financial Reporting

1179. AltaLink maintains financial accounting records that fully and accurately reflect all the transactions and business in which AltaLink engages, in accordance with applicable accounting principles, policies and practices. AltaLink prepares its financial reports on a going concern basis in accordance with IFRS. The principal accounting policies adopted by AltaLink are set out below.

1180. AltaLink's financial statements are prepared on the historical cost basis except for provisions, accrued employment benefits liabilities and certain financial assets and liabilities related to regulated activities, which are measured initially at fair value. Financial assets and liabilities related to regulated activities are subsequently measured at amortized cost.

1181. AltaLink's financial statements are presented in Canadian dollars, which is its functional currency.

Use of Estimates and Judgment

1182. The preparation of the financial statements requires management to make estimates and assumptions that affect the application of accounting policies and the reported amounts of assets, liabilities, income and expenses. Actual results may differ from these estimates.

¹⁶⁶ Appendix 6-B2, Audited Annual Financial Statements December 2020.

1183. Estimates and underlying assumptions are reviewed on an ongoing basis. Revisions to accounting estimates are recognized in the period in which the estimates are revised and in any future periods affected. Judgements made by management that have significant effects on the financial statements and estimates with a significant risk of material adjustments in the next year are disclosed, where applicable, in the relevant notes to the financial statements.
1184. Accounting policies are selected and applied in a manner which ensures the resulting financial information satisfies the concepts of relevance and reliability, thereby ensuring the substance of the underlying transactions or other events is reported.
1185. As a regulated utility, AltaLink records certain amounts at estimated values until these amounts are finalized. AltaLink bases its estimates and judgements on historical experience, including experience with regulatory processes, current conditions and various other assumptions that are believed to be reasonable under the circumstances. These factors form the basis for making judgements about the carrying values of assets and liabilities. They are also the basis for identifying and assessing AltaLink's accounting treatment with respect to commitments and contingencies. Significant estimates include:
- expected regulatory decisions on matters that may impact revenue;
 - the recovery and settlement of financial assets and liabilities related to regulated activities, including the collection of the recovery of FITs and prudence reviews by the Commission of DACDA applications;
 - key economic assumptions used in cash flow projections, including those used to assess goodwill for impairment;
 - the estimated useful lives of assets;
 - the recoverability of tangible and intangible assets, including estimates of future costs to retire physical assets or the recoverability of costs associated with DA projects that have been delayed in the regulatory process;
 - the recoverability of intangible assets with indefinite lives, such as goodwill; and
 - the accruals for capital projects.
1186. AltaLink applies changes in estimates prospectively as they result from new information. To the extent that a change in accounting estimate gives rise to changes in assets or liabilities, or relates to an item of equity, AltaLink adjusts the carrying amount of the related asset or liability in the period of change.
1187. AltaLink discloses the nature and amount of a material change in an accounting estimate that has an effect in the current period. It also discloses the nature and amount of a material change in accounting estimate that is expected to have an effect in future periods, except when it is impracticable to estimate that effect, in which case AltaLink discloses that fact.

Regulation of Transmission Tariff

1188. AltaLink operates under cost-of-service regulation in accordance with the *Electric Utilities Act* (Alberta). The AUC must provide AltaLink with a reasonable opportunity to recover its prudently incurred and forecasted costs, including operating expenses, depreciation, cost of debt, capital and taxes associated with investment, and a fair return on investment. Fair return is determined on the basis of return on rate base and AFUDC for projects included in CWIP. AltaLink applies for a transmission tariff based on forecasted costs-of-service. AltaLink's transmission tariff is not dependent on the price or volume of electricity transported through its transmission system. Once approved, the transmission tariff is not adjusted if actual costs-of-service differ from

forecast, except for certain prescribed costs for which deferral and reserve accounts are established within the transmission tariff.

