2024-2025
GENERAL TARIFF APPLICATION

TO THE

ALBERTA UTILITIES COMMISSION

APPLICATION

APRIL 28, 2023

AMENDED AUGUST 31, 2023

2611– 3rd Avenue SE, Calgary, Alberta T2A 7W7 | www.altalink.ca

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[1] Originally filed as Exhibit 26509-X0234.

FORWARD-LOOKING INFORMATION ADVISORY

This 2024-2025 General Tariff Application (the Application or 2024-2025 GTA) and any document referenced, or incorporated or deemed to be incorporated by reference, in the Application 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) 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.

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 further discussion, refer to AltaLink’s annual information form for the year ended December 31, 2021 (AIF)[2]or any new annual information form filed with applicable securities regulatory authorities for a subsequent financial year of AltaLink during the Test Period of the Application (the AIF or such subsequent annual information form, whichever is later, is the Current AIF) and AltaLink’s Management’s Discussion and Analysis of financial condition and results of operations filed with applicable securities regulatory authorities on February 27, 2023 for the year ended December 31, 2022 (MD&A)[3] or any subsequent annual management discussion and analysis of financial condition and results of operations filed with applicable securities regulatory authorities for a subsequent financial year of AltaLink during the Test Period of the Application (the MD&A or such subsequent annual management discussion and analysis of financial condition and results of operations, whichever is later, is the Current Annual MD&A);

[2] Refer to Appendix 6-B1.
[3] Refer to 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 further discussion, refer to the Current AIF and the Current Annual MD&A filed with applicable securities regulatory authorities for a financial year of AltaLink during the Test Period of the Application);
- approved rates of return and deemed capital structures of AltaLink's transmission business that are sufficient to foster a stable investment climate (for further discussion, refer to the Current AIF and the Current Annual MD&A filed with applicable securities regulatory authorities for a financial year of AltaLink during the Test Period of the Application);
- a stable competitive environment;
- AltaLink obtaining sufficient capital on acceptable terms to finance its transmission system expansion and to pay maturing debt; and
- no significant event occurring outside the ordinary course of business such as a natural disaster, pandemic or other calamity.

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 referenced in this Application (including the AIF and MD&A) or 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.

The forward-looking information in statements or disclosures in the Application, or in other documents referenced in this Application (including the AIF and MD&A) or 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 statements or disclosures. 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 in such statements or disclosures include, 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 or changed;
- the risk that the actual costs of completing a transmission project significantly exceed estimated costs or that the AUC determines actual costs of completing a project were not prudently incurred;

- the risks to AltaLink's facilities posed by climate change, severe weather, wildfires, 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 or experiences a cyber or physical attack;
- 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;
- the risk that transmission system expansion costs that are directed to AltaLink by the AESO or costs incurred by AltaLink in maintaining or upgrading the existing system become stranded and AltaLink's recovery of the related costs is impaired; and
- the risk that transmission system costs bypassed through onsite generation by load customers results in decreased use of system facilities and increased cost of service for remaining system users or an allocation of those costs to the utility.

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 disclosure documents filed with securities regulatory authorities, which may be referenced, or incorporated or deemed to be incorporated by reference, in this Application, including those disclosed under "*RISK MANAGEMENT*" in the Current MD&A filed with applicable securities regulatory authorities for a financial year of AltaLink during the Test Period of the Application, or any interim management discussion and analysis of financial condition and results of operations filed with applicable securities regulatory authorities for an interim period during during the Test Period of this Application and "*RISK FACTORS*" in the Current AIF filed with applicable securities regulatory authorities for a financial year of AltaLink during the Test Period of the Application. 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.

All forward-looking information herein is given as of the date of the Application. AltaLink is not obligated to update or revise any statements or disclosures containing forward-looking information in the Application, or in other documents referenced in this Application (including the AIF and MD&A) or incorporated or deemed to be incorporated by reference herein, 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 referenced in this Application (including the AIF and MD&A) or incorporated or deemed to be incorporated by reference herein, is expressly qualified by this statement.

1. INTRODUCTION

1. 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 Deferral Account Reconciliation
- 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

2. Between 2019 -2023, AltaLink executed its commitment to provide certainty and stability to customers through keeping its transmission tariffs at or below 2018 revenue requirement levels. By working with customers, and through successful negotiations and approvals from the Alberta Utilities Commission, AltaLink accomplished its commitment to Albertans in the face of the pressures of the COVID-19 pandemic, supply chain challenges and ever-increasing inflation.

3. AltaLink seeks approval to continue to provide support to Albertans by extending its commitment to customers into 2024, keeping its transmission tariffs at 2018 levels while managing the impacts of high interest rates, high inflation, increased global uncertainty and many other risks that AltaLink faces as a transmission facility owner in Alberta.

4. In 2025, AltaLink applies for a transmission tariff increase of less than a 1% while at the same time responding to realities that face all Albertans by addressing inflation, labour impacts, and supply chain challenges as well as existing and emerging threats to the Alberta Interconnected Electric System. AltaLink's proposed tariff reflects its continued focus on discharging its statutory obligation to provide transmission service to Albertans that is safe, reliable and economic. AltaLink's 2025 transmission tariffs will enable AltaLink to prudently manage its operations to meet these obligations while addressing these real and ongoing challenges.

5. AltaLink in its capacity as General Partner of AltaLink, L.P., applies[4] to the Commission for approval of a TFO tariff for the 2024-2025 test years (the Test Period) consisting of:

   - Revenue Requirements of $887.5M and $904.2M in 2024 and 2025, respectively;
   - Total Transmission Tariffs (net of adjustments) of $895.7M and $904.2M in 2024 and 2025, respectively, as set out in Section 1.4;
   - AltaLink's deferral accounts for the Test Period as described in Section 31.7; and
   - AltaLink's reserve accounts for the Test Period as described in Section 31.6.

6. In preparing this Application, AltaLink had regard for the Commission's decision from the 2022-2023 GTA and prior GTAs. AltaLink makes considerable efforts to continually improve its applications while balancing the costs involved in preparing each application. AltaLink strives to provide the Commission with material, helpful information and not simply greater volumes of information. An overview of key aspects of AltaLink's application follows.

1.1.1 2024-2025 General Tariff Application

7. Table 1.1.1-1 below summarizes AltaLink's Revenue Requirement and Transmission Tariffs for the 2024-2025 Test Period.

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

Table 1.1.1-1 - Applied for Revenue Requirement and Transmission Tariffs 2024-2025 ($M)

	2021 Actual	2022 Actual	2023 MU	2024 Test Year 1	2025 Test Year 2
Revenue Requirement					
Operating expense	163.2	165.1	172.4	176.9	179.4
Return - Equity	235.6	235.6	227.4	234.2	234.0
Return - Debt	181.6	182.7	188.9	194.2	195.9
Depreciation	292.1	296.2	301.9	289.7	302.3
Revenue Offsets	(9.5)	(9.2)	(8.1)	(7.5)	(7.5)
Income Taxes	0.0	0.0	0.0	0.0	0.0
Total Revenue Requirement	**863.0**	**870.4**	**882.4**	**887.5**	**904.2**
Tariff Adjustments					
Settlement of SIR Balance		(2.7)			
Settlement of Hearing Costs		(3.8)			
Recovery of Return on				11.0	
True up of TransAlta Utilities				(1.1)	-
Other Customer Refund				(1.8)	
Transmission Tariff	**863.0**	**863.9**	**882.4**	**895.7**	**904.2**
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	8.52%	8.58%	8.29%	8.50%	8.50%
FFO/Debt	**11.1%**	**11.1%**	**11.0%**	**11.1%**	**11.0%**

1.1.2 2023 Generic Cost of Capital (GCOC) Proceeding

8. On March 31, 2022, the Commission issued Decision 27084-D01-2022 with respect to the first stage of the 2023 GCOC proceeding.[5] The Commission approved the extension of the 2022 return on equity of 8.5% and deemed equity ratio of 37% for 2023 on a final basis, recognizing lingering uncertainty and continued volatility of financial markets due to the COVID-19 pandemic.[6] Since the final approved return on equity of 8.5% and deemed equity ratio of 37% for both 2022 and 2023 were the same as the placeholders used in AltaLink's approved 2022 and 2023 transmission tariffs, no amendment to the approved tariffs were necessary.

9. On June 29, 2022, the Commission initiated stage two of the 2023 GCOC proceeding to determine the cost-of-capital parameters for 2024 and future test years.[7] The Commission indicated that it intends to use a formula-based approach to annually adjust the return on equity beginning in 2024. AltaLink and other registered parties filed evidence on February 1, 2023 and filed rebuttal evidence on April 26, 2023. If determined to be required by the Commission, an oral hearing will take place from May 15 to May 19, 2023. Oral argument and reply argument are to take place from May 29 to May 31, 2023. Based on the foregoing, the Commission is expected to issue its decision on stage two of the 2023 GCOC proceeding by the end of the third quarter of 2023.

[5] Decision 27084-D01-2022, 2023 Generic Cost of Capital, March 31, 2022 (Decision 27084-D01-2022).
[6] Decision 27084-D01-2022, paras 12 and 55-56.
[7] Exhibit 27084-X0034, AUC letter - Directions on procedure.

10. In its 2024-2025 GTA, AltaLink has used a return on equity of 8.5% and deemed equity ratio of 37% for both 2024 and 2025 on a placeholder basis.

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

11. AltaLink proposes to continue using the depreciation rates approved by the Commission in the 2022-2023 GTA. The depreciation rates, based on a comprehensive depreciation study prepared by Concentric Energy Advisors, were approved by the Commission following a fully litigated proceeding. The depreciation study in the 2022-2023 GTA was based on AltaLink's asset transactions and balances up to December 31, 2019. The rates were amended according to the Commission's orders in Decision 26509-D01-2022 and were approved in Decision 27174-D01-2022.[8] The amortization rate for Customer Contribution was derived from the PP&E rates approved by the Commission, and the amortization rates for software and leasehold improvements are a continuation of rates from past Commission decisions.

12. The depreciation rates approved by the Commission continue to be appropriate for the 2024-2025 test years considering the forecast net change in the value of plant in service for the 2024-2025 Test Period from the 2023 plant in service is approximately 2% annually. In addition, the forecast total depreciation and amortization expenses inclusive of pre-collection of salvage for the 2024-2025 Test Period (amounting to $289.7M and $302.3M respectively) are not materially different as compared to the 2023 approved depreciation and amortization expense of $302.3M.

13. The depreciation rates continue to be appropriate given:

- the short period of time that has elapsed since the last depreciation study and Decision 26509-D01-2022;
- the expense required to complete a technical update or a full depreciation study.

14. AltaLink will file a full comprehensive Depreciation Study in its next GTA.

1.1.4 Salvage

1.1.4.1 Salvage Transition - Overview

15. In Decision 25870-D01-2020, the Commission approved AltaLink's proposal to capitalize salvage costs incurred in relation to replacement projects. The Commission also approved the creation of a Net Salvage Reserve Account to fund salvage costs which are related to terminal asset retirement. The transition to the new method is anticipated to take seven-to-eight years starting from 2019 (i.e. from 2019 to 2026). During the transition, AltaLink would collect funding for the Net Salvage Reserve Account in its revenue requirement at a level sufficient to maintain an FFO/Debt ratio of 11.1%.[9]

16. Under the approved capitalize and expense salvage method, salvage costs incurred in relation to assets being retired and not replaced would be charged to the Reserve Account. For assets where the asset retirement is followed by a replacement asset, the costs incurred in relation to the asset being retired from rate base will be added to the cost of the replacement asset and depreciated as part of the cost of the new asset. This method is consistent with how all other costs attributed to the asset are being capitalized.

[8] Decision 27174-D01-2022, AML KLP and PLP 2022-2023 Compliance Filing.
[9] Decision 25870-D01-2022, AltaLink Management Ltd., AltaLink Net Salvage Proposal, November 19, 2020, pdf 10, para 36(i).

17. A Net Salvage Reserve Account is an integral part of the transition to the Capitalize and expense salvage method. Funding for the Net Salvage Reserve Account is included in revenue requirement and credited to the reserve account. Salvage costs incurred, or forecast to be incurred in a GTA test period, in relation to terminal asset retirements will be charged to this account. The reserve 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.

18. In this 2024-2025 GTA, AltaLink proposes to collect $11.5M for 2024 and $19.5M for 2025 in order to maintain AltaLink's forecast FFO/Debt ratio at 11.1% in each test year.

19. Table 1.1.4-1 below shows a summary of the Net Salvage Reserve Account. For the purpose of this GTA, the forecast balance in the net salvage reserve account regarding the accumulated salvage account balance as of December 31, 2024 and 2025, are increased by all salvage amounts collected, and reduced by all salvage costs incurred. Refer to Schedule 29-8 of the MFR Revenue Requirement Schedule for further details.

Table 1.1.4-1 – Net Salvage Reserve Account ($M)

	2024F	2025F
Forecast funding	$11.5	$19.5
Net Salvage Expenditures	($40.5)	($34.5)
Year-end Net Salvage Reserve Account Balance	**$183.9**	**$168.9**

20. The Net Salvage Reserve Account is expected to have a balance of approximately $168.9M by the end of 2025. AltaLink is of the view that this amount is sufficient to fund with a reasonable tolerance the forecast salvage spending over the foreseeable future.

21. Refer to Sections 6 and 29 for further details regarding the capitalize and expense salvage method and net salvage reserve account respectively.

1.1.4.2 AltaLink's 2019-2021 Salvage Expenditures

22. In Decision 26509-D01-2022, the Commission did not approve AltaLink's 2019-2021 actual CRU net salvage expenditures based on its determination that AltaLink had not provided sufficient information to test the prudence of those expenditures.[10] The Commission directed AltaLink to remove its 2019-2021 actual CRU salvage expenditures, in the amount of $98.9M, from its 2019-2021 net salvage reserve account (Directive 52).[11] The Commission stated, however, that it would test the prudency of the 2019-2021 net salvage costs in AltaLink's next GTA if AltaLink provides the necessary support for its actual 2019-2021 net salvage costs.[12]

23. AltaLink has developed detailed salvage summary reports for each CRU business case from the 2019-2021 GTA explaining the variances from forecast to 2019-2021 actual salvage expenditures and demonstrating the prudence of those expenditures. The salvage summary reports are discussed in Section 10.3.7 and are provided in **Appendix 18-B**. AltaLink also provides additional relevant information in Sections 10.3.1 and 10.3.4.

[10] Decision 26509-D01-2022, para 684.
[11] Decision 26509-D01-2022, para 686.
[12] Decision 26509-D01-2022, para 687.

24. AltaLink's "as-filed" 2022 opening salvage reserve account balance was $210.4M. In accordance with the Commission's directive, AltaLink removed the $98.9M amount, resulting in a revised opening balance of $309.3M.

25. AltaLink submits that it has demonstrated the prudence of its 2019-2021 actual CRU salvage expenditures and, on that basis, requests Commission approval of the following: First, approval to include the $98.9M amount in its 2024 opening salvage reserve account balance. Second, approval to recover the $11M in returns incurred over the 2022-2023 test period applicable to these prudent 2019-2021 actual salvage expenditures. AltaLink has reflected the requested approvals in its MFR schedules by incorporating the $98.9M into Schedule 29-8 at line 14 and the $11M into Schedule 3-1 at line 17.

1.1.5 Inventory

26. In Decision 26509-D01-2022, Directive 9, the Commission directed:

> Further, at the time of its next GTA, the Commission directs AltaLink to provide the same information [amounts capitalized by each USA] on an actual basis for the years 2022-2023 and on a forecast basis for the test years being applied for. AltaLink should also provide reasons for any capitalization of emergency spares inventory in addition to what has been capitalized in 2019-2021 and to explain how AltaLink differentiates between emergency spares inventory, and materials and supplies inventory included in Account 154 under the USA[13]

27. In preparation for its response to the Commission's direction, AltaLink conducted a thorough review of its entire materials and supplies inventory and emergency spares inventory, with direct reference to "Account 154" and "Plant Equipment Held For Emergency in Stores" as set out in AUC Bulletin 2006-25 (USA).[14] During the course of this review, AltaLink discovered that a portion of its materials and supplies inventory is non-rotational in nature and should be properly classified as "plant equipment held for emergency in stores" as set out in the USA. These emergency spares include circuit breakers, regulators, conductors, and tower materials, and are separate from the larger capital spares which include transformers, current transformers, potential transformers, etc. The forecast balance at the end of 2023 for this plant equipment held for emergency is $16.3M. AltaLink proposes to reclassify $16.3M from materials and supplies inventory to plant equipment held for emergency in stores at the end of 2023. This misclassification resulted in an undercapitalization. AltaLink is not proposing any historical correction.

28. Also, as a result of this review, AltaLink found that certain materials for capital projects had been included in plant equipment held for emergency in stores previously and are rotational in nature, as they are deployed to capital projects in less than one year. The forecast balance at the end of 2023 for these materials is $5.7M. AltaLink proposes to reclassify $5.7M from plant equipment held for emergency to materials and supplies inventory at the end of 2023. Refer to Section 10.6 for further details about AltaLink's materials and supplies inventory, plant equipment held for emergency in stores, and the reclassification.

[13] Decision 26509-D01-2022, para 158, pdf 42.
[14] Bulletin 2006-25, Announcing the Approval in Principle of the Form and Content of a Uniform System of Accounts and Minimum Filing Requirements for Alberta Electric Utilities.

29. In summary, AltaLink requests Commission approval of the net transfer of $10.6M from materials and supplies inventory to plant equipment held for emergency ($16.3M less $5.7M), to comply with USA requirements set out in AUC Bulletin 2006-25.

1.1.6 Wildfire Mitigation Plan

30. AltaLink introduced its WMP in its 2019-2021 GTA. AltaLink continued to file WMPs in its 2022-2023 GTA and in this current 2024-2025 GTA. In May and June 2023, AltaLink directly experienced unprecedented pace, intensity and size wildfires in its service area. In addition, these wildfires occurred outside recognized HRFAs underlined the need to address the heightened risk of wildfire. AltaLink reviewed data on wildfire trends in Alberta, responses from regulators and utilities, and the state of its assets. This review demonstrated that AltaLink must expand and accelerate its WMP in the 2024-2025 Test Period to respond to the pace of change in wildfire behaviour.

31. In response, AltaLink's amendment to its WMP is outlined below:

- introduce a dynamic wildfire model to enhance real time operator awareness;
- accelerate the timing (pace) to resolve previously identified ignition causing structural deficiencies (maintenance notifications) in HRFAs and identified high risk ignition points;
- accelerate the timing (pace) to resolve newly identified ignition causing structural deficiencies (maintenance notifications) in HRFAs and identified high risk ignition points within 12 months;
- implement a new program to address the top ignition causing lines that cause a high proportion of fire ignitions; and
- establish a Deferral Account for future catastrophic wildfire damages.

32. Given the urgency of responding to this heightened wildfire risk, AltaLink has now proactively commenced planning for this work in order to commence execution in early 2024. AltaLink estimates the capital expenditures for its WMP at $38.5M for 2024 and $38.4M for 2025. Refer to **Appendix 22** for further details about AltaLink's 2024-2025 WMP.

1.1.7 TransAlta Meter Services

33. Since 2002 AltaLink has provided meter data services to TransAlta Utilities Corporation, TransAlta Generation Partnership and TA Alberta Hydro L.P. (collectively, TransAlta) with respect to metering equipment used to measure data exclusively or near exclusively for generation purposes (the "Generation Metering Equipment"). AltaLink charges TransAlta for these services and receives payments, which are included in transmission revenue offsets (Section 8.1.1.2 Services to TransAlta). AltaLink regularly maintains over 800 individual metering installations as part of its obligations as a TFO to provide required billing data to the AESO, and AltaLink maintained and serviced the Generation Metering Equipment (currently 35 meters and associated equipment) as part of its overall meter maintenance program. In 2022, AltaLink realized that it had inadvertently neglected to charge TransAlta for the meter maintenance services and meter replacement costs incurred with respect to the Generation Metering Equipment. AltaLink estimated the operating maintenance costs and capital costs incurred with respect to the Generation Metering Equipment since 2002 and the related impact on transmission tariffs, including depreciation and returns (debt and equity).

34. Accordingly, AltaLink requests Commission approval of a one-time tariff reduction of $1.8M to correct this oversight. AltaLink has removed the estimated net book value of $0.3M from its rate base, which amount would not be in rate base if the capital amounts had been charged to

TransAlta in the past. AltaLink is currently party to two agreements for the provision of meter services, one with TransAlta Generation Partnership and one with TA Hydro L.P. Both agreements expire in June 2023. AltaLink and TransAlta are in negotiations with respect to new meter services agreements. AltaLink requests placeholder treatment for Test Period forecast miscellaneous revenue at current levels and proposes to update the forecast amounts as part of its compliance filing once negotiations are completed. Refer to Transmission Revenue Offsets (Section 8.1.1.2 Services to TransAlta).

1.1.8 PiikaniLink L.P. and KainaiLink L.P 2024-2025 GTAs

35. 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.[15] 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.[16] 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.[17]

36. PLP's and KLP's 2024-2025 GTAs are filed along with AltaLink's 2024-2025 GTA.

1.1.9 AltaLink – Overview

37. AltaLink is the largest TFO in Alberta, 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 over 13,300 kilometres of high-voltage transmission lines and approximately 310 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**.

1.1.10 Technical Aspects of the Application

38. 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.

39. This Application includes tables and schedules containing numbers that may not add up to the exact totals indicated within the tables due to rounding.

[15] Decision 22612-D01-2018, AltaLink L.P. Transfer of Specific Transmission Assets to PiikaniLink L.P. and KainaiLink L.P. and the Associated 2017-2018 General Tariff Applications, November 13, 2018.
[16] Decision 24757-D01-2019, AltaLink Management Ltd., AltaLink L.P. Transfer of Specific Transmission Assets to PiikaniLink L.P., Compliance Filing to Proceeding 22612, September 12, 2019
[17] Decision 25307-D01-2020, AltaLink Management Ltd., AltaLink L.P. Transfer of Specific Transmission Assets to KainaiLink L.P., Compliance Filing to Proceeding 22612, March 13, 2020

1.2 Overview of Revenue Requirement

1.2.1 Revenue Requirement

40. This section provides an overview and brief explanation of the key factors driving the changes in AltaLink's forecast revenue requirement for the 2024-2025 Test Period.

41. AltaLink's forecast revenue requirement is shown on line 13 of MFR Schedule 3-1. AltaLink's forecast transmission rates which are charged to the AESO are shown on line 21 of MFR Schedule 3-1.

42. Table 1.2.1-1 below, shows the year-to-year changes in AltaLink's revenue requirement over the 2024-2025 Test Period, and Table 1.2.2-1 below provides further context for the factors driving these changes. Section 1.3 discusses the key aspects of AltaLink's applied for transmission tariff.

Table 1.2.1-1 -Overview Forecast Changes in Revenue Requirement for 2021 to 2025 ($M)

	2021 Actual	2022 Actual	2023 MU	2024 Test Year 1	2025 Test Year 2
Revenue Requirement					
Operating expense	163.2	165.1	172.4	176.9	179.4
Return - Equity	235.6	235.6	227.4	234.2	234.0
Return - Debt	181.6	182.7	188.9	194.2	195.9
Depreciation	292.1	296.2	301.9	289.7	302.3
Revenue Offsets	(9.5)	(9.2)	(8.1)	(7.5)	(7.5)
Income Taxes	0.0	0.0	0.0	0.0	0.0
Total Revenue Requirement	**863.0**	**870.4**	**882.4**	**887.5**	**904.2**

43. As reflected in Table 1.2.1-1 above:

- AltaLink's 2023 management updated forecast revenue requirement (before adjustments) of $882.4M represents an increase of $12.0M (1.4%) over the 2022 actual revenue; an increase of $11.6M (1.3%) over the Commission-approved 2022 revenue requirement of $870.8M[18], and an increase of $7.4M (0.8%) over the Commission-approved 2023 revenue requirement of $875.0M.[19]
- AltaLink's 2024 forecast revenue requirement (before adjustments) of $887.5M represents an increase of $5.1M (0.6%) over the 2023 management updated forecast revenue requirement and an increase of $12.5M (1.4%) over the Commission-approved 2023 revenue requirement of $875.0M; and
- AltaLink's 2025 forecast revenue requirement (before adjustments) of $904.2M represents an increase of $16.6M (1.9%) over the 2024 forecast revenue requirement.

44. With the exception of labour costs which are subject to market based escalation, AltaLink limited the escalation of all other non-deferral account O&M spending to a general inflation rate of 2.2%, as explained in Section 1.8 below. As a result, total operating expenses in 2023 are forecast at $172.4M which represents an increase of $7.3M (4.4%) compared to 2022. Test Period O&M expenses are forecast to be $176.9M in 2024 and $179.4M in 2025. Refer to Section 5 and Section 25 for further details regarding operating expenses.

[18] Exhibit 27548-X0007, AML 2022-2023 GTA 2nd Compliance Filing Attachment 6 ALP GTA MFR Schedules, Schedule 3-1, line 13.
[19] Exhibit 27548-X0007, AML 2022-2023 GTA 2nd Compliance Filing Attachment 6 ALP GTA MFR Schedules, Schedule 3-1, line 13.

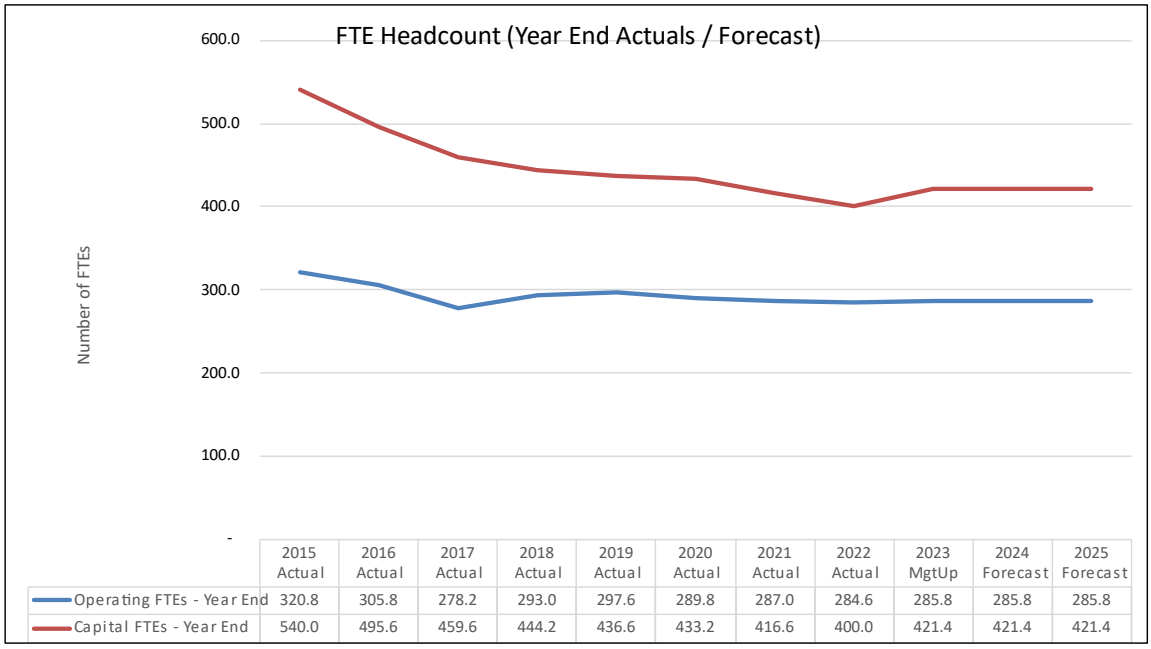
45. Capital expenditures by AltaLink in the 2024-2025 period continue to reflect reduced capital spending compared to 2015 which was the last year of the "Big Build". Total capital spending is forecast at $267.8M in 2023, $384.3M in 2024 and $383.7M in 2025. The forecast amounts in 2024 and 2025 are higher than the capital spending in the three previous years: $290.5M in 2020, $241.8M in 2021, and $243.0M in 2022. The main drivers of the higher forecast capital expenditures include increased Direct Assign project activities, increased requirements to address identified physical security risks, increased requirements to address required changes in wildfire risk management, and incremental requirements associated with capital replacement and upgrades when compared to 2022 and 2023 expenditures. Refer to Section 10 for further details regarding capital expenditures.

46. The application of AltaLink's new salvage methodology approved by the Commission in Decision 25870-D01-2020 results in an approximate reduction of $80M in salvage collection over the Test Period.

47. 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 2024-2025 Test Period.

1.2.1.1 Labour Resourcing

48. In this Application, AltaLink is extending its commitment to maintain its transmission tariff at or below 2018 levels for the 2024-2025 Test Period. AltaLink is able to extend this commitment in part through continued reductions AltaLink has made to its FTE levels since 2015. The historical trend in AltaLink's total FTEs is illustrated in Figure 1.2.1.1-1.



	2015 Actual	2016 Actual	2017 Actual	2018 Actual	2019 Actual	2020 Actual	2021 Actual	2022 Actual	2023 MgtUp	2024 Forecast	2025 Forecast
Operating FTEs - Year End	320.8	305.8	278.2	293.0	297.6	289.8	287.0	284.6	285.8	285.8	285.8
Capital FTEs - Year End	540.0	495.6	459.6	444.2	436.6	433.2	416.6	400.0	421.4	421.4	421.4

Figure 1.2.1.1-1 - AltaLink Total Operating and Capital FTEs – Actuals and Forecast

*Note: The 2015-2022 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 forecast FTE numbers shown in the figure above have been reduced by the forecast 2% vacancy rate in 2023, and by the applied for 2% vacancy rate in 2024 and 2025 relative to the gross FTE numbers. This allows for a consistent comparison against actual FTE results from prior period year end actual numbers.

49. In this 2024-2025 GTA, AltaLink's applied-for revenue requirements reflect a total of 722 FTEs for each test year. This is 20 fewer FTEs than the 742 FTEs approved by the Commission in AltaLink's 2022-2023 GTA, but the same as its 2023 management updated forecast of 722 FTEs.

50. The FTE levels forming the basis of this GTA were determined using a zero-based budgeting approach and reflect the base level of internal resources required for AltaLink to efficiently meet its statutory service obligations. They also align with AltaLink's return to an operations focused company from a capital growth focused company during the "Big Build". AltaLink continues to improve and optimize its use and allocation of resources across its operations, specifically in its use of internal versus external labour in carrying out both capital and operating activities. AltaLink assesses and considers its total labour requirements and the most suitable work for employees and contracted manpower based on such factors as the nature and frequency of the type of work, and the skills and competencies required to complete that work.

51. In 2022, AltaLink faced ongoing post pandemic impacts which continued to create tight labour market conditions, reducing number of 2022 year-end actual FTEs (i.e., net of vacancies) compared to AltaLink's 2022 target level of FTEs. AltaLink faced a significant increase in turnover in 2022: turnover increased from an average of 5.7% over the 2018-2021 period to 10.5% in 2022. Similarly, AltaLink's retirements in 2022 were at a five-year high, with AltaLink experiencing a 50% increase in retirements above 2021 levels. AltaLink has been actively recruiting to fill the resulting position vacancies in the tight labour market, and expects to achieve the FTE levels reflected in its 2023 MU within 2023. Further detail respecting AltaLink's vacancy rate is provided in Section 1.9.10.

52. Consistent with prior applications, AltaLink reports its historical actual FTEs net of vacancies (in other words, actual vacancies at year end are excluded from AltaLink's reported actual FTE levels). By contrast, AltaLink's forecast (target) FTEs do not reflect the application of a vacancy rate; the forecast vacancy rate is applied later in the revenue requirement calculation, and is reflected as a reduction to AltaLink's test period revenue requirement.

53. As shown in Table 1.2.1-2 below, AltaLink's 2022 year-end total actual FTEs were 685. AltaLink's target FTEs, reflecting the FTE level that AltaLink required to carry out its operating and capital work during 2022, were 721. The 2022 721 FTE target level was determined through the ongoing assessment of the actual work activities required to be performed by internal labour resources and as assessed and approved by senior management. This level of internal FTEs for 2022 results in 21 less or 3% less FTEs when compared to the approved 2022 FTE levels and results from matching the assessment of actual work activities to required FTE levels.

Table 1.2.1-2— Target Year End FTES and FTEs Net of Vacancies

	2022 Act.		2023MU		2024F		2025F
Operating FTEs - Dec. 31, 2022	285						
Capital FTEs - Dec. 31, 2022	400						
Total FTEs	**685**						
Operating FTEs - Vacant positions	*16*						
Capital FTE - Vacant positions	*20*						
Total Vacant positions	*36*						
Total Gross FTEs							
Operating FTEs	*301*		292		292		292
Capital FTEs	*420*		430		430		430
Total Target FTES	***721***		722		722		722
Vacancies - Forecast			*2%*		*2%*		*2%*
Operating FTEs			6		6		6
Capital FTEs			9		9		9
Total FTEs - vacancies			14		14		14
FTE Target Levels Net of Vacancies							
Operating FTE vacancy			286		286		286
Capital FTEs vacancy			421		421		421
Total Target FTE Levels Net of Vacancies			**707**		**707**		**707**

54. The difference of 36 FTEs between 2022 target versus 2022 actual year end FTEs was comprised of 16 vacant operating positions and 20 vacant capital positions, which AltaLink has been diligently recruiting to fill.

55. AltaLink provides job descriptions in **Appendix 2-D** for the 2022 year-end 36 vacant FTE positions that AltaLink has been working to fill as soon as possible. Although AltaLink has managed to maintain its operations with the reduced FTE contingent through temporarily delaying work, handling work through unpaid management overtime, etc. continuing to operate with these vacancies is unsustainable.

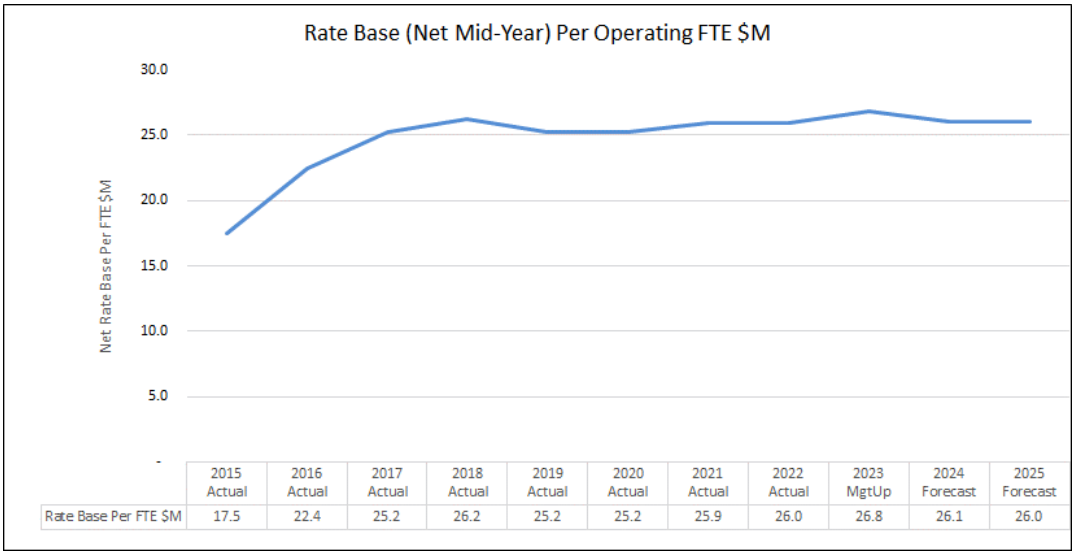
56. As of April 2023, AltaLink has filled 14 of the 16 operating positions and 9 of the 20 capital positions. Most of the remaining vacant positions are in active recruitment and are expected to be filled in Q2 of 2023. The status of AltaLink's efforts to restore its FTE contingent to its 2023-2025 722 FTE target are detailed in **Appendix 2-B**. The specific positions that were vacant at 2022 year-end are identified in **Appendix 2-B** Additions/Reductions, and are further described in **Appendix 2-C** - Positions by Functional Group and **Appendix D** – Job Descriptions.

57. To the extent 36 vacant positions are included in the 2022 FTE total, AltaLink's 2022 FTE count of 721 is roughly the same as the total target FTE count of 722 reflected in AltaLink's 2023 MU and 2024-2025 forecast.

58. Table 1.2.1-2 above also illustrates that AltaLink's 2023MU FTEs net of AltaLink's forecast year end vacancy rate of 2% for 2023 is consistent with AltaLink's 2024-2025 forecast FTEs net of AltaLink's forecast vacancy rate also at 2%. Therefore, AltaLink's year end Operating FTEs are forecast to remain relatively flat from 2023 MU to 2024-2025 forecast.

59. As shown in Figure 1.2.1.1-1 above, AltaLink's FTE levels have generally trended down over the past number of years and are forecast to remain relatively flat through the Test Period. AltaLink has achieved these FTE levels over time by effectively managing its operations in the face of impacts from external factors, such as the current economic environment of persistently high inflation, increased security concerns driving the need for additional IT security FTEs, new ISO rule compliance requirements, and recovery from the impacts of the COVID-19 pandemic. The pandemic disrupted AltaLink's business in various ways, particularly in the years 2020-2021, with impacts that continue to linger as described above.

60. 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 net mid-year rate base is forecast to be $7,441.7M in 2025[20] which represents a further increase of 1.2% compared to 2017. Figure 1.2.1.1-1 above shows that over the 2017-2025 period, AltaLink's operating level of FTEs have remained relatively flat averaging approximately 287.5 FTEs per year. 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 2025, AltaLink is forecasting a ratio of rate base per operating FTE of $26.0M which is virtually unchanged from the average of $25.8M over the 2017-2025 period.



	2015 Actual	2016 Actual	2017 Actual	2018 Actual	2019 Actual	2020 Actual	2021 Actual	2022 Actual	2023 MgtUp	2024 Forecast	2025 Forecast
Rate Base Per FTE $M	17.5	22.4	25.2	26.2	25.2	25.2	25.9	26.0	26.8	26.1	26.0

Figure 1.2.1.1-2 - AltaLink Rate Base (Net Mid-Year) Per Operating FTE $M

[20] MFR Schedules, Schedule 31.2-A, Schedule of AML Total Net Mid-Year Rate Base, line 12.

Operating versus Capital FTEs

61. AltaLink's method for classifying an FTE as operating or capital is based on the review of the activities performed by the position and whether they are related to operating or capital projects by cost centre. As AltaLink has explained in prior applications, almost all positions in AltaLink work on both operating and capital activities and are therefore not 100% operating or 100% capital as the designation might indicate. As an example, if a group of ten positions in a cost center are forecast to have 60% of their time spent on capital activities and 40% of their time spent on operating activities, AltaLink assigns six positions as capital FTEs and four positions as operating FTEs to obtain a reasonable split of the focus of positions between operating and capital. At year-end, AltaLink does not change the designation assigned to the positions regardless of the amount of actual capital or operating work completed by those positions. This ensures consistency in the information provided across applications, facilitating a clear understanding of changes in labor forecasts from test period to test period.

62. Consistent with its approach in prior GTAs, as part of AltaLink's zero-based budgeting for the 2024-2025 GTA, AltaLink assessed the amount of operating versus capital work performed by its internal resources and re-evaluated each position's designation as operating or capital by cost centre and USA. Based on this review, AltaLink refined its allocation of FTEs between operating and capital, having regard for the activities forecast for 2023 MU and the 2024-2025 Test Period.

63. AltaLink identified a number of instances in which the capital or operating designation assigned to an FTE needed to be adjusted to more accurately reflect the average capitalization rate of the cost centre based on the work activities forecast. AltaLink's reclassification of FTEs resulted in a net shift of seven operating FTEs to capital FTEs. These reclassifications are reflected in AltaLink's 2023 MU and 2024-2025 forecast FTE numbers shown in Table 1.2.1-2 above.

Capital Projects

64. Although the Big Build is complete, there is still a large amount of DA capital work that remains for AltaLink.

65. AltaLink manages its varying capital workloads by maintaining a base level of capital FTEs to support Capital project governance and delivery, and relies on contractors and term employees to handle peak workload activities. AltaLink also leverages the considerable experience of its personnel gained through effectively managing projects through the Big Build to efficiently plan and staff its ongoing capital projects, now primarily focused on Direct Assigned project work directed by the AESO.

66. The volume of resources required for project delivery is managed by the use of an outsourced engineering procurement and construction model (EPCm) 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 ensures that AltaLink is appropriately staffed with internal resources, but at the same time mitigates the cost risk (including severance cost risk) associated with hiring full time staff to address an inherently variable capital workload.

67. 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, leverage the capacity and capability of the internal team members and also leverage external contractors where appropriate to help manage the the variability in timing and staffing requirements that are typically experienced in completing its Direct Assign capital project portfolio.

68. As described in the 2019-2021[21] and 2022-2023 GTAs[22], AltaLink is shifting its approach even further with its DA projects, towards a "self-manage" approach for smaller projects that are within AltaLink's capability to directly manage, as discussed in more detail in Section 10.2.3. These changes provide opportunities for increasing the effectiveness and efficiency of AltaLink's capital work.

69. As described in the 2022-2023 GTA, AltaLink is applying the flexible EPCm model for DA projects.[23] AltaLink believes it can use the experience from the self-manage model to increase the complexity scale of projects and realize cost-savings with the flexible EPCm model. The flexible EPCm model will continue to rely on EPCms and other contractors to execute engineering, procurement, construction and construction management functions. Distinct from the traditional EPCm model is that AltaLink will take on responsibility for the day-to-day management and oversight of the project, where historically this function was completed by the EPCm. Given the EPCm would no longer be involved in the construction phase of the project, or less so than historically, AltaLink FTEs will focus on directly contracting with third party contractors to provide services on a project-by-project basis and manage the performance of these contractors.

70. Although the volume of DA projects have decreased since 2015, AltaLink has seen an increasing amount of smaller projects to support customer interconnection requests as compared to prior periods. These smaller projects provide a consistent workload for internal staff, including preparing estimates, AESO reports, schedules, stage gates, and providing cost control and facility application support regardless of project size/expenditure. Additionally, capital FTEs will not directly correlate with capital expenditures because 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. AltaLink continues to forecast a baseload of projects that require execution for its customers and the AESO.

71. As capital project workload increases, AltaLink manages the higher volume of work by increasing its contractor and EPCm resources as necessary, and reducing its contractor and EPCm staff accordingly when the workload decreases. AltaLink allocates work between employees and contractor services with the overall objective of ensuring that its employees are fully utilized. AltaLink ensures the most efficient delivery of its capital programs by leveraging its contractor workforce to manage workload variability and specialty skill requirements as applicable. This approach ensures efficient use of both AltaLink employees and contractor services in accordance with project requirements while retaining required competencies within AltaLink employees necessary to support its ongoing operations over time. AltaLink will continue to address project workload variability with external resources to allow it to efficiently ramp up and ramp down as required.

72. Overall, capital FTEs are adjusted only when the base workload is proven to be increasing or decreasing at sustained levels. The need for contractor services is dependent on the dynamic nature of the capital program as projects are completed, cancelled, deferred or as new projects arise. When the overall activity levels decrease, AltaLink will descope contractors while keeping

[21] Exhibit 23848-X0002.02, AML 2019-2021 GTA Application Updated 20190821, paras 625-628, pdf 242-243.
[22] Exhibit 26509-X0002.01, AML 2022-2023 GTA Application Updated Sep2021, paras 653-660, pdf 209-210.
[23] Exhibit 26509-X0002.01, AML 2022-2023 GTA Application Updated Sep2021, para 655.

the base level capital FTEs engaged at all times. This approach allows AltaLink to easily adapt to changes in project volumes. Additionally, AltaLink's stable internal workforce helps to serve as an anchor, stabilizing costs even as the volume of projects may change or fluctuate over time.

73. In AltaLink's 2022-2023 GTA, AltaLink responded to a Commission information request, providing the capital FTEs by Program (CRU, DA, CRU/DA, IT, Facilities, IT/Facilities/All).[24] AltaLink provides its 2021-2022 actual and 2023-2025 forecast capital FTEs broken out in the same format in the table below.

Table 1.2.1.1-3 - Capital FTEs by Department

2021 Actuals								
Program	**CRU**	**DA**	**DA/CRU**	**IT**	**FAC**	**IT/FAC**	**All**	**Total**
Focused	99	46	96	13	1	7		262
Partially Focused	58		37.8	11				106.8
Support							47.6	47.6
Grand Total	157	46	133.8	24	1	7	47.6	416.4
2022 Actuals								
Program	**CRU**	**DA**	**DA/CRU**	**IT**	**FAC**	**IT/FAC**	**All**	**Total**
Focused	96	48	93	11	0	5		253
Partially Focused	57		35	9				101
Support							46	46
Grand Total	153	48	128	20	0	5	46	400
2023 MU/2024-25 GTA Forecast**								
Program	**CRU**	**DA**	**DA/CRU**	**IT**	**FAC**	**IT/FAC**	**All**	**Total**
Focused	101	49	97	12	0	5		264
Partially Focused	65		39	10				114
Suppot							52	52
Grand Total	166	49	136	22	0	5	52	430

**Note: The 2023 MU/2024-2025 GTA forecast positions represents the total number of positions and does not reflect the vacancy rate

Operating Activities

74. Consistent with prior test periods, AltaLink has minimized the amount of contractor and/or external labour contract resources relative to historical levels and is relying on its internal resources to efficiently manage its projected workloads associated with operating and maintaining its large asset base.

75. AltaLink's forecast FTE levels reflect its return to an operations-based company compared to a infrastructure growth company. AltaLink's internal resource requirements are driven by the personnel required to operate and maintain AltaLink's large and complex transmission system, to address asset aging and deterioration, and to deal with evolving industry rules and standards such as ISO rules and security requirements. AltaLink's ongoing focus of identifying and implementing process improvements, as detailed in Section 1.11, will enable AltaLink to mitigate the effects of other factors that continue to put upward pressure on its operating workloads and required staffing levels.

[24] Exhibit 26509-X0223, AML-AUC-2021AUG20-067(c), pdf 303-304.

76. 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, skills and competencies required. AltaLink primarily uses contracted manpower for peak workload management for operating activities and for specialized services. In most cases that work is 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 include but 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.

77. AltaLink provides further details on its forecasts for operating labor and contracted manpower in Sections 5 and Section 25 of the Application.

78. AltaLink provides a breakdown of operating and capital FTEs by USA in **Appendix 2-A**, **Appendix 2-B** and on a company functional basis in **Appendix 2-C**. See **Appendix 2-D** for detailed operating FTE job descriptions required to achieve target FTE levels relative to the year end operating FTEs.

1.2.2 System Growth and Maintenance – Capital Additions

79. This section addresses year-to-year changes in revenue requirement relating to changes in capital spending and operating costs related to system growth and maintenance.

80. Total capital additions for system growth and maintenance are forecast to be $258.5M in 2023, $336.6M in 2024, and $336.8M in 2025, 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.

81. Table 1.2.2-1 below shows the year-to-year changes in revenue requirement over 2022-2024 as driven by changes in AltaLink's System Growth and Maintenance costs which, in turn, reflect changes in capital additions and related 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.

82. In 2024 the forecast changes in capital spending related to system expansion and maintenance are forecast to account for a change of $0.0M or 0.0% in revenue requirement compared to the 2023 management update forecast revenue requirement. In addition to this capital related change in forecast 2024 revenue requirement are changes in the operating costs component of system capital and changes in system support operating costs. Specifically, changes in operating costs related to system capital account for an increase of $0.5M or 0.1% in revenue requirement, and changes in system support operating costs account for an increase of $4.6M or 0.5% in forecast revenue requirement. In addition to the increase related to changes in

operating costs, the recovery of return on previously disallowed salvage expense and other settlements and true-ups will result in an increase of $8.2M or 0.9% in forecast 2024 revenue requirement compared to 2023. As shown in Table 1.2.2-1, the combined effect of changes related to system expansion and maintenance, system support costs, and the recovery of return on disallowed salvage and other settlements and true-ups results in an overall increase in revenue requirement $13.3M or 1.5% in 2024 compared to the current 2023 forecast.

83. The 2025 forecast revenue requirement increase over the 2024 forecast amount is primarily driven by higher system maintenance related capital spending and, to a lesser extent, higher system growth related capital spending. As shown in Table 1.2.2-1, the higher system growth and system maintenance related capital spending in 2025 results in a combined revenue requirement increase of approximately $14.1M or 1.6% compared to 2024. Additionally, higher operating costs related to system capital and higher system support operating costs result in further increases in the forecast 2025 revenue requirement of $0.9M (0.1%) and $1.6M (0.2%), respectively, compared to the forecast revenue requirement in 2024. 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 $16.6M or 1.9% in forecast revenue requirement in 2025 compared to the 2024 forecast.

Table 1.2.2-1 - Overview Forecast Changes in Revenue Requirement for 2024 to 2025 ($M)

			% Chg
Revenue Requirement - 2023 MU		882.4	
Provision for Deferral Accounts		0.0	
2023 Management Update - Adjusted Revenue Requirement		**882.4**	
Recovery of Return on previously disallowed Salvage Expense		0.0	
Other Settlement Accounts inc TransAlta Revenue Offsets Trueup		0.0	
Total Transmission Tariff 2023 Management Update		**882.4**	
2024 Forecast: Revenue Requirement changes due to:			
System Growth & Maintenance			
System Capital			
System expansion	1.9		
Existing system maintenance	(2.0)		
Change in System Capital		(0.0)	*0.0%*
Operating costs related to System Capital			
Taxes other than income tax	0.7		
Annual Structure Payments	0.0		
Self Insurance Reserve and insurance premiums	0.0		
Brushing	(0.2)		
Change in Operating costs related to System Capital		0.5	*0.1%*
System Support Operating Costs			
Labour	2.0		
Contractor services	0.7		
Hearing Cost Reserve	0.9		
Other expenses	1.0		
Change in System Support Operating Costs		4.6	*0.5%*
Change in Revenue Requirement from 2023 levels		5.1	*0.6%*
Total Revenue Requirement - 2024 Forecast		**887.5**	
Recovery of Return on disallowed Salvage Expense and Other Settlements		8.2	
Total Transmission Tariff 2024 Forecast		**895.7**	*1.5%*
2025 Forecast: Revenue Requirement changes due to:			
System Growth & Maintenance			
System Capital			
System expansion	1.7		
Existing system maintenance	12.4		
Change in System Capital		14.1	*1.6%*
Operating costs related to System Capital			
Taxes other than income tax	0.8		
Annual Structure Payments	0.0		
Self Insurance Reserve and insurance premiums	0.0		
Brushing	0.2		
Change in Operating costs related to System Capital		0.9	*0.1%*
System Support Operating Costs			
Labour	1.7		
Contractor services	0.5		
Hearing Cost Reserve	(1.4)		
Other expenses	0.8		
Change in System Support Operating Costs		1.6	*0.2%*
Change in Revenue Requirement from 2024 levels		16.6	*1.9%*
Total Revenue Requirement - 2025 Forecast		**904.2**	
Recovery of Return on disallowed Salvage Expense and Other Settlements		0.0	
Total Transmission Tariff 2025 Forecast		**904.2**	*0.9%*

1.2.3 2021-2023 GTA Period – Approved versus Actuals

84. In order to provide greater context and continuity to the 2024-2025 GTA Application, Table 1.2.3-1 below sets out additional detail and provides a breakdown of the various cost groupings for the previous 2021-2023 GTA years.

Table 1.2.3-1 – 2021-2023 GTA Revenue Requirement – Approved GTA versus Actuals ($M)

Revenue Requirement	2021 Approved	2021 Actual	2021 Variance	2022 Approved	2022 Actual	2022 Variance
Operating Costs	161.6	163.2	1.6	165.7	165.1	(0.6)
Depreciation	287.7	292.1	4.4	297.3	296.2	(1.1)
Return on Rate Base	417.8	417.2	(0.6)	416.4	418.3	1.9
Revenue Offsets	(8.4)	(9.5)	(1.1)	(8.5)	(9.2)	(0.7)
Income Tax Expense	0.0	0.0	0.0	0.0	(0.0)	(0.0)
Total	**858.6**	**863.0**	**4.3**	**870.8**	**870.4**	**(0.5)**

Table 1.2.3-2 – 2021-2023 GTA Revenue Requirement – Approved GTA versus Actuals ($M)

Revenue Requirement	2023 Approved	2023 MU	2023 Variance
Operating Costs	168.6	172.4	3.7
Depreciation	302.3	301.9	(0.3)
Return on Rate Base	412.3	416.3	4.0
Revenue Offsets	(8.2)	(8.1)	0.0
Income Tax Expense	0.0	0.0	(0.0)
Total	**875.0**	**882.4**	**7.4**

Table 1.2.3-3 – 2021-2023 GTA Operating Expenses – Approved GTA versus Actuals ($M)

Operating Costs	2021 Approve	2021 Actual	2021 Variance	2022 Approve	2022 Actual	2022 Variance
Net Salaries and Wages	49.9	49.6	(0.3)	50.0	48.5	(1.6)
Contracted Manpower	20.8	19.8	(1.1)	20.4	20.4	(0.0)
Administrative & General	23.8	25.7	1.9	27.7	26.9	(0.9)
Total Costs before Reserve & Deferral Accounts	**94.5**	**95.0**	**0.5**	**98.2**	**95.7**	**(2.5)**
Taxes Other Than Income	49.3	51.7	2.4	51.1	52.8	1.7
Self Insurance Reserve	1.1	-	(1.1)	0.9	-	(0.9)
Hearing Costs	1.4	1.1	(0.3)	-	1.1	1.1
Annual Tower Payments	15.3	15.3	(0.0)	15.5	15.5	(0.0)
Total Reserve & Deferral Operating Costs	**67.1**	**68.1**	**1.0**	**67.5**	**69.4**	**1.9**
Total Operating Costs	**161.6**	**163.2**	**1.6**	**165.7**	**165.1**	**(0.6)**

Totals may not add due to rounding.

Table 1.2.3-4 – 2021-2023 GTA Operating Expenses – Approved GTA versus Actuals ($M)

Operating Costs	2023 Approved	2023 MU	2023 Variance
Net Salaries and Wages	51.0	50.5	(0.4)
Contracted Manpower	20.7	20.9	0.2
Administrative & General	29.0	29.1	0.1
Total Costs before Reserve & Deferral Accounts	**100.6**	**100.6**	**(0.0)**
Taxes Other Than Income Tax	51.6	54.9	3.3
Self Insurance Reserve	0.9	0.9	-
Hearing Costs	-	0.5	0.5
Annual Tower Payments	15.5	15.5	-
Total Reserve & Deferral Operating Costs	**68.0**	**71.8**	**3.8**
Total Operating Costs	**168.6**	**172.4**	**3.7**

85. As shown in Table 1.2.3-1 above, the 2021 actual revenue requirement is $863.0M which is $4.3M higher than the approved amount of $858.6M. This 2021 variance is due to a $1.6M increase in operating costs and a $4.4M increase in depreciation expense, which are only partially offset by lower return on rate base and higher revenue offsets.

86. For the year 2022, Table 1.2.3-1 above shows that actual revenue requirement is $870.4M, which is $0.5M less than the approved amount of $870.8M. In 2022, decreases of $0.6M in operating costs and $1.1M in depreciation coupled with a $0.7M increase in revenue offsets more than offset a $1.9M increase in return on rate base.

87. For the year 2023, Table 1.2.3-1 above shows that forecast revenue is $882.4M which is $7.4M higher than the approved amount of $875.0M. This expected variance is due to a $3.7M increase in operating costs and a $4.0M increase in return on rate base.

1.2.4 System Growth and Maintenance - Rate Base Impact

88. System growth and maintenance primarily captures the cost associated with DA projects, which are driven by 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 a reduction in no cost capital, the 2021 net mid-year rate base is now reported to be $7,469.2M. This rate base amount represents an increase of 0.8% compared to the net mid-year rate base of $7,410.4M in 2020.

89. Similarly, in 2022 the actual net mid-year rate base is $7,421.9 M, an amount which is 0.6% less than 2021. This decrease in 2022 is due to slightly lower capital additions combined with small increases in no cost capital and Customer Contributions. By 2023, the net mid-year rate base is forecast at $7,417.9M, an amount which is virtually unchanged from the prior year 2022.

90. In the 2024-2025 Test Period, AltaLink is forecasting a mid-year rate base (after adjustments) of $7,447.4M[25] and $7,441.7M[26] in 2024 and 2025, respectively. These forecast amounts represent:

- an increase of $29.6M in 2024 compared to the 2023 forecast rate base of $7,417.9M; and
- a decrease of $5.8M in 2025 compared to the 2024 forecast rate base of $7,447.4M.

91. Forecast changes to the rate base in 2024 and 2025 are primarily driven by changes in the NBV of system assets which reflect capital spending programs in the prior, current and forecast years, and also to a lesser extent, by changes in no cost capital and Customer Contributions.

92. 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.

93. AltaLink's revenue requirement forecast is detailed in Section 3.

1.3 Overview of Key Aspects of Application

94. The key aspects of the Application discussed in this section include:

- Revenue Requirement Overview;
- Cost Containment Measures used to Level Revenue Requirement;
- Operating Costs Overview;
- Capital Spending;
- Consolidated FTE Forecasts;
- Overview of Total Company Operating Expenses (O&M and A&G);
- Wildfire Mitigation;
- Security and Information Technology; and
- Salvage 2022-2023 Actuals/MU and 2024-2025 Forecast.

1.3.1 Revenue Requirement Overview

95. 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:

- 2024 test year: $887.5M; and
- 2025 test year: $904.2M.[27]

96. After taking into account the tariff adjustments, AltaLink is requesting approval for the following annual tariff amounts:

- 2024 test year: $895.7M; and
- 2025 test year: $904.2M.[28]

1.3.2 Revenue Requirement

97. 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

[25] MFR Schedules, Schedule 31.2-A, Schedule of AML Total Net Mid-Year Rate Base, line 12.
[26] MFR Schedules, Schedule 31.2-A, Schedule of AML Total Net Mid-Year Rate Base, line 12.
[27] MFR Schedules, Schedule 3-1, Summary of Transmission Revenues and Costs, line 13.
[28] MFR Schedules, Schedule 3-1, Summary of Transmission Revenues and Costs, line 21.

cost-of-removal and only collect an annual amount sufficient to maintain AltaLink's FFO/Debt ratios at 11.1%.[29] When AltaLink's FFO/Debt ratio exceeds 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 salvage pre-collection amounts by approximately $90M for the current Test Period. For the current GTA, AltaLink is proposing salvage pre-collection of $11.5M and $19.5M for 2024 and 2025 respectively, compared to approximately $60M per year under the traditional salvage methodology.

98. As explained below, in the 2024-2025 GTA AltaLink is limiting the annual escalation of all O&M spending to the expected general inflation of 2.2%, with the exception of salaries and wages which are subject to market based escalation.

99. This 2024-2025 GTA will continue to provide customers with approximately $80M per year of tariff reduction related to the change starting in 2016 from the future income tax method to the flow-through tax method.

1.3.3 Operating Costs Overview

100. Over the 2024-2025 Test Period, AltaLink is limiting the escalation of all O&M spending to the expected general inflation of 2.2%, with the exception of salaries and wages which are subject to market based escalation. Total O&M spending is forecast to be:

- 2024 test year: $176.9M; and
- 2025 test year: $179.4M.[30]

101. As shown, total 2024 O&M spending is forecast at $176.9M which represents an increase of $4.5M or 2.6% compared to 2023 O&M expenses which are forecast at $172.4M. In 2025 total O&M expenses are forecast at $179.4M which represents an increase of $2.5M or 1.4% compared to 2024.

102. Operating expenses are further explained in detail in Section 1.3.6, Section 5, and Section 25.

1.3.4 Capital Spending

103. Capital expenditures in the 2024-2025 Test Period continue to reflect reduced capital spending compared to 2015 which was the last year of the "Big Build". As AltaLink continues to work on a relatively stable amount of capital maintenance and more DA project expenditures in alignment with the AESO's 2022 Long Term Plan[31] and increased requirements to address identified physical security risks, total capital spending in this GTA is forecast at $384.3M in 2024 and $383.7M in 2025. In comparison, in the three previous years, capital spending totalled $241.8M in 2021, $243.0M in 2022 and $267.8M in 2023.

104. The 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.

105. As shown, AltaLink forecasts total capital expenditures of $267.8M in 2023, $384.3M in 2024 and $383.7M in 2025, and total capital additions to rate base on $258.5M in 2023, $336.6M in 2024 and $336.8M in 2025. The impact on revenue requirement attributed to these levels of

[29] Decision 25870-D01-2020, Stage 2 Review and Variance of Decision 23848-D01-2020, AltaLink Management Ltd., 2019-2021 General Tariff Application, November 19, 2020.
[30] MFR Schedules, Schedule 3-1, Summary of Transmission Revenues and Costs, line 8.
[31] AESO 2022 Long-term Transmission Plan: https://www.aeso.ca/grid/grid-planning/long-term-transmission-plan/.

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.

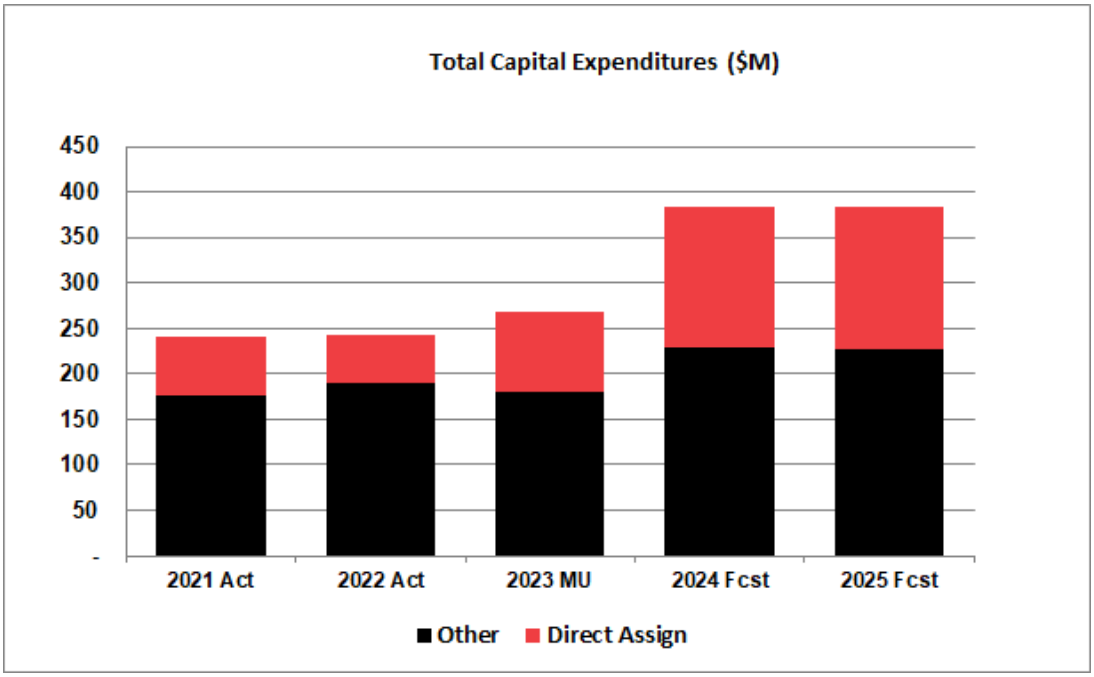


Figure 1.3.4-1 - Total Capital Expenditures 2021-2025 ($M)

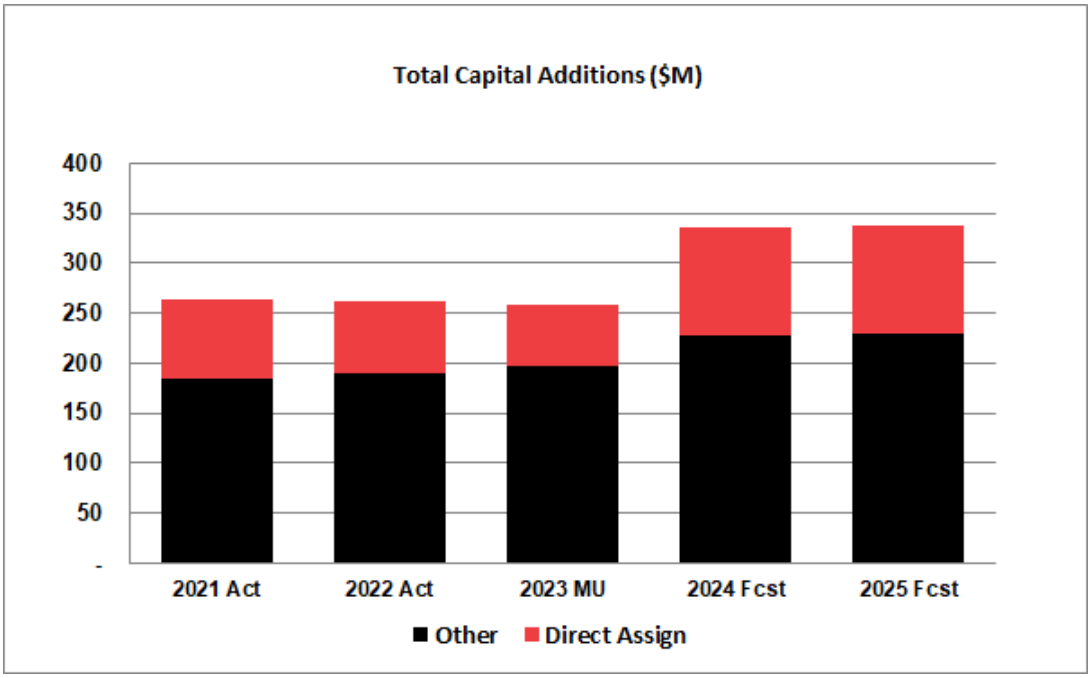


Figure 1.3.4-2 - Total Capital Additions 2021-2025 ($M)

1.3.5 Consolidated Full Time Equivalent Forecasts

106. AltaLink addresses its Test Period and previous years' FTEs in Section 1.2.1.1 above.

1.3.6 Overview – Total Company Operating Expenses (O&M and A&G)

Table 1.3.6-1 - AltaLink Total Company - Operating Expenses ($M)

Expense	2021 Actual	2022 Actual	2023 MU	2024 Test Year	2025 Test Year
Labour	49.5	48.5	50.5	52.6	54.2
Contracted Manpower	19.8	20.4	20.9	21.5	22.2
Other GOE	42.2	43.5	46.0	47.2	46.6
Total	**111.4**	**112.3**	**117.5**	**121.3**	**123.0**

Totals may not add due to rounding.

1.3.6.1 Labour

Table 1.3.6.1-1 - AltaLink Total Company - Operating Labour Expenses ($M)

Operating Labour Expense	2021 Actual	2022 Actual	2023 MU	2024 Test Year	2025 Test Year
Total O&M (Section 5)	27.5	27.6	28.7	29.8	30.7
Total A&G (Section 25)	22.0	20.9	21.9	22.7	23.5
AltaLink Total	**49.5**	**48.5**	**50.5**	**52.6**	**54.2**

Totals may not add due to rounding.

Table 1.3.6.1-2 - AltaLink Total Company - Labour Forecast Increase ($M)

Forecast Increase	2023 MU versus 2022 Actual	2024 Test Year versus 2023 MU	2025 Test Year versus 2024 Test Year	2 Test Year Average
Inflation	2.1	1.8	1.8	1.8
Other	(0.0)	0.3	(0.2)	0.0
Total	**2.1**	**2.0**	**1.7**	**1.8**

Totals may not add due to rounding.

107. AltaLink forecasts labour expense to increase on average by $1.8M in the Test Period primarily due to the impact of inflation assumptions defined in Section 1.8. The increase in Other of $0.3M from 2023 MU to 2024 forecast is primarily due to changes in the timing and requirements for operating and capital support activities as further detailed in Sections 5 and Section 25.

1.3.6.2 FTEs

Table 1.3.6.2-1 - AltaLink Total Company - FTEs Year End Summary

Year End Operating FTEs	2021 Actual	2022 Actual	2023 MU	2024 Test Year	2025 Test Year
Total O&M (Section 5)	184.2	182.6	178.6	178.6	178.6
Total A&G (Section 25)	102.8	102.0	113.0	113.0	113.0
Total	**287.0**	**284.6**	**291.6**	**291.6**	**291.6**

Totals may not add due to rounding.

108. On a total company basis, AltaLink forecasts 291.6 operating FTEs for both years of the Test Period.

109. The 7.0 FTE increase over 2022 year-end actuals is due to an additional 11.0 A&G FTEs, offset by a reduction of 4.0 O&M FTEs. AltaLink's A&G FTEs increased in 2023-2025 as a result of filling vacancies that existed at year-end 2022, primarily in USA 934. AltaLink's security and Information technology team experienced a high level of staff retiring or seeking other jobs following a return to the office post-COVID as discussed in Section 25.2.13.3. AltaLink's significant recruitment efforts to fill vacancies have been successful as the majority of vacant positions have since been filled or are intended to be filled in Q2 of 2023. The decrease of 4.0 O&M FTEs is due to not backfilling for a retirement and reclassifying operating FTEs to capital FTEs, driven primarily from AltaLink re-assessing its work activities within each cost center and USA to ensure critical items are managed between operating and capital support requirements. This assessment reflects the amount of capital and operating FTEs that are represented in the financial forecast and revenue requirement. Refer to Section 1.2.1.1 above, Section 5 and Section 25 for details by USA Activity Code as well as **Appendix 2-A** to **Appendix 2-D**.

1.3.6.3 Contracted Manpower

Table 1.3.6.3-1 - AltaLink Total Company - Contracted Manpower Operating Expenses ($M)

Contracted Manpower Expense	2021 Actual	2022 Actual	2023 MU	2024 Test Year	2025 Test Year
Total O&M (Section 5)	14.4	14.3	14.9	15.2	15.7
Total A&G (Section 25)	5.4	6.0	6.0	6.3	6.5
AltaLink Total	**19.8**	**20.4**	**20.9**	**21.5**	**22.2**

Totals may not add due to rounding.

Table 1.3.6.3-2 - AltaLink Total Company - Contracted Manpower Forecast Increase ($M)

Forecast Increase	2023 MU versus 2022 Actual	2024 Test Year versus 2023 MU	2025 Test Year versus 2024 Test Year	2 Test Year Average
Inflation	0.2	0.5	0.5	0.5
Other	0.3	0.1	0.2	0.2
Total	**0.5**	**0.6**	**0.7**	**0.6**

Totals may not add to due to rounding.

110. On an overall company basis, for the Test Period, AltaLink forecasts an average increase of $0.6M for Contracted Manpower, primarily due to the impact of inflation assumptions defined

in Section 1.8. The $0.2M average increase in the Test Period in Other is primarily related to increased support activities for wildfire weather forecasting in Direct O&M (refer to Section 5).

111. The increase in Other from 2022 Actuals to 2023MU of $0.3M is primarily driven by lower maintenance activities in vegetation management and market conditions that are not expected to continue in the Test Period. Refer to Section 5 for details.

1.3.6.4 Other GOE

Table 1.3.6.4-1 - AltaLink Total Company - Other GOE Expenses ($M)

Other GOE	2021 Actual	2022 Actual	2023 MU	2024 Test Year	2025 Test Year
Total O&M (Section 5)	23.5	23.2	23.9	23.8	23.9
Total A&G (Section 25)	18.7	20.2	22.1	23.4	22.6
AltaLink Total	**42.2**	**43.5**	**46.0**	**47.2**	**46.6**

Totals may not add due to rounding.

Table 1.3.6.4-2 - AltaLink Total Company - Other GOE Increase ($M)

Forecast Increase	2023 MU versus 2022 Actual	2024 Test Year versus 2023 MU	2025 Test Year versus 2024 Test Year	2 Test Year Average
Inflation	0.4	1.0	1.0	1.0
Other	2.1	0.2	(1.7)	(0.7)
Total	**2.5**	**1.2**	**(0.7)**	**0.3**

lTotals may not add due to rounding.

112. On an overall company basis, AltaLink is forecasting an increase of $0.4M on average over the Test Period, partially due to the impact of inflation assumptions defined in Section 1.8.

113. The $2.1M increase in Other from 2022 Actuals to 2023 MU is driven by multiple factors including changes in SIR; insurance expenses; one-off favourable true-up adjustments in building operating costs and timing of material, repairs, and company memberships. Refer to Section 5 and 25 for details.

114. The further increase of $0.7M in Other from 2023MU to 2024 Forecast is primarily related to hearing costs associated with that year. Those are not expected to continue through the end of the Test Period. Refer to Section 25 for details.

115. Refer to Section 5 and Section 25 for a detailed description of the GOE forecasts on an individual USA Activity Code basis.

1.3.7 Wildfire Mitigation

116. The Commission approved AltaLink's Wildfire Mitigation Plans submitted in its 2019-2021 and 2022-2023 GTAs. In the previous four years, through the execution of these WMPs, AltaLink has reduced the likelihood of an ignition event occurring from its operations. The scope of AltaLink's WMP includes operating practices, situational awareness activities, and capital programs designed to lower the risk of an ignition event occurring from its operations.

117. In the 2024-2025 Test Period, AltaLink's WMP is a continuation of and consistent with previously approved wildfire mitigation principles and methodologies and introduces new subprograms

and programs to address heightened wildfire risk. AltaLink seeks to implement WMP activities in areas of identified risk based on current industry practices. Refer to **Appendix 22** for further detail on AltaLink's WMP.

1.3.8 Security and Information Technology

118. Security and IT program expenditures have increased in the 2024-2025 Test Period compared to the 2022-2023 test period. This increase is primarily driven by physical security measures at critical AESO identified CIP-14 substation sites and cyclical replacements and upgrades.

119. The proposed physical security measures proactively mitigate the risk of serious physical attacks on the AIES that could cause prolonged outages and disrupt Alberta's provincial economy. The CIP-014 and CIP Medium Impact Site Physical Security business case identifies $22.8M of forecasted capital expenditures to mitigate this threat. These security measures will collectively deter, detect, delay, assess, communicate, and respond to physical attacks on AltaLink's facilities. Refer to Section 10.4 and **Appendix 13-B1-04** for further detail on physical security threats and AltaLink's planned threat mitigation.

120. Cyber attacks on electricity infrastructure in North America have also increased in frequency and complexity throughout 2022-2023. AltaLink expects this trend to continue throughout the Test Period. AltaLink's firewall is subject to roughly one million potentially malicious attacks each week, including vulnerability scanning by malicious actors attempting to identify weaknesses in AltaLink's defenses. These attacks are continually changing, using new and more sophisticated technologies. AltaLink must investigate, contain and remediate cyber threats to protect customers and the AIES from increasing and evolving cyber threat. Refer to Section 10.4 and **Appendix 13-B1-05** for further detail on AltaLink's security investment.

121. IT forecasted capital expenditures in the Test Period are higher than the 2022-2023 test period due to the cyclical timing of hardware replacements and end of support software upgrades. Overall, approximately $19.6M are forecast across four business cases – Systems Upgrade Program, Data Centre and System Protection Program, Technology Refresh Program and Corporate and OT Network and Infrastructure Upgrade to address lifecycle improvements across these key systems that are required for AltaLink to effectively operate its assets in support of the AIES. Refer to Section 10.4 and **Appendix 13-B3-02, Appendix 13-B3-13, Appendix 13-B3-07** and **Appendix 13-B3-08**.

122. Alberta Reliability Standards compliance requirements continue to evolve. AltaLink has forecasted $2.7M in capital expenditures to develop, deploy and report on ARS requirements in the Test Period. In addition, AltaLink must implement the Integrated System Operations Software Addition program to comply with new AESO data requirements for planned outage submissions. The forecast capital expenditures for this program are $5M. Refer to Section 10.4, **Appendix 13-B4-01** and **Appendix 13-B3-10**.

123. Section 10.4 describes AltaLink's IT long-range plan. AltaLink has thoroughly reconsidered the impending end-of-life of its SAP system and affected adjacent systems following the Commission's decision with respect to AltaLink's proposed Enterprise Resource Plan Upgrade Program business case and Enterprise Asset Management Upgrade business case in its 2022-2023 GTA. Section 10.4 describes AltaLink's revised phased strategy which will be implemented over the next three GTA test periods leading to 2030. AltaLink's capital IT projects and programs support this plan and the continued safe, reliable and economic operation of AltaLink's transmission assets. Refer to Section 10.4 for further detail on AltaLink's IT long-range plan and

Appendix 13-B2, Appendix 13-B3 and **Appendix 13-B4** for further detail on AltaLink's capital IT projects.

1.3.9 Salvage 2022-2023 Actuals/MU and 2024-2025 Forecast

124. Consistent with its long-standing historical approach, AltaLink addresses CRU salvage as an integrated part of its overall CRU Program.[32] AltaLink does not plan or track salvage activities and costs associated with each CRU project separately from other aspects of the project. It is neither efficient nor practical to delineate the costs specifically for the salvage portion of a CRU project, as the salvage activity is highly integrated and seamless with the rest of the overall execution of the project. This reflects the nature of CRU work, which involves the replacement of an asset through the contemporaneous removal of the existing asset and installation of the new asset at the same or nearly the same physical location. The salvage activities on a CRU project are primarily driven by and are integral to the CRU capital installation/upgrade activity.

125. As part of AltaLink's improvement of salvage information included in its GTA, AltaLink provides more detailed explanations of its salvage allocation methodology in Section 10.3.1 alongside its CRU forecast methodology. Additionally, AltaLink provides information regarding the prudence of its 2022-2023 salvage expenditures in Section 10.3.8 to 10.3.41, where AltaLink explains both CRU capital and salvage expenditures 2022-2023 variances. Finally, AltaLink has incorporated its 2024-2025 salvage expenditures forecast into each CRU business case, included in **Appendix 13-A**.

1.4 Transmission Tariffs Applied For

126. AltaLink is applying for transmission tariffs that reflect the forecast revenue requirement and tariff adjustments for the 2024-2025 Test Period as follows:

- the 2024 transmission tariff is forecast at $895,701,600; and
- the 2025 transmission tariff is forecast at $904,153,800.

127. The tariffs, if approved by the Commission as filed in the Application, would translate into 12 equal monthly billings to the AESO as follows:

- 2024: $74,641 ,800; and
- 2025: $75,346,150.

1.5 Deferral Account Reconciliation

128. AltaLink applies to the Commission for approval and reconciliation of its 2021 and 2022 completed projects, all 2021 and 2022 trailing costs, and all other deferral account balances for 2021 and 2022. AltaLink requests approval of a net charge to the AESO of $3.4M for 2021 and 2022, as set out below ($1.0M net refund for 2021 and $4.4M net charge for 2022).

129. The total 2021 Deferral Account reconciliation includes a total tariff adjustment of ($1.0M) as a net refund to the AESO consisting of the following:

- DA projects – Total gross capital additions of $79.9M, net of Customer Contributions results in $7.4M of system investment;
  - reconciliation of 2021 DA projects results in an adjustment of ($1.2 M) refund to the AESO;

[32] Exhibit 26509-X0156, AML-CCA-2021JUN25-016, pdf 52; Exhibit 26509-X0309, AML Rebuttal Evidence, paras 1385 and 1387, pdf 294-295; and Exhibit 3524-X0056, AML-CCA-2015JAN20-078(b), pdf 942.

  - seven customer projects that were a direct result of a SASR to the AESO by a customer requiring transmission service;
- The balance of the deferral accounts amount to the following tariff adjustments:
  - Property Taxes: $2.4M Charge to AESO.
  - LTDDA: ($2.2M) refund to AESO.
  - ASPs: $0.0M.

130. The total 2022 Deferral Account reconciliation includes a total tariff adjustment of $4.4M as a net charge to the AESO consisting of the following:

- DA projects – Total gross capital additions of $75.8M, net of Customer Contributions results in $34.7M of system investment;
  - reconciliation of DA projects results in an adjustment of $3.2M charge to the AESO;
  - eleven customer projects that were a direct result of a SASR to the AESO by a customer requiring transmission service;
  - three system projects directed by the AESO; and
  - four AESO directed Behind the Fence projects.
- The balance of the deferral accounts amount to the following tariff adjustments:
  - Property Taxes: $1.7M charge to AESO.
  - LTDDA: ($0.5M) refund to AESO.
  - ASPs: $0.0M.

131. AltaLink's 2021-2022 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

132. AltaLink is requesting the continuation of five previously approved deferral accounts.

133. 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.

134. In **Appendix 22** AltaLink Wildfire Mitigation Plan, AltaLink requests a new deferral account driven by the wildfire amendment:

- future catastrophic wildfire damages.

135. 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
- Net Salvage Reserve.

136. In Decision 2013-407,[33] the Commission confirmed its previous findings[34] 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

137. 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 25.2.6; and
- HCR as per Section 25.2.8.

1.6.3 Approval of AltaLink 2021 and 2022 Deferral Accounts

138. As explained above, AltaLink is also applying as part of this GTA for the reconciliation and approval of its 2021 and 2022 deferral accounts. Refer to **Appendix 23** for the details.

1.7 Organizational Structure

1.7.1 AltaLink Ownership Structure

139. The sole limited partner of AltaLink is AILP. The sole limited partner of AILP is AltaLink Holdings, L.P., or AHLP, a limited partnership formed under the laws of Alberta. The sole limited partner of AHLP is BHE AltaLink Ltd., a subsidiary of BHE Canada Holdings Corporation which is itself an indirect subsidiary of Berkshire Hathaway Energy Company. Berkshire Hathaway Energy also holds, indirectly, all of the outstanding voting shares of the General Partner through subsidiaries established for that purpose.

140. Berkshire Hathaway Energy is a holding company headquartered in Des Moines, Iowa, U.S.A, which owns a highly diversified portfolio of primarily regulated businesses that generate, transmit, store, distribute and supply energy and serve customers across geographically diverse service territories in the Western and Midwestern United States, in Great Britain and Canada.

141. In June 2019 and January 2020, respectively, AltaLink operationalized PiikaniLink, L.P. (PLP) and KainaiLink, L.P. (KLP), as two new subsidiary limited partnerships formed under the laws of Alberta to jointly own, with local First Nation partners, certain transmission facilities located on their reserve lands. The business and affairs of PLP and KLP are managed by AltaLink Management Ltd., as general partner under each limited partnership agreement. The limited partner interests in PLP and KLP are divided between AltaLink, as to 49%, and each respective First Nation, as to 51%.

142. Effective June 1, 2019, AltaLink transferred to PLP approximately $52.6M in transmission assets located on Piikani First Nation reserve lands that were part of the South West project; a 90 km, 240 kV transmission line and related facilities in southwestern Alberta energized in 2010. The transfer application was approved by the AUC in Decision 22612-D01-2018.

143. Effective January 1, 2020, AltaLink transferred to KLP approximately $34.7M in transmission assets located on Blood Tribe reserve lands that were part of the South West project; a 90 km,

[33] Decision 2013-407, AltaLink Management Ltd., 2013-2014 General Tariff Application, November 12, 2013, pdf 228-229, paras 1131-1133.
[34] Decision 2012-221, AltaLink Management Ltd., Refiling Pursuant to Decision 2011-453 and Decision 2011-474, August 17, 2012, pdf 27, para 131.

240 kV transmission line and related facilities in southwestern Alberta energized in 2010. The transfer application was approved by the AUC in Decision 22612-D01-2018.

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

1.7.2 AltaLink Organizational Structure

145. Refer to **Appendix 1-B** for the organization charts as of January 1, 2023, for vice presidents and above, and their direct reports.

1.8 Forecasting Methodology/Process and Key Assumptions

1.8.1 Forecast Overview

146. For this Application, AltaLink continued to utilize a zero-based approach to develop its forecasts as directed by the Commission in 2011. In Decision 2011-453[35], 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.

147. AltaLink has presented the forecast for the Application in a manner that it believes is clear, understandable, and is consistent with the USA/MFR Consensus document. AltaLink's forecast was developed in accordance with the direction in paragraph 124 of Decision 2011-453.

148. For this Application, each department assessed all activities required to meet the objectives necessary to fulfill AltaLink's statutory duties and business obligations during the Test Period. For each department, activity levels and details of complex activities were summarized and the need for each activity to provide safe and reliable transmission services was reviewed. The assessments were bottoms-up and did not start with prior year activity levels, budgets, or actual costs.

149. Next, the specific activities to be undertaken during the Test Period were considered along with the need duration (short-term or on-going) and type (FTE or contractor). The volumes of resources required to perform the identified activities were quantified in order to determine the causal relationship between the specific activity drivers and the need for resources within each department. The departmental assessments established the labour hours or FTE and contractor levels required to carry out the forecast workloads, as well as the GOE. Since FTEs or employee labour hours are generally more cost-effective, they were assigned to activities first. However, contract labour hours were used when specialized skills and experience were not available and to supplement FTE resources particularly when the need fluctuates significantly. These FTE and contractor levels then formed the basis for the forecast portion of this Application. Explanations of the need for all forecast FTE additions for each department are included in Sections 5 and 25.

150. In this Application and as previously decided by the Commission, AltaLink has provided summaries of the activities assessed as well as relevant metrics or key activity levels that can be used to assess the reasonableness of AltaLink's forecasts for the Test Period. AltaLink submits that reporting activity levels or output metrics along with information on the complexity of the activities aligns with zero based budgeting which was developed to focus on objectives. Further, AltaLink views the activity levels or output metrics are more useful in demonstrating efficiency

[35] Decision 2011-453, AltaLink Management Ltd., 2011-2013 General Tariff Application (Decision 2011-453).

and effectiveness when combined with forecast costs, than input metrics such as employee labour hours.

151. The forecasts for the Test Period are described in the Application by USA Activity Codes as included in Sections 5 and 25.

1.8.2 Forecast - Additional Information

152. AltaLink is using a zero-based approach to forecast its required FTE levels in this Application. Related to operating expenses, in Sections 5 and 25, and consistent with the Commission's ruling in the 2022-23 GTA, AML-CCA-2021JUN25-001(b), AltaLink has included additional FTE information.[36] AltaLink also added more detailed operating expense tables for several USA codes according to the Commission's ruling in AML-AUC-2021AUG20-066.[37] In addition, consistent with the Commission's ruling on to AML-CCA-2021JUN25-002(a) AltaLink has disclosed key activity volumes in this 2024-2025 GTA to enable the Commission's assessment of the forecasts.[38]

153. In AltaLink's 2022-2023 GTA, the Commission requested AltaLink provide its capital FTEs by Program (CRU, DA, CRU/DA, IT, Facilities, IT/Facilities/All).[39] Additionally, in AltaLink's 2022-2023 GTA Compliance Filing, the Commission requested AltaLink to provide a cost breakdown of its forecast for transmission capital expenditures by the following cost categories: labour, contractor services, and other.[40] In order to assist the Commission, AltaLink has provided this additional information in the same format. Refer to Section 1.3.6 and Section 10.1 for the FTE details and capital expenditures, respectively.

1.8.3 2024 Labour Escalation

154. **Non-Union Employees** – As per Table 1.8.5-1 AltaLink forecast a 3.5% increase for non-union employees, including executives, in 2024. This forecast considers: AltaLink's current market position; the forecast market salary escalation; and management judgment as further described in Section 1.9.

155. **Union Base Pay Increases** As per Table 1.8.5-1 AltaLink forecast a 3.5% increase for union employees in 2024. This forecast considers: AltaLink's settlement already reached with one of two AltaLink's unions for 2024; the settlements in 2024 of AltaLink's closest peers; and management judgement, as further explained in Section 1.9.

1.8.4 2025 Labour Escalation

156. **Non-Union Employees** – As per Table 1.8.5-1 AltaLink forecast a 3.25% increase for non-union employees, including executives, in 2025. This forecast considers: AltaLink's current market position; the forecast market salary escalation; and management judgment as further described in Section 1.9.

157. **Union Base Pay Increases** As per Table 1.8.5-1, AltaLink forecast a 3.0% increase for union employees in 2025. This forecast considers: the settlement with the one company of AltaLink's closest peers who has settled for 2025; private sector settlements in 2025; Mercer broad based forecast for 2025; and management judgement, as further explained in Section 1.9.

[36] Exhibit 26509-X0208, AUC Appendix A - Ruling on the CCA motion, pdf 1-2.
[37] Exhibit 26509-X0223, AML IR Responses to AUC (1-69), pdf 281-298.
[38] Exhibit 26509-X0208; AUC Appendix A - Ruling on the CCA motion, pdf 7.
[39] Exhibit 26509-X0213, AML-AUC-2021-AUG20-067, page 97.
[40] Exhibit 27174-X0020; AML-AUC-2022MAR10-007(a), page 11.

1.8.5 General Assumptions

158. AltaLink's revenue requirement forecast for the Test Period is based on the assumptions outlined in Table 1.8.5-1 below.

Table 1.8.5-1 - AltaLink's Forecast Rate Assumptions

Assumption	2024 Forecast	2025 Forecast
Blended Salary Escalation	3.5%	3.13%
Non-union	3.5%	3.25%
Union	3.5%	3.0%
Contractor	2.20%	2.20%
General Inflation	2.20%	2.20%
Capital Escalation- Direct Assigned Projects	3.90%	3.90%
Capital Escalation- Capital Replacement and Upgrades	2.50%	2.50%
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

159. The forecasts in Table 1.8.5-1 above were prepared by each department using constant 2022 Canadian dollars. Inflationary increases for net salaries and wages were subsequently added to the forecasts by the Budgets and Forecasts group. The general inflation rate above of 2.20% for each of the test years is consistent with the Government of Alberta Budget 2023, Fiscal Plan 2023-2026, Alberta (published February 2023) as described in Section 1.8.6.

160. 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 at 3.90% for Direct Assigned projects and 2.50% for Capital Replacement and Upgrades. The rates are based on management estimates and judgement, after considering information such as competitively bid fixed price contracts, availability of materials and labour, average length of project lives, and the ability to control project schedule and to utilize advance procurement strategies. The lower rate for CRU reflects the fact that AltaLink has some control over these projects in terms of schedule and procurement practices, while the higher rate for DAs reflects AltaLink's limited control over the projects. The forecast rates are lower than current levels of inflation, which is in line with general market expectations that inflation pressures will moderate by the end of 2023 and onwards. AltaLink chose not to procure an escalation study for this GTA cycle due to the ever changing and unpredictable nature of current market conditions, which would complicate the study and limit its useful life.

1.8.6 Forecasting Methodologies

161. 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;
- Operations;
- Projects;
- Government and Commercial Relations;
- Customer and Corporate Services;
- Compliance, Law and Regulatory; and
- Human Resources.

162. 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 1.8.6.3. No other written guidelines were provided.

163. When departments provided their forecasts and activities, the information was then reviewed and challenged to validate expenditure levels.

164. 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.

165. The Budgets and Forecasts group performed a review to provide consistency, completeness and to eliminate errors or duplication.

166. Every year, in the fall, AltaLink develops an integrated long-range business plan for its parent company. The fall 2022 long-range forecast was used as the basis for the 2023 Management Update and the 2024-2025 GTA. It was updated to reflect 2022 actuals and trickle-down consequences. It was developed with the objective of keeping contracted manpower and GOE below inflation for the Test Period.

167. Also in the fall of 2022, a long-term capital forecast was developed based on the current economic situation and further adjusted in Q1 2023 to reflect known changes. As a result, FTEs for the period 2024 to 2025 were re-evaluated and challenged by the executive for each department. The resulting reductions and related impacts have been reflected in the 2024-2025 GTA and form the basis for AltaLink's 2023 MU and the 2024-2025 GTA. A series of face-to-face meetings were then held with departments to ensure understanding of the zero-based budgeting process and to challenge the activities and forecast costs. 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. Further, the Executive Team challenged the forecast costs based on their knowledge of operations and experience within the utilities industry.

168. Each department forecasted the overall level of activity in the Test Period using a zero-base and considered the capital activity and FTE levels (after reductions). Departments did not simply take actuals from a previous year but looked at each department on a line item by line item basis, estimating the amount of work in 2024-2025, if any, and forecasted 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 and Forecasting by USA Activity Codes

169. 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.

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

Testing the Reasonableness of the Forecast

171. To confirm the reasonableness of its forecast, AltaLink reviewed its forecast for the Test Period in comparison to the 2021 and 2022 actual costs which had been captured by USA Activity Code and the 2023 MU which had been forecast based on USA Activity Codes. 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.

172. 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 to ensure the forecasts did not contain errors. In this Application, AltaLink has provided explanations for increases and decreases in costs for different USA Activity Codes based on anticipated changes in activity levels.

Forecasting Capital Costs

173. During the development of the forecast, the activities were assessed to determine which activities were capital costs in accordance with the Capitalization Policy. In addition, once the activities in the Test Period were forecast, a review was performed to ensure the Capitalization Policy was properly applied.

174. 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. Internal labour or other costs that do not directly support capital projects are not 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.

1.8.6.1 Operating Cost Forecast Preparation

175. AltaLink forecasted general operating expense line items as reflected in MFR Schedule 5 and Schedule 25.

176. 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.

177. 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 quantity 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.

178. 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 for customers. Therefore, AltaLink incorporated new ways of delivering services and additional efficiency (business improvements) into its forecasting process. In addition, AltaLink's process included changes to its operating environment and regulatory activities, where appropriate. Sections 5 and 25 contain descriptions of how various cost drivers will impact the number of FTEs required in the USA-specific subsections.

1.8.6.2 Capital Forecast Preparation

179. 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.

180. Consistent with the process for forecast development through 2013 to 2023 GTA test years, AltaLink continues to prepare individual project plans for DA capital expenditures that include the best estimate of the project, giving consideration to all known project activities with associated costs and schedules. For the 2024-2025 Test Period revenue requirements, the aggregation of these individual project plans forms AltaLink's DA capital expenditures and additions forecast.

181. 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.

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

183. AltaLink's capital cost escalation rates used within the capital forecast are in Table 1.8.5-1 above.

184. AFUDC is calculated in accordance with Commission requirements.

1.8.6.3 Forecast Guidelines

185. 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 were not provided but 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 2.2% general inflation applied to contracted manpower and general operating expenses. Departments were required to absorb the additional inflation from prior years through process changes, and additional efficiency (business improvements);
- labour:
    - use current 2022 base salaries and escalate as per assumptions defined in Table 1.8.5-1 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 2024-2025. Operating FTEs presented in **Appendix 2-B** are vacancies on December 31, 2022, 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 lower affiliate revenue as a result of the corporate re-organization. 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;
- vegetation management costs 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.

186. In summary, AltaLink reconfirms it does not rely upon actuals from a previous year and then apply an escalation factor. Rather, it looks at each department on a line by line basis, estimating the amount of work in 2024-2025, if any, and estimating staffing, contracted manpower and general operating expenses necessary to fulfill the work.

1.8.6.4 Forecast Consolidation and Review

187. Once the departmental reviews were completed, the forecasts were consolidated and submitted for review by the Executive Team (CEO Department).

188. 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 re-assessed and Industry developments were again considered.

189. The executive review was thorough and resulted in the forecast submitted within the Application.

1.8.7 Economic Parameters

190. AltaLink's general inflation rate forecast during the Test Period is based on the Government of Alberta Budget 2023, Fiscal Plan 2023-2026, Alberta (published February 2023) as per **Appendix 2-F** (page 44):[41]

- 2024: 2.2%; and
- 2025: 2.2% (compounded 4.4%).

191. AltaLink has absorbed significant increases related to inflation, by using 1% instead of 6.4% for 2022 and 1% versus 3.3% (Government of Alberta forecast) for 2023.

192. 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 Table 1.8.7-1 below, the Government of Alberta forecasts were reasonably close to the actual inflation rate in Alberta from 2016 to 2022.

Table 1.8.7-1 – CPI Actual vs Forecast

	Actual CPI	Government of Alberta Forecast CPI	***Note:***
2016	1.1%	1.1%	*1*
2017	1.6%	1.6%	*2*

[41] Appendix 2, pdf 88.

	Actual CPI	Government of Alberta Forecast CPI	***Note:***
2018	2.4%	2.1%	*3*
2019	1.8%	1.9%	*3*
2020	1.1%	2.0%	*3*
2021	3.2%	1.4%	*4*
2022	6.4%	1.8%	*4*
2023		3.3%	*5*
2024		2.2%	*5*
2025		2.2%	*5*

1. Government of Alberta Budget 2017- 2020 Fiscal Plan Published March 16, 2017 - page 9 Table Energy and Economic Assumptions[42]
2. Government of Alberta Budget 2018- 2021 Fiscal Plan Published March 22, 2018 - page 14 Table Energy and Economic Assumptions[43]
3. 2017-2018 First Quarter Fiscal Update and Economic Statement - August 23, 2017 -page 14 Key Energy and Economic Assumptions[44]
4. Government of Alberta Budget 2021 - 2024 Fiscal Plan published February 25, 2021 -page 44 Key Energy and Economic Assumptions[45].
5. **Appendix 2-F**, Government of Alberta Budget 2023 - 2026 Fiscal Plan published February 28, 2023 -page 26 Key Energy and Economic Assumptions (**Appendix 2**, pdf 67).

193. Table 1.8.5-1 above summarizes AltaLink's forecast capital escalation rates.

1.9 Labour Overview and Compensation Forecast

1.9.1 Labour Overview and Compensation Forecast Summary

194. AltaLink Labour Environment – Internal data: AltaLink employees' number one concern expressed in the employee survey, (most unfavorable response), was related to their compensation, as described further in Section 1.9.4. Both the employee survey and the exit interview data also show that the level of concern AltaLink employees have with their compensation has increased significantly the last few years. Turnover increased from 6.0% in 2021 to 10.5% in 2022. The number of new hire offer declines related to compensation increased from 2 or 3 per year from 2018 to 2021, to 16 in 2022.

195. Alberta Labour Environment – External data: As per the external experts at Royal Bank of Canada (RBC), ATB Financial (ATB), and Government of Alberta (AB Government), while the Canadian economy is forecast to have a possible recession, it is expected to be mild by historical standards, and Alberta is expected to avoid a recession. The Alberta economy is forecast to remain relatively strong during the test period, as per the key economic data forecasts in Section 1.9.3.

196. AltaLink's Application does not include any substantive changes to Pension, Benefits, STIP, LTIP, or other related staffing costs during the Test Period. The only substantive compensation change is the market-based salary escalation.

[42] Available from: https://open.alberta.ca/dataset/aa40ded0-75b3-48fe-9bbf-ea33802b8825/resource/da23ee3c-b79c-4971-8f75-e28ab7684983/download/fiscal-plan-complete.pdf.
[43] Available from: https://open.alberta.ca/dataset/8beb5614-43ff-4c01-8d3b-f1057c24c50b/resource/68283b86-c086-4b36-a159-600bcac3bc57/download/2018-21-fiscal-plan.pdf.
[44] 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.
[45] Available from: https://open.alberta.ca/dataset/6f47f49d-d79e-4298-9450-08a61a6c57b2/resource/ec1d42ee-ecca-48a9-b450-6b18352b58d3/download/budget-2021-fiscal-plan-2021-24.pdf.

197. AltaLink has fully described the process for establishing the market-based salary escalation forecast. This is based on objective, independent, and accurate data. To achieve market average compensation for non-union employees, AltaLink would require more than is forecasted in this application. However, AltaLink has applied management judgement, considering both the AltaLink labour environment and the Alberta labour environment, and has applied for what is necessary to attract and retain union and non-union employees for AltaLink to deliver on its commitment as a Transmission Facility Owner.

1.9.2 Compensation Overview

1.9.2.1 Base Pay

198. For union employees, being the IBEW and the UUWA combined, AltaLink is forecasting an increase of 3.0% in 2024, plus a 0.5% step increase, and a 2.5% increase in 2025, plus a 0.5% step increase. The 2024 forecast salary escalation reflects the agreement already reached with AltaLink IBEW employees, peer settlements at ATCO, ENMAX, EPCOR and Fortis Alberta, as well as management judgement. The 2025 salary escalation forecast reflects the only settlement in 2025 of AltaLink's peers at Fortis Alberta, as well as the private sector settlements in 2025, the Mercer 2025 forecast, and management judgement.

199. For non-union employees, including executive employees, AltaLink is forecasting an increase of 3.5% in 2024 and 3.25% in 2025. As of 2023, AltaLink's TTDC for non-union employees is 1.5% below market. To achieve market average compensation, forecasted increases of 4.0% in 2024 and 3.75% in 2025 would have been required. However, AltaLink applied management judgement to determine the salary escalation forecast.

200. Executive salary escalation, as described in Section 1.9.5.4 is combined with the salary escalation for non-union non-executive into one non-union forecast. AltaLink is forecasting an overall blended base pay budget increase for union and non-union employees of 3.5% for 2024; and 3.13% for 2025. AltaLink's forecast for base pay is set out in Section 1.9.6 and Section 1.9.7.

1.9.2.2 Short Term Incentive Pay (STIP)

201. AltaLink is not planning any design changes for the 2024-2025 Test Period. The STIP goals are Customer Satisfaction, Reliability, Safety, Cyber and Gross OM&A spend before capitalization. In addition, for non-union employees, the design creates 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 forecasted STIP is set out in Section 1.9.8.

1.9.2.3 Long Term Incentive Pay (LTIP)

202. AltaLink is not planning any design changes for the 2024-2025 Test Period. In 2023, AltaLink introduced a Customer Service goal which ensures a focus on cost and schedule. This aligns with AltaLink's focus on customer needs. The Customer Service goal replaces the Flat for Five Goal. There are no proposed goal changes for the 2024-2025 Test Period. The customer component goals are "Reliability" and "Customer Service". AltaLink's forecasted LTIP is set out in Section 1.9.9.

1.9.2.4 Pension

203. 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 2024-2025 revenue requirement forecast reflects changes to DC Plan costs that arise from staffing and compensation changes only.

1.9.2.5 Benefits

204. AltaLink is not proposing any design changes to benefits in this Application. As per **Appendix 2-J,** Pension and Group Benefits Benchmarking December 2022, page 4 AltaLink pension and benefits are at median on an employer provided value basis.

1.9.2.6 Other Labour Related Staffing Costs

205. Other labour related staffing costs include the wellness fund, outstanding contribution awards, severance, relocation, and safety bonus. AltaLink is forecasting an increase to the Wellness Spending Account (WSA) from $1000 to $1,100 in 2024 due to inflation as per Table 1.9.12.1-1.

1.9.3 Alberta Labour Environment – External Data

206. As in past GTAs, in order to assess the key economic factors and forecasts impacting the Alberta Labour environment, AltaLink has relied on external experts within the following organizations: RBC, ATB, and the AB Government.

207. AltaLink relied upon the most recent economic forecasts available from each of the above-mentioned organizations at the time of developing AltaLink's 2024-2025 GTA. Once the most up to date economic forecasts are publicly available, AltaLink must analyze and finalize salary escalation forecasts, draft a write up, and have executive and regulatory review before filing the application. Therefore, the latest forecasts AltaLink was able to use were March 15, 2023.

1.9.3.1 Summary

208. The three economic forecasts, while not identical, provide a similar overall forecast: "The Canadian economy continues to inch closer to a recession in 2023. Early signs of easing inflation pressures are raising odds that the downturn will be 'mild' by historical standards."[46] Alberta is expected to avoid a recession. "While there's plenty to cheer about, Alberta households aren't immune to the challenges posed by soaring interest rates and high inflation"[47] However, "Alberta will be a standout again in 2023. We [RBC] expect it to avoid a recession, thanks in part to a stronger energy sector and broad-based recovery."[48] The price of oil is expected to remain relatively high; the housing market is expected to stay resilient, and a population boost are reasons cited in the ATB Alberta economic outlook that forecast Alberta will avoid a recession.[49]

209. In all three forecasts, Alberta's economy is expected to remain relatively strong, as reflected in positive GDP forecasts of about 2% growth per year. As well employment is expected to continue to grow, and unemployment is expected to remain flat at about 6%.

1.9.3.2 Alberta Government Report Highlights

210. GDP – Alberta Real Gross Domestic Product, average of all private forecasts:[50]

- 2023 – 1.9%, 2024 – 1.8%, 2025 – 2.0%

211. Employment – Alberta Employment Benchmark (% change), average of all private forecasts:[51]

- 2023 – 1.3%, 2024 – 1.2%, 2025 – 1.6%

[46] Appendix 2-M, page 1.
[47] Appendix 2-M, page 8.
[48] Appendix 2-M, page 8.
[49] Appendix 2-E.
[50] Appendix 2-F, page 52.
[51] Appendix 2-F, page 53.

212. Unemployment – Alberta Unemployment Rate Benchmark (%), average of all private forecasts:[52]

- 2023 – 6.0%, 2024 – 6.1%, 2025 – 6.1%

213. Price of Oil -Based on the average of all private forecasts, WTI oil is expected to decline from $86 in 2023 to $81.50 in 2024 to $79.50 in 2025.[53] The Light-Heavy Oil Price Differential Benchmark (Average of All Private Forecasts) is expected to decrease from $21.90 in 2023 to $17.60 in 2024 to $16.00 in 2025.[54] "The spread between WTI and Western Canadian Select (WCS) oil prices is expected to narrow as factors that weighed on the differential in late 2022 dissipate".[55] These factors include higher pipeline capacity and improving US refinery demand.[56] "Additional support to prices will also come from U.S. government's decision to begin rebuilding its strategic reserves".[57]

214. Housing market to stay resilient – "Strong fundamentals will keep the province's housing market on solid footing. With Alberta's healthy labour market and strong population growth, housing starts are expected to remain strong."[58]

215. Inflation to subside gradually.[59]

216. Consumers to remain cautious.[60]

217. Risks to the Economic Outlook, "The uncertainty surround the global economic downturn, tighter financial conditions, and ongoing geopolitical events creates a number of risks to the Alberta economy."[61]

218. For the full report, refer to **Appendix 2-F**.

1.9.3.3 RBC Report Highlights

219. GDP, Alberta GDP % change

- 2023 – 1.9%, 2024 – 2.1%[62]
- Alberta leads all provinces in 2023 and 2024[63]

220. Canadian Economy "The Canadian economy continues to inch closer to a recession in 2023. Early signs of easing inflation pressures are raising odds that the downturn will be 'mild' by historical standards […] But headwinds from aggressive central bank interest rate hikes are gaining strength", noting "[h]ousing markets have already retrenched sharply", "consumer spending is expected to soften further", and "Risks to this outlook are still tilted to the downside".[64]

[52] Appendix 2-F, page 53.
[53] Appendix 2-F, page 48.
[54] Appendix 2-F, page 49.
[55] Appendix 2-F, page 33.
[56] Appendix 2-F, page 33.
[57] Appendix 2-F, page 33.
[58] Appendix 2-F, page 42.
[59] Appendix 2-F, page 43.
[60] Appendix 2-F, page 44.
[61] Appendix 2-F, page 45.
[62] Appendix 2-M, page 7.
[63] Appendix 2-M, page 7.
[64] Appendix 2-M, page 1.

221. Alberta Economy[65]

- "Alberta will be a standout again in 2023. We expect it to avoid a recession, thanks in part to a stronger energy sector and a broad-based recovery."
- "Wheat prices will likely remain strong".
- "Alberta's housing sector is poised to remain a bright spot."
- "While there's plenty to cheer about, Alberta households aren't immune to the challenges posed by soaring interest rates and high inflation."

222. For the full report, refer to **Appendix 2-M**.

1.9.3.4 ATB Report Highlights

223. GDP, % change – 2023 – 2.6%, 2024 – 2.3%[66]

224. Employment growth, % change – 2023 – 1.7%, 2024 – 1.8%[67]

225. Unemployment rate, average % - 2023 – 5.9%, 2024 – 5.8%[68]

226. "To paraphrase Yogi Berra, it might feel like déjà vu all over again in 2023 as the main economic stories continue to be above-target inflation and elevated interest rates aimed at reducing it. Alberta's relatively strong economic growth in the face of these challenges will also continue to make headlines."[69]

227. "Inflation expected to ease, but slowly".[70]

228. "[T]he negative economic consequences of higher borrowing costs will work their way through the economy in 2023."[71]

229. "Alberta has a better boat". "The Alberta economy can't avoid the rough economic waters, but strong performance in its natural resource and agricultural sectors combined with the population boost this is providing will enable it to navigate them better than other jurisdictions."[72]

230. "Oil patch doing well".[73]

231. "Some, but not too much, loosening of the labour market".[74]

232. "Housing market will slow but remain resilient".[75]

233. For the full report, refer to **Appendix 2-E**.

1.9.3.5 Management Judgement

234. AltaLink is aware that economic conditions reported in the very recent news (mid March 2023) seem to indicate that the economic forecasts may be revised to the downside. For example, the

[65] Appendix 2-M, page 8.
[66] Appendix 2-E, page 1.
[67] Appendix 2-E, page 1.
[68] Appendix 2-E, page 1.
[69] Appendix 2-E, page 1.
[70] Appendix 2-E, page 1.
[71] Appendix 2-E, page 1.
[72] Appendix 2-E, page 1.
[73] Appendix 2-E, page 1.
[74] Appendix 2-E, page 2.
[75] Appendix 2-E, page 2.

price of oil recently decreased, and markets were unsettled due to the bankruptcy of the Silicon Valley Bank. Although AltaLink did not have any formal updated reports to reflect these recent changes, in finalizing the salary escalation forecast AltaLink did consider this as part of the information available to it when applying management judgement. Accordingly, AltaLink's management judgement assumed more negative economic conditions than what is reflected in the formal reports described above. AltaLink has adjusted the salary escalation forecast downward due to more negative economic conditions than as forecasted in the attached economic forecasts.

1.9.4 AltaLink Labour Environment – Internal Data

235. In Decision 26509-D01-2022, the Commission stated: "Furthermore, when looking at AltaLink's exit interview data and employee surveys, the Commission is not persuaded that AltaLink's employees are dissatisfied with their compensation, because only a small fraction of AltaLink's employees responded negatively to the compensation at AltaLink."[76]

236. AltaLink is assisting the Commission by providing employee survey results, exit interview data, and turnover data to substantiates employees' level of satisfaction with their compensation. As described below, a substantial number of employees are dissatisfied with their level of compensation and indeed, as per the employee survey, compensation is the number one concern of AltaLink employees. In addition, this information reflects that AltaLink employees are increasingly concerned with compensation and that AltaLink's turnover increased substantially in 2022.

1.9.4.1 Pulse Survey data

237. As per **Appendix 2-N**, the question that had the highest unfavorable rating from employees was the question, "I am satisfied with my overall compensation considering what I could get for similar work in other organizations I know about." 46% of employees who participated in this survey rated this question as unfavorable, 30% as favorable and 24% as neutral.

238. When a similar question was asked in 2017, 31% rated compensation as unfavorable and 41% of employees rated compensation as favorable. The remaining employees were neutral at 28%. The percentage of employees rating compensation as unfavorable increased from 31% in 2017 to 46% in 2022. The number of employees rating compensation favorable decreased from 41% to 30%. This indicates that AltaLink employees are increasingly concerned with their compensation.

239. Mercer conducts pulse surveys across multiple organizations. Mercer reports that the average favorable rating with respect to compensation in other organizations is 55%, compared to 30% at AltaLink in 2022. This demonstrates that AltaLink employees have significantly less satisfaction with their compensation compared to employees in other organizations.

240. In summary, compensation is the number one employee concern and has the highest unfavorable rating in the pulse survey; the level of dissatisfaction has increased significantly from 2017 to 2022; and employees at AltaLink are much less satisfied with their compensation than employees at other organizations.

[76] AUC Decision 26509-D01-2022 (Corigenda), AltaLink Management Ltd., AltaLink KainaiLink PiikaniLink General Tariff Applications, para 73, pdf 26-27 [footnotes omitted].

1.9.4.2 Exit Interview data

241. As per **Appendix 2-N**, employee concerns with compensation increased since 2020. In response to the question, "What is your primary reason for leaving?", "Better Career opportunity with higher compensation" was selected by 33% of employees in 2020 and 25% of employees in 2021. In 2022, in response to the question "What are your primary reasons for leaving AltaLink?", 52% of employees selected "Higher Compensation". AltaLink notes however, that in 2020-2021 employees could select only one reason for leaving, while in 2022 employees could select more than one reason. This impacts the comparison data between 2020-2021 and 2022.

242. In response to the question related to compensation, it was the 5th lowest score in 2020, the 4th lowest score in 2021 and the 2nd lowest score in 2022, showing once again a trend of increasing concern with compensation.

243. "Better opportunities for career development/advancement" was the lowest score in all three years. This reflects the fact that as AltaLink has reduced the number of FTEs from 837 employees in 2015, to 707 forecast net of vacancies in 2024-2025, resulting in decreased opportunity for career development/advancement opportunities.

244. Similar to the pulse survey results, the exit interview data demonstrates that AltaLink employees are becoming increasingly dissatisfied with their compensation.

1.9.4.3 Turnover Data

245. AltaLink saw an increase in turnover, particularly in 2022 as per Table 1.9.4.3-1 below.

Table 1.9.4.3-1 – AltaLink Five Year Turnover History 2018 – 2022

Year	Voluntary Turnover
2018	5.3%
2019	7.0%
2020	4.5%
2021	6.0%
2022	10.5%

New Hire Offer Declines

246. In 2022, the number of times that candidates declined AltaLink's offer of employment increased substantially. Following are the number of compensation related declines for the last five years: 2018 – 3; 2019 – 2; 2020 – 2; 2021 – 2; 2022 – 16. The sharp spike in new hire offer declines related to compensation is very concerning to AltaLink and reinforces the need to have sufficient compensation to attract new employees.

AltaLink Labour Environment – Internal Data Summary

247. Both the pulse survey and the exit interview data demonstrate the high level of dissatisfaction AltaLink employees have with their compensation, and that the level of dissatisfaction has increased significantly in recent years. Turnover has also increased, from an average of 5.7% over the last four years, to 10.5% in 2022. In addition, the new hire offer declines increased substantially in 2022, indicating AltaLink's compensation is not high enough to attract employees.

1.9.5 Overall Compensation Forecast Approach

1.9.5.1 Application of Management Judgement in the Salary Escalation Forecast

248. AltaLink has applied management judgement in arriving at the salary escalation forecast. Management judgement has considered two primary factors as per Section 1.9.3 Alberta Labour Environment – External Data and Section 1.9.4 AltaLink Labour Environment – Internal Data.

249. In this respect, AltaLink is cognizant of the Commission's finding in Decision 26509-D01-2022[77] that the Mercer report does not supplant management judgment and other economic factors that must be considered before a base pay increase is contemplated.

250. AltaLink notes that the Mercer market salary escalation projection as per **Appendix-G** considers intangible factors such as the economic climate in Alberta including GDP, price of oil and gas, inflation and the unemployment rate.

1.9.5.2 Focus on Total Compensation

251. As in past GTAs, AltaLink's submission in this Application is based on the principle of a focus on total compensation. In Decision 2009-151 the Commission stated:

> The Commission agrees with CG that its focus should be on total compensation and not on the details of the individual components. Total compensation includes consideration of employee pension and benefits in addition to base pay, STIP, LTIP, and perquisites. The Commission accepts that incentive plans are a necessary component of total direct compensation in order to provide employees with a competitive compensation package. The 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. Notwithstanding, the Commission also considers that it has a responsibility to assure itself that the proposed level of total compensation is prudent and that the components that make up total compensation are both necessary and reasonable.[78]

252. In Decision 3524-D01-2016, the Commission quoted Decision 2009-151 and stated "it is necessary to consider base salary in the context of AltaLink's total compensation package, because base salary is intertwined with AltaLink's total compensation package."[79]

1.9.5.3 Market Average Compensation

253. The Commission has consistently supported the concept that regulated utilities, such as AltaLink, should provide employees with market average total compensation. For example, in the 2013-2014 GTA the Commission confirmed that adjustments "in order to bring base pay to

[77] AUC Decision 26509-D01-2022 (Corigenda), AltaLink Management Ltd., AltaLink KainaiLink PiikaniLink General Tariff Applications, para 50, pdf 22. "The Commission also continues to support the findings in Decision 25663-D01-2021. There, the Commission found that the Mercer report does not supplant management judgment and other economic factors that must be considered before a base pay increase is contemplated. The Commission also noted that it is very difficult for any study to incorporate intangible factors such as the economic climate in Alberta, risk of job loss, labour productivity and the unemployment rate." [footnotes omitted]

[78] AUC Decision 2009-151, AltaLink Management Ltd. and TransAlta Corporation, 2009 and 2010 Transmission Facility Owner Tariffs, October 2, 2009, para 96, pdf 24.

[79] AUC Decision 3524-D01-2016, AltaLink Management Ltd., AltaLink Management Ltd. 2015-2016 General Tariff Application, May 9, 2016, para 105-106, pdf 33.

market average levels" were reasonable.[80] As in past years, AltaLink's forecast salary escalation, and other compensation such as STIP and LTIP, are intended to achieve market average total compensation in aggregate.

254. Providing market average total compensation is in the best interests of customers as it enables AltaLink to attract and retain highly qualified employees. In addition, providing competitive compensation is an important factor supporting employee engagement and ensuring a high-performance culture, which benefits customers by having employees who provide quality and efficient work. AltaLink views providing market average total compensation as a matter of fairness. AltaLink employees expect and deserve market average compensation.

1.9.5.4 AltaLink's Approach to Forecasting Non-Union Salary Escalation

255. The following is a description of the approach AltaLink has utilized to forecast non-union salary escalation. In Section 1.9.7, AltaLink describes how it specifically applied this approach in forecasting salary escalation in the Test Period.

Independent Salary Data – Mercer

256. Mercer provides AltaLink with two reports related to salary escalation: 1) **Appendix 2-H** 2023 AltaLink Non-Unionized Employee Compensation Review, February 24, 2023; and 2) **Appendix 2-G** 2023-2025 Salary Escalation Projections February 13, 2023. Mercer data is objective, independent, and historically proven to be accurate. The two Mercer reports provide AltaLink with market information. Mercer does not provide an AltaLink salary forecast. AltaLink uses this data and applies management judgement to determine the AltaLink salary escalation forecast. AltaLink describes the two Mercer reports below.

1) Appendix 2-H 2023 AltaLink Non-Unionized Employee Compensation Review, February 24, 2023

257. Mercer conducts an annual compensation survey. Mercer utilizes this survey data to create the Non-Union Compensation Review so that AltaLink knows how employees are paid relative to similar positions at other companies with whom AltaLink competes to attract and retain employees and talent.

258. The Mercer annual compensation survey has the following characteristics:

- It is independent, conducted by highly qualified experts.
- There is a robust process to ensure data quality. Examples of the robust process include: thorough instructions to all participants on how to complete the survey, annual interactive in person/virtual session with participants to discuss the various elements of the survey, ongoing support to everyone completing the survey, and Mercer review and testing of the position matches which are discussed with participants to ensure the highest quality matches;
- It has a large sample size; most importantly, it includes AltaLink's key competitors for talent.
- It covers a significant number of benchmark positions, ensuring that AltaLink can evaluate its compensation against the market; and
- It is as timely as possible. Mercer conducts this survey on an annual basis. AltaLink relies upon the most recent survey available when filing the GTA.

259. Compensation surveys are typically conducted by independent consulting firms to ensure the credibility, integrity and confidentiality of the data. It would be cost prohibitive, if possible, at

[80] AUC Decision 2013-407, AltaLink Management Ltd., 2013 General Tariff Application, November 12, 2013, para 103, pdf 28.

all, for AltaLink to conduct its own custom survey that includes a large sample size of companies in the Alberta marketplace comparable to Mercer. In AltaLink's opinion, it is a better practice to rely upon independent, objective data already collected by a Human Resource consulting firm, rather than have AltaLink conduct its own survey which would not be independent.

260. AltaLink is aware of three firms that conduct a broad-based salary survey in Alberta. They are Mercer, Willis Towers Watson and AON. AltaLink chose Mercer for two main reasons; that Mercer has local experts who are knowledgeable of the Alberta market, and the Mercer salary compensation survey is far more robust than the other HR consulting firms. The Mercer compensation survey includes approximately 150 companies in the Alberta market, compared to approximately 40 at Willis Towers Watson and 10 at AON.

2) Appendix 2-G 2023-2025 Salary Escalation Projections February 13, 2023

261. Mercer provides two different market salary forecasts: market salary forecasts one year in advance; and market salary forecasts beyond one year. These are forecasts of the average market salary increases. In other words, these are not forecasts of AltaLink's salary escalation, they are forecasts of what the market salary escalation will be. AltaLink has analyzed the accuracy of those forecasts, as per **Appendix 2-O**. The two types of salary forecasts and the accuracy of those forecasts are described below.

A. Salary forecasts one year in advance

262. These forecasts are based on an annual survey conducted by Mercer. The participants in this survey report their expected salary budget for the following year. For example, in this Application, salary forecasts one year in advance relates to the 2023 market salary escalation forecast. Note that due to the timing of submitting this Application, AltaLink also requested Mercer to conduct a spot poll in January 2023 to gather projected and approved budgets.

263. As per **Appendix 2-O**, the salary forecasts one year in advance are very accurate. Over the 12-year period analyzed, the average Mercer salary forecasts one year in advance, were on average, 0.12% lower than the market actual salary increase.

B. Salary forecasts beyond one year

264. For salary forecasts beyond one year, Mercer considers economic indicators both historical and forecast data from several reputable sources such as Statistics Canada, major Canadian banks and the Conference Board of Canada. These forecasts consider several economic indicators for Alberta such as the forecast for the price of oil, unemployment rate, economic growth forecasts such as GDP, and inflation.

265. As per **Appendix 2-O**, the salary forecasts beyond one year were also very accurate, especially considering that these forecasts are further in the future, and like any forecasts, the further in the future, the more difficult it is to be accurate. Over the 12-year period analyzed, the Mercer salary forecasts beyond one year, were on average, 0.21% higher than the market actual salary increase. In the 12-year period analyzed, the Mercer salary escalation forecast was higher than the market actual increases six times, and lower than the market actual increases six times, an indication that the Mercer salary escalation forecasts were neither biased to the upside or the downside.

266. Due to the independent, objective, and proven accuracy of Mercer's data and market salary forecasts, AltaLink relies on this data to forecast the salary escalation required to achieve market average compensation.

Management Judgement

267. AltaLink understands that the Mercer data is only one factor in assessing the level of required wage increases and does not supplant management judgment and other economic factors that must be considered before a base pay increase in contemplated.[81]

268. After utilizing the Mercer data to forecast the salary increase required to achieve market average compensation, AltaLink then applies management judgement, considering the Alberta Labour Environment-External Data, Section 1.9.3; and the AltaLink Labour Environment-Internal Data, Section 1.9.4. AltaLink has used management judgement to supplement, not to supplant, the market salary forecast data provided by Mercer. It is important to note that in developing their salary escalation forecasts, Mercer already considered a variety of economic factors such as the oil price forecast, Alberta unemployment rate, GDP growth, and inflation.[82]

Salary Forecast Combining Non-union Below Executive and Executive Employees

269. In AltaLink's 2022-2023 GTA and previous GTAs, AltaLink provided salary increase forecasts for three groups of employees: executive, non-union below executive, and union. In AltaLink's 2024-2025 GTA, and in alignment with the Commission's decision in AltaLink's 2022-2023 GTA, Decision 26509-D01-2022, in which the Commission assessed AltaLink's non-union below executive and executive employees on a combined basis,[83] AltaLink is providing a salary increase forecast for non-union below executive and executive employees on a combined basis. AltaLink supports the Commission's decisions in considering the employees in a combined manner as executive salaries only account for 2% of the overall salary escalation, such that a separate category for executive salary escalation is unnecessary. Therefore, AltaLink will be providing salary forecasts for two groups of employees; non-union employees, which includes executive, and union employees.

270. Although AltaLink will combine the salary escalation forecast for non-union below executive and executive employees, as in the Mercer report, **Appendix 2-H**, the market data for both executive employees and non-executive employees has been provided separately as done in the past.

Executive Peer Group

271. AltaLink considered the feedback from Decision 26509-D01-2022, with respect to the differing responsibilities between AltaLink's executives and executives at a parent company,[84] and AltaLink made changes to the executive peer group since the previous GTA.

[81] Refer to AUC Decision 25663-D01-2021: ATCO Pipelines, a division of ATCO Gas and Pipelines Ltd., 2021-2023 General Rate Application, March 1, 2021, paragraph 128, pdf 33 and AUC Decision 26509-D01-2022 (Corigenda), AltaLink Management Ltd., AltaLink KainaiLink PiikaniLink General Tariff Applications, para 50, pdf 22 for the Commission's guidance in relation to the Mercer Report.

[82] Appendix 2-G, page 3.

[83] AUC Decision 26509-D01-2022 (Corigenda), AltaLink Management Ltd., AltaLink KainaiLink PiikaniLink General Tariff Applications, para 70, pdf 26, the Commission held: "With regard to non-union base pay increases, the Commission has decided to assess AltaLink's non-union below executive and executive employees on a combined basis. Awarding a combined amount for both employee groups give AltaLink flexibility to determine how it should allocate its approved base pay increases. This is consistent with the Commission's approach in Decision 25663-DO1-2021 and Decision 24964-D02-2021."

[84] Refer to AUC Decision 26509-D01-2022 (Corigenda), AltaLink Management Ltd., AltaLink KainaiLink PiikaniLink General Tariff Applications, para 43, pdf 21 "The Commission agrees with the CCA that AltaLink's executives, who are primarily responsible for managing AltaLink's transmission utility function, likely have different responsibilities and are hired based on different qualifications than the executives at a parent company such as ATCO Ltd. or ENMAX Corporation."

272. In AltaLink's 2022-2023 GTA, the executive peer group consisted of 78% parent companies and 22% subsidiary companies. The Executive peer group in AltaLink's 2024-2025 GTA consists of 48% parent companies and 52% subsidiary companies.

273. AltaLink also addresses the Commission's comment in Decision 26509-D01-2022 that "targeted explanations for why the executives in AltaLink's peer group were reasonably matched, based on their responsibilities and qualifications"[85] would be helpful.

274. AltaLink continues to include approximately half parent companies in the executive peer group as AltaLink competes with these parent companies to attract and retain executive talent. Below is a more targeted explanation of the appropriateness of parent company inclusion.

275. AltaLink executives have comparable qualifications and responsibilities to executives at parent companies given how independently AltaLink executives manage the regulated Alberta Transmission business.

276. As previously stated in AML-CCA-2021JUN25-014, "the organization and structure of AltaLink in relation to its ownership has been established pursuant to certain fundamental principles designed to ensure that AltaLink remains financially, legally, and operationally separate from its owners, with its risks as a regulated TFO being separate and distinct from those of its owners. Those principles include the requirement that AltaLink's debt obligations are separate and distinct from any indebtedness or obligations of its owners, and that AltaLink maintain an independent Board of Directors. As required by the Inter-affiliate Code of Conduct, the business, and affairs of AltaLink are managed and conducted separately from the business and affairs of its ownership, except as required to fulfill corporate governance, policy, and strategic direction responsibilities of a corporate group of businesses as a whole."[86]

1.9.5.5 AltaLink's Approach to Forecasting Union Salary Escalation

277. AltaLink describes below the approach to forecasting union salary escalation for the 2024-2025 GTA. In Section 1.9.6, AltaLink describes how its application of the approach in forecasting salary escalation in the Test Period.

278. AltaLink's approach to forecasting union salary escalation is based on the data available as per the following steps.

279. Step 1 – If AltaLink has reached collective agreements with both of its unions, the UUWA, and the IBEW, for any year in the test period, AltaLink will utilize actual settlements as the salary escalation forecast for that year. In that situation, this is not a forecast but rather actual salary escalation.

280. If AltaLink has reached an agreement with one of the two unions, then that agreement will be the main consideration, but AltaLink also considers other factors as described below in step 2.

281. Step 2 – If AltaLink has not reached a settlement with both of AltaLink's unions, AltaLink will consider the settlements of AltaLink's closest peers; ATCO Electric, ENMAX, FortisAlberta, and EPCOR. These four companies are AltaLink's closest peers as they:

- are located in Alberta;
- are TFOs, or DFOs;

[85] AUC Decision 26509-D01-2022 (Corigenda), AltaLink Management Ltd., AltaLink KainaiLink PiikaniLink General Tariff Applications, para 43, pdf 21.
[86] Exhibit 26509-X0156, AML-CCA-2021JUN25-014(b), pdf 49; AltaLink KainaiLink PiikaniLink General Tariff Applications.

- have many of the same positions as AltaLink;
- are roughly comparable in size;
- are the companies that AltaLink most directly competes with to attract and retain talent; and
- are the only company comparisons that AltaLink's unions, UUWA and IBEW, consider in the bargaining process.

282. In addition to settlements at AltaLink's closest peers, AltaLink considers its market position relative to these peers and applies management judgement based on Section 1.9.3 and Section 1.9.4.

283. If there is insufficient settlement data based on AltaLink's closest peers, AltaLink considers data described in step 3.

284. Step 3 – AltaLink will consider the available data from private sector unions in Alberta, as well as the broad-based salary escalation forecast from Mercer, and apply management judgement, considering Section 1.9.3 and Section 1.9.4.

1.9.6 Union Base Pay Increase Forecast

285. AltaLink is forecasting union base pay increases, UUWA and IBEW blended rate, of 3.0% in 2024 and 2.5% in 2025, plus step or normal progression increases of 0.5% in each year.

286. AltaLink reached a binding collective agreement with the IBEW in April 2022 that includes the period January 1,2022 to December 31, 2024. AltaLink reached a binding agreement with the UUWA in February 2023 including the time period of January 1,2022 to December 31, 2023.

287. Bargaining with each of the UUWA and IBEW were the longest and most difficult negotiations in AltaLink's 21-year history. Bargaining with the IBEW took 16 months. A tentative agreement between AltaLink and IBEW was rejected by the membership. Mediation was required to achieve a binding collective agreement. Bargaining with the UUWA took 13 months. A tentative agreement between AltaLink and UUWA was rejected by the membership. Mediation was required to achieve a binding collective agreement.

288. Both the IBEW and UUWA unions had higher expectations than previous rounds of bargaining with respect to monetary items and salary escalation, which was reflective of the expectations of the memberships. The unions expected and demanded higher salary escalation relying on competitor peers and economic factors in Alberta such as inflation.

289. As per **Appendix 2-I**, Align Consulting completed a compensation market analysis and concluded that compared to the Alberta Utility Industry, AltaLink is approximately 1.0% above market; and compared to the Alberta General Industry, AltaLink is 0.6% above market.[87]

1.9.6.1 2024 Union Salary Escalation Forecast

290. AltaLink has already reached an agreement with the IBEW for 2024. As described above in Section 1.9.5.5 Step 1, because AltaLink has already reached an agreement with the IBEW, the IBEW agreement is the main consideration for forecasting the combined UUWA and IBEW increases. The IBEW increase in 2024 is 3.5%, plus a 0.6% step increase for a total of 4.1%.

[87] Appendix 2-I, page 5.

291. As per **Appendix 2-I**, four of AltaLink's peers, ATCO, ENMAX, Fortis Alberta, and EPCOR, have all reached a collective agreement settlement for 2024. The average annual increase settlement in 2024 for these four companies was an average of 2.9%.[88]

292. AltaLink considered the AltaLink IBEW annual increase agreement in 2024 of 3.5% (step one) and AltaLink's closest utility peers average annual increase of 2.9% (step two). These settlements will have already accounted for the external environment. AltaLink also considered the Alberta labour market – external data and AltaLink labour market – internal data, as described in Sections 1.9.3 and 1.9.4, which reflects compensation is a major concern.

293. Considering the above, AltaLink is forecasting an increase of 3% in 2024, plus a 0.5% step increase for a total of 3.5%.

1.9.6.2 2025 Union Salary Escalation Forecast

294. As described above in Section 1.9.5.5, AltaLink has not reached an agreement with either the IBEW or UUWA for 2025 and settlement data for our closest peers is limited. Therefore, AltaLink considered the private sector settlements in 2025 (step three), as per **Appendix 2-I**. AltaLink also considered the broad-based Mercer forecast which includes non-union and union employees, refer to **Appendix 2-G.**

295. The only collective agreement settlement in 2025 amongst AltaLink's closest peers is FortisAlberta, which settled with an annual increase of 2.5%. Therefore, AltaLink has considered a broader set of data. As per **Appendix 2-I**, the average private sector union settlements in Alberta are 2.1% and reflects an increasing trend.[89] A secondary consideration, the Mercer salary escalation forecast, **Appendix 2-G**, is 3.0%, but it includes progression or step increases. AltaLink presumes, based on the AltaLink step increase average of 0.5%, that the Mercer forecast excluding step increases is 2.5%.

296. Considering the Fortis Alberta settlement of 2.5%, the average private sector settlement of 2.1% and the Mercer salary escalation forecast of 2.5%, and external and internal factors described previously, AltaLink is forecasting an increase of 2.5% in 2025, plus step increases of 0.5% for a total of 3.0%.

1.9.7 Non-Union Base Pay Increase Forecasts

297. AltaLink is forecasting an increase for non-union employees, (non-union below executive and executive employees combined), of 3.5% in 2024 and 3.25% in 2025.

298. AltaLink's non-union market position and forecasted salary escalation to achieve market average is as follows in Table 1.9.7-1 and Table 1.9.7-2.

Table 1.9.7-1 – AltaLink's Non-Union Market Position 2022 and 2023

2022 Market Position as per **Appendix 2-H**, page 8	3% below market
2023 AltaLink increase of 5.5%, less Market Salary Escalation Forecast as per **Appendix 2-G**, page 2, of 4.1% (rounded to 4.0%)	Less 1.5%
2023 AltaLink Market Position	1.5% below market

[88] Appendix 2-I, page 3.
[89] Appendix 2-I, page 4.

Table 1.9.7-2 – Management Judgement Applied to Non-Union Salary Increase Forecast

Year	Mercer Market Salary Forecast	Salary increase required to achieve market average by the close of the test period	AltaLink salary increase forecast
2024	3.25%	4.0%	3.5%
2025	3.0%	3.75%	3.25%

299. As per the Table 1.9.7-2 above, AltaLink applied management judgement to the Mercer salary data, reducing the salary forecast in 2024 from 4%, which is the salary increase required to achieve market average by the end of the Test Period, to 3.5%; and reducing the salary increase forecast in 2025 from 3.75%, which is the salary increase required to achieve market average by the end of the Test Period, to 3.25%.

300. As per Sections 1.9.3 and 1.9.4, AltaLink considered two primary factors in applying management judgement, specifically the Alberta Labour Environment – external data and AltaLink labour environment market – internal data. Again, it should be noted that the Mercer escalation forecast as per **Appendix 2-G**, has already taken into consideration many of the factors in the Alberta Labour Environment, external data.

301. AltaLink applied management judgement and reduced the salary increase forecast to 3.5% and 3.25% in 2024 and 2025 respectively because AltaLink's management judgement assumed more negative economic conditions than what is reflected in the economic reports described in Section 1.9.3.

302. The salary escalation forecast is expected to result in non-union employees remaining below market average at the end of the Test Period but is forecast that they will move closer to market. The AltaLink labour environment – internal data, indicates these increases may not be sufficient to attract and retain employees. As per the pulse survey, exit interviews, and turnover data, AltaLink employees are dissatisfied with their compensation. In addition, the increasing number of new hire offer declines due to compensation not being high enough indicates that AltaLink needs to increase compensation to attract qualified employees.

303. AltaLink's non-union salary escalation reflects AltaLink's overall base pay increases. However, individual increases for non-union employees will vary based on the employee's relative performance, experience, and specific salary compared to market.

304. Other than the Base Pay increase forecasts above, AltaLink is not forecasting any other Compensation changes during the Test Period.

305. Table 1.9.7-3 below is the blended salary increase calculation.

Table 1.9.7-3 – Blended Salary Increase Calculation

	Weighting[1]	2024 Forecast	2025 Forecast
Non-Union	50%	3.5%	3.25%
Union	50%	3.5%	3.0%
Total Blended Increase	100%	3.5%	3.13%

[1] Reflects the percent of total labour.

1.9.8 STIP

306. AltaLink is not planning any design changes during the Test Period.

307. AltaLink's STIP plan goals are designed to focus on ongoing operations and maintenance. The STIP goals are Customer Satisfaction (20% weighting), Reliability (20% weighting), Safety (20% Weighting), Cyber (20% weighting), and Gross OM&A Spend before Capitalization (20% weighting).

308. For non-union employees – STIP is 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 a 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.

309. If Net Income is below target, then the maximum corporate result is target.

310. As STIP target payout levels remain unchanged during the Test Period, year over year changes reflect staffing levels and base compensation.

311. AltaLink's 2021-22 actual expense, 2023 MU, and 2024–2025 forecast is provided in Table 1.9.8-1 below.

Table 1.9.8-1 – STIP ($M)

	2021 Actual	2022 Actual	2023 MU	2024 Forecast	2025 Forecast
STIP	11.6	9.3	10.2	9.4	9.7

1.9.8.1 STIP Payout Levels

312. Table 1.9.8.1-1 below sets out AltaLink's STIP target levels as of 2023 and for the Test Period.

Table 1.9.8.1-1 – STIP Target Levels – As a Percent of Base Pay

Pay levels	Target*
Executive (SVP's, EVP, President and CEO)	40-100%
Management/Functional Expert/Senior Management	15%
Entry to First Level Supervision/Specialist level	10%
Administrative	7.5%
Union (UUWA/IBEW)	7.5%

Note: In 2023 one executive had their STIP target increased from 30% to 40%.

313. STIP Goals and Plan Design –Shown in Table 1.9.8.1-2 below is AltaLink's 2023 STIP Corporate Goals.

Table 1.9.8.1-2 – AltaLink 2023 STIP Corporate Goals

Goal	Weight	Minimum	Target	Maximum
Customer Satisfaction	20%	9.20	9.34	9.58
Reliability	20%	0%	20%	40%
Safety	20%	0.40	0.30	0.20
Cyber	20%	99.940%	99.950%	99.960%
Gross OM&A spend before Capitalization	20%	$196.5M	$191.5M	$186.5M
Total	**100%**			

1.9.8.2 STIP Goal Mechanics

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

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

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

Customer Satisfaction Goal

316. The customer satisfaction goal recognizes the value in feedback from customers. AltaLink's leadership has taken 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.

317. 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.

318. 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

319. AltaLink's reliability goal, measured by System Average Interruption Duration Index (SAIDI), is established to reflect the fact that transmission system reliability is important to customers. The SAIDI index was chosen as the reliability measure since it most appropriately reflects customer experience and that employees have appropriate level of influence over.

320. The STIP reliability goal includes load interruptions caused by the bulk electric system as per the guidelines of Electricity Canada. 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 minutes of interruption per delivery point in a year.

321. 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 an improvement

on the five-year average, maximum as an improvement on the best result ever and midpoint as the middle of minimum and maximum.

322. SAIDI performance is measured for each of three supply connection types, as defined by Electricity Canada, 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

323. AltaLink implemented the STIP safety goal as a safe working environment is absolutely critical and imperative in this industry. It is also in the interest of all stakeholders and positively impacts employee productivity. The safety goal is defined by AltaLink's Safety Incident Frequency Rate and is calculated as the sum of 60% Employee TRIF + 20% Contractor TRIF + 20% SNM Incident Frequency. This goal is designed to reduce the number of recordable injuries for employees and contractors.

324. The employee and contractor incidents are calculated using a total recordable frequency rate (TRIF). TRIF is a measure of the number of medical aid, lost time accidents and restricted work injuries. This 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.

325. Significant near miss rate (SNM) is calculated as: (the number of employee plus contractor SNM incidents) x 200,000 hours worked/total exposure hours worked.

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

326. The Operating Cost goal is the gross OM&A expenditures before capitalization; includes AltaLink's controllable expenses only and excludes reserve accounts, deferral accounts, third-party capital services and non-regulated expenses.

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

Cyber Goal

328. Given the risks of a cyber-attack impacting the transmission system, AltaLink has a cyber goal. 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.

329. For information purposes, Table 1.9.8.2-1 below provides AltaLink's 2022 STIP results.

Table 1.9.8.2-1 – AltaLink 2022 STIP Final Results

Goal	Weight	Minimum	Target	Maximum	Final Results
Customer Satisfaction	20%	9.00	9.22	9.44	9.57
Reliability	20%	0%	20%	40%	38.4%
Safety	20%	0.40	0.25	0.10	0.50
Cyber	20%	99.920%	99.950%	99.980%	99.955%
Operating Costs	20%	$196.1M	$191.1M	$186.1M	$180.87M
Total	**100%**				

330. AltaLink designs its STIP targets to be at a reasonable level of stretch for employees. In the previous five years, AltaLink's STIP payout for non-union employees has averaged 125.3%. The five-year STIP non-union corporate results were: 123.9% in 2018; 141.6% in 2019; 132% in 2020, 129% in 2021; and 100% in 2022. Achieving STIP target level goals with some stretch is intended to result in market average pay. If the Net Income target is not achieved, as was the case in 2022, the company result is capped at 100%. Through the hard work of employees, they have been able to achieve on average, above target results. It is certainly in the interests of customers that AltaLink employees achieve strong results, with the associated payout above target being paid by the shareholders. STIP is designed so that maximum payout requires a significant stretch. AltaLink has previously never had a STIP payout at maximum.

331. AltaLink uses target STIP levels for market pay comparisons. Using actual STIP would have the illogical outcome as described below. If AltaLink employees achieved low customer based STIP results, and therefore a low payout, this would result in their market comparisons being lower, and would provide justification for higher base pay salary increases. If employees achieved strong customer based STIP results, and therefore a high payout, using actual STIP payout would result in their market comparisons being higher, and would provide justification for lower base pay salary increases. It is not logical that if employees achieve poor results, they are rewarded with higher base pay, any more than it is logical that if employees achieve strong results, they are penalized with lower base pay increases. AltaLink believes this is one reason that it is common market practice to use target level incentive pay for market pay comparisons.

332. Mercer recommends the methodology to use target rather than actual STIP for market comparisons. As per **Appendix 2-H**, Mercer states: "Our study evaluates target, rather than actual, compensation because target compensation does not factor in individual and/or corporate performance and reflects the pay opportunity AltaLink and its peers make available to their employees and/or the intended compensation for the role; target compensation therefore provides a more relevant competitive assessment of AltaLink's compensation structure."[90]

1.9.8.3 STIP Payout Calculations

Union Employees

333. 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:

[90] Appendix 2-H, page 7.

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 X 7.5% X 95%
  $100,000 X 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 X (7.5% + ((110% - 100%) X (2.5%))
  $100,000 X (7.5% + (10% X 2.5%))
  $100,000 X 7.75%
  $7,750

Non-Union Employees

334. 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.

335. 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% + ((Corporate Result- 100%) x .60) = Non-Union Conversion

Example: 100% +((110%-100%) x .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 X 10% X 106% X 105% = $11,130 Payout

1.9.9 LTIP

336. AltaLink is not planning any design changes to LTIP during the Test Period. In 2023 AltaLink introduced a customer service goal which ensures a focus on cost and schedule of project delivery. The customer service goal replaces the Flat for Five Goal. The previous Flat for Five goal was aligned with AltaLink's commitment to customers to keep rates flat from 2017 to 2021.

Given the Test Period is for 2024-2025, the Flat for Five goal no longer applies and has been replaced with the customer service goal. There are no proposed goal changes for the 2024-2025 Test Period. AltaLink's LTIP combines a focus on ongoing operations with increasing levels of capital build during the Test Period.

337. 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 2024-2025 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 2024-2025 LTIP costs and are provided in Table 1.9.9-1 below.

Table 1.9.9-1 - LTIP ($M) Costs Included in the Revenue Requirement

	2021 Actual	2022 Actual	2023 MU	2024 Forecast	2025 Forecast
LTIP[1]	1.6	1.1	1.3	1.1	1.3

[1] Excludes forecast LTIP costs incurred by AltaLink shareholders.

338. The remaining cost of LTIP, which is attributable to goals that benefit both the shareholder and customers, will be paid by the shareholder.

339. Table 1.9.9-2 below includes the total and actual forecast costs.

Table 1.9.9-2 - Actual Total Costs Including Cost Incurred by Shareholder[1] ($M)

	2021 Actual	2022 Actual	2023 MU	2024 Forecast	2025 Forecast
LTIP	3.1	2.2	2.5	2.2	2.5

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

1.9.9.1 LTIP Goals and Plan Design

340. AltaLink has two LTIP customer goals, Reliability and Customer Service as shown in Table 1.9.9.1-1 below.

Table 1.9.9.1-1 - LTIP Customer Goals

Goal	Weight	Customer Benefit
Reliability	25%	Identified as a key customer priority. 100% customer benefit.
Customer Service	25%	Ensure focus is on cost and schedule of project delivery.
Revenue Requirement portion of total LTIP costs	50%	

341. 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 is not included in AltaLink's revenue application.

Table 1.9.9.1-2- 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%		

1.9.9.2 LTIP Plan Summary

342. 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) following three years. The value of phantom share units at the time of payout will be based on results achieved in reliability, customer service and net income. Participation in LTIP will include the CEO, SVPs, VPs, and Directors. In addition, an annual LTIP pool of $0.5M will be granted in additional phantom share units to select employees.

Plan Payout Target Levels

343. LTIP target levels are provided in Table 1.9.9.2-1 below. In 2022, as per **Appendix 2-H**, executive employees were 26% below market and VP employees were 8% below market. In 2023, AltaLink adjusted the LTIP target levels for the VP and above level positions by 5-15% to help address the market gap. As a result of these increases to target levels, it is estimated that executives will be 22% below market and the VPs will be 3% below market.

Table 1.9.9.2-1 - LTIP Target Levels

AltaLink Organization Level	LTIP Target as a percentage of Base Pay
Executive (SVP's, EVP, President and CEO)	40-80%
VP	20-30%
Director	15%

344. As described in previous applications, AltaLink has an LTIP pool of $0.5M annually. This amount is escalated based on forecasted salary escalation. On an annual basis, AltaLink determines which employees will be given additional LTIP grants from this pool. This enables AltaLink to target select employees to further motivate and retain.

345. Consistent with previously approved LTIP, AltaLink is applying for 50% of this cost, or $0.2M annually in the revenue requirement.

Plan Mechanics

346. LTIP participation and eligibility will be reviewed annually by the Human Resource and Governance 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).

347. 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.

1.9.9.3 Customer Goals

Reliability Goal

348. 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.

349. 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 Electricity Canada.

350. 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 time requirement of these efforts makes SAIFI very applicable for a long-term incentive program.

351. Results are determined based on the objective measurement of reliability results.

Customer Service

352. The LTIP Customer Service goal is designed to focus on cost and schedule of project delivery for customers in the process of connecting to the transmission system. Interconnection projects reflect a typical project timeframe of 24-36 months from project inception to project energization and closeout consistent with the LTIP program period. The measure is based on customer satisfaction survey feedback to specific questions on cost and schedule and is intended to focus the organization on improving the customer perception of cost competitiveness of project delivery through connection proposal, service proposal, energization and final cost review phases.

353. The customers to be included in the survey are Connecting Customers, Market Participant Choice (MPC) Customers, and AESO System Projects.

354. Connecting Customers – these customers are currently being surveyed as part of our STIP measure. The score that is being measured for STIP is "overall satisfaction".

355. MPC Customers – these customers are not currently included in any of our measures. AltaLink piloted surveying MPC customers on the AltaLink scope of work for their projects in 2022. Although MPC customers may choose to build their own projects, the final connection to the grid is an AltaLink project.

356. AESO System Projects – project delivery feedback is measured as part of the AESO survey and is not included in AltaLink's STIP measure. A project focused survey will be developed for AESO participants.

357. The LTIP measure will be the average score of two questions for each survey: a) "Value for money" - this is the focus on cost and b) "Meeting commitments" - this is the focus on schedule and commitments.

358. Each survey will pose these two questions and the scores will be averaged. Each survey is equal in weighting.

359. On average, there are roughly two to three dozen surveys completed each year for the groups identified above. This will result in a sample size of approximately 50-60 scores each year over the three-year period.

Shareholder/Customer Goal

360. **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.

1.9.10 Vacancy

361. AltaLink's historical operating vacancy rate is reflected in Table 1.9.10-1 below.

Table 1.9.10-1- Actual Operating Vacancy Rate

	Approved/Managed Operating FTEs Mid-year (note 1) (Before vacancy)	Actual Operating FTEs Mid-year	Vacancy Rate
2018 Mid-year	297.6	286	3.90%
2019 Mid-year	290.3	295	-1.61%
2020 Mid-year	292.8	294	-0.41%
2021 Mid-year	292.8	288	1.64%
2022 Mid-year	304	286	5.92%
Five Year Average	**295.5**	**289.8**	**1.89%**

Note: 2018 – 2021 reflects Managed FTEs, 2022 reflects approved FTE's.

362. AltaLink's average operating vacancy rate over the previous five years, 2018-2022, has been 1.89%. Therefore, AltaLink is forecasting a vacancy rate of 2%.

363. In 2022, AltaLink experienced a temporary spike in the vacancy rate. This was due to a significant increase in turnover and a challenging labour market for recruitment. From 2018 to 2021 turnover averaged 5.7%. In 2022 turnover almost doubled to 10.5%. AltaLink attributes the increase in turnover to three primary factors: 1) an increase in retirements; 2) employees unable to find career advancement opportunities at AltaLink; and 3) employees leaving AltaLink for higher compensation. The significant increase in turnover put pressure on recruitment because AltaLink was recruiting for multiple positions at the same time. The number of times that candidates declined AltaLink's offer of employment increased substantially in 2022 and this impacted the vacancy rate. Following are the number of total declines for the last five years: 2018 – 4; 2019 – 8; 2020 – 4; 2021 – 5; 2022 – 22.

364. AltaLink does not foresee the three factors described above will be ongoing issues for the following reasons: the increase in retirements may have been a post pandemic impact; there is

an increased focus in creating cross-functional and in-position career development opportunities other than level advancement; AltaLink has increased compensation to be more market competitive; and in late 2022 AltaLink made changes to streamline the hiring process to fill positions quicker. In 2023 AltaLink has already filled many of the vacant positions and is forecasting a year end vacancy rate of 2%.

365. AltaLink will need to continue to manage with a low vacancy rate, as the applied for level of FTEs 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 including:

- 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 employee;
- 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 have 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.

1.9.11 Pension and Benefits

366. AltaLink is not proposing any changes to pension and benefits for the Test Period. As per **Appendix 2-J**, AltaLink's Pension and Benefits are at median on an employer provided value basis.[91]

367. AltaLink's benefit package includes pension, disability coverage, life insurance, medical/dental, wellness, and time off provisions.

368. All changes in the pension and benefit expenses will be commensurate with inflation or benefit specific escalation, staff levels and/or compensation increases.

369. AltaLink's 2021-2022 actual expense, 2023 MU, and 2024-2025 forecast are detailed in Table 1.9.11-1 below.

[91] Appendix 2-J, page 4.

Table 1.9.11-1 – 2021 - 2025 Benefit and Other Compensation Costs by Component ($M)

Description	2021 Actual	2022 Actual	2023 MU	2024 Forecast	2025 Forecast
Base Benefits (1)	8.2	8.7	8.9	9.4	9.7
DC Plan (2)	7.8	7.5	8.0	8.3	8.6
SPP	0.3	0.3	0.2	0.2	0.2
PRB	0.7	0.6	0.5	0.5	0.6
Other Labour related Staffing Costs (3)	1.6	1.0	2.0	1.9	1.9
Perquisites	0.4	0.3	0.4	0.4	0.4
STIP	11.6	9.3	10.2	9.4	9.7
LTIP4	1.6	1.1	1.3	1.1	1.3
Targeted Retention Bonus	0.0	0.1	0.1	0.1	0.1
Total Benefit and Other Compensation Loading	32.1	29.0	31.5	31.2	32.3

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, signing bonus and safety bonus.

LTIP reflects the 50% (customer component) of LTIP at target payout.

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

1.9.11.1 Pension

371. AltaLink terminated 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 Table 1.9.11-1.

372. 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, pension, and benefits.

1.9.11.2 Base Benefits

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

Government Benefits

- CPP;
- EI; and
- WCB benefits.

374. AltaLink has forecasted 2024-2025 government benefits to reflect staffing changes and general inflation.

Company Provided Benefits

375. AltaLink's 2024-2025 company provided benefits forecast reflect staff changes and inflation increases as described below:

- **Dental** - AltaLink is utilizing the 2022 actuals as a starting point to forecast future costs. AltaLink has applied the midpoint for the forecasted dental increase of 7% as per the forecast provided by Mercer in **Appendix 2-K**.
- **Extended Health** - AltaLink is utilizing the 2022 actuals as a starting point to forecast future costs. AltaLink has applied the midpoint for the forecasted dental increase of 6% as per the forecast provided by Mercer in **Appendix 2-K**.

376. AltaLink is utilizing the 2022 actuals as a starting point to forecast future costs. 2024 and 2025 forecasts are determined by the following changes:

- 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)

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

378. AltaLink is not proposing any changes to its SPP design in the Test Period. AltaLink's contribution remains at 8%. AltaLink's 2021-2022 actual expense, 2023 MU, and 2024-2025 forecast are detailed in Table 1.9.11.2-1 below.

Table 1.9.11.2-1 - Supplemental Pension Plan ($M)

	2021 Actual	2022 Actual	2023 MU	2024 Forecast	2025 Forecast
SPP	0.3	0.3	0.2	0.2	0.2

Post-Retirement Benefits (PRB)

379. AltaLink's 2021-2022 actual expense, 2023 MU, and 2024-2025 forecast are detailed in Table 1.9.11.2-2 below.

Table 1.9.11.2-2 - Post Retirement Benefits ($M)

	2021 Actual	2022 Actual	2023 MU	2024 Forecast	2025 Forecast
PRB	0.7	0.6	0.5	0.5	0.6

380. PRB include extended health care and dental benefits for retirees until age 65. PRB cost forecast is described in **Appendix 2-L.** 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

381. AltaLink is not proposing any changes to Perquisites. Perquisite levels have been adjusted for inflation of 2.2% and staffing levels. Perquisites are included in the TTDC comparisons in **Appendix 2-H.**

382. AltaLink's 2021-2022 actual expense, 2023 MU, and 2024-2025 forecast are detailed in Table 1.9.11.2-3 below.

Table 1.9.11.2-3 - Perquisites ($M)

	2021 Actual	2022 Actual	2023 MU	2024 Forecast	2025 Forecast
PSB	0.4	0.3	0.4	0.4	0.4

1.9.11.3 Executive Pension and Benefits

383. AltaLink's pension and benefits for executive employees are the same as all other employees including, union and non-union below executive employees. Refer to Section 1.9.11, Pension and Benefits.

384. 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. This may result in executive employees total renumeration being further than 26% below market as per **Appendix 2-H,** because this report does not include benefits.

1.9.11.4 Attraction and Retention Bonus

385. AltaLink's 2021-2022 actual expense, 2023 MU, and 2024-2025 forecast are detailed in Table 1.9.11.4-1 below.

Table 1.9.11.4-1 – Attraction and Retention Bonus Expense ($M)

	2021 Actual	2022 Actual	2023 MU	2024 Forecast	2025 Forecast
Attraction and Retention Bonus	0.0	0.1	0.1	0.1	0.1

386. AltaLink anticipates the continuing need for retention bonuses for the 2024-2025 Test Period. It is AltaLink's belief that retention bonuses are appropriate in certain situations. Rather than incorporating these costs into base pay for specific positions that are experiencing a hot market or for high performing employees, 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.

1.9.12 Other Labour Related Staffing Costs

1.9.12.1 Wellness Spending Account

387. AltaLink's 2021-2022 actual expense, 2023 MU, and 2024-2025 forecast are detailed in Table 1.9.12.1-2 below.

388. The WSA will be increased in 2024 from $1,000 to $1,100 due to inflation as per Table 1.9.12.1-1 below.

Table 1.9.12.1-1 – WSA Inflation adjustment

Year	WSA amount adjusted	Inflation adjustment	WSA forecast amount
2022	$1,000	6.9%	$1,069
2023	$1,069	2.2%	$1,093
2024	$1,093	2.2%	$1,117
2025	$1,117	2.2%	$1,141

389. The annual WSA amount for employees was included in the pension, benefits and time off provisions study completed by Mercer as per **Appendix 2-J**.

390. **Table 1.9.12.1-2 –WSA ($M)**

	2021 Actual	2022 Actual	2023 MU	2024 Forecast	2025 Forecast
WSA	0.7	0.7	0.7	0.8	0.8

391. 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.

1.9.12.2 Outstanding Contribution Awards

392. There have been no changes in the structure of outstanding contribution awards. AltaLink's 2021-2022 actual expense, 2023 MU, and 2024-2025 forecast are detailed in Table 1.9.12.2-1 below.