All tariff adjustments arising from deferral or reserve accounts relate to services provided to the AESO during the reporting periods, and settlement of these accounts with the AESO is not contingent on providing future services. If, in management's judgement, a reasonable estimate can be made of the impact future regulatory decisions may have on the current period's financial statements, such an estimate will be recorded in the current period. When the AUC issues a decision affecting the financial statements of a prior period, the final effects of the decision are recorded in the period in which the decision is issued.

Revenue Recognition

1189. Operations revenue from regulated activities represent the inflow of economic benefits earned during the period arising in the ordinary course of AltaLink's operating activities. AltaLink has a single performance obligation to stand ready to provide electrical transmission services through its transmission infrastructure as directed by the AUC. The return earned by AltaLink is based on tariffs approved by the AUC and is subject to variability. Operations revenues are recognized on an accrual basis in accordance with tariffs approved by the AUC, and based on the value of consideration expected to be received by AltaLink. AltaLink does not recognize revenue for any portion of tariffs received but not earned. Unearned tariffs are classified as financial liabilities related to regulated activities or deferred revenue in the financial statements.
1190. Revenue for the recovery of deemed future income taxes is accrued based on the underlying right for AltaLink to earn an after-tax rate of return.
1191. Funds provided by the regulator to pay for salvage costs are deferred and released into revenue from operations when the associated salvage activities are performed and costs are incurred.
1192. Other revenue represents revenue received from third parties and includes, but is not limited to, cost recoveries for services provided to other utilities. Third party contributions are recorded as deferred revenue when capital funds are expended and recognized into other revenue over the useful lives of the associated asset. Other revenue is recognized on an accrual basis as the costs are incurred. Rental income from third parties is recognized on a straight-line basis over the contract term.

Financial Assets and Liabilities Related to Regulated Activities

1193. The regulatory and legal rights and obligations under which AltaLink operates assign AltaLink the right to bill and collect financial assets related to regulated activities from the AESO. The AESO is AltaLink's single counterparty for regulated activities and amounts billed to it are based on specific amounts and timing approved by the AUC. There is no future performance required by AltaLink to recover these amounts. Long-term amounts due from the AESO earn a regulatory return and are discounted at a market rate of interest. Financial assets include an AFUDC which represents the cost of debt and equity financing incurred during construction as approved by the Alberta Utilities Commission. AFUDC is a non-cash item that will be recovered in rates charged to customers over the service life of the assets, commencing with the asset's inclusion in the rate base.
1194. Financial assets are reviewed for impairment every reporting period. The carrying amounts of financial assets in the statement of financial position are net of impairment loss allowances recognized for any identified lifetime expected credit losses. Expected credit losses are a probability-weighted estimate of the present value of expected cash shortfalls over the

expected life of the financial asset, determined based on AltaLink's historical experience and forward-looking information.

The regulatory and legal rights and obligations under which AltaLink operates also require AltaLink to refund to the AESO certain amounts that have been received in tariff revenue that are greater than its actual expenses. Such financial liabilities related to regulated activities due to the AESO within twelve months are not discounted.

Property, Plant and Equipment

1195. Property, plant and equipment are carried at cost less accumulated depreciation and disallowed capital costs. The initial cost of an asset consists of its purchase price or construction cost, any costs directly attributable to bringing the asset into operation, and for qualifying assets, borrowing costs that are eligible to be recovered over the estimated useful life of the asset. AltaLink capitalizes major replacements and upgrades if these costs extend the life of the asset and AltaLink expects to use these items during more than one year. Maintenance and repair costs are recognized as expenses in the period in which they are incurred.
1196. Depreciation is calculated over the estimated useful lives of assets on a straight-line basis based on depreciation studies prepared by an independent expert. The expected useful lives of the assets are reviewed annually, and if necessary, changes in useful lives are accounted for prospectively.
1197. When an asset is retired or disposed of in the normal course of business, the gain or loss is recognized immediately in the statement of comprehensive income. Generally, losses or gains are recoverable from/repayable to the AESO through future transmission tariffs. The Partnership recognizes the related amounts in revenue and records the amount as financial assets or liabilities related to regulated activities. Capital inventory and land are capitalized but not depreciated. CWIP is capitalized but not depreciated until the assets are available for use and the costs have been transferred to lines, substations, and buildings and equipment.
1198. Reviews of property, plant and equipment to establish whether there has been any impairment are carried out when a change in circumstance is identified that indicates an asset might be impaired.