Table 1.9.12.2-1 – Outstanding Contribution (O/C) Awards ($M)

	2021 Actual	2022 Actual	2023 MU	2024 Forecast	2025 Forecast
Outstanding Contribution Awards	0.3	0.4	0.4	0.4	0.4

393. There are no planned changes for 2024 or 2025 other than adjusting for staffing levels and general inflation.

394. 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
- AltaLink Culture and Teamwork

1.9.12.3 Severance Costs

395. AltaLink's 2021-2022 actual expense, 2023 MU, and 2024-2025 forecast are detailed in Table 1.9.12.3-1 below.

Table 1.9.12.3-1 – Severance Costs ($M)

	2021 Actual	2022 Actual	2023 MU	2024 Forecast	2025 Forecast
Severance Costs	0.2	0.0	0.6	0.4	0.4

396. In the 2024-2025 Test Period, AltaLink is forecasting severance of $0.4M per year, based on the five-year average excluding the Pandemic years, 2020 and 2021. Severance was also lower in 2022 than normal, in part due to the pandemic, however AltaLink has included 2022 in the five-year average. Severance was lower during the Pandemic because of challenging change management issues. The organization focus was on adapting to the rapidly changing business situation versus making changes that would disrupt the work environment. The forecast of $0.4M matches the actual average severance of $0.4M from 2016 to 2019, as well as 2022 actual.

1.9.12.4 Relocation and Signing Bonus

397. AltaLink's 2021-2022 actual expense, 2023 MU, and 2024-2025 forecast are detailed in Table 1.9.12.4-1.

Table 1.9.12.4-1 -Relocation and Signing Bonus Expense ($M)

	2021 Actual	2022 Actual	2023 MU	2024 Forecast	2025 Forecast
Relocation and Signing Bonus	0.0	0.0	0.1	0.1	0.1

398. AltaLink is forecasting its 2024-2025 relocation expense based on the ten-year average cost of relocation which is approximately $70k adjusted for inflation. The signing bonus expense was also based on the ten-year average of approximately $20k per year, adjusted for inflation. Given the economic downturn in 2020 and 2021, AltaLink had lower expenses for relocation and signing bonuses. As AltaLink experienced recruitment challenges in 2022, there was a need to provide more relocation and signing bonuses. This need has continued into 2023 and AltaLink anticipates this will continue during the Test Period.

1.9.12.5 Safety Bonus

399. AltaLink's 2021-2022 actual expense, 2023 MU, and 2024-2025 forecast are detailed in Table 1.9.12.5-1 below.

Table 1.9.12.5-1 - Safety Bonus Expense ($M)

	2021 Actual	2022 Actual	2023 MU	2024 Forecast	2025 Forecast
Safety Bonus	0.5	0.0	0.2	0.2	0.2

400. AltaLink has used the five-year average payout per person of $324 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. If both of these goals are met, the safety bonus would be $680 per employee.

1.10 Operational Performance

401. 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.

402. AltaLink continues to utilize various operational performance measures or KPIs as management tools to identify operational performance trends. Longer-term trends 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.

403. Electricity Canada produces annual reports on certain composite KPIs based on data supplied by utilities across Canada. While AltaLink is including these high-level Electricity Canada averages as a peer comparator for information purposes, it 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.

404. AltaLink's reliability performance measures and improvements are provided 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

405. 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 and the appropriate balance between cost, safety, reliability, and the environment.

406. To illustrate the many factors affecting reliability, Table 1.10.1-1 below describes significant interruptions on AltaLink's system in 2022.

Table 1.10.1-1 — Significant Outages in 2022 (Top 10 Events Ranked by MW-Minutes Lost)

Date	Cause of Outage	Description
10/26/2022	Defective Equipment	On October 26, 2022, a 138/34.5 kV transformer tripped due to a mis-operation of the transformer non-electrical protection, interrupting 19.3 MW of load for an industrial customer. The load was restored in 3 hours 40 minutes following onsite inspection, testing, and restoration of the transformer.
3/20/2022	Contamination	On March 20, 2022, a 138 kV transmission line tripped due to a failed crossarm, interrupting a combined 19.84 MW at two radially connected substations. One substation, with 14.93 MW, was restored in 55 minutes by sectionalizing the line. The remaining substation, with 4.91 MW, had its load transferred out via the distribution system in 3 hours and 17 minutes. The line was repaired and fully restored the following morning.
10/27/2022	Customer Initiated	On October 27, 2022, a 138/25 kV transformer tripped in response to a downstream fault on the distribution system, interrupting 7.7 MW of load at the substation. The load was restored in 2 hours 49 minutes following onsite inspection and restoration of the transformer.
4/4/2022	Defective Equipment	On April 4, 2022, a 138/25 kV transformer tripped at a generation site at approximately midnight at a remote substation due to failure of a 25 kV fused disconnect switch, interrupting 1.8 MW of FortisAlberta load. Based on site design there was no load transfer capability, and first response triage was unable to bypass the failed switch. After mobilizing the field crew, the switch was physically disconnected enabling the transformer to be re-energized. The lost load was restored in 7 hours and 36 minutes.

Date	Cause of Outage	Description
8/12/2022	Adverse Weather	On August 12, 2022, a 138 kV transmission line which was supplying a substation in radial configuration tripped due to lightning resulting in an interruption to 7.3 MW of load at the substation. At the time of the trip, an alternate transmission line into the substation was open to mitigate system overload risk. Since the faulted line was within a high fire risk area and it was not test energized based on the respective protocol. ACC attempted to close the alternate line, but the breaker tripped open. Field personnel were then dispatched to site for inspection. Following site inspection, it was assessed that the line protection associated with the alternate transmission line had mis-operated during the close attempt. Using a different energization sequence, ACC successfully restored the alternate transmission line and station load after 1 hour and 43 minutes from the initial trip. An aerial patrol was carried out for the line affected by lightning, it was restored the next day.
5/13/2022	Foreign Interference	On May 13, 2022, a structure on a radial 138 kV line was struck by a landowner vehicle. The line remained energized but with significant damage, thus, it was manually removed from service to enable the repair. ACC contacted the customers connected to the radial line and notified them of the need for an emergency outage to complete repairs. One customer was able to transfer their load via distribution system prior to the line outage. However, 1.48 MW of industrial load and 11.3 MW of generation were interrupted due to the radial configuration. The line was restored to service in 7 hours and 20 minutes after repairs were completed by the lines crew.
6/8/2022	Customer Initiated	On June 8, 2022, a tree contacted a customer owned 138 kV T-tapped transmission line, damaging the line and causing a fault. This caused the AltaLink transmission line supplying the T-tap to trip, resulting in an interruption to 11.06 MW of load at two other T-tapped substations. 8.88 MW of load at one substation was restored in 29 minutes by operator action after sectionalizing the line. The second substation and remaining 2.18 MW was restored in 2 hours 41 minutes following manual isolation of the customer T-tap by field crews, which allowed the AltaLink line to be completely restored. The customer line was repaired and returned to service the following day.

Date	Cause of Outage	Description
8/1/2022	Wildlife Contact	On August 1, 2022, a 240/25 kV transformer tripped due to a bird contact on the 25 kV side of the transformer, interrupting 2.9 MW of load. The load was restored via the distribution system in 3 hours and 26 minutes. The transformer was inspected and returned to service later that day.
9/5/2022	Human Element	On September 5, a 138 kV line tripped when a tree fell into the line during right of way brushing, which interrupted 8.5 MW of load at a t-tapped substation. The load was restored in 1 hour 7 minutes by sectionalizing the line. The line was fully restored later that day following removal of the tree.

407. 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 customer 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 currently.

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

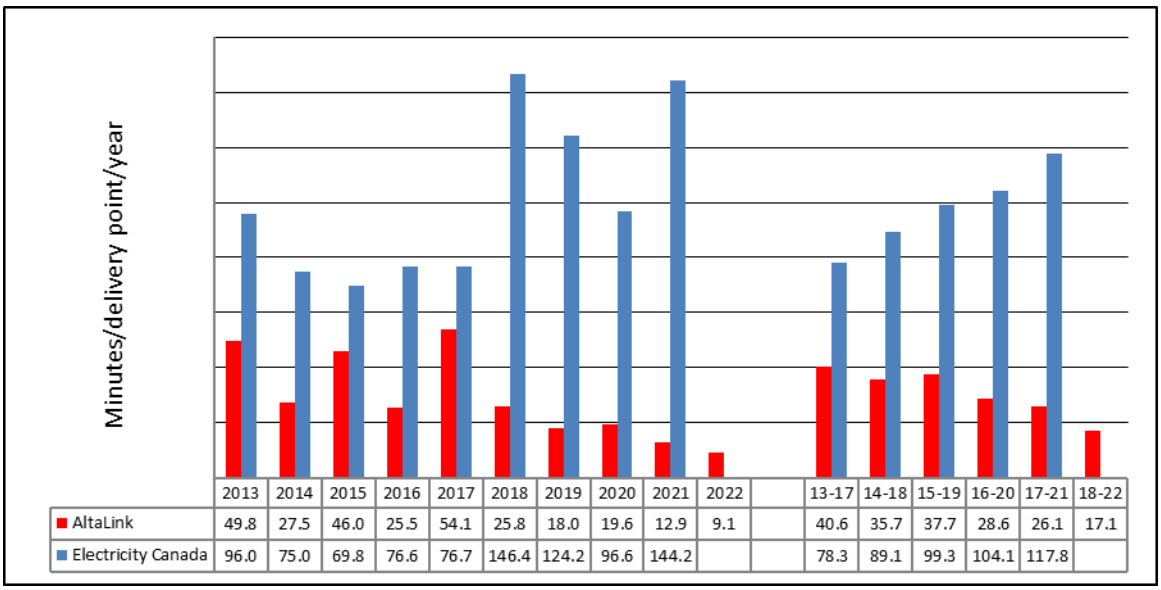
$$SAIFI = \frac{Total\ Number\ of\ Momentary\ \&\ Sustained\ Interruptions}{Total\ Number\ of\ Delivery\ Points\ Monitored}$$

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

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

Figure 1.10.1-1 – Reliability Indices

408. AltaLink is also including the Canadian composite reliability indices through 2019 for comparison purposes as Figure 1.10.1-2 below. Electricity Canada'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.

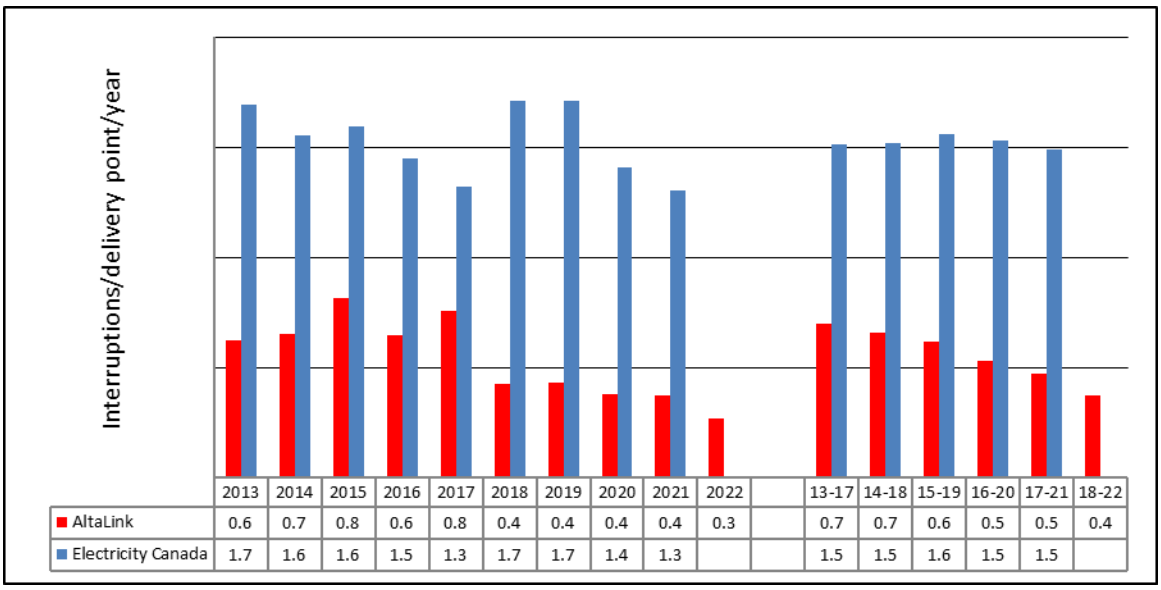


	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022		13-17	14-18	15-19	16-20	17-21	18-22
AltaLink	49.8	27.5	46.0	25.5	54.1	25.8	18.0	19.6	12.9	9.1		40.6	35.7	37.7	28.6	26.1	17.1
Electricity Canada	96.0	75.0	69.8	76.6	76.7	146.4	124.2	96.6	144.2			78.3	89.1	99.3	104.1	117.8	

Figure 1.10.1-2 - Transmission Delivery Point Outage Duration

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

409. AltaLink's outage duration performance continues to compare favorably with the Electricity Canada composite index. The rolling five-year average indicates that the duration of outages has improved over the past three years. AltaLink attributes this to the combination of operating practices and timely CRU investments such as the Reliability Improvements described in this Section and the Asset and System Operations related Business Improvements listed in Section 1.11. AltaLink's planned improvements continue to improve performance in average duration of outages.



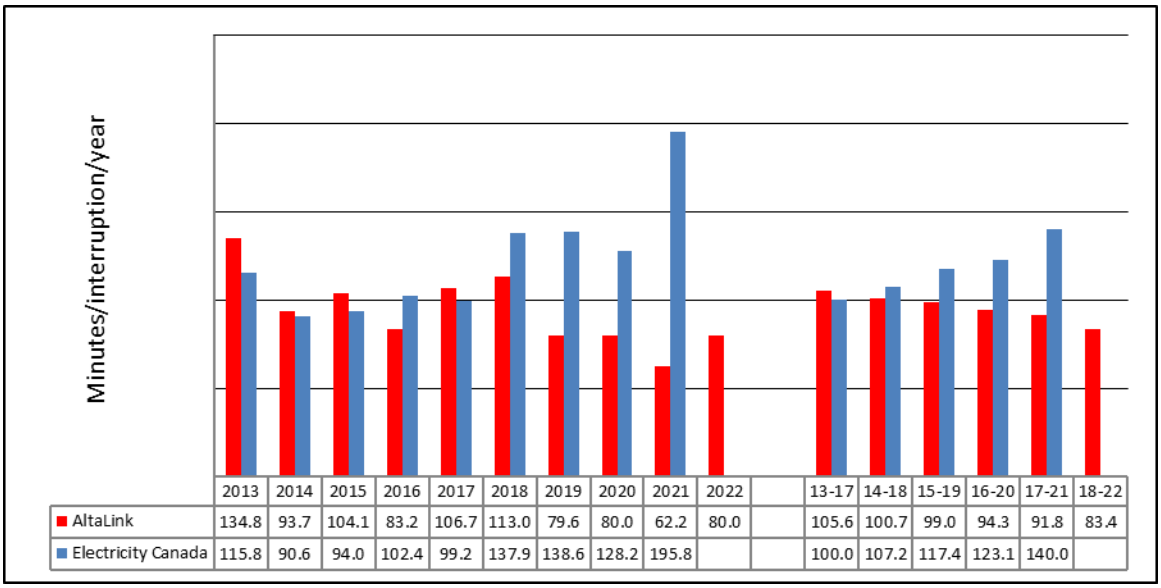
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022		13-17	14-18	15-19	16-20	17-21	18-22
AltaLink	0.6	0.7	0.8	0.6	0.8	0.4	0.4	0.4	0.4	0.3		0.7	0.7	0.6	0.5	0.5	0.4
Electricity Canada	1.7	1.6	1.6	1.5	1.3	1.7	1.7	1.4	1.3			1.5	1.5	1.6	1.5	1.5	

Figure 1.10.1-3 - Transmission Delivery Point Outage Frequency

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

410. 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 Electricity Canada

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



	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022		13-17	14-18	15-19	16-20	17-21	18-22
AltaLink	134.8	93.7	104.1	83.2	106.7	113.0	79.6	80.0	62.2	80.0		105.6	100.7	99.0	94.3	91.8	83.4
Electricity Canada	115.8	90.6	94.0	102.4	99.2	137.9	138.6	128.2	195.8			100.0	107.2	117.4	123.1	140.0	

Figure 1.10.1-4 - Transmission Restoration Time

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

411. 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 has an improving trend, observed in the declining five-year average response time. AltaLink continuously reviews its operation and restoration practices and implements improvements to its response time. In addition, AltaLink has several CRU programs (for example, Disturbance Analysis Equipment, **Appendix 13-A08**) and Business Improvements (Section 1.11) that are focused to enable faster isolation and reduced restoration times for customers. Results of these efforts are visible in the performance trends. AltaLink strives to sustain this performance by continuing its focus on the respective programs.

Reliability Performance Expected Range

412. 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 2018-2022 actuals. Using historical data to set expected performance ranges takes into account the nature of reliability indices, namely:

- SAIDI, SAIFI and SARI are all lagging indicators of past decisions in system design and capital expenditures; and,
- interruptions can vary widely between years.

Table 1.10.1-2 — Reliability Performance and Expected Range

Reliability Targets all kV	2018	2019	2020	2021	2022	2023F	2024-2025 Expected Range	2024-2025 Target
SAIDI	26	18	20	13	9	17	11-20	15
SAIFI	0.4	0.4	0.4	0.4	0.3	0.4	0.3-0.4	0.4
SARI	113	80	80	62	80	83	69-85	77

Reliability Improvements

413. AltaLink 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, and ensure public safety wherever possible.

Partial Discharge (PD) Online Monitoring

414. AltaLink initiated a 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.

415. The monitoring program is to install PD monitors on key transformers after a 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.

416. 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

417. 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 22% of all substation forced outages. Since the commencement of the wildlife mitigation program at AltaLink, the average number of wildlife contacts has been declining showing 47% improvement from the start of the program. However, wildlife contact with substation equipment is still one of the major causes of outage to customers. AltaLink is targeting sites without wildlife mitigation that have experienced outages in the past, sites with existing wildlife mitigation, sites with high customer impacts, and sites with single transformers or limited alternative supply options as part of its CRU Program. For further details on wildlife mitigation refer to **Appendix 13-A07** Substation Components.

Indoor Switchgear

418. 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.

419. 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.

420. 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 Gas Analysis (DGA) in Oil

421. 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 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.

422. 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

423. 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 because of insulator flashovers increases at higher operating voltages, insufficient and degrading insulation qualities and contamination. Moreover, cross-arm burn-offs due to contamination on the underside of insulators may result in a structure 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 use of AltaLink's insulator washing program has enabled a reduced number of outages.

424. The criteria used to determine the annual insulator washing program includes visual observations of contamination levels, proximity to sources of contaminant accumulation such as highways or industrial process facilities, 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 experience to identify which assets should be targeted for insulator washing each year and define the amount and timing of work to be executed. 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.

425. 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-initiated fires thereby decreasing the risk to the public safety 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

426. 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. Since the program started in 2011 there has been no contamination-related load interruption at the substations where the insulators have been replaced. For further details on Insulator Replacements, refer to **Appendix 13-A07** Substation Components.

CT/PT Replacement Program

427. 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.

Line Clearance Mitigation

428. Prior to 2019, approximately 20% of the lines that AltaLink operates and maintains had original design-based operating ratings. Aerial mapping completed in 2019/2020 has enabled AltaLink to identify electrical clearance deficiencies and opportunities where, on certain lines, results in AltaLink being able to improve existing operating line ratings, raising the capacity of the line. Deficient line spans that do not meet requirements are identified, prioritized, and line ratings re-established in a reasonable time. AltaLink's Line Clearance Mitigation program is further described in the Line Clearance Mitigation business case (refer to **Appendix 13-A32**).

429. 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 public safety and power system reliability performance.

Online Transformer Oil Monitoring

430. 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.

431. 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 $1.8M to $5.0M range with delivery times greater than 16 months if a spare is not available.

Online Transformer Bushing Monitoring

432. 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 subprogram, refer to **Appendix 13-A06** Condition Monitoring.

Conductor Sleeve Thermography

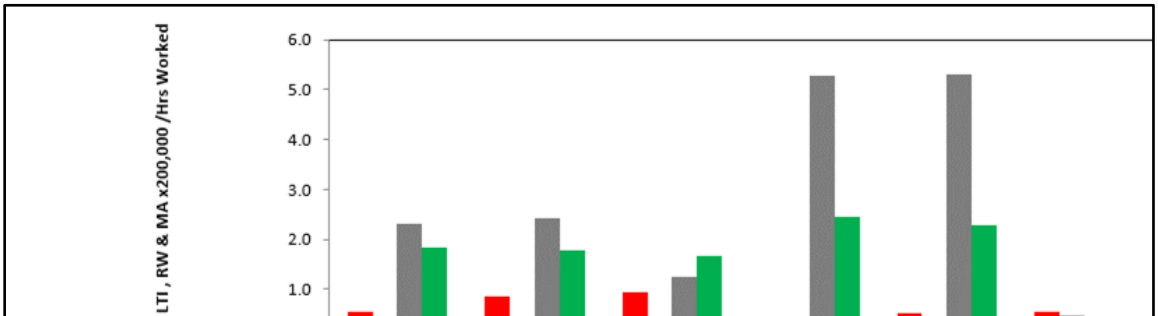
433. AltaLink performs infrared scans on conductor sleeves that are suspected to be faulty. The scan is done when the line is at or near full rating. If the scan results in a "hot" sleeve, then that sleeve is deemed faulty and corrective action is taken to prevent unplanned failures. Depending on the 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 because of faulty sleeves and overheating damages to the main conductors. This improves asset availability and performance.

1.10.2 Safety

434. 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 1.10.2-1 below.

435. TRIF: Total Recordable Injury Rate:

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



	2017	2018	2019	2020	2021	2022
AltaLink Contractors	0.54	0.86	0.93	0.22	0.51	0.56
AltaLink Employees	0.26	0.27	0.27	0.15	0.00	0.48
Electricity Canada Transmission Unit	2.31	2.43	1.24	5.28	5.30	
Electricity Canada Composite	1.83	1.77	1.66	2.44	2.29	

Figure 1.10.2-1 - AltaLink Total Recordable Injury Rate

436. AltaLink safety performance consistently attains strong safety results. Employee and contractor Injury Frequency Rates continue to be better than utility peers in the Electricity Canada.

Preventable Vehicle Accidents (PVA)

437. 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 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 covers, trip cards, use of spotters and driver training, AltaLink has reduced its number of PVAs as compared to 2018. This is demonstrated in Figure 1.10.2-2 below.

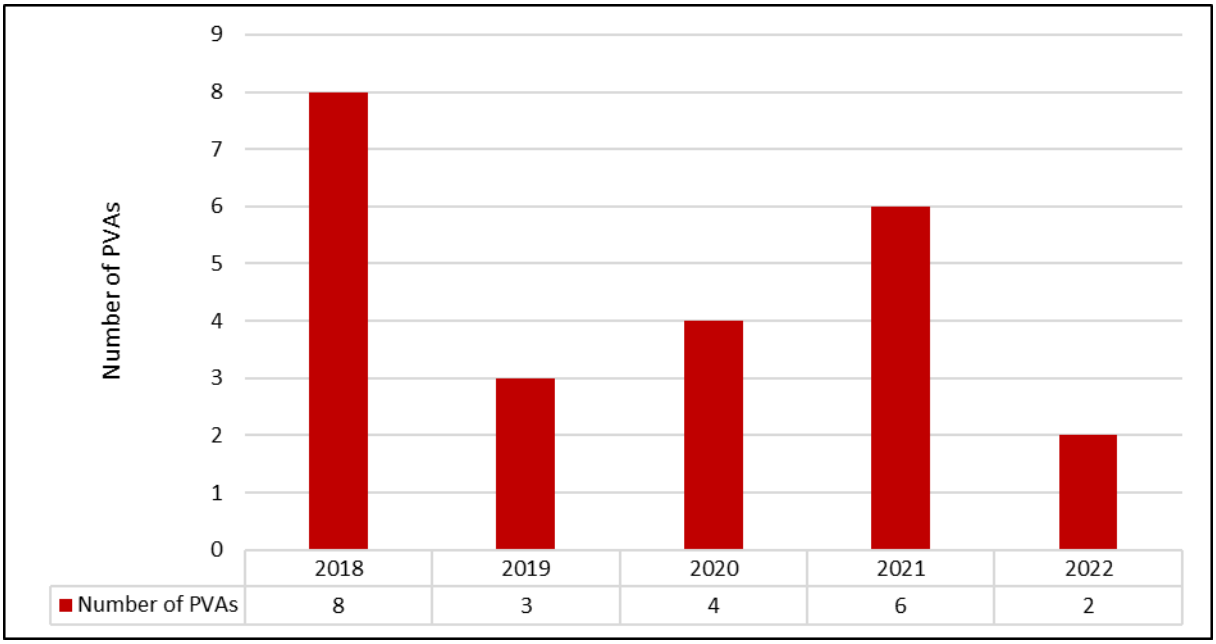


Figure 1.10.2-2 - Preventable Vehicle Accidents

Safety Improvements

438. 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.

439. 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

440. 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

441. 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

442. 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

443. 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 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).

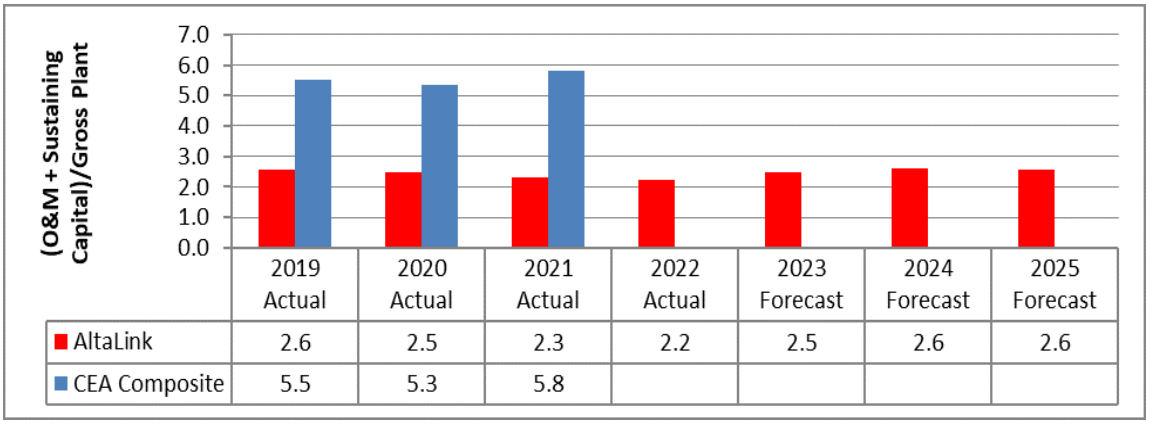
444. These measures are useful indicators of a utility's cost efficiency in operating and maintaining its facilities over time but are influenced in the shorter term by rates of organizational and asset growth and by current economic factors such as availability and cost of inputs (labour, materials 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.[92]

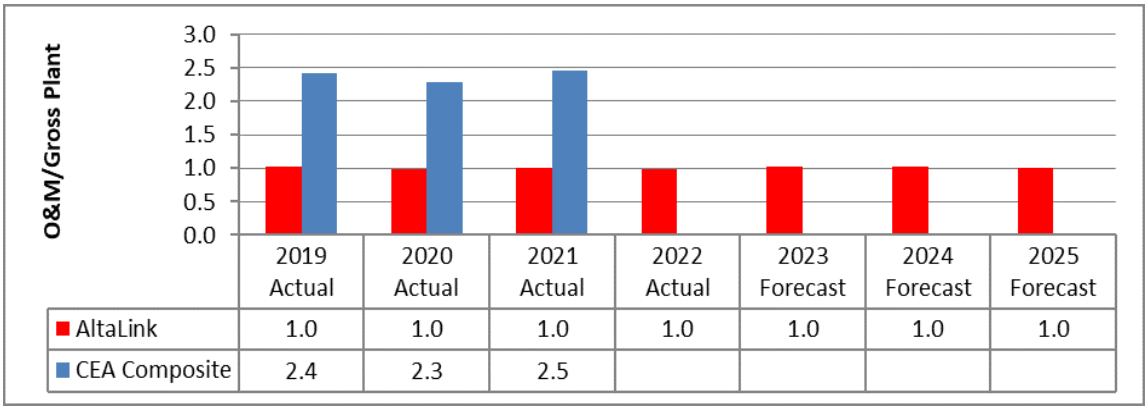
445. AltaLink's performance measures are not intended to be viewed as absolute goals, but rather as indicators of performance taking recent influencing factors into account. Moreover, AltaLink uses these metrics consistent with the Canadian transmission industry to enable comparisons with Electricity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

446. 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.



	2019 Actual	2020 Actual	2021 Actual	2022 Actual	2023 Forecast	2024 Forecast	2025 Forecast
AltaLink	2.6	2.5	2.3	2.2	2.5	2.6	2.6
CEA Composite	5.5	5.3	5.8				

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



	2019 Actual	2020 Actual	2021 Actual	2022 Actual	2023 Forecast	2024 Forecast	2025 Forecast
AltaLink	1.0	1.0	1.0	1.0	1.0	1.0	1.0
CEA Composite	2.4	2.3	2.5				

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

[92] Decision 2009-151, AltaLink Management Ltd. and TransAlta Corporation, 2009 and 2010 Transmission Facility Owner Tariffs, October 2, 2009, para 734, pdf 131.

447. 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.

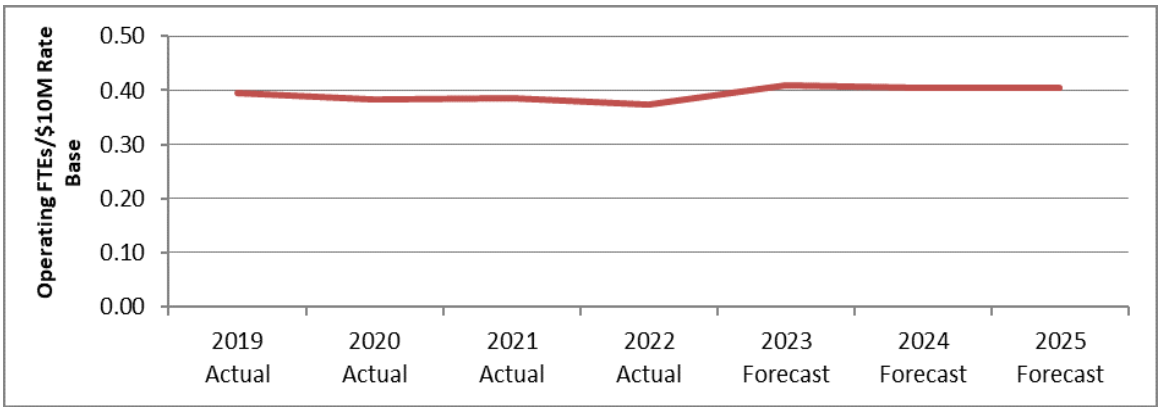


Figure 1.10.3-3 - AltaLink Operating FTEs per $10M Rate Base (Mid-Year)

1.11 Business Improvements

448. AltaLink encourages employees to examine day-to-day business practices for opportunities to increase effectiveness. Consequently, AltaLink 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.

449. Table 1.11-1, Table 1.11-2, Table 1.11-3, Table 1.11-4, Table 1.11-5, Table 1.11-6 and Table 1.11-7 below detail AltaLink business improvements and the related efficiency gains which are identifiable and material, including 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,[93] 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**
• AESO - Collaboration with the AESO: ○ 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:	• 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.

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

▪ 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. ○ Cyber Security Threat Awareness ▪ Information sharing on cyber threats and activities.	
Operational Process Improvement Initiative with Fortis: 2011 and ongoing	**Benefits**
• Undertook a formal project with Fortis Operations to integrate Fortis Control Centre (FCC) centralized operations with ACC operations. • Ongoing process improvements and collaborative modifications to transmission and distribution scheduling. • Supported Fortis' Distribution Automation program. • Distributed Energy Resources (DER) implementation requirements and impacts.	• 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. • Adapting to increased levels of DER, adjusting practices and improved planning and coordination for distributed generation.
Emergency Response Plan (ERP)/Business Continuity Plan (BCP) Updates Implementation: 2012 and ongoing	**Benefits**
• 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. • Supported AESO with planning and implementation of Alberta Coordinated Resilience Exercise (ACRE).	• 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). • Increased communication and collaboration across industry to respond to an unplanned event.

Table 1.11-2 - Business Improvements - Asset Management

Asset Health (Performance) Monitoring: 2010 and ongoing	**Benefits**
• Formalized and implemented a condition monitoring process to evaluate the real time condition of assets and monitor asset health scores for key asset groups consistently and effectively. • Updating legacy tools to support the next iteration of this effort. • Condition monitoring of circuit breakers enabled through remote analysis of relay records. • Implementation of transformer through-fault monitoring to prevent failures.	• Improved trending of asset group health. • Reduced equipment failures. • Improved trending of equipment deterioration and identification of related causes. • Leverage data sources to enable advanced analytics that can trigger targeted investment or incremental operating actions. • Improved development of long-term CRU investment requirements.
Operational Readiness and Integration Implementation: 2013 - 2021	**Benefits**
• A planning process to ensure AltaLink is prepared to integrate new transmission facilities and technologies into its power system.	• 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**
• Utilization of relocatable online transformer oil decontamination equipment. • Addressing corrosive sulfur contamination in some transformers	• Improves transformer oil condition thereby improving reliability and extending the life of the transformer. • Permanent filters installed on older 500 kV transformers as part of life extension based on findings after an internal fault.

Technical Data and Document Management Business Process Implementation: 2012 - 2021	**Benefits**
• Developed 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).	• 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 Reviews: 2014 and ongoing	**Benefits**
• 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.	• 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**
• High pressure washing of transmission line insulators with ground based corn and water washing.	• 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.

Battery Monitoring – Technology Implementation: 2016 and ongoing	**Benefits**
• Battery monitoring technology being installed on new battery banks for replacement of time based maintenance. • Battery management software being used to collect data and analyze condition of battery banks.	• Avoidance of operating/contract work for electrolyte monitoring. • Time based replacements to condition based replacements for battery banks (based on data received from field battery test results). • Compliance with AESO ARS.
Transformer Specification for Reduced Maintenance Implementation: 2016 - 2019	**Benefits**
• Power transformer purchases are specified with reduced maintenance components.	• Allows AltaLink to reduce transformer maintenance outage durations and improve availability.
Circuit Breaker Technology Implementation: 2014 and ongoing	**Benefits**
• 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 working towards a pilot at 138 kV as the market develops in ~2024. • Piloted 138 kV mixed gas dead tank circuit breakers in 2017 which is now standard. • Piloted dead tank circuit breakers with integrated disconnect switches in 2018, which will be considered for special applications.	• Vacuum circuit breaker technology has the following advantages: ○ 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. • Integrated disconnect switches provide improved reliability and a reduced footprint/foundation.
Enhanced Maintenance Techniques: 2020 and ongoing	**Benefits**
• Breaker first trip maintenance practice with assisted analysis of the results. • Transformer tap-change online and offline vibro-accoustic testing.	• Improved equipment maintenance process through avoidance of maintenance tasks and opportunity to schedule field crew for multiple breaker maintenance activities in one day. • Reduced outage durations and avoidance of work to remove HV leads.

• 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.	• Identification of leading indication of failure not detectable by other testing. • Improved diagnostics for maintenance planning and condition assessments. • Non-intrusive maintenance. • 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 and leakage reactance provides leading indications of transformer failure enabling early intervention – reducing damage to transformers.
Digital Substation Implementation: 2017 and ongoing	**Benefits**

• 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.
	• Increased maintainability provided by equipment diagnostics.
	• Reduced maintenance requirements.
	• Increased availability provided by equipment and technology redundancy.
	• Equipment reduction:
	  ○ Human Machine Interfaces (HMI) incorporated into the RTU;
	  ○ SCADA meter eliminated (metering provided be existing relays); and
	  ○ SCADA I/O reduction (I/O provided by existing relays).

Risk Quantification & Economic Analysis: 2018 and ongoing	**Benefits**
• 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.	• 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 Sparing Model **Implementation:** 2018 and ongoing	**Benefits**
• Implementation of a self-sparing model for radios. • Investigation of quantities, statistics of failures and support calls, cost of materials, etc.	• Costs reduction compared to vendor support costs to provide spares.
Telecom Outage Process Improvements **Implementation:** 2017 and ongoing	**Benefits**
• 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.	• Removing the need for blocking relays in certain outage scenarios improving reliability. • Cost reductions through resource optimization.
Capital process improvements **Implementation:** 2017 and ongoing	**Benefits**

• Capital planning to field execution process improvements to improve on:
  ○ 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.
	• Costs improvements through improved processes.
	• Improved communication and prioritization of work between groups and service providers.

Wildlife Mitigation: 2021 and ongoing	**Benefits**
• Enhancing wildlife mitigation beyond bird coverup in AltaLink's substations (portable and operational).	• Prevents unplanned outages. • Prevents wildlife contacts. • Prevents deferral of scheduled work due to wildlife nesting.
Relay Maintenance Cost Reduction: 2022 and ongoing	**Benefits**

• Developed automated techniques for reducing four maintenance activities that required field visits. • Developed automated techniques for reducing manual operational activities requiring field visits for non-critical relay settings at low impact CIP substations.	• Reduce number of field visits to perform four types of maintenance activities for protective relays. • Reduce field visits to change non-critical relay settings.

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

Carbon Footprint Initiative Implementation: 2016 and ongoing	**Benefits**

• Targeted reduction in overall energy consumption by 2% in the areas of electricity and fuel consumption through:
  ○ 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.
• New vehicle purchases to include enhancements that increase public and operator safety and support idle reduction.
	• 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.

Intelex Incident Management Software Implementation: 2020	**Benefits**
• Incident management software for the tracking, trending and reporting of: ○ 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.	• 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**
• Systematic Approach to Training (SAT) is the process to: ○ 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.	• 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**
• FleetWave is a fleet management tool that is utilized by the Fleet team and operators of fleet equipment.	• Improved prioritization and scheduling of maintenance. • Improved vehicle reliability and availability. • Increased operator and public safety.
Improved vehicle maintenance processes Implementation: 2020	**Benefits**
• Increased maintenance cycles on light and medium duty trucks to align with manufacturers standards.	• Reduction in maintenance costs, as well as reduced fluids disposal amounts and costs. • Increase in vehicle availability while maintaining vehicle reliability.

Human Performance Improvement Program Implementation: 2021 and ongoing	Benefits
• Human Performance Improvement Program and expansion includes the following topics: ○ Error Trap Reduction ○ Significant Injury Fatality (SIF) Review ○ Training sessions on HPI ○ HPI Tool kit expansion	• Proactive process for identifying errors in work practices. • A process to review high risk work programs and look for ways to reduce risk in that work, i.e. working at heights. • Reducing errors in work and reducing where mistakes are made.

Table 1.11-4 – Business Improvements – Land

Land Payment System Implementation: 2023	**Benefits**
• Implementation of upgrade to land management and crossings information systems integrated with Land Payment System.	• Realtime Updates between Land Brokers and AltaLink. • Reduced project delays. • Reduced Email traffic of documents back and forth for signatures and possible lost emails. • Tracking Commitments/Compliance of 3rd parties.

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

Security Continuous Improvements: 2019 and ongoing	**Benefits**
• 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 • Enhancing AltaLink's emergency response capabilities through process improvements, new systems and participation in GridEx VIII • CIP process improvements - SharePoint forms, metrics reporting, process improvements • Security access improvements that include geofencing, isolation protocols and firewall cleanup • Vulnerability patching through continuous vulnerability scanning and application of patches	• 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. • 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. • Reduced inadvertent risk of introducing malware into substations. • Strengthen cyber security position in response to the Russia/Ukraine conflict. • Increase employee awareness on phishing risk. • Reduce risk of attack through exploitation of software vulnerability. • Reduce number of CIP self-reports and penalties. • Decrease time lost due to cyber incident.

• Conducting phishing simulations that include weekly phishing tests, employee reporting, ongoing training, and communication	
Leverage Information Services Tools: 2022 and ongoing	**Benefits**
• Implement efficiency gains through improved governance and maturity with technology tools such as Microsoft Power Apps and Power BI. • Enhance the data and analytics capabilities by developing improvements to the governance of the technologies and the use of existing tools. • Implement a program to improve the employee's digital experience and the technology services provided (Digital Employee Experience - DEX). • Implement and expand mobility roadmaps, capabilities, governance, and technologies. • Leverage existing investments in automation to avoid increasing manpower to meet new business requirements.	• Increased productivity • Ability to standardize on common guidance and tools. • Improved efficiency as business users able to build solutions that are fit for purpose. • Provide consistency and common methods of using data to drive decision making. • Increase employee engagement, satisfaction, and effectiveness. • Simplify the processes and procedures applied when on-boarding/off-boarding. • Increase field situational awareness. • Leverage technology investments to support field-based data gathering and more real-time data availability to field users. • Automation of standardized, repetitive, manual tasks reducing effort for resources to focus their experience and skills on higher value activities.
IT Service Delivery Improvements: 2023 and ongoing	**Benefits**
• Completing an RFP for managed infrastructure services. • Reviewing and revising service management activities and measures. • Formalize service management's problem management processes. • Integrate and optimize managed infrastructure provider from the RFP.	• Refresh competitive pricing of services • Review and improve license management processes. • Aligned problem resolution.

Table 1.11-6 – Business Improvements – Procurement

eAuctions Implementation: 2017 and ongoing	**Benefits**
• 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.	• Reduction in rates or material pricing. • Improvements in procurement process work efficiency.
Procurement Process Continuous Improvement Implementation: 2019 and ongoing	**Benefits**
• Procure to Pay (P2P) Process Improvement: joint initiative with Finance to implement tools, processes and procedures for increased efficiency.	• Creates visibility of end to end process and identifies areas for collaboration, improvement and red tape reduction.
• 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.	• Establishment of various KPIs to monitor and reduce sole source purchases, invoices before PO and single bidder eAuctions.
• Implementation of contracts and sourcing supply chain tools: eSourcing, Contracts Management and Spend Analytics.	• Enables automation of sourcing activity including eAuctions.
• Implementation of the Celonis process tool.	• Provides data driven analysis and decision making for process improvement.
• Implementation of a supplier management program.	• Regular performance monitoring (including scorecards) for top suppliers. • Performance metrics include safety, environment, project execution, security and subcontractor performance.
Evaluation Enhancement of Supplier Information Security Risk: 2023 and ongoing	**Benefits**
• Improving processes and controls for evaluation of supplier information security risk. • Compliance with upcoming CIP-013 requirements.	• Overall improved management of vendors, including vendor performance against security requirements as defined in AltaLink's contractual agreements. • Proactive approach to avoiding the costs associated with cyber security breaches. • Risk assessments of new vendors to identify potential information security risks prior to supplier engagement.

Table 1.11-7 – Business Improvements – Finance

Improving Forecasting: 2023 and ongoing	**Benefits**
• Implementing enhancements for labour forecasting by documenting cost center activities as well as associated volumetric data (KPIs). • Improving processes for forecasting asset retirements leveraging automated workflow implemented in 2022 .	• Enhanced GTA information. • Less effort required for responding to information requests. • Improved asset retirement forecasts. • Standardized asset retirement process which reduces processing delays and improves accuracy.

1.12 Major Issues and Policy Changes

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

451. 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.

452. AltaLink has added a new section for consideration by the Commission as follows:

- Section 30 – Affiliate Transactions

1.13 Terms and Conditions

453. AltaLink has adopted the Alberta TFO T&Cs approved in AUC Decision 22073-D01-2017,[94] effective June 26, 2017.

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

[94] 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

455. In Paragraph 32 of the 2022-2023 GTA Decision, the Commission found that AltaLink complied with 33 out of the 34 directives of previous GTA decisions. AltaLink maintains a directives database that contains any active Commission directive along with AltaLink's compliance with the directive. AltaLink provides summaries of its compliance with Commission directions as follows.

456. Section 2 contains the responses to outstanding or ongoing 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 22570-D01-2018 (2018 GCOC);
- Decision 23848-D01-2020 (2019-2021 GTA);
- Decision 25870-D01-2020 (2019-2021 GTA Stage 2 R&V Net Salvage Proposal);
- Decision 25913-D01-2021 (2019 DACDA);
- Decision 26509-D01-2022 (2022-2023 GTA);
- Decision 26551-D01-2021 (Sale of Foothills Property);
- Decision 27174-D01-2022 (2022-2023 GTA Compliance);
- Decision 27238-D01-2022 (2022-2023 GTA Stage 2 RV (Pipeline Electrical Interference Mitigation).

457. Where the Commission has confirmed that AltaLink has either: 1) fully complied with the requirements of the direction and it is not ongoing; or 2) complied with the direction and the direction is no longer applicable, the directive has not been included in the 2024-2025 GTA.

Decision 2005-082 **Page 17 or PDF Page 21** **Paragraph N/A** **Directive 2**

Topic: Required Information

Directive: 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.

Response:

458. This GTA provides the requested information. In particular, Section 2 of this GTA provides responses to the Commission's directives.

Decision 2007-012 **Page 100 or PDF Page 106** **Paragraph N/A** **Directive 26**

Topic: Insourcing, Outsourcing

Directive: 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.

Response:

459. AltaLink's Relationship Agreement with Burns & McDonnell (BMcD) expired on April 30, 2022 and was not extended. As described in the 2022-2023 GTA, AltaLink continues to move 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 internal project staff or explore market opportunities to find an appropriate EPC through its regular procurement process to efficiently and cost effectively deliver the projects. Continuing to test the market through the competitive procurement process will help ensure the most cost-effective model for ratepayers.

460. 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. But it also allows AltaLink to scale its project delivery according to the size and complexity of projects. Table 10.2.3-1 in Section 10.2.3 of the Application provides a list of projects that AltaLink will insource a portion of the work under the flexible EPC model.

Decision 2011-453	Page 196 or PDF Page 204	Paragraph 1118	Directive 40

Topic: Performance Indicators

Directive: 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.

Response:

461. This information is provided in Section 1.10 of the Application.

Decision 2012-221 | **Page 33 or PDF Page 37** | **Paragraph 164** | **Directive 7**

Topic: Capital Forecasts

Directive: 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 during the course of AltaLink's next GTA proceeding should these directions be insufficient.

Response:

462. In AltaLink's 2024-2025 GTA, the DA capital forecast for expenditures and additions is based on individual project plans. These plans are developed on an annual basis. The DA forecast represents the best available information at the time of filing and is a reasonable forecast for the DA capital project revenue requirement. This approach remains consistent with AltaLink's 2022-2023 GTA and previous GTAs.

463. Since the 2022-2023 test period, AltaLink has observed changes in three drivers for capital transmission projects:

- The release of AESO's 2022 Long-Term Transmission Plan (LTP);
- The AESO's current active project queue; and
- Completion of more "brownfield" BTF projects.

464. The AESO's 2022 LTP has identified approximately $1.5 billion of system transmission projects up to 2035 in AltaLink's service area.[95]

465. In addition to the AESO's 2022 LTP, the active project queue for customer interconnections has grown steadily over the last few years. In 2019, there were 12 generation projects representing 350 MW seeking to connect to AltaLink's system. In 2023, that project queue has grown to approximately 145 projects representing 21,000 MW seeking to connect to AltaLink's system. While not all of these projects will be fully developed, executed and energized, AltaLink develops these projects to each customers' desired pace and stage in the schedule. Between 2014 and 2022, the number of new DA and BTF projects has increased by 390%. Figure 2.04-4 below shows the number of DA and BTF projects by category which AltaLink was working on from 2014 to 2022. Although the system projects have decreased, the overall project count has increased due to the increase in customer and BTF projects.

[95] AESO 2022 Long-Term Transmission Plan, page 60. Retrieved from: AESO-2022-Long-term-Transmission-Plan.pdf.

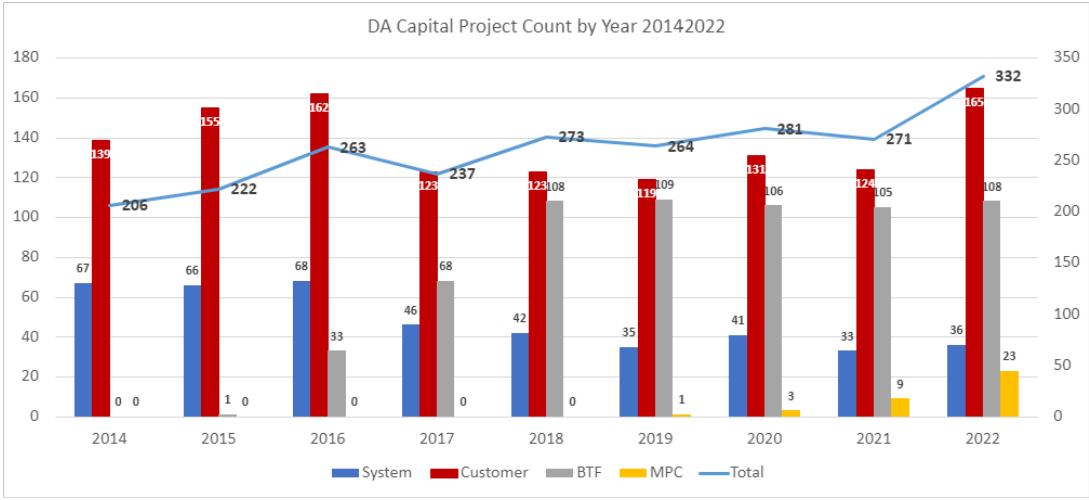


Figure 2.04-4 – DA Capital Project Count by Year 2014-2022

466. AltaLink completed $13.6M of BTF projects in 2022, which is the highest number in AltaLink's history. AltaLink's forecast in 2023 includes BTF projects that AltaLink has visibility of which could increase as more projects get further in the process.

467. The forecast expenditures in this application reflect the current view of the drivers described above. AltaLink works closely with the AESO and connecting customers to estimate the ISDs included in the application. Additional information is provided in Section 10.2 of the Application.

Decision 2012-221 | **Page 34 or PDF Page 38** | **Paragraph 169** | **Directive 8**

Topic: Capital Forecasts

Directive: Accordingly, the Commission directs AltaLink to provide additional information in future GTAs to facilitate greater scrutiny of its capital expenditure forecasts as follows:

(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.

(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 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.

(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.

(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.

Response:

468. All project numbers are consistent in AltaLink's 2024-2025 GTA.

469. AltaLink's forecast process for determining the Test Period revenue requirement for all projects identified at the time of its GTA incorporates the following key elements:

- 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 forecast ISDs for projects under direction;
    - the basis of an individual project forecast is dependent on the project stage at the time of GTA preparation. It will use the most up to date information available;
- 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 in the 2024-2025 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 or generation projects have been developed using general assumptions based on past experience 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;
- BTF projects typically require minor changes to AltaLink facilities as a result of changes the market participant is making to their facilities. Recent BTF projects have required system modifications identified by the AESO that are not customer funded. Annual generic forecast amount for potential BTF projects has been included in the Test Period. BTF projects are included in the **Appendix 19-D** Continuity Schedules; and
- Contract capacity change projects are subject to Section 5 of the AESO Tariff[96] 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. Shared cost of facilities calculations are also not included in future forecast amounts unless AltaLink has been made aware of these in advance. These calculations are included in updated Construction Contribution Decision issued by the AESO and applied to project costs as they are received.

470. Refer to Section 10.2 of the Application for further details.

471. Project D.0633 Provost to Edgerton and Nilrem to Vermilion (PENV) Transmission Reinforcement from the 2019-2021 GTA has been changed to D.0777, D.0778 and D.0779 Provost to Edgerton and Nilrem to Vermilion (PENV) Transmission Reinforcement.

472. 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. Refer to

[96] AESO Tariff, Section 5 – Changes to System Access Service. Retrieved from: https://www.aeso.ca/rules-standards-and-tariff/tariff/section-5-changes-to-system-access-service/

Appendix 19-B Project List with Proceeding ID Numbers for the project list and proceeding ID numbers.

Decision 2012-221	Page 23 or PDF Page 27	Paragraph 131	Directive N/A

Topic: Income Taxes

Directive: 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.

Response:

473. As directed by the Commission, AltaLink has deducted Capitalized G&A in its taxable income calculation in MFR Schedule 7-3, line 13. 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.

Decision 2013-407 **Page 43 or PDF Page 51** **Paragraph 249** **Directive 18**

Topic: Right-of-way payments

Directive: 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.

Response:

474. AltaLink is aware of the following decisions from The Land and Property Rights Tribunal (formerly Surface Rights Board) in respect of right-of-way payments since the 2022-2023 GTA. The five decisions relate to Compensation Decisions or Appeals on the WATL Project and Langdon to Janet Project.[97]

- Bretin v AltaLink BR2021.0018 (Ref File No. CR1438) LPRT2021/SR0436[98]
- Bretin v AltaLink BR2021.0019 (Ref File No. RE2014.0012) LPRT2021/SR0433[99]
- Thompson v AltaLink RE2013.0009&RE2013.0010 LPRT2021/SR0501[100]
- Thompson v AltaLink RE2013.0009&RE2013.0010 LPRT2021/SR0707[101]
- Thompson v AltaLink RE2013.009 and RE2013.0010[102]

475. These decisions are provided in **Appendix 12-2**.

[97] Note that the SRB is now the Land and Property Rights Tribunal.
[98] Appendix 12-2 Attachment 1.
[99] Appendix 12-2 Attachment 2.
[100] Appendix 12-2 Attachment 3.
[101] Appendix 12-2 Attachment 4.
[102] Appendix 12-2 Attachment 5.

Decision 2013-407 **Page 53 or PDF Page 61** **Paragraph 292** **Directive 23**

Topic: Lease Revenue and Other

Directive: 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.

Response:

476. AltaLink forecast Lease Revenue and Other, excluding Enbridge/MATL, was $2.0M for 2021 and $1.5M for 2022. Actuals were $1.4M for 2021 and $1.6M for 2022. The variances were mainly due to reduced and increased third-party activity. The over-forecast of $0.5M to actual variance over the two year period, reflects that AltaLink did not underestimate the forecast lease and other revenue. Refer to Section 8.

Decision 2013-417 | **Page 82-83 or PDF Page 86-87** | **Paragraph 327** | **Directive 2**

Topic: Utility Asset Disposition

Directive: 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 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.

Response:

477. All land parcels previously identified as being no longer required for utility service have been removed from AltaLink's rate base except for one parcel that was subsequently utilized for an expansion of the Johnson Substation for the Red Deer Area Development Project. Of the other 23 originally identified locations, 20 have been sold, two are being retained as the sale 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.

Decision 3524-D01-2016 **Page 7 or PDF Page 15** **Paragraph 33** **Directive 1**

Topic: Forecasting methodology - FTEs

Directive: The Commission continues to find the information provided in Appendix 1-C of the application [breakdown of individual job classifications and FTEs by position by cost centre and showing the O&M versus capital split applied for each position by test year] to be of assistance and directs AltaLink to continue to provide this information in future GTAs.

Response:

478. AltaLink provides the information related to this directive in **Appendix 2-C**. This breakdown includes individual FTEs by position, department, USA code and percentage of capitalization for the test years. To further assist the Commission in this Application, AltaLink has also grouped each position by category. This categorization can also be found in Section 5.3 and Section 25 by USA activity code.

Decision 3524-D01-2016 **Page 73 or PDF Page 81** **Paragraph 381** **Directive 20**

Topic: Computer Hardware and Computer Software

Directive: 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.

Response:

479. 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**.

Decision 3524-D01-2016 **Page 74 or PDF Page 82** **Paragraph 382** **Directive 21**

Topic: Account 391.1 – general plant – computer hardware; and Account 391.2 – general plant – computer software

Directive: 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 indicate where applicable, the existence of subaccounts on a stand-alone basis and by account number and name.

Response:

480. AltaLink applied consistent naming of all accounts in its current Application and where applicable indicated the existence of subaccounts. Refer to MFR Schedule 10-7.

Decision 3585-D03-2016 **Page 68 or PDF Page 78** **Paragraph 331** **Directive 14**

Topic: **Capitalized labour and E&S Costs**

Directive: 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.

Response:

481. In accordance with the Commissions direction, AltaLink is filing a 2018 DAIC Study, 2020 DAIC Study and the 2022 E&S Study. For further information, refer to Section 10.7 (Schedule 10-5) and **Appendix 10**.

Decision 21827-D01-2016 **Page 11 or PDF Page 15** **Paragraph 60** **Directive 1**

Topic: Revenue offsets

Directive: 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 below.

Table 1 – Revenue Offsets 2012 to 2014 Actual

Revenue Offsets		2012 Actual	2013 Actual	2014 Actual
		($ millions – Totals may not add due to rounding)		
Affiliates and inter-affiliates	**A**	**1.8**	**4.4**	**3.2**
Non-affiliate				
FortisAlberta services/agreements	B	3.8	3.8	3.4
TransAlta services/agreements	C	1.0	1.1	1.0
Lease and other revenue	D	1.5	1.9	3.4
Sub-total	**E = B + C + D**	**6.3**	**6.8**	**7.8**
Other revenue				
Interest income		0.1	0.3	0.1
Miscellaneous other		0.1	0.5	-
UAD hearing cost revenue		-	0.3	-
IFRS DBP Plan loss offset		1.3	-	-
Project Athabasca – Fort McMurray		-	-	2.3
Sub-total	**F**	**1.5**	**1.1**	**2.3**
Total non-affiliate revenue	**G**	**7.8**	**7.9**	**10.1**
Total Revenue Offsets	**A + G**	**9.6**	**12.3**	**13.3**

Response:

482. The Commission directed AltaLink to provide a level of detail equal to or greater than that provided in Table 1 above. As directed, AltaLink continues to provide Table 1 above in Section 8. Further, AltaLink provides the following additional information to assist the Commission:

- Instead of one line item shown as FortisAlberta services/agreements in Table 1 above, Table 8.1.1-1 provides a breakdown of Service to FortisAlberta into three categories:
  - Telecommunication Services;
  - Joint Use; and
  - Miscellaneous Service.
- Instead of one line item shown as TransAlta services/agreements in Table 1 above, Table 8.1.1-2 provides a breakdown of Service to TransAlta into four categories:
  - Transmission (First Nation);

  - Telecommunication Services;
  - System Control Services; and
  - Meter Data Services.

- Finally, instead of one line item shown as Affiliates and inter-Affiliates in Table 1 above, Table 8.1.2-1 provides a breakdown of Variable Labour Contracts into three categories:

  - PLP and KLP;
  - MATL; and
  - Other Affiliates.

483. Refer to Section 8 of the GTA for greater details on Services to FortisAlberta in Table 8.1.1-1, Services to TransAlta in Table 8.1.1-2, and Variable Labour Contracts in Table 8.1.2-1. Table 8.1.3-1 for Lease revenue and other contains.

Decision 21827-D01-2016 **PDF Page 39** **Settlement Agreement Section 90** **Commitment**

Topic: **EPCM Provider**

Directive: In the next and subsequent GTAs, for new projects exceeding $30M in total costs, AltaLink will identify whether the project is expected to be self-managed by AltaLink or executed under an existing EPCm Relationship Agreement or provided by another supplier. Additionally, AltaLink will provide a rationale supporting its choice to either self-manage the project, execute it under an existing EPCm Relationship Agreement or why it selected another supplier.

Response:

484. Using reasonable judgement and experience, AltaLink will use an EPCm service provider on projects while exploring opportunities for its internal staff to scale up on its capabilities to manage certain aspects of complex projects such as construction management. The EPCm service provider will be "flexed" based on complexity and size of the project(s). This means that the EPCm service provider may not do all of the engineering, procurement and construction management functions, but would rather provide the resourcing/capabilities where AltaLink specifically needs it. Scaling up capabilities, like in the construction management space, 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. 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 is without increasing costs to ratepayers.

485. AltaLink provides information below on some key projects on its approach. This information can also be found in Section 10.2, Table 10.2.3-1 of the Application.

Table 2.15-1 – Identification of EPCm for new Projects

Project	EPCm Provider	Rationale for Choice of Provider
D.0777 Nilrem to Vermillion, a component of PENV Transmission Reinforcement[103]	To Be Tendered under flexible EPCm model	Complex, multi-year 240 kV line project in excess of $100M.
D.0778 Provost to Edgerton South, a component of PENV Transmission Reinforcement	To Be Tendered under flexible EPCm model	Complex, multi-year 240 kV line project in excess of $50M.
D.0779 Provost to Edgerton North, a component of PENV Transmission Reinforcement	To Be Tendered under flexible EPCm model	Complex, multi-year 240 kV line project in excess of $60M.

[103] Project previously included in AltaLink's 2019-2021 GTA as D.0633 Provost-Edgerton and 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.

Project	EPCm Provider	Rationale for Choice of Provider
D.0726 Central East Transfer Out	To Be Tendered under flexible EPCm model	Complex, multi-year 240 kV line project in excess of $150M.
D.0788 EDF Bull Trail Wind	To Be Tendered under flexible EPCm model	Multi-year 240 kV project in excess of $40M.
D.0801 and D.0859 Vauxhall	Self managed using contractors	Critical line rating increase 138 kV and substation modifications project of approximately $20M. Lower voltage and smaller size of the project appropriate complexity to be self managed.

Decision 22570-D01-2018 **Page 19 or PDF Page 25** **Paragraph 99** **Directive 1**

Topic: **Claiming maximum allowable income tax deductions when forecasting income tax expense**

Directive: 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.

Response:

486. As directed by the Commission, AltaLink has only claimed sufficient capital cost allowance deductions to reduce forecast taxable income to zero. Refer to MFR Schedule 7-3, line 12, to view the capital cost allowance deductions.

Decision 25870-D01-2020 **Page 7 or PDF Page 10** **Paragraph 36** **Directive (i)**

Topic: **Net Salvage Method**

Directive: 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.

(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.

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).

Response:

487. In this GTA, AltaLink is proposing to collect $11.5M and $19.5M of net salvage reserve funding in depreciation expense for test years 2024 and 2025 respectively in order to maintain an 11.1% FFO/Debt ratio. Refer to Section 6.5 of this Application and MFR Schedules 6-1 and 31.1-E.

488. The Commission, in the 2016 and 2018 GCOC decisions, determined the 11.1%FFO/Debt ratio (referencing S&P's "low volatility scale" benchmark of 9.0 to 13.0% for the FFO/Debt ratio) being commensurate with AltaLink's A credit rating. S&P's current "low volatility scale" benchmarks remain at 9.0 to 13.0% for the FFO/Debt ratio. Therefore, the 11.1% FFO/Debt ratio, as a measure in substance and form for determining the amount of net salvage funding, remains sufficient to protect AltaLink's A credit rating and keep its borrowing costs at a level commensurate with the public interest.

Decision 25870-D01-2020 **Page 7 or PDF Page 10** **Paragraph 36** **Directive (ii)**

Topic: **Net Salvage Method**

Directive: 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.

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.

Response:

489. AltaLink continues to track, by uniform system of account, information related to 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, in sufficient details as directed by the Commission. The 2024-2025 Test Period is part of the "seven- to eight-year period of transition" recognized by the Commission in Decision 25870-D01-2020 at paragraph 31. During this period of transition, all costs of removal are recorded in the Net Salvage Reserve Account, a summary of which is provided as Schedule 29-8 of the MFR Schedules. Schedule 29-8 also provides a breakdown of salvage for terminal and replacement projects.

490. The forecast and actual costs of removal being recorded to the Net Salvage Reserve Account during this period of transition are reported by uniform system of account in Schedule 29-8 of the MFR Schedules. There is no cost of removal capitalized during this transition period.

Decision 25870-D01-2020 **Page 8 or PDF Page 11** **Paragraph 36** **Directive (iii)**

Topic: **Net Salvage Method**

Directive: 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.

Response:

491. AltaLink expects the balance in the Net Salvage Reserve Account to be sufficient to meet anticipated costs of removal in the 2024-2025 Test Period. 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 will propose the manner and period of collection of those costs in that GTA or DACDA. The Net Salvage Reserve Account continuity is provided as Schedule 29-8 of the MFR Schedules, which provides a breakdown of salvage for terminal and replacement projects.

Decision 25870-D01-2020 **Page 8 or PDF Page 11** **Paragraph 36** **Directive (iv)**

Topic: **Net Salvage Method**

Directive: The Stage 2 panel directs that in each future GTA or DACDA, AltaLink will provide sufficiently detailed information for the purposes of testing the prudency 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.

Response:

2022-2023 Salvage Expenditures

492. AltaLink provides information demonstrating the prudence of its 2022-2023 actual/MU salvage expenditures in Sections 10.3.1, 10.3.4, and 10.3.8-10.3.41.

2019-2021 Salvage Expenditures

493. In Decision 26509-D01-2022, the Commission did not approve AltaLink's 2019-2021 actual CRU net salvage expenditures on the basis of its determination that AltaLink had not provided sufficient information to test the prudence of those expenditures. The Commission directed AltaLink to remove its 2019-2021 actual CRU salvage expenditures in the amount of $98.9M from its 2019-2021 net salvage reserve account. The Commission stated, however, that it would test the prudency of the 2019-2021 net salvage costs in AltaLink's next GTA if AltaLink provides the necessary support for its actual 2019-2021 net salvage costs.

494. AltaLink has developed detailed salvage summary reports for each CRU business case from the 2019-2021 GTA explaining the variances from forecast to 2019-2021 actual salvage expenditures and demonstrating the prudence of those expenditures. The salvage summary reports are discussed in Section 10.3.7 and are provided in **Appendix 18-B**. AltaLink also provides additional relevant information in Sections 10.3.1 and 10.3.4.

Decision 25913-D01-2021 **Page 6 or PDF Page 9** **Paragraph 31** **Directive 2**

Topic: **Affiliate costs**

Directive: 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:

(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.

Response:

495. Refer to Section 30 – Affiliate Transactions and MFR Schedule 30-2 (Schedule of Transmission O&M Costs Charged from Affiliates) for a description of affiliate costs included in the Application.

Decision 26551-D01-2021 **Page 1 or PDF Page 4** **Paragraph 4(2)** **Order 2**

Topic: **Sale of Foothills Property**

Directive: AltaLink Management Ltd. shall file the details of the disposition, including the net proceeds of the sale, the historical cost, accumulated depreciation and net book value of each category of property as of the date of disposition and the proposed adjustment to its closing and opening rate base in its next general tariff application.

Response:

496. AltaLink completed the sale of its Foothills Property on September 1, 2021, for gross proceeds of $4.0M ($3.9M net of $0.1M realtor commission). Historical cost, accumulated depreciation, and net book value of each category of property as of the date of disposition and final net sales proceeds are shown in Table 1 below.

Table 2.22-1 – Summary of historical cost, accumulated depreciation, net book value and allocation of proceeds from sale by uniform system of accounts ($)

USA	Description	Cost	Accumulated depreciation	Net book value including salvage	Net proceeds on sale	Gain (Loss)
350	Land	135,630	-	135,630	2,013,375	1,877,745
390	Building	8,373,776	(3,327,017)	5,046,759	1,886,625	(3,160,134)
353.1	Generator	100,000	(43,207)	56,793	-	(56,793)
		8,609,407	(3,370,225)	5,239,182	3,900,000	(1,339,182)

497. The net book value of $5.2M was removed from regulated property, plant and equipment in 2021, as directed by the Commission in Decision 26551-D02-2021, refer to MFR Schedule 10-2 and Schedule 10-3, Retirements and adjustments for 2021. As a result, AltaLink's opening rate base for the 2024 test year already properly reflects the removal of the net book value of the Foothills Property sold.

498. The net loss of $1.3M was reported in AltaLink's IFRS income statement as part of the $8.4M loss (2021 Report on Finance and Operations, Col. A, line 43), and was adjusted to $0 for "Utility Total" at Col. D. Refer to Appendix 06-A3 for AltaLink's 2021 Report on Finance and Operations.

499. In accordance with the Commission's conclusions and directions in Decision 26551-D01-2021 and Decision 26551-D02-2021, AltaLink has removed the net book value of the Foothills Property from regulated rate base and excluded the resulting loss on sale from regulated net income, since it went to the account of shareholders.

Decision 26509-D01-2022 **Page 24 or PDF Page 35** **Paragraph 121** **Directive 6**
Corrigenda

Topic: **O&M expenses - A&G security and IT department**

Directive: While the Commission did not rely on the table from Computer Economics or the IT spending ratios that the CCA derived for the reasons stated above, the Commission is concerned directionally about AltaLink's expenditures in this area. AltaLink did not directly address or refute the data in the Computer Economics table or the CCA's evidence about AltaLink's IT spending ratios. The Commission considers that relevant comparator information would be highly useful in evaluating these expenditures in AltaLink's next GTA. The Commission therefore directs AltaLink to file a comparison of its total IT expenditures (including both O&M and capital IT expenditures) against other relevant comparators in the utility industry, as part of its next GTA. AltaLink should identify, explain and support the reasonableness of: (i) the methodology and analysis conducted to select the comparators; (ii) any assumptions made; and (iii) the metrics, or other quantitative assessment tools, used.

Response:

Overview

500. AltaLink has complied with the Directive and compared its total operating costs and capital IT expenditures against other relevant comparators in the utility industry. This comparison is based on publicly available information in relation to three other Alberta transmission facility owners: EPCOR, ENMAX and ATCO. AltaLink made certain assumptions with respect to these utilities' IT operating costs and capital IT expenditures given the limitations of publicly available information. Where such assumptions have been made, AltaLink has identified and explained them.

501. AltaLink's analysis of publicly available information is based on a comparison of amounts in Uniform System of Accounts (USA) code 934 for IT operating expenditures and Section 10.4 of the general tariff applications filed by the comparator utilities. This information is the best publicly available information that AltaLink could identify. However, as further described below, AltaLink anticipates that there are differences in how the comparator utilities use USA code 934 or other USA codes and report IT capital expenditures in their general tariff applications. Specifically, AltaLink includes security operational costs in USA 934 and includes all security projects related to transmission assets (Operational Technology, EMS and Substation environments) within Section 10.4 of its GTA. AltaLink has used these GTA sources to compare itself with the other utilities, however, AltaLink cannot confirm whether other utilities follow the same practices. It is possible that the other utilities also include IT and security expenditures in other USA codes or outside of the capital projects in Section 10.4 of their respective general tariff applications.

502. Although AltaLink compares favourably using the data presented below, AltaLink expects that it would compare even more favourably if IT and security expenditures for comparator utilities could be extracted from other USA codes and added to the comparison.

503. The three comparator utilities (ATCO, Enmax, and EPCOR) are required to meet the same Alberta Reliability Standards as AltaLink and are all regulated by the AUC. AltaLink collected and assessed the GTAs using three components of the applications:

- the Uniform System of Accounts (USA) code 934 for IT Operating Expenditures;
- Section 10.4; and
- **Appendix 13-B** for IT Capital Expenditures.

504. These TFOs capture their costs via a common cost capture framework – the USA. However, AltaLink's analysis determined that there is inconsistency among the comparator utilities with respect to how they categorize their costs in USA codes. This is due to many factors including organizational structure such as shared service models and cost accounting methodologies. Any comparisons should be considered with caution and in context of differences among the comparator utilities. Benchmark numbers should be considered only as reference points and not best practices or targets.

505. The metrics AltaLink considered as relevant and appropriate for a utility comparison are listed below. These metrics are commonly used benchmarks within the IT industry.

- IT spending as a percentage of revenue;
- IT operating expense as a percentage of revenue;
- IT spending per FTE/end-user; and
- IT operating expense per FTE/end-user.

506. AltaLink encountered several challenges with establishing comparative data which must be considered when reviewing the benchmarking analysis results provided below. In summary:

- the USA codes were defined in 2006 and there has been significant technology developments since that time. New IT cost elements, Operational Technology, cloud and security are not clearly defined in the USA codes so it is difficult to track how these new cost elements are allocated across the USA codes amongst the comparator utilities;
- for security expenditures:
    - it is difficult to determine how the comparator utilities classify their expenditures for security projects which span across the IT, Operational Technology, EMS and substation environments. AltaLink identifies new security projects in one place – Section 10.4 of the Application. It is not apparent that the other utilities do the same; and
    - the potential impact on the AIES of security risks is different among each of the comparator utilities. This could be a reflection of their previous investments, bulk system configuration, or their visibility of the magnitude of increasing and evolving security threats;
- AltaLink captures both IT and Security capital and operating expenses per the Sections and USA Codes as depicted on the left of Figure 2.23-1 – IT & Security Capital and Operating Expenditures below. In brief, both security and IT costs are captured in USA code 934. AltaLink was unable to confirm that the other TFOs used the same categorization based on the data in their applications. Notable differences in classification between the comparator companies are described further below.

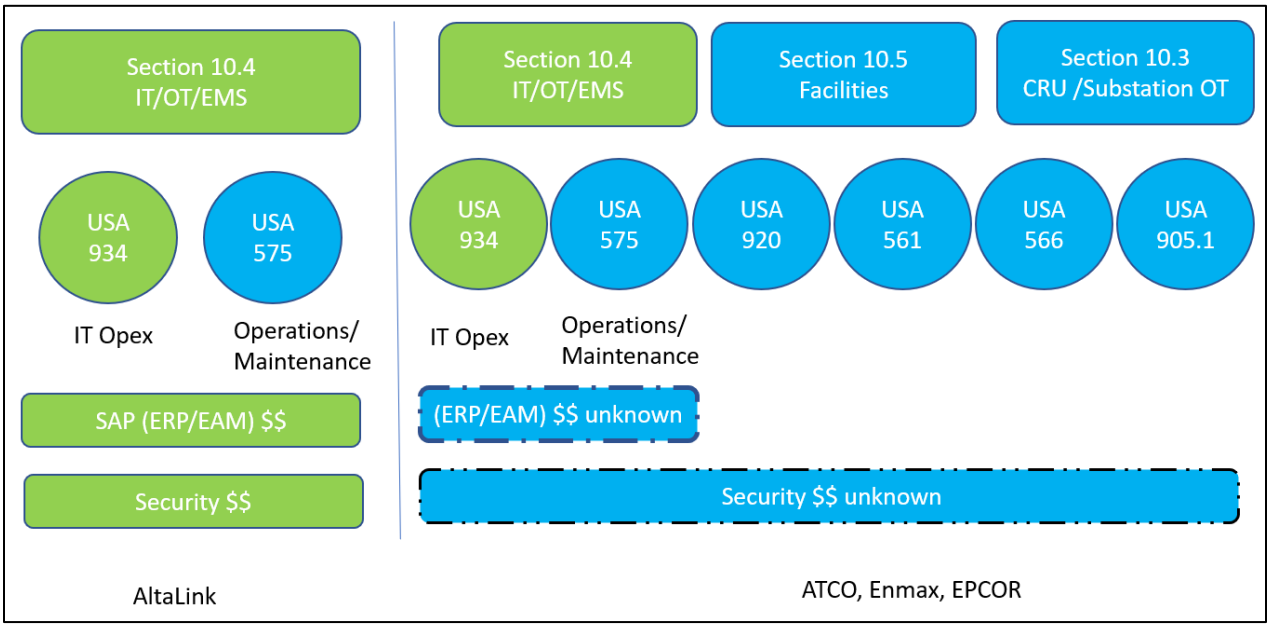


Figure 2.23-1 – IT & Security Capital and Operating Expenditures

507. Taking into consideration the data classification issues summarized above, AltaLink compares reasonably within the range of the benchmarks using the publicly available data. Comparisons among TFOs would be facilitated by updating the 2006 definitions of the USA codes.

Benchmarking Analysis Methodology, Assumptions, & Metrics

508. Directive 6 stated, "AltaLink should identify, explain and support the reasonableness of: (i) the methodology and analysis conducted to select the comparators; (ii) any assumptions made; and (iii) the metrics, or other quantitative assessment tools, used." AltaLink has addressed each component of the Directive below.

Comparator Methodology and Analysis

509. In developing comparators with other utilities, AltaLink has reviewed publicly available capital and IT expenditures in the GTA filings from 2015-2025 for the other TFOs in Alberta.

510. AltaLink has included the comparator information from the other utilities that it could discern from their public GTA filings. This information was derived from their operating expenditures across USA codes and capital expenditures included in Section 10.4 for relevant IT expenditures.

511. It is challenging to benchmark across utilities because they each have different business models. AltaLink is a transmission only company while the other three utilities are part of integrated utilities. Organizational structure influences methodologies for reporting financial and operational data. For example, IT costs and cost classification will vary due to:

- different IT systems: each utility may have different IT systems and infrastructure in place, making it difficult to compare the performance of the different systems;
- different IT strategies: each utility may have different IT strategies and priorities, for example, continuing on-premises versus moving to Cloud for applications and/or storage;
- complexity of IT operations: the IT operations of utilities are complex and multifaceted, involving a wide range of systems, applications, and processes configured and grouped according to organizational needs;

- inclusion of Security related systems and operational support: each utility has a different security maturity and may include these types of expenditures in IT or within their Transmission Asset section of the GTA filing;
- interpretation of USA accounts: each utility may have interpreted the USA accounts differently as their company infrastructure and IT services have evolved since 2006;
- different organization structures: some utilities share their IT systems with their parent or affiliates and receive allocated costs; and
- different accounting methodologies: activity-based costing as compared to USA-based costing approaches.

512. That said, some IT benchmarking can still be done by identifying commonly used key performance indicators. It is important to note that benchmarking should be done with caution and with a good understanding of the context and specific circumstances of each company. It is important to review trends over many years as the IT spend can vary with the lifecycle of the capital infrastructure and its replacement timeline.

Comparator Assumptions

513. To undertake IT benchmarking with the publicly available data, AltaLink made several assumptions on USA cost classifications. These assumptions are based on AltaLink's best effort to understand the available data; however, there continue to be significant gaps as further outlined below.

Relevant Utilities in Alberta

514. AltaLink has used the publicly available information from the other comparator utilities using the following GTA applications for the period 2017-2025 which overlaps AltaLink's 2024-2025 Test period application. The relevant filings are:

- ATCO 2018-2019, 2020-2022 GTA and 2023-2025 GTA[104]
- EPCOR 2018-2019, 2020-2022 GTA and 2023-2025 GTA[105]
- ENMAX 2018-2020, 2021-2022 GTA and 2023-2025 GTA[106]

515. Overall, while these utilities all operate in Alberta, they have different areas of focus and operations which influences how IT services are delivered and maintained in the companies:

- AltaLink provides transmission only services;
- ATCO provides diversified energy services (shared service model);
- ENMAX provides electricity, natural gas and renewable energy services; and
- EPCOR provides water, waste water treatment services as well as electricity and natural gas (shared service model).

516. AltaLink used only data from the TFO tariff applications to perform the comparator analysis.

517. As described in AltaLink's 2022-2023 GTA Rebuttal Evidence[107] , there are differences between ATCO and AltaLink such as the different service territories (ATCO's service territory is more

[104] Exhibit 2664-X0005.01, ATCO 2018-2019 Second Compliance Filing Attachment 4 – MFR Schedules, Exhibit 27062-X0015.02, AET 2023-2025 GTA Schedules and Exhibit 26477-X0011.01, Attachment 4 - 2020-2022 GTA Updated Schedules.
[105] Exhibit 23165-X0073, MFR Schedules, Exhibit 24798-X0067, MFR Schedules and Exhibit 27675-X0090.01, MFR Schedules Transmission MFR Schedules 2023-2025 TFO.
[106] Exhibit 23966-X0012, Appendix A - MFR Schedules, Exhibit 26732-X0003, Appendix A - Minimum Filing Requirements Schedules and Exhibit 27581-X0017, Appendix A - Minimum Filing Requirements (MFR) Schedules.
[107] Exhibit 26509-X0309.

spread out, covering two-thirds of the geographic area of Alberta whereas AltaLink serves 85% of the population in a more condensed area), AltaLink's larger rate base with interties with BC and Saskatchewan, AltaLink and ATCO's different facilities (engineering designs, suppliers, materials, age, etc.) and capital projects with different warranty claims that could drive different IT and security strategies. In addition, AltaLink notes ATCO uses an "activity-based costing exercise on a cost centre basis and then manually allocates portions of these cost centre costs to USA accounts"[108] and which can make comparisons to AltaLink inaccurate.

Information Technology and Operating Technology Definitions

518. AltaLink has used the definitions of Information Technology and Operating Technology as per the NIST Special Publication 800-37 revision 2.0.[109]

- Information Technology: includes computers, ancillary equipment (including imaging peripherals, input, output, and storage devices necessary for security and surveillance), peripheral equipment designed to be controlled by the central processing unit of a computer, software, firmware and similar procedures, services (including cloud computing and help-desk services or other professional services which support any point of the life cycle of the equipment or service), and related resources.
- Operating Technology: Programmable systems or devices that interact with the physical environment (or manage devices that interact with the physical environment). These systems/devices detect or cause a direct change through the monitoring and/or control of devices, processes, and events. Examples include industrial control systems, building management systems, fire control systems, and physical access control mechanisms.

519. This Directive requires a comparison of IT Expenditures. Based on the definitions above, it is challenging to discern between IT and Operational Technology because for practical reasons some functions (systems and operational support) are combined to efficiently manage AltaLink's operations. As described below, IT and Operational Technology is defined separately but has been reported together in some instances.

USA Codes

520. In comparing available cost information, AltaLink has used the Uniform System of Account Definitions published in EUB Bulletin 2006-25, updated May 2006. In this document, the relevant IT and Operating Technology definitions from 2006 are USA 934 IT general & administrative expenses and USA 575 Operations and Maintenance IT Support. Other USA codes that could have IT related costs include USA 561, USA 566 and USA 930.1. The USA definitions are reproduced below.

- **USA 934 IT general & administrative expense:** This account shall include the compensation (salaries, and expenses) employees of the IT department related to general and administrative activities properly chargeable to utility operations for the provision of regular utility services and not chargeable directly to a particular operating function. Example systems supported:
    - Document/Records Management
    - Back-office systems (e-mail, file - print, web, etc).

[108] Exhibit 26509-X0309, AML Rebuttal Evidence, para 1070.
[109] NIST Special Publication 800-37, revision 2.0 Risk Management Framework for Information Systems and Organizations, December 2018. Available from: https://nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.800-37r2.pdf.

  - Office Furniture tracking systems
  - Treasury and Accounting applications used for corporate reporting

- **USA 575 Operation and Maintenance IT Support:** shall include the cost of labor, materials used and expenses incurred in operation and maintenance of owned or leased Information Technology (IT) systems which is assignable to transmission operations and is not provided for elsewhere. Example systems supported are:

  - AMFM (Geographical Information Systems)
  - Crew Dispatch Applications
  - Repair tracking tools
  - Workforce management systems
  - Outage reporting and management systems
  - Data reliability applications

- **USA 561 Operation and Maintenance Control centre operations**: shall include the cost of labor, materials used and expenses incurred in control centre operations pertaining to the transmission of electricity. Example systems supported:

  - Communication service provided for system control purposes.
  - System record and report forms.
  - Obtaining weather and special events reports.

- **USA 566 Operation and Maintenance Miscellaneous transmission expenses:** shall include the cost of labor, materials used and expenses incurred in transmission map and record work, transmission office expenses, and other transmission expenses not provided for elsewhere.
- **USA 905.1 IT Customer Service:** shall include the cost of labour, materials used and expenses incurred in the operations and maintenance of owned or leased Information Technology (IT) systems which is assignable to customer service operations. Example systems supported:

  - Order Entry and related tracking tools
  - Billing, Accounting receivable and collections applications (SAP/ISU)
  - Call Center infrastructure, telecommunications/networks.

521. AltaLink has an integrated Enterprise Resource Planning (ERP) system (SAP Business Suite 7) which, in addition to accommodating the work management, crew dispatch, repair tracking and outage management systems (USA 575) and customer deposits, billing, refunding functions identified (USA 905.1) – also includes back-office functions like Finance, HR, Procurement, Materials Management as well as Asset Management functions.

522. It is not readily possible to separate the attributable costs associated with the USA 575 complex and high-volume functions described above and USA 905.1 customer related functions from the back-office functions. AltaLink therefore includes all SAP costs and operational support within USA 934. Likewise, it is not possible to discern how other utilities allocate their ERP costs which perform similar functions among USA 934, USA 575 and USA 930.1.

523. AltaLink also includes security costs in USA 934 that can be attributed to protecting the Operational Technology and EMS environments. It is unclear if other utilities have those costs in USA 934, USA 575, USA 561, or USA 566.

Capital Expenditure Assumptions

524. In Section 10.4 and **Appendix 13-B** of this Application, AltaLink identifies the proposed capital expenditure projects to maintain current IT systems supporting existing operations, and supplement new system to meet business requirements as well as addressing both physical and cyber-security threats and risks.

525. AltaLink explicitly identified security business cases which address new needs across the business, whether the threat is a cyber threat to the corporate IT systems, the Operating Technology systems, Control Centre Energy Management Systems or threats to the assets and operations within the substations. AltaLink includes these capital expenditures within Section 10.4.

526. The potential impact on the AIES of security risks is different among each of the comparator utilities and this could be a reflection of their previous investments, bulk system configuration, or visibility of the magnitude of the increasing and evolving security threats.

527. AltaLink understands from the publicly filed information that the other comparator utilities could have included security projects related to their transmission assets (Operational Technology, EMS and Substation environments) within their respective Capital Replacement and Upgrade programs, rather than IT.

528. In AET's most recent General Tariff Application, security capital expenditures are not listed in the GP&E (General Property & Equipment) software projects. Instead, $8.9M of capital expenditures are listed in the following TCM (Transmission Capital Maintenance) business cases[110]:

- Alberta Reliability Standards preparatory phase and implementation Project
- Critical Infrastructure Protection (CIP) preparatory phase and implementation Projects
- ISO rules preparatory phase and implementation Projects
- Compliance Management Software Project
- Cyber Security Projects.

529. AltaLink could not discern from the publicly filed information whether the other comparator utilities planned their respective capital programs on the same end of life/end of service basis.

Comparator Metrics

530. Benchmarking across a broad utilities segment will usually incorporate generators and retail companies, whose revenue base and operating expenses are significantly different than regulated utilities like DFOs and TFOs.

531. From the analysis above, AltaLink proposes the following metrics as relevant and appropriate for comparisons among TFO utilities. Evaluating an organization's IT spending using several metrics provides a more complete view of IT performance.

- IT spending as a percentage of revenue - comparators should be Albertan utilities as well as a larger utility data set;
- IT operating expense a percentage of revenue – including IT operating expenditures and depreciation;
- IT spending per FTE/end user; and

[110] Exhibit 27062-X0196, 2-1 to 2-22 – TCM Business Cases, pdf 781.

- IT operating expense per FTE/end user.

532. In both metrics of costs per FTE/end user, AltaLink includes all employees, contractors and third parties who have a user accounts to access systems. It is difficult to calculate this metric for peer TFO utilities because only FTE information is available in public filings. Relying solely on spend per FTE could disproportionately inflate the cost per employee in organizations such as AltaLink that include a sizeable contractor user base (more users than FTEs).

Benchmarking Analysis Results

IT & Security Spend as a Percentage of Revenue

533. IT spend as a percentage of revenue is calculated by dividing total cost of IT spend (capex + opex per USA 934) divided by revenue. The resulting percentage represents the proportion of revenue that is allocated to IT expenses. This metric can be used to evaluate the efficiency of IT spending in an organization and to compare the IT spending of different organizations within the industry.

534. The capex numerator is indicative of the utilities' IT investment. It can swing widely in response to changes in the environment or during periods of heavy investment such as times of equipment refresh cycles or major system implementations.

535. AltaLink has included both IT and security spend as the request for capital and operating expenditures is included in Section 10.4 and MFR Schedule 10.4 and Section 25 USA 934 and MFR Schedule 25-1. As discussed above, AltaLink includes both IT and security capital expenditures in Section 10.4 and IT and security operating expenditures in USA 934. AltaLink cannot determine whether the comparator utilities include all of their security expenditures in the same areas as AltaLink.

536. In the Figure 2.23-2 below, AltaLink has compared the average IT & security spend ratio as a percentage of revenue among the four TFO utilities. Assuming that the three comparator utilities include only IT expenditures in their respective Schedule 10.3 and USA 934, when AltaLink removes its security costs, the results show that AltaLink's IT ratio is slightly above the median of 2.8% and is reasonable to support the efficient operations of the AIES. The impact of including security expenditures is also presented in Figure 2.23-2.

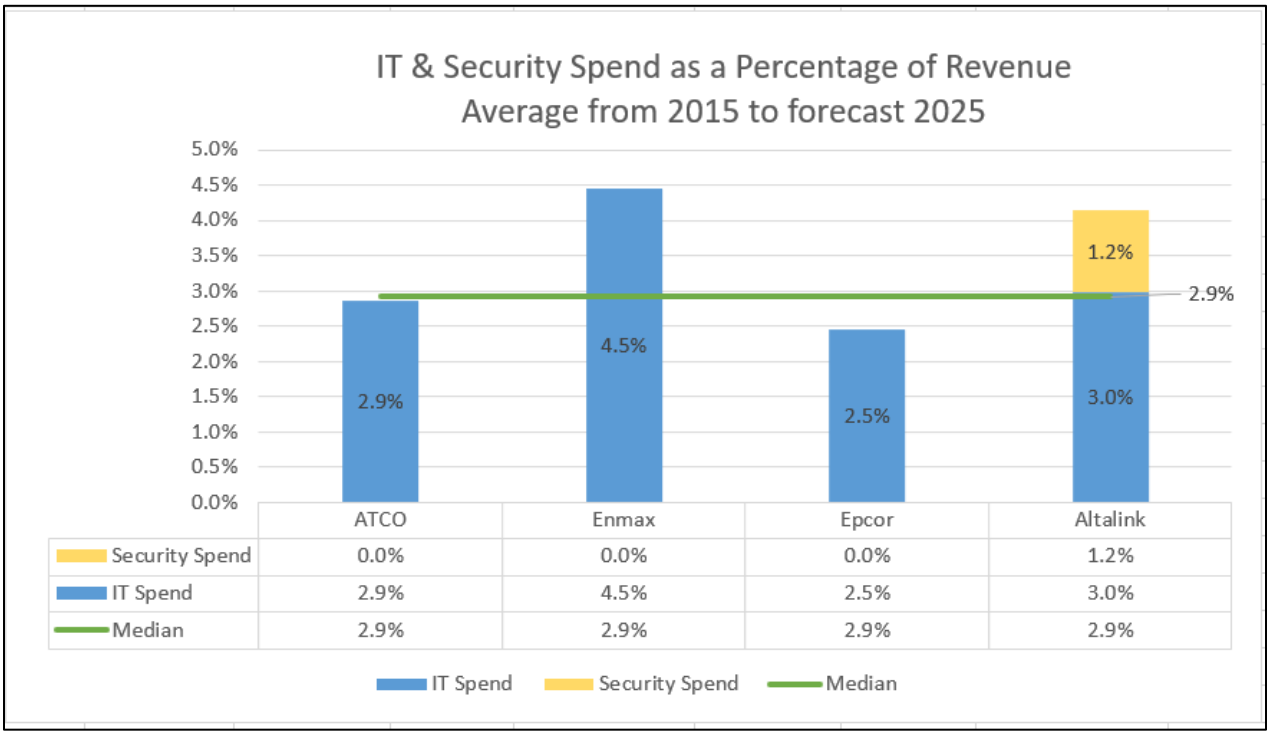


Figure 2.23-2 – IT & Security Spend as a Percentage of Revenue

537. The security maturity of the four utilities varies. AltaLink cannot determine if the other utilities' security capital spend is captured in IT or partially allocated to their capital replacement and upgrade portfolios for physical and cyber security related to their transmission assets.

IT Operating Expense as a Percentage of Revenue

538. IT operating expenditure as a percentage of revenue is calculated by dividing total cost of IT Operating expense in USA 934 and IT Hardware and Software Depreciation divided by revenue as shown in Figure 2.23-3 below. The resulting percentage represents the ongoing cost of maintaining and running and organization's IT systems and infrastructure, such as software and hardware maintenance, support and staff salaries.

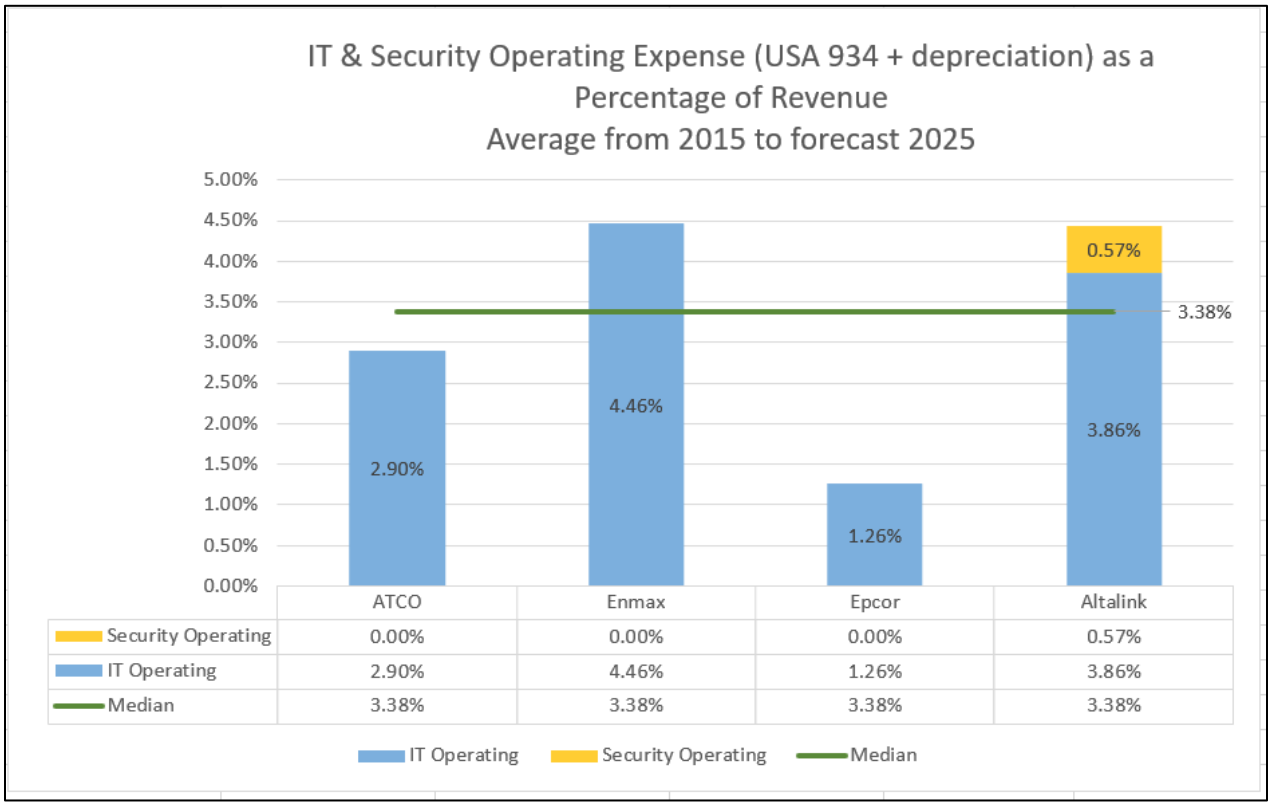


Figure 2.23-3 – IT & Security Operating Expense as a Percentage of Revenue

539. AltaLink's operating expenditures in USA 934 tend to be relatively steady from year to year. This numerator can include the following variables:

- the TFOs may interpret the USA codes differently and include and exclude costs inconsistently;
- it is not clear where the security spend is located for other TFOs. AltaLink categorizes most of the security spend in Section 10.4, **Appendix 13-B** and USA 934, including security for Operational Technology and EMS networks which may be included in operations in other comparator utilities; and
- it is not clear whether the comparator utilities' costs that support IT Transmission are categorized within USA 934.

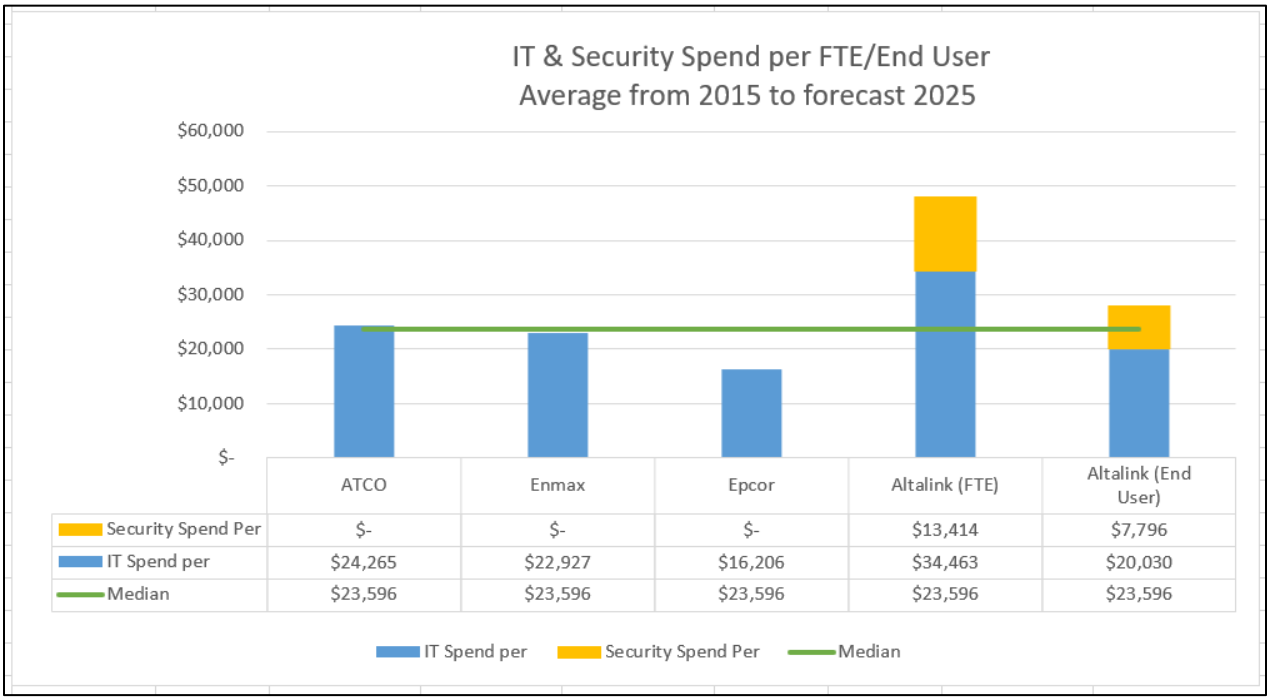
IT spending per FTE/end user

540. IT spending per FTE/end user is calculated by dividing the IT spend (Capex & USA 934) by the number of FTE's or end user accounts.

541. The number of end users is defined as the number of employees, contractors and third parties that have an AltaLink mailbox. All end users access AltaLink IT services and therefore are reflected in the cost of providing services.

542. Figure 2.23-4 demonstrated the metrics using FTEs for the comparator utilities and both FTE and end users for AltaLink. AltaLink is unable to discern the contractor workforce for the comparator utilities because only FTE information is available in the public GTA filings.

543. AltaLink provides laptops and devices to contractors who assist in delivering operational and capital programs. In AltaLink's IT & security delivery model, AltaLink supports more than FTE's and the metric disproportionally allocates IT & security costs to the FTE workforce. For this reason, AltaLink has also provided the metric by user count with and without security expenditures which demonstrates the impact of not capturing key cost elements in the metrics. This variation is why metrics are reference points which must be assessed in contextually.



	ATCO	Enmax	Epcor	Altalink (FTE)	Altalink (End User)
Security Spend Per	$-	$-	$-	$13,414	$7,796
IT Spend per	$24,265	$22,927	$16,206	$34,463	$20,030
Median	$23,596	$23,596	$23,596	$23,596	$23,596

Figure 2.23-4 – IT & Security Spend per Employee/End User

IT Operating Expense per FTE/End User

544. This metric, shown in Figure 2.23-5 below, is calculated by dividing the IT operating expense in USA 934 and IT Hardware and Software Depreciation by the number of users accounts – which includes all employees and contractors who have a user account to access systems. AltaLink is unable to discern the contractor workforce for comparator utilities because only FTE information is available in the public GTA filings.

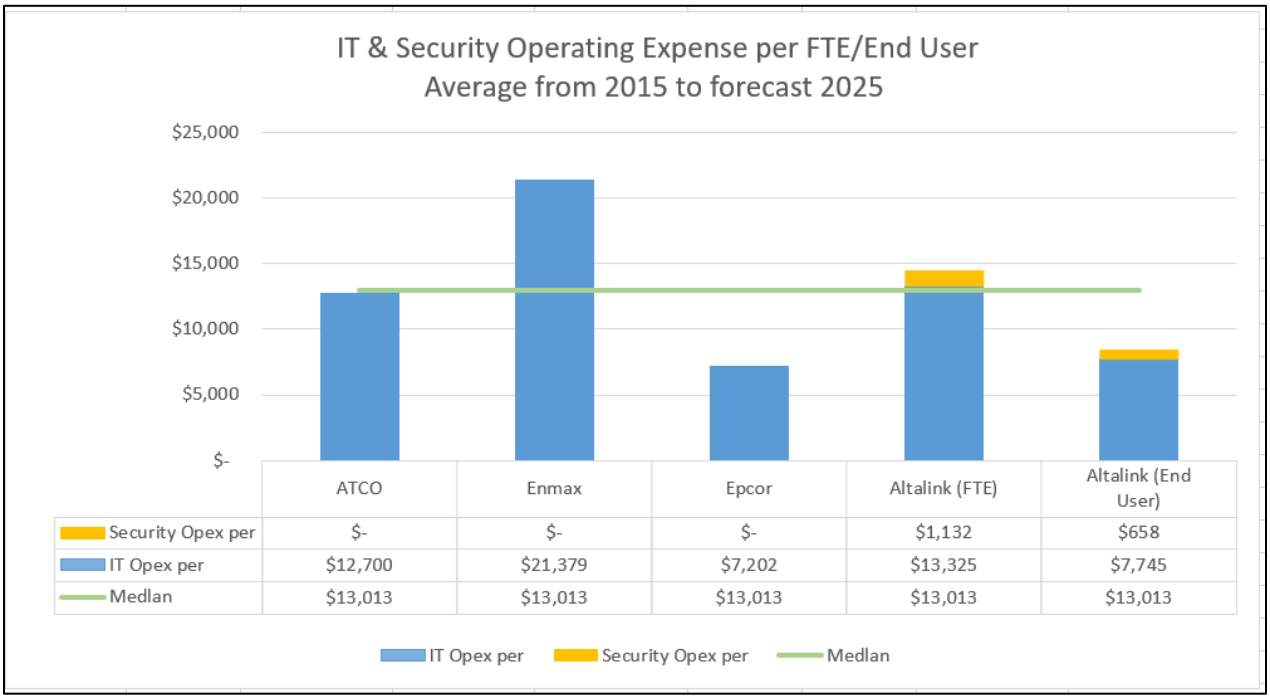


Figure 2.23-5 – IT Operating Expense per Employee/End User

Conclusion

545. AltaLink's analysis shows the reasonableness of its IT expenditures. As AltaLink has explained above, benchmarking has its inherent limitations due to comparability of the publicly available data:

- there is a very limited public information on the common allocation, definition, and activity levels of costs among the comparator utilities to make a comparison meaningful;
- there is very limited visibility between the utilities on their approach to funding security projects which span across the IT, Operational Technology, EMS and substation environments. AltaLink identifies new security projects in one place – Section 10.4. It is not apparent that the comparator utilities do the same;
- the potential impact on the AIES of security risks is different between each of the comparator utilities, and this could be a reflection of their previous investments, bulk system configuration or visibility of the magnitude of the increasing and evolving security threat;
- the USA codes were defined in 2006, and there has been significant technology developments since that era in IT, Operational Technology, Cloud and Subscription pricing to name a few, which is not readily visible amongst the different utilities;
- USA Codes were intended to be a standard to compare but interpretation and use of the USA codes between utilities is inconsistent relative USA 934 and 575 and therefore can skew the comparison between peers against relevant IT metrics; and
- there are no equivalent security expenditure benchmarks to compare security expenditures. Nor is there a specific USA code established and defined for security expenditures.

546. Taking into consideration the data limitations described above, it is not reasonable to draw firm conclusions from this IT benchmarking analysis. Using the publicly available data, AltaLink compares reasonably with its peers.

Decision 26509-D01-2022 Page 24 or PDF Page 35 Paragraph 122 Directive 7
Corrigenda

Topic: **O&M expenses - A&G security and IT department**

Directive: The Commission further directs AltaLink to provide an analysis that shows its annual IT expenditures from 2015, to the next test period. As part of this analysis, AltaLink must provide a breakdown of its IT budget by cost category (e.g., hardware, software, subscription services, staffing, data centre, security, and other expenses) and by capital versus O&M. This breakdown should identify what components of the IT budget are user dependent, and what components are more global to AltaLink and cannot be broken down on a per user basis (e.g., data management costs for capital programs and projects, or the costs to implement new industry standards). AltaLink must also provide a narrative that summarizes the evolution of its IT expenditures by cost component since 2015, and identify the cost drivers (e.g., new industry standards, new security initiatives, software or hardware changes, etc.) for any material cost increases that have occurred since 2015.

Response:

547. In response to Directive 7, AltaLink provides the following information:

- Annual IT & Security Capital and Operating expenditures from 2015 through the 2024-2025 Test Period in Table 2.24-1 broken down by cost categories;
- An analysis and narrative that summarizes the evolution of its IT & Security expenditures by cost component since 2015 and identifies the cost drivers for material cost increases that have occurred since 2015;
- AltaLink's IT budget broken down by suggested cost categories of security, data center, and subscriptions in Table 2.24 3 to Table 2.24 5; and
- In Table 2.24 7, AltaLink has identified components of the IT budget that are user dependent versus global and cannot be broken down on a per user basis.

Annual IT & Security Capital and O&M expenditures and forecasts for 2015 - 2025

548. Table 2.24-1 provides a breakdown of annual IT & Security Capital and Operating expenditures and forecasts for 2015 to 2025. Costs are broken down into the categories consistent with capital project cost reporting found in **Appendix 13-B** Information Services and the Directive.

549. The actual cost data for years 2015-2021 is consistent with information on the record in AltaLink's previous GTA filings. The actual and forecast data for years 2022-2025 is consistent with AltaLink's current GTA filing. AltaLink has included Industrial Control Systems Security (ICSS) costs separately to align with reporting in MFR Schedule 10.4. The ICSS line item includes complete program costs made up of internal and external labour, hardware, software, and other costs related to the program. For a detailed breakdown of the ICSS Program refer to Table 2.24 2.

550. AltaLink's analysis and narrative of the evolution of IT expenditures describes material increases to the average expenditures over the 10-year period. The three major cost drivers over the 10-year period are:

- implementation of Alberta Reliability Standards;
- implementation of Industrial Control System Security (ICSS); and

- lifecycle replacement or upgrades to hardware and software applications which occur in a 4-to-5-year cyclical pattern.

Table 2.24-1 – 2015-2025 IT & Security Capital and O&M Expenditures and Forecasts by Cost Category

Capital Expenditures	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Grand Total	Average
Internal Labour	3.84	6.06	6.55	5.88	6.48	6.31	4.84	5.23	5.22	7.06	7.62	65.10	5.92
External Labour	18.62	17.69	11.41	6.98	10.02	10.86	6.03	11.23	11.63	17.14	13.86	135.46	12.31
Hardware	5.78	2.01	4.28	4.37	4.37	1.95	1.80	3.08	5.88	8.29	6.96	48.76	4.43
Software	2.08	3.02	3.33	0.53	1.99	5.20	1.04	1.11	0.94	1.04	3.59	23.88	2.17
Other Costs	2.67	3.66	1.74	2.00	2.84	3.56	2.28	2.31	2.48	3.35	3.20	30.11	2.74
ICSS	0.00	0.00	0.00	2.86	16.04	8.39	0.50	0.19	0.00	0.00	0.00	27.98	2.54
Capital Expenditure Total	**32.99**	**32.45**	**27.32**	**22.61**	**41.73**	**36.28**	**16.49**	**23.15**	**26.15**	**36.89**	**35.23**	**331.29**	**30.12**

O&M Expenditures													
Internal Labour	1.76	2.09	2.17	3.10	3.08	2.51	3.74	3.37	4.29	4.48	4.62	35.20	3.20
External Labour	1.52	1.98	1.97	2.09	1.96	1.82	1.82	1.87	1.82	1.95	2.09	20.90	1.90
Hardware	0.02	0.02	0.01	0.43	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.05
Software	3.52	4.46	4.05	4.67	4.51	5.52	5.36	6.56	6.68	6.68	6.68	58.67	5.33
Other Costs	0.50	0.36	0.28	0.39	0.33	0.22	0.55	0.26	0.24	0.26	0.27	3.64	0.33
O&M Expenditure Total	**7.31**	**8.91**	**8.48**	**10.67**	**9.90**	**10.07**	**11.47**	**12.06**	**13.02**	**13.37**	**13.66**	**118.91**	**10.81**

Grand Total	**40.31**	**41.35**	**35.80**	**33.28**	**51.63**	**46.34**	**27.96**	**35.21**	**39.18**	**50.26**	**48.88**	**450.20**	**40.93**

Table 2.24-2 – ICSS Program Capital Expenditures by Cost Category

ICSS Capital Expenditures	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Grand Total	Average
Internal Labour	0.00	0.00	0.00	0.75	1.80	1.65	0.22	0.01	0.00	0.00	0.00	4.44	0.40
External Labour	0.00	0.00	0.00	1.72	8.52	4.49	0.33	0.02	0.00	0.00	0.00	15.08	1.37
Hardware	0.00	0.00	0.00	0.14	4.14	0.41	-0.29	0.00	0.00	0.00	0.00	4.40	0.40
Software	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.02	0.00
Other Costs	0.00	0.00	0.00	0.26	1.62	1.82	0.23	0.16	0.00	0.00	0.00	4.09	0.37
ICSS Capital Expenditures Total	**0.00**	**0.00**	**0.00**	**2.86**	**16.08**	**8.39**	**0.50**	**0.19**	**0.00**	**0.00**	**0.00**	**28.02**	**6.96***

*Average over a four-year period from 2018-2021

551. These are the assumptions and definitions for the Table 2.24-1 and Table 2.24-2 Cost Categories:

- internal labour includes full time labour expenses from AltaLink employees;
- external labour includes labour from contractors and managed services contractors;

- hardware includes capitalized hardware costs;
- software includes capitalized software costs;
- maintenance & license fees is used as a category in operating expenditures only and includes the ongoing annual licensing and maintenance costs related to software and hardware. AltaLink has not captured operating software and hardware costs separately in USA 934 and has included them in other GOE; and
- other costs – includes all costs that are neither internal or external labour, or hardware and software. Examples of such items are contractor or employee travel and meal expenses, courier, printing and AFUDC and E&S and other miscellaneous charges.

Analysis and Evolution of AltaLink's IT & Security Capital and Operating Expenditures by Cost Category Since 2015

IT & Security Capital Expenditures Program

552. AltaLink's IT & Security capital expenditure program has averaged $30.1M annually from 2015 to 2025. AltaLink incurred higher than average capital expenditures in the years 2019 ($41.7M) and 2020 ($36.3M), mainly attributed to execution of the ICSS program. Overall, costs within the 2019-2021 test period remained within the $30.0M average. AltaLink is forecasting higher than average IT program expenditures in 2024 ($36.1M) and 2025 ($34.8M), with the increase mainly attributed to the CIP14 and CIP Medium Impact Site Physical Security program.[111] The CIP14 program is required to address the evolving physical security threat to critical infrastructure. Further details at the capital project cost category level are provided below for internal labour, external labour, hardware, software, and other costs.

Internal Labour

553. Internal labour capital expenditures have averaged $6.0M annually from 2015 to 2025. Internal labour costs related to IT capital projects include AltaLink employees both in IT and Security, and subject matter experts from other areas of the organization.

554. AltaLink's internal labour capital costs increased materially in 2016 ($3.8M to $6.1M) to support the implementation of the capital ARS program which included planning and implementation of ARS-CIP requirements. As described in Table 2.24 5, Security capital expenditures also increased materially from 2015 to 2016 for this reason. Additional details on the ARS program are provided in section Security capital Expenditures below.

555. AltaLink is forecasting increases to internal capital labour of $1M in 2024 (to $7.1M) and a further increase of $0.6M in 2025 (to $7.6M) mainly attributed to the execution of the CIP14 and CIP Medium Impact Site Physical Security program.[112]

External Labour

556. External labour capital expenditures have averaged $12.3M from 2015 to 2025. AltaLink uses Management Services Agreements to augment resources in order to execute capital projects and will increase or decrease these resources with the number of projects in execution.

557. External labour capital costs were above the 10 year average in 2015 ($18.6M) and 2016 ($17.7M) as a result of several projects which required extensive external labour support throughout the Test Period. The projects that most heavily relied on external resources included

[111] 2024-2025 GTA Appendix 13-B1-04.
[112] 2024-2025 GTA Appendix 13-B1-04.

the Cost Estimating and Reporting Compliance (CERC) Project[113], continuation of the Linear Asset Management System (LAMS) Project, SAP Upgrade Projects, Microsoft Upgrades, Delivery Team Support, and the Bulk Electric System Security Initiative (BESSI) Project, among others.

558. AltaLink forecasts higher than average external labour costs in 2024 ($18.3M) and 2025 ($15.3M) mainly attributed to the execution of the CIP14 and CIP Medium Impact Site Physical Security program[114] required to address evolving physical threats to critical substation.

Hardware

559. Capital expenditures for hardware have averaged $4.4M from 2015 to 2025. Hardware costs were above average in 2015 ($5.8M) due to the purchase of VBlock storage technology as per lifecycle replacement practices.[115] Overall, hardware costs for the 2015-2016 test period ($3.9M) were within range of the 10-year average. IT Hardware capital expenditures decreased from 2015 levels which reflects the server and storage capacity increase in 2015 combined with performance gains in server and storage technology.[116]

560. AltaLink forecasts higher than average hardware costs in 2023 ($5.9M) as a result of a later than anticipated start to project execution in 2022, in part driven by delays in procurement and staffing availability. Overall, average hardware costs for the 2022-2023 test period ($4.5M) are forecasted to be within range of the 10-year average.

561. For the 2024-2025 Test Period, AltaLink forecasts higher than average hardware costs in 2024 ($8.3M) and 2025 ($7.0M), mainly attributable to meeting the business requirements of three projects: Data Centre and System Protection program,[117] Smart Keys Implementation project,[118] and CIP14 and CIP Medium Impact Site Physical Security program.[119]

Software

562. Capital expenditures for software have averaged $2.2M from 2015 to 2025. Software costs increased in 2020 ($5.2M) due to the Data Protection Licence Upgrade Project[120] and Service Management Software licence costs which were paid in 2020.[121] Additionally, software costs increased in 2020 related to the purchase of Palo Alto licences which were not forecast in the Corporate and OT Network and Infrastructure business case.[122]

563. AltaLink forecasts higher than average software costs in 2025 ($4.0M), mainly attributable to software component associated with the Data Center and System Protection Program[123] which is a lifecycle sustainment project.

Other

564. Capital expenditures for Other costs have averaged $2.7M from 2015 to 2025. Costs that fall within the other category have remained relatively stable throughout the 10-year period.

[113] Exhibit 0003.00.AML-3524, 2015-2016 GTA Appendix 13-B2.04, pdf 2654.
[114] Appendix 13-B1-04.
[115] Exhibit 21341-X0138, 2017-2018 GTA Appendix 13-B1-01, para 6, pdf 240.
[116] Exhibit 21341-X0138, 2017-2018 GTA, Appendix 13-B1-01, para 5, pdf 240.
[117] Appendix 13-B3-13.
[118] Appendix 13-B1-03.
[119] Appendix 13-B1-04.
[120] Exhibit 23848-X0018.01, 2019-2021 GTA Appendix 13-B1-05, pdf 27.
[121] Exhibit 26509-X0002.01, AML 2022-2023 GTA Section 10.4.8.2, para 926.
[122] Exhibit 26509-X0002.01, AML 2022-2023 GTA Section 10.4.8.2, para 931.
[123] Appendix 13-B3-13.

IT & Security Operating Expenditures Program

565. AltaLink's IT & Security operating expenditure program has averaged $10.8M annually from 2015 to 2025. Costs have progressively increased from 2015, largely attributed to increasing internal labour, maintenance and licence fees. Further details at the operating cost category level are provided below for internal labour, external labour, maintenance and licence fees, and other costs.

Internal Labour

566. Internal labour operating expenditures have averaged $3.2M annually from 2015 to 2025. IT & Security operating staffing expenditures are key to supporting the stability of the electricity network, business functions and field organization through which AltaLink sustains the safe, secure, reliable, and economic operation of its transmission system. Increases in cyber and physical security activities are the main cost driver behind the overall trend in internal labour. Table 2.24 5 provides the summary of operating expenditures for security. AltaLink first categorized security expenditures separately in 2018.

567. Implementation of the ARS-CIP standards and the ICSS security program were the main cost drivers behind the progressive increase in internal labour operating expenditures. After the capital projects are completed, the security programs go into operational support mode requiring operating FTEs to maintain and support systems and processes that were deployed. Table 2.24 5 shows the significant investment that has been made in security programs that require internal labour to maintain.

568. AltaLink has filled six of nine vacancies with the three remaining positions in recruitment. Two operating positions which support security requirements have been reclassified operating positions.

External Labour

569. External labour operating expenditures have averaged $1.9M annually from 2015 to 2025 and have remained stable throughout the 10-year period.

Software – Maintenance and Licence Fees

570. Software maintenance and licence fees within operating expenditures have averaged $5.3M annually from 2015 to 2025. Expenditures in this category are due primarily to transitioning applications to the cloud wherever possible.

571. As AltaLink has implemented new cloud-based applications to meet the security and IT business requirements, operating costs have correspondingly increased, offset in some part by cloud solutions that enable a reduction or elimination of hardware, depreciation, and maintenance costs. Software licence/subscription costs have increased, however, there is a net overall cost reduction to AltaLink through the offsetting savings. In addition, cloud-based systems have a different business model in which operating costs are driven by usage measures such as the number of users or storage require ements compared to fix fee maintenance agreements which give the user the ability to have some additional flexibility in managing costs.

Other Costs

572. Within USA 934, the Other GOE account includes costs for meals, traveling and incidental expenses and office telecom for cellular services. Other costs within operating expenditures have averaged $0.3M from 2015 to 2025 and have remained stable throughout the 10-year period.

AltaLink's IT and Security Budget Broken Down by Additional Categories

573. The Commission directed AltaLink to provide a cost breakdown by additional categories to the ones used in Table 2.24-1 above and suggested the following: data centre, security and subscription services. AltaLink has provided the cost breakout as directed in Table 2.24 3 to Table 2.24 6 below.

574. It is important to note that the suggested categories are not mutually exclusive, and therefore the aggregate costs reported in Table 2.24 3 to Table 2.24 7 do not match the total costs in Table 2.24-1. An example of this is a subscription service for security reporting, which is included in security in Table 2.24 5 and subscriptions in Table 2.24 6. Another example is Microsoft Office which is a user driven cost and a subscription (as a component of M365). AltaLink does not capture information in the categories identified in this Directive, however, AltaLink made best efforts to break out the requested categories.

Data Centre Capital and Operating Expenditures

Table 2.24-3 - 2015-2025 Data Centre Capital & Operating Expenditures

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Grand Total	Average
Data Centre Capital Expenditures	4.13	0.37	3.61	3.16	8.49	7.47	3.45	2.74	1.78	3.25	4.86	43.31	3.94
Data Centre Operating Expenditures	0.43	1.50	1.70	1.89	2.20	2.89	2.80	3.19	3.29	3.20	3.25	26.34	2.39
Grand Total	**4.57**	**1.87**	**5.30**	**5.05**	**10.69**	**10.36**	**6.25**	**5.93**	**5.07**	**6.45**	**8.11**	**69.65**	**6.33**

* Operating Expenditures for 2015 are low because external labour costs were not tracked by data centre category at that time and are not included in the analysis.

575. AltaLink does not track costs by a data centre category. For the purposes of this Directive, AltaLink considered the data centre category to mean projects, labour, maintenance and licensing fees that are fully attributed to hardware and software within the data centre, such as servers, server operating systems, supporting software such as backup software. AltaLink reviewed its projects from 2015 and identified projects that were entirely data centre related. There are other projects within the IT and Security portfolio that have a data centre component (example, addition of servers required for project implementation). AltaLink does not track these costs as data centre costs and therefore has not included them in this analysis.

576. AltaLink executes data centre projects under a multitude of business cases. In some cases, the business case is entirely data centre related, in other business cases specific projects may be data centre related, but not the business case in its entirety. An example of business cases that were entirely data centre and business cases that had data centre related projects for the 2019-2021 GTA are provided in Table 2.24 4 below.

Table 2.24-4 – 2019-2021 Data Centre Related Business Cases

Appendix Number	Appendix Name	Business Case Entirely Data Centre Related
Appendix 13-B1.05	Cyber Protection Systems Enhancements[124]	No
Appendix 13-B2.09	IS Helpdesk Enhancements Project[125]	Yes
Appendix 13-B3.02	Systems Upgrade Program[126]	No
Appendix 13-B3.03	Data Centre Hardware Replacement[127]	Yes
Appendix 13-B3.04	Software Replacements – Operations[128]	No
Appendix 13-B3.07	Data Storage Program[129]	Yes
Appendix 13-B3.09	Corporate Network Upgrade[130]	Yes
Appendix 13-B4.08	Netcom Enhancements[131]	Yes

Data Centre Capital Expenditures

577. Capital expenditure costs have averaged $3.9M from 2015 to 2025. The cyclical nature of hardware replacement is visible as costs peak in 2019 and 2020 and reduce again after the hardware components are replaced. Data centre capital expenditures occur as different components are replaced as dictated by the technology lifecycles. This creates a non-uniform spending profile year over year.

578. Data Centre costs materially increased in 2019 ($8.6M) and 2020 ($8.6M) as a result of several large projects executed under the business cases listed above.

579. The projects that contributed to above average capital expenditures in 2019 included the Data Domain Replacement Project ($1.6M), the Data Centre Hardware Replacement Project ($3.3M), and the Corporate and OT Network Refresh Project ($2.0M) and the Data Centre Hardware Replacement project which implemented Hyper-convergent technology (Dell VxRail).[132]

580. As noted under the IT and Security capital expenditures software category above, in 2020, AltaLink executed the Data Protection Licence Upgrade Project ($3.1M). Capital expenditures for this project resulted in above average data centre expenditures in 2020.

Data Centre Operating Expenditures

581. Operating expenditure costs have averaged $2.4M annually from 2015 to 2025 and have remained flat from 2022 onwards. Data Centre Costs include operating costs directly associated with data centre operations such as hardware and software maintenance and external labour supporting servers within the data centres. Operating expenditures began increasing in 2019

[124] Exhibit 23848-X0018.01, 2019-2021 GTA Appendix 13-B1.05, pdf 26.
[125] Exhibit 23848-X0018.01, 2019-2021 GTA Appendix 13-B2.09, pdf 78.
[126] Exhibit 23848-X0018.01, 2019-2021 GTA Appendix 13-B3.02, pdf 89.
[127] Exhibit 23848-X0018.01, 2019-2021 GTA Appendix 13-B3.03, pdf 93.
[128] Exhibit 23848-X0018.01, 2019-2021 GTA Appendix 13-B3.04, pdf 97.
[129] Exhibit 23848-X0018.01, 2019-2021 GTA Appendix 13-B3.07, pdf 111.
[130] Exhibit 23848-X0018.01, 2019-2021 GTA Appendix 13-B3.09, pdf 119.
[131] Exhibit 23848-X0018.01, 2019-2021 GTA Appendix 13-B4.08, pdf 160.
[132] Exhibit 26509-X0002.01, 2022-2023 GTA, Section 10.4.8.3, para 930.

after capital projects completed with licensing and maintenance fees transitioning to operating expenditures. As the capital expenditures have reduced, the operating expenditures for the data centre have remained flat and are forecast in 2024-2025 to remain consistent with the previous test period.

Security Capital and Operating Expenditures

Table 2.24-5 – 2015-2025 Security Capital & Operating Expenditures

Category	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Grand Total	Average
Capital Expenditures													
Security	5.4	5.0	9.5	3.2	3.4	6.6	2.6	6.5	7.6	4.9	4.4	58.9	5.4
ARS-CIP	1.1	7.3	3.5	0.6	2.3	2.6	2.1	4.3	5.7	10.4	12.5	52.4	4.8
ICSS Program	0.0	0.0	0.0	2.9	16.0	8.4	0.5	0.2	0.0	0.0	0.0	28.0	2.5
Total Security Programs	**6.4**	**12.3**	**13.0**	**6.6**	**21.8**	**17.5**	**5.1**	**10.9**	**13.3**	**15.3**	**16.9**	**139.2**	**12.7**
Total Operational Expenditures	**0.0**	**0.0**	**0.0**	**1.2**	**1.6**	**1.2**	**1.9**	**1.5**	**2.0**	**2.0**	**2.1**	**13.4**	**1.7**
Grand Total	**6.4**	**12.3**	**13.0**	**7.8**	**23.4**	**18.7**	**7.1**	**12.5**	**15.3**	**17.3**	**18.9**	**152.6**	**13.9**

582. Table 2.24 5 includes both capital and operating expenditures for physical and cyber security projects and operations.

Security Capital Expenditures

583. Capital expenditures for the Security portfolio have averaged $12.7M annually from 2015 to 2025.The security capital expenditures vary depending on the programs being implemented and the required response to evolving security threats.

584. Over the 10-year period, AltaLink has executed two critical security programs that account for 60% of the security expenditures. The capital expenditures for these specific programs are provided separately in Table 2.24 5 and additional details for each are provided below. The two programs are:

- Alberta Reliability Standards – Critical Infrastructure Protection (ARS-CIP), includes CIP-014.
- Industrial Control System Security (ICSS).

585. The remaining Security expenditures have averaged $5.0M from 2015 to 2025. In 2017, security expenditures increased in part due to the implementation of the Information Security Management System (ISMS), and Center for Internet Security Critical Security Controls Top 20 (CIS-CSC).[133] AltaLink implemented an ISMS as defined by the requirements in the ISO/IEC 27001 series standards.

586. Security expenditures increased in 2020, mainly attributed to costs being incurred for the Data Protection Licence upgrade as noted under the IT & Security capital expenditures software category above. Overall, annual costs within the 2019-2021 test period remained within the $5.0M average.

[133] Exhibit 21341-X0138, 2017-2018 GTA Appendix 13-B1-03, pdf 250.

587. In 2022-2023, AltaLink is forecasting higher than average security capital expenditures ($7.0M average/year for the 2022-2023 test period). The two approved business cases which contribute the majority of the expenditures are Substation Security Controls[134] and Cyber Security System[135].

ARS - CIP (including CIP-14)

588. ARS-CIP v5 became a regulatory requirement with an effective date of October 2017 and has required ongoing capital investment over the 10-year period as ARS requirements are updated and new standards are added. Efforts to prepare for CIP compliance started in 2015 and 2016. Significant effort was required to establish the security measures across AltaLink assets and the reporting system to comply with the standards. Once implemented, ongoing annual investments are required to address mitigation plans for contraventions and new standard implementation.

589. In the 2022-2023 GTA, the Commission approved additional capital expenditures to address new CIP 14 security requirements for critical AESO identified substations. The Application includes a business case for improved physical security measures for Alberta Reliability Standards CIP-002-AB-5.1 Medium Impact Sites, including critical facilities as defined by CIP-014-AB-2 R1 which require materially more capital expenditures than the 10-year average.[136]

590. AltaLink expected that sustaining the ARS-CIP program will continue to require capital dollars as new CIP standards are released (e.g. CIP-014 in 2020) and the current version of the CIP standards (v5) is upgraded and revised to newer versions. These changes are included in the AESO's workplan.

ICSS

591. In 2018 the ICSS project assessed the impact of a substation's function being compromised and developed a prioritized three-year plan to reduce risk for the higher customer impact substations. AltaLink reviewed the baseline for physical and cyber security controls for those prioritized substations, assessed threats and vulnerabilities and then defined the layers of additional controls to be applied to reduce risk to an acceptable level.

592. The ICSS program used a risk-based approach to assess substation criticality to determine a formalized method to define which level and scope of controls to implement. Based on the risk determined, the ICSS project implemented cyber controls at substations following industry standards and best practices as defined in the SANS Top 20 CSC Controls.

593. In 2019, AltaLink began implementation of the ICSS program in the field. Implementation continued through 2021 with work and capital expenditures continuing through 2022.

594. AltaLink completed the ICSS program in 2022 and is anticipating the remaining additions will be completed in 2023.

Security Operating Expenditures

595. Operating expenditures for the security portfolio have averaged $1.7M annually from 2017 to 2025. Security includes employees focused security operations such as cyber and physical security, Information Security Management System (ISMS) sustainment, regulatory compliance

[134] Exhibit 26509-X0033, 2022-2023 GTA Appendix 13-B1-02, pdf 12.
[135] Exhibit 26509-X0033, 2022-2023 GTA, Appendix 13-B1-05, pdf 33.
[136] CIP-014 and CIP Medium Impact Site Physical Security, Appendix 13-B1-04.

and Critical Infrastructure Protection sustainment. These expenditures are described in Section 25.2.13, USA 934. Prior to 2018, security operating costs were not explicitly tracked separately.

596. Security operating expenditures have increased due to an evolving need to: support the increasing high-volume, manual CIP processes and evidence gathering processes; increase the cadence of software patching to address increases in security vulnerabilities; respond to the increasing volume of malware attacks; address the increasing volume of physical security incidents; and undertake degree of emergency response planning exercises.[137] Increased operating expenditures are directly related to the increase volume of activity in this space.

597. As noted in AltaLink's response to Directive 6, in addition to supporting corporate security measures, AltaLink's security operations support the operational technology and EMS environments and are recorded in USA 934. Other utilities may have included the work related to CIP directly in OT and EMS capital costs in transmission capital and USA 566 – IT Transmission operating costs.

Subscription Based Operating Expenditures

Table 2.24-6 – 2015-2025 Subscription Based Operating Expenditures

2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Avg
1.1	1.2	1.2	1.2	1.5	1.6	1.7	2.2	2.5	2.6	2.6	1.8

598. Table 2.24 6 above includes software or services that are provided on a subscription basis, such as Microsoft 365 (Microsoft Office, Teams, Windows, PowerBI, and others), and email protection. There are no capital costs or labour costs identified as subscription.

599. The Subscription-based operating cost category has averaged $1.8M since 2015 and increased from $1.1M in 2015 to $2.6M in 2025 as a direct result of several overarching factors:

- changes in vendor pricing models: Vendor pricing has moved from perpetual licensing (defined as buying the licence once and purchasing support annually) to subscriptions (defined as the right to use during the subscription time period). The Microsoft Office licensing is an example of vendor pricing models changing from perpetual-only to perpetual or multiple levels of subscriptions;
- increased usage of cloud hosted solutions: cloud services are subscription-based; and
- subscription only services: some newer services are offered via subscription-only (no perpetual licensing option). Examples include external vulnerability monitoring, Concur (employee expense reporting), SuccessFactors (online training), and Microsoft Teams.

600. In addition to the general factors listed above, in 2022-2023 subscription costs increased related to subscription renewals including the 2022 Microsoft renewal during which AltaLink moved from version E3 to version E5. Version E5 contains additional features required to meet AltaLink's business needs, including a subscription to Microsoft Power BI, a data visualization software which AltaLink uses for analytical reporting.

[137] Exhibit 26509-X0223, AML-AUC-2021AUG20-066(d), pdf 295-296.

Components of the IT Budget that are User Dependent Versus Global

Table 2.24-7 – User Driven Operating Costs

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Avg
Mntc & Licensing	$0.5	$0.8	$0.7	$0.5	$1.3	$1.2	$1.3	$1.6	$1.8	$1.9	$1.9	$1.2
Ext Labour	NA	$0.8	$1.6	$1.7	$1.3	$1.5	$1.3	$1.0	$1.0	$1.1	$1.1	$1.2
Total	$0.5	$1.6	$2.3	$2.3	$2.6	$2.7	$2.6	$2.6	$2.9	$2.9	$3.0	$2.4

* User Driven costs for 2015 are NA because external labour costs were not tracked by the user category at that time and are not included in the analysis. User driven costs were tracked starting in April 2016 when a new managed service contract was implemented.

601. AltaLink does not track costs specifically by user. In Table 2.24 7, AltaLink reports user-driven costs based on maintenance and licence fees and external labour. For the purposes of this Directive, AltaLink identified maintenance and licence fees that are priced by user and included them in the category of user-driven costs. The external labour user driven costs are for service desk and deskside support. All other higher-level categories from Table 2.24 7 considered global costs including internal labour. No capital costs are reported as user based.

602. Approximately 87% of user-based software within AltaLink has less than 100 licences. Given that the majority of user-based software is for a more specialized function, variations in AltaLink's headcount do not directly correlate to changes in the number of licences required. Approximately 13% of AltaLink's software have a larger number of licences, such as MS Office, anti-malware, and SAP. For these software licences, there are reductions or increases at the time of licence renewal if warranted due to headcount changes.

603. The User Based cost category has averaged $2.4M from 2015 to 2025, with both Maintenance and Licencing Fees and External Labour averaging $1.2M each. Maintenance and licencing fees have increased from 2019 onwards mainly due to increased subscriptions such as M365. Costs further increased in 2022 for M365 subscription cost increases as described under the Subscription Based Operating Expenditures section above, as well as related data protection of M365 information.

Decision 26509-D01-2022 **Page 31 or PDF Page 42** **Paragraph 158** **Directive 9**
Corrigenda

Topic: **Emergency spares inventory in opening 2022 rate base**

Directive: The Commission requires AltaLink to track the amounts and USA accounts to which emergency spares inventory has been, and may be, capitalized in the future. This will allow a better understanding of AltaLink's inventory procurement and management practices. Therefore, the Commission directs AltaLink, in its compliance filing to this decision, to list the amounts capitalized by each USA in each applicable year both on an actual basis for 2019-2021 and on a forecast basis for 2022-2023. Further, at the time of its next GTA, the Commission directs AltaLink to provide the same information on an actual basis for the years 2022-2023 and on a forecast basis for the test years being applied for. AltaLink should also provide reasons for any capitalization of emergency spares inventory in addition to what has been capitalized in 2019-2021 and to explain how AltaLink differentiates between emergency spares inventory, and materials and supplies inventory included in Account 154 under the USA

Response:

604. AltaLink developed a new section in its 2024-2025 GTA to respond to, and provide the clarity requested by the Commission under Decision 26509-D01-2022 Directive 9.

605. Section 10.6 provides a description of AltaLink's plant equipment held for emergency in stores and plant materials and operating supplies. This section includes both the actual and forecast additions by USA code and includes variance explanations for each USA.

606. AltaLink also includes **Appendix 13-D** Inventory which is the business case for forecast additions in the 2024-2025 Test Period by USA for both plant equipment held for emergency in stores and plant materials and operating supplies.

607. As part of AltaLink's development of these new sections within this Application it has identified that a portion of its plant materials and operating supplies inventory are non-rotational in natures and should be properly classified as plant equipment held for emergency in stores as set out in the USA. This resulted in an undercapitalization because of the misclassification of equipment between USA codes. AltaLink is not proposing any historical correction to this error.

608. AltaLink provides more details in relation to this re-classification at Section 10.6.8.1 of this Application.

609. Refer to Section 10.6 of the Application and **Appendix 13-D**.

Decision 26509-D01-2022 **Page 38 or PDF Page 49** **Paragraph 191** **Directive 12**
Corrigenda

Topic: **Substation Components Program - Battery bank and charger replacements**

Directive: However, given the large number of batteries AltaLink expects to replace in the near term, the Commission considers it necessary for AltaLink to explore approaches to maximize the lifespan of its batteries. In future GTAs, the Commission expects AltaLink will support its Battery Replacement Program with concrete data and analysis. AltaLink has a battery testing program, has installed battery monitors at a number of its substations, and can (in either a destructive or non-destructive manner) randomly test batteries as it removes them from service when they are replaced. These activities provide sources of data AltaLink can use to gain insights into the actual lifespans of batteries and to assess the effectiveness, and suitability, of different battery replacement methodologies. Accordingly, the Commission directs AltaLink to provide details on how it has used actual test results and observed failures to determine any battery bank and charger replacements it proposes in its next GTA.

Response:

610. AltaLink uses individual battery cell impedance measurements and historical battery cell replacements to identify battery banks operating outside design specifications. In **Appendix 13-A07** Substation Components, Section 5.1.1 AltaLink has provided a detailed example of routine test results used to inform battery bank replacement. Additional battery bank testing details can be found in Section 5.2.1 of the same Appendix referenced above.

Decision 26509-D01-2022 **Page 47 or PDF Page 58** **Paragraph 234** **Directive 16**
Corrigenda

Topic: **Telecommunication Equipment Program - Telecom pole replacements**

Directive: The Commission observes that a commercial telecom tower is directly adjacent to the 99S St. Albert Substation. AltaLink did not explain whether it attempted to negotiate a joint-use agreement with the owner of this tower, which could allow AltaLink to place its radios on the tower. Given the expenditures necessary to install a new structure, the Commission directs AltaLink to provide evidence that it has explored this option when applying for its opening rate base in its next GTA.

Response:

611. AltaLink completed an engineering assessment and cost estimates for replacement of the Telecom pole and co-locating AltaLink's equipment on the adjacent third party tower during the engineering design phase of the project. The estimated cost of replacing Telecom pole with light duty steel pole is $0.29M, which is lower than the 2022-2023 GTA forecast of $0.47M due to reduced material and installation costs. The estimated cost of co-locating equipment on the adjacent third party tower is $0.38M. The main factor for higher cost of colocation is implementation of ground grid mitigation measures. The third party tower compound is not part of AltaLink 99S St. Albert substation ground grid infrastructure. To ensure safety and prevent hazards related to ground potential rise, it is necessary to implement ground grid mitigation measures when connecting equipment to the compound situated outside the substation. The incremental estimated cost for ground grid mitigation is $0.12M. In addition to the increased capital expenditure, AltaLink would also be required to pay a co-location fee of $1400/month to the owner of the third party tower. As a result, AltaLink determined that co-locating AltaLink's equipment on the adjacent third party commercial tower was not the lowest cost approach.

612. In addition, the adjacent third party commercial telecom tower is located approximately 80m from the AltaLink control building and outside the current substation boundary. AltaLink's proposed telecom tower, inside its current site, would be located 3m from the control building. Placement of AltaLink telecom equipment on the noted third party commercial tower would require longer and complex cable routing to bring telecom signals back to the AltaLink control building as compared to the proposed site. The communications signal travelling over the longer distance will experience signal degradation giving rise to increased communication errors, potential data loss and SCADA outages impacting the reliability of the power system. This risk to the power system can be eliminated by installing the replacement pole located 3m from the control building. Replacement of telecom pole with a 20m light duty steel pole, which meets service needs of this site, is the recommended course of action for this project. AltaLink is proceeding with this recommended option in 2023.

613. AltaLink as part of its Telecom Equipment Program does assess short and long term service needs based on the site and traffic criticality along with future needs of the grid in that area. Co-location and other opportunities such as Radio to Fibre conversion are considered to reduce infrastructure duplication in a safe, secure, reliable, and cost-effective manner and will be presented, as applicable, in future business cases.

Decision 26509-D01-2022 **Page 76 or PDF Page 87** **Paragraph 410** **Directive 28**
Corrigenda

Topic: **WMP capital expenditure forecast for the 2022 to 2023 test period**

Directive: Notwithstanding AltaLink's position, the Commission is cognizant that the WMP program is relatively new. Further, in light of AltaLink's previous commitment to work with fire experts to assess and define whether any other alternatives in support of its wildfire situational awareness can be provided, the Commission remains interested in any benefit that can be obtained from publicly available weather data sources. AltaLink is therefore directed to provide (i) an update in its next GTA as to whether any additional integration of publicly available weather data can be accommodated within its Wildfire Situational Awareness Program; and (ii) analysis of the potential benefit of incorporating such data.

Response:

614. AltaLink responds to (i) and (ii) with the following:

AltaLink reviewed publicly available external weather sources and wildfire information and as a result AltaLink has adjusted its wildfire risk assessment and daily weather wildfire weather forecast. For additional information, refer to **Appendix 22** Wildfire Mitigation Plan, Section 3.2.2.

Decision 26509-D01-2022 **Page 77 or PDF Page 88** **Paragraph 417** **Directive 29**
Corrigenda

Topic: **Targeted Component and Structure Replacements in HRFAs Program**

Directive: With respect to future reporting of component and structure replacements in HRFAs, the Commission finds that the status of AltaLink's progress towards addressing notifications is required to determine where there is support for related future capital investments. Accordingly, the Commission directs AltaLink to provide a breakdown of its notifications, in a more granular level of detail, that were resolved in a prior test period or are forecast to be resolved in the next test period as a result of ongoing inspections and line patrols. In addition, the Commission would find it helpful if AltaLink's business case included the total line length (km), total line length in HRFAs (km), the percentage of its line lengths located in each HRFA, the number of component and structure replacements, and the total fire-related notifications by component and structure. Similarly, AltaLink should provide evidence outlining the type, cause and why the deficiency addressed on each component and structure by line number and HRFA has to be replaced, as opposed to relying on a generic statement that "Insulator x 1 or Mechanical Hardware x 1" has to be replaced. The Commission finds that this generic statement does not explain what a deficiency is, and instead just indicates what component or structure AltaLink is replacing.

Response:

615. AltaLink provided a more granular level of detail of its notification that were resolved in the 2019 to 2022 time period as a result of ongoing inspection and line patrols. Refer to **Appendix 22-A2** Targeted Component and Structure Replacement, Appendix 1, Table A-1 for the directed breakdown of notifications.

616. Refer to **Appendix 22-A2** Targeted Component and Structure Replacement, Table 4-1 Line Lengths and Structure, Component Information within HFRAs for the directed line length breakdown with number of notifications by structure/component. Further, Table A-1 in Appendix 1 provides a breakdown of fire-related notification by components (Insulator, Crossarm, Conductor/Overhead/Hardware, Tower, Guy/Anchor) and by structure (Pole/Structure).

617. AltaLink provided justification by type and cause for replacement in, Table A-1 in Appendix 1 of **Appendix 22-A2** Targeted Component and Structure Replacement. AltaLink further provided example photos, in Appendix 2 of **Appendix 22-A2** Targeted Component and Structure Replacement of representative deficiencies being addressed within this program.

Decision 26509-D01-2022 Page 82 or PDF Page 93 Paragraph 443 Directive 31
Corrigenda

Topic: **Further reporting of the WMP**

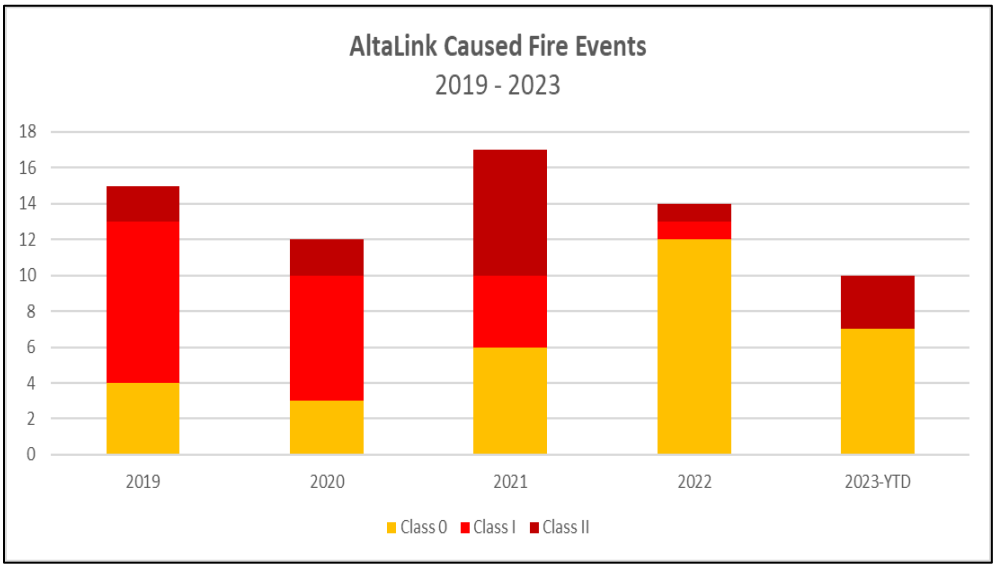
Directive: Guided by the metrics table provided in Appendix 6, AltaLink is directed to update its WMP business case to include the quantitative metrics and show the performance indicators it will use to assess the progress and the overall effectiveness of its WMP commencing with 2019. AltaLink is also directed, in its next GTA filing, to provide more detailed descriptions in the table, including more specific definitions of what it means by Class I, II and III wildfire incidents. As an added metric, it would be beneficial for AltaLink to include any identified deficiencies, concerns, degrading hardware, structures and/or vegetation risks noted during the execution of its WMP and to identify the steps AltaLink will undertake to address these matters.

Response:

618. AltaLink included the directed quantitative metrics in Table 4-1 within Section 4 of **Appendix 22** Wildfire Mitigation Plan. This Table, as directed, provides a more detailed description of what is meant by Class I, II and III wildfire incidents.

619. Ignition Events, shown in Figure 4-1 from **Appendix 22** Wildfire Mitigation Plan, from 2019-2023 YTD is used to show overall effectiveness of its WMP Program. Figure 4-1 is reproduced below, for convenience and named Figure 2.30-1 in this Directive response.

Figure 2.30-1- Total Count of Class 0/I/II/III fire incidents, by class from 2019 to 2023 YTD (end of July)



620. Further, AltaLink included a Table to highlight any identified deficiencies, concerns, degrading hardware, structures and/or vegetation it noted during the execution of its WMP program. For reference, Table 4-2 – Wildfire Notifications determined during Annual Inspections Inside HFRAs is in **Appendix 22** Wildfire Mitigation Plan, Section 4.1.1. AltaLink incorporated these identified deficiencies into its WMP under **Appendix 22-A2** Targeted Component and Structure Replacements in HRFAs in order to address the deficiencies.

Decision 26509-D01-2022 **Page 82 or PDF Page 93** **Paragraph 445** **Directive 32**
Corrigenda

Topic: **Further reporting of the WMP**

Directive: The Commission acknowledges AltaLink's commitment to provide an update in its next GTA explaining how it has further developed its internal expertise, and how it has consulted with other utilities and weather and fire specialists. As AltaLink incorporates feedback through discussion with industry peers, the Commission expects AltaLink to take any corrective actions and adjust its program as required. If adjustments to the WMP are required resulting from these discussions, AltaLink is directed to provide all pertinent information in this regard, in a WMP update to be filed at the time of its next GTA.

Response:

621. ALtaLink responded by providing a Wildfire Industry Update in **Appendix 22** Wildfire Mitigation Plan, Section 3, and sub-parts 3.2.1, 3.2.2, and 4.1.3. These sections highlight AltaLink's engagement with other utilities and weather and fire specialists. Resulting adjustments to the WMP include incorporation of grass curing data, and inclusion of a new Head Fire Intensity (HFI) metric to determine wildfire risk in grass/cropslands, and inclusion of failure sensing technology. Additional details on inclusion of failure sensing waveform analytical technology can be found in **Appendix 22-A01** Wildfire Situational Awareness, Section 5, and its sub-parts.

Decision 26509-D01-2022 **Page 83 or PDF Page 94** **Paragraph 447** **Directive 33**
Corrigenda

Topic: **Further reporting of the WMP**

Directive: Accordingly, AltaLink is directed to continue to track and provide quantitative analysis as part of its future reporting of transmission outage statistics system and SAP records and to include all ignition events that are connected to its transmission facilities. The information should incorporate the location, date, severity and impact of the fire, the component(s) or structure(s) that caused the ignition event, any outages that occurred as a result of the event, what preventative mitigation measures were employed, and the effectiveness of the mitigation measures.

Response:

622. In response to the Directive, AltaLink has provided Table 4-3 – 2021, 2022 and 2023 YTD Wildfire details by Fire Class in **Appendix 22** Wildfire Mitigation Plan, Section 4.1.4 which includes details of the 42 ignition events connected to its transmission facilities that were recorded in 2021, 2022 and 2023 YTD. The Table includes:

- Location
- Date
- Severity (Fire Class)
- Fire Impact (Fire Size)
- Component Failure
- Primary Failure Cause
- Outage Occurrence (Load Loss)
- Preventative Fire Mitigation Measures
- Weather conditions (Wind, Relative Humidity, Precipitation)

623. Further, **Appendix 22** Wildfire Mitigation Plan, Section 4.1.4 provide a discussion on the preventative mitigation measures and effectiveness of wildfire mitigations that may have been employed.

Decision 26509-D01-2022 **Page 93 or PDF Page 104** **Paragraph 511** **Directive 37**
Corrigenda

Topic: **Data Storage Program**

Directive: To the extent that AltaLink forecasts costs for data storage in future GTAs, the Commission directs AltaLink to provide details of its strategy to minimize costs associated with data storage requirements.

Response:

624. Data storage has two components and two related cost reduction strategies:

Active storage:

625. This storage directly supports business processes by storing content such as files, databases and e-mail that is available for immediate use.

626. Active storage data drives 25% of AltaLink's total data storage requirements and is the most directly controllable element of the storage strategy. AltaLink has been reducing end-user storage requirements (email and user files) as well as shared storage (Sharepoint data, GIS files, project files, and aerial, satellite, drone, and LIDAR imagery).

627. The majority of these documents must be retained for regulatory purposes; therefore, AltaLink's primary cost reduction strategy is to migrate this information from on-premise storage to lower cost, flexible cloud-based storage. AltaLink also assesses all data storage needs as part of its business cases and solutions.

628. Opportunities to reduce active data storage costs are considered as part of evaluating business case alternatives.

629. AltaLink has not forecast additional active storage in the 2024-2025 Test Period.

System protection storage (data backups):

630. This storage provides backup and recovery of business-critical databases and data such as financial and HR information and is essential to maintain business continuity.

631. System protection storage data drives 75% of AltaLink's total data storage requirements. AltaLink is reducing system protection storage costs by deploying the lowest cost technical solutions for maintaining data backup for core enterprise data (financials, HR records, asset records, etc).

632. System protection storage is discussed further in Appendix 13-B3-13 Data Centre Infrastructure business case.

633. Figure 2.33-1 below shows the progress that AltaLink has made in managing active storage since 2020. In 2020, employees transitioned to working remotely from home as a result of the Covid-19 pandemic, which required more active storage. AltaLink has reduced active storage between Q1 2020 and Q4 2022.

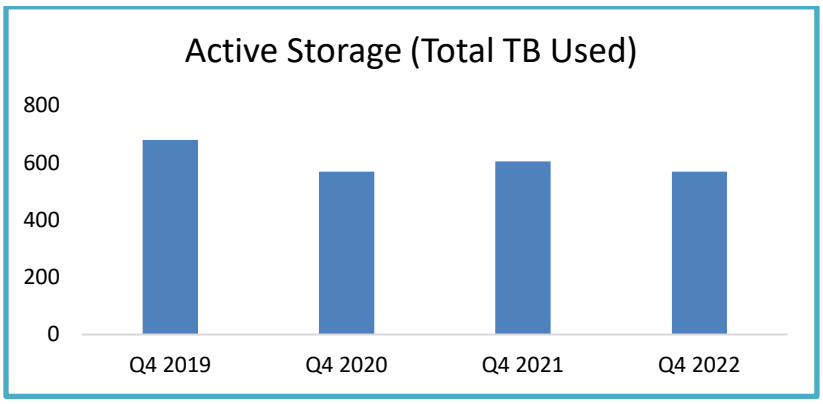


Figure 2.33-1 – Active Data Storage Trend from 2019 to 2022

634. AltaLink has undertaken numerous initiatives to reduce active data storage requirements as part of the data storage strategy. These initiatives and targeted storage reductions are listed in Table 2.33-1.

Table 2.33-1– Active Storage Reduction Initiatives

Cloud Migration Initiatives	Target Reduction	Target Completion
End User Storage Reduction		
1. user email	10 Tb	• 10 Tb Completed
2. user files	15 Tb	• 9 Tb Completed • 6 Tb by Q2 2023
3. shared email accounts	1 Tb	• Target Q1 2023
4. PST files	2.3 Tb	• Target Q2 2023
Shared File Reduction		•
1. SharePoint Files cloud	1.5 Tb	• In Progress • Target Q2 2023
2. aerial and satellite imagery & UAV drone footage	11 Tb	• In Progress • Target Q3 2023
3. LiDAR data	4.6 Tb	• 4.6 Tb Completed
Summary	**Target Reduction: 45.4 TB**	• **23.6 Tb Completed** • **21.8 Tb In Progress**

635. AltaLink has reduced active storage by 23.6 Tb or 4.1% as of the end of 2022 and is on track to reducing a further 21.8 Tb or 3.8% in 2023. This represents a 45.4 Tb or 8% reduction of active storage from the 2021 year end baseline of 570 Tb. A reduction of 1 Tb represents the equivalent to 250,000 documents, therefore the reduction to date is equivalent to 5.9 million documents.

636. These targeted storage reduction initiatives require significant effort, as regulated Utility data retention guidelines are intended to safeguard data required for regulatory filings. Reducing active storage will continue to be a major focus going forward especially as more data is digitized to support real time business requirements. AltaLink's strategy is to focus on reducing storage cost by migrating storage to the cloud wherever possible.

637. In addition to the above efforts, AltaLink continues to assess further opportunities to migrate GIS and project documentation to the cloud. Beginning in 2022, AltaLink changed its practices with respect to employee active data storage, and now supports only cloud-base storage for end-user documents (email and end-user files). As a result of these efforts, there is no requirement for any additional active storage or additional system protection storage in the 2024-2025 Test Period.

Decision 26509-D01-2022 Page 106 or PDF Page 117 Paragraph 581 Directive 43
Corrigenda

Topic: **Impacts of savings from IT projects in revenue requirement**

Directive: In its next GTA, AltaLink is directed to reconcile the table that it provides in its compliance filing in response to the direction in the previous paragraph with information regarding the projects AltaLink actually completed, and to explain whether the estimated savings were realized in 2022 and 2023 (if applicable), and what savings are expected to be realized on a go-forward basis. AltaLink should include an analysis showing how the savings have been incorporated into its forecast revenue requirement. AltaLink may wish to refer to UCA-AUC-2021SEP24-006(i)-(iv) for guidance on how this analysis can be completed.

Response:

638. In 2022, AltaLink began executing the following programs for which it forecast cost saving in the 2022-2023 GTA:

- 13-B2-01 Workforce Mobility and Collaboration[138]
- 13-B2-02 RPA – Robotic Process Automation program[139]
- 13-B2-03 Vegetation Management System[140]
- 13-B2-04 Data Analytics and Management Program[141]

639. Collectively, these projects were forecast in Directive 42 to generate $1M savings in 2022.[142] AltaLink realized $365k in savings in 2022 with $330k of savings attributed to USA code 934 and $35k of savings to USA code 566.

640. The savings realized were recognized in the respective 2023 budgets for these areas as part of the zero-based budgeting process. These savings offset cost increases driven by inflation, new workload due to evolving regulatory (ARS) compliance requirements and new customer requirements to maintain AltaLink's "Flat for Five" commitment. For examples, refer to Section 5.3.7 and Section 25.2.13.

641. Collectively, these projects were forecast in Directive 42 to generate $2.7M savings in 2023.[143] AltaLink is now projecting $1.34M in savings in 2023.

642. In Directive 42, cumulative savings realized in 2022 and 2023 were forecast to continue the following test period and planned into the budgets for the subsequent test period. See Table 2.34-1 and 2.34-2 below.

643. AltaLink experienced delays in starting several of the programs identified above due to staffing issues caused by early retirements, departures, and staff availability when COVID-19 work from home restrictions were lifted. AltaLink continues to expect savings but some of their

[138] Exhibit 26509-X0033, Appendix 13-B, pdf 68.
[139] Exhibit 26509-X0033, Appendix 13-B, pdf 75.
[140] Exhibit 26509-X0033, Appendix 13-B, pdf 82.
[141] Exhibit 26509-X0033, Appendix 13-B, pdf 89.
[142] Exhibit 27174-X0003.01, Section B Decision Directives Revised, B-42 Attachment (AUC Directive 42), pdf 46.
[143] Exhibit 27174-X0003.01, Section B Decision Directives Revised, B-42 Attachment (AUC Directive 42), pdf 46

achievement has been delayed and will be realized in the next test period as per Table 2.34-1 below.

644. AltaLink completed initial components of the Data Analytics and Management Program and RPA program in 2022. At the time of submitting the Application, RPA has realized $350k in savings in 2022. Data analytics has realized $15k in savings in 2022. Other projects are in progress or cancelled and savings were not realized in 2022. An update to the progress of each program is provided below.

13-B2-01 Workforce Mobility and Collaboration (WMC)

645. The WMC program consists of five projects. The forecast savings in Directive 42 for the program was $0.778M.[144] Current cost savings have been reduced to $0.454M for projects executed over the 2022-2023 test period.