Goodwill

1199. Goodwill is carried at initial cost less any write-down for impairment. An impairment loss is recognized to the extent that the carrying amount of the goodwill exceeds its fair value. In the last quarter of each fiscal year and as economic events dictate, management reviews the valuation of goodwill, taking into consideration any events or circumstances which might have impaired the fair value.

Inventory Accounting and Construction Materials and Supplies

1200. Construction materials and supplies are valued at the lower of cost and net realizable value. Cost is determined on a moving average cost basis for non-major materials and equipment and on a specific item basis for major materials and equipment. All inventory is capitalized whereas major materials and equipment are capitalized and depreciated at the standard rate for the specific asset class in which they are included.

Intangible Assets

1201. AltaLink's intangible assets are non-monetary assets without physical substance that can be individually identified and consist of the following:

- Land Rights — AltaLink pays fees to third parties to access, survey, build and maintain transmission facilities on third party land. Land rights are reported at cost less accumulated amortization and impairments, if any. Land rights are amortized on a straight-line basis at rates based on the estimated useful lives of tangible assets located on these lands. The expected useful lives of the assets are reviewed annually, and if necessary, changes in useful lives are accounted for prospectively.
- Computer Software — Computer software includes application software and enterprise resource planning software. Computer software is reported at cost less accumulated amortization. Amortization is calculated on a straight-line basis at rates based on the estimated useful lives of assets. The expected useful lives of the assets are reviewed annually, and if necessary, changes in useful lives are accounted for prospectively.
- Third-Party Deposits - Third party deposits are recognized as non-current assets with corresponding non-current liabilities. These deposits have certain restrictions attached and can be used only for their intended purpose.
- Contributions in Advance of Construction - For certain projects, the AESO requires third parties wanting to interconnect to the Partnership's transmission facilities to contribute their share of capital project costs in advance of construction. The Partnership uses these cash contributions to fund capital expenditures as construction progresses.

1202. Operating and Maintenance Charges in Advance of Construction - Certain third parties were required to provide advance funding for future operating and maintenance costs of assets constructed with third party-contributed funds.

Cash and Cash Equivalents

1203. Cash equivalents have been restricted to investments that are readily convertible into a known amount of cash and which have an original maturity of three months or less.

Provisions

1204. Provisions are recognized when AltaLink has a present obligation (legal or constructive) as a result of a past event, it is probable that an outflow of economic benefits will be required to fulfill the obligation and a reliable estimate can be made of the amount of the obligation. The amount recognized as a provision is the best estimate of the consideration required to settle the present obligation at the Statement of Financial Position date, taking into account the risks and uncertainties surrounding the obligation. If the effect is material, provisions are determined by discounting the expected future cash flows at a pre-tax rate that reflects current market assessments of the time value of money and where appropriate, the risks specific to the liability. Where discounting is used, the increase in the provision due to the passage of time is recognized as a finance cost.

Employee and Future Benefit Plan Costs

1205. AltaLink Management Ltd. (AML) employs staff and provides administrative and operational services to AltaLink on a cost reimbursement basis. AltaLink bears all of the related expenses and also bears the risk and reward of any certain plans or other staff related programs which AML establishes. AltaLink has indemnified AML for all costs and liabilities associated with its employment of staff. As such, the employee future benefit plans of AML are reported as if they were provided by AltaLink even though the legal sponsor of the plans and employer of the staff is AML. Current service costs are expensed in the period in which they are incurred.