646. AltaLink has reduced its forecast savings because the Fleet Mobile Data Entry component and the BA/QA Tool Projects were cancelled when the vendors could not meet the projects' requirements. The start of the Field Work Execution Project was delayed so that AltaLink could reconfirm the scope of the Project and operational requirements before execution. AltaLink expects to initiate the Project in 2023.

647. The cancelled projects reduced the forecast project savings by $75k. The delay in the Field Work Execution Project reduced the forecast savings in the test period by $0.248M.

13-B2-02 RPA Program

648. AltaLink initiated the 2022-2023 RPA program in Q2 of 2022. The objective of the RPA program is to automate standard, repetitive, manual tasks identified throughout the organization.

649. In AltaLink's 2022-2023 GTA, AltaLink forecast that it would complete 24 RPA projects per year to achieve an estimated $1.0M per year of savings (or approximately 10,000 labour hours of savings in 2022 and 13,000 hours and $1.3M of savings in 2023).[145] This forecast did not take into consideration the resource impacts of early retirement or departures and employee availability after COVID-19 restrictions were lifted. As a result of those resource impacts, the implementation of the RPA program was delayed.

650. AltaLink completed three RPA projects in 2022, compared to the 24 that were planned. The three Projects (Lidar Files Migration and Consolations, Field Ops Timesheet Automated Entry and Mobile Device Cancelation) resulted in total labour offsets of 3,500 hours and $0.350M of savings. Table 2.34-2 below provides a revised forecast to achieve $1.95M by 2025 as compared to the $2.3M which AltaLink originally forecast would be realized in 2023 and 2024.

651. On average, individual RPA initiatives offset 200-500 hours of labour. Small efficiencies are created throughout multiple teams. In aggregate, the efficiencies from all projects may represent an offset for one FTE worth of hours versus the elimination of an FTE position. These initiatives enable the business to stay within the current headcount or avoid increasing headcount or hiring incremental contracted manpower while addressing inefficiencies in workflow and processes. This allows teams to execute their work more efficiently by allowing those same hours to be reallocated to other work activities.

[144] Exhibit 27174-X0003.01, Section B Decision Directives Revised, B-42 Attachment (AUC Directive 42), pdf 46.
[145] Exhibit 26509-X0033, Appendix 13-B, para 13, Table 1-2, pdf 78.

13-B2-03 Vegetation Management System

652. The Vegetation Management System program consisted of five elements. In the 2022-2023 GTA, AltaLink forecast $428k of savings ($214k in opex and capex savings, respectively) in 2023.[146] The five elements of the program were grouped into two projects. One project focused on the elements driving opex savings and the other focused on the elements driving capex savings.

653. AltaLink now forecasts that these two Projects will deliver $400k of savings in 2023, as compared to the $428k of savings which AltaLink forecast in the 2022-2023 GTA. AltaLink has reassessed the split of opex and capex savings with a revised forecast of $300k opex savings and $100k capex savings. The opex forecast is provided in Table 2.34-1 and the capex forecast is provided in Table 2.34-2 below.

13-B2-04 Data Analytics and Management Program

654. The scope of the 2022-2023 Data Analytics and Management Program business case included building out a data foundation to support delivery of five use cases per year. In 2022, AltaLink executed the data foundation development and one use case (the Asset Retirement Data Capture use case).

655. The objective of the Asset Retirement Data Capture use case developed in 2022 was to increase the efficiency and lead time of processing of asset retirement data when projects are executed. AltaLink selected this Project for its scale to establish the data foundation. This use case required the creation of a new foundation comprising of a data environment with linkages to other data sources, required user-level access restrictions and permissions framework to be developed, along with custom workflows and alerting using the latest Microsoft Office 365 environment.

656. AltaLink realized opex savings of approximately $15k in 2022 and forecasts that opex savings will increase to $33k per year in 2023 for this use case.

657. Additional use cases are under review for implementation in 2023. The data analytics project is expected to ramp up to five use cases per year.

658. Savings for 2023 will be reforecast once the use cases for 2023 are finalized.

659. Table 2.34-1 is organized by USA code so that savings can be seen by USA code. For RPA and Data Analytics, individual projects cannot be identified to a USA code until AltaLink confirms what projects are proceeding. This information will be updated in the compliance filing.

Clarification of Directive 42

660. In preparing its response to Directive 43, AltaLink has determined that further clarification is required with respect to the Table provided in response to Directive 42 and the update in this response.

661. Once the target savings are achieved for a project, the savings identified in subsequent years in the Directive 42 Table indicate that the savings are sustained in future years. These savings in subsequent years are not incremental. Further, consistent with AltaLink's treatment of efficiency gains provided in Section 1.11 of the Application, such gains are reflected in actual costs or activities incurred and as such are incorporated into AltaLink's revenue requirement forecasts for the Test Period.

[146] Exhibit 26509-X0033, Appendix 13-B, para 27, Table 1-1, pdf 86.

662. AltaLink's response to Directive 42 stated that its cumulative forecast target savings for the projects identified in Directive 42 were $4.566M by 2025.[147]

663. AltaLink has revised its cumulative forecast target savings from the projects approved in its 2022-2023 GTA based on the progress of those projects to date. The revised cumulative forecast savings are $3.145M by 2025 for the reasons explained above. This amount will change once the data analytics savings for 2023 are confirmed.

Table 2.34-1 – ($K) Variance in OPEX Saving Forecast Directive 42 to Directive 43

OPEX DIRECTIVE 42		Estimated Annual Savings ($K)				
	Project	2022	2023	2024	2025	2026
USA 934	WMC - BA/QA 1	0	25	25*	25*	25*
	Smart Keys	0	0	0	60	60*
USA 571	Vegetation mgmt	0	214	214*	214*	214*
USA 562	WMC- Fleet Mobile 3	0	0	13	13*	13*
562/563	WMC- Field Execution 2	0	186	372	372*	0
USA 566	Data Analytics					
USA 920						
USA 934						
USA TBD		0	500	1,000	1000*	1000*
USA 566						
USA 920	RPA					
USA 934						
USA TBD		1000	1300	2300	2300*	2300*
	Total	1000	2225	3685	60	0

OPEX DIRECTIVE 43 Update		Estimated Annual Savings ($K)				
	Project	2022	2023	2024	2025	2026
USA 934	WMC - BA/QA 1	0	0	0	0	0
	Smart Keys	0	0	0	60	60*
USA 571	Vegetation mgmt	0	300	300*	300*	300*
USA 562	WMC- Fleet Mobile 3	0	0	0	0	0
562/563	WMC- Field Execution 2	0		186	372	372*
USA 566	Data Analytics	15	33	33*	33*	33*
USA 920						
USA 934						
USA TBD			TBD	TBD	TBD	TBD
USA 566		20				
USA 920	RPA					
USA 934		330				
USA TBD			700	1250	1950	1950*
	Total	365	1033	1436	2382	0

- Value with * represent sustained savings, not incremental savings for the project.
- Data Analytics forecast savings to be updated once 2023 use cases are determined.
- AltaLink's forecast opex savings for Smart Keys remain the same as described in Directive 42.

Table 2.34-2 – ($k) Variance in Capex Saving Forecast Directive 42 to Directive 43

CAPEX DIRECTIVE 42		Estimated Annual Savings ($K)				
	Project	2022	2023	2024	2025	2026
App 13-B	WMC - mobile Fleet 4		25	38	38*	38*
Sch 10-4	WMC - FN Relations 5	0	25	25*	25*	25*
Sch 10-4	WMC - Field work 6	0	63	125	125*	0
Sch 10-4	WMC- Pandell Land 7	0	180	180*	180*	180*
App13-A03	Vegetation mgmt	0	214	214*	214*	214*
App 22-A4						
	Total	0	482	125	0	0

CAPEX DIRECTIVE 43 Update		Estimated Annual Savings ($K)				
	Project	2022	2023	2024	2025	2026
App 13-B	WMC - mobile Fleet 4		0	0	0	0
Sch 10-4	WMC - FN Relations 5	0	25	25*	25*	25*
Sch 10-4	WMC - Field work 6	0	0	63	125	125*
Sch 10-4	WMC- Pandell Land 7	0	180	180*	180*	180*
App13-A03	Vegetation mgmt	0	100	100*	100*	100*
App 22-A4						
	Total	0	305	63	125	0

- Value with * represent sustained savings, not incremental savings for the project.

[147] Exhibit 27174-X0003.01, Section B Decision Directives Revised, B-42 Attachment (AUC Directive 42), pdf 46.

Decision 26509-D01-2022 Corrigenda | **Page 130-131 or PDF Page 141-142** | **Paragraph 720** | **Directive N/A**

Topic: TransAlta O&M Agreement

Directive: For the reasons below, the Commission has decided to fix revenue requirement offsets connected with the O&M Agreement at the level forecast by AltaLink over this Test Period on a placeholder basis. This means that the placeholder amount is subject to change in the future based on AltaLink's actual revenues earned under the O&M Agreement over this Test Period. The placeholder amounts will be trued up for AltaLink's actual revenues at the time of AltaLink's next GTA.

Response:

664. AltaLink's TransAlta Transmission (First Nations) O&M Agreement forecast revenue requirement offsets were approved as placeholders as follows: $0.2M for 2022 and $0.0M for 2023. 2022 actual was $0.6M and 2023 MU is forecast at $0.7M. Accordingly, AltaLink has provided the net $1.1M true-up over the two-year period in its current Application. Refer to Section 8 and MFR Schedule 3-1, line 18. AltaLink will update the true-up amount to reflect 2023 actuals as part of its compliance filing expected in early 2024.

Decision 27238-D01-2022 **Page 7 or PDF Page 10** **Paragraph 23** **Directive 1**

Topic: **Costs for pipeline electrical interference mitigation where cost allocation is to be determined**

Directive: In approving capital expenditures of $1.360 million in 2022 and $1.700 million in 2023, the Stage 2 review panel acknowledges an element of uncertainty for a significant number of events where the allocation share is yet to be determined. The Stage 2 review panel directs AltaLink to provide sufficient information in its next GTA and supporting business case to test the prudency of these costs on an actual basis. The Stage 2 review panel directs AltaLink in its next GTA to provide all actual costs spent on a per-event basis, the cost allocation shares between AltaLink and the pipeline owner, any contribution amounts received by AltaLink from the pipeline owners and those provided to the pipeline owners from AltaLink, and any other relevant information to test the prudency of the events that are as noted above in tables 1 and 2, yet "to be determined." In conjunction with making this direction, the Stage 2 review panel has decided to rescind the direction made in paragraph 355 of Decision 26509-D01-2022 (Corrigenda).

Response:

665. For 2022-2023 actuals, AltaLink has provided **Appendix 13-A17** Pipeline Electrical Interference Mitigation Attachment 3 (Study and Mitigation Units 2022-2023). Where available, the referenced tables provide all actual costs spent on a per-unit basis, as well as the cost allocation between AltaLink and pipeline owners. The actual costs reflect the costs paid by AltaLink to the pipeline owners based on the cost allocation. At no time do the pipeline owners provide a contribution to AltaLink.

666. AltaLink used the same format as the 2022-2023 actuals to present the 2024-2025 Study and Mitigation scope. Refer to **Appendix 13-A17** Pipeline Electrical Interference Mitigation Attachment 2.

667. For both **Appendix 13-A17** Pipeline Electrical Interference Mitigation Attachment 3 (Study and Mitigation Units 2022-2023) and Attachment 2 (Study and Mitigation Units 2024-2025), AltaLink followed the same format as the updated Table 1-5 produced in the R&V.[148]

668. Where items are "to be determined" for 2023 or 2024-2025 in **Appendix 13-A17** Pipeline Electrical Interference Mitigation Attachment 3 (Study and Mitigation Units 2022-2023) and Attachment 2 (Study and Mitigation Units 2024-2025), the costs have not yet been quantified.

[148] Exhibit 27238-X0012, Attachment 3 (Table 1-5 Updated).

3. TRANSMISSION REVENUE REQUIREMENTS

669. 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

670. 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

671. As outlined in Schedule 3-1, AltaLink is applying to the Commission for approval of total revenue requirements of $887.5M in 2024, and $904.2M in 2025. After taking into account tariff relief refunds, the net Transmission Tariff amounts that AltaLink is requesting approval for are $895.7M in 2024 and $904.2M in 2025.

672. Sponsorships and charitable donations committed by AltaLink or any of its affiliates have never been included or are not part of the 2024-2025 GTA as per Decision 2003-061[149] and Decision 2007-012,[150] as these are considered non-utility costs and are not included in regulated revenue requirement.

3.3 Direct Assign Capital Deferral Account Included in Revenue Requirement

673. 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 3-2.2024 (i), Schedule 3-2.2024 (ii), Schedule 3-2.2024 (iii) for the 2024 forecast year; and Schedule 3-2.2025 (i), Schedule 3-2.2025 (ii), Schedule 3-2.2025 (iii) for the 2025 forecast year.

674. 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.

675. In this Application, AltaLink is seeking Commission approval of the 2021 and 2022 DACDAs. AltaLink is including the 2021-2022 DACDA application as **Appendix 23.**

3.4 Transmission Revenue Requirement Schedules

Schedule 3-1	Summary of Transmission Revenues and Costs
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

[149] 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.
[150] Decision 2007-012 AltaLink Management Ltd. and TransAlta Utilities Corporation, 2007 and 2008 Transmission Facility Owner Tariff, February 16, 2007, pages 41-42, pdf 47-48.

Schedule 3-2.2024 (i)	Schedule of 2024 DACDA Revenue Requirement
Schedule 3-2.2024 (ii)	Schedule of 2024 DACDA Mid-year Rate Base
Schedule 3-2.2024 (iii)	Schedule of 2024 DACDA CWIP
Schedule 3-2.2025 (i)	Schedule of 2025 DACDA Revenue Requirement
Schedule 3-2.2025 (ii)	Schedule of 2025 DACDA Mid-year Rate Base
Schedule 3-2.2025 (iii)	Schedule of 2025 DACDA CWIP

4. TRANSMISSION FUEL COSTS

NOT APPLICABLE TO ALTALINK'S APPLICATION

5. TRANSMISSION OPERATING COSTS

676. 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)

677. Refer to Section 1.3.6 of the Application.

5.2 Overview – Total Operation & Maintenance Costs

678. Section 5 provides information with respect to AltaLink's O&M Costs as defined in the USA/MFR requirements documents approved by the Commission, refer to Table 5.2-1 for the total operation and maintenance expenses.

Table 5.2-1- Operation & Maintenance Expenses ($M)

Expense	2021 Actual	2022 Actual	2023 MU	2024 Test Year	2025 Test Year
Labour	27.5	27.6	28.7	29.8	30.7
Contracted Manpower	14.4	14.3	14.9	15.2	15.7
Other GOE	23.5	23.2	23.9	23.8	23.9
Total	**65.4**	**65.1**	**67.5**	**68.8**	**70.4**

Totals may not add due to rounding.

5.2.1 Labour

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

Expense	2021 Actual	2022 Actual	2023 MU	2024 Test Year	2025 Test Year
Labour	**27.5**	**27.6**	**28.7**	**29.8**	**30.7**

Table 5.2.1-2 - Operation & Maintenance - Labour Forecast Increase ($M)

Forecast Increase	2023 MU versus 2022 Actual	2024 Test Year versus 2023 MU	2025 Test Year versus 2024 Test Year	2 Test Year Average
Inflation	1.2	1.0	1.0	1.0
Other	(0.1)	0.1	(0.1)	0.0
Total	**1.1**	**1.1**	**0.9**	**1.0**

Totals may not add due to rounding.

679. AltaLink forecasts O&M, Operating Labour Expense, as shown in Table 5.2.1-1 and Table 5.2.1-2 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.

680. Refer to Section 5.3 for a detailed description of O&M Labour forecasts on an individual USA Activity Code basis.

5.2.2 FTEs

Table 5.2.2-1 - Operating & Maintenance - FTE Year End Summary

	2021 Actual	2022 Actual	2023 MU	2024 Test Year	2025 Test Year
Total Year End FTEs	**184.2**	**182.6**	**178.6**	**178.6**	**178.6**

681. AltaLink's operating Direct O&M FTEs for the Test Period are forecast to be 4 FTEs lower than the 2022 actual level, as shown in Table 5.2.2-1 above. This is primarily due to the review of the forecast work activities between staff functions in each USA Activity Code to ensure critical items are managed between operating and capital support requirements. AltaLink is updating its forecast of FTEs based on these requirements. This FTE forecast reflects the amount of capital and operating FTEs that are represented in the labor financial forecasts for the 2023 MU and the Test Period.

682. For further detail please see the Labor sections for USA 560, 562, 563 and 566. For FTE position details please refer to **Appendix 2-A to Appendix 2-D**.

683. Refer to Section 5.3 for a detailed description of O&M FTE forecasts on an individual USA Activity Code basis.

5.2.3 Contracted Manpower

Table 5.2.3-1 - Operation & Maintenance - Contracted Manpower Expenses ($M)

Expense	2021 Actual	2022 Actual	2023 MU	2024 Test Year	2025 Test Year
Contracted Manpower	**14.4**	**14.3**	**14.9**	**15.2**	**15.7**

Table 5.2.3-2 - Operation & Maintenance - Contracted Manpower Increase ($M)

Forecast Increase	2023 MU versus 2022 Actual	2024 Test Year versus 2023 MU	2025 Test Year versus 2024 Test Year	2 Test Year Average
Inflation	0.1	0.3	0.3	0.3
Other	0.4	(0.0)	0.1	0.1
Total	**0.5**	**0.3**	**0.5**	**0.4**

Totals may not add due to rounding.

684. AltaLink forecasts a $0.4M average increase in O&M - Contracted Manpower for the Test Period driven primarily by inflation assumptions, as described in Section 1.8 and shown in Table 5.2.3-1 and Table 5.2.3-2 above. The $0.1M average increase in the Test Period in Other is primarily related to increased support activities for wildfire weather forecasting in control center operations (refer to USA 561). The $0.4M increase in Other from 2022 actuals to 2023 MU is primarily due to lower maintenance activities experienced in 2022 for overhead line expenses

(refer to USA 563) and variability in vegetation management activities between years (refer to USA 571.1) that are not expected to continue in 2023 and the Test Period.

685. Refer to Section 5.3 for a detailed description of the Contracted Manpower forecasts on an individual USA Activity Code basis.

5.2.4 Other GOE

Table 5.2.4-1 - Operation & Maintenance Expenses ($M)

Expense	2021 Actual	2022 Actual	2023 MU	2024 Test Year	2025 Test Year
Other GOE	**23.5**	**23.2**	**23.9**	**23.8**	**23.9**

Table 5.2.4-2 - Operation & Maintenance - Other GOE Forecast Increase ($M)

Forecast Increase	2023 MU versus 2022 Actual	2024 Test Year versus 2023 MU	2025 Test Year versus 2024 Test Year	2 Test Year Average
Inflation	0.2	0.5	0.5	0.5
Other	0.4	(0.6)	(0.4)	(0.5)
Total	**0.7**	**(0.1)**	**0.1**	**0.0**

Totals may not add due to rounding.

686. AltaLink's O&M - Other GOE Expense for the Test Period is forecast to increase, on average, by $0.1M in the Test Period, primarily due to inflation factors as described in Section 1.8 and shown in Table 5.2.4-1 and Table 5.2.4-2 above. The $0.4M increase from 2022 actuals to 2023 MU is primarily driven by a combination of increased volume of parts and materials for repairs and increased staff expenses for meals and accommodations post pandemic in station equipment and overhead line expenses areas, see USA 562 and 563.

687. The decrease from 2023 MU to 2024 in Other is primarily driven by changes in miscellaneous transmission expenses, see USA 566, related to timing of write-downs for obsolescent inventory.

688. Refer to Section 5.3 for a detailed description of the Other GOE forecasts on an individual USA Activity Code basis.

5.2.5 Changes in Operation

689. 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

690. Refer to MFR 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 MFR Schedule 5-1.

5.3.2 USA 560 - Supervision and Engineering

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

692. Staff included in USA 560 are all managers 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.

693. AltaLink 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 forecasts FTEs to remain stable in the Test Period with 11 operating FTEs as shown in Table 5.3.2-4 below. 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	2021 Actual	2022 Actual	2023 MU	2024 Test Year	2025 Test Year
Labour	2.9	2.8	2.8	3.0	3.0
Contracted Manpower	0.0	0.0	0.0	0.0	0.0
Other GOE	0.0	0.1	0.1	0.1	0.1
Total	**3.0**	**3.0**	**2.9**	**3.1**	**3.2**

Totals may not add to due to rounding.

694. Virtually all of USA 560 is attributable to labour expenses which are forecast on average to be approximately $3.1M per forecast year, shown in Table 5.3.2-1 above. No contractor expenses are forecast for USA 560. GOE (other expenses) are forecast to be approximately $0.1M in total per year. GOE in USA 560 is largely staff expenses, which were lower during 2021 and 2022, due to the pandemic and cancellation of business-related travel. Operating expenses are expected to remain constant for the Test Period.

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

Forecast Increase	2023 MU versus 2022 Actual	2024 Test Year versus 2023 MU	2025 Test Year versus 2024 Test Year	2 Test Year Average
Labour	0.0	0.1	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.

695. AltaLink forecasts operating expenses to increase $0.1M, refer to Table 5.3.2-2 above, on average over the Test Period primarily attributed to inflationary increases and compensation as set out in Sections 1.8, and 1.9, respectively.

5.3.2.1 Labour

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

Forecast Increase	2023 MU versus 2022 Actual	2024 Test Year versus 2023 MU	2025 Test Year versus 2024 Test Year	2 Test Year Average
Inflation	0.1	0.1	0.1	0.1
Other	(0.1)	0.0	(0.0)	0.0
Total	**0.0**	**0.1**	**0.1**	**0.1**

Totals may not add to due to rounding.

696. As shown in Table 5.3.2-4 below, AltaLink forecasts 11 operating FTEs in USA 560, remaining at 2023 levels, during the Test Period. The reduction in operating FTE levels by three between 2021 and 2023 reflects two internal position re-assignments and one personnel retirement that was not backfilled. AltaLink reviewed the current forecasted workloads and work processes for the Test Period based on its forecast O&M plans and confirmed the FTE complement is sufficient to support the activities identified in USA 560. Table 5.3.2-3 shows the forecast increase for labour which is an average of $0.1M.

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

	2021 Actual	2022 Actual	2023 MU	2024 Test Year	2025 Test Year
Sr Mgmt	1.0	1.0	1.0	1.0	1.0
Mgmt	13.0	11.0	10.0	10.0	10.0
Total Year End FTEs	**14.0**	**12.0**	**11.0**	**11.0**	**11.0**

5.3.2.2 Contracted Manpower

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

Forecast Increase	2023 MU versus 2022 Actual	2024 Test Year versus 2023 MU	2025 Test Year versus 2024 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.

697. AltaLink forecasts no contracted manpower in USA 560 for the Test Period, as shown in Table 5.3.2-5 above.

5.3.2.3 Other GOE

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

Forecast Increase	2023 MU versus 2022 Actual	2024 Test Year versus 2023 MU	2025 Test Year versus 2024 Test Year	2 Test Year Average
Inflation	0.0	0.0	0.0	0.0

Forecast Increase	2023 MU versus 2022 Actual	2024 Test Year versus 2023 MU	2025 Test Year versus 2024 Test Year	2 Test Year Average
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.

698. AltaLink forecasts no material changes to GOE expenses in USA 560 for the Test Period, refer to Table 5.3.2-6 above.

5.3.3 USA 561 - Operation & Maintenance Control Centre Operations

699. This account includes the cost of labour, materials used and expenses incurred in ACC operations. The ACC 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 and expenses are further described below.

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 Alberta Reliability Standards (ARS). including Critical Infrastructure Protection (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;
- obtaining wildfire weather forecasts and supporting the assessment of PSPS risk; and
- contractor costs.

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

Expense	2021 Actual	2022 Actual	2023 MU	2024 Test Year	2025 Test Year
Labour	6.0	6.1	6.7	7.0	7.2
Contracted Manpower	0.2	0.2	0.3	0.5	0.7
Other GOE	0.8	0.7	0.8	0.8	0.8
Total	**7.0**	**7.0**	**7.8**	**8.4**	**8.7**

Totals may not add due to rounding.

700. Approximately 83% of USA 561 is attributed to labour expenses, as shown above in Table 5.3.3-1. AltaLink's forecast for the Test Period is directly related to the work effort to operate and maintain its transmission facilities combined with asset aging and wear out, and increased 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, including CIP. AltaLink requires continued operating activities to support these practices and processes to ensure compliance, and reliable and secure grid operation.

701. Planning and coordinating the electrical system maintenance work continues to increase in complexity. This is due to factors such as the widespread ongoing deployment of renewable generation interconnections at both transmission and distribution voltage levels, the increasing number and complexity of RAS to accommodate intermittent generation sources and ensure power system reliability, increased amount of activities to manage changes in wildfire risk, and the requirements and expectation from customers related to planned outage coordination and timely completion. In many cases, AltaLink needs to coordinate a planned outage with multiple customers who have competing priorities, maintenance schedules and impacts requiring incremental efforts to coordinate. In addition, technologists and EMS engineers have increased cybersecurity and CIP compliance activities including periodic AESO ARS audits to support. Forecast year-over-year expense increases during the Test Period are presented in Table 5.3.3-2 below.

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

Forecast Increase	2023 MU versus 2022 Actual	2024 Test Year versus 2023 MU	2025 Test Year versus 2024 Test Year	2 Test Year Average
Labour	0.7	0.3	0.2	0.3
Contracted Manpower	0.0	0.3	0.2	0.2
Other GOE	0.1	0.0	0.0	0.0
Total	**0.8**	**0.5**	**0.4**	**0.5**

Totals may not add due to rounding.

702. AltaLink forecasts operating expenses to increase by $0.5M per year on average from 2023. Labour, Contracted Manpower, and Other GOE are discussed below.

5.3.3.1 Labour

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

Forecast Increase	2023 MU versus 2022 Actual	2024 Test Year versus 2023 MU	2025 Test Year versus 2024 Test Year	2 Test Year Average
Inflation	0.3	0.2	0.2	0.2
Other	0.4	0.0	(0.0)	0.0
Total	**0.7**	**0.3**	**0.2**	**0.3**

Totals may not add due to rounding.

703. The forecast $0.3M per year average increase, as shown in Table 5.3.3-3 above, to labour expense is primarily a function of inflationary and compensation assumptions as outlined in Section 1.8 and Section 1.9, respectively.

704. The primary driver of the other variance between 2023 MU to 2022 actuals relates to AltaLink staff working on short term configuration and commissioning of the planned 2022 EMS Version Upgrade project which resulted in a higher proportion of direct capital charges for a portion of the year. EMS Version Upgrades occur on a five-to-seven-year cycle and will not re-occur in the Test Period. AltaLink managed the required operating activities through prioritization to reschedule activities over the short term and, if necessary, with contractor support.

705. 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 and has updated its forecast of FTEs between operating and capital based on 2023 MU and Test Period activities.

706. As shown in Table 5.3.3-4 below, AltaLink forecasts FTE levels for USA 561 to remain constant during the Test Period at 40 operating FTEs. At the end of 2022, there were 2 FTE vacancies in USA account 561. The vacancies consisted of an ACC Operator and a Systems Operations Engineer that were in active recruitment, one of which was filled in Q1 2023. For details, refer to **Appendix 2-B and Appendix 2-D**.

707. The FTE decrease in Technologists by 2 FTEs from 2022 actuals to 2023 MU is due to the assessment of the primary focus of each FTE as either operating or capital for the Test Period. The positions within this USA support both operating and capital activities. This FTE forecast reflects the amount of capital and operating FTEs that are represented in the labor financial forecast for 2023 MU and the Test Period. For further details please refer to **Appendix 2-A through Appendix 2-D.**

708. AltaLink reviewed the current forecasted workloads, compliance processes, ISO Rules and security requirements and grid operation work processes for the Test Period and confirmed the FTE complement is sufficient for the control centre operations activities identified in USA 561.

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

	2021 Actual	2022 Actual	2023 MU	2024 Test Year	2025 Test Year
Management	3.0	3.0	3.0	3.0	3.0
Admin	1.0	1.0	1.0	1.0	1.0
ACC	18.0	17.0	18.0	18.0	18.0
Engineer	11.0	10.0	11.0	11.0	11.0
Analyst	4.0	4.0	4.0	4.0	4.0
Technologist	4.0	4.0	2.0	2.0	2.0
Training	1.0	1.0	1.0	1.0	1.0
Total Year End FTEs	**42.0**	**40.0**	**40.0**	**40.0**	**40.0**

General Control Center Workload Analysis

709. Table 5.3.3-5 below provides a breakdown of the various labour activities and their volumes over time performed within this USA. AltaLink has assessed the work activities and resource requirements by job class and confirmed the typical volume of activities and resource requirements remain consistent with prior periods. It is primarily the complexity of the work, as described above, not the volume of work that continues to increase over time.

Table 5.3.3-5 - USA 561 Illustration of Duties/Activities and Time Requirement by Job Class 2021 to 2024

Job Class	Duties/Activities	Typical Annual Volume of Activities (items/yr)	Typical Resource Requirement (hours/year)
Management, Administration	Preparing operating and compliance reports and data for billing and budget purposes	n/a	4850
	Administration/time approval	52	25
	Performance management and employee development reviews	84	450
ACC	Executing and directing switching orders	3,000	6,000
	Monitoring and controlling system voltages	n/a	24/7 x 365 days
ACC Engineering	Arranging and controlling clearances and equipment outages for construction, maintenance, test, and emergency purposes	1680	5800
	Planning the power system operations	383	3450
	Maintain power system models and ratings	70	1,900
Engineering, Analysts, and Technologists	Operating and maintaining the secure EMS/SCADA system	n/a	8500

Job Class	Duties/Activities	Typical Annual Volume of Activities (items/yr)	Typical Resource Requirement (hours/year)
Engineering Technologists	Analyzing the system when events occur and preparing event reports for customers and the AESO	420	3430
Training	Preparing/updating operator training modules	4	1,200
All (excluding Administration and Training)	Responding to power system trouble events.	3,000	1,500
All	Carrying out compliance evidence requirements for ARS, ARS CIP and ISO standards.	316	2,750
	Developing operating procedures and maintaining emergency preparedness	200	1,000
	General process improvement activities	n/a	350

5.3.3.2 Contracted Manpower

Table 5.3.3-6 - USA 561 - Operation & Maintenance Control Centre Operations Contracted Manpower Forecast Increase ($M)

Forecast Increase	2023 MU versus 2022 Actual	2024 Test Year versus 2023 MU	2025 Test Year versus 2024 Test Year	2 Test Year Average
Inflation	0.0	0.0	0.0	0.0
Other	0.0	0.3	0.1	0.2
Total	**0.0**	**0.3**	**0.2**	**0.2**

Totals may not add to due to rounding.

710. AltaLink forecasts an average increase of $0.2M in contracted manpower expenditures for the Test Period, as shown in Table 5.3.3-6 above. The $0.2M average increase forecast in the Test Period is primarily driven by costs to continue to provide and expand wildfire weather forecasting support for situational awareness related to wildfire risk and power system operations as well as anticipated annual maintenance costs for wildfire weather monitoring stations over the Test Period.

711. AltaLink forecasts increased requirements for wildfire risk support related to its implementation of a new dynamic wildfire risk modelling platform. Details are provided, including the operational support requirements, in **Appendix 22-A1**.

5.3.3.3 Other GOE

Table 5.3.3-7 – USA 561 – Operation & Maintenance Control Centre Operations GOE Detail ($M)

Category	2021 Actual	2022 Actual	2023 MU	2024 Test Year	2025 Test Year
PC Software	0.7	0.7	0.7	0.7	0.7
Supplies and Consumables (Office	0.0	0.0	0.0	0.0	0.0
Meals and Accommodations (Staff	0.0	0.0	0.0	0.0	0.0
Training	0.0	0.0	0.0	0.0	0.0
Other Incidental Expenses	0.0	0.0	0.0	0.0	0.0
Total	**0.8**	**0.7**	**0.8**	**0.8**	**0.8**

Totals may not add due to rounding.

Table 5.3.3-8 - USA 561 - Operation & Maintenance Control Centre Operations GOE Forecast Increase ($M)

Forecast Increase	2023 MU versus 2022 Actual	2024 Test Year versus 2023 MU	2025 Test Year versus 2024 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 to due to rounding.

712. AltaLink forecasts no material changes to GOE expenses in in USA 561 for the Test Period, as shown in Table 5.3.3-7 and Table 5.3.3-8 above.

5.3.4 USA 562 - Station Equipment Maintenance

713. 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.

714. 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.

715. 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.

716. 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	2021 Actual	2022 Actual
Stations	309	311
Transformers*	712	707
Circuit Breakers	2,218	2,244
SVC/SC	4	4
Capacitor Banks	112	112
Telecom Sites	97	97

* Volume includes transformers and regulators that are installed and those held in stores for emergency use.

717. Station maintenance work typically entails managing and completing approximately 4,000 repair work orders each year for equipment. The level of maintenance activity is forecast to remain consistent during the Test Period even with the level of identified work continuing to increase, as discussed below. This increase is due to several factors including: aging assets that require maintenance due to wear out; the increasing number of assets to maintain due to prior period transmission system additions; and incremental maintenance and inspection requirements to manage compliance to ARS such as PRC-005-AB1-6 Protection System, Automatic Reclosing, and Sudden Pressure Relaying Maintenance (PRC-005).

718. The main activities undertaken in station maintenance include:

- performing predictive maintenance such as site and equipment inspections in 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 Transmission Maintenance, PRC-005, FAC-008 Facility Ratings and all CIPs currently in effect. Future versions of these standards may be introduced prior to/during the Test Period.

719. 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.

720. 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	2021 Actual	2022 Actual	2023 MU	2024 Test Year	2025 Test Year
Labour	7.5	7.2	7.2	7.5	7.8
Contracted Manpower	4.0	4.6	4.4	4.5	4.6
Other GOE	2.7	2.2	2.5	2.6	2.7
Total	**14.2**	**14.1**	**14.2**	**14.6**	**15.0**

Totals may not add due to rounding.

721. On average approximately 52% 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 2022 Actuals during the Test Period, when adjusted for inflation factors as described in Section 1.8, while accommodating incremental inspection and maintenance activities to comply with ARS and ISO Rules implemented in the prior periods.

722. Forecast year-over-year expense increases during the Test Period are presented in Table 5.3.4-3 below.

Table 5.3.4-3 - USA 562 - O&M Station Equipment Expense Forecast Annual Increases ($M)

Forecast Increase	2023 MU versus 2022 Actual	2024 Test Year versus 2023 MU	2025 Test Year versus 2024 Test Year	2 Test Year Average
Labour	0.0	0.3	0.2	0.3
Contracted Manpower	(0.3)	0.1	0.1	0.1
Other GOE	0.3	0.1	0.1	0.1
Total	**0.1**	**0.5**	**0.4**	**0.4**

Totals may not add due to rounding.

723. AltaLink forecasts operating expenses to increase by $0.4M per year on average. Labour, contracted manpower, and other GOE are discussed below.

5.3.4.1 Labour

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

Forecast Increase	2023 MU versus 2022 Actual	2024 Test Year versus 2023 MU	2025 Test Year versus 2024 Test Year	2 Test Year Average
Inflation	0.3	0.3	0.3	0.3
Other	(0.3)	0.0	(0.0)	0.0
Total	**0.0**	**0.3**	**0.2**	**0.3**

Totals may not add due to rounding.

724. AltaLink forecasts an average increase of $0.3M, as shown in Table 5.3.4-4 above, over the Test Period primarily due to inflationary assumptions outlined in Section 1.8 and 1.9. The remaining variance from 2022 actuals to 2023 MU is primary the result of vacancies experienced throughout 2022. These vacancies were partially offset by an increase in contracted manpower.

725. As shown in Table 5.3.4-5 below, AltaLink forecast FTE levels for USA 562 to remain consistent during the Test Period with 46 operating FTEs. At the end of 2022, there was 1 FTE vacancy of an

HVDC Engineer. This vacancy is currently in recruitment and is expected to be filled in Q2 2023. For further details, please refer to **Appendix 2-B** and **Appendix 2-D**.

726. 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. AltaLink updated its forecast of FTEs between operating and capital based on 2023 MU and Test Period activities.

727. The decrease from 2022 actuals to 2023 MU is due to the reduction of 1 Admin FTE in the Test Period that was transferred to USA 563 based on reporting structure and administrative tasks being performed. The decrease in Field Crew by 3 FTEs is due to the assessment of the primary focus of each FTE as either operating or capital for the Test Period. The positions within this USA support both operating and capital activities. This FTE forecast reflects the amount of capital and operating FTEs that are represented in the labor financial forecasts for the 2023 MU and the Test Period. For further details please refer to **Appendix 2-A** through **Appendix 2-D**.

728. AltaLink has reviewed the current forecast 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 562.

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

	2021 Actual	2022 Actual	2023 MU	2024 Test Year	2025 Test Year
Admin	5.0	3.0	2.0	2.0	2.0
Engineer	1.0	0.0	1.0	1.0	1.0
Field WL	11.6	13.0	13.0	13.0	13.0
Field Crew	32.0	33.0	32.0	32.0	32.0
Total Year End FTEs	**49.6**	**49.0**	**48.0**	**48.0**	**48.0**

General Station Maintenance Workload Analysis

729. AltaLink assessed the work activities and resource requirements by job class and confirmed the typical volume of activities and resource requirements remain consistent with prior periods. This is illustrated in Table 5.3.4-6 below.

Table 5.3.4-6 – USA 562 – Illustration of Duties and Activities by Job Class 2021-2025

Job Class	Duties/Activities	Typical Resource Requirement (hours/year)
Field Crew Field Work Leader	Perform predictive maintenance such as site and equipment inspections in Stations and telecommunication locations.	14,000
	Perform 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.	31,300
	Perform 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.	20,600
	Perform 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.	3,700
	Physical Security, Cyber, Copper theft repairs.	2,000
Field Work Leader	Planning and Scheduling.	2,400
Administration	Time sheet entry, budgeting, forecasting, preparing meetings.	5,700
Engineering	Compliance reporting, relay test plans, support HVDC facilities.	1,000

730. 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.

731. AltaLink has assessed the total amount of annual station maintenance, P&C and telecom work hours which are summarized in Table 5.3.4-7 below.

Table 5.3.4-7 - USA 562 - AltaLink Total Maintenance Hours Forecast

Maintenance Hours (all disciplines	2021 Actual	2022 Actual	2023 Forecast	2024 Forecast	2025 Forecast
Total Annual Work Identified	133,000	129,000	152,000	161,000	170,000
Available man-hours (based on existing FTEs, including overtime)	(67,000)	(59,000)	(70,000)	(69,000)	(69,000)
Contracted Workforce*	(19,000)	(22,000)	(20,000)	(20,000)	(21,000)
Constrained Work	47,000	48,000	62,000	72,000	80,000

* 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.

732. The above maintenance hour forecasts show an increase in total annual workload resulting from the increasing number of assets to maintain, increased safety requirements, compliance requirements from ARS such as PRC-005, maintenance requirements for HVDC and SCADA systems, and aging assets that require maintenance due to wear out.

733. Additionally, AltaLink forecasts incremental workload from the physical and cyber security equipment installed as part of AltaLink's Substation Security Controls program that was completed in the prior period and the new programs outlined in **Appendix 13-B1-04** and **Appendix 13-B1-12** of this Application. These projects invest in physical and cyber security protection of substations by installing additional door contacts, proximity alarms, physical barriers, and video surveillance and associated alarms at a number key substations. These devices require ongoing preventative maintenance to ensure their continued functionality.

734. Constrained work is uncompleted maintenance. Constrained work for a given year is equal to the Total Annual Work Identified, less the available crew hours, less the available contracted workforce. Constrained work for a given year becomes part of the next year's Total Annual Work. AltaLink assesses the amount of constrained work being added in any given year for reasonability against its resources and the equipment risks ensuring high priority work is completed. AltaLink monitors its ability to execute changes to workload with its current workforce, and if the constrained work or compliance requirements change above the forecast levels, AltaLink will adjust its resourcing as required.

735. AltaLink continues to monitor and leverage the balance of workload between AltaLink's FTEs and contracted manpower.

736. The station maintenance workload forecast shown in Table 5.3.4-7 above can be seen to grow as regularly scheduled inspections and maintenance are identifying an increasing amount of required future maintenance work, also shown by Equipment Notifications 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.

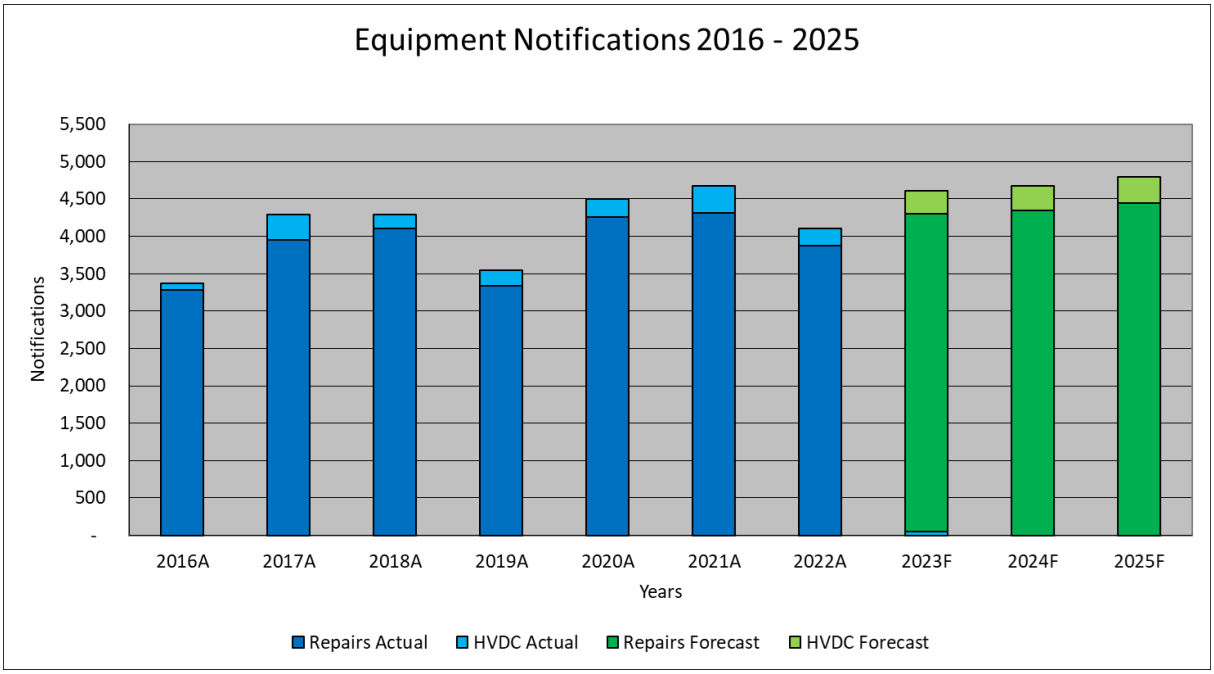


Figure 5.3.4-1 - USA 562 - Substation, Protection and Telecom Equipment Notifications 2014-2023

737. 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.

5.3.4.2 Contracted Manpower

738. 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.

739. 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;
- to 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;
- to complete unique system maintenance that AltaLink does not have the capability to perform (e.g. fire suppression and deluge systems); and
- to complement AltaLink crews for general system maintenance activities when required, to enable crews to maintain a sustainable queue of work within all disciplines.

740. 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 and meet AltaLink's obligations.

Table 5.3.4-8 – USA 562 – O&M Station Equipment Expense Contracted Manpower Forecast Increase ($M)

Forecast Increase	2023 MU versus 2022 Actual	2024 Test Year versus 2023 MU	2025 Test Year versus 2024 Test Year	2 Test Year Average
Inflation	0.0	0.1	0.1	0.1
Other	(0.3)	0.0	(0.0)	0.0
Total	**(0.3)**	**0.1**	**0.1**	**0.1**

Totals may not add due to rounding.

741. As shown in Table 5.3.4-8 above, contracted manpower is forecast to have an average increase of $0.1M for the Test Period primarily due to inflationary assumptions outlined in Section 1.8. The primary driver of the variance from 2022 actuals to 2023 MU is the use of contractors in 2022 to supplement internal labour due to unanticipated staff turnover. AltaLink forecasts contracted manpower requirements to return to historical levels for 2023 based on work activities and volumes, as described above.

742. 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.

5.3.4.3 Other GOE

743. 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.

744. GOE actual and forecast expenditures are shown in Table 5.3.4-9 below.

Table 5.3.4-9 - USA 562 - GOE Actual and Forecast Expenditure Detail ($M)

Category	2021 Actual	2022 Actual	2023 MU	2024 Test Year	2025 Test Year
Facility Repair Expense	0.0	0.0	0.0	0.0	0.0
Operating Parts (Materials)	1.2	1.0	1.2	1.2	1.2
Transportation Expenses (Vehicles)	0.8	0.7	0.7	0.7	0.7
Supplies and Consumables (Office Supplies)	0.0	0.0	0.0	0.0	0.0
Test Equipment Repairs	0.3	0.2	0.3	0.3	0.3
Meals and Accommodations (Staff	0.3	0.2	0.4	0.4	0.4
Other Incidental Expenses	0.0	0.0	0.0	0.0	0.0
Total	**2.7**	**2.2**	**2.5**	**2.6**	**2.7**

Table 5.3.4-10 - USA 562 - O&M Station Equipment Expense GOE Forecast Increase ($M)

Forecast Increase	2023 MU versus 2022 Actual	2024 Test Year versus 2023 MU	2025 Test Year versus 2024 Test Year	2 Test Year Average
Inflation	0.0	0.1	0.1	0.1
Other	0.3	0.0	(0.0)	0.0
Total	**0.3**	**0.1**	**0.1**	**0.1**

Totals may not add due to rounding.

745. AltaLink forecasts for GOE an average increase of $0.1M, as shown in Table 5.3.4-10, for the Test Period due to inflationary assumptions outlined in Section 1.8.

746. The increase from 2022 actuals to 2023 MU is due to a combination of increases in the volume of parts and materials for repairs and increased staff expenses for meals and accommodations post pandemic.

5.3.5 USA 563 - Overhead Line Expense

747. 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 included in Accounts 354, Towers and Fixtures; 355, Poles and Fixtures; and 356, Overhead Conductors and Devices.

748. 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.

749. AltaLink forecasts to maintain approximately 13,300 km of transmission circuit length over the Test Period. This figure includes both AC and DC line circuit lengths.

750. Table 5.3.5-1 below illustrates the volume and typical types of work activities undertaken within this USA Activity Code since 2021 and forecast through the end of the Test Period.

Table 5.3.5-1- USA 563 - O&M Transmission Line Work Quantities

	2021 Actual	2022 Actual	2023 MU	2024 Forecast	2025 Forecast
Line Patrols	90	79	97	95	90
Emergency Line Patrols	84	86	85	85	85
Emergency Maintenance	45	30	40	40	40

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.

751. Another key driver of current and future overhead line expenses is several standards and practices, such as the *EUA*, ISO Rules and ARS such as 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.

752. 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 5.3.5-2 - USA 563 - O&M Overhead Line Expense ($M)

Expense	2021 Actual	2022 Actual	2023 MU	2024 Test Year	2025 Test Year
Labour	1.2	1.4	1.3	1.4	1.4
Contracted Manpower	2.5	2.2	2.6	2.6	2.7
Other GOE	1.1	0.8	1.1	1.1	1.2
Total	**4.9**	**4.4**	**5.0**	**5.2**	**5.3**

Totals may not add to due to rounding.

753. Approximately 27% of USA 563 total expenses is attributable to labour with an additional approximate 50% attributable to contracted manpower, as shown above in Table 5.3.5-2.

754. Total expenses for USA 563 are forecast to increase by $0.1M, as shown below in Table 5.3.5-3, over the test period on average primarily driven by inflation assumptions, as outlined in Section 1.8, over the Test Period. A breakdown of variances as compared to 2022 actual amounts are as follows:

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

Forecast Increase	2023 MU versus 2022 Actual	2024 Test Year versus 2023 MU	2025 Test Year versus 2024 Test Year	2 Test Year Average
Labour	(0.1)	0.1	0.0	0.1
Contracted Manpower	0.4	0.1	0.1	0.1
Other GOE	0.3	0.0	0.0	0.0
Total	**0.6**	**0.1**	**0.1**	**0.1**

Totals may not add to due to rounding.

5.3.5.1 Labour

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

Forecast Increase	2023 MU versus 2022 Actual	2024 Test Year versus 2023 MU	2025 Test Year versus 2024 Test Year	2 Test Year Average
Inflation	0.1	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 rounding and as a result increases may not be visible.

Table 5.3.5-5 - USA 563 - O&M Overhead Line Expense FTEs

	2021 Actual	2022 Actual	2023 MU	2024 Test Year	2025 Test Year
Admin	1.0	3.0	3.0	3.0	3.0
Field WL	2.0	2.0	1.0	1.0	1.0
Field Crew	5.0	6.0	6.0	6.0	6.0
Total Year End FTEs	**8.0**	**11.0**	**10.0**	**10.0**	**10.0**

755. As shown in Table 5.3.5-4 above, AltaLink forecasts on average a $0.1M increase in Labour through the Test Period. This is primarily due to AltaLink's labour escalation assumptions discussed in Section 1.8. Other variances between years are primarily driven by differences in line maintenance requirements arising from line patrols and emergency and operational requirements.

756. As shown in Table 5.3.5-5 above, AltaLink forecasts FTE levels for USA 563 to remain consistent during the Test Period with 10 operating FTEs.

757. 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 and has updated its forecast of FTEs between operating and capital based on 2023 MU and Test Period activities.

758. The decrease from 2022 actuals to 2023 MU in Field Work Leader by 1 FTE is due to the assessment of the primary focus of each FTE as either operating or capital for the Test Period. The positions within this USA support both operating and capital activities. This FTE forecast reflects the amount of capital and operating FTEs that are represented in the labor financial forecast for 2023 MU and the Test Period. For further details please refer to **Appendix 2-A** through **Appendix 2-D.**

759. AltaLink reviewed the current forecasted workloads and work processes for its forecast maintenance plans and confirmed the FTE complement is sufficient to operate and maintain the assets identified in USA 563 for the Test Period.

760. AltaLink assessed the work activities and confirmed the typical resource requirements remain consistent with prior periods. This is illustrated in Table 5.3.5-6 below.

Table 5.3.5-6 – USA 563 Illustration of Activities and Time Requirement 2021 to 2025

Activities	**Typical Resource Requirement (hours/year)**
Perform predictive maintenance such as aerial patrols; ground patrols; assisting in trouble identification, assessment and location.	5,600

Activities	Typical Resource Requirement (hours/year)
Perform corrective and 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.	4,200
Perform preventative maintenance including insulator washing – aerial and ground based.	200
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; data entry and admin etc.	3,200

5.3.5.2 Contracted Manpower

761. 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	2023 MU versus 2022 Actual	2024 Test Year versus 2023 MU	2025 Test Year versus 2024 Test Year	2 Test Year Average
Inflation	0.0	0.1	0.1	0.1
Other	0.4	(0.0)	0.0	(0.0)
Total	**0.4**	**0.1**	**0.1**	**0.1**

Totals may not add due to rounding.

762. AltaLink forecasts an average increase of $0.1M to its contracted manpower during the Test Period, as shown in Table 5.3.5-7 above. This is primarily due to AltaLink's escalation assumptions discussed in Section 1.8.

763. The increase in 2023 MU over 2022 actuals is due to three primary factors that occurred in 2022: AltaLink experiencing fewer requirements than in previous periods for installing, repairing,

and bonding of gates and fences in rural areas; delays in timing of activities within AltaLink's wood pole test and treat program; and delays in AltaLink's insulator washing programs. In 2022, procurement and onboarding of a new pole test and treat contractor took longer than anticipated and wet conditions prevented access to several structures planned for insulator washing. AltaLink expects to complete the delayed pole testing activities from 2022 in 2023 as well as a return to normal volume of requirements for gates and fence repairs. AltaLink does not anticipate these impacts to reoccur in the Test Period.

764. The majority of AltaLink's contracted manpower costs in USA 563 are related to helicopter costs for line patrols (as forecast in Table 5.3.5-1 above) and pole testing/treatment and insulator washing programs.

765. 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.

766. 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.

767. Table 5.3.5-8 below shows actual and forecast contamination outages due to insulator flashover over a seven-year timeframe because 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

	2021 Actual	2022 Actual	2023 Forecast	2024 Forecast	2025 Forecast
Contamination Outages	29	27	34	30	30

768. Alberta Transportation developed high load corridors throughout the province of Alberta; however, many high loads travel beneath AltaLink transmission lines outside of these corridors. AltaLink utilizes contractors to confirm routes and load heights; escort loads that are close to or within clearance limits; coordinate outages; and, where necessary, make arrangements to lift the conductors. These contractor costs form part of the forecast contracted manpower in this USA account. For high load moves initiated by third parties, AltaLink collects offsetting miscellaneous revenue to cover the cost of facilitating the move. AltaLink forecasts approximately 1300 high move load requests of which 60-80 are anticipated to need escorts or outages. This is consistent with past experience and work volumes.

5.3.5.3 GOE

Table 5.3.5-9 – USA 563 - Other GOE

Category	2021 Actual	2022 Actual	2023 MU	2024 Test Year	2025 Test Year
Facility Repair Expense	0.0	0.0	0.0	0.0	0.0
Operating Parts (Materials)	0.1	0.0	0.1	0.1	0.1
Transportation Expenses (Vehicles)	0.5	0.5	0.6	0.6	0.6
Supplies and Consumables (Office Supplies)	0.0	0.0	0.0	0.0	0.0
Test Equipment Repairs	0.1	0.0	0.1	0.1	0.1
Land Lease Rental Charges	0.4	0.2	0.2	0.3	0.3
Meals and Accomodations (Staff Expenses)	0.1	0.1	0.1	0.1	0.1
Other Incidental Expenses	0.0	0.0	0.0	0.0	0.0
Total	**1.1**	**0.8**	**1.1**	**1.1**	**1.2**

Table 5.3.5-10 - USA 563 - O&M Overhead Line Expense GOE Forecast Increase ($M)

Forecast Increase	2023 MU versus 2022 Actual	2024 Test Year versus 2023 MU	2025 Test Year versus 2024 Test Year	2 Test Year Average
Inflation	0.0	0.0	0.0	0.0
Other	0.3	0.0	0.0	0.0
Total	**0.3**	**0.0**	**0.0**	**0.0**

Totals may not add to due to rounding.

769. AltaLink is not forecasting an increase in GOE over the Test Period, as shown in Table 5.3.5-9 and Table 5.3.5-10 above. The increase from 2022 actuals to 2023 MU is due to an expected return to typical volumes of parts and materials for repairs and transportation expenses, which were lower in 2022 and can vary based on the specific work performed in a given period.

5.3.6 USA 564 - Underground Line Expenses

770. 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.

771. 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 the Test Period.

5.3.7 USA 566 – Operation & Maintenance Miscellaneous Transmission

772. 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 MFR Schedule 5-3. The Labour and Materials and Expenses are described below.

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.

773. 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*, *EUA*, 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	2021 Actual	2022 Actual	2023 MU	2024 Test Year	2025 Test Year
Labour	7.7	8.1	8.5	8.8	9.0
Contracted Manpower	1.1	1.0	0.8	0.8	0.9
Other GOE	0.7	0.7	0.6	0.4	0.4
Total	**9.5**	**9.8**	**9.9**	**10.0**	**10.3**

Totals may not add due to rounding.

774. AltaLink's forecast, as shown in Table 5.3.7-1 above, 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 including CIP.

775. 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;*
- *AUC Rules;*
- *Alberta Transportation Regulations;*
- *Traffic Safety Act;*
- *Environmental Regulations;*
- *Alberta Forestry and Wildfire Regulations;*
- *National Parks Act;*
- *Code of Conduct; and*
- *Personal Information Protection Act.*

776. Additionally, AltaLink receives and manages external requests each year inclusive of items such as:

- 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.

777. 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	2023 MU versus 2022 Actual	2024 Test Year versus 2023 MU	2025 Test Year versus 2024 Test Year	2 Test Year Average
Labour	0.4	0.3	0.2	0.3
Contracted Manpower	(0.2)	0.0	0.0	0.0
Other GOE	(0.0)	(0.2)	0.0	(0.1)
Total	**0.2**	**0.1**	**0.3**	**0.2**

Totals may not add due to rounding.

778. AltaLink forecasts total operating expenses for USA 566 to have an increase on average of $0.2M over the Test Period, as shown above in Table 5.3.7-2 and as detailed further below.

5.3.7.1 Labour

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

Forecast Increase	2023 MU versus 2022 Actual	2024 Test Year versus 2023 MU	2025 Test Year versus 2024 Test Year	2 Test Year Average
Inflation	0.3	0.3	0.3	0.3
Other	0.1	0.0	(0.1)	(0.0)
Total	**0.4**	**0.3**	**0.2**	**0.3**

Totals may not add due to rounding.

779. AltaLink forecasts an average increase of $0.3M to labour over the Test Period primarily attributable to AltaLink's labour inflation assumptions, which are discussed in Section 1.8 Forecasting Methodology. Refer to Table 5.3.7-3 for the labour forecast increase.

780. AltaLink 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

	2021 Actual	2022 Actual	2023 MU	2024 Test Year	2025 Test Year
Management	1.0	1.0	1.0	1.0	1.0
Admin	12.0	12.0	10.0	10.0	10.0
Advisor	5.0	4.0	7.0	7.0	7.0
Engineer	24.0	24.0	19.0	19.0	19.0
Analyst	4.0	5.0	5.0	5.0	5.0
Buyer	1.0	1.0	1.0	1.0	1.0
Coordinator	1.6	1.6	1.6	1.6	1.6

	2021 Actual	2022 Actual	2023 MU	2024 Test Year	2025 Test Year
Plan/Schedule	7.0	7.0	7.0	7.0	7.0
Specialist	4.0	4.0	7.0	7.0	7.0
Technologist	1.0	1.0	1.0	1.0	1.0
Training	1.0	1.0	1.0	1.0	1.0
Total Year End FTEs	**61.6**	**61.6**	**60.6**	**60.6**	**60.6**

781. As shown in Table 5.3.7-4 above, AltaLink forecasts FTE levels for USA 566 to remain consistent during the Test Period with 60.6 operating FTEs. At the end of 2022, there were 4 FTE vacancies in USA account 566. The vacancies include a Knowledge Development Advisor, P&C Engineer, Technical Writer, and a Sr Transmission Lines Work Specialist all of which have or will be filled in early 2023. For details, refer to **Appendix 2-A** through **Appendix 2-D**.

782. 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 and updated its forecast of FTEs between operating and capital based on 2023 MU and Test Period activities. 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.

783. The increase in three FTE Advisor and 1 specialist positions and the decrease in two FTE Admin and five FTE Engineering positions is due to the assessment of the primary focus of each FTE as either operating or capital for the Test Period. The positions within this USA provide support to both operating and capital activities. This FTE forecast reflects the amount of capital and operating FTEs that are also represented in the labor financial forecasts for the 2023MU and the Test Period. For details on each position please refer to **Appendix 2-A** through **Appendix 2-D**.

784. AltaLink has reviewed the current forecasted workloads and work processes for the Test Period based on its forecast maintenance activities and has confirmed the forecast FTE complement is sufficient and required to perform the activities identified in USA 566.

785. AltaLink assessed the work activities and resource requirements and confirmed the typical volume of activities and resource requirements remain consistent with prior periods. This is summarized in Table 5.3.7-5 below.

Table 5.3.7-5 - USA 566 Illustration of Activities and Time Requirement 2021 to 2025

Activities	Typical Resource Requirement (hours/year)
General activities including the maintenance of asset records and GIS mapping; general clerical and administration work; land records including the administration of crossing and processing of agreements, planning commission circulations, encroachments and easement inquires or complaints.	47,200

Activities	Typical Resource Requirement (hours/year)
Planning and Scheduling maintenance work and management of asset maintenance programs.	11,000
Safety, Environment and Training tasks including the development, implementation, training, management and oversight of programs, processes and procedures to ensure compliance with external obligations; monitoring worksites to ensure that operations do not negatively impact the environment, ensuring that environmental aspects comply with environmental regulations and good industry practices.	9,200
Engineering 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.	3,500
Third Part Requests for crossing and encroachment; AESO data requests; coordination with interconnecting parties to ensure customer reliability requirements are sustainable.	2,800
Compliance activities as they relate to ISO Rules and standards.	2,700
Procurement of material and services for maintenance work and management of asset maintenance program contractors.	2,600

5.3.7.2 Contracted Manpower

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

- Safety and environment qualifications;
- training and certification delivery;
- instructional designer for training material development;
- ARS 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 improvement assistance.

787. As an illustration of key activities in this USA that utilize contracted manpower AltaLink provides the following examples.

788. 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 and activities anticipated in 2023. Refer to Table 5.3.7-6 below.

Table 5.3.7-6 - USA 566 - O&M Third Party Request

2021 Actual	2022 Actual	2023 MU	2024 Forecast	2025 Forecast
894	808	840	840	840

789. 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 manage with the demand of these requests in a timely fashion. 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.

790. 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.

791. 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.

792. 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.

793. 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 doble testing fees, and power system modeling support.

Table 5.3.7-7 - USA 566 - O&M Miscellaneous Transmission Expense Contract Manpower Forecast Increase ($M)

Forecast Increase	2023 MU versus 2022 Actual	2024 Test Year versus 2023 MU	2025 Test Year versus 2024 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 due to rounding.

794. AltaLink is not forecasting an increase in contracted manpower over the Test Period, as shown in Table 5.3.7-7 above. The $0.2M decrease in 2023 MU from 2022 actuals is primarily driven by

costs to complete additional evidentiary requirements in support of ARS CIP compliance based on learnings from AltaLink's 2020 ARS CIP audit. The 2020 audit was the first AltaLink ARS CIP audit cycle since the ARS CIP rules came into effect in 2017. AltaLink anticipates future evidence requirements to be completed by internal operating staff.

5.3.7.3 Other GOE

795. 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 5.3.7-8 – USA 566 – O&M Miscellaneous Transmission Expense - GOE Actual and Forecast Expenditure Detail ($M)

Category	2021 Actual	2022 Actual	2023 MU	2024 Test Year	2025 Test Year
Operating Parts (Materials)	1.0	0.4	0.3	0.1	0.1
Supplies and Consumables (Office	0.0	0.0	0.0	0.0	0.0
Meals and Accommodations (Staff	0.0	0.1	0.1	0.1	0.1
Training	0.1	0.1	0.1	0.1	0.1
Other Incidental Expenses	-0.3	0.1	0.0	0.0	0.0
Total	**0.7**	**0.7**	**0.6**	**0.4**	**0.4**

Totals may not add due to rounding.

Table 5.3.7-9 – USA 566 – O&M Miscellaneous Transmission Expense GOE Forecast Increase ($M) versus Actual

Forecast Increase	2023 MU versus 2022 Actual	2024 Test Year versus 2023 MU	2025 Test Year versus 2024 Test Year	2 Test Year Average
Inflation	0.0	0.0	0.0	0.0
Other	(0.0)	(0.2)	(0.0)	(0.1)
Total	**(0.0)**	**(0.2)**	**0.0**	**(0.1)**

Totals may not add due to rounding.

796. AltaLink forecasts a 0.1M average decrease in GOE expenses during the Test Period, as shown in Table 5.3.7-9 above. In 2022, the decrease in Operating Parts (Materials) from 2021 actual by $0.6M, shown in Table 5.3.7-8, is primarily related to requirements for write-downs of obsolescent inventory recorded in the prior period. This reduction is offset by an increase in actual staff expenses and other expenses returning to pre-pandemic levels in 2022 and forecast to continue in the Test Period.

5.3.8 USA 567 – Right-of-Way Payments

797. AltaLink is not forecasting an increase to ASP rates for landowners whose ASP agreement comes up for renewal in the Test Period. The total annual increase will remain flat from the 2022-2023 Test Period. Although an in dependent study performed in 2022 by Serecon - Annual Structure Payments for Transmission Lines in Alberta (Serecon Report) – suggested a moderate increase.

AltaLink received approval in the 2019-2021 GTA for an increase of 2% for its Annual Structure Payments. AltaLink retroactively instituted the increase in 2021-2022 ASPs, for example the ASP for a 500 kV double circuit structure increased from $1,470 to $1,499.

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

Expense	2021 Actual	2022 Actual	2023 MU	2024 Test Year	2025 Test Year
Total	**15.3**	**15.5**	**15.5**	**15.5**	**15.5**

798. As shown in Table 5.3.8-1 AltaLink forecasts expenditures to remain consistent during the Test Period. The $0.2M increase from 2021 actuals to 2022 actuals is due to retroactive payments for landowners whose ASP agreements came up for renewal during 2019 – 2021.

799. Similar to prior test 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's analysis is to estimate the fair compensation for the impacts that landowners face by having structures located on their properties. The study results are based on the Surface Rights Act compensation components of loss of use and adverse effects (tangible and intangible).

800. 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.

801. 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.

802. Serecon recommended annual escalation of 2.5% for ASP rates.[151] AltaLink does not view this escalation is warranted at this time, given the 2019-2020 2% increase. In addition, ATCO has not increased individual structure rates since 2013 and maintained current rates through the 2023-2025 years.[152] AltaLink is similarly proposing to remain flat for individual structure rates and also proposes to remain flat on forecast expenditures in the Test Period. Forecast payments are trued up to actual costs in AltaLink's Annual Structure Payment deferral account, which AltaLink has requested to continue in this Application. AltaLink will consider recommendations for any further escalation to ASPs in future test periods.

803. AltaLink forecasts the following ASP rates for the 2024-2025 Test Period as shown in Table 5.3.8-2 below.

[151] Appendix 12-1, pdf 67.
[152] Exhibit 27062-X0014.02 AET 2023-2025 General Tariff Application Revised 2, pdf 227, paragraph 243.

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

	2021 Total Compensation Rate/ Structure	2022 Total Compensation Rate/ Structure	2023 Total Compensation Rate/Structure	2024 Total Compensation Rate/Structure	2025 Total Compensation Rate/Structure
500 kV Double Circuit	$1,499	$1,499	$1,499	$1,499	$1,499
500 kV Single Circuit or 240 kV High Capacity	$1,474	$1,474	$1,474	$1,474	$1,474
240 kV Lattice	$1,224	$1,224	$1,224	$1,224	$1,224
240 kV/138 kV 2 -pole	$622	$622	$622	$622	$622
Single Poles	$439	$439	$439	$439	$439

804. AltaLink did not encounter any Land and Property Rights Tribunal (LPRT)[153] hearings on review of annual rentals since the 2022-2023 GTA but did encounter five LPRT Compensation Decisions or Appeals on the WATL Project and Langdon to Janet Project.

- Bretin v AltaLink BR2021.0018(Ref File No. CR1438) LPRT2021/SR0436[154]
- Bretin v AltaLink BR2021.0019(Ref File No. RE2014.0012) LPRT2021/SR0433[155]
- Thompson v AltaLink RE2013.0009&RE2013.0010 LPRT2021/SR0501[156]
- Thompson v AltaLink RE2013.0009&RE2013.0010 LPRT2021/SR0707[157]
- Thompson v AltaLink RE2013.009 and RE2013.0010[158]

805. AltaLink forecasts a minor increase in ASP operating costs associated with annual structure payments over the Test Periods due to new structures being added to the system as outlined in Table 5.3.8-3 New Projects, CETO and BullTrail.

Table 5.3.8-3 - AltaLink New Projects Costs

Project	Structure Type	Land Type	Number of Structures	2024 Compensation	2025 Compensation
CETO	Single Pole	Cultivated	90		$39,510
		Uncultivated	154		$29,950
Bulltrail	Single Pole	Cultivated	70	$30,730	
		Uncultivated	10	$1,750	
		Cultivated	10	$6,220	

[153] Formerly known as the Surface Rights Board.
[154] Appendix 12-2 Attachment 1.
[155] Appendix 12-2 Attachment 2.
[156] Appendix 12-2 Attachment 3.
[157] Appendix 12-2 Attachment 4.
[158] Appendix 12-2 Attachment 5.

Project	Structure Type	Land Type	Number of Structures	2024 Compensation	2025 Compensation
	240 kV 2-pole	Uncultivated	25	$6,225	
	240 kV Lattice	Cultivated	2	$2,448	
		Uncultivated	0	0	

5.3.8.1 Easements

806. 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

807. 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.

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

5.3.10 USA 571.1 – Vegetation Management

809. 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 ROW such as access trails, culverts, water crossings, approaches, and erosion control.

810. AltaLink's mandate is to provide a safe environment for the public and employees and contractors at all times, while accessing the ROW. 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.

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

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

813. AltaLink's goal is to promote sustainable resource management practices and principles in addition to maintaining power system reliability and ROW safety and security. AltaLink is committed to environmental stewardship, social, and governance standards by utilizing cost effective VM practices while complying with all necessary regulations and maintaining good relations with landowners and other stakeholders.

814. A key driver of current and future vegetation and right-of-way management forecast is the AEUC, the ARS FAC-003-AB1-1 (FAC-003), and applicable Alberta Environment and Protected Areas 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 clearances to any vegetation under or alongside its transmission lines and be able to demonstrate compliance thereto.

815. 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 or detailed air patrols 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 ROW 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);
- annual ground patrol of locations where air patrols cannot be done due to flight restrictions; and
- LiDAR inspection and vegetation clearance analysis. Growth projections are assessed against available survey data to assess vegetation clearances.

816. 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.

817. 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.

818. Treatment methods include:

- mowing/mulching – use of larger machines equipped with blades or rotating drums that cut or shred vegetation along the ROW;
- 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, and alternative use methods which include allowance for gardens, pathways, secondary uses, farming activities, planted compatible vegetation, etc.

819. A further key element of AltaLink's Integrated VM program includes 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 ROW 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 buffer 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.

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

- contract management and supervision of multiple contract crews assigned to VM duties and ROW maintenance duties;
- maintenance and tracking within established programs for management of reliability requirements;
- planning and compliance management requirements within ARS FAC-003;
- obligations under the Wildfire Management Agreement with Ministry of Forestry, Parks and Tourism;
- 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 ROW 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 ROW.

821. AltaLink forecasts to maintain the integrated VM program expenditures generally consistent with historic levels during the Test Period. 2022 expenditures were lower than planned primarily due to an early shutdown of field work due to inclement weather at year end, one contractor being shutdown for a period following a safety incident earlier in the year, and several sites unexpectedly experienced lower regional vegetation growth patterns in areas planned for vegetation maintenance in 2022. AltaLink is not expecting these impacts to reoccur in 2023 or the Test Period. 2022 and 2023 expenditures are also impacted by higher than anticipated fuel prices due to market conditions, as component of the contractor costs.

822. AltaLink's forecast expenses for USA 571.1 for the Test Period are shown in Table 5.3.10-1 below. Table 5.3.10-2 provides the forecast increase average. 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	2021 Actual	2022 Actual	2023 MU	2024 Test Year	2025 Test Year
Labour	0.6	0.4	0.5	0.5	0.5
Contracted Manpower	6.2	6.0	6.6	6.4	6.5
Other GOE	0.1	0.1	0.1	0.1	0.1
Total	**6.9**	**6.5**	**7.2**	**7.0**	**7.1**

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	2023 MU versus 2022 Actual	2024 Test Year versus 2023 MU	2025 Test Year versus 2024 Test Year	2 Test Year Average
Labour	0.1	0.0	0.0	0.0
Contracted Manpower	0.6	(0.2)	0.1	(0.0)
Other GOE	0.0	0.0	0.0	0.0
Total	**0.6**	**(0.2)**	**0.2**	**(0.0)**

*Totals may not add to due to rounding.

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

	2021 (Actuals)			2022 (Actuals)			2023 (MU)			2024 (Forecast)			2025 (Forecast)		
	m2 (000's)	Unit Cost ($/m2)	$ M	m2 (000's)	Unit Cost ($/m2)	$ M	m2 (000's)	Unit Cost ($/m2)	$ M	m2 (000's)	Unit Cost ($/m2)	$ M	m2 (000's)	Unit Cost ($/m2)	$ M
Trim	168	4.70	0.8	140	5.93	0.8	152	5.93	0.9	131	5.99	0.8	150	5.99	0.9
Mechanical Mow	702	0.69	0.5	1,187	0.52	0.6	1,236	0.52	0.6	711	0.54	0.4	780	0.54	0.4
Slash/Removals	730	3.89	2.8	468	4.22	2.0	610	4.22	2.6	600	4.50	2.7	590	4.50	2.7
Herbicide/Weed Control	3,500	0.24	0.8	3,500	0.21	0.7	3,269	0.22	0.7	3,510	0.23	0.8	3,500	0.23	0.8
Grass Mowing	-	-	0.2	-	-	0.3	-	-	0.3	-	-	0.3	-	-	0.3
Snow Removal	-	-	0.0	-	-	0.0	-	-	0.0	-	-	0.0	-	-	0.0
Garbage Cleanup	-	-	0.0	-	-	0.0	-	-	0.0	-	-	0.0	-	-	0.0
Contractor Consenting	-	-	1.2	-	-	1.2	-	-	1.2	-	-	1.2	-	-	1.2
Internal Program Management	-	-	0.6	-	-	0.6	-	-	0.6	-	-	0.7	-	-	0.7
Air Patrols	-	-	0.1	-	-	0.3	-	-	0.1	-	-	0.2	-	-	0.2
Growth Study	-	-	0.0	-	-	0.0	-	-	0.0	-	-	0.0	-	-	0.0
115S Bridge Rental (2023)	-	-	0.0	-	-	0.0	-	-	0.1	-	-		-	-	0.0
Total	5,042		6.9	5,295		6.5	5,267		7.2	4,952		7.0	5,020		7.1

*Totals may not add to due to rounding.

823. VM expenditures are comprised of:

- internal AltaLink labour, which includes managing the integrated VM program and ROW programs, patrolling and a portion of landowner consenting activities;
- external contracted manpower which includes brushing (mechanical and herbicide) and ROW and substation/telecom weed control, ROW clean up (urban grass mowing and snow removal), ROW maintenance activities, along with external contractors that assist with consenting requirements; and
- GOE which support overall program activities.

824. AltaLink is not forecasting an increase in operating expenses over the Test Period on average.

825. The 2022 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.

826. 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 long-term declining trend and near-term

stabilizing trend shown in Figure 5.3.10-1 below indicates sufficient expenditure levels successfully managing to minimize the number of priority sites.

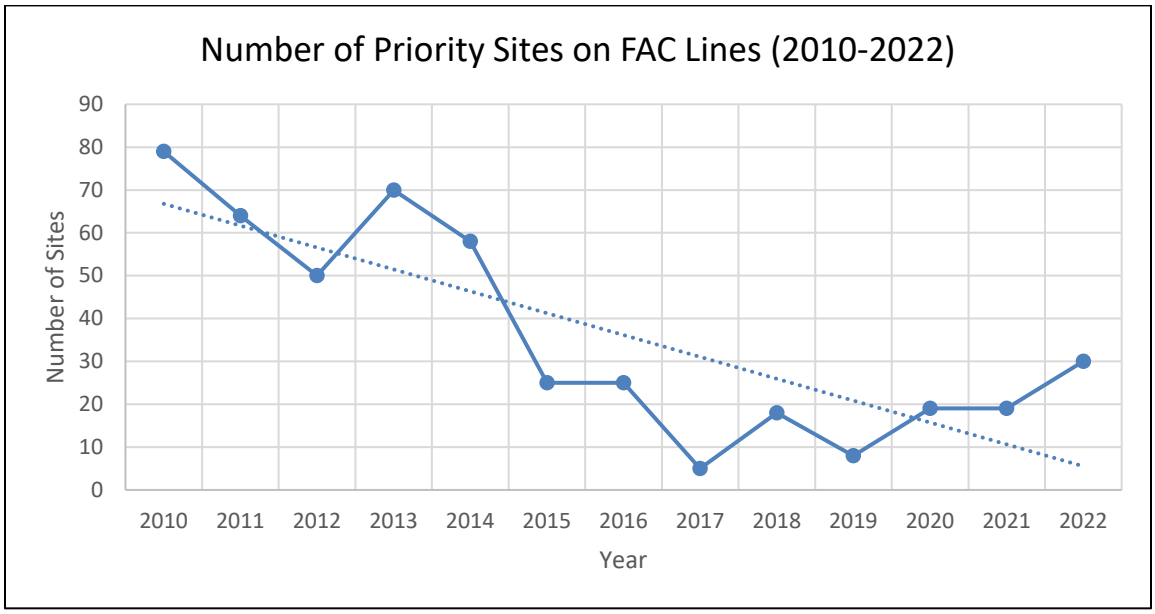


Figure 5.3.10-1 - USA 571.1 - Priority Sites Identified as per Fall Air Patrols – 2010 to 2022

827. AltaLink forecasts 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 ROW treated through the various VM methods. The amount of ROW 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.

828. 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.

829. 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.

830. AltaLink follows industry standard practices and processes in the procurement of services that support its VM program to obtain market supported rates.

831. The forecasts are estimated based on AltaLink's actual cost experience and the anticipated regions and types of vegetation management anticipated for the Test Period. Volume estimates are derived primarily from aerial patrols and while experienced patrollers reduce the extent of inaccuracies in the forecast, it cannot be totally eliminated until detailed patrols are completed

closer the year of maintenance activities in order to confirm vegetation growth and specific site requirements. Environmental and site conditions are highly variable and this variability impacts site access and 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.

5.3.10.1 Labour

832. AltaLink's internal labour activities focus on maintaining the integrated VM plan and ROW 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

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

Forecast Increase	2023 MU versus 2022 Actual	2024 Test Year versus 2023 MU	2025 Test Year versus 2024 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	**0.1**	**0.0**	**0.0**	**0.0**

*Totals may not add to due to rounding.

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

	2021 Actual	2022 Actual	2023 MU	2024 Test Year	2025 Test Year
Field Crew	2.0	2.0	2.0	2.0	2.0
Total Year End FTEs	**2.0**	**2.0**	**2.0**	**2.0**	**2.0**

833. As shown in Table 5.3.10-5 above, AltaLink forecasts FTE levels for USA 571 to remain consistent during the Test Period with two operating FTEs. AltaLink reviewed the current forecasted workloads and work processes for the Test Period and has confirmed the FTE complement is sufficient to manage the programs in USA 571.

5.3.10.2 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	2023 MU versus 2022 Actual	2024 Test Year versus 2023 MU	2025 Test Year versus 2024 Test Year	2 Test Year Average
Inflation	0.1	0.1	0.1	0.1
Other	0.5	(0.3)	0.0	(0.2)
Total	**0.6**	**(0.2)**	**0.1**	**(0.0)**

Totals may not add to due to rounding.