- Defined Contribution Pension Plan - AltaLink's defined contribution plan is a post-employment plan under which AltaLink and employees pay fixed contributions into the plan and AltaLink has no legal or constructive obligation to pay further amounts. Obligations for contributions to the plan are recognized as an expense in the periods during which services are rendered by employees.
1206. Post-employment benefits plan - The cost of AltaLink's post-employment benefits plan is actuarially determined, using the projected benefit method pro-rated on service and management's estimate of discount rates and the expected growth rate of health care costs. The liability discount rate is determined based on a portfolio of high-quality corporate bonds with cash flows that match the expected benefit payments under the plan. Actuarial gains and losses in the AltaLink's post-employment benefits plan arising from experience adjustments and changes in actuarial assumptions are charged to other comprehensive income in the Statement of Comprehensive Income in the period in which they arise. Past service costs are recognized as an expense immediately in the income statement.
1207. Long-term Employee Benefits - Long-term employee benefit obligations are measured on a discounted basis and expensed in the Statement of Comprehensive Income as the related service is provided. A liability is recognized for the amount expected to be paid under the long-term incentive plan if AltaLink has a present legal or constructive obligation to pay this amount as a result of past service provided by employees, and the obligation can be estimated reliably.
- Short-Term and Long-Term debt**
1208. Short-term and long-term debt are measured initially at fair value and subsequently at amortized cost. Costs incurred to arrange long-term debt financing are offset against the debt amount and amortized using the effective interest rate method. The amortization of these charges is included in finance costs.
- Accounting for Income Tax**
1209. As a limited partnership, AltaLink does not pay income taxes. Instead, the tax consequences of its operations are borne by its partners on a pro rata basis in proportion to their interest in AltaLink. Accordingly, no income tax expense is recognized in the financial statements. Any reference to income tax in the financial statements relates to the recovery in transmission tariff revenue of deemed tax expense borne by the partners.
- Foreign Currency**
1210. AltaLink's functional currency is the Canadian dollar. Monetary assets and liabilities denominated in foreign currencies are translated at exchange rates in effect at the Statement of Financial Position date. Non-monetary assets and liabilities are translated at exchange rates prevailing at the transaction date. Revenues and expenses are translated at the exchange rate prevailing on the date of the transaction except for depreciation and amortization, which are translated at the exchange rate prevailing when the related assets were acquired. Gains and losses on translation are reflected in income when incurred.
- Leases**
1211. AltaLink assesses whether a contract is or contains a lease, at inception of the contract. AltaLink recognizes a leased asset and a corresponding lease liability with respect to all lease arrangements in which it is the lessee, except for short-term leases (defined as leases with a lease term of 12 months or less) and leases of low value assets. For these leases, AltaLink

recognizes the lease payments as an operating expense on a straight-line basis over the term of the lease.

1212. The lease liability is initially measured at the present value of the lease payments that are not paid at the commencement date, discounted by using the incremental borrowing rate. The lease liability is presented as a separate line in the consolidated statement of financial position. AltaLink re-measures the lease liability (and makes a corresponding adjustment to the related right-of-use asset) whenever the lease terms change, or the lease payments change, or a lease contract is modified and the lease modification is not accounted for as a separate lease.
1213. The leased assets comprise the initial measurement of the corresponding lease liability, less any lease incentives received and any initial direct costs. They are subsequently measured at cost less accumulated depreciation and impairment losses. The leased assets are presented together with property, plant and equipment in the consolidated statement of financial position.
1214. AltaLink applies IAS 36 to determine whether a leased asset is impaired and accounts for any identified impairment loss as described in the Property, plant and equipment policy.

Capitalized Borrowing Costs

1215. Borrowing costs are capitalized if they are incurred in connection with the acquisition or production of a “qualifying asset” for which a considerable period of time is required to prepare the asset for its intended use. AltaLink borrows funds to provide financing for its capital construction program. Borrowing costs eligible for capitalization are included in capital expenditures unless the borrowing costs are eligible to be recovered through transmission tariffs in the year in which the costs are incurred. The capitalization rate is based on actual costs of debt used to finance the acquisition or construction of qualifying assets

Transfer Pricing and Related Party Transactions

1216. Transfer pricing (cost or fair value) between affiliates of AltaLink is determined based on the standards and conventions established in the Inter-Affiliate Code of Conduct. The Inter-Affiliate Code of Conduct requires that that the activities of the affiliate cannot be cross-subsidized by the Utility, that the affiliates do not have preferential access to Utility services, and that uncompetitive practices between the Utility and its affiliates, which may be detrimental to the interests of Utility customers, cannot occur.

Non-Controlling Interest

1217. Portions of the equity not owned by AltaLink are reflected as non-controlling interests within the equity section of the statement of financial position. Portions of the net income attributable to AltaLink and the non-controlling interests are reported on the statement of comprehensive income.

31.6 Reserve Accounts

1218. AltaLink is requesting the Commission to approve the continuation of the following reserve accounts for 2022 and 2023:
- Commission Expenses (Hearing Costs) – USA Activity Code 928 (refer to Section 25.2.14);
 - PRB Plan liability and Supplemental Pension Liability – USA Activity Code 926 (refer to Section 25.2.13);
 - Injuries and Damages (SIR) – USA Activity Code 925 (refer to Section 25.2.12); and
 - Net Salvage – newly approved in the 2019-2021 GTA (refer to Section 29.7)

31.7 Deferral Accounts

1219. In this Application, AltaLink requests the continuation of the five previously approved deferral accounts for 2022 and 2023:
- Taxes Other Than Income Tax;
 - Annual Structure Payments;
 - DA Capital;
 - Long Term Debt; and
 - IFRS to the extent that future Canadian ASB pronouncements may impact upon the Commission's Rule 026.
1220. AltaLink is forecasting long term debt issuance of \$900M in the Test Period which replaces a \$275M debt maturity in November 2022 and a \$500M debt maturity in November 2023. The \$900M of forecast new long term debt issuance represents 18.9% of current outstanding long-term debt of \$4.75B. AltaLink notes that a 1% interest variance on the \$900M of forecast debt issuance is \$9M per year. By any accounting the forecast new debt issuance and interest rate exposure represent large **material** (emphasis intentionally added) amounts in the Test Period. Reasons and circumstances supporting the use of the other deferral accounts (Taxes Other Than Income Tax, Annual Structure Payments, DA Capital, and IFRS) in the past continues to apply to support deferral account treatment in the 2022 and 2023 test years.
1221. In the 2018 GCOC, the ATCO Utilities recommended that any deferral account for income taxes be established in accordance with criteria the Commission had previously applied:¹⁶⁷
- (1) the materiality of the forecast amount;
 - (2) uncertainty regarding the accuracy of the forecast amount;
 - (3) uncertainty regarding the ability of the utility to forecast the amount;
 - (4) whether or not the factors affecting the forecast are typically beyond the utility's control; and
 - (5) whether or not the utility is typically at risk with respect to the forecast amount.
1222. The Commission found that:
- ...the five criteria listed by the ATCO Utilities should form the basis upon which any deferral accounts for income taxes for the transmission utilities should be decided. In addition, the Commission considers that the symmetry factor detailed in paragraphs 71-74 of Decision 2010-189138 should also be considered, as "symmetry must exist between costs and benefits for both the Company and its customers."¹³⁹ However, the Commission will not make any specific findings with respect to income tax deferral accounts for the transmission utilities in this decision. The Commission considers that determinations with respect to tax deferral accounts for the transmission utilities are best made on the basis of a utility's specific circumstances and on a case-by-case basis, and considering the criteria articulated in this decision.¹⁶⁸

¹⁶⁷ Decision 22570-D01-2018, 2018 Generic Cost of Capital, August 2, 2018, para 103, pdf 26.

¹⁶⁸ Decision 22570-D01-2018, 2018 Generic Cost of Capital, August 2, 2018, para 116, pdf 29.