834. AltaLink is not forecasting an increase in contracted manpower over the Test Period on average, as shown in Table 5.3.10-6.

835. The other variance between 2023 MU and 2022 actuals is primarily due to inclement weather near year end 2022 which required shut down of field crews earlier than planned, one mechanical contractor being shutdown for a period following a safety incident, and AltaLink overall experiencing lower than forecast requirements for mechanical trim and slash/removal activities in 2022, due to the site conditions and vegetation growth experienced at the sites scheduled. Several sites unexpectedly experienced lower regional vegetation growth patterns in areas planned for vegetation maintenance. AltaLink is not anticipating these conditions to reoccur in 2023 or the Test Period due to variability in vegetation growth and the differences in ROW locations being managed from year to year.

836. Another contributor to other variances between 2023 MU and 2022 actuals, and between 2024 Test Year and 2023 MU, is higher than anticipated fuel prices in 2022 and 2023 due to market conditions, which is a component of the contractor costs.

837. The VM contracted manpower forecast is composed of two distinct categories based on the type of work performed in the management of AltaLink's ROW. AltaLink's contracted manpower expenditures and work volumes forecast for the Test Period are shown in Table 5.3.10-7 below.

838. The first category, "Brushing", is work associated with the actual control methods done to manage the vegetation on AltaLink's ROW, typically outside the urban areas. This work includes:

- spraying herbicide application for control of trees/brushes under the wires and on the ROW;
- 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.

839. The second category "Other Contractor Cost" is work associated with the management of the overall VM program, ROW management through urban areas as well as the substation and telecom sites. Activities consist of substation and ROW weed control, grass mowing and snow removal, ROW cleanup and the patrolling, site inspections, auditing, and landowner consenting and notifications required for the overall VM program.

840. Landowner consenting refers to the activities that need to be completed in advance of the brushing and ROW 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 ROW are to be accessed, including addressing any landowner concerns;
- obtaining landowner permission to access their lands; and
- obtaining permits for off ROW access and pipeline crossings.

841. 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.

842. 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.

843. 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.

844. 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	2021 Actual (000 m^2)	2022 Actual (000 m^2)	2023 MU (000 m^2)	2024 Forecast (000 m^2)	2025 Forecast (000 m^2)
Trim	168	140	152	131	150
Mow	702	1,187	1,236	711	780
Slash/Remove	730	468	610	600	590
Herbicide (Right-of-Way Volumes Only)	3,500	3,500	3,269	3,510	3,500
Total Brushing volume	**5,042**	**5,295**	**5,267**	**4,952**	**5,020**
Brushing Cost	$4.9M	$4.1M	$4.8M	$4.7M	$4.8M
Other Contractor costs	$1.4M	$1.8M	$1.7M	$1.7M	$1.7M
Total Contracted Manpower Costs	**$6.2M**	**$6.0M**	**$6.6M**	**$6.4M**	**$6.5M**

*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.

5.3.10.3 Other (GOE)

845. Typical GOE include:

- system record and report forms associated with vegetation and ROW 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	2023 MU versus 2022 Actual	2024 Test Year versus 2023 MU	2025 Test Year versus 2024 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.

846. AltaLink is not forecasting an increase in GOE forecast for the Test Period, as shown in Table 5.3.10-8 above.

5.3.11 USA 575 – Operations and Management IT Support

847. This account includes 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 equipment exists at all AltaLink facilities, including 95 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 with applicable government rules and regulations.

848. The Network Communications and Operational Technology area is managing continued demands on AltaLink's telecommunications and Operational Technology infrastructure due to several external factors and continued technology evolution. These factors, specifically the ongoing support of the MPLS technology, managing ISO Rules compliance including new ARS 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 are:

- 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 27001/19, and ISO Rules and standards including ARS/CIP);
- ongoing cyber security threat assessments and mediation programs;
- asset management and monitoring development;
- cooperation with the AESO to develop consolidated, longer-term capital plans and project identification documents;
- participation in AESO workgroups focusing on telecom standards and long term provincial Wide Area Network (WAN) planning including interfaces with other TFOs and service delivery;
- day-to-day troubleshooting and remediation of tickets and events (e.g., excessive tower twist, MPLS network optimization, microwave radio link performance review, network security assessments, Operational T infrastructure and application support, etc.);
- co-ordination, review, and planning of third-party use of telecom infrastructure and services by third parties including independent power producers, distribution partners, other TFO's, 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 firmware upgrades to maintain telecommunication system operations and security.

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

Expense	2021 Actual	2022 Actual	2023 MU	2024 Test Year	2025 Test Year
Labour	1.5	1.5	1.6	1.6	1.7
Contracted Manpower	0.3	0.2	0.3	0.4	0.4
Other GOE	2.8	3.1	3.1	3.1	3.1
Total	**4.6**	**4.9**	**4.9**	**5.1**	**5.2**

*Totals may not add due to rounding.

849. Approximately 32% 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 services charges, and some staff and training related expenses. Refer to Table 5.3.11-1 for USA 575 expenses.

850. Total expenses for USA 575 are forecast to increase primarily driven by inflation assumptions, as outlined in Section 1.8 and show in Table 5.3.11-2 below, over the Test Period. A breakdown of variances as compared to 2022 actual amounts are as described below.

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

Forecast Increase	2023 MU versus 2022 Actual	2024 Test Year versus 2023 MU	2025 Test Year versus 2024 Test Year	2 Test Year Average
Labour	0.0	0.1	0.1	0.1
Contracted Manpower	0.1	0.1	0.0	0.0
Other GOE	(0.0)	0.0	0.0	0.0
Total	**0.1**	**0.2**	**0.1**	**0.1**

*Totals may not add due to rounding.

5.3.11.1 Labour

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

Forecast Increase	2023 MU versus 2022 Actual	2024 Test Year versus 2023 MU	2025 Test Year versus 2024 Test Year	2 Test Year Average
Inflation	0.1	0.1	0.1	0.1
Other	(0.0)	0.0	(0.0)	0.0
Total	**0.0**	**0.1**	**0.1**	**0.1**

*Totals may not add due to rounding.

851. AltaLink is forecasting an average increase of $0.1M in labour, as shown in Table 5.3.11-3 above, over the Test Period due primarily to inflationary assumptions outlined in Section 1.8.

852. As shown in Table 5.3.11-4 below, AltaLink forecasts FTE levels for USA 575 to remain consistent during the Test Period with seven operating FTEs. AltaLink reviewed the current forecasted workloads and work processes, including compliance processes and security requirements, for the Test Period and forecasts FTE levels for USA 575 to remain consistent during the Test Period and confirmed the FTE complement is sufficient to manage the activities in USA 575.

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

	2021 Actual	2022 Actual	2023 MU	2024 Test Year	2025 Test Year
Management	1.0	1.0	1.0	1.0	1.0
Engineer	2.0	2.0	2.0	2.0	2.0
Analyst	1.0	1.0	1.0	1.0	1.0
Specialist	3.0	3.0	3.0	3.0	3.0
Total Year End FTEs	**7.0**	**7.0**	**7.0**	**7.0**	**7.0**

*Totals may not add due to rounding.

853. AltaLink assessed the work activities and resource requirements in the Test Period and confirmed the volume of activities and resource requirements remain consistent with prior periods. This is illustrated in Table 5.3.11-5 below.

Table 5.3.11-5 – USA 563 Illustration of Activities and Time Requirement 2021 to 2025

Activities	Typical Resource Requirement (hours/year)
WAN Planning and Service Development.	1,000
WAN Day-to-day Operations Moves/Adds/Changes and Maintenance.	1,000
Telecom Engineering Standards, product evaluations, vendor and service provider engagement, Telecom Engineering evaluations including colocation requests and encroachment assessments.	1,500
Monitoring and dispatch associated with Telecom Infrastructure alerts and events	2,500
Audit, Governance, Compliance and similar activities associated with ARS, ARS-CIP, ISO27001/19, CSOX, etc.	2,000
Operational Technology Infrastructure Planning and Service Development.	1,000
Operational Technology Application Support.	2,000
Enterprise Network Support and Moves/Adds/Changes.	2,000
Cyber Security Development and Implementation.	1,500
Telecom Infrastructure Maintenance Planning and Analysis.	1,500
3rd Party Network Services Management and Support.	500
Internal And External Telephony Service Support and Moves/Adds/Changes.	2,000

*Totals may not add due to rounding.

Network Operation Workload Analysis

854. The Operational Technology environment was established in 2016/2017, primarily to address various ARS CIP requirements and other industry practices. Since inception with approximately 70 servers, it has experienced steady growth as shown in Table 5.3.11-6.

855. The quantity of servers managed primarily impacts costs associated with support and licensing agreements included in GOE and contracted manpower. Despite growth in this environment, AltaLink has offset these impacts, primarily through standardization and optimization of processes, enabling AltaLink to forecast relatively consistent labour and contracted manpower expenditures period to period. Continued growth in network operating requirements are expected to continue to pressure GOE and contracted manpower and/or labour costs in the longer term.

Table 5.3.11-6 – USA 575 – Servers Managed

	2019 Actual	2020 Actual	2021 Actual	2022 Actual	2023 MU
Servers Managed	131	165	182	207	236

856. The MPLS based WAN is also experiencing steady growth in routers managed, services carried, and third-party market participants connected due to changes in the power system. The WAN has grown at approximately 20 MPLS routers and 75 individual circuits/services per year, which has sustained increasing work activities associated with the support and licensing agreements and day to day operational support.

857. Additionally, as more market participants leverage the utility WAN, AltaLink also anticipates increased:

- network coordination with other TFO's,
- outage planning with both internal and external stakeholders,
- service and facility inventory tracking,
- demarcation and access management,
- development and maintenance of Joint Use Agreements (JUA's) and Network Services Agreements (NSA's), and
- overall network complexity and criticality.

858. For example, between 2019 and 2022 the total number of JUA's and NSA's with third parties grew from 41 to 68 plus another five existing agreements that had scope increase.

859. No cost increases are forecast during the Test Period, and AltaLink is monitoring staffing levels and/or contracted manpower as the number of third parties served continues to increase.

5.3.11.2 Contracted Manpower

Table 5.3.11-7 - USA 575 - Operation & Maintenance IT Support Contract Manpower Forecast Increase ($M)

Forecast Increase	2023 MU versus 2022 Actual	2024 Test Year versus 2023 MU	2025 Test Year versus 2024 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**	**0.0**

*Totals may not add to due to rounding.

860. There are no material forecast increases for this USA account in the Test Period attributable to contracted manpower, as shown in Table 5.3.11-7 above. The increase in 2023 MU from 2022 is primarily increases in support requirements and scope associated with the Operational Technology server environment and associated applications resulting in incremental costs associated with outsourced support.

861. The recent addition of the Voice over IP (VoIP) based telephony environment as part of the AESO Grid Operations Wide Area Network (GO-WAN) project and associated updated ARS COM-001-AB-3 requirements[159] have identified AltaLink as the primary emergency voice service provider for electric system Market Participants. These responsibilities include additional compliance requirements and service level obligations for AltaLink in providing these services to Market Participants. AltaLink is forecasting this service growth and associated compliance requirements to increase its contracted manpower during the Test Period and may impact GOE longer term based on licensing and support contract increases. To date, GOE increases related to the GO-WAN initiatives have generally been offset with cost reductions in other areas.

5.3.11.3 Other GOE

Table 5.3.11-8 – USA 575 – GOE Actual and Forecast Expenditure Detail ($M)

Category	2021 Actual	2022 Actual	2023 MU	2024 Test Year	2025 Test Year
PC Software	2.0	2.3	2.2	2.2	2.2
Government Fees	0.3	0.3	0.3	0.3	0.4
Telecom	0.5	0.5	0.5	0.5	0.5
Supplies and Consumables (Office	0.0	0.0	0.0	0.0	0.0
Meals and Accomodations (Staff Expenses)	0.0	0.0	0.0	0.0	0.0
Training	0.0	0.0	0.0	0.0	0.0
Other Incidental Expenses	0.0	0.0	0.0	0.0	0.0
Total	**2.8**	**3.1**	**3.1**	**3.1**	**3.1**

*Totals may not add due to rounding.

[159] AESO Stakeholder engagement on COM-001-AB-3, COM-002-AB-4, COM-002-AB1-2a & COM-001-AB1-1.1, retrieved from: https://www.aeso.ca/stakeholder-engagement/completed-engagements/rules-standards-and-tariff/com-001-ab-3com-002-ab-4-com-002-ab1-2a-and-com-001-ab1-1-1/.

Table 5.3.11-9 – USA 575 – Operation & Maintenance IT Support GOE Forecast Increase ($M)

Forecast Increase	2023 MU versus 2022 Actual	2024 Test Year versus 2023 MU	2025 Test Year versus 2024 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	**(0.0)**	**0.0**	**0.0**	**0.0**

*Totals may not add due to rounding.

862. AtaLink forecasts no material changes to GOE expenses in USA 575 for the Test Period, as shown in Table 5.3.11-8 and Table 5.3.11-9 above.

5.4 Allocated Administrative and General

863. 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

864. 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.

865. 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, refer to Table 5.5.1-1.

Table 5.5.1-1– Property and Business Tax Forecast ($M)

Property Type	2021 Actual	2022 Actual	2023 MU	2024 Test Year	2025 Test Year
Transmission Lines	14.4	15.0	16.2	16.5	17.0
Substations	32.3	32.0	33.0	32.8	33.0
Telecontrol	1.7	1.7	1.9	2.1	2.2
Buildings / Structures	1.3	2.1	1.9	2.1	2.2
Land	1.9	1.9	2.0	2.0	2.1
Property Tax Total	**51.7**	**52.8**	**54.9**	**55.6**	**56.4**
Business Tax	0.0	0.0	0.0	0.0	0.0
Total	**51.7**	**52.8**	**54.9**	**55.6**	**56.4**

*Totals may not add to due to rounding.

866. 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	2021 Actual	2022 Actual	2023 MU	2024 Test Year	2025 Test Year
Total Property Taxes ($M)	51.7	52.8	54.9	55.6	56.4
Increase in Property Taxes from Prior Year ($M)	1.7	1.0	2.1	0.7	0.8
Property Taxes on Capital Additions ($M)	N/A	N/A	N/A	0.7	0.9

867. 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.

868. 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.

869. Refer to Schedule 5-6 for Taxes Other Than Income Tax.

5.6 Transmission Manpower – Full Time Equivalents

870. Refer to MFR Schedule 5-5 for transmission costs included in the transmission function and Section 5.3 for FTEs.

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

871. In this 2024-2025 GTA, AltaLink proposes to continue using the depreciation and amortization rates approved by the Commission in AltaLink's 2022-2023 GTA Decision 26509-D01-2022 (issued January 19, 2022) and Decision 27174-D01-2022 (issued May 17, 2022). The depreciation rates in relation to PP&E were approved by the Commission following a fully litigated proceeding premised upon a comprehensive depreciation study. The depreciation study was provided by Concentric Energy Advisors in the 2022-2023 GTA based on AltaLink's asset transactions and balances up to December 31, 2019, amended according to the Commission's orders in Decision 26509-D01-2022 and approved in Decision 27174-D01-2022. The amortization rate for Customer Contribution was derived from the PP&E rates approved by the Commission, and the amortization rates for software and leasehold improvements are continuation of rates from past Commission decisions.

872. The depreciation rates approved by the Commission continue to be appropriate for the 2024-2025 test years considering the forecast net change in the value of plant in service for the 2024-2025 Test Period from the 2023 plant in service is approximately 2% annually and the forecast total depreciation and amortization expenses for the 2024-2025 Test Period (amounting to $289.7M and $302.3M respectively) as compared to the 2023 approved depreciation and amortization expense of $302.3M are not materially different, refer to Table 6.1-1 below.

873. The depreciation rates continue to be appropriate given:

- the short period of time that has elapsed since the last depreciation study and Decision 26509-D01-2022;
- the expense required to complete a technical update or a full depreciation study; and
- continuing with the Commission approved depreciation rates supports the Commissions mandate to effect regulatory efficiency.

874. AltaLink will file a full comprehensive Depreciation Study in its next GTA.

875. AltaLink's depreciation and amortization expenses comprises 5 components as follows:

- Depreciation expense in relation to PP&E;
- Amortization of Software costs;
- Amortization of Leasehold Improvements;
- Net Salvage Funding; and
- Offset by Amortization of Customer Contributions.

876. The total depreciation and amortization expense for 2024 (Refer to Table 6.1-1below), in comparison to AltaLink's 2023 GTA approved amount of $302.3M and the 2023 anticipated actual amount of $301.9M, is forecast to decrease to $289.7M in 2024 mainly due to decrease in net salvage funding and increases in amortization of Customer Contributions, partially offset by net increases in PP&E. In 2025, total depreciation and amortization expense increases from $289.7M in 2024 to $302.3M due predominantly to net increases in PP&E and net salvage reserve account funding. AltaLink is asking approval for total depreciation and amortization expenses of $289.7M and $302.3M for the 2024-2025 Test Period respectively.

Table 6.1-1 – Depreciation, Net Salvage Funding and Amortization Expenses

$millions	2022 Actuals and 2023 MU		2022-2023 GTA Approved		2024-2025 GTA Forecasts	
	2022	2023	2022	2023	2024	2025
Depreciation on PP&E	269.6	276.0	269.8	274.8	282.5	289.8
Amortization of Software costs	18.5	20.1	20.1	20.6	21.9	21.3
Amortization of Leasehold Improvements	3.1	2.8	3.1	3.2	2.5	2.5
Net Salvage Funding	30.3	30.3	30.3	30.3	11.5	19.5
Amortization of Customer Contributions	(25.3)	(27.2)	(26.1)	(26.6)	(28.7)	(30.8)
Total Depreciation & Amortization Expenses[1]	296.2	301.9	297.3	302.3	289.7	302.3

*1 Totals may not add due to rounding. Refer to MFR Schd 6-0 for sources and calculations.

6.2 Depreciation Rates and Expenses on Property, Plant and Equipment

877. Table 6.2-1 below shows the Commission-approved depreciation rates from AltaLink's 2022-2023 GTA and applied in this GTA:

Table 6.2-1 – Property, Plant and Equipment Depreciation Rates

Depreciation Rates excluding Net Salvage	2022-2023 GTA Approved	
	Annual Accrual	Annual Accrual including Provision for True-up
TRANSMISSION PLANT		
350.10 LAND RIGHTS	1.88%	1.90%
352.00 STRUCTURES AND IMPROVEMENTS	2.33%	2.29%
353.00 STATION EQUIPMENT	2.43%	2.37%
353.01 STATION EQUIPMENT (HVDC)	2.78%	2.59%
353.10 SYSTEM COMMUNICATION AND CONTROL	4.65%	4.48%
354.00 TOWERS AND FIXTURES	1.91%	1.71%
354.01 TOWERS AND FIXTURES (ISO Rule 502.2 Compliant)	1.81%	1.80%
355.00 POLES AND FIXTURES	2.59%	2.73%
355.01 POLES AND FIXTURES (Steel)	1.94%	1.90%
356.00 OVERHEAD CONDUCTORS AND DEVCES	1.62%	1.58%
358.00 UNDERGROUND CONDUCTORS AND DEVICES	2.04%	2.02%
GENERAL PLANT		
390.00 STRUCTURES AND IMPROVEMENTS	2.26%	2.28%
391.00 OFFICE FURNITURE AND EQUIPMENT	6.67%	6.67%
391.10 COMPUTER HARDWARE	20.00%	20.00%
392.00 TRANSPORTATION EQUIPMENT - FLEET VEHICLES	13.09%	5.19%
394.00 TOOLS, SHOP AND LAB EQUIPMENT	10.00%	10.00%
396.00 POWER OPERATED EQUIPMENT	5.92%	6.57%
Compound weighted average depreciation rate	2.44%	2.39%

878. Depreciation on PP&E is expected to increase from $274.8M approved for 2023 in AltaLink's 2022-2023 GTA to $282.5M in 2024 and $289.8M in 2025. Referring to Table 6.2-2 below, the 2024 and 2025 forecast depreciation expenses are respectively $7.7M and $15.0M higher than the 2023 Approved depreciation due to higher gross plant. Refer to Sections 10.02, 10.03 and 10.05 for explanations of net changes to PP&E. The weighted average depreciation rates remain at 2.4% from 2023 to 2025. Refer to Schedule 6-0 of the Revenue Requirement Schedules for sources and calculations of these values.

Table 6.2-2 – Depreciation on PP&E: changes from 2023 approved
Note that the amounts in this table relate only to assets included in AltaLink's depreciation study and do not include net salvage

	2023	2024	2025
Depreciation Expense		*$millions*	
2023 Approved	274.8	274.8	274.8
Increase due to higher Gross Plant	-	7.7	15.0
Annual Depreciaton on PP&E	274.8	282.5	289.8
Weighted Avg Dep Rates	2.4%	2.4%	2.4%

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.

6.3 Amortization of Software Costs

879. Amortization of software costs is forecast to increase from $20.6M approved for 2023 in AltaLink's 2022-2023 GTA to $21.9M for 2024 mainly due to capital additions in the non-SAP 5 Year software asset class. The 2025 amortization of software costs of $21.3M is reduced from the 2024 forecast of $21.9M primarily due to end-of-life retirements in the SAP software class, while also partially offset by net additions in the non-SAP 5 Year software class. The 2023 amortization of software costs is forecast at $20.1M in the management update, which is $0.5M lower than $20.6M approved for 2023. This lower amortization is a result of certain 2023 projects and related capital additions in the non-SAP 5 Year software class that were originally forecast for 2022 and driving a full year's amortization impact for 2023 taking longer to complete and therefore now forecast to be completed in 2023 in the management update and only being amortized for a half year.

6.4 Amortization of Leasehold Improvements

880. Amortization of leasehold improvements is forecast to remain consistent over the 2024-2025 Test Period at $2.5M for each year but represent a decrease from the $3.2M approved for 2023 in AltaLink's 2022-2023 GTA. The decrease is primarily a result of end-of-life retirements that will be processed in December 2023, and which were not forecast in the 2023 approved amounts as they were expected to be retired in early 2024 instead. The amortization impact of these December 2023 end-of-life retirements have been subsequently included in the $2.8M amortization forecast for the 2023 management update.

6.5 Net Salvage Funding

881. At paragraph 31 of Decision 25870-D01-2020, the Commission states[160]:

[160] Decision 25870-D01-2020, page 5-6, pdf 8-9.

> With respect to its credit rating, AltaLink confirmed that, despite the COVID-19 crisis, it continues to have the ability to maintain an A credit rating while providing rate relief to ratepayers in Alberta, and that it anticipates it will be able to maintain a funds from operations (FFO)/Debt ratio of 11.1 per cent over the seven to eight year period of transition to its proposed net salvage methodology.

882. And at paragraph 36 (i) of Decision 25870-D01-2020, the Commission states[161]:

> (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.
>
> 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).

883. Pursuant to AUC Decision 25870-D01-2020, AltaLink is requesting Commission approval for $11.5M and $19.5M funding of the Salvage Reserve Account for the years 2024 and 2025 respectively. These amounts of funding would allow AltaLink to maintain its FFO/Debt ratio at 11.1% for the 2024-2025 test years.

884. The 2024-2025 test years is part of the "seven to eight year period of transition"[162] during which the Commission approved AltaLink's collection of net salvage funding based on meeting an FFO/Debt ratio of 11.1%. AltaLink began to transition away from the Traditional Method of collecting net salvage funding from customers in the year 2019 and the "seven to eight year period of transition"[163] would end after 2025/2026.

885. The Commission, in the 2016 and 2018 GCOC decisions, determined the 11.1% FFO/Debt ratio (referencing S&P's "low volatility scale" benchmark of 9.0 to 13.0% for the FFO/Debt ratio) being commensurate with AltaLink's A credit rating.[164] S&Ps has not changed its "low volatility scale" benchmark of 9.0 to 13.0%. Therefore, the 11.1 per cent FFO/Debt ratio, as a measure in substance and form for determining the amount of net salvage funding, remains sufficient to protect AltaLink's A credit rating and keep its borrowing costs at a level commensurate with the public interest.

[161] Decision 25870-D01-2020, page 7, pdf 10.
[162] Decision 25870-D01-2020, para 31, page 5-6, pdf 8-9.
[163] Decision 25870-D01-2020, para 31, page 5-6, pdf 8-9.
[164] Decision 20622-D01-2016, para 376, page 83, pdf 89 and para 390, page 86, pdf 92; and Decision 22570-D01-2018, para 700, page 141, pdf 147 and para 740, page 148, pdf 154.

886. Refer to Section 2, 10.3, and **Appendix 18** for further information with regards to 2019-2021 and 2022-2023 actual salvage expenditures in accordance with the Commission's 2020 Directive (iv)[165].

6.6 Amortization of Customer Contributions

887. The amortization rate applicable to Customer Contributions is directly derived from the depreciation rates applicable to AltaLink's PP&E. As explained in Section 6-1 above, AltaLink is proposing to continue using the depreciation rates approved by the Commission in AltaLink's 2022-2023 GTA Decision 26509-D01-2022 (issued January 19, 2022) and Decision 27174-D01-2022 (issued May 17, 2022). As a result, the amortization rate applicable to Customer Contributions in this 2024-2025 GTA remain the same 2.36% as approved by the Commission in said Decisions.

888. AltaLink is asking Commission approval for amortization of Customer Contributions amounting to ($28.7M) and ($30.8M) for the test years 2024 and 2025 respectively. Both amounts are higher than the ($26.6M) approved for 2023 as a result of forecast gross increases in contributions from customer. Refer to Table 6.6-1 below.

Table 6.6-1 – Amortization of Customer Contributions

	2023	2024	2025
Amortization of Customer Contributions		*$millions*	
2023 Approved	(26.6)	(26.6)	(26.6)
(Increase) due to higher Gross CIAC	-	(2.1)	(4.2)
Annual Amortization of CC	(26.6)	(28.7)	(30.8)
Weighted Average rate	2.36%	2.36%	2.36%

[165] Decision 25870-D01-2020, Appendix 2 – Summary of Commission directions, page 13, pdf 16.

7. TRANSMISSION INCOME TAXES

889. 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

890. AltaLink requests the Commission's approval to continue to include both federal and provincial income tax in its revenue requirement for 2024 and 2025 on a flow-through basis.

891. AltaLink is not currently taxable in 2024 and 2025, but forecasts to be currently taxable starting in 2026.

892. AltaLink adopted IFRS commencing January 1, 2011.[166] 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.

893. 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)

	2021 Actual	2022 Actual	2023MU	2024 Forecast	2025 Forecast
Income Taxes	0.0	0.0	0.0	0.0	0.0

894. There are no changes to income taxes for the 2024 and 2025 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

895. The income tax amounts have been calculated using the following enacted tax rates.

Table 7.2-1 - Income Tax Rates

	2024	2025
Federal Income Tax	15.00%	15.00%
Provincial Income Tax	8.00%	8.00%

7.3 Timing/Temporary Differences

896. 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.

897. AltaLink has included the estimated unfunded future tax liability of $665.9M and $725.9M for 2024 and 2025 respectively in its MFR Schedule 31.1-C Liabilities, and the offsetting deferred

[166] AUC Decision 2011-453, AltaLink Management Ltd., 2011-2013 General Tariff Application, November 18, 2011 ("Decision 2011-453"), paras 115 and 116, pdf 28.

regulatory asset in Schedule 31.1-B Assets. These amounts do not impact the determination of forecast revenue requirement for the test period.

7.4 Treatment of Engineering and Supervision (E&S) Costs for Tax Purposes

898. 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.

899. 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.

900. 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 2022, the summary of which is in **Appendix 10**.

901. 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.[167]

902. 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.

[167] 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

903. Section 8 of AltaLink's Application addresses the following:

8.1 Summary

8.2 Transmission Revenue Offset Schedules

8.1 Summary

904. 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, mainly resulting from a decrease in revenue derived from fixed contracts. Please 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	2021 Actual	2022 Actual	2023 MU	2024 Forecast	2025 Forecast
Services to FortisAlberta	3.0	3.0	2.9	2.9	2.8
Services to TransAlta	1.3	1.4	1.4	0.9	0.9
Variable Labour Contracts	3.7	3.3	2.3	2.3	2.4
Lease Revenue and Other	1.4	1.6	1.5	1.4	1.4
Total	**9.5**	**9.2**	**8.1**	**7.5**	**7.5**

Totals may not add due to rounding.

8.1.1 Fixed Contracts

905. 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. The current contracts with TransAlta are attached as **Appendix 11**. 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.

8.1.1.1 Services to FortisAlberta

906. AltaLink provides the following services to FortisAlberta which are expected to remain consistent over the Test Period:

- Telecommunication System Services - these services include the provision of voice communication services capable of operating FortisAlberta's mobile communications assets, such as vehicle mobile radios, office radios, pagers and portable handheld 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.

907. Table 8.1.1-1 below summarizes the forecast transmission revenue offsets AltaLink will receive for the provision of the foregoing services to FortisAlberta.

Table 8.1.1-1 — FortisAlberta Transmission Revenue Offset Forecast ($M)

Fortis Contracts	2021 Actual	2022 Actual	2023 MU	2024 Forecast	2025 Forecast
Telecommunications Services	0.7	0.7	0.7	0.7	0.7
Joint Use	2.3	2.2	2.2	2.1	2.1
Miscellaneous Service	0.0	0.0	0.0	0.0	0.0
Total	**3.0**	**3.0**	**2.9**	**2.9**	**2.8**

Totals may not add due to rounding.

8.1.1.2 Services to TransAlta

908. AltaLink provides the following 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. These services are expected to remain consistent over the Test Period. In Decision 26509-D01-2022, Paragraph 720[168], the Commission fixed revenue requirement offsets connected with the TransAlta Transmission (First Nations) O&M Agreement at the level forecast by AltaLink over the 2022-2023 Test Period on a placeholder basis. The Commission directed AltaLink to true up these placeholder amounts at the time of AltaLink's next GTA. AltaLink's TransAlta Transmission (First Nations) O&M Agreement forecast revenue requirement offset was $0.2M for 2022 and $0.0M for 2023. 2022 Actual was $0.6M and 2023 MU is forecast at $0.7M. As a result, AltaLink has provided the net $1.1M true-up over the two-year period in its current Application in MFR Schedule 3-1, line 18. AltaLink will update the true-up amount to reflect 2023 actuals as part of its compliance filing expected in early 2024.
- 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 – this contract expires in November 2023 and is expected to be renewed with a reduced level of services provided by AltaLink. AltaLink expects to continue to provide thermal telecommunication services but does not expect to provide other telecommunication services as TransAlta expects to install its own new control system with telecommunications.
- System Control Services - provision of SCADA for TransAlta's generating facilities, including data transfer, device visibility and device control – this contract expires in November 2023 and is not expected to be renewed as TransAlta expects to install its own new control system and maintain both thermal and hydro services.
- Meter Data Services - provision of generation meter data acquisition and meter field and technical services. AltaLink is currently party to two agreements for the provision of meter services, one with TransAlta Generation Partnership and one with TA Hydro L.P. Both agreements expire in June 2023. AltaLink and TransAlta are in negotiations with respect to new meter services agreements.

909. As discussed in Section 1.1.6, AltaLink has managed the maintenance of metering equipment used to measure data exclusively or near exclusively for generation purposes (currently 35 meters and associated equipment) as part of its more than 800-meter installations, and inadvertently neglected to charge TransAlta for the meter maintenance services and meter replacement costs incurred. AltaLink has estimated these amounts and the resulting impact of

[168] Decision 26509-D01-2022 Corrigenda, para 720, page 130, pdf 141.

its transmission tariffs and requests Commission approval of a one-time tariff reduction of $1.8M to correct this oversight, refer to MFR Schedule 3-1, line 18. AltaLink has removed the estimated net book value of $0.3M from its rate base, which would not be in rate base if the capital amounts had been charged to TransAlta in the past, refer to MFR Schedule 10-2, line 75 ($0.8M cost) less MFR Schedule 10-3, line 67 ($0.5M accumulated depreciation).

910. The provision of meter data services and meter maintenance services are expected to change when new service agreements are in place later this year. AltaLink has provided Test Period forecasts at current levels and requests Commission approval on a placeholder basis. AltaLink will update the forecast amount as part of its compliance filing expected in early 2024, once negotiations are completed.

911. 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	2021 Actual	2022 Actual	2023 MU	2024 Forecast	2025 Forecast
Transmission (First Nation)	0.6	0.6	0.7	0.7	0.7
Telecommunications Services	0.2	0.2	0.2	0.0	0.0
System Control Services	0.4	0.4	0.4	0.0	0.0
Meter Data Services	0.1	0.1	0.2	0.2	0.2
Total	**1.3**	**1.4**	**1.4**	**0.9**	**0.9**

Totals may not add due to rounding.

8.1.2 Variable Labour Contracts

8.1.2.1 Services to Affiliates

912. Services to Affiliates that generate revenue offsets are divided into three categories: (i) the BHE Canada group of Affiliates; (ii) PiikaniLink L.P. (PLP) and KainaiLink (KLP) L.P.; and (iii) MATL Canada L.P. (MATL). Table 8.1.2-1 below summarizes the forecast transmission revenue offsets AltaLink will receive for the provision of the foregoing services to affiliate companies. Particulars of AltaLink's allocation methodology for Affiliate charge outs and affiliate transactions are detailed further in Section 30 of this Application.

913. AltaLink provides limited services to Affiliates such as AILP, AHLP, BHEA and BHE Canada Management Ltd. (BHECML). AltaLink charges these entities for time spent by AltaLink employees on the affiliate companies' accounting, financial, treasury, business development, IT, operational, administrative and legal activities. During the Test Period, AltaLink is forecasting a recovery of $1.5M per year from other affiliates. The decrease compared to prior years results from changes in the Executive organizational structure with two Executives no longer partially supporting affiliates.

914. PLP and KLP began operations on June 1, 2019, and January 1, 2020, respectively. These partnerships were formed to hold the Southwest 240 kV regulated transmission assets located on First Nations Reserve lands with local First Nation partners. AltaLink owns a 49% interest in each of those partnerships. As this GTA is being presented on a non-consolidated basis, the revenue in the table below represents the transmission operating and administrative costs

charged to PLP and KLP and is eliminated on consolidation of these subsidiaries. This revenue is expected to remain stable over the course of the Test Period.

915. On May 1, 2020, BHE Canada Holdings Corporation indirectly acquired MATL. For consistency and ease of understanding, 100% of the revenues from MATL for years 2021 to 2025 are shown in the Table 8.1.2-1 below. There are no significant changes to the contract relative to MATL and revenue is expected to remain consistent over the Test Period.

Table 8.1.2-1 — Services to Affiliates Transmission Revenue Offset Forecast ($M)

Services to Affiliates	2021 Actual	2022 Actual	2023 MU	2024 Forecast	2025 Forecast
PLP and KLP	0.6	0.6	0.6	0.6	0.6
MATL	0.2	0.2	0.3	0.3	0.3
Other BHE Canada Affiliates	2.8	2.4	1.5	1.5	1.5
Total	**3.7**	**3.3**	**2.3**	**2.3**	**2.4**

8.1.3 Lease Revenue and Other

916. 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 parties, utility ROW 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	2021 Actual	2022 Actual	2023 MU	2024 Forecast	2025 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 ROW and road use	0.1	0.1	0.1	0.1	0.1
Amortization of customer contributions	0.2	0.2	0.2	0.2	0.2
O&M services to third parties	0.2	0.3	0.2	0.1	0.1
Other	-	-	-	-	-
Total	**1.4**	**1.6**	**1.5**	**1.4**	**1.4**

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

917. 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

918. AltaLink's forecast return on rate base is summarized in Schedule 9-1.

919. AltaLink is forecasting the weighted average rate of return to change from 5.57%, 5.63% and 5.60% in the 2021, 2022 and 2023, respectively, to 5.74% and 5.77% in the 2024 and 2025 test years, respectively. Refer to Schedule 28-1 for more details regarding this component of AltaLink's evidence.

9.2 Capital Structure

920. This Application reflects a capital structure consisting of common equity ratio of 37% as a placeholder for 2024 and 2025.

921. Refer to Section 28 for further details and explanations regarding these items and capital structure related matters.

9.3 Return on Equity

922. AltaLink has use the approved deemed ROE of 8.50% for 2023,[169] as a placeholder for the 2024 and 2025 test years. For further details on this request refer to Section 28.2.

9.4 Embedded Cost of Debt

923. Schedule 28-2 sets out AltaLink's forecast mid-year embedded cost of debt at 4.12% for 2024 and 4.16% for 2025.

924. 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

925. 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

926. 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

[169] Decision 26212-D01-2021, 2022 Generic Cost of Capital, March 4, 2021, para 23(1), pdf 9.

10. TRANSMISSION RATE BASE

927. 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 Inventory Capital Costs
- 10.7 Transmission Rate Base Schedule

10.1 Summary

928. AltaLink's rate base continuity can be found in Schedules 9-1, 3-2.2022 (i), 3-2.2023 (i), and 31.2-A.

929. AltaLink forecasts a mid-year rate base (after adjustments) of $7,447.4M and $7,441.7M for the years 2024 and 2025, respectively. These forecast amounts represent:

- An increase of $29.6M in 2024 compared to the 2023 forecast rate base of $7,417.9M; and
- A decrease of $5.8M in 2025 compared to the 2024 forecast rate base of $7,441.7M.

930. 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.

931. AltaLink's actual and forecast capital expenditures over the 2021 to 2025 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 – 2021 -2025 Forecast Capital Expenditures ($M)

Capital Expenditures	2021 Actual	2022 Actual	2023 MU	2024 Test Year	2025 Test Year
Direct Assignments	**64.6**	**53.6**	**87.7**	**155.0**	**156.1**
Capital Replacement & Upgrades	147.1	148.6	148.8	189.3	189.4
General Plant					
Security Compliance	4.6	10.7	13.2	15.3	16.9
Information Technology	11.4	12.2	12.9	21.6	18.4
Facilities	2.8	3.7	5.2	3.2	3.0
Total General Plant	19.3	26.9	31.3	40.0	38.2
Other Transmission	10.8	13.9	-	-	-
Total Non-Direct Assigned	**177.2**	**189.4**	**180.1**	**229.3**	**227.6**
Total Capital Expenditures	**241.8**	**243.0**	**267.8**	**384.3**	**383.7**

Totals may vary due to rounding.

932. 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.**

933. 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.

934. In AltaLink's 2022-2023 GTA Compliance Filing, the Commission requested AltaLink, in an information request, to provide a cost breakdown of its forecast for transmission capital expenditures by the following cost categories: labour, contractor services, and other.[170] To be helpful, AltaLink provides its capital expenditure forecast in the same format as the Commission previously requested. AltaLink notes that it does not prepare its forecast using the below categories. Refer to Table 10.1-2 below for the distribution of forecast capital expenditures by the following categories:

- the "labour and fringe" cost category includes costs for direct capital labour (labour and fringe benefits) performed by personnel who are directly employed by AltaLink on a full or part-time basis (AltaLink Employees). This also includes internal labour which is indirectly charged to projects for support staff supporting overall capital activities;
- the "contractor services" cost category includes labour costs for third party resources who perform work for AltaLink under AltaLink's Professional Services Agreements, or otherwise. This can include engineering, project management, construction labour and/or site supervision; and
- the "other" cost category includes all non-labour costs; for example items like material and equipment, land rights, travel expenses, and AFUDC.

Table 10.1-2 – Distribution of Forecast Capital Expenditures ($M)

	2021	2022	2023	2024	2025
Capital Expenditures	**Sch 10-4**	**Sch 10-4**	**Sch 10-4**	**Sch 10-4**	**Sch 10-4**
Transmission Capital Maintenance	**146.0**	**148.2**	**148.8**	**189.3**	**189.4**
Labour & Fringe	38.5	36.3	38.4	38.6	39.5
Contractor Services	80.8	76.2	61.9	88.9	88.1
Other	26.6	35.6	48.5	61.7	61.8
Direct Assigned	**64.6**	**53.6**	**87.7**	**155.0**	**156.1**
Labour & Fringe	15.0	14.6	18.7	22.5	24.7
Contractor Services	33.0	21.2	28.8	61.4	59.9
Other	16.5	17.7	40.2	71.0	71.5
IT	**16.0**	**23.0**	**26.1**	**36.9**	**35.2**
Labour & Fringe	7.1	7.2	8.0	7.8	8.4
Contractor Services	6.6	11.2	10.8	18.8	15.2
Other	2.3	4.5	7.3	10.3	11.6
Facilities	**3.5**	**3.5**	**3.3**	**3.2**	**3.0**
Labour & Fringe	0.4	0.4	0.4	0.4	0.4
Contractor Services	2.6	2.6	2.4	2.3	2.2
Other	0.5	0.5	0.5	0.4	0.4

[170] Exhibit 27174-X0020, AML-AUC-2022MAR10-007(a), p. 11.

	2021	2022	2023	2024	2025
Capital Expenditures	**Sch 10-4**	**Sch 10-4**	**Sch 10-4**	**Sch 10-4**	**Sch 10-4**
Salvage Costs					
Transmission Capital Maintenance	**30.4**	**26.8**	**27.7**	**38.4**	**32.7**
Labour & Fringe	6.7	7.1	9.3	9.0	7.6
Contractor Services	19.9	16.7	15.3	25.0	21.5
Other	3.8	3.0	3.1	4.3	3.7
Direct Assigned	**1.2**	**1.8**	**1.9**	**2.1**	**1.8**
Labour & Fringe	0.4	0.5	0.5	0.6	0.5
Contractor Services	0.8	1.3	1.4	1.6	1.3
Other		-	-	-	-
Total Capital Expenditures & Salvage	**261.7**	**256.8**	**294.5**	**424.9**	**418.2**
Labour & Fringe	68.1	66.1	75.3	79.2	81.0
Contractor Services	143.8	129.3	136.5	198.1	188.2
Other	57.7	70.1	99.6	147.9	149.0

935. As explained in AltaLink's AML-AUC-2022MAR10-007(a) response, "AltaLink does not prepare its GTA forecasts using the three categories identified by the Commission in this information request (IR). This is primarily due to the uncertainty in the actual project labour and material details at the time of preparing the forward-looking Test Period forecast, which often occurs multiple years in advance of the actual project activity".[171] To prepare Table 10.1-2, AltaLink used its historical actual expenditures to categorize the forecasts prepared for the 2024-2025 GTA.

936. For AltaLink's forecast methodology refer to Section 1.8, 10.2, 10.3, 10.4, and 10.5.

[171] Exhibit 27174-X0024, AML-AUC-2022MAR10-007(a), pdf 23. Footnote omitted.

10.2 Capital – Direct Assign

10.2.1 Overview

937. In AltaLink's 2024-2025 GTA, the DA capital forecast for expenditures and additions is based on individual project plans. These plans are developed on an annual basis. The DA forecast represents the 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 2022-2023 GTA and previous GTAs.

938. Since the last GTA, AltaLink has observed changes in three drivers for capital transmission projects:

a. the release of AESO's 2022 Long-Term Transmission Plan (LTP);
b. the AESO's current active project queue; and
c. completion of more "brownfield" BTF projects.

939. The AESO's 2022 LTP identifies approximately $1.5 billion of transmission projects between 2024 and 2035 in AltaLink's service area.[172]

940. The AESO's 2022 LTP represents an average of $150M to $200M per year in transmission system projects over a 10-year period. In 2021 and 2022, AltaLink executed DA projects totalling less than $80M per year which included all AESO system projects, customer interconnections and BTF. The AESO's 2022 LTP identifies approximately $900M of system projects in AltaLink's service area with ISDs before 2030.

941. In addition to the AESO's 2022 LTP for system projects, the active project queue for customer interconnections has grown steadily over the last few years. In 2019, there were 12 generation projects representing 350 MW seeking to connect to AltaLink's system. In 2023, that project queue has grown to approximately 145 projects representing 21,000 MW seeking to connect to AltaLink's system. While not all these projects will be fully developed, executed, and energized, AltaLink develops these projects to each customers' desired pace and stage in the schedule.

942. No matter the size of the project, the front-end development activities can be, and often are, complex and extensive, requiring efforts from the projects, siting, engineering, consultation, and environment teams, as well as many others.

943. Between 2014 and 2022, the number of new DA and BTF projects has increased by 390 percent. Refer to Figure 10.2.1-1 that shows the number of DA and BTF projects by category which AltaLink was working on from 2014 to 2022. Although the system projects have decreased, the overall project count has increased due to the increase in customer and BTF projects.

[172] AESO 2022 Long-Term Transmission Plan, page 60. Retrieved from: https://www.aeso.ca/assets/Uploads/grid/ltp/AESO-2022-Long-term-Transmission-Plan.pdf.

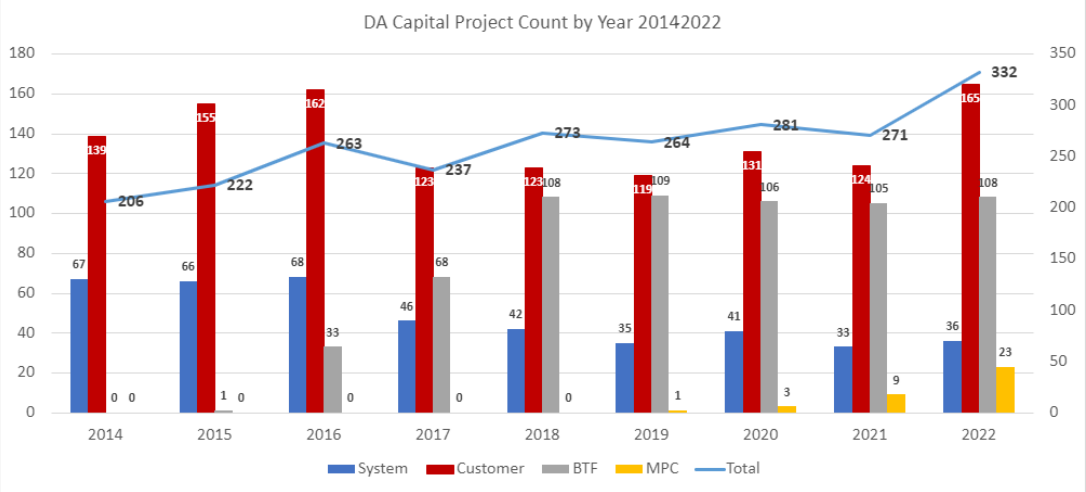


Figure 10.2.1-1 DA Capital Project Count by Year 2014-2022

944. The BTF projects are typically characterized as brownfield development, which are associated with further complexities in outage planning and protection and control requirements. Unlike typical greenfield development, the brownfield/BTF projects can disrupt the current system topology, resulting in more complex engineering studies and modifications to existing protection & control schemes. While these projects are generally small in nature, the efforts required to energize these projects are generally high in the areas of engineering, coordination and outage planning to manage impacts to surrounding energized assets.

945. AltaLink completed $13.6M of BTF projects in 2022, which is the highest number in AltaLink's history. AltaLink's forecast in 2023 includes BTF projects that AltaLink has visibility of, which could increase as more projects move further along in the process.

946. The forecast expenditures in this Application reflect the current view of the drivers described above. AltaLink works closely with the AESO and connecting customers to estimate the ISDs included in the application.

947. While there continues to be uncertainty, this forecast does not include a high number of large projects like those that were present in the 2010 to 2017 time period. The majority of future projects are generally smaller in size and vary greatly in complexity. Additionally, there are new system projects from the AESO's 2022 LTP,[173] which are intended to address system congestion and reliability.

948. 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 2024-2025 Test Period revenue requirements, the aggregation of these individual project plans forms AltaLink's DA capital expenditures and additions forecast.

949. The 2024-2025 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 load growth over the next five years;

[173] AESO 2022 Long-Term Transmission Plan. Retrieved from: https://www.aeso.ca/assets/Uploads/grid/ltp/AESO-2022-Long-term-Transmission-Plan.pdf.

- the current view of AESO's project queue, which reflects assumptions of generation interconnections and system projects; and
- the outcomes of the AESO and AltaLink project review meetings, including project scope and ISDs.

10.2.2 Direct Assign Capital Forecasting Approach

950. AltaLink's DA forecast in this Application has considered projects with varying degrees of complexity (from low complexity to medium/high complexity) which includes increased customer interconnections and new system projects consistent with the AESO's 2022 LTP. AltaLink applied its experience and judgement to a group of projects which are currently in the AESO's project queue and 2022 LTP to create the base case forecast for the DA projects in the Test Period.

951. AltaLink's forecast 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. It will use the most up to date information available.
- to address the potential for extended delay or cancellation of projects, AltaLink developed a conservative forecast by reducing the expenditure forecasts for the projects that have been on, or are anticipated to be on extended hold in the 2024-2025 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 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 took 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 considered knowledge of historical customer projects and put forward a conservative forecast of potential future projects;
- BTF projects typically require minor changes to AltaLink facilities as a result of changes the market participant is making to their facilities. Recent BTF projects have required system modifications identified by the AESO that are not customer funded. An annual generic forecast amount for potential BTF projects has been included in the Test Period. BTF projects are included in the **Appendix 19-D** continuity schedules; and
- Contract capacity change projects are subject to Section 5 – Changes to System Access Service[174] and may result in adjustments to customer contribution determination that was

[174] AESO Tariff, Section 5 – Changes to System Access Service. Retrieved from: https://www.aeso.ca/rules-standards-and-tariff/tariff/section-5-changes-to-system-access-service/.

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. Shared cost of facilities calculations are also not included in future forecast amounts unless AltaLink has been made aware of these in advance. These calculations are included in updated CCD issued by the AESO and applied to project costs as they are received.

952. In addition, AltaLink addresses the Commission's concerns in Decision 2012-221 related to forecast accuracy and up to date ISDs,[175] and outlines how uncertainty has been accounted for in the 2024-2025 forecast in the following paragraphs.

10.2.2.1 Potential of project cancellation

953. To address the potential for extended delay or cancellation of projects, AltaLink reduces the forward forecast for those projects that have been on extended hold or are anticipated to be cancelled (i.e., projects may remain in the continuity tables due to remaining opening/closing balances, but minimal expenditures and no new 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 Test Period, its actual costs will exceed the minimal amounts forecasted.

954. A reduced number of generic customer placeholder projects (denoted by reference project numbers starting with "G") have been included as part of the 2024-2025 GTA revenue requirement to stand in place of DA generation connection projects or as potential future customer 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 considered knowledge of historical customer projects and put forward a conservative forecast of potential future projects.

955. 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 2024-2025 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.

956. Generic forecasts have not been included for BTF projects. The majority of BTF projects are fully funded by customers. The schedule and scope of BTF projects are mainly driven by customer requirements which are difficult to predict.

10.2.2.2 Uncertainty from external factors

957. There is a larger number of interconnections in the AESO project queue currently than in the past, which results in a larger number of projects in earlier stages of the project lifecycle. For projects in an earlier stage of development, project managers have greater ability to adjust for

[175] 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).

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.

10.2.2.3 Confirmation of ISDs

958. As a project progresses, AltaLink is in regular contact with the AESO and as part of the ongoing discussions and interactions, 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.

959. Project schedules 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.

960. AltaLink's base plan includes projects with ISDs in or prior to 2023 that may have trailing costs in the Test Period. Refer to **Appendix 19-A** for project scope descriptions of projects included in the base plan. Refer to **Appendix 19-D** for base plan capital expenditures and additions forecasts by project.

961. AltaLink prepares forecasts of annual capital expenditures and additions on an individual project level. The aggregation of the individual project plans forms the basis of AltaLink's base plan or working plan and is aligned with the AESO forecast 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. 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 or issues that may affect cost, schedule or ISD of projects under direction. 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.

962. Table 10.2.2-1 below, outlines forecasted capital expenditures and capital additions for the Test Period 2024-2025, as well as 2021 and 2022 actuals and 2023 MU. This includes system projects, interconnecting customer projects and BTF projects.

Table 10.2.2-1 - DA Capital Forecast – Base Plan ($M)

	2021 Actual	2022 Actual	2023 MU	2024	2025
Base Plan DA Capital Expenditures	75.5	67.4	87.6	155.0	156.1
Base Plan DA Capital Additions	87.0	85.2	61.1	109.7	102.1

963. Expenditures are amounts forecast to be disbursed in any year and have been forecast 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 forecast are the cumulative lifetime expenditures for any capital project.

964. The actuals/MU in 2024-2025 GTA and forecast in 2022-2023 GTA approved compliance filing is shown in Table 10.2.2-2 below.

Table 10.2.2-2 - DA Capital Forecast 2021, 2022-2023 GTA

Expenditures	**2021**	**2022**	**2023**
GTA Forecast / MU	94.8	29.4	30.7
Actuals/MU	75.5	67.7	87.6
Additions	**2021**	**2022**	**2023**
GTA Forecast / MU	115.5	43.7	23.5
Actuals/MU	87.0	85.2	61.1

965. AltaLink's 2021 MU and 2022-2023 GTA compliance filing revenue requirement excluded three large system projects identified in the AESO 2020 Long Term Plan. Since then, the AESO moved these ISDs to 2026 and later. In 2022 and 2023 the actuals were higher than the GTA forecast due to customer connection projects not forecast in the GTA.

10.2.2.4 AESO 2022 LTP Projects

966. The AESO 2022 LTP includes expected system projects to address current and anticipated congestion and reliability issues. The forecast includes the best estimate of cost and schedule for these projects at this time. However, this changes continuously as the AESO addresses emerging issues in updated plans and directions to AltaLink. System projects included in the 2024-2025 GTA are:

- Central East Transfer Out (CETO);
- Vauxhall Area Transmission Development (VATD);
- Provost to Edgerton and Nilrem to Vermillion (PENV);
- Chapel Rock-to-Pincher Creek (CRPC);
- Bowmanton Substation Voltage Support; and
- 853L Line Capacity Increase.

967. On December 1, 2022, the AESO issued direction to AltaLink to commence the construction of the CETO project. The anticipated ISD, aligned with the AESO's 2022 LTP, is in early 2026. The capital expenditures forecasted reflect the majority of the work to be completed in 2024 and 2025.

968. On December 16, 2022, AltaLink filed a Facility Application for the VATD project, which has an anticipated ISD of 2024, also consistent with the AESO's 2022 LTP.

969. PENV Transmission Reinforcement Project includes two developments. The AESO's NID application has been approved; AltaLink's facility application for the Provost to Edgerton (PE) component was approved in 2021 and the Nilrem to Vermillion (NV) component Facility Application was not approved. In the AESO's 2022 LTP it states, "with 749L restored to its conductor rating, the existing system can accommodate more renewables generation and PENV can be deferred for two to three years."[176] This has been reflected in the 2024 – 2025 GTA forecast.

970. The AESO continues to have the CRPC project in its 2022 LTP. Minimal carrying costs are forecast in the 2024 – 2025 GTA.

971. On March 2, 2023, the AESO issued direction to AltaLink to support its NID preparation for the Southwestern Alberta Transmission Development project. This has not been included in the 2024-2025 GTA as it is too early to determine the value and timing of this project.

10.2.3 Flexible EPCm Model

972. Throughout its history, and as examined through numerous previous regulatory proceedings, AltaLink has utilized an outsource EPCm model for a significant number of DA projects. This model 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 operated as anticipated when the model was originally put forth in prior proceedings before the Commission.

973. AltaLink's RA with B&M expired on April 30, 2022, and was not extended. As described in the 2022-2023 GTA, AltaLink continues to move 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 internal project staff or explore market opportunities to find an appropriate EPCm through its regular procurement process to efficiently and cost effectively deliver the projects. Continuing to test the market through the competitive procurement process will help ensure the most cost-effective model for ratepayers.

974. In the 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.

975. Smaller projects that are within AltaLink's capability to directly manage will be "self-managed," meaning its internal staff will have direct oversight over contractors for work activities such as construction management and construction, as well as engineering and procurement activities. Where projects have greater complexity or the project cannot be resourced internally due to timing or size, AltaLink will identify an appropriate EPCm through its procurement process to help support the project activities to execute on the project.

976. 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

[176] AESO 2022 Long-Term Transmission Plan, page 17, retrieved from: https://www.aeso.ca/assets/Uploads/grid/ltp/AESO-2022-Long-term-Transmission-Plan.pdf.

Big Build. But it also allows AltaLink to scale its project delivery according to the size and complexity of projects.

977. 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 an 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. 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.

978. AltaLink provides information on some key projects and its execution approach. This information can be found in Table 10.2.3-1 below.

Table 10.2.3-1 - Identification of EPCm for new Projects

Project	EPCm Provider	Rationale for Choice of Provider
D.0777 NV, a component of PENV Transmission Reinforcement[177]	To Be Tendered under flexible EPCm model	Complex, multi-year 240 kV line project in excess of $100M.
D.0778 PE South, a component of PENV Transmission Reinforcement	To Be Tendered under flexible EPCm model	Complex, multi-year 240 kV line project in excess of $50M.
D.0779 PE North, a component of PENV Transmission Reinforcement	To Be Tendered under flexible EPCm model	Complex, multi-year 240 kV line project in excess of $60M.
D.0726 Central East Transfer Out	To Be Tendered under flexible EPCm model	Complex, multi-year 240 kV line project in excess of $150M.
D.0788 EDF Bull Trail Wind	To Be Tendered under flexible EPCm model	Multi-year 240 kV project in excess of $40M.
D.0801 and D.0859 Vauxhall	Self managed using contractors	Critical line rating increase 138 kV and substation modifications project $20M. Lower voltage and smaller size of the project appropriate complexity to be self managed.

[177] 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

979. AltaLink's CRU Program covers the transmission asset base including lines, substations, telecommunications, relays, control centers and any tools and equipment and fleet vehicles. CRU projects are the capital 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 MFR Schedule 10.4 and further detailed below. AltaLink's forecast CRU salvage expenditures for the Test Period are provided in MFR Schedule 29-8 and further detailed below.

980. Customers directly benefit from AltaLink's CRU Program as it enables AltaLink to:

- 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;
- adhere to security standards and cyber security controls;
- ensure public and worker safety;
- address increasing wildfire risk in its service area; and
- restore full asset functionality.

981. AltaLink plans CRU investment on the understanding that there is only one trajectory for existing assets – functional performance degradation due to continued service, wear and weather. AltaLink cannot meet its obligations or reliably and safely operate the power system by waiting for assets to fail before replacing them; energized assets can fail and jeopardize reliability, public safety or the environment. Waiting for assets to fail results in a more costly approach and more risk to system reliability. Maintaining a safe, efficient and reliable transmission system requires completing CRU investments before asset conditions have eroded to the point of failure, which otherwise results in risks and adverse impacts to the public and customers.

982. AltaLink forecasts CRU investment requirements of $186.9M in 2024 and $180.0M in 2025, and salvage expenses of $37.2M in 2024 and $33.9M in 2025. Forecast investment in CRU capital expenditures are required to continue to address deteriorating asset condition, and safety, environmental and reliability obligations. AltaLink's CRU forecasts (capital and salvage) are specific to the type of CRU program as described in the CRU business cases attached in **Appendix 13-A**. AltaLink's WMP and associated capital business cases are described in **Appendix 22,** Wildfire Mitigation Plan.

983. AltaLink has organized this Section 10.3 under the following main topic headings:

- 10.3.1 CRU Program Forecast Methods
- 10.3.2 CRU Procurement Basis
- 10.3.3 CRU Project Management and Construction Management Oversight
- 10.3.4 CRU Historical and Forecast Expenditures
- 10.3.5 2021 Actuals to Approved 2021 MU
- 10.3.6 2019-2021 Actual Salvage Expenditures
- 10.3.7 to 10.3.41 CRU Capital Expenditures and Salvage Expenditure Variances: 2022-2023 Approved to 2022 Actuals and 2023 MU
- 10.3.42 CRU Test Period Forecasting Methodology
- 10.3.43 CRU Major Projects – Equipment Deficiency Trend Analysis

- 10.3.44 Summary of Notification Trend Analysis
- 10.3.45 Future State Population Profiles
- 10.3.46 Customer Benefit Analysis
- 10.3.47 Capital Maintenance Business Cases

10.3.1 CRU Program Forecast Methods

984. AltaLink prepares its CRU forecasts on a cost per project (i.e., unit cost) basis. AltaLink's CRU project forecasts have two components: capital expenditures and salvage expenditures. AltaLink forecasts its total capital and salvage expenditures for each project based on its historical average cost of completing that project, having regard for any specific work requirements during the Test Period that AltaLink is aware of at the time it prepares its forecast. AltaLink then applies the appropriate salvage allocation percentage from its salvage allocation methodology to the total forecast project expenditure (net of materials) to determine the forecast salvage expenditure amount for that project type. The forecast capital expenditure for the CRU project is then the total forecast expenditure for that project less the forecast salvage expenditure.

985. AltaLink forecasts the number of projects or units to be undertaken in a test year within each CRU program based on assessing asset condition, addressing those assets with a high likelihood of failure in the next two to five years, and assessing the overall risk exposure from the continued operation of the entire population of equipment being managed over time. As part of the unit selection process, AltaLink also considers additional near-term factors to determine the most efficient timing of investments including design and field construction opportunities being completed at the same site which optimizes resource usage and reduces customer outages. Refer to AltaLink's CRU forecast methodology in Section 10.3.42 for further details on how AltaLink forecasts CRU units. Specific forecast unit details are found in each program business case, refer to **Appendix 13A**.

986. AltaLink determines its actual capital expenditures and salvage expenditures in the same manner. AltaLink applies the appropriate salvage allocation percentage from its salvage allocation methodology to its total actual expenditures for each project or unit completed within a CRU program (net of materials costs) to determine its actual capital expenditures and salvage expenditures.

987. Figure 10.3.1-2 below illustrates how the two components (i.e., the CRU capital expenditure shown as "Capex" in the figure and the CRU salvage expenditure shown as "Salvage" in the figure) relate to materials and non-materials CRU project costs.

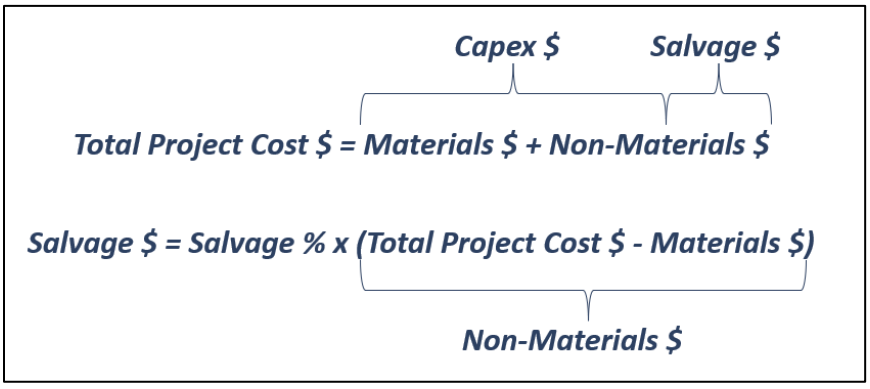


Figure 10.3.1-2 – Breakdown of Project Costs and Salvage Costs

988. For example, assume a CRU unit total project cost (forecast or actual) is $100. Assume also that $10 of the $100 is for materials, and the applicable salvage allocation percentage under AltaLink's salvage allocation methodology is 30%. The salvage expenditure would be $27 (i.e., ($100 - $10) * 0.30 = $27). AltaLink would record a CRU capital expenditure for the unit of $73 (i.e., $63 + $10 = $73) and a CRU salvage expenditure for the unit of $27, for an overall total project cost of $100. The $73 CRU capital expenditure represents the materials cost for the replacement ($10) and the labour associated with the completing the installation of the replacement asset ($63), which would include costs for engineering, installation, etc. The CRU salvage expenditure ($27) represents the costs for engineering, removal, etc. necessary to complete the salvage of the existing asset, as determined by application of AltaLink's salvage allocation methodology.

989. AltaLink provides a more detailed description of its salvage allocation methodology in Section 10.3.1.2 below. AltaLink's 2013-2014 Cost of Salvage Study (Salvage Study), which details the salvage allocation methodology and sets out AltaLink's standard salvage percentages (also referred to as salvage rate), is included as **Appendix 18-A02**.

10.3.1.1 Capital Expenditures Forecast

990. AltaLink prepares its CRU Program forecasts two to four years in advance of field construction. The CRU Program includes a large volume of small projects (i.e., 500 to 700 annually) of one or more units each, where it is not practical or cost effective to complete detailed engineering or site visits several years in advance of the work activities. Further, consistent with good industry practice, detailed engineering and site visits are typically completed six to 12 months in advance of project work to ensure a greater degree of certainty respecting the most current site-specific factors that will affect the scope of each project. AltaLink manages CRU projects effectively by completing detailed design with a short lead time to minimize the impact that factors such as site conditions, outages, industry standards, and customer or landowner requirements may have on project execution and cost.

991. As such, AltaLink bases its CRU Program forecasts primarily on historical average actual unit or project expenditures in each CRU program. AltaLink's forecast CRU Program expenditures reflect average historical design conditions and permitting and consultation requirements for each project. As a result, however, AltaLink's use of historical actual average unit costs inherently leads to forecasts that may not reflect unique site specific or project specific events or conditions, such as:

- unique requirements to consult with indigenous peoples;
- changes in 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 including wildlife management restrictions and expectations from stakeholders/landowners impacting access requirements, crossing requirements, vegetation management, and timing of field construction activities;
- changing safety requirements and expectations;

- increasing detailed 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 and interconnected TFO requirements.

992. AltaLink intends to execute forecast CRU projects within the test year for which they are forecast. At times, circumstances can arise that will delay a project into the next test year or into a subsequent test period. Occasionally, certain CRU projects may require execution over more than one year or test period.

993. As a result of these factors, AltaLink expects its forecast accuracy of each individual CRU project is between plus 20% or minus 30%, depending on the individual characteristics of the specific replacement or upgrade project.[178] Approved forecast to actual CRU Program expenditure variances will reflect the types of factors outlined above.

994. Notwithstanding the many factors that can affect AltaLink's actual expenditures in a given year as compared to its forecast, AltaLink has accurately forecast its actual CRU expenditures over the past six years, with a cumulative variance of only 1% as shown in Table 10.3.4.1-1 below. In AltaLink's experience, its current CRU forecast process remains the most effective approach to forecast the ongoing investments in its CRU Program (i.e., a large collection of ongoing multi-year programs with numerous small risk-based individual asset level projects/investments).

10.3.1.2 Salvage Expenditures Forecast

AltaLink's Salvage Allocation Methodology

995. Consistent with its long-standing historical approach, AltaLink addresses CRU salvage as an integrated part of its overall CRU Program.[179] AltaLink does not plan or track salvage activities and costs associated with each CRU project separately from other aspects of the project. It is neither efficient nor practical to delineate the costs specifically for the salvage portion of a CRU project, as the salvage activity is highly integrated and seamless with the rest of the overall execution of the project. This reflects the nature of CRU work, which involves the replacement of an asset through the contemporaneous removal of the existing asset and installation of the new asset at the same or nearly the same physical location. For example, it is neither efficient nor practical to separate the activities and costs for preparing and filing regulatory applications

[178] 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 stakeholder involvement). The timing and scope of specific individual project execution will also contribute to the potential variance of forecast to actual expenditures. 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: permitting requirements; weather; outage and environmental constraints on construction; supply chain impacts; and customer requests.

[179] Exhibit 26509-X0156, AML-CCA-2021JUN25-016, pdf 52; Exhibit 26509-X0309, AML Rebuttal Evidence, para 1385 and 1387, pdf 294-295; and Exhibit 3524-X0056, AML-CCA-2015JAN20-078(b), pdf 942.

between the installation/upgrade work and the salvage work, as the regulatory application involves one seamless effort and is required for both the installation/upgrade and salvage work. The salvage activities on a CRU project are primarily driven by and are integral to the CRU capital installation/upgrade activity.

996. To capture both its forecast and actual salvage expenditures accurately and efficiently, AltaLink uses an allocation methodology that allocates an appropriate percentage of the total cost of the replacement or upgrade of a unit of CRU work (net of materials costs) to salvage. This approach reflects the fact that salvage work is integral to the overall replacement/upgrade of assets in each CRU project category. Salvage costs are a function of the total cost of executing CRU projects.

997. AltaLink's salvage allocation methodology was developed a number of years ago based on the Salvage Study.[180] The salvage allocation methodology applies a standard salvage percentage (also referred to as salvage rate) to specific project types.

998. Because salvage costs are a function of the CRU execution costs, the drivers for the costs incurred on labour, engineering, access, and planning are generally the same for both the replacement activities and the salvage activities. For example, if a project is executed under adverse weather conditions, the effort to perform the overall work becomes more difficult and additional costs would be incurred to manage activities like more complex access, managing environmental concerns and rig-matting on site, and additional labour charges due to tougher conditions. All of these factors impact both the installation/upgrade activities as well as the salvage activities.

Review of the 2013-2014 Salvage Study

999. In concert with preparing its 2019-2021 salvage summary reports described later in this section, during 2022 AltaLink conducted a review of its Salvage Study. The purpose of the review was to determine whether the standard salvage percentages assigned to each project type in the Salvage Study continue to accurately reflect the salvage component of the total project costs. A detailed description of the review and its conclusions is provided in **Appendix 18-A01**.

1000. To summarize, AltaLink completed approximately 3,000 CRU projects during the 2019-2021 test period. AltaLink randomly selected 98 projects for review as a sample from the 2019-2021 projects. AltaLink's internal project management staff reviewed each of the 98 projects in detail to assess the types and levels of activities required to complete the salvage component of the project compared to the installation/upgrade component. AltaLink's primary conclusion from the review is that the standard salvage percentages established in the Salvage Study are still an accurate representation of the salvage effort and salvage expenditures associated with CRU programs that have a salvage component.

1001. AltaLink also observed the following:

a. Rebuild of Older Wood Poles program: The standard salvage percentages of 20% for no concrete foundation and 40% for concrete foundation identified in the 2013-2014 Cost of Salvage Study remain appropriate for forecast purposes. However, AltaLink anticipates the need to execute more complex rebuilds in the future, where the salvage component of the work relative to the installation component may vary significantly from historic line rebuilds.

180 Appendix 18A-A02, 2013-2014 Salvage Study.

Each line rebuild project can have unique factors and requirements for construction sequencing and execution. AltaLink will continue to review the specific requirements of each rebuild project during both the planning stage and execution stage to identify potential salvage expenditure drivers that are not sufficiently reflected in the salvage allocation percentages and that may warrant different treatment.

b. P&C Major Program: The standard salvage percentage of 30% identified in the Salvage Study is appropriate across the entire lifecycle of P&C Major projects. However, given the multi-year execution and multi-staged salvage activities of P&C Major Projects, the 30% allocator may not accurately reflect the salvage expenditures incurred on a project in a specific year. Going forward, AltaLink intends to more closely monitor its P&C Major projects to determine whether the standard salvage percentage should be adjusted to more accurately reflect the specific salvage activities undertaken in each major phase of these projects.

1002. For the purposes of its 2024-2025 forecasts, AltaLink determined that the standard salvage percentages identified in the Salvage Study do not require any changes. In support of the salvage allocation methodology, AltaLink has included the following documents:

- **Appendix 18-A03** - Salvage Costs Business Process AL-1099, which details the steps necessary to capture and record salvage costs.
- **Appendix 18-A04** – Salvage Costs Policy which sets the standard that must be followed for recognition and recording of salvage costs.

10.3.2 CRU Procurement Basis

1003. 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 established RAs with a group of qualified suppliers for telecom, substation and lines construction services, including agreed upon terms and conditions and pricing for labour, fleet and equipment over a term of typically 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;
  - performing a market evaluation to identify appropriate suppliers to be included in a competitive event;
  - developing and initiating a competitively bid RFP from potential service providers;
  - evaluating proposals based on established criteria for environment, safety, technical expertise, experience, commercial terms and pricing; and
  - awarding, negotiating, and executing a fixed term RA with successful service providers.
- AltaLink follows a similar competitive process for the acquisition of materials and equipment.

1004. This procurement practice ensures AltaLink obtains market competitive pricing for the required services, materials and equipment in support of the delivery of the CRU Program. In order for AltaLink to be effective in the specific activities necessary to deliver the required services and materials/equipment, AltaLink will establish multi-year agreements when appropriate. AltaLink utilizes and evaluates this approach to optimize the cost, time and effort of the procurement department, and the negotiating process, as opposed to creating a specific procurement event for each individual CRU project in the CRU 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 CRU 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 workforce demand and capacity and ensure that resources assigned to AltaLink projects meet and maintain technical and safety training requirements (e.g. the workforce assigned to AltaLink jobs are familiar with AltaLink processes and standards).

1005. AltaLink monitors the supplier marketplace. If shifts in the market are recognized during the term of the RAs, AltaLink will seek opportunities to make prudent and thoughtful adjustments to pricing and rates as appropriate, rather than waiting for the end of the contract term before entering the market in a formal process. AltaLink conducted its most recent competitive bid process for substation construction services in 2021-2022, which resulted in new competitive rates through to 2022-2025. AltaLink will be conducting additional competitive bid processes for other CRU construction scopes over the course of the next several years to ensure market competitive rates. AltaLink anticipates rates will align with the labour escalation forecasts for the Test Period, as discussed in Section 1.8.5 of the Application. AltaLink has and will continue to assess ways to achieve market competitive rates and cost-effective delivery of the CRU Program.

1006. Through the procurement practices described above, more than 80% of AltaLink's external or materials costs are obtained through externally procured market competitive pricing for materials/equipment and construction services. This portion of the cost reflects 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.

10.3.3 CRU Project Management and Construction Execution Oversight

1007. 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, project management, environmental review, regulatory, and select project design, procurement and construction. As outlined above, AltaLink uses service providers as appropriate in the delivery of the CRU Program. This approach allows for the cost-effective augmentation of internal resources from key service providers based on market competitive rates and provides the required capacity to execute the entirety of the CRU Program as well as respond to urgent or emergency repair situations.

1008. The following are the general project management and construction execution practices in place to monitor and manage the cost-effective delivery of the CRU Program:

- As part of the project scoping process, AltaLink will develop a DBM for the projects that will be in construction the following year.
- The AltaLink project manager will complete a cost estimate for the project, with the support from service providers if needed.
- AltaLink then assigns the projects to internal resources or external service providers based on maximizing the utilization of internal resources and the skills and capabilities of the different resources. If utilizing a service provider, AltaLink will provide them with the project DBM to initiate the planning of the portion of the project which they have been assigned.

- Service providers may complete the design, materials procurement, construction or any combination thereof. For example, a design completed by AltaLink engineering might be constructed by a service provider if internal resources are not available for construction.
- The service provider will develop the execution plan, including confirming the scope and pricing at the start of the project. The service provider will execute the project and any changes in the execution phase are managed through project change management.
- The AltaLink project manager oversees the execution of the work with the service provider including safety, cost, schedule, scope and quality.
- During the project, the project manager manages internal or external resources during the execution of the project to ensure that incurred costs are reasonable.
- Throughout the execution of the CRU portfolio, program level variances can occur as a result of detailed project planning and the nature of working in brownfield energized facilities. These program level variances may include items such as outages changing to accommodate customer requirements, unknown site conditions, incremental scope and changes as a result of detailed design requirements.

10.3.4 CRU Historical and Forecast Expenditures

1009. AltaLink's historical and forecast CRU capital and salvage expenditures, organized by category, are provided in Table 10.3.4-1 and Table 10.3.4-2 below.

Table 10.3.4-1 - 2021-2025 CRU Capital Expenditures Actual and Forecast ($M)

Description	2021	2022	2023	2024	2025
	Actual	Actual	MU	Forecast	Forecast
Transmission Urgent Repair	15.0	9.6	11.3	9.2	9.4
Transmission Planned Maintenance	39.4	48.3	42.5	51.3	47.7
Substation Planned Maintenance	52.9	49.5	54.3	59.7	56.8
Telecom Planned Maintenance	10.3	11.0	10.4	12.5	12.3
Meter Replacements	0.6	0.4	0.8	1.4	1.4
System Control Centre Upgrades	2.9	4.6	2.5	2.7	3.2
Transmission Line Moves	2.1	1.9	4.1	3.9	4.0
Vehicles	2.5	1.1	4.7	4.5	3.6
Tools & Instruments	1.4	1.6	2.1	2.0	1.5
551L Rebuild	0.1	0.0	0.0	0.0	0.0
Line Clearance Mitigation	4.0	2.9	3.6	1.2	1.8
Wildfire Mitigation Plan	17.0	10.0	9.7	38.5	38.4
Transmission Capital Maintenance Total	**148.2**	**141.0**	**146.1**	**186.9**	**180.0**
Line Move Customer Contribution	(0.4)	(0.1)	(1.0)	(1.0)	(1.0)
Net Transmission Capital	**147.8**	**140.9**	**145.1**	**185.9**	**179.0**

Totals may not add due to rounding.

Table 10.3.4-2 - 2021-2025 CRU Salvage Expenditures Actual and Forecast ($M)

Description	2021 Actual	2022 Actual	2023 MU	2024 Forecast	2025 Forecast
Transmission Urgent Repair	4.0	3.0	3.4	2.8	2.9
Transmission Planned Maintenance	7.9	10.0	7.7	9.1	8.6
Substation Planned Maintenance	10.6	10.5	10.0	11.6	11.1
Telecom Planned Maintenance	1.3	1.0	0.8	0.8	0.9
Meter Replacements	0.2	0.2	0.2	0.4	0.3
System Control Centre Upgrades	0.0	0.0	0.0	0.0	0.0
Transmission Line Moves	0.5	0.4	1.4	1.3	1.4
Vehicles	(0.1)	(0.2)	(0.6)	(0.5)	(0.5)
Tools & Instruments	0.0	0.0	0.0	0.0	0.0
551L Rebuild	0.0	0.0	0.0	0.0	0.0
Line Clearance Mitigation	2.0	0.7	0.7	0.2	0.4
Wildfire Mitigation Plan	3.6	1.2	1.4	8.5	7.8
Transmission Facility Modification Program	0.3	0.2	1.3	2.9	1.1
Transmission Capital Maintenance Total	**30.4**	**26.9**	**26.3**	**37.2**	**33.9**
Line Move Customer Contribution	0.0	0.0	0.0	0.0	0.0
Net Transmission Capital	**30.4**	**26.9**	**26.3**	**37.2**	**33.9**

Totals may not add due to rounding.