1223. There is no question of the materiality of the interest rate exposure on forecast new long-term debt issuance during the Test Period for AltaLink and ratepayers. In addition, there is significant uncertainty regarding the future path of long-term interest rates especially given the unprecedented borrowing at the Federal government level. This uncertainty makes it difficult for AltaLink to forecast the expected interest rate on any new debt issuance. AltaLink would acknowledge that experts in this field have tended to over forecast interest rates in recent years. The factors that might impact the interest rate forecast on new long-term debt issuance are certainly out of AltaLink's control. As to the fifth criteria, AltaLink notes that the LTDDA has been in place since the 2004-2007 GTA. This represents a lengthy period of time for which both AltaLink and ratepayers have typically not been at risk for this forecast amount.
1224. Using the five criteria outlined by ATCO in the 2018 Generic Cost of Capital proceeding it is AltaLink's view that it would be appropriate to continue with the LTDDA for this Test Period.

31.8 Supplemental Information Schedules

Schedule 31.1-A	Schedule of Income Statements
Schedule 31.1-B	Schedule of Balance Sheet Assets
Schedule 31.1-C	Schedule of Balance Sheet liabilities and Shareholders' Equity
Schedule 31.1-D	Schedule of Cash Flows
Schedule 31.1-E	Schedule of Credit Metrics
Schedule 31.2-A	Schedule of AltaLink Total Net Mid-Year Base
Schedule 31.2-B	Schedule of AltaLink Total Capital Expenditures

32. ALTALINK’S PURCHASE OF CUSTOMER OWNED ASSETS – SPECIAL FACILITIES CHARGE

1225. Section 32 of AltaLink’s Application addresses the following:

- 32.1 Overview
- 32.2 Special Facility Charge
- 32.3 No Harm to Utility Ratepayers
- 32.4 Risk Mitigation
- 32.5 Conclusion

32.1 Overview

1226. AltaLink proposed a Special Facilities Charge in the 2019-2021 GTA Application,¹⁶⁹ and although it was approved as a pilot under the Negotiated Settlement with interveners,¹⁷⁰ it was not approved by the AUC due to the risk exposure to ratepayers in a 50/50 risk and benefit sharing mechanism.¹⁷¹
1227. AltaLink would like to proceed with the option to offer the Special Facilities Charge to customers with this Application but, differently from the previous application, accept 100% of the risk associated with an unlikely event of customer default but also receive a premium charge for taking on such risk from customers and leave utility rate payers unharmed.
1228. The Commission has approved the Special Facility Charge for distribution assets (Rider E)¹⁷² and understands the need for special facilities to be built to address unique customer circumstances.¹⁷³ AltaLink is proposing to adopt a Special Facilities Charge for transmission assets that is similar to the methodology used by Fortis and approved by the Commission. Key differences between Fortis' Rider E and AltaLink's Special Facilities Charge include:
- Rider E's Early Abandonment Adjustment is replaced by a premium charge to manage customer default risk;
 - Methodology to collect salvage costs (Restoration costs) – AltaLink will only collect restoration costs when incurred and follow AltaLink's current salvage calculation methodology versus Rider E that charges a monthly fee based on estimated costs to remove the asset at the asset's life; and
 - AltaLink is proposing a 20 year term versus Fortis' 30 year term duration for Special Facilities Charge.
1229. This Special Facility Charge will provide benefits directly to customers who currently own transmission class assets. Many customers in Alberta are focused on reducing costs to remain competitive and profitable. AltaLink has the capabilities and the economy of scale to own, operate and maintain these transmission assets more cost effectively than individual customers. A number of customers have expressed an interest in having AltaLink own, operate and maintain assets in exchange for a Special Facility Charge due to AltaLink's expertise in owning transmission assets.
1230. This section of AltaLink's GTA also informs the Commission that AltaLink would like to work with the AESO to enable the Rider I program that the AESO had applied for back in 2012. The application for Rider I at that time was not approved due to the issue of ownership of the customer default risk (Decision 2012-364). AltaLink is proposing to accept 100% of the risk associated with an unlikely event of customer default, but also receive a premium charge for taking on such risk from customers and leave rate payers unharmed.

¹⁶⁹ Exhibit 23848-X0002.01, AML 2019-2021 GTA Application.

¹⁷⁰ Exhibit 23848-X0254, AML-AUC-2019JUL19-003-NSA(f), pdf 8.

¹⁷¹ Exhibit 23848-X0257, AUC letter – Opportunity to revise NSA, ruling on CCA motion for better responses; Exhibit 23848-X0264, AML Letter to AUC – Update re Special Facilities Charge.

¹⁷² Exhibit 0001.00.FORTIS-909, 2010-10-28 FortisAlberta Application for Special Facilities Charge; Exhibit 0004.00.FORTIS-1647, 2011-12-22 FortisAlberta Rider E Compliance Filing; Exhibit 0134.01.AE-20, ATCO Electric's Response to the Commission's Direction No. 1 (AUC Decision 2013-417).

¹⁷³ Decision 2011-176, FortisAlberta Inc. Application for Special Facilities Charge, May 2, 2011, para 34, pdf 10.

1231. Within this section of AltaLink's GTA, AltaLink is requesting the Commission consider the approval of a Special Facility Charge for transmission assets, as well as how this charge should be considered within AltaLink's tariff.
1232. AltaLink will enter into a commercial agreement for the purchase of the assets from customers in exchange for a Special Facility Charge. AltaLink will apply to the Commission to approve the transfer of any related Licence for the operation of the transmission assets. AltaLink is proposing the charge will be set out in a 20 year agreement between the customer and AltaLink, and will recover the associated revenue requirement of the facilities. The charge for a respective customer will be calculated based on the purchase price of the facilities, and will include capital return, a premium for default risk, income tax, depreciation, operating and maintenance costs, and shared allocated costs (overhead). The actual O&M expenses incurred by AltaLink to service these customers will be offset by corresponding O&M revenues from the Special Facility Charge customer. The respective charge to the customer is subject to change as new facilities or upgrades are added or existing facilities are retired.
1233. AltaLink will offer the Special Facilities Charge option to customers after receiving approval from the Commission. At present, AltaLink has not forecast any Special Facility costs or revenues within this tariff and is seeking approval to enter into agreements with potential customers. When arrangements progress with future customers, AltaLink will include forecasts of O&M and G&A costs and offsetting revenues collected from customers.

32.2 Special Facility Charge

1234. The Special Facility Charge would be defined on an annual basis and consist of a capital-related charge, a premium charge to manage risk, an operating and maintenance charge plus an annual true-up. These charges are described in detail in **Appendix 11**.

32.2.1 Capital-related charge:

1235. Costs associated with ownership of the Special Facilities will be recovered with this charge. The components are depreciation, return on rate base, working capital, gain or loss on retirement, a site restoration adjustment when applicable and a capital overhead deferral amount. Any capital replacements, upgrades or retirements will be reflected in the book value in the month they occur.

32.2.2 Premium charge:

1236. The premium charge consists of a percentage of the net book value of the Special Facility based on the special facility customer's credit rating. Any replacements or retirements will be reflected in book value in the month they occur. The purpose of collecting this charge from the customer is to collect compensation for AltaLink accepting credit default risk from the Special Facility customer. (Refer to Section 32.4)

32.2.3 Operating and Maintenance charge:

1237. O&M charges are billed monthly and are comprised of:

- Actual monthly O&M costs;
- A fixed administrative fee;
- An allocation of "Setup" costs;
- Taxes; and
- Insurance.

32.2.4 Annual True-Up

1238. A true-up is required if AltaLink’s forecasts of facilities additions and retirements are materially different from actuals and an adjustment to the charge is required.

32.3 No Harm to Utility Ratepayers

1239. As the Special Facility Charge is intended to collect all direct costs associated with the special facilities, plus an allocation of overhead costs from the respective customer, the rate payers will not be charged with incremental costs as a result of Special Facilities.