AltaLink's historical and forecast CRU capital and salvage expenditures organized by category and by program are provided in Table 10.3.4-3 and

1010. Table 10.3.4-4 below.

Table 10.3.4-3 - 2021-2025 CRU Capital Expenditures Actual and Forecast ($M) by Business Case

Description Business Case	2021 Actual	2022 Actual	2023 MU	2024 Forecast	2025 Forecast
Transmission Urgent Repair	**15.0**	**9.6**	**11.3**	**9.2**	**9.4**
13-A01 Urgent Repair	15.0	9.6	11.3	9.2	9.4
Transmission Planned Maintenance	**39.4**	**48.3**	**42.5**	**51.3**	**47.7**
13-A02 Line Components	16.6	14.8	20.8	19.4	19.7
13-A03 Transmission Line Rights-Of-Way	3.1	3.1	3.7	3.3	3.2
13-A04 Transmission Line Airbreaks	0.2	1.4	0.0	0.0	0.0
13-A05 Rebuild Older Wood Poles	15.3	26.2	13.9	24.7	20.8
13-A17 Pipeline Interference Mitigation	4.2	2.8	4.1	4.0	3.9
Substation Planned Maintenance	**52.9**	**49.5**	**54.3**	**59.7**	**56.8**
13-A06 Condition Monitoring	1.4	1.1	1.3	1.4	1.4
13-A07 Substation Components	10.4	9.5	10.6	10.9	9.8
13-A08 Disturbance Analysis Equipment	0.4	0.5	1.3	0.9	0.4
13-A09 Scada Equipment	2.2	1.7	5.1	3.6	3.0

Description Business Case	2021 Actual	2022 Actual	2023 MU	2024 Forecast	2025 Forecast
13-A11 Substation Grounding	1.7	1.9	2.1	2.1	2.2
13-A12 Substation Major Equipment	14.4	13.6	16.4	18.0	17.2
13-A13 25 kV Bus	2.8	4.4	0.8	1.0	0.8
13-A14 Substation Rebuild Program	0.3	0.2	4.6	5.0	7.9
13-A15 Protection and Control Equipment	6.0	5.8	5.5	7.6	7.8
13-A16 Protection and Control Major	13.0	10.8	6.8	9.2	6.3
13-A30 Arc Flash Hazard Mitigation	0.3	0.1	-	-	-
Telecom Planned Maintenance	**10.3**	**11.0**	**10.4**	**12.5**	**12.3**
13-A10 Telecommunication Equipment	8.6	8.7	8.5	10.1	9.8
13-A19 Telecom Major Projects	1.7	2.4	1.9	2.4	2.5
Meter Replacements	**0.6**	**0.4**	**0.8**	**1.4**	**1.4**
13-A22 Metering	0.6	0.4	0.8	1.4	1.4
System Control Centre Upgrades	**2.9**	**4.6**	**2.5**	**2.7**	**3.2**
13-A20 AltaLink Control Centre	2.4	4.0	1.8	1.4	1.3
13-A21 AltaLink Control Centre Visibility	0.5	0.4	0.6	1.1	1.1
13-A33 Control Centre Relocation	0.0	0.2	0.1	0.2	0.8
Transmission Line Moves (Net)	**1.8**	**1.8**	**3.1**	**2.9**	**3.0**
13-A24 Transmission Line Moves	2.1	1.9	4.1	3.9	4.0
Less: Contributions In Aid of Construction	(0.4)	(0.1)	(1.0)	(1.0)	(1.0)
Vehicles	**2.5**	**1.1**	**4.7**	**4.5**	**3.6**
13-A25 Transmission General Capital -	2.5	1.1	4.7	4.5	3.6
Tools & Instruments	**1.4**	**1.6**	**2.1**	**2.0**	**1.5**
13-A23 Tools and Instruments	1.4	1.6	2.1	2.0	1.5
551L Rebuild	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**
13-A31 Banff - Lake Louise 551L Rebuild	0.1	0.0	0.0	0.0	0.0
Line Clearance Mitigation	**4.0**	**2.9**	**3.6**	**1.2**	**1.8**
13-A32 Line Clearance Mitigation	4.0	2.9	3.6	1.2	1.8
Wildfire Mitigation Plan	**17.0**	**10.0**	**9.7**	**38.5**	**38.4**
22-A1 Wildfire Situational Awareness	0.7	0.8	0.8	1.8	0.9
22-A2 Targeted Component and Structure Replacements In HRFA	10.2	4.6	4.1	15.5	8.5
22-A3 Line Rebuilds	4.9	0.1	1.0	4.7	2.3
22-A4 Transmission Line Row Upgrade in HRFA	1.2	4.5	3.9	6.0	6.9
22-A5 Top Ignition Causing Lines Upgrades	-	-	-	10.4	19.9
Transmission Facility Modification	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
13-A34 Transmission Facility Modification	0.0	0.0	0.0	0.0	0.0
Capital Expenditure Total	**147.8**	**140.9**	**147.1**	**185.9**	**179.0**

Table 10.3.4-4 - 2021-2025 CRU Salvage Expenditures Actual and Forecast ($M) by Business Case

Description Business Case	2021 Actual	2022 Actual	2023 MU	2024 Forecast	2025 Forecast
Transmission Urgent Repair	**4.0**	**3.0**	**3.4**	**2.8**	**2.9**
13-A01 Urgent Repair	4.0	3.0	3.4	2.8	2.9
Transmission Planned Maintenance	**7.9**	**10.0**	**7.7**	**9.1**	**8.6**
13-A02 Line Components	5.1	4.4	5.7	5.1	5.2
13-A03 Transmission Line Rights-of-Way	0.2	0.1	(0.2)	0.0	0.0
13-A04 Transmission Line Airbreaks	0.0	0.3	0.0	0.0	0.0
13-A05 Rebuild Older Wood Poles	2.5	5.2	2.3	4.0	3.4
13-A17 Pipeline Interference Mitigation	0.0	0.0	0.0	0.0	0.0
Substation Planned Maintenance	**10.6**	**10.5**	**10.0**	**11.6**	**11.1**
13-A06 Condition Monitoring	0.2	0.2	(0.3)	0.1	0.1
13-A07 Substation Components	1.5	1.5	1.5	1.5	1.3
13-A08 Disturbance Analysis Equipment	0.0	0.1	0.1	0.0	0.0
13-A09 Scada Equipment	1.0	0.9	1.3	0.9	0.8
13-A11 Substation Grounding	0.0	0.0	0.0	0.0	0.0
13-A12 Substation Major Equipment	2.3	2.8	3.1	3.5	3.2
13-A13 25 kV Bus	0.4	0.8	0.2	0.2	0.2
13-A14 Substation Rebuild Program	0.1	0.0	1.2	1.3	2.0
13-A15 Protection and Control	1.5	1.6	1.5	2.2	2.2
13-A16 Protection and Control Major	3.6	2.7	1.4	2.0	1.3
13-A30 Arc Flash Hazard Mitigation	0.1	0.0	-	-	-
Telecom Planned Maintenance	**1.3**	**1.0**	**0.8**	**0.8**	**0.9**
13-A10 Telecommunication Equipment	1.1	1.0	0.8	0.8	0.9
13-A19 Telecom Major Projects	0.2	0.0	0.0	0.0	0.0
Meter Replacements	**0.2**	**0.2**	**0.2**	**0.4**	**0.3**
13-A22 Metering	0.2	0.2	0.2	0.4	0.3
System Control Centre Upgrades	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
13-A20 AltaLink Control Centre	0.0	0.0	0.0	0.0	0.0
13-A21 AltaLink Control Centre Visibility	0.0	0.0	0.0	0.0	0.0
13-A33 Control Centre Relocation	0.0	0.0	0.0	0.0	0.0
Transmission Line Moves (Net)	**0.5**	**0.4**	**1.4**	**1.3**	**1.4**
13-A24 Transmission Line Moves	0.5	0.4	1.4	1.3	1.4
Less: Contributions in Aid of Construction	0.0	0.0	0.0	0.0	0.0
Vehicles	**(0.1)**	**(0.2)**	**(0.6)**	**(0.5)**	**(0.5)**
13-A25 Transmission General Capital -	(0.1)	(0.2)	(0.6)	(0.5)	(0.5)
Tools & Instruments	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

Description Business Case	2021 Actual	2022 Actual	2023 MU	2024 Forecast	2025 Forecast
13-A23 Tools and Instruments	0.0	0.0	0.0	0.0	0.0
551L Rebuild	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
13-A31 Banff - Lake Louise 551L Rebuild	0.0	0.0	0.0	0.0	0.0
Line Clearance Mitigation	**2.0**	**0.7**	**0.7**	**0.2**	**0.4**
13-A32 Line Clearance Mitigation	2.0	0.7	0.7	0.2	0.4
Wildfire Mitigation Plan	**3.6**	**1.2**	**1.4**	**8.5**	**7.8**
22-A1 Wildfire Situational Awareness	0.0	0.0	0.0	0.0	0.0
22-A2 Targeted Component and Structure Replacements In HRFA	2.7	1.2	1.2	4.6	2.6
22-A3 Line Rebuilds	0.9	0.0	0.2	0.8	0.4
22-A4 Transmission Line Row Upgrade in	0.0	0.0	0.0	0.0	0.0
22-A5 Top Ignition Causing Lines Upgrades	-	-	-	3.1	4.9
Transmission Facility Modification	**0.3**	**0.2**	**1.3**	**2.9**	**1.1**
13-A34 Transmission Facility	0.3	0.2	1.3	2.9	1.1
Salvage Expenditure Total	**30.4**	**26.9**	**26.3**	**37.2**	**33.9**

1011. AltaLink's historical CRU capital expenditures and salvage expenditures by program and subprogram are provided in Appendix 13-A Attachment 1.

1012. As shown Table 10.3.4-3 above, the two largest CRU investment areas are focused on addressing substation planned maintenance and transmission line planned maintenance. The remaining forecast investments relate to grid operation and include 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 capital investment breakdown for the 2024-2025 Test Period is shown Figure 10.3.4-1.

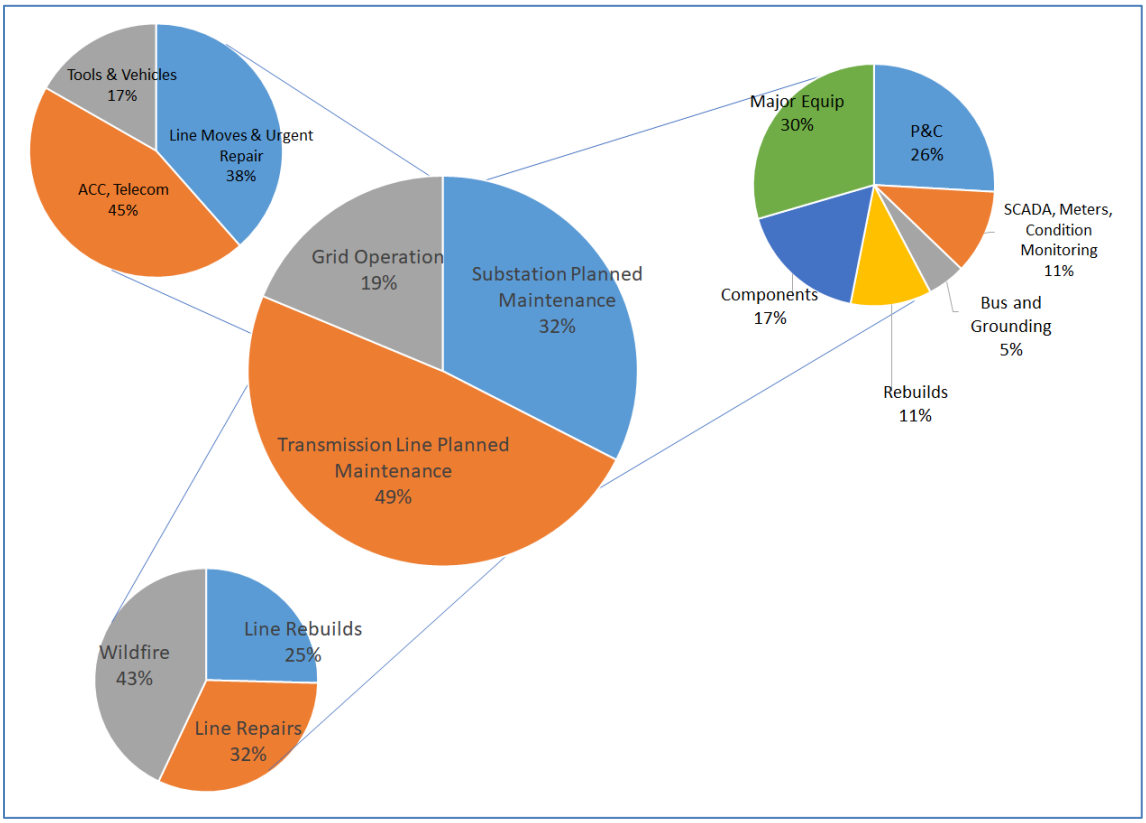


Figure 10.3.4-1 - 2024-2025 CRU Investment Focus Areas

10.3.4.1 Capital Expenditures

1013. AltaLink forecasts a 28% increase in average annual CRU capital expenditures in the 2024-2025 Test Period relative to the 2022-2023 test period.

1014. CRU investments are ongoing multi-year capital maintenance investments. Therefore, AltaLink appropriately considers variances on a cumulative, rather than year-by-year, basis. Any year can have variability due to numerous factors, such as customer outage availability, wildlife or environmental requirements, supply chain interruptions impacting materials, construction labour, equipment condition and weather. As a result of these factors, these programs should be considered over a longer period.

1015. AltaLink's total CRU capital expenditures between 2017 and 2022 track consistently to approved levels with a cumulative 1% variance. AltaLink consistently completed the forecast level of CRU Program investments, with some unavoidable year to year timing variability. A summary breakdown for 2017-2022 is provided in Table 10.3.4.1-1 below.

Table 10.3.4.1-1 - 2017-2022 CRU Capital Expenditures versus Approved ($M)

Description	Total 2017-2022 GTA Approved	Total 2017-2022 Actual	Variance	Average 2017-2022 GTA Approved	Average 2017-2022 Actual
Transmission Urgent Repair	45.4	73.1	61%	7.6	12.2
Transmission Planned Maintenance	235.6	231.0	-2%	39.3	38.5
Substation Planned Maintenance	308.2	314.8	2%	51.4	52.5

Description	Total 2017-2022 GTA Approved	Total 2017-2022 Actual	Variance	Average 2017-2022 GTA Approved	Average 2017-2022 Actual
Telecom Planned Maintenance	67.8	63.9	-6%	11.3	10.6
Meter Replacements	5.6	5.3	-6%	0.9	0.9
System Control Centre Upgrades	18.5	17.5	-5%	3.1	2.9
Mobile Substation	0.0	0.0	-	0.0	0.0
Vehicles	22.0	14.2	-36%	3.7	2.4
Tools & Instruments	11.9	10.1	-15%	2.0	1.7
551L Rebuild	79.6	66.3	-17%	13.3	11.0
Line Clearance Mitigation	47.3	35.4	-25%	7.9	5.9
Wildfire Mitigation Plan	46.8	44.3	-5%	7.8	7.4
Transmission Line Moves	15.2	16.6	9%	2.5	2.8
Total	**903.9**	**892.4**	**-1%**	**150.7**	**148.7**

1016. Table 10.3.4.1-2 below provides a further breakdown of the actual and approved CRU capital expenditures related to the 2022-2023 GTA and AltaLink's 2024-2025 forecast. Table 10.3.4.1-2 also shows the variances for the previous GTA period. Explanation of category forecast trends is provided in Section 10.3.4.2.

Table 10.3.4.1-2 – 2022-2025 CRU Capital Expenditures versus Approved ($M)

Description	Average 2022-2023 Approved	Average 2022-2023 Actual/MU	Variance	Average 2022-2023 Actual/MU	Average 2024-2025 Forecast	Variance
Transmission Urgent Repair	8.5	10.4	22%	10.4	9.3	-11%
Transmission Planned	45.0	45.4	1%	45.4	49.5	9%
Substation Planned	50.0	51.9	4%	51.9	58.2	12%
Telecom Planned Maintenance	10.9	10.7	-1%	10.7	12.4	16%
Meter Replacements	0.8	0.6	-23%	0.6	1.4	131%
System Control Centre Upgrades	3.0	3.5	16%	3.5	2.9	-17%
Vehicles	3.5	2.9	-16%	2.9	4.0	38%
Tools & Instruments	1.9	1.9	-2%	1.9	1.7	-7%
551L Rebuild	0.0	0.0	-	0.0	0.0	-
Line Clearance Mitigation	2.2	3.3	50%	3.3	1.5	-54%
Wildfire Mitigation Plan	10.2	9.9	-3%	9.9	38.4	28%
Transmission Line Moves	3.8	3.0	-21%	3.0	3.9	31%
Total	**139.8**	**143.6**	**3%**	**143.6**	**183.5**	**28%**

10.3.4.2 2024-2025 Capital Expenditure Trends

1017. 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 experiences unexpected requirements for equipment replacement, for example within its Transmission Urgent Repair program, AltaLink

makes effective repairs to maintain reliable transmission service. AltaLink uses the knowledge gained from each urgent repair to build future forecasts. AltaLink provides explanations of program- or subprogram-specific forecast trends in Section 3 of each CRU business case in **Appendix 13-A**. The following is a high-level summary of the primary trends between AltaLink's 2022-2023 actual/management update and 2024-2025 forecasts by program category.

1018. **Transmission Urgent Repair** – AltaLink forecasts a reduction in capital expenditures from the 2023MU as AltaLink experienced a series of complex urgent repairs in 2022 and 2023 relating to underground cables which resulted in higher capital expenditures than reflected in the forecast. Refer to Section 10.3.8.1 for additional 2022 and 2023 MU variance details. AltaLink is not anticipating a similar level of urgent repair expenditures in 2024 or 2025. Refer to the Transmission Urgent Repair business case, **Appendix 13-A01** for additional forecast details.

1019. **Transmission Planned Maintenance** – AltaLink forecasts an increase in capital expenditures for transmission planned maintenance based on two drivers. First, AltaLink is working on several multi-year line rebuild projects that were in the planning and permitting phases during 2022-2023 and will transition into higher cost construction activities in 2024-2025. Second, AltaLink will implement a new conductor replacement subprogram under its Line Components program starting in 2024. For the 2024-2025 Test Period this subprogram will address identified conductor degradation on sections of SDC. These drivers are discussed in more detail in the Rebuild Wood Pole Lines business case, **Appendix 13-A05** and the Line Components business case, **Appendix 13-A02,** respectively.

1020. **Substation Planned Maintenance** – AltaLink forecasts an increase in capital expenditures for substation planned maintenance primarily due to requirements to address an increased volume of equipment risks as compared to the prior test period. For example:

- An increased number of transformers requiring replacement compared to the previous test period, identified through AltaLink's ongoing assessments of transformer asset condition.
- An increased volume of substation components and high voltage major equipment requiring replacement, such as circuit breakers and instrument transformers, based on condition and risk of failure assessments.
- An increase to two substations that are planned to undergo substation refurbishment field construction activities compared to one in the previous test period.
- An increased volume of individual relays requiring replacement during the Test Period compared to the last test period.
- These increases are partially offset by a forecast decrease in capital expenditures in the P&C Major program.

These items are described further in 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**.

1021. **Telecom Planned Maintenance** – AltaLink forecasts an increase in capital expenditures for telecom planned maintenance primarily due to increased complexity and unique site requirements for building upgrades and pole replacements. These drivers are described further in the Telecommunication Equipment business case, **Appendix 13-A10;** and Telecommunication Major business case, **Appendix 13-A19**.

1022. **Meter Replacements** – AltaLink forecasts an increase in capital expenditures for meter replacements primarily driven by timing and requirements to complete additional meter replacements caused by COVID pandemic-related equipment certification delays. Further details are provided in the Metering business case, **Appendix 13-A22**.

1023. **System Control Center Upgrades** – AltaLink forecasts a decrease in capital expenditures for system control centre upgrades reflecting the completion of AltaLink's EMS upgrade (which is undertaken every five to seven years) during the 2022-2023 test period. This decrease will be partially offset by Control Centre improvements that are identified in the new AltaLink Control Centre Reconfiguration business case, **Appendix 13-A33**. Further details impacting the AltaLink Control Centre are provided in AltaLink Control Centre Visibility business case, **Appendix 13-A21** and the AltaLink Control Centre business case, **Appendix 13-A20**.

1024. **Vehicles** – AltaLink forecasts an increase in capital expenditures for vehicles reflecting both the anticipated timing of required vehicle replacements and differences in the types of vehicles that will require replacement in the 2024-2025 Test Period compared to the last test period. Vehicle deliveries in prior periods have been impacted by recent supply chain constraints, with the result that AltaLink anticipates receiving a number of vehicles later than originally planned, with some being delayed from the 2022-2023 test period into the 2024-2025 Test Period. Further details on AltaLink's Test Period vehicle forecast is provided in the Transmission General Capital – Vehicles business case, **Appendix 13-A25**.

1025. **Tools & Instruments –** AltaLink forecasts a decrease in capital expenditures for tool and instruments primarily driven by less specialized tool purchases forecast for the Test Period relative to the previous test period. Further details respecting AltaLink's forecast expenditures are provided in the Tools and Instruments business case, **Appendix 13-A23**.

1026. **Transmission Line Moves** – AltaLink forecasts an increase in capital expenditures for transmission line move projects from the previous test period based on increasing post-pandemic economic and customer activities. Refer to the Transmission Line Moves business case at **Appendix 13-A24** for further forecast details.

1027. **LCM** – AltaLink forecasts a decrease in capital expenditures for LCM primarily due to forecast reductions in the volume of more complex high priority C1 deficiencies that will need to be addressed in 2024-2025 compared to the previous test period. Further details are provided in the Line Clearance Mitigation business case, **Appendix 13-A32**.

1028. **WMP** – AltaLink forecasts an increase in capital expenditures due to expanding and accelerating its WMP, as outlined below:

- an increase in the number of line rebuilds in HRFAs for the Test Period primarily driven by requirements to shift field construction of one of the previously forecast rebuilds to 2024 due to more complex stakeholder consultation and regulatory approval process requirements;
- requirements to increase the volume of ROW upgrades in HRFAs to mitigate identified vegetation that, based on location and growth, could come into contact with electrical wires and ignite a wildfire;
- requirements to initiate ROW federal permitting requirements in the Banff National Park to address identified upgrades in HRFAs recently identified;

- need to address of individual structures with identified deficiencies at individual locations outside HRFAs that pose high risk of initiating a wildfire;
- updating the original wildfire risk model first completed in 2020;
- introduce a dynamic wildfire model to enhance real time operator awareness;
- accelerate the timing (pace) to resolve previously identified ignition causing structural deficiencies (maintenance notifications) in HRFAs and identified high risk ignition points;
- accelerate the timing (pace) to resolve newly identified ignition causing structural deficiencies (maintenance notifications) in HRFAs and identified high risk ignition points within 12 months;
- implement a new program to address the top ignition causing lines that cause a high proportion of fire ignitions; and
- implementing a new situational awareness technology through the Waveform Analytics subprogram to pilot technology for monitoring and pre-emptive failure detection on transmission lines in HRFAs.

1029. Refer to **Appendix 22** Wildfire Mitigation Plan and the relevant capital business cases for additional forecast details:

- **Appendix 22-A1:** Wildfire Situational Awareness;
- **Appendix 22-A2:** Targeted Component and Structure Replacements in HFRAs;
- **Appendix 22-A3:** Line Rebuilds in HFRAs;
- **Appendix 22-A4:** Transmission Line Rights-Of-Way Upgrades in HFRAs; and
- **Appendix 22-A5:** Top Ignition Causing Lines Upgrades.

10.3.4.3 Salvage Expenditures

1030. AltaLink forecasts a 33% increase increase in average annual CRU salvage expenditures in the 2024-2025 Test Period relative to the 2022-2023 test period.

1031. For the reasons provided above in Section 10.3.4.2 related to CRU Program expenditures, variances in historical actual to test period forecast CRU Salvage expenditures should also be considered over the longer term rather than year-by-year.

1032. AltaLink's total CRU salvage expenditures between 2017 and 2022 have tracked to approved levels with a cumulative 5% variance. This percentage is different from the -1% variance applicable to CRU capital expenditures discussed earlier, primarily reflecting: (1) variances in materials costs which are excluded from the calculation of salvage expenditures under AltaLink's salvage allocation methodology, and (2) differences in the mix of CRU project types completed compared to forecast, which impacts the salvage percentage applied under the salvage allocation methodology and thus the total salvage expenditures. AltaLink consistently completes the necessary CRU salvage work on its CRU projects, with some year-to-year timing variability. A summary breakdown for 2017-2022 is provided in Table 10.3.4.3-1 below.

Table 10.3.4.3-1 – 2017-2022 CRU Capital Salvage Expenditures versus Approved ($M)

Description	Total 2017-2022 GTA Approved	Total 2017-2022 Actual	Variance	Average 2017-2022 GTA Approved	Average 2017-2022 Actual
Transmission Urgent Repair	15.7	17.5	12%	2.6	2.9
Transmission Planned Maintenance	41.4	47.8	15%	6.9	8.0

Substation Planned Maintenance	60.3	61.9	3%	10.0	10.3
Telecom Planned Maintenance	4.7	8.6	82%	0.8	1.4
Meter Replacements	1.2	1.6	36%	0.2	0.3
System Control Centre Upgrades	0.0	0.0	-	0.0	0.0
Mobile Substation	0.0	0.0	-	0.0	0.0
Vehicles	(1.5)	(1.7)	15%	(0.2)	(0.3)
Tools & Instruments	0.0	0.0	-	0.0	0.0
551L Rebuild	17.0	14.3	-16%	2.8	2.4
Line Clearance Mitigation	9.2	6.5	-30%	1.5	1.1
Wildfire Mitigation Plan	10.2	9.1	-11%	1.7	1.5
Transmission Facility Modification Program	0.0	0.5	-	0.0	0.1
Transmission Line Moves	3.3	4.1	23%	0.6	0.7
Total	**161.5**	**170.1**	**5%**	**26.9**	**28.3**

1033. Table 10.3.4.3-2 below provides a further breakdown of the actual and approved CRU salvage expenditures related to the 2022-2023 GTA and the Test Period. Table 10.3.4.3-2 also shows the variance for the previous GTA period. Explanations of category trends are provided in Section 10.3.4.4.

Table 10.3.4.3-2 – 2022-2025 CRU Salvage Expenditures versus Approved ($M)

Description	Average 2022-2023 Approved	Average 2022-2023 Actual/MU	Variance	Average 2022-2023 Actual/MU	Average 2024-2025	Variance
Transmission Urgent Repair	2.9	3.2	9%	3.2	2.8	-12%
Transmission Planned Maintenance	8.0	8.9	11%	8.9	8.8	0%
Substation Planned Maintenance	9.7	10.3	5%	10.3	11.4	11%
Telecom Planned Maintenance	0.2	0.9	267%	0.9	0.9	-5%
Meter Replacements	0.2	0.2	5%	0.2	0.3	109%
System Control Centre Upgrades	0.0	0.0	-	0.0	0.0	-
Vehicles	0.0	(0.4)	-	(0.4)	(0.5)	12%
Tools & Instruments	0.0	0.0	-	0.0	0.0	-
551L Rebuild	0.0	0.0	-	0.0	0.0	-
Line Clearance Mitigation	0.4	0.7	64%	0.7	0.3	-58%
Wildfire Mitigation Plan	1.5	1.3	-15%	1.3	8.2	531%
Transmission Facility Modification Program	0.6	0.7	23%	0.7	2.0	165%
Transmission Line Moves	0.8	0.9	18%	0.9	1.3	50%
Total	**24.4**	**26.6**	**9%**	**26.6**	**35.5**	**33%**

*Totals may not add due to rounding.

10.3.4.4 2024-2025 Salvage Expenditure Trends

1034. The tables above show that AltaLink's salvage expenditure forecasts for 2024-2025 are consistent with the capital expenditure forecasts for most CRU programs.

1035. Due to the application of the salvage allocation methodology described in Section 10.3.1 above, the 2022-2023 actual to 2024-2025 forecast salvage variances are mainly attributable to forecast changes in the activities and work levels that will be required to remove, recycle and dispose of the transmission assets forecast for capital replacement for each CRU project. Therefore, the drivers of the salvage variances are the same as those described above in Section 10.3.4.2 for the CRU capital expenditure variances unless otherwise described below.

1036. **WMP** – The salvage expenditures are expected to increase greater than the variance increase for capital expenditures due to the nature of the work in AltaLink's WMP. Some WMP activities do not require salvage and the activities associated with the new Top Ignition Causing Lines Upgrades program, **Appendix 22-A5** includes salvage expenses.

1037. **Transmission Facility Modification** – In this and the prior test period this program consists purely of salvage activities. AltaLink forecasts an increase in salvage expenditures in this program primarily driven by the completion of work required at 2739S Wabamun. Salvage expenditures for this site were approved in the 2022-2023 GTA. The planning work was completed in 2022-2023 and project execution is planned for 2024-2025. In addition, AltaLink has identified several locations where either transformers have PCBs or transformers are no longer required. Under the applicable PCB-related regulations, all equipment with PCB concentration greater than 50 ppm must be removed by December 31, 2025. Specific locations are described in the Transmission Facility Modification business case, **Appendix 13-A34**.

1038. **Transmission Planned Maintenance** –Although capital expenditures are forecast to increase by 12%, salvage expenditures are not. This is because there are subprograms in the Line Components program which have installation/upgrade work (and thus project capital expenditures) but will not require any salvage work (and thus will not incur any salvage expenditures). Examples include pole test and treatment activities, and steel structure corrosion inspections. In addition, AltaLink forecasts fewer complex notifications to be addressed in the Test Period as compared to the 2022-2023 test period, resulting in less labour required relative to the materials costs. As noted earlier, materials costs are excluded from the application of the salvage allocation percentages. Further details on these projects are provide in the Rebuild Wood Pole Lines business case, **Appendix 13-A05** and the Line Components business case, **Appendix 13-A02.**

1039. **Telecom Planned Maintenance** – Although capital expenditures are forecast to increase by 16%, salvage expenditures are forecast to decrease by 5%. This is mainly due to the Southern Dense Wave Division Multiplexing subprogram included in the Telecom Major program in the 2024-2025 Test Period. This subprogram does not involve any salvage activities as no assets are being removed or replaced, and therefore the subprogram does not attract any salvage expenditures. Further details on the mix of projects forecast for the Test Period are provided in the Telecom Major business case, **Appendix 13-A19**.

1040. **Vehicles** - Although capital expenditures are forecast to increase by 38%, salvage proceeds are forecast to increase by only 12%. Vehicles do not follow the typical pattern of salvage increasing in the same proportion as capital expenditures. Instead, vehicle salvage is forecast based on recent experience from vehicle auctions. A standard salvage allocation percentage is not applied

to vehicles as AltaLink receives proceeds from the sale of the vehicles which generally vary from asset to asset, based on age, condition, type of vehicle and market conditions at the time of sale. More details about the vehicles to be sold or disposed of are provided in the Transmission General Capital – Vehicles business case, **Appendix 13-A25**.

1041. **Transmission Line Moves** - Although capital expenditures are forecast to increase by 31%, salvage expenditures are forecast to increase by 50%. The forecast salvage expenditures in the Test Period reflects an expected return to more normal materials expenditures for transmission line moves. In 2022-2023, AltaLink's completed projects involved substantially higher materials costs reflecting greater volumes of materials required for structure replacements, resulting in lower salvage costs (as the salvage allocation percentages are not applied to materials costs). AltaLink's lower materials cost forecast for the Test Period drives a corresponding forecast increase in salvage costs for 2024-2025. Further details respecting the line moves forecast to be completed in 2024-2025 are provided in the Transmission Line Moves business case, **Appendix 13-A24.**

10.3.5 2021 Actuals to Approved 2021 MU

1042. Table 10.3.5-1 below provides a comparison of 2021 actual CRU capital expenditures to the 2021 MU as forecast in the 2022-2023 GTA and included in AltaLink's opening rate base. The table demonstrates that 2021 actuals followed a similar trend of a 1% to 2% variance as compared to the approved MU forecast as shown earlier for the 2022-2023 test period and cumulatively for the past six years for the CRU program as shown in Table 10.3.4.1-1. Overall, there was no material variance in AltaLink's total CRU Program 2021 actuals compared to 2021 MU.

Table 10.3.5-1 – 2021 MU to 2021 Actual CRU Capital Expenditures ($M)

Description	2021 MU	2021 Actual	% Variance
Gross Capital Expenditures	**150.2**	**148.2**	**-2%**
Line Move Customer Contributions/Refunds	0.6	(0.4)	-62%
Net Capital Expenditures	**150.8**	**147.8**	**-2%**

Totals may not add due to rounding.

1043. Actual 2021 capital expenditures were lower than forecast, reflecting changes in timing of required work activities based on updated asset condition inspections and refined program requirements identified through detailed design activities completed after the 2021 MU forecast was completed. For example, within the Line Clearance Mitigation program, AltaLink, through its site-specific assessments, resolved several forecast line clearance deficiencies by completing engineering assessments and avoiding the need for structure modifications, resulting in reductions in capital expenditures. As well, AltaLink was able to develop unique crossarm design solutions for one transmission line that lowered the unit cost of work required to address multiple deficiencies at that location.

1044. The reductions were partially offset by higher than forecast capital expenditures in urgent repairs primarily driven by large equipment failure events including a transformer failure at Fort Saskatchewan 54S substation and an ice damming event that caused multiple transmission line structure failures on 749AL in 2021; a higher than anticipated volume of major substation equipment failures; and six transmission line component and structure failures.

10.3.6 2019-2021 Actual Salvage Expenditures

1045. In Decision 26509-D01-2022, the Commission did not approve AltaLink's 2019-2021 actual CRU net salvage expenditures on the basis of its determination that AltaLink had not provided sufficient information to test the prudence of those expenditures. The Commission directed AltaLink to remove its 2019-2021 actual CRU salvage expenditures in the amount of $98.9M from its 2019-2021 net salvage reserve account (Directive 52).[181] The Commission stated, however, that it would test the prudency of the 2019-2021 net salvage costs in AltaLink's next GTA if AltaLink provides the necessary support for its actual 2019-2021 net salvage costs.[182] AltaLink developed detailed salvage summary reports for each CRU business case from the 2019-2021 GTA explaining the variances from forecast to 2019-2021 actual salvage expenditures and demonstrating the prudence of those expenditures. The salvage summary reports are provided in **Appendix 18-B**.

10.3.7 CRU Capital Expenditure and Salvage Expenditure Variances: 2022-2023 Forecast to 2022 Actuals and 2023 MU

1046. As outlined above, AltaLink has construction execution and project management practices, supported by industry standard procurement processes, which ensure its CRU programs are delivered with market competitive pricing and cost-efficient methods. AltaLink efficiently and cost effectively delivered and is delivering its 2022-2023 CRU Program, ensuring that its actual costs are prudent. In the sections below, AltaLink identifies the variances between its 2022-2023 approved forecast and 2022 actual/2023MU estimated CRU Program expenditures for each CRU program.

1047. As a direct response to Commission expectations in the 2022-2023 GTA Decision,[183] AltaLink provides a variance explanation of its CRU and WMP approved forecast expenditures to its actual/MU expenditures for the 2022-2023 test period on a program-by-program basis. As described in Section 10.3.1 of the Application, AltaLink uses its salvage allocation methodology to determine its forecast and actual salvage expenditures for each project. As such, the drivers of the variances in AltaLink's forecast to actual/MU program capital expenditures are generally also the drivers of the variances in AltaLink's forecast to actual/MU program salvage expenditures. Differences occur, however, where AltaLink incurred markedly different materials costs than forecast to complete a CRU project (i.e., affecting the salvage expenditure due to the exclusion of materials costs from the calculation of salvage), and where the project type actually completed is different from the project type that was forecast.

1048. Table 10.3.7-1 provides a summary of the variances in AltaLink's CRU Program and WMP capital expenditures and salvage expenditures for the 2022-2023 test period, by each program. Sections 10.3.8 to 10.3.41 provide detailed explanations of the drivers of the capital and salvage expenditure variances for each CRU and WMP program. Refer to **Appendix 13-A** Attachment 1 for summary of variances in AltaLink's CRU Program and WMP capital expenditures and salvage expenditures.

1049. Table 10.3.7-1 shows a large reduction in units completed during the 2022-2023 test period within the Line Components program. This was the primary driver of the overall unit reduction during the 2022-2023 test period. AltaLink was unable to complete 2,600 units in its Line Pole

[181] Exhibit 27174-X0003.01, AML 2022-2023 GTA Compliance Filing - Section B Decision Directives, pdf 17.
[182] Decision 26509-D01-2022, para 687.
[183] Decision 26509-D01-2022 paras 138 and 139.

Treatments subprogram due to procurement issues. Refer to Section 10.3.9 below for further details.

Table 10.3.7-1 – 2022-2023 Approved versus Actual/MU Variance Summary

	2022-2023 Approved			2022-2023 Actual/ MU			Variance		
	Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX ($M)	Salvage ($M)
13-A01 Urgent Repair	-	17.1	5.8	-	20.9	6.4	-	3.8	0.5
13-A02 Line Components	15,615	32.9	9.0	11,928	35.6	10.0	(3,687)	2.7	1.1
13-A03 Transmission Line Right of Way	602	6.5	0.0	603	6.8	(0.1)	1	0.3	(0.1)
13-A04 Line Airbreaks	5	1.8	0.2	3	1.4	0.3	(2)	(0.4)	0.1
13-A05 Rebuild Older Wood Poles	78	41.7	6.8	54	40.1	7.5	(24)	(1.5)	0.7
13-A06 Condition Monitoring	24	1.5	0.1	19	2.4	(0.1)	(5)	0.9	(0.2)
13-A07 Substation Components	359	22.1	4.3	304	20.1	2.9	(55)	(2.0)	(1.4)
13-A08 Disturbance Analysis Equipment	34	1.9	0.0	22	1.8	0.2	(12)	(0.0)	0.1
13-A09 SCADA Equipment	27	7.6	1.5	24	6.8	2.2	(3)	(0.7)	0.7
13-A10 Telecommunication Equipment	1,158	16.6	0.5	1,103	17.2	1.7	(55)	0.6	1.2
13-A11 Substation Grounding	40	3.8	0.0	27	4.0	0.0	(13)	0.2	0.0
13-A12 Substation Major Equipment	210	28.6	6.2	152	30.0	5.9	(58)	1.4	(0.3)
13-A13 25kV Bus	2	3.1	0.6	3	5.1	0.9	1	2.0	0.3
13-A14 Substation Rebuild	-	3.9	0.6	-	4.8	1.2	-	0.9	0.5
13-A15 Protection & Control Equipment	148	12.5	3.4	125	11.2	3.2	(23)	(1.2)	(0.2)
13-A16 Protection & Control Major Equipment	-	15.2	2.7	-	17.5	4.1	-	2.4	1.4
13-A17 Pipeline Electrical Interference Mitigation	100	7.2	0.0	74	6.9	0.0	(26)	(0.3)	0.0
13-A19 Telecom Major Upgrades	-	5.2	0.0	-	4.3	0.1	-	(0.9)	0.1
13-A20 AltaLink Control Centre	-	4.9	0.0	-	5.8	0.0	-	0.8	0.0
13-A21 ACC Visibility	-	1.1	0.0	-	1.1	0.0	-	(0.1)	0.0
13-A22 Metering	53	1.6	0.3	23	1.2	0.3	(30)	(0.4)	0.0
13-A23 Tools and Instruments	-	3.8	0.0	-	3.7	0.0	-	(0.1)	0.0
13-A24 Transmission Line Moves	-	7.6	1.5	-	6.0	1.8	-	(1.6)	0.3
13-A25 Vehicles	54	7.0	0.0	53	5.8	(0.9)	(1)	(1.1)	(0.9)
13-A30 Arc Flash Hazard Mitigation	0	0.0	0.0	1	0.1	0.0	1	0.1	0.0
13-A31 551L Rebuild	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0
13-A32 Line Clearance Mitigation	191	4.4	0.9	291	6.5	1.4	100	2.2	0.6
13-A33 AltaLink Control Centre Reconfiguration	0	0.0	0.0	0	0.2	0.0	0	0.2	0.0
13-A34 Transmission Facility Modification Program	-	0.0	1.3	-	0.0	1.5	-	0.0	0.2
22-A1 Wildfire Situational Awareness	12	1.1	0.0	12	1.6	0.0	0	0.5	0.0
22-A2 Targeted Component and Structure Replacements in HRFAs	350	8.4	2.5	449	8.7	2.4	99	0.3	(0.1)
22-A3 Line Rebuilds in HRFAs	8	3.4	0.5	2	1.1	0.2	(6)	(2.3)	(0.4)

	2022-2023 Approved			2022-2023 Actual/ MU			Variance		
	Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX ($M)	Salvage ($M)
22-A4 Transmission Line ROW Upgrades in HRFAs	502	7.6	0.0	497	8.4	0.0	(5)	0.9	0.0
TOTAL	**19,572**	**279.6**	**48.8**	**15,769**	**287.2**	**53.2**	**(3,803)**	**7.5**	**4.4**

10.3.8 Transmission Urgent Repair Program Variance

1050. Table 10.3.8-1 below provides the 2022-2023 approved forecast and anticipated actuals for the capital and salvage expenditures associated with the Transmission Urgent Repair program.

Table 10.3.8-1 – Urgent Repair Actual/MU to Approved Variance 2022-2023

Urgent Repair											
2022-2023 Approved			2022-2023 Actual / MU			Variance			Variance %		
Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX	Salvage
-	17.1	5.8	-	20.9	6.4	-	3.8	0.5	-	22%	9%

1051. Transmission urgent repair is unplanned work and the scope and frequency of events can vary significantly from year to year, primarily driven by weather or unanticipated conditions. As described in Section 1.3 of the 2022-2023 Transmission Urgent Repair business case,[184] AltaLink forecast urgent repairs based on historical actual costs normalized for unusual or unique failures reflected in the historical actuals. AltaLink applied its salvage allocation methodology to determine its forecast and actual salvage expenditures for each project.

10.3.8.1 Capital & Salvage Expenditure Variance: 2022-2023 Forecast to 2022 Actuals and 2023 MU

1052. The 2022 actual and 2023 MU forecast Transmission Urgent Repair program capital and salvage expenditures are $3.8M and $0.5M higher than forecast, respectively. The variances are primarily driven by underground cable failures discussed below. In 2023, the urgent repairs for underground cables are expected to be $2.3M.

1053. AltaLink experienced a series of significant underground cable failures on 1080L and 1109L transmission lines. In October 2022, AltaLink experienced an underground cable failure on one phase of 1080L and initiated an urgent repair to replace the cable, which was completed in February 2023. In March 2023, AltaLink experienced two additional cable failures, a second phase of 1080L and a single phase on parallel circuit 1109L. These failures affected two of the four circuits feeding the Shepard Energy Centre. Due to materials unavailability and supply chain lead times, AltaLink could not immediately repair the additional failed underground cables. To ensure power system reliability, AltaLink initiated the construction of a temporary overhead bypass to restore 1109L. AltaLink is in the process of repairing the underground cables on 1080L and 1109L. AltaLink anticipates repairing 1080L in Q2 of 2023. The timing of the repair of 1109L is dependent on the timing of material delivery and is currently expected to be completed in 2024.

[184] Exhibit 26509-X0026, Appendix 13-A01.

1054. In Table 10.3.8.1-1 below are the significant failures that required unplanned repair or replacement in 2022 that contributed to the actual expenditures and increase from forecast.

Table 10.3.8.1-1 – Significant Failures that Required Unplanned Repair or Replacement in 2022 ($M)

Description	2022 Expenditures
1080L U/G Cable Failure	1.1
284s T1 Failure	0.4
115s T2 Failure	0.4
749L Multi Sleeves Failure	0.3
797L65 Urgent Repair	0.3
OPGW Failure/Repair (1-985L)	0.3
WATL Fiber Break Failure/Repair	0.2
204s T1 Bushing Failure	0.2
185s T2 Bushing Failure	0.2
702L445 Structure Failure	0.2
906s T1 Failure	0.2
89s252 CT Failure	0.2

10.3.9 Line Components Program Variance

1055. Table 10.3.9-1below provides the 2022-2023 approved forecast and anticipated actuals for the capital and salvage expenditures associated with the Line Components program.

Table 10.3.9-1 – Line Components Actual/MU to Approved Variance 2022-2023

Line Components											
2022-2023 Approved			2022-2023 Actual / MU			Variance			Variance %		
Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX	Salvage
15,615	32.9	9.0	11,928	35.6	10.0	(3,687)	2.7	1.1	-24%	8%	12%

1056. As described in Section 1.3 of the 2022-2023 Line Components business case,[185] the forecast units were identified through aerial inspections, detailed ground patrols and pole inspections. AltaLink based its forecast unit pricing for the Line Components program on historical average expenditures adjusted for inflation. AltaLink applied its salvage allocation methodology to determine its forecast and actual salvage expenditures for each project.

10.3.9.1 Capital and Salvage Expenditure Variance: 2022-2023 Forecast to 2022 Actuals and 2023 MU

1057. AltaLink's 2022 actual and 2023 anticipated Line Components program capital expenditures are $2.7M higher than forecast primarily due to AltaLink experiencing higher actual costs for its General Upgrades subprogram and required changes to AltaLink's corrosion inspection and mitigation subprogram.

[185] Exhibit 26509-X0026, Appendix 13-A02.

- AltaLink expects General Upgrade subprogram expenditures to be approximately $2.6M higher than forecast due to asset and site-specific design requirements not anticipated in the forecast. AltaLink is completing component replacements and upgrades on 240 kV and 500 kV lines which, based on current experience, have a higher unit cost than previously forecast due to design requirements and current market conditions. The historical actuals used for the forecast were predominantly comprised of work on 69 kV and 138 kV lines. 240 kV and 500 kV transmission lines are typically not along roadways, have additional considerations for construction such as cultivation and native prairie sensitive species and are more labour intensive for both the removal and installation of components;
- The following additional factors also resulted in higher capital expenditures than forecast for the General Upgrades subprogram:
    - lines requiring more extensive repairs than forecast (e.g. full structure replacements instead of component replacements, pole replacements instead of stub replacements);
    - outage constraints forcing work to be performed with the lines energized which was not forecast and increases cost;
    - a fire caused damage to a line that was targeted for upgrade which required additional repairs that were not forecast;
    - access issues necessitating the usage of additional equipment (e.g. tracked machinery for rolling hill access);
    - several tower replacements required a line reroute that was not forecast; and
    - locations required more extensive brushing that was not forecast.
- due to these challenges, AltaLink expects to execute 903 fewer units than forecast for the General Upgrades subprogram due to resource limitations and the greater labour requirements driven by the factors noted above. Additionally, AltaLink experienced delays in procuring contractor services and expects to complete 2,600 fewer units in the Line Pole Treatment subprogram than forecast. The initial contract award was challenged by one of the unsuccessful bidders resulting in a four-month delay to the commencement of the work under the program. The remaining unit variance is driven by the corrosion mitigation subprogram discussed below; and
- the variance was also driven by requirements within AltaLink's corrosion inspection and mitigation program. At the time of filing the 2022-2023 GTA, AltaLink's plan with respect to corrosion inspections and mitigations was to inspect and complete any required mitigations for one line per year. AltaLink has since found that it takes longer than expected to acquire the environmental, historical, and land access permits resulting in project delays, in some cases of more than a year. As a result, AltaLink changed its approach in 2022 and is now completing a full inspection of a line in one year and then performing identified required mitigations in the following year. Due to these changes, AltaLink expects to complete 179 inspections and 65 mitigations in 2022-2023, instead of its forecast 360 inspections and 40 mitigations. As the mitigation work is more costly than inspection work, AltaLink anticipates incurring $0.2M higher expenditures than forecast.

10.3.10 Transmission Line Rights-of-Way Program Variance

1058. Table 10.3.10-1 below provides the 2022-2023 approved forecast and anticipated actuals for the capital and salvage expenditures associated with the Transmission Line Rights-of-Way program.

Table 10.3.10-1 – Transmission Line Rights-of-Way Actual/MU to Approved Variance 2022-2023

Transmission Line Right of Way											
2022-2023 Approved			2022-2023 Actual / MU			Variance			Variance %		
Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX	Salvage
602	6.5	-	603	6.8	(0.1)	1	0.3	(0.1)	0%	4%	-

1059. As described in Section 1.3 of the 2022-2023 Transmission Line Rights-of-Way business case,[186] the forecast units were identified through scheduled patrols, annual line inspections, survey analysis, field assessment, landowner comments, and in conjunction with the work under AltaLink's Line Component and Rebuild Older Wood Pole Lines programs. AltaLink based the forecast unit pricing for the Transmission Line Rights-of-Way program on historical average expenditures adjusted for inflation. AltaLink did not forecast salvage expenditures for this program generally, as it does not involve the removal of equipment or extensive site reclamation.

10.3.10.1 Capital Expenditure Variance: 2022-2023 Forecast to 2022 Actuals and 2023 MU

1060. AltaLink's 2022 actual and 2023 anticipated Transmission Line Rights-of-Way program capital expenditures are $0.3M higher than forecast due to higher-than-expected contractor rates as a result of changes in market pricing for herbicide and post-construction restoration. The cost increases were partially offset by less expenditures on the ROW upgrades subprogram than forecast.

10.3.10.2 Salvage Variance: 2022-2023 Forecast to 2022 Actuals and 2023 MU

1061. The ($0.01M) salvage expenditure variance reflects a correction respecting salvage expenditures that were incorrectly allocated to the herbicide subprogram in 2021.[187] The application of herbicide and other weed management activities do not involve the removal of equipment and therefore salvage should not have been recorded, as explained in **Appendix 18-B**, Section 4.

10.3.11 Line Airbreaks Program Variance

1062. Table 10.3.11-1 below provides the 2022-2023 approved forecast and anticipated actuals for the capital and salvage expenditures associated with the Line Airbreaks program.

Table 10.3.11-1 – Line Airbreaks Actual/MU to Approved Variance 2022-2023

Line Airbreaks											
2022-2023 Approved			2022-2023 Actual / MU			Variance			Variance %		
Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX	Salvage
5	$1.8	0.2	3	$1.4	0.3	(2)	($0.4)	0.1	-40%	-22%	44%

[186] Exhibit 26509-X0026, Appendix 13-A03.
[187] Refer to Appendix 18-B, section 4.

1063. As described in Section 1.3 of the 2022-2023 Line Airbreaks business case,[188] AltaLink identified the forecast units using data collected from detailed ground and aerial inspections, malfunction reports, condition-based inspections, customer/landowner comments, analysis of line faults and industry advisories. AltaLink based the forecast unit pricing for airbreak replacements on historical average expenditures adjusted for inflation. AltaLink applied its salvage allocation methodology to determine its forecast and actual salvage expenditures for each project.

10.3.11.1 Capital and Salvage Expenditure Variance: 2022-2023 Forecast to 2022 Actuals and 2023 MU

1064. AltaLink's Line Airbreak program capital expenditures are $0.4M lower than forecast and its salvage expenditures are $0.1M higher than forecast, due to:

- AltaLink rescheduled the installation of two airbreaks on 847L, which it forecast completing in 2022-2023, to a future test period to allow for further engineering assessment of potential alternatives. During detailed design and planning, AltaLink determined that the installation of a double temporary bypass was required to facilitate the installation of the two new airbreaks due to high-risk outage constraints with distributed generators in the area. AltaLink expected this additional work to double the forecast expenditure to complete these two installations. As a result, AltaLink decided to delay the installation of the two airbreaks so it could review other potentially more cost-effective alternatives. Shifting the installations into a future test period resulted in $0.8M lower capital expenditures than forecast (with no impact to salvage); and
- This reduction of capital expenditures is partially offset by higher than forecast expenditures required to complete the three planned airbreak replacements on 730L and 732L. Materials, design and construction costs were higher than forecast due to the unanticipated requirement to install and remove temporary bypasses to accommodate outage constraints. AltaLink identified the need for temporary bypasses during detailed engineering design and planning. Additionally, AltaLink experienced resource availability constraints due to field crews responding to a trouble call which increased costs. The execution of these replacements also resulted in higher-than-expected land costs for temporary workspaces and damages and AltaLink required additional security in response to materials thefts that occurred on another project in the same area that was not anticipated in the forecast. These factors resulted in $0.4M higher capital expenditures and $0.1M higher salvage expenditures than forecast.

10.3.12 Rebuild Older Wood Poles Program Variance

1065. Table 10.3.12-1 below provides the 2022-2023 approved forecast and anticipated actuals for the capital and salvage expenditures associated with the Rebuild Older Wood Poles program.

[188] Exhibit 26509-X0026, Appendix 13-A04.

Table 10.3.12-1 – Rebuild Older Wood Poles Actual/MU to Approved Variance 2022-2023

Rebuild Older Wood Poles											
2022-2023 Approved			2022-2023 Actual / MU			Variance			Variance %		
Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX	Salvage
78	41.7	6.8	54	40.1	7.5	(24)	(1.5)	0.7	-31%	-4%	10%

1066. As described in Section 1.3 of the 2022-2023 Rebuild Older Wood Poles business case,[189] AltaLink identified forecast units using several factors including, but not limited to: risk assessment, line performance, field reports, current and future outages, significant line damage and identified line clearance concerns. AltaLink based the forecast unit pricing for the Rebuild Older Wood Poles program on historical average expenditures adjusted for inflation. AltaLink applied its salvage allocation methodology to determine its forecast and actual salvage expenditures for each project.

10.3.12.1 Capital and Salvage Expenditures Variance: 2022-2023 Forecast to 2022 Actuals and 2023 MU

1067. The capital expenditure variance was primarily driven by five factors. Three of the factors resulted in a decrease in expenditures totaling $14.3M and two of the factors resulted in offsetting increases totaling $12.8M, for a net $1.5M decrease. The salvage expenditures were $0.7M higher than forecast due to a $2.9M increase in salvage expenditures which was offset by a decrease of $2.2M in salvage expenditures, for a net $0.7M increase. Salvage expenditures increased while capital expenditures decreased due to changes in the ratio of materials costs to labour costs for a number of projects (under AltaLink's salvage allocation methodology, the salvage allocation percentages are not applied to materials costs).

1068. The following factors resulted in a decrease in capital and salvage expenditures for the 54L, 757L and 799L transmission line rebuilds: 1) additional time to manage regulatory, stakeholder, and permitting complexity that was not known at the time of forecasting which delayed procurement and construction activities to a later period; 2) collection of updated asset condition information which resulted in changes in the timing of field construction to a later period; and 3) requirements for third party regulatory assessment of alternative transmission system configurations.

- AltaLink based its forecast for the 54L rebuild on average historical unit cost experience for wood pole rebuilds. As project development progressed, AltaLink required substantial time and additional cost to manage stakeholder concerns related to items such as access management complexities, land and access acquisition, and structure design optimization to minimize tree clearing and maximize tree retention strategies that it did not anticipate in the forecast. The 54L Project will require the 2022-2023 test period and the 2024-2025 Test Period to facilitate stakeholder engagement, land acquisition (if required), and to manage an expected regulatory proceeding and federal parks permitting process. AltaLink will complete tree clearing and construction activities after receiving permit and license for the rebuild,

[189] Exhibit 26509-X0026, Appendix 13-A05.

and any required land acquisition has been completed. AltaLink now forecasts construction to start in 2026. As a result of the above, AltaLink experienced lower actual capital expenditures of $4.1M in 2022-2023.

- In response to the AUC initiative on AESO engagement, specifically with respect to Planning Criteria #2 – Optimizing the Grid, AltaLink initiated discussions with the AESO to evaluate transmission system configuration changes for the Rimbey and Eckville area to supply Eckville 534S and Rimbey 297S. As a result, AltaLink placed the planned 757L rebuild on-hold until further direction from the AESO is received. AltaLink incurred lower actual capital expenditures of $4.7M by not advancing permitting and construction on a portion of the 757L that was forecast to be undertaken in the 2022-2023 test period.
- As a result of detailed planning, AltaLink is now planning the 799L rebuild in multiple segments across multiple years for efficient execution of the project and to manage outages. During planning of the first segment in 2022, AltaLink rescheduled the construction of the line to the 2024-2025 Test period following review of condition information and the conclusion that some high-risk deficiencies could be mitigated through component replacements. As result, AltaLink incurred lower actual capital expenditures of $5.5M.
- The above resulted in a $2.2M decrease in salvage expenditures from forecast.

1069. The above reductions in capital expenditures were partially offset by increases in expenditures of $12.8M. The expenditure increases were primarily a result of the following factors influencing the 113L, 170L, and 174L transmission line rebuilds: 1) collection of updated asset condition information enabling changes in the timing of field construction; 2) unanticipated scope complexity, timing restrictions, and permitting changes based on site conditions that were not originally contemplated in the forecast; and 3) unanticipated requirement to rebuild a section of line based on electrical clearance and stakeholder requirements.

- AltaLink rescheduled the construction of a section of 174L to the 2022-2023 test period after AltaLink assessed the asset condition information on 174L that enabled the delay of part of the construction from the end of 2021 into the first part of 2022. This resulted in more construction activities completed in 2022 and 2023 than forecast and increased capital expenditures by $5.2M for the 2022-2023 test period. AltaLink completed other line rebuild activities instead in the 2019-2021 GTA period. Further details of the activities in 2019-2021 are provided in **Appendix 18-B,** Section 6.
- AltaLink received Permit and Licence in Q4 2021 for the 113L rebuild[190] which resulted in work activities planned for 2021 being completed in 2022, totalling $0.8M. Additionally, AltaLink required more labour effort to execute the project due to additional unique engineering design requirements, access management, construction coordination, and tree clearing activities due to complex mountainous terrain and restrictive field construction windows that were not fully anticipated in the forecast for 2022-2023. AltaLink's historical unit rate used for the forecast did not take into account the mountainous terrain and significant vegetation management the project actually required. This resulted in an increase in capital expenditures of $6.2M.
- During a vegetation assessment on 170L, AltaLink identified that a segment of the line required a rebuild in order to meet electrical clearance and stakeholder requirements for vegetation management not previously forecast. The rebuild was located in mountainous

[190] Proceeding 26458, Permit and Licence 26458-D02-2021, AltaLink Management Ltd. Rebuild Transmission Line 113L, October 7, 2021.

terrain and had access constraints. AltaLink incurred actual capital expenditures of $1.4M to complete this line rebuild.

- The above increases resulted in a $2.8M increase in salvage expenditures compared to forecast.

10.3.13 Condition Monitoring Program Variance

1070. Table 10.3.13-1 below provides the 2022-2023 approved forecast and anticipated actuals for the capital and salvage expenditures associated with the Condition Monitoring program.

Table 10.3.13-1 – Condition Monitoring Actual/MU to Approved Variance 2022-2023

Condition Monitoring											
2022-2023 Approved			2022-2023 Actual / MU			Variance			Variance %		
Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX	Salvage
24	1.5	0.1	19	2.4	(0.1)	(5)	0.9	(0.2)	-21%	60%	-271%

1071. As described in Section 1.3 of the 2022-2023 Condition Monitoring business case,[191] the forecast units were identified using several factors including, but not limited to: asset condition, asset performance, system criticality and customer outage availability. AltaLink based the forecast unit pricing for the Condition Monitoring program on historical average expenditures adjusted for inflation. AltaLink applied its salvage allocation methodology to determine its forecast and actual salvage expenditures for each project.

10.3.13.1 Capital Expenditure Variance: 2022-2023 Forecast to 2022 Actuals and 2023 MU

1072. AltaLink's 2022 actual and 2023 anticipated Condition Monitoring program capital expenditures are $0.9M higher and salvage expenditures are $0.2M less than forecast. Higher capital expenditures are primarily due to higher than forecast materials costs, the correction of an accounting error from the 2019-2021 test period, and unanticipated site design requirements for a forecast monitor installation.

- The cost for Bushing monitor installations increased primarily due to a higher than forecast cost of materials due to market conditions. This is expected to result in approximately $0.4M higher capital expenditures than forecast.
- For three PD Monitor subprogram units, AltaLink identified that it was operationally more efficient to install multi-functional monitors which includes three different monitors in one unit: transformer DGA monitoring, bushing monitoring, and PD monitoring of the transformer main tank and bushings. This is expected to result in approximately $0.2M higher capital expenditures and $0.1M higher salvage expenditures than forecast.
- In 2023, AltaLink corrected an error in the 2019-2021 test period under the GMD Monitoring subprogram where salvage was incorrectly applied to this subprogram which did not include any salvage activities. This error has since been corrected resulting in $0.2M capital expenditures in the 2022-2023 test period and a decrease of salvage expenditures by ($0.2M).

[191] 26509-X0026, Appendix 13-A06.

- During detailed design of the transformer oil monitor at 121S Brooks, AltaLink identified the need to install a new input/output module. Connections in the existing module were insufficient to accommodate the oil monitor. This scope increase was not anticipated at the time of the forecast and resulted in a $0.1M increase in capital expenditures for the Transformer Oil Monitoring subprogram. As this was a new module and not a replacement, there was no salvage incurred for this unit resulting in a variance to forecast of ($0.1M).

10.3.14 Substation Components Program Variance

1073. Table 10.3.14-1 below provides the 2022-2023 approved forecast and anticipated actuals for the capital and salvage expenditures associated with the Substation Components program.

Table 10.3.14-1 – Substation Components Actual/MU to Approved Variance 2022-2023

Substation Components											
2022-2023 Approved			2022-2023 Actual / MU			Variance			Variance %		
Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX	Salvage
359	22.1	4.3	304	20.1	2.9	(55)	(2.0)	(1.4)	-15%	-9%	-32%

1074. As described in Section 1.3 of the 2022-2023 Substation Component business case,[192] AltaLink identified forecast units through a combination of AltaLink and industry experience, field inspection reports, equipment performance, equipment test results and equipment usage (i.e. duty cycle). AltaLink based the forecast unit pricing for the Substation Components program on historical average expenditures adjusted for inflation. AltaLink applied its salvage allocation methodology to determine its forecast and actual salvage expenditures for each project.

10.3.14.1 Capital and Salvage Expenditure Variance: 2022-2023 Forecast to 2022 Actuals and 2023 MU

1075. AltaLink's 2022 actual and 2023 anticipated Substation Components program capital expenditures are $2.0M lower than forecast. This was primarily due to AltaLink identifying work, based on updated asset condition information, that could be safely rescheduled to future periods and AltaLink having to reschedule planned upgrades due to supply chain delays.

- AltaLink, during the detailed planning stage, reduced the volume of forecast airbreak/switch replacements and lightning/surge arrestor replacements during the test period based on the results of site inspections and updated condition information. As a result, AltaLink completed 81 units instead of the forecast 126 units. AltaLink expects that this reduction in units will result in $1.1M lower capital expenditures than forecast and $0.2M lower salvage expenditures than forecast.
- AltaLink was able to delay the Warner 344S faulting switch replacement based on updated condition information into the next test period. AltaLink expects this delay will result in $0.8M lower capital expenditures than forecast and $0.2M lower salvage expenditures than forecast.
- AltaLink expects to execute fewer battery bank and charger replacements in 2022-2023 than forecast due to material delivery delays. AltaLink expects that these delays will result in

[192] Exhibit 26509-X0026, Appendix 13-A07.

$0.5M lower capital expenditures than forecast and $0.1M lower salvage expenditures than forecast.

- These reductions are partially offset by cost increases for grading capacitor replacements reflecting higher than forecast material and contract labour costs due to increases in market prices. This is expected to result in $0.3M higher capital expenditures than forecast.

1076. Salvage expenditures are expected to be $1.4M lower than forecast reflecting the reductions in capital expenditures described above. In addition, AltaLink based its forecast on the information known at the time of its forecast and applied the salvage allocation percentages to the entire General Substation Components subprogram. There are, however, projects within this subprogram that did not require any salvage activities including noise impact studies and mitigation; the addition of bird cover-up to substation equipment to prevent bird contacts; and the installation of fall arrest on transformers for regulatory compliance. AltaLink expects removing the allocation to salvage associated with these activities to result in approximately $1.0M lower actual salvage expenditures compared to forecast.

10.3.15 Disturbance Analysis Equipment Program Variance

1077. Table 10.3.15-1 below provides the 2022-2023 approved forecast and anticipated actuals for the capital and salvage expenditures associated with the Disturbance Analysis program.

Table 10.3.15-1 – Disturbance Analysis Equipment Actual/MU to Approved Variance 2022-2023

Disturbance Analysis Equipment											
2022-2023 Approved			2022-2023 Actual / MU			Variance			Variance %		
Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX	Salvage
34	1.9	0.0	22	1.8	0.2	-12	-0.0	0.1	-35%	-2%	463%

1078. As described in Section 1.3 of the 2022-2023 Disturbance Analysis Equipment business case,[193] AltaLink based its forecast on installing new DDRs and to reconfigure existing relays and SCADA equipment to allow timely access of fault type and location data by the EMS. AltaLink based the forecast unit pricing for the Disturbance Analysis Equipment program on historic average expenditures adjusted for inflation. AltaLink did not forecast any salvage expenditures for this program as the projects comprising it were not expected to involve the removal of any equipment.

10.3.15.1 Capital Expenditure Variance: 2022-2023 Forecast to 2022 Actuals and 2023 MU

1079. AltaLink expects its 2022 actual and 2023 anticipated Disturbance Analysis Equipment program capital expenditures to be marginally lower than forecast reflecting the execution of fewer Fault Reporting projects than forecast. AltaLink determined through detailed analysis undertaken prior to proceeding with the projects that a number of sites either had sufficient reporting or that existing site equipment could not be upgraded based on site design. The reduced expenditures are partially offset by higher actual costs expected for the forecast phasor measurement unit replacement at 320P reflecting greater design complexity than originally forecast. In addition, due to the impacts of the required outage, AltaLink requires a longer

[193] Exhibit 26509-X0026, Appendix 13-A08.

outage than forecast in order to complete the replacement and multiple outages to manage customer outage constraints. Multiple outages require increased outage coordination activities and planning with corresponding increased labour costs.

10.3.15.2 Salvage Variance: 2022-2023 Forecast to 2022 Actuals and 2023 MU

1080. AltaLink's 2022 actual and 2023 anticipated Disturbance Analysis Equipment program salvage expenditures are $0.1M higher than forecast reflecting the unanticipated need to remove two failed phasor measurement units. The AESO ultimately determined that these units were no longer required on the system and should be removed. AltaLink expects removing these two units will result in increased salvage expenditures of approximately $0.1M.

10.3.16 SCADA Equipment Program Variance

1081. Table 10.3.16-1 below provides the 2022-2023 approved forecast and anticipated actuals for the capital and salvage expenditures associated with the SCADA Equipment program.

Table 10.3.16-1 – SCADA Equipment Actual/MU to Approved Variance 2022-2023

SCADA Equipment											
2022-2023 Approved			2022-2023 Actual / MU			Variance			Variance %		
Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX	Salvage
27	7.6	1.5	24	6.8	2.2	(3)	(0.7)	0.7	-11%	-10%	43%

1082. As described in Section 1.3 of the 2022-2023 SCADA Equipment business case,[194] AltaLink identified the forecast units using several factors including, but not limited to: SCADA maintenance notifications, site criticality and security, customer load, the number of lines in/out of a substation, and ACC operating requirements. AltaLink based the forecast unit pricing for the SCADA Equipment program on historical average expenditures adjusted for inflation. AltaLink applied its salvage allocation methodology to determine its forecast and actual salvage expenditures for each project.

10.3.16.1 Capital Expenditure Variance: 2022-2023 Forecast to 2022 Actuals and 2023 MU

1083. AltaLink's 2022 actual and 2023 anticipated SCADA Equipment program capital expenditures are $0.7M lower than forecast. The variance is primarily due to delays arising from supply chain delays and site-specific customer outage coordination requirements. Additionally, one site was rescheduled to avoid unnecessary engineering complexities at a site where a concurrent direct assign project was subsequently identified.

10.3.16.2 Salvage Variance: 2022-2023 Forecast to 2022 Actuals and 2023 MU

1084. AltaLink's 2022 actual and 2023 anticipated SCADA Equipment Program salvage expenditures are $0.7M higher than forecast primarily reflecting the use in the forecast of an incorrect salvage allocation percentage. More specifically, AltaLink applied the generic substation equipment project type for the forecast when it should have applied the salvage rate for P&C SCADA project types. The 2022 actual and 2023 MU results reflect the application of the correct salvage allocation percentage.

[194] Exhibit 26509-X0026, Appendix 13-A09.

10.3.17 Telecommunication Equipment Program Variance

1085. Table 10.3.17-1 below provides the 2022-2023 approved forecast and anticipated actuals for the capital and salvage expenditures associated with the Telecommunication Equipment program.

Table 10.3.17-1 – Telecommunication Equipment Actual/MU to Approved Variance 2022-2023

Telecommunication Equipment											
2022-2023 Approved			2022-2023 Actual / MU			Variance			Variance %		
Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX	Salvage
1,158	16.6	0.5	1,103	17.2	1.7	(55)	0.6	1.2	-5%	3%	254%

1086. As described in Section 1.3 of the 2022-2023 Telecommunication Equipment business case,[195] AltaLink identified the forecast units using several factors including, but not limited to: AESO requirements, reliability and communication standards, asset condition, obsolescence and the availability of spare parts. AltaLink based the forecast unit pricing for the Telecommunication Equipment program on historical average expenditures adjusted for inflation. AltaLink applied its salvage allocation methodology to determine its forecast and actual salvage expenditures for each project.

10.3.17.1 Capital Expenditure Variance: 2022-2023 Forecast to 2022 Actuals and 2023 MU

1087. AltaLink's 2022 actual and 2023 anticipated Telecommunications Equipment program capital expenditures are $0.6M higher than forecast primarily reflecting increased expenditures for the General Projects, Microwave Radio Upgrade and Substation LAN Replacement subprograms.

1088. Both actual labour costs and material costs were higher than forecast reflecting changes in market conditions. The Microwave Radio Upgrade and Substation LAN subprograms also saw cost increases due to unanticipated additional requirements such as installation of incremental hardware for Substation LAN subprogram and replacement of hardware components and associated labour costs for the Microwave Radio Upgrade subprogram. These requirements were identified through detailed design and were not anticipated at the time of the forecast.

10.3.17.2 Salvage Variance: 2022-2023 Forecast to 2022 Actuals and 2023 MU

1089. AltaLink forecast no salvage for the General Projects, Microwave Radio Upgrade and MPLS Upgrade subprograms due to the mix of projects and lack of site-specific scope definition. During detailed design, AltaLink identified salvage activities required for certain projects which required the application of the salvage allocation methodology. This resulted in approximately $0.6M higher actual salvage expenditures than forecast.

1090. AltaLink underestimated the initial salvage expenditures forecast for several subprograms. AltaLink applied a lower salvage allocation percentage than what was actually reflective of the removal work. For example, AltaLink based the forecasts for the 4G Modem, Firewall Replacements, LAN Switch Replacements and Analog Teleprotection subprograms on a salvage allocation percentage of 5%. Based on the actual salvage work completed, AltaLink determined that a salvage allocation rate of 15% was representative of its cost of completing the salvage

[195] Exhibit 26509-X0026, Appendix 13-A10.

activities. This resulted in an increase of $0.2M in actual salvage expenditures compared to forecast.

1091. AltaLink incurred an additional $0.4M of salvage expenditures for the General Projects subprogram for the removal of assets that were not identified as requiring removal at the time certain upgrade projects were forecast (e.g., Dalehurst 4G Modem salvage and several General Projects including 377S Hardisty pole salvage, 77S Sagitawah tower salvage, 95S/38S Copper Cable salvage, etc.).

10.3.18 Substation Grounding Program Variance

1092. Table 10.3.18-1 below provides the 2022-2023 approved forecast and anticipated actuals for the capital and salvage expenditures associated with the Substation Grounding program.

Table 10.3.18-1 – Substation Grounding Actual/MU to Approved Variance 2022-2023

Substation Grounding											
2022-2023 Approved			2022-2023 Actual / MU			Variance			Variance %		
Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX	Salvage
40	3.8	-	27	4.0	0.0	(13)	0.2	0.0	-33%	6%	-

1093. As described in Section 1.3 of the 2022-2023 Substation Grounding business case,[196] AltaLink identified the forecast units using data collected from visual inspections, customer concerns, ground resistance test results and soil resistivity test results. AltaLink based the forecast unit pricing expenditures for the Substation Grounding program on historical average expenditures adjusted for inflation. AltaLink did not forecast any salvage expenditures as this program generally does not involve the removal of equipment.

10.3.18.1 Capital Expenditure Variance: 2022-2023 Forecast to 2022 Actuals and 2023 MU

1094. AltaLink's 2022 actual and 2023 anticipated Substation Grounding program units are lower than forecast while capital expenditures are $0.2M higher than forecast. This is due to higher-than-average gravel requirements at seven sites, in particular, Edson 58S and Gaetz 87S substations. These sites are among AltaLink's larger substations in terms of surface area. AltaLink determined after detailed site and engineering inspections that the required gravel for the sites would cost two and four times the typical unit cost, respectively. AltaLink based the forecast on historical unit costs and did not know site-specific requirements until it performed detailed site inspections.

10.3.18.2 Salvage Variance: 2022-2023 Forecast to 2022 Actuals and 2023 MU

1095. AltaLink did not forecast salvage for this program because substation grounding primarily involves the addition of new gravel or grounding materials to existing equipment. AltaLink did not anticipate the removal or disposal of existing gravel and ground grid material in the forecast. The actual salvage expenditures were $0.02M. This small amount of salvage expenditure is associated with the need to remove and replace portions of the existing substation fence at Edson 58S to accommodate the ground grid modifications.

[196] Exhibit 26509-X0026, Appendix 13-A11.

10.3.19 Substation Major Equipment Program Variance

1096. Table 10.3.19-1 below provides the 2022-2023 approved forecast and anticipated actuals for the capital and salvage expenditures associated with the Substation Major Equipment program.

Table 10.3.19-1 – Substation Major Equipment Actual/MU to Approved Variance 2022-3023

Substation Major Equipment											
2022-2023 Approved			2022-2023 Actual / MU			Variance			Variance %		
Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX	Salvage
210	28.6	6.2	152	30.0	5.9	(58)	1.4	(0.3)	-28%	5%	-5%

1097. As described in Section 1.3 of the 2022-2023 Substation Major Equipment business case,[197] AltaLink identified the forecast units using several factors including, but not limited to: risk assessments, asset condition, asset performance, field reports, and outage availability. AltaLink based the forecast unit pricing for the Substation Major Equipment program on historical average expenditures adjusted for inflation. AltaLink applied its salvage allocation methodology to determine its forecast and actual salvage expenditures for each project.

10.3.19.1 Capital Expenditure Variance: 2022-2023 Forecast to 2022 Actuals and 2023 MU

1098. AltaLink's 2022 actual and 2023 anticipated Substation Major Equipment program capital expenditures are $1.4M higher than forecast. AltaLink expects to complete fewer program units. Individual subprogram 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 higher equipment costs based on market conditions.

- AltaLink incurred $0.6M more capital expenditures than forecast related to progress payments for supply of the new 212sT1 transformer. AltaLink ordered the transformer prior to the Commission's decision[198] to disallow the expenditure in the 2022-2023 test period to meet supply chain delivery timelines. AltaLink is now proposing to replace the transformer in the 2024-2025 Test Period. With current supply chain delivery timelines to meet the transformer replacement scheduled in 2024-2025 Test Period, the procurement process was required to start in the 2022-2023 test period.
- Schedule delays and the completion of higher priority replacements shifted the replacement of Cadomin 983S transformer from 2021 to 2022. In addition, increased costs were also experienced due to rig matting required at site to manage ground conditions which was not anticipated in the forecast. This resulted in $0.8M more capital expenditures in 2022 than forecast.
- Further, AltaLink incurred $0.8M more capital expenditures than forecast in the replacement of the 659sT1 and 746sT1 transformer replacements primarily related to the increase in transformer material costs in the 2022-2023 test period based on market conditions.
- AltaLink also incurred higher than forecast expenditures in the Transformer and Regulator subprogram for the replacement of East Airdrie 199S substation (199S). The Commission

[197] Exhibit 26509-X0026, Appendix 13-A12.
[198] Decision 26509-D01-2022, para 262, Directive 18.

denied the transformer replacement expenditure in the 2022-2023 test period.[199] However, as indicated in Proceeding 27515, AltaLink determined it was necessary to proceed with the transformer replacement in 2022[200]. This was based on continued degradation of condition and the consequence of failure with the quantity of PCB contaminated oil in the transformer (i.e., 24,000L with 20 parts per million PCBs). The transformer bushings also contained PCB oil above PCB Regulations[201] in-service threshold and required removal from service prior to December 31, 2025. AltaLink determined that due to the condition of the transformer and the associated risks, it was necessary to proceed with the replacement. Refer to Appendix 13-A Attachment 6 for the technical and business drivers for the original selection and details of the condition assessment. AltaLink has subsequently tested the 199S transformer bushings after removal from service and confirmed the PCB content was at more than double PCB Regulations threshold. The transformer was 63 years old and was emitting an audible rattle indicating reduced internal mechanical strength. The transformer experienced several faults as part of its service history within the last 15 years which have led to reduced strength to withstand further faults. Vibrations are causing separation of the insulation from the current transformer wires further compromising its electrical integrity. Additionally, the legacy design of 199S site has no secondary containment for the transformer in the event of an oil release. The site is also in proximity to a waterbody. Lastly, the legacy design bushings on the transformer were of porcelain construction and AltaLink had no means of testing their internal condition. Given the service life of the bushings there is heightened risk of failure. Porcelain bushing failures are typically explosive, where discharged fragments can travel beyond the substation fence. Based on all of these factors, AltaLink determined that it was necessary to replace the transformer in the 2022-2023 test period, irrespective of the Commission's disallowance of the forecast expenditure. This resulted in a $2.4M increase in capital expenditures.

- AltaLink identified additional transformer oil replacements and refurbishments to meet PCB Regulations after completion of its 2022-2023 forecast. These replacements were required to manage the frequency and volume of oil being released from transformer leaks based on asset condition and ensure ongoing compliance with PCB Regulations. AltaLink also identified transformers that required corrosive sulfur mitigation to remove corrosivity from the insulating oil to reduce the risk of premature failure and irreversible damage. These unanticipated requirements resulted in $1.1M higher expenditures than forecast.
- The above increases are expected to be partially offset by $4.0M in lower than forecast expenditures due to changes in schedule based on the following:
    - AltaLink rescheduled the Warner 344S transformer replacement following a re-evaluation of the asset condition and overall risk. The deferral resulted in $1.6M reduced expenditures incurred for the Transformers and Regulators subprogram. The Warner 344S transformer replacement is now forecast in the 2024-2025 Test Period under the Substation Refurbishment Program;
    - AltaLink experienced delays with Capacitor Bank Replacements subprogram due to supply chain constraints which resulted in a reduction of two units and $1.2M lower than forecast expenditures. One unit, 38sC2, is now forecast for replacement in the

[199] Decision 26509-D01-2022, para 262, Directive 18.
[200] Exhibit 27515-X0002, AML East Airdrie 199S Transformer Replacement LOE – Application, pdf 2.
[201] PCB Regulations, SOR/2008-273 (PCB Regulations), 16(1)(b)(ii): https://laws-lois.justice.gc.ca/eng/regulations/SOR-2008-273/index.html.