32.4 Risk Mitigation

1240. Since AltaLink will be accepting credit default risk, AltaLink is proposing the following:

- charging a premium annually to the participating customers, from 1-4 % depending on credit rating as per Table 32.4-1 below;
- ensuring that security in the form of a letter of credit is provided by customers whose credit rating is below BBB- (or the equivalent);
- reserving the right to manage the terms and conditions of the contracts with the customer;
- reserving the right, at AltaLink’s sole discretion, to enter into agreements (or not) with potential customers. Each opportunity will be evaluated based on its specific merits.
- Reserving the right to choose one or a mix of credit ratings from the following credit rating agencies – DBRS Limited (DBRS), Standard and Poor’s (S&P), or Moody’s Investors Service (Moody’s) to determine the premium charge.

Table 32.4-1 – Credit Rating and respective premium charge

DBRS	Moody's	S&P	Premium Charge
A (high)	A1	A+	1%
A	A2	A	1%
A (low)	A3	A-	1%
BBB (high)	Baa1	BBB+	2%
BBB	Baa2	BBB	3%
BBB (low)	Baa3	BBB-	4%
<BBB(Low)	< Baa3	< BBB-	4% plus a letter of credit

1241. The premium charge will consist of a percentage of the purchase price minus accumulated depreciation of the assets over time (net book value) plus working capital costs. Purchase price suggested is replacement cost new minus accumulated depreciation.

1242. To determine the premium, AltaLink will review the credit ratings of the customer or its guarantor as rated by one or a mix of the credit ratings of the following credit rating agencies: DBRS, S&P, or Moody’s. If approved, AltaLink commits to include in its future GTA filings, a summary of the current purchased assets, asset value (purchased price + capital replacements or upgrades – depreciation), customer name, customer credit rating, and premiums. The customer will be responsible for the cost of capital replacements.

1243. If a customer’s credit rating changes during the term of the contract, the premium will be adjusted to reflect the new credit rating accordingly with the option to require added security from the customer.

1244. AltaLink reserves the option to determine which customers and assets it will enter into agreements with, and intends to have good credit management practices before entering in any agreement for the Special Facilities Charge; but in case of an event of a default of a customer and AltaLink is unable to collect the outstanding balance for the Special Facilities Charge, AltaLink will bear 100% of the unpaid balance.

32.5 Conclusion

1245. In summary, the Special Facilities Charge will provide an opportunity to improve cash flow and efficiencies for customers by selling transmission assets that are not part of their core business. Customers will also have the benefit to have a TFO to maintain and operate these assets. AltaLink will make a regulated return from these assets and receive a premium for accepting the risk of an unlikely event of customer default. Utility rate payers will remain unharmed and will not bear any costs of this offering.

33. AMORTIZATION OF CUSTOMER CONTRIBUTIONS – RIDER I

1246. Section 33 of AltaLink’s Application addresses the following:

33.1 Amortization of Customer Contributions – Rider I

33.1 Amortization of Customer Contributions – Rider I

1247. AltaLink requests the implementation of Rider I and continued approval in principle. AltaLink requests a direction to the AESO to file a specific Rider I tariff application which will give effect to this request.
1248. Rider I creates many benefits for customers allowing market participants the option to amortize customer contributions for their connection projects for up to 20 years. This Rider I will provide benefits directly to these customers that would like an alternative financing option to improve cash flow.
1249. AltaLink will work with the AESO to enable Rider I that the AESO had applied for in 2012. The application for Rider I at that time was not approved due to the issue of ownership of the customer default risk.¹⁷⁴
1250. At that time, In denying the implementation of Rider I the Commission stated in Decision 2012-364 that the reasons for denying it is as follows:
- “The Commission considers that if the TFOs, that may realize some benefit from the implementation of Rider I, are unwilling to bear any potential risk, the Commission is similarly not prepared to impose any potential risk on customers, other than the customer that is opting into Rider I”
1251. AltaLink is prepared to bear 100% of the default risk provided it can retain 100% of the premium collected from each customer. This will not impose any risk on system customer and leaves AltaLink to bear the risk of Rider I’s implementation. AltaLink is proposing to charge a premium in accordance with the charge calculation being proposed for the Special Facilities Charge option in this Application. Refer to Section 32.

¹⁷⁴ Decision 2012-364