2024-2025 Test Period and the second unit, 217sC1, is now scheduled for replacement in a future test period;
- AltaLink was required to reschedule site construction to align with customer outage requests, to coordinate with other work at the sites to realize efficiencies and manage supply chain constraints which results in a $0.8M reduction in Instrument Transformer replacements. The rescheduled replacements are planned to be completed in the 2024-2025 Test Period;
- AltaLink is expecting to realize $0.4M cost reductions in the Customer Reliability Improvements and HVDC Upgrades programs due to site-specific design requirements and actual market conditions; and
- AltaLink was required to reschedule site construction to align with customer outage requests and to coordinate with other work at the sites to realize efficiencies. This resulted in a $0.2M reduction in high voltage breaker replacements subprograms including some forecast 240 kV, 138 kV, 69 kV and capacitor bank breakers.

10.3.19.2 Salvage Variance: 2022-2023 Forecast to 2022 Actuals and 2023 MU

1099. AltaLink's 2022 actual and 2023 anticipated Substation Major Equipment program salvage expenditures are $0.3M lower than forecast due to:

- AltaLink corrected an error in the salvage expenditures related to a 2021 capacitor bank replacement project, which incorrectly charged too much salvage.[202] The correction is reflected in 2022 actuals. In addition, there were changes in the timing of previously planned capacitor bank replacements due to supply chain delays, as described above. The correction, combined with the program timing changes, are expected to result in a $0.5M reduction in salvage expenditures from forecast.
- AltaLink forecast $0.5M of salvage expenditures for the removal of equipment as part of the customer reliability improvement project at 228S. However, during detailed design and on-site inspections, it was determined that no equipment needed to be removed. As a result, this project is not expected to incur any salvage, resulting in a reduction from forecast of $0.5M.
- The capital expenditure variances discussed above drove the following salvage expenditure variances:
  - $0.6M higher than forecast for Transformers and Regulators;
  - $0.3M higher than forecast for Transformers and Regulators Refurbishment;
  - $0.1M less than forecast for Instrument Transformer replacements; and
  - $0.1M less than forecast for high voltage breaker replacements.

10.3.20 25 kV Bus Program Variance

1100. Table 10.3.20-1 below provides the 2022-2023 approved forecast and anticipated actuals for the capital and salvage expenditures associated with the 25 kV Bus program.

Table 10.3.20-1 – 25 kV Bus Actual/MU to Approved Variance 2022-2023

25 kV Bus			
2022-2023 Approved	**2022-2023 Actual / MU**	**Variance**	**Variance %**

[202] Refer to **Appendix 18-B**, section 13.

Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX	Salvage
2	3.1	0.6	3	5.1	0.9	1	2.0	0.3	50%	64%	50%

1101. As described in Section 1.3 of the 2022-2023 25 kV Bus business case,[203] AltaLink identified the forecast units using several factors including, but not limited to: field expert knowledge, overall bus component and structure condition, safety, reliability, customer load, outage availability and overall resource availability. AltaLink based the forecast unit pricing for the 25 kV Bus program on historical average expenditures adjusted for inflation. AltaLink applied its salvage allocation methodology to determine its forecast and actual salvage expenditures for each project.

10.3.20.1 Capital and Salvage Expenditure Variance: 2022-2023 Forecast to 2022 Actuals and 2023 MU

1102. AltaLink's 2022 actual and 2023 anticipated 25 kV Bus program capital expenditures are $2.0M higher than forecast primarily because of changes in the timing of delivery of materials and equipment from the prior test period and required upgrades at West Cascade 177S substation that were not reflected in the forecast.

- **Suffield 895S** – Delays in the delivery of the planned switchgear building and other materials for the Suffield 895S substation rebuild, resulted in additional planning and coordination effort to maintain the project schedule. Outages were required to be coordinated with two customers. Further, following installation of the switchgear the new protection system failed during commissioning, resulting in additional construction and engineering efforts. This is expected to result in approximately $0.9M higher expenditures than forecast. The salvage expenditures are expected to be $0.1M higher;
- **West Cascade 177S** – AltaLink did not include this project in the forecast as it was planned to be completed in 2021. Supply chain delays in component deliveries and scheduling requirements for FortisAlberta activities in the area delayed the site upgrade into 2022 and 2023. AltaLink anticipates completion of project in 2023 with expenditures of $1.3M. The salvage expenditures are expected to be $0.2M; and
- **Stavely 349S** – Based on site requirements and design, AltaLink anticipates completing the 25 kV component replacements at 349S Stavely at a $0.2M lower capital cost than forecast primarily as after the detailed inspection of the 25 kV wood bus, AltaLink determined that less replacement work as required due to the condition of the 25 kV bus.

10.3.21 Substation Refurbishment Program Variance

1103. Table 10.3.21-1 below provides the 2022-2023 approved forecast and anticipated actuals for the capital and salvage expenditures associated with the Substation Refurbishment program.

Table 10.3.21-1 – Substation Refurbishment Program Actual/MU to Approved Variance 2022-2023

Substation Refurbishment Program			
2022-2023 Approved	2022-2023 Actual / MU	Variance	Variance %

[203] Exhibit 26509-X0026, Appendix 13-A13.

Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX	Salvage
-	3.9	0.6	-	4.8	1.2	-	0.9	0.5	-	23%	82%

1104. As described in Section 1.3 of the 2022-2023 Substation Refurbishment business case,[204] AltaLink identified the forecast sites through an annual review of substation components to identify assets that were no longer performing to an acceptable level or where maintenance was no longer effective. Sites were selected based on the aggregate of operational issues, the age and condition of equipment on site, as well as the trend in high priority notifications over time. AltaLink based the forecast unit pricing on historical average expenditures for similar component replacements carried out in other substation maintenance programs adjusted for inflation. AltaLink applied its salvage allocation methodology to determine its forecast and actual salvage expenditures for each project.

10.3.21.1 Capital and Salvage Expenditure Variance: 2022-2023 Forecast to 2022 Actuals and 2023 MU

1105. AltaLink's 2022 actual and 2023 anticipated Substation Refurbishment program capital and salvage expenditures are higher than forecast due to:

- **Spring Coulee 385S** – The actual cost of the transformer AltaLink purchased for the 385S Spring Coulee rebuild is higher than originally forecast due to market conditions. AltaLink also determined during detailed design and detailed scoping that the station service transformer and T1/T2 protections needed replacing to complete the site refurbishment based on the site configuration and condition. These factors are expected to result in a $0.9M increase in capital expenditures compared to forecast and an approximately $0.5M increase in salvage expenditures. The forecast used an incorrect salvage allocation percentage. More specifically, AltaLink applied the generic substation equipment project type for the forecast when it should have applied the salvage rate for Transformer project types. The 2022 actual and 2023 MU results reflect the application of the correct salvage allocation percentage; and
- **Warner 344S** – AltaLink is planning Warner 344S for rebuild in 2024-2025[205] due to its poor condition and risk of failure. Based on current supply chain requirements needing longer lead time ordering and to facilitate the field construction, AltaLink initiated preliminary expenditures for planning, design, and material progress payments. This will result in approximately $0.2M additional capital expenditures not anticipated in the forecast.

10.3.22 Protection and Control Equipment Program Variance

1106. Table 10.3.22-1 below provides the 2022-2023 approved forecast and anticipated actuals for the capital and salvage expenditures associated with the Protection and Control Equipment program.

Table 10.3.22-1 – Protection and Control Equipment Actual/MU to Approved Variance 2022-2023

Protection & Control Equipment

[204] Exhibit 26509-X0026, Appendix 13-A14.
[205] Refer to Appendix 13-A14 Substation Refurbishment.

2022-2023 Approved			2022-2023 Actual / MU			Variance			Variance %		
Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX	Salvage
148	12.5	3.4	125	11.2	3.2	(23)	(1.2)	(0.2)	-16%	-10%	-7%

1107. As described in Section 1.3 of the 2022-2023 Protection and Control Equipment business case,[206] AltaLink identified the forecast units using data collected through routine maintenance, alarm responses, and operation failures. AltaLink based the forecast unit pricing for the Protection and Control Equipment program on historical average expenditures adjusted for inflation. AltaLink applied its salvage allocation methodology to determine its forecast and actual salvage expenditures for each project.

10.3.22.1 Capital and Salvage Expenditure Variance: 2022-2023 Forecast to 2022 Actuals and 2023 MU

1108. AltaLink's 2022 actual and 2023 anticipated Protection and Control Equipment program capital expenditures are $1.2M lower than forecast primarily due to a lower than forecast number of switch installations for the motorized line switch customer reliability improvement at 268S and the completion of fewer than forecast transmission line protection replacements. The salvage expenditures are expected to be $0.2M less than forecast.

- During detailed scoping and design, AltaLink determined that the number of switch installations could be reduced from three to one for the 526L motorized line switch customer reliability improvement project at 268S and still achieve the required isolation. This reduction in scope is expected to reduce expenditures by $0.6M compared to forecast; and
- AltaLink expects to execute seven fewer transmission line protection replacements than previously forecast following its review and analysis of updated asset condition information. This updated condition information enabled AltaLink to reschedule several forecast replacements. AltaLink expects this will result in a $0.6M reduction in capital expenditures compared to forecast and a $0.2M reduction in salvage expenditures.

10.3.23 Protection and Control Major Equipment Program Variance

1109. Table 10.3.23-1 below provides the 2022-2023 approved forecast and anticipated actuals for the capital and salvage expenditures associated with the Protection and Control Major Equipment program.

Table 10.3.23-1 – Protection an Control Major Equipment Actual/MU to Approved Variance 2022-2023

Protection & Control Major Equipment											
2022-2023 Approved			2022-2023 Actual / MU			Variance			Variance %		
Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX	Salvage

[206] Exhibit 26509-X0026, Appendix 13-A15.

-	15.2	2.7	-	17.5	4.1	-	2.4	1.4	-	16%	54%

1110. As described in Section 1.3 of the 2022-2023 Protection and Control Major Equipment business case,[207] AltaLink identified the forecast sites using data collected through routine maintenance, alarm responses, and operation failures. AltaLink based its selection on several factors including relay failure risk, building condition, expert verification, service life and condition of equipment within the control building and coordination with other projects. AltaLink based the forecast unit pricing for the Protection & Control Major Equipment program on historical average expenditures adjusted for inflation. AltaLink applied its salvage allocation methodology to determine its forecast and actual salvage expenditures for each project.

10.3.23.1 Capital Expenditure Variance: 2022-2023 Forecast to 2022 Actuals and 2023 MU

1111. AltaLink's 2022 actual and 2023 anticipated Protection and Control Major Equipment program capital expenditures are $2.4M higher than forecast due to unforeseen schedule delays and site requirements identified during detailed planning and design as discussed further below:

- **Ghost 20S** –AltaLink incurred higher than forecast labour costs due to unanticipated site access issues related to bridge access requiring that a control building be constructed in multiple sections subsequently welded together and constructed on-site. The building would have been too large to transit the bridge in a completed state, as is typical practice. AltaLink also incurred higher than forecast labour costs due to project timing delays. AltaLink had to extend completion of the project into 2022 to coordinate with a customer planned outage. These factors resulted in approximately $2.0M higher capital expenditures than forecast in the 2022-2023 test period.
- **Brooks 121S** – AltaLink originally anticipated completing this project in 2021. However, AltaLink experienced unexpected expenditures and project delays due to the control building requiring a unique retrofit based on detailed site design requirements. In addition to increasing the cost of the work, this requirement also necessitated delaying the project into the 2022-2023 test period. These factors increased AltaLink's capital expenditure on this project by $1.0M from forecast.
- **Empress 394S** – AltaLink originally anticipated completing this project in 2021. There were delays and higher expenditures due to requirements to meet customer requests to reschedule the outage several times, which delayed the completion of the project into 2022. AltaLink also incurred higher expenditures due to higher than forecast contractor costs reflecting changes in market conditions. Overall, this resulted in capital expenditures of $0.8M higher than forecast.
- **Redwater 171S** – The above cost increases are partially offset by schedule changes and reduced costs for the Redwater 171S upgrade following detailed site planning and engineering. AltaLink determined that most of the existing metering equipment and some protection equipment were suitable for re-use in the project design, resulting in lower than forecast equipment costs and salvage activities. Final cutovers are now planned for 2024. This site is expected to incur $1.1M lower expenditures in the 2022-2023 test period than forecast.

[207] Exhibit 26509-X0026, Appendix 13-A16.

10.3.23.2 Salvage Variance: 2022-2023 Forecast to 2022 Actuals and 2023 MU

1112. AltaLink's 2022 actual and 2023 anticipated Protection and Control Major Equipment program salvage expenditures are $1.4M higher than forecast.

- The salvage variances related to the several projects that were delayed from the prior test period into the 2022-2023 test period as explained above, were:
  - $0.5M higher salvage expenditures than forecast relating to Ghost 20S;
  - $0.4M higher salvage expenditures than forecast for relating to Brooks 121S;
  - $0.4M higher salvage expenditures than forecast relating to Empress 394S; and
  - $0.4M lower salvage expenditures than forecast relating to Redwater 171S.
- **Building Upgrades** – AltaLink's Building Upgrades subprogram targets buildings that are in a condition that poses a risk to the equipment housed inside. Typical subprogram activities involve the removal and replacement of doors and frames, the removal and installation of new joists, and the removal and replacement of roof air vents. In nearly all cases, building upgrades involve the removal of materials/equipment. The original forecast incorrectly forecast no salvage for these projects (i.e., the applicable salvage allocation percentage was not applied to the forecast unit costs of the work). AltaLink's actual salvage expenditures are expected to be $0.5M more than forecast, reflecting the application of the salvage allocation methodology to AltaLink's actual capital expenditures for these projects completed during the 2022-2023 test period.

10.3.24 Pipeline Electrical Interference Program Variance

1113. Table 10.3.24-1 below provides the 2022-2023 approved forecast and anticipated actuals for the capital and salvage expenditures associated with the Pipeline Electrical Interference program.

Table 10.3.24-1 – Pipeline Electrical Interference Mitigation Actual/MU to Approved Variance 2022-2023

Pipeline Electrical Interference Mitigation											
2022-2023 Approved			2022-2023 Actual / MU			Variance			Variance %		
Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX	Salvage
100	7.2	-	74	6.9	-	(26)	(0.3)	-	-26%	-4%	-

1114. As described in Section 1.3 of the 2022-2023 Pipeline Electrical Interference Mitigation business case,[208] AltaLink identified the forecast units through proactive table-top reviews of its existing transmission facilities near pipeline facilities, known interference issues, and interference concerns brought to AltaLink's attention by pipeline owners. AltaLink based the forecast unit pricing for the Pipeline Electrical Interference program on historical average expenditures adjusted for inflation. AltaLink did not forecast salvage expenditures for this program as it generally does not involve the removal of equipment.

[208] Exhibit 26509-X0026, Appendix 13-A17. Note that AltaLink has renamed this program Pipeline Electrical Interference.

1115. Pursuant to AUC Decision 27238-D01-2022,[209] the Commission directed AltaLink to "provide all actual costs spent on a per-event basis, the cost allocation shares between AltaLink and the pipeline owner […] and those provided to the pipeline owners from AltaLink". Refer to Appendix 13-A17 Attachment 3 for the table providing the requested information for the 2022-2023 Study and Mitigation program actuals.

10.3.24.1 Capital Expenditure Variance: 2022-2023 Forecast to 2022 Actuals and 2023 MU

1116. AltaLink's 2022 actuals and 2023 anticipated Pipeline Electrical Interference program capital expenditures are $0.3M lower than forecast due predominantly to a delayed start to planned 2022 study work resulting in the completion of fewer interference studies than forecast.

- AltaLink expects to only compete 39 of 50 forecast studies due to delays in the regulatory approval process. Study work is weather dependent as field work must be completed in frost-free conditions. AltaLink did not initiate the majority of 2022 study work until Q3 of 2022 after receiving Commission approval of the program. The combination of regulatory delays, unfavourable weather conditions and resource constraints results in the delay of some study work into the next test period. Resource constraints are due to AltaLink, pipeline owner, and contractor resource capacities impacting the number of studies being completed. This is expected to result in $0.6M lower capital expenditures than forecast.
- The study delays are partially offset by higher expenditures on mitigation work. AltaLink expects to complete fewer mitigations than previously forecast due to the delays described above. However, several of the required mitigations will be more expensive than forecast. Due to the uncertainty in the actual cost allocation at the time of the forecast, AltaLink uses a historical blended actual unit rate. The capital expenditures related to the actual mitigation units completed in the 2022-2023 test period are higher than what is reflected in the historical blended actual unit rate used in the forecast. This is expected to result in $0.3M higher expenditures than forecast.

10.3.25 Telecom Major Upgrades Program Variance

1117. Table 10.3.25-1 below provides the 2022-2023 approved forecast and anticipated actuals for the capital and salvage expenditures associated with the Telecom Major Upgrades program.

Table 10.3.25-1 – Telecom Major Upgrades Actual/MU to Approved Variance 2022-2023

Telecom Major Upgrades											
2022-2023 Approved			2022-2023 Actual / MU			Variance			Variance %		
Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX	Salvage
-	5.2	-	-	4.3	0.1	-	(0.9)	0.1	-	-17%	-

1118. As described in Section 1.3 of the 2022-2023 Telecom Major Upgrades business case,[210] AltaLink identified the forecast projects using data collected from field inspections, asset condition, the assessment of existing radio path capacity, and the assessment of existing radio path

[209] Decision 27238-D01-2022, Application for Variance of Decision 26509-D01-2022 (Corrigenda), AltaLink Management Ltd., 2022-2023 General Tariff Application (Pipeline Electrical Interference Mitigation Program) para 23, Directive 1.
[210] Exhibit 26509-X0026, Appendix 13-A19.

requirements. AltaLink based the forecast unit pricing for the Telecom Major Upgrades program on historical average expenditures adjusted for inflation. AltaLink did not forecast salvage for this program as there were no anticipated salvage activities based on the nature of the planned work for the test period.

10.3.25.1 Capital Expenditure Variance: 2022-2023 Forecast to 2022 Actuals and 2023 MU

1119. AltaLink's 2022 actuals and 2023 anticipated Telecom Major Upgrades program capital expenditures are expected to be $0.9M lower than forecast due to changes in the scope and timing for the Fibre Backbone Ring Completion project. The reduced costs are partially offset by forecast expenditure increases related to two telecom reliability improvement projects and the rescheduling of the 793S Horse Creek Tower replacement from 2021 into 2022.

- **Fibre Backbone Ring Completion Project** – This project is a coordinated effort with ATCO Electric and includes the originally forecast East Fibre Backbone Conversion and South Fibre Backbone Ring Closure projects. AltaLink expects to incur $1.8M lower capital expenditures than forecast due to revisions in the project design and identification of opportunities to coordinate with ATCO. The initial forecast for the project was based on availability of co-location facilities on ATCO's EATL Fibre route and included estimates for AltaLink to install Dense Wave Division Multiplexing (DWDM) repeaters and power supplies at four ATCO sites. After the initial forecast, ATCO applied to install DWDM infrastructure at its sites. Consequently, the co-location facilities on ATCO's EATL Fibre route are not available for AltaLink to install its equipment. ATCO agreed to provide AltaLink a communication channel on its DWDM network in exchange for a similar channel on AltaLink's network. Due to the above design changes, AltaLink rescheduled completion of the revised scope of work for 2024. The revised scope reflects the cancellation the South Fibre Backbone Ring Closure due to the design revisions.[211]
- **5S East Calgary Telecom Reliability Improvement** – Based on detailed design and the receipt of vendor estimates for civil, hydrovac and the installation of the fibre for the site, the capital expenditures are expected to be approximately $0.2M higher than forecast. The increase reflects more complex design requirements based on site-specific conditions that were not anticipated at the time of the forecast.
- **Northwest Alberta Telecom Reliability Improvement** – Based on detailed design the contractor estimates for the work were higher than forecast. AltaLink expects to incur $0.3M higher capital expenditures than forecast for this project.
- **Horse Creek 793S Telecom Tower Replacement** – This project was originally forecast to be completed in 2021 and was therefore not included in the 2022-2023 forecast. AltaLink had to reschedule the project into 2023 to align with a planned customer outage. AltaLink did not know of the customer's planned outage schedule at the time of the forecast. AltaLink expects completion of the project in 2023 to increase AltaLink's capital expenditures in the 2022-2023 test period by $0.4M compared to forecast.

10.3.25.2 Salvage Variance :2022-2023 Forecast to 2022 Actuals and 2023 MU

1120. Typically, the only subprogram within the Telecom Major Upgrades program that involves the removal of equipment is tower replacements. AltaLink did not forecast any tower replacements within the 2022-2023 test period. However, the Horse Creek 793S tower replacement, originally planned to be completed in 2021, had to be rescheduled to align with a planned customer

[211] Refer to Appendix 13A-19, Section 4.

outage in 2023. Because of this rescheduling, AltaLink is now expecting to incur salvage expenditures of $0.1M under this program in the 2022-2023 test period. The $0.1M amount is based on the application of AltaLink's salvage allocation methodology.

10.3.26 AltaLink Control Centre Program Variance

1121. Table 10.3.26-1 below provides the 2022-2023 approved forecast and anticipated actuals for the capital expenditures associated with the AltaLink Control Centre program.

Table 10.3.26-1 – AltaLink Control Centre Actual/MU to Approved Variance 2022-2023

AltaLink Control Centre											
2022-2023 Approved			2022-2023 Actual / MU			Variance			Variance %		
Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX	Salvage
-	4.9	-	-	5.8	-	-	0.8	-	-	17%	-

1122. As described in Section 1.3 of the 2022-2023 AltaLink Control Centre business case,[212] the forecast projects targeted the replacement obsolete hardware, the upgrade of existing software to maintain support and cyber security, and the implementation of functional improvements to improve overall ACC operations. AltaLink based the forecast unit pricing on historical average expenditures for similar projects adjusted for inflation, and in some cases preliminary discussions with vendors. AltaLink did not forecast any salvage expenditures for this program as it does not involve the removal of equipment.

10.3.26.1 Capital Expenditure Variance: 2022-2023 Forecast to 2022 Actuals and 2023 MU

1123. AltaLink's 2022 actuals and 2023 anticipated AltaLink Control Centre program capital expenditures are $0.8M higher than forecast primarily as a result of increased costs for the ACC Version Upgrade program.

- AltaLink expects to incur $1.4M higher capital expenditures than forecast for the ACC version upgrade due to increases in labour and materials costs. As execution of the version upgrade to AltaLink's EMS software progressed, AltaLink identified the need to engage additional internal staff to effectively establish the team's knowledge of the software and its support requirements following completion of the upgrade. These internal staff worked closely with the vendor on the various stages of the upgrade and participated in several cross-training workshops that AltaLink did not anticipate in the forecast. Additionally, the cost of materials such as rack modules and power supplies were higher than forecast based on changes in market conditions. Lastly, based on detailed design requirements some additional materials had to be purchased to complete the project.
- The higher expenditures for the ACC version upgrade are partially offset by lower than anticipated requirements and expenditures in the ACC functional improvements subprogram. AltaLink incurred lower capital expenditures and rescheduled several projects due to the need to deploy additional internal resources on the EMS upgrade as noted above. This is expected to result in a $0.7M reduction capital expenditures compared to forecast.

[212] Exhibit 26509-X0026, Appendix 13-A20.

10.3.27 ACC Visibility Program Variance

1124. Table 10.3.27-1 below provides the 2022-2023 approved forecast and anticipated actuals for the capital expenditures associated with the ACC Visibility program.

Table 10.3.27-1 – ACC Visibility Actual/MU to Approved Variance 2022-2023

ACC Visibility											
2022-2023 Approved			2022-2023 Actual / MU			Variance			Variance %		
Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX	Salvage
-	1.1	-	-	1.1	-	-	(0.1)	-	-	-7%	-

1125. As described in Section 1.3 of the 2022-2023 ACC Visibility business case,[213] AltaLink based the forecast work on data collected from historical experience which was used to identify required upgrades necessary to improve decision making and reduce outage impacts to customers. AltaLink based the forecast cost for the ACC Visibility program work on historical average expenditures for similar work, adjusted for inflation. AltaLink did not forecast any salvage expenditures for this program as it does not involve the removal of equipment.

10.3.27.1 Capital Expenditure Variance: 2022-2023 Forecast to 2022 Actuals and 2023 MU

1126. AltaLink expects marginally lower capital expenditures than originally forecast due completing some enhancements remotely, reducing travel time and field construction.

10.3.28 Metering Program Variance

1127. Table 10.3.28-1 below provides the 2022-2023 approved forecast and anticipated actuals for the capital and salvage expenditures associated with the Metering program.

Table 10.3.28-1 – Metering Actual/MU to Approved Variance 2022-2023

Metering											
2022-2023 Approved			2022-2023 Actual / MU			Variance			Variance %		
Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX	Salvage
53	1.6	0.3	23	1.2	0.3	(30)	(0.4)	0.0	-57%	-23%	5%

1128. As described in Section 1.3 of the 2022-2023 Metering business case,[214] the forecast units are obsolete and/or non-compliant pieces of equipment that require replacement to comply with both federal and provincial regulations and equipment standards. AltaLink based the forecast unit pricing for the Metering program on historic average expenditures adjusted for inflation. AltaLink applied its salvage allocation methodology to determine its forecast and actual salvage expenditures for each project.

[213] Exhibit 26509-X0026, Appendix 13-A21.
[214] Exhibit 26509-X0026, Appendix 13-A22.

10.3.28.1 Capital and Salvage Expenditure Variance:2022-2023 Forecast to 2022 Actuals and 2023 MU

1129. AltaLink's 2022 actual and 2023 anticipated Metering program capital expenditures are $0.4M lower than forecast primarily due to AltaLink completing the replacement of several units concurrently with other planned substation projects, re-certification delays due to impacts of the pandemic and rescheduling work to better align with customers' needs or other site construction. The reduction in capital expenditures due to the AltaLink's execution of fewer units is partially offset by higher labour and materials costs due to market conditions not known at the time of the forecast. AltaLink was required to migrate to the latest meter model which is more expensive than the previous model and requires additional site work to install. The legacy meter model is no longer supported and no longer available for purchase from the vendor.

10.3.29 Tools and Instruments Program Variance

1130. Table 10.3.29-1 below provides the 2022-2023 approved forecast and anticipated actuals for the capital expenditures associated with the Tools and Instruments program.

Table 10.3.29-1 – Tools and Instruments Actual/MU to Approved Variance 2022-2023

Tools and Instruments											
2022-2023 Approved			2022-2023 Actual / MU			Variance			Variance %		
Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX	Salvage
-	3.8	-	-	3.7	-	-	(0.1)	-	-	-2%	-

1131. As described in Section 1.3 of the 2022-2023 Tools and Instruments business case,[215] AltaLink based the forecast tool purchases on sustaining AltaLink's inventory of tools and instruments required to operate, maintain, and repair the transmission system. AltaLink identified tools and instruments that had reached end of life through historical performance and experience. AltaLink based the forecast unit pricing for the Tools and Instruments program on historical average expenditures adjusted for inflation, and in some cases, preliminary discussions with vendors. AltaLink did not forecast any salvage expenditures as the program only involves the purchase of new equipment.

10.3.29.1 Capital Expenditure Variance: 2022-2023 Forecast to 2022 Actuals and 2023 MU

1132. AltaLink expects no material variances in this program.

10.3.30 Transmission Line Moves Program Variance

1133. Table 10.3.30-1 below provides the 2022-2023 approved forecast and anticipated actuals for the capital and salvage expenditures associated with the Transmission Line Moves program.

Table 10.3.30-1 – Transmission Line Moves Actual/MU to Approved Variance 2022-2023

Transmission Line Moves			
2022-2023 Approved	2022-2023 Actual / MU	Variance	Variance %

[215] Exhibit 26509-X0026, Appendix 13-A23.

Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX	Salvage
-	7.6	1.5	-	6.0	1.8	-	(1.6)	0.3	-	-21%	18%

1134. As described in Section 1.3 of the Transmission Line Moves business case,[216] AltaLink forecast Transmission Line Moves capital expenditures based on identified potential line move projects or requests from third parties. AltaLink incorporated its experience in the forecast for the line moves program in two primary ways: forecasting the scope and duration of work based on complexity and the use of historical average unit costs for line moves completed in prior periods. AltaLink applied this experience to the anticipated volume of line move requests for the test period to determine its forecast capital expenditures. AltaLink applied its salvage allocation methodology to determine its forecast and actual salvage expenditures for each project.

10.3.30.1 Capital Expenditure Variance: 2022-2023 Forecast to 2022 Actuals and 2023 MU

1135. Transmission line relocations are dependent upon the timing and scope of requests from the initiating party, and the location and site-specific conditions of the transmission line facilities to be relocated. Schedules and costs are determined by the timing of each request and can be affected by AUC facility applications, material delivery, construction resources, and outage restrictions. For these reasons there is generally a high level of uncertainty with these projects at the time AltaLink prepares its forecasts, and they are highly variable in scope and nature. AltaLink experienced less activity in 2022 than reflected in its historical trends and cost experience and, as a result, AltaLink is now expecting transmission line move capital expenditures to be $1.6M lower than forecast. Refer to **Appendix 13-A24**, Sections 3.1.1 and 3.1.2 for a summary of the transmission line moves completed and forecast in 2022 and 2023.

10.3.30.2 Salvage Variance: 2022-2023 Forecast to 2022 Actuals and 2023 MU

1136. AltaLink's forecast was based on a salvage allocation percentage applicable to line rebuilds. However, during detailed planning, AltaLink determined that the nature of the work would be more akin to line component work, which warranted a higher salvage allocation percentage to accurately capture the required salvage effort for the projects. This is expected to result in $0.3M higher salvage expenditures than forecast.

10.3.31 Vehicles Program Variance

1137. Table 10.3.31-1 below provides the 2022-2023 approved forecast and anticipated actuals for the capital and salvage expenditures associated with the Vehicles program.

Table 10.3.31-1 – Vehicles Actual/MU to Approved Variance 2022-2023

Vehicles											
2022-2023 Approved			2022-2023 Actual / MU			Variance			Variance %		
Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX	Salvage
54	7.0	-	53	5.8	(0.9)	(1)	(1.1)	(0.9)	-2%	-16%	-

[216] Exhibit 26509-X0026, Appendix 13-A24.

1138. As described in Section 1.3 of the 2022-2023 Vehicles business case,[217] the identified forecast units were based on vehicle condition, age and mileage. AltaLink based the forecast unit pricing for the Vehicles program on historical average expenditures adjusted for inflation and changes in requirements. AltaLink did not forecast salvage expenditures for this program. However, AltaLink attempts to sell any retired vehicles at auction with all proceeds reflected as a salvage credit.

10.3.31.1 Capital Expenditure Variance: 2022-2023 Forecast to 2022 Actuals and 2023 MU

1139. AltaLink expects the Vehicles program capital expenditures to be $1.1M lower than forecast due to the replacement of less expensive vehicle types (units) than forecast and due to supply chain timing changes between 2021 and 2022.

- AltaLink determined that the life of several vehicles previously targeted for replacement could be extended based on their condition. The vehicles are still in good condition and have readily available parts for repairs. Therefore, AltaLink made the decision to delay their replacement into a future test period. Other less expensive units whose condition does require replacement are now planned for completion in 2022-2023. Overall, this is expected to result in a $0.7M reduction in capital expenditures compared to forecast.
- Supply issues and unavailability of certain vehicles impacted the types of vehicles ordered as well as the timing and the cost of vehicles. This resulted in an unanticipated expenditure reduction of $0.4M in 2022.

10.3.31.2 Salvage Variance: 2022-2023 Forecast to 2022 Actuals and 2023 MU

1140. AltaLink expects salvage credits amounting to approximately $0.9M in 2022-2023 due to the sale of vehicles that are being retired/replaced. Vehicles are sold at auction with all proceeds reflected as a salvage credit to the salvage reserve. As noted above, the original forecast did not account for salvage credits from proceeds.

10.3.32 Arc Flash Hazard Mitigation Program Variance

1141. Table 10.3.32-1 below provides the 2022-2023 approved forecast and anticipated actuals for the capital and salvage expenditures associated with the Arc Flash Hazard Mitigation program.

Table 10.3.32-1 – Arc Flash Hazard Mitigation Actual/MU to Approved Variance 2022-2023

Arc Flash Hazard Mitigation											
2022-2023 Approved			2022-2023 Actual / MU			Variance			Variance %		
Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX	Salvage
-	-	-	1	0.1	0.0	1	0.1	0.0	-	-	-

1142. AltaLink did not forecast any capital or salvage expenditures in 2022-2023 as this program was expected to conclude in 2021.

[217] Exhibit 26509-X0026, Appendix 13-A25.

10.3.32.1 Capital and Salvage Expenditure Variance: 2022-2023 Forecast to 2022 Actuals and 2023 MU

1143. The variance reflects actual capital and salvage expenditures in 2022 to complete projects that were initiated but not completed in the prior test period.

10.3.33 Line Clearance Mitigation Variance

1144. Table 10.3.33-1 below provides the 2022-2023 approved forecast and anticipated actuals for the capital and salvage expenditures associated with the Line Clearance Mitigation program.

Table 10.3.33-1 – Line Clearance Mitigation Actual/MU to Approved Variance 2022-2023

Line Clearance Mitigation											
2022-2023 Approved			2022-2023 Actual / MU			Variance			Variance %		
Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX	Salvage
191	4.4	0.9	291	6.5	1.4	100	2.2	0.6	52%	50%	64%

1145. As described in Section 1.3 of the 2022-2023 Line Clearance Mitigation business case,[218] AltaLink identified the forecast units using data collected from the Aerial Mapping sub-program and line patrols and inspections. AltaLink based the forecast unit pricing for the Line Clearance Mitigation program on historical average expenditures adjusted for inflation. AltaLink applied its salvage allocation methodology to determine its forecast and actual salvage expenditures for each project.

10.3.33.1 Capital and Salvage Expenditure Variance: 2022-2023 Forecast to 2022 Actuals and 2023 MU

1146. Through detailed planning of Category 1 and Category 2 mitigation units, AltaLink identified 77 Category 3 units that had to be completed. Completing these newly identified Category 3 units concurrently with the Category 1 and 2 units enabled AltaLink to realize cost efficiencies that would reduce unit costs and result in lower landowner and reduced customer outages. This approach is consistent with the Commission's comments in Decision 26509-D01-2022[219] that AltaLink should realize efficiencies when Category 3 units can reasonably be undertaken when completed simultaneously with Category 1 or Category 2 units. Completion of these additional Category 3 units concurrently with the planned Category 1 and 2 units in 2022-2023 resulted in increased capital expenditures of $1.6M and increased salvage expenditures of $0.5M. AltaLink was able to complete an additional 100 units in 2022-2023, reducing its overall average cost per unit for the program.

1147. Below are two examples showing the efficiencies of combining the mitigation units into one activity:

- 834L – In 2022, AltaLink addressed 59 Category 2 deficiencies adjacent to 23 Category 3 deficiencies at the same line location. Resolving these 23 deficiencies while construction crews were already in the area optimized costs and avoided multiple land access, and

[218] Exhibit 26509-X0026, Appendix 13-A32.
[219] Decision 26509-D01-2022, para 382.

reduced customer impacts by minimizing the number of line outages required to complete the work.

- 776L – In 2023, AltaLink determined from field activities and an engineering review that five Category 3 deficiencies could be addressed at the same time as 11 Category 2 deficiencies at the same location. Again, this allowed AltaLink to achieve cost savings through completing the two categories of work at the same time while minimizing impacts on landowners and customers.

1148. In addition, AltaLink incurred increased capital expenditures for some Category 1 deficiencies. Some line derates which had previously been agreed with the AESO, were no longer possible due to changes in demands on the power system. The power system needs required these deficiencies to be addressed in 2022, increasing the associated capital expenditures by $0.6M and salvage expenditures by $0.2M in 2022-2023 compared to forecast.

10.3.34 AltaLink Control Centre Reconfiguration Program Variance

1149. Table 10.3.34-1 below provides the 2022-2023 approved forecast and anticipated actuals for the capital expenditures associated with the AltaLink Control Centre Reconfiguration program.

Table 10.3.34-1 – Control Centre Reconfiguration Actual/MU to Approved Variance 2022-2023

AltaLink Control Centre Reconfiguration											
2022-2023 Approved			2022-2023 Actual / MU			Variance			Variance %		
Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX	Salvage
-	-	-	-	0.2	-	-	0.2	-	-	-	-

1150. Subsequent to the Commission's Decision,[220] the program formerly known as the "AltaLink Control Centre Relocation" program was removed from AltaLink's forecast. There was therefore no forecast for the 2022-2023 test period.

10.3.34.1 Capital Expenditure Variance: 2022-2023 Forecast to 2022 Actuals and 2023 MU

1151. Subsequent to the Commission's Decision[221], in order to assess design alternatives, AltaLink is completing additional studies. AltaLink required expenditures of $0.2M to engage a third-party specialist to identify and assess design alternatives. These include options for the reconfiguration and modification of the existing control center space. The results of the study are described in 2024-2025 AltaLink Control Centre Reconfiguration program business case, **Appendix 13A-A33**.

10.3.35 Transmission Facility Modification Program Variance

1152. Table 10.3.35-1 below provides the 2022-2023 approved forecast and anticipated actuals for the capital and salvage expenditures associated with the Transmission Facility Modification program.

[220] Decision 26509-D01-2022, para 402.
[221] Decision 26509-D01-2022, para 385.

Table 10.3.35-1 – Trans. Facility Modification Program Actual/MU to Approved Variance 2022-2023

Transmission Facility Modification Program											
2022-2023 Approved			2022-2023 Actual / MU			Variance			Variance %		
Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX	Salvage
-	-	1.3	-	0.0	1.5	-	0.0	0.2	-	-	14%

1153. As described in Section 1.3 of the 2022-2023 Transmission Facility Modification business case,[222] AltaLink identified the forecast sites using data collected from regular reviews of AltaLink assets, system configuration, and customer driven changes conducted as part of AltaLink's maintenance planning process. AltaLink based the forecast unit pricing on historical experience adjusted for inflation. This is entirely a salvage expenditures program and AltaLink did not forecast any capital expenditures for this program as its purpose is to remove assets that are no longer required to support the AIES.

10.3.35.1 Salvage Variance: 2022-2023 Forecast to 2022 Actuals and 2023 MU

1154. The 2022 actual and 2023 anticipated salvage expenditures for the Transmission Facility Modification program are expected to be $0.2M higher than forecast due to higher than forecast soil remediation costs and the unanticipated need to remove disconnect switches at four sites, offset by reductions reflecting delays in completing work at the Wabamun Substation.

- The results of soil sampling completed at 2739S for the Wabamun Substation Removal project indicated that the required soil mitigation and remediation would be more substantial than forecast. AltaLink expects that soil sampling at AlbChem Beaverhill Creek 308S will have similar results. As a result, AltaLink expects salvage expenditures will increase $0.3M from the forecast.
- After its forecast had been finalized, AltaLink identified the need to electrically disconnect customers at four sites as they were no longer drawing power from the grid. AltaLink initiated these projects in 2021 and they were completed in 2022. This resulted in approximately $0.1M higher salvage expenditures than forecast.
- These increased expenditures are partially offset by cost reductions due to scheduling delays to the 2739S Wabamun Substation Removal project. Soil sampling, completion of detailed engineering and ensuring the alternative supply from Fortis was in place took longer than expected causing site construction to be delayed into 2024. AltaLink expects this will result in $0.1M lower salvage expenditure in 2022-2023 than forecast.

10.3.36 Wildfire Situational Awareness Program Variance

1155. Table 10.3.36-1 below provides the 2022-2023 approved forecast and anticipated actuals for the capital expenditures associated with the Wildfire Situational Awareness program.

Table 10.3.36-1 – Wildfire Situational Awareness Actual/MU to Approved Variance 2022-2023

Wildifre Situational Awareness			
2022-2023 Approved	2022-2023 Actual / MU	Variance	Variance %

[222] Exhibit 26509-X0026, Appendix 13-A34.

Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX	Salvage
12	1.1	-	12	1.6	-	0	0.5	-	0%	52%	-

1156. As described in Section 1.3 of the 2022-2023 Wildfire Situational Awareness business case,[223] the forecast units will complete commitments made to municipalities and customers as part of the PSPS process. As this was a new program, AltaLink based the forecast on high level desktop estimates. AltaLink did not forecast any salvage expenditures as this program does not involve the removal of equipment.

10.3.36.1 Capital Expenditure Variance: 2022-2023 Forecast to 2022 Actuals and 2023 MU

1157. AltaLink expects its Wildfire Situational Awareness program capital expenditures to be $0.5M higher than forecast due to the initial forecast under-estimating the amount of actual labour required for the design, siting, and installation of the identified weather stations and cameras. As this was a new program and there were no prior installations, AltaLink developed the initial forecast using high level estimates through a desktop review.

10.3.37 Targeted Component and Structure Replacements in HRFAs Program Variance

1158. Table 10.3.37-1 below provides the 2022-2023 approved forecast and anticipated actuals for the capital and salvage expenditures associated with the Targeted Component and Structure Replacements in HRFAs program.

Table 10.3.37-1 – Targeted Component & Structure Replacements in HRFAs Actual/MU to Approved Variance 2022-2023

Targeted Component and Structure Replacements in HRFAs											
2022-2023 Approved			2022-2023 Actual / MU			Variance			Variance %		
Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX	Salvage
350	8.4	2.5	449	8.7	2.4	99	0.3	(0.1)	28%	4%	-3%

1159. As described by Section 1.3 of the 2022-2023 Targeted Component and Structure Replacements in HRFAs business case,[224] AltaLink identified the forecast units using data collected from maintenance notifications/deficiencies that reside on structures within HRFAs. AltaLink based the forecast unit pricing on historical average expenditures for similar work adjusted for inflation. AltaLink applied its salvage allocation methodology to determine its forecast and actual salvage expenditures for each project.

10.3.37.1 Capital and Salvage Expenditure Variance: 2022-2023 Forecast to 2022 Actuals and 2023 MU

1160. AltaLink's 2022 actual and 2023 anticipated Targeted Component and Structure Replacements in HRFAs program capital expenditures are slightly higher than forecast. Based on inspections

[223] Exhibit 26509-X0046, Appendix 22-A01.
[224] Exhibit 26509-X0046, Appendix 22-A02.

results, AltaLink identified a higher volume of required component replacements in HRFAs and a lower volume of required structure replacements than previously forecast. These changes resulted in lower unit costs. The changes drove reduced salvage expenditures as component replacements require less salvage effort than structure replacements (as reflected in differences in the applicable salvage allocation percentages under AltaLink's salvage allocation methodology).

10.3.38 Line Rebuilds in HRFAs Program Variance

1161. Table 10.3.38-1 below provides the 2022-2023 approved forecast and anticipated actuals for the capital and salvage expenditures associated with the Line Rebuilds in HRFAs program.

Table 10.3.38-1 – Line Rebuilds in HRFAs Actual/MU to Approved Variance 2022-23

Line Rebuilds in HRFAs											
2022-2023 Approved			2022-2023 Actual / MU			Variance			Variance %		
Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX	Salvage
8	3.4	0.5	2	1.1	0.2	(6)	(2.3)	(0.4)	-72%	-68%	-69%

1162. As described in Section 1.3 of the 2022-2023 Line Rebuilds in HRFAs business case,[225] AltaLink based the forecast of the rebuild on the 616L/164L transmission line. The Commission did not approve the rebuild of 185L/412L which was also proposed in the 2022-2023 test period as the Commission found there remained uncertainty of stakeholder and permitting issues and it was unlikely to occur in the 2022-2023 test period.[226] AltaLink based the forecast unit pricing on historical average expenditures adjusted for inflation. AltaLink applied its salvage allocation methodology to determine its forecast and actual salvage expenditures for each project.

10.3.38.1 Capital and Salvage Expenditure Variance: 2022-2023 Forecast to 2022 Actuals and 2023 MU

1163. AltaLink's 2022 actual and 2023 anticipated Line Rebuilds in HRFAs program capital expenditures and salvage expenditures are $2.3M and $0.4M lower than forecast due to delays experienced in completing the planned rebuild of 616L/164L.

1164. AltaLink forecast to rebuild 616L/164L as a double circuit line, replacing two existing parallel wood pole H-frame lines during 2022-2023 test period. During development of the project the market pricing for steel poles increased and AltaLink no longer considered the chosen solution to be the best alternative. As a result, AltaLink paused its stakeholder consultation to consider potentially lower cost alternatives.

1165. AltaLink restarted consultation on a like-for-like replacement of the existing lines and anticipates filing a facility application with the AUC in 2023. Should the rebuild be approved, AltaLink is forecasting this work would start in late 2023 or early 2024 with completion in 2024, depending on the timing of the AUC regulatory approval process.[227]

[225] Exhibit 26509-X0046, Appendix 22-A03.
[226] Decision 26509-D01-2022, para 424.
[227] Refer to Appendix 22-A03 for further details.

10.3.39 Transmission Line ROW Upgrades in HRFAs Program Variance

1166. Table 10.3.39-1 below provides the 2022-2023 approved forecast and anticipated actuals for the capital expenditures associated with the Transmission Line ROW Upgrades in HRFAs program.

Table 10.3.39-1 – Transmission Line ROW Upgrades in HRFAs Actual/MU to Approved Variance 2022-2023

Transmission Line ROW in HRFAs											
2022-2023 Approved			2022-2023 Actual / MU			Variance			Variance %		
Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX ($M)	Salvage ($M)	Units	CAPEX	Salvage
502	7.6	-	497	8.4	-	-5	0.9	-	-1%	11%	-

1167. As described in Section 1.3 of the 2022-2023 Transmission Line ROW Upgrades in HRFAs business case,[228] AltaLink identified the forecast units using data collected from scheduled patrols and annual line and vegetation inspections as well as analysis of LiDAR survey data. AltaLink based forecast unit pricing on historical average expenditures for similar activities adjusted for inflation. AltaLink did not forecast any salvage expenditures as this program generally does not involve the removal of equipment or extensive site reclamation.

10.3.39.1 Capital Expenditure Variance: 2022-2023 Forecast to 2022 Actuals and 2023 MU

1168. AltaLink's 2022 actual and 2023 anticipated Transmission Line ROW Upgrades in HRFAs program capital expenditures are approximately $0.9M higher than forecast. This is primarily due to AltaLink encountering more complex and unanticipated requirements for fire risk modelling along 551L in BNP not in the forecast. Unique engineering and consultation activities related to discussions with BNP were needed based on stakeholder requirements AltaLink was required to carry out site marking activities to assess and define the wildfire mitigation options to support initial permitting discussions. Refer to **Appendix 22-A04** for further details.

10.3.40 Discontinued for Use Salvage Program Variances from 2022-2023 forecast

1169. Table 10.3.40-1 below provides the 2022-2023 approved forecast and anticipated actuals for the salvage expenditures associated with the DA/Customer & Discontinued for Use projects for the 2022-2023 test period.

Table 10.3.40-1– Discontinued for Use Salvage Actual/MU to Approved Salvage Variances 2022-2023

Discontinued for Use Salvage							
2022-2023 Approved		2022-2023 Actual / MU		Variance		Variance %	
Units	Salvage ($M)	Units	Salvage ($M)	Units	Salvage ($M)	Units	Salvage ($M)
-	3.4	-	3.9	-	0.6	-	17%

1170. For Discontinued for Use salvage projects, AltaLink received confirmation from the AESO that certain transmission facilities are to be permanently discontinued from use. The entire scope of

[228] Exhibit 26509-X0046, Appendix 22-A04.

each project is salvage-related only. AltaLink based its forecast salvage expenditures on the scope of each project.

10.3.40.1 Salvage Variance: 2022-2023 Forecast to 2022 Actuals and 2023 MU

1171. AltaLink originally forecast the salvage work under this program to start in 2018 and be completed in 2019. AltaLink encountered unexpectedly complex stakeholder engagement, planning, engineering and permitting challenges which took several years to address, resulting in the field work having to be delayed into the 2022-2023 test period.[229] AltaLink also required additional labour to complete planning and permitting which increased salvage expenditures. AltaLink now forecasts the salvage field work that was originally planned to be completed in the 2019-2021 will instead be completed by 2024. The work completed to date includes structure removal on 80L and 716L. AltaLink has 88 remaining structures to remove in 2024 as well as soil remediation. Salvage expenditures in 2022-2023 include soil testing to enable AltaLink to develop a plan for soil remediation in line with Alberta Government standards.

10.3.41 Other Non-CRU Salvage Program Variances from 2022-2023 forecast

1172. Table 10.3.41-1 below provides the 2022-2023 approved forecast and anticipated actuals for the salvage expenditures associated with the Other Non-CRU Salvage program.

Table 10.3.41-1 – Other Non-CRU Salvage Actual/MU to Approved Salvage Variance 2022-23

Other Non-CRU Salvage							
2022-2023 Approved		2022-2023 Actual / MU		Variance		Variance %	
Units	Salvage ($M)	Units	Salvage ($M)	Units	Salvage ($M)	Units	Salvage ($M)
-	-	-	0.9	-	0.9	-	-

1173. AltaLink did not forecast other non-CRU salvage expenditures, which relate to material scrapping costs as well as other unique salvage expenditures relating to AltaLink's Facilities Capital program.

1174. The salvage expenditure was $0.9M and relates to material disposal costs which includes scrapping and disposal of obsolete and unserviceable material. Specifically, these costs represent the dismantling of transformers, potential transformers, current transformers, high voltage breakers, and separation of equipment that require special environmental consideration (paper, metal, copper, waste, oil, etc). AltaLink is anticipating approximately $0.9M of material disposal salvage expenditures in the 2022-2023 test period.

10.3.42 CRU Test Period Forecasting Methodology

1175. AltaLink's forecast CRU programs during the Test Period seek to manage the risks associated with outage of equipment due to internal failure or external interference to preserve transmission system availability and optimally prevent customer power outages, danger to public safety or the environment, and cyber security breaches, which is necessary for AltaLink to meet its obligations. As part of the CRU programs, AltaLink also ensures compliance with applicable rules and regulations.

[229] Refer to Appendix 18-B, section 29.

1176. AltaLink plans its CRU projects based on numerous inputs, such as physical inspection, field tests, performance history, online condition monitoring results, industry reports (including studies on trends based on age or manufacturer), and historical project expenditures. This information amounts to thousands of points of data and through the analysis of this data, AltaLink identifies asset components that have a high likelihood of failure in the near term and that should be repaired, upgraded, or replaced to maintain safe and effective operations. While this forms the basis for the majority of AltaLink's CRU forecast there are other drivers such as system configuration improvement, obsolescence and regulatory compliance that are also considered. AltaLink also assesses the consequences of failure for 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 putting employees or public at risk of injury, environment contamination, widespread power outages or catastrophic failure of a major asset (e.g. transformer failure and fire).

1177. AltaLink's CRU programs fall into one of three general categories:

- sustaining programs that aim to maintain or extend asset life by replacing, upgrading or adding components in lieu of an entire asset replacement. A few examples of sustaining program activities are line component replacements, tap-changer rebuilds and ground grid upgrades;
- replacement programs that aim to replace an entire asset when sustainment is not feasible or is not cost effective in long run with a multitude of components in poor condition. Breaker replacement program is an example; and
- customer reliability improvement programs that aim to resolve situations where the configuration at a location in the system contributes to more frequent or longer duration outages of a group of customers compared to system averages.

1178. Through application of knowledge and experience, together with the risk analysis process described further below, CRU programs are analyzed and prioritized based on estimated risk reduction applicable to power system integrity, customer supply reliability, safety, environment, and compliance with regulations. AltaLink's decision to maintain, upgrade or replace a transmission asset is based on the condition of the asset, the likelihood of failure, assessment of the consequences of failure and the criteria described below.

10.3.42.1 Criteria to Maintain or Upgrade

1179. AltaLink relies upon the following criteria for deciding whether to maintain or upgrade assets:

- 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 life to date;
- the cost of maintenance or upgrade must be less than the cost of full replacement; and
- the addition of life extending components (e.g. filters on tap-changers) must result in reduced maintenance costs and/or extension of the asset life.

10.3.42.2 Asset Replacement Criteria

1180. AltaLink relies upon the following criteria for deciding whether to replace an asset:

- 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 that is unmanageable by maintenance, plans for refurbishment or replacement are made;

- obsolescence – the ability to support the asset in service often diminishes with time 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 the older assets contributes to infeasibility of maintenance and making a decision for replacement or refurbishment;
- ownership costs – ongoing maintenance of a particular asset or asset class may no longer be cost effective. High maintenance cost of an existing asset will contribute to a preference for a replacement decision as opposed to a partial upgrade;
- operation ratings – as the transmission system changes, ratings of older equipment may become inadequate. Operating assets above ratings, if possible, at all, can accelerate the deterioration and increase likelihood of catastrophic failure which may represent a safety risk. Since partial upgrades typically do not increase an asset's capacity, the expected change in operation requirement is considered in the decision to replace;
- asset performance – review of performance trends can indicate performance degradation for specific assets, asset classes or manufacturers which 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 two parts per million before the end of 2025[230].

10.3.42.3 Asset Risk Management Process

1181. AltaLink's asset risk management process includes five steps, as shown in Figure 10.3.42-1 below.

[230] PCB Regulations, SOR/2008-273, section 16.

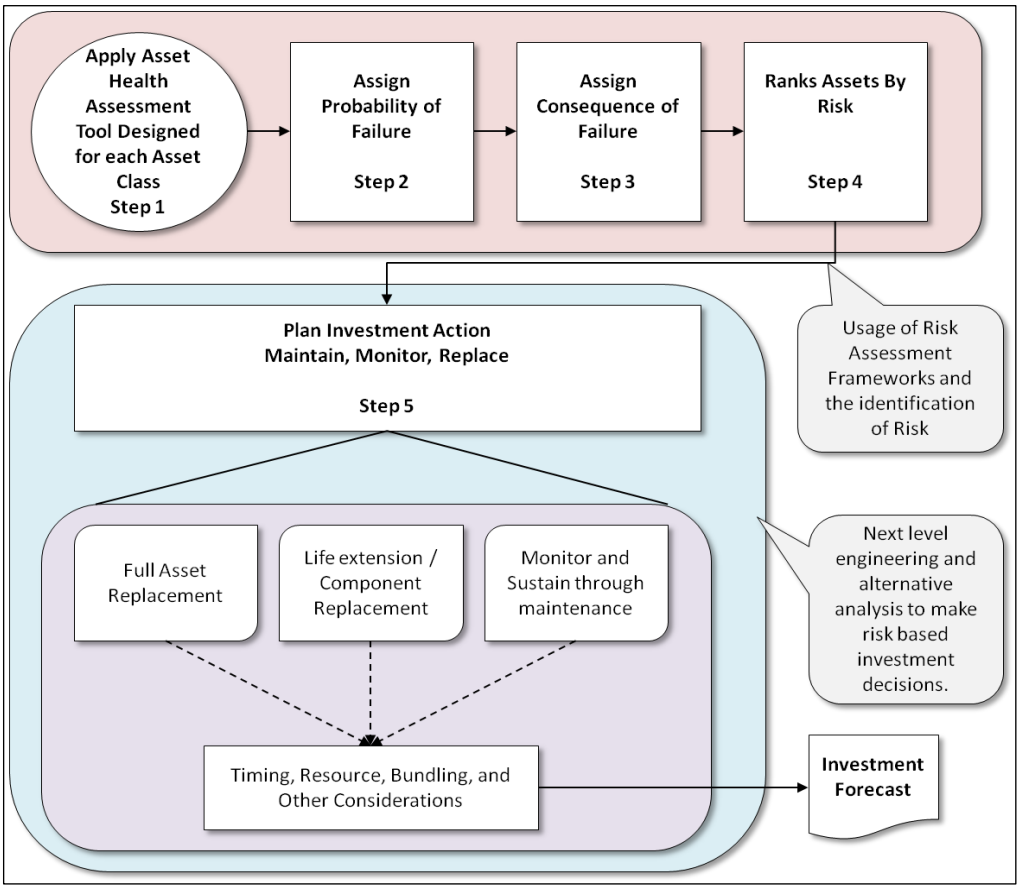


Figure 10.3.42-1 - Asset Risk Management Process

1182. Steps one to four are completed through assessment of equipment condition and assessing the likelihood and consequence of failure to define risk. Examples of the condition assessment, estimated time to failure and overall risk assessment can be found for each power system asset being managed within the CRU business cases in **Appendix 13-A**. The result of AltaLink's process is a prioritized list of assets to be considered for potential maintenance investment.

1183. The final step (step five) of AltaLink's risk management process involves an engineering review to identify the nature and timing of the investment required to mitigate the risk associated with the prioritized assets. 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 based on the criteria discussed above. AltaLink also verifies recent maintenance activity, asset health indicators, the timing of other projects and customer activities, and the technical feasibility of investment alternatives.

1184. AltaLink determines the appropriate volume of equipment to address in the Test Period based on the assessment of asset condition, to address those assets with a high likelihood of failure in the next two to five years and by assessing the overall risk exposure from the continued operation of the entire population of equipment being managed over time. As the assets continue to see operational stresses and wear-out from adverse environment and weather, the likelihood of failure continues to increase which, in turn, increases the risk of failure while in operation. This risk exposure needs to be managed over time to avoid degradation in future power system performance.

1185. As part of the unit selection process, AltaLink also considers additional near-term factors to determine the most efficient timing of investments including design and field construction opportunities completed at the same site which optimizes resource usage and reduces customer outages. Through this evaluation and the five steps explained above, the forecast replacement of assets is determined. The overall risk management process determines the most optimum overall investment in the Test Period.

1186. The specific drivers and forecast methodology for each equipment type being forecast for CRU investment in the Test Period is found in the CRU business cases found in **Appendix 13-A**.

1187. AltaLink performs three other high-level analyses on the output of its CRU forecasting and risk assessment process, outlined above, to further assess the reasonableness of the Test Period forecast and assure that the continued service life of the fleet does not create unmanageable high-risk situations in future. These approaches are discussed further in the following sections:

- CRU Major Programs - Equipment Deficiency Trend Analysis – Section 10.3.43;
- Future State Population Profiles – Section 10.3.45; and
- Customer Benefit Analysis – Section 10.3.46.

10.3.43 CRU Major Programs - Equipment Deficiency Trend Analysis

1188. The CRU Program is a vital part of AltaLink's overall maintenance program. Where it no longer makes sense to perform preventative or corrective maintenance on an asset, AltaLink plans for replacement or refurbishment. Deficiency trends are a leading indicator that AltaLink utilizes to monitor the overall condition and health of assets and ensure that the respective investment plan in the Test Period is reasonable.

1189. Notifications are deficiencies reported for assets identified through field 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 likelihood of failure to avoid asset failures that ultimately compromise the safe, reliable operation of the system.

1190. Notifications come from multiple sources, including visual inspections, root cause failure analysis, and SCADA alarms. 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 defects in early development stage and serve as leading indicator of future investment requirements. In AltaLink's experience, low-priority notifications typically will not require intervention within five years. Medium-priority notifications usually require action within two to four years depending on the asset type.

1191. 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.

1192. An increasing number of high-priority notifications represents increasing risk due to high likelihood of in-service failure. The notification trends are an important part of AltaLink's investment forecasting process, as they reflect the current and future risk state and the optimum timing for component or full asset replacement.

1193. Current notification and deficiency trends for four major groups of AltaLink's assets are provided as examples in Figure 10.3.43-1 to Figure 10.3.43-7 below with each followed by a summary discussion of how AltaLink uses these trends in its CRU forecasts.

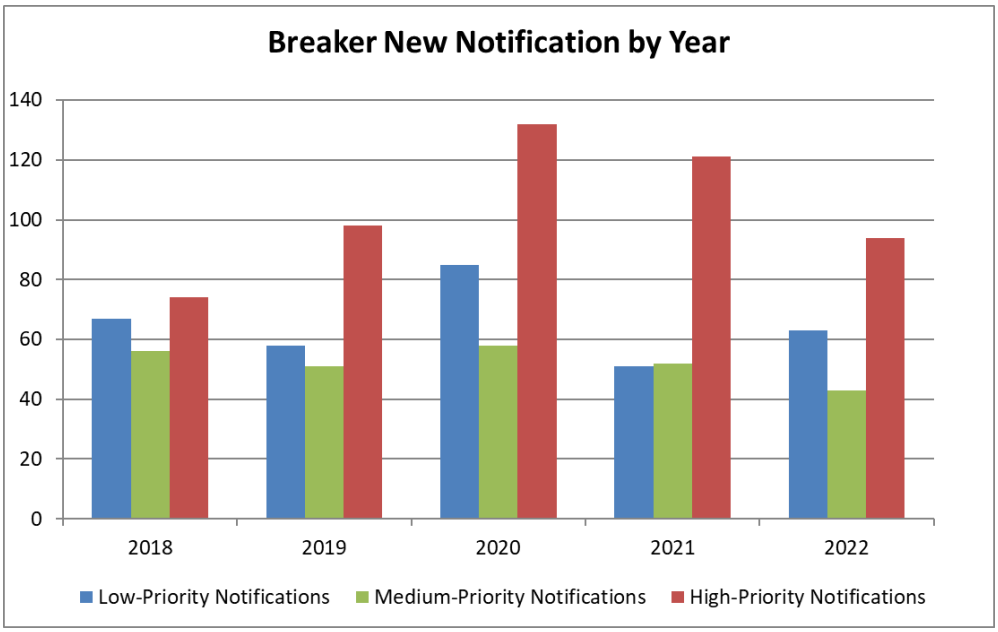


Figure 10.3.43-1 – Circuit Breaker New Deficiency Notifications Identified by year

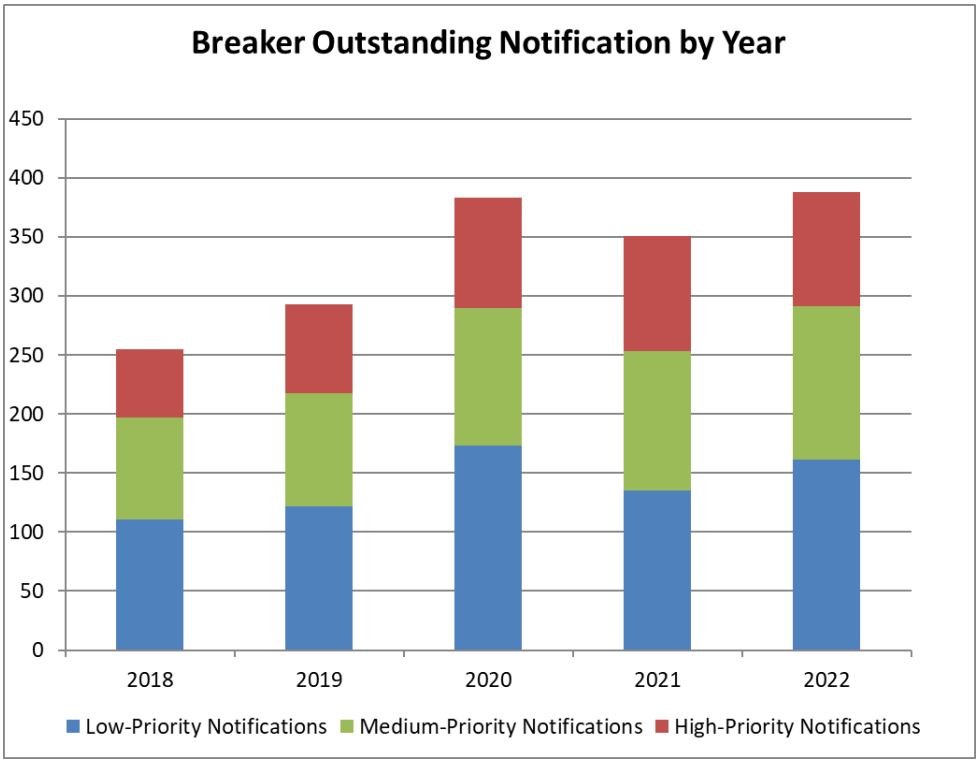


Figure 10.3.43-2 – Circuit Breaker Outstanding Deficiency Notifications Trend

1194. Figure 10.3.43-1 above shows that a high number of circuit breaker maintenance notifications continue to be identified which reflects AltaLink's ageing circuit breaker fleet. This trend is clear

in Figure 10.3.43-2 which shows the number of cumulative outstanding maintenance notifications that have not been addressed for circuit breakers. This trend indicates that the number of circuit breaker defects and likelihood of in-service failure continues to require adequate and timely investment. As a result, AltaLink is forecasting required continued investment in the Test Period to address breakers identified in poor condition. The function of breakers is to interrupt fault currents and, as a result, they are exposed to a high degree of electrical and physical stress. Breaker failures are typically catastrophic with the potential for significant consequential damage, placing employees and the public at risk. Additionally, breakers typically protect other major assets, and failure of a breaker will result in delayed clearance of fault current stressing other major assets such as transformers. Breaker defect 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 identified breakers in poor condition with high likelihood of failure in the near term for replacement within the Test Period. More details about breaker replacements can be found in **Appendix 13-A12** Substation Major Equipment.

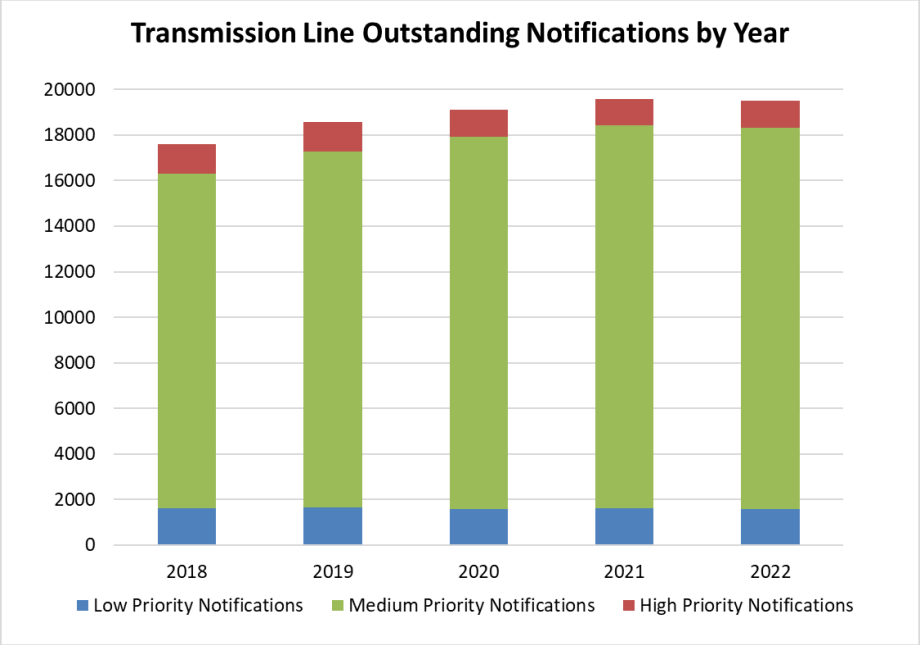


Figure 10.3.43-3 - Transmission Line Outstanding Deficiency Notifications Trend

1195. Figure 10.3.43-3 above shows that the number of outstanding deficiency notifications, including high, medium, and low-priority notifications, were trending higher until 2021 and has leveled off recently. This indicates that AltaLink's recent investments were reasonable and sufficient to sustain the current level of transmission line notifications due to wear and continued service. AltaLink continues to require its forecasted lines capital investments in the Test Period to be able to sustain their performance and public safety. For more information regarding the transmission line CRU business cases, refer to **Appendix 13-A02** to **Appendix 13-A05**.

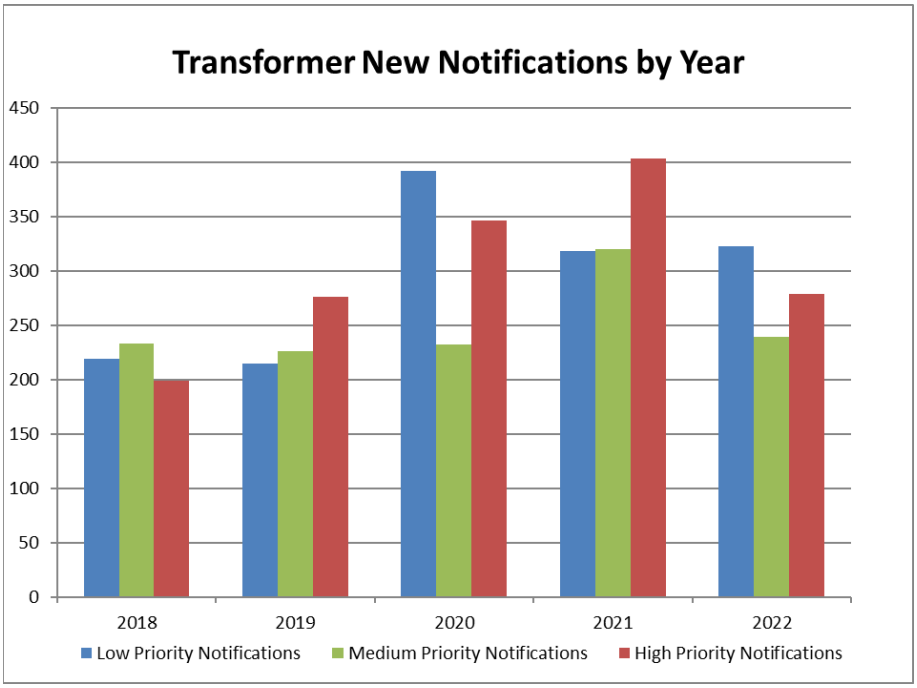


Figure 10.3.43-4 - Transformer New Deficiency Notifications by Year

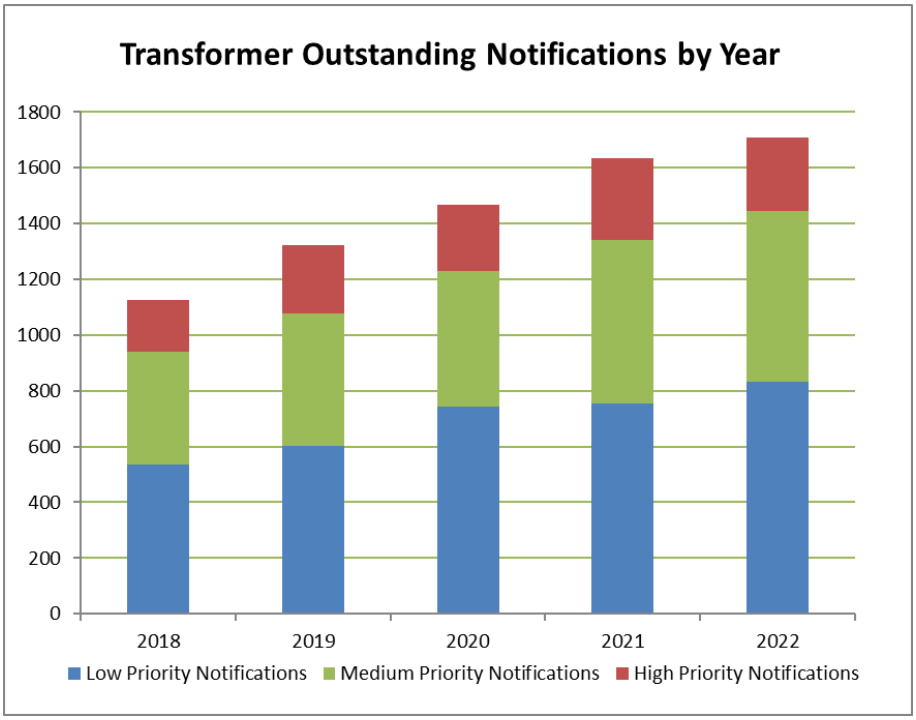


Figure 10.3.43-5 – Transformer Outastanding Deficiency Notifications Trend

1196. Figure 10.3.43-4 and Figure 10.3.43-5 above illustrate an increasing trend in transformer deficiency notifications. This trend of increasing notifications confirms that AltaLink's transformer fleet continues to deteriorate in condition through continued service. AltaLink transformer replacements forecast in the Test Period, along with AltaLink's monitoring and

maintenance programs, are targeting to address this notification trend and reduce the risk of in-service failure. Many of AltaLink's transformers are at delivery points where failure will result in loss of power for customers and transformer manufacturers typically take one to two years (or longer) to supply a transformer. AltaLink must continue to invest in transformer replacements as further detailed in **Appendix 13-A12** Substation Major Equipment.

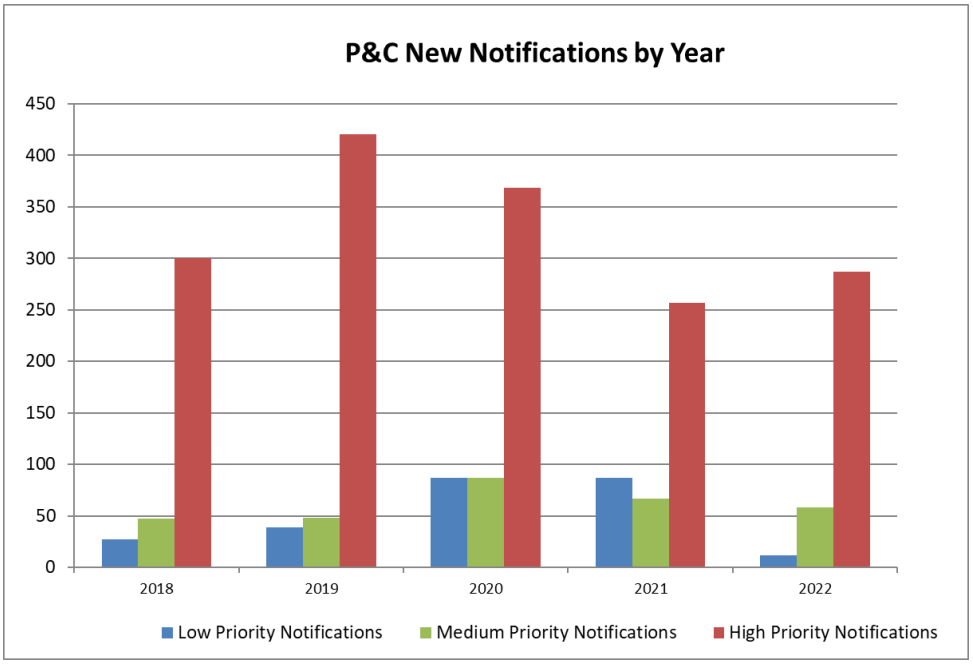


Figure 10.3.43-6 - Protection and Control New Deficiency Notifications by Year

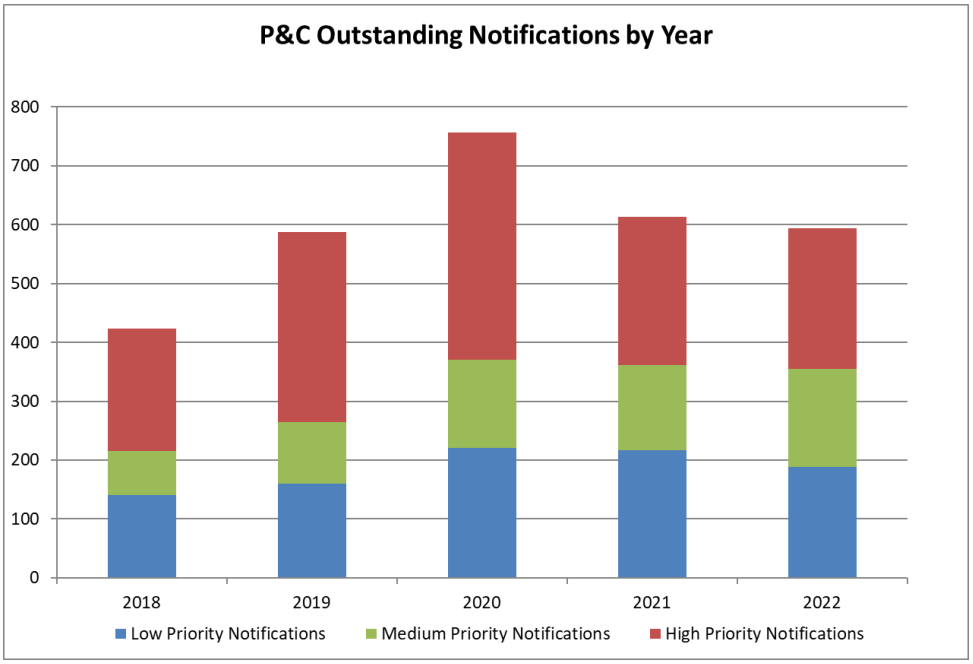


Figure 10.3.43-7 - Protection and Control Outstanding Deficiency Notification Trend

1197. The trend of P&C high-priority notifications, shown in Figure 10.3.43-6 and Figure 10.3.43-7 above, shows a fairly consistent number of high-priority notifications in the past five years. This reflects the aging population of relays across AltaLink's transmission network and recorded relay deficiencies year over year. These deficiencies are related to relay condition, performance, or functional failures. AltaLink forecasts 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 protection setting requests from external parties, building upgrades, reducing the number of obsolete relays. For more details on the P&C programs, refer to **Appendix 13-A15** and **Appendix 13-A16**.

10.3.44 Summary of Notification Trend Analysis

1198. 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.

1199. 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 CRU investments focus on assets with high likelihood of failure in the near-term and the consequence to customers, safety, or the environment to ensure the CRU investments are targeted to the right assets.

10.3.45 Future State Population Profiles

1200. AltaLink also assesses the current and future profiles of its asset population based on current and projected asset service life. Service life is another indicator of asset health as it represents the time a transmission asset has been exposed to the wear and tear caused by ongoing operation, weather, and the environment. Analysis of service life is therefore a suitable indicator to assess current and future equipment replacement requirements. The majority of transmission assets follow the bathtub curve of failure rate, as shown in Figure 10.3.45-1 below. Based on the bathtub curve, assets can fail at anytime but as assets remain in service the probability of failure increases with the wear and tear due to ongoing operation until the asset functionally fails. The failure probability grows exponentially after service life passes a certain level presenting higher likelihood of failure.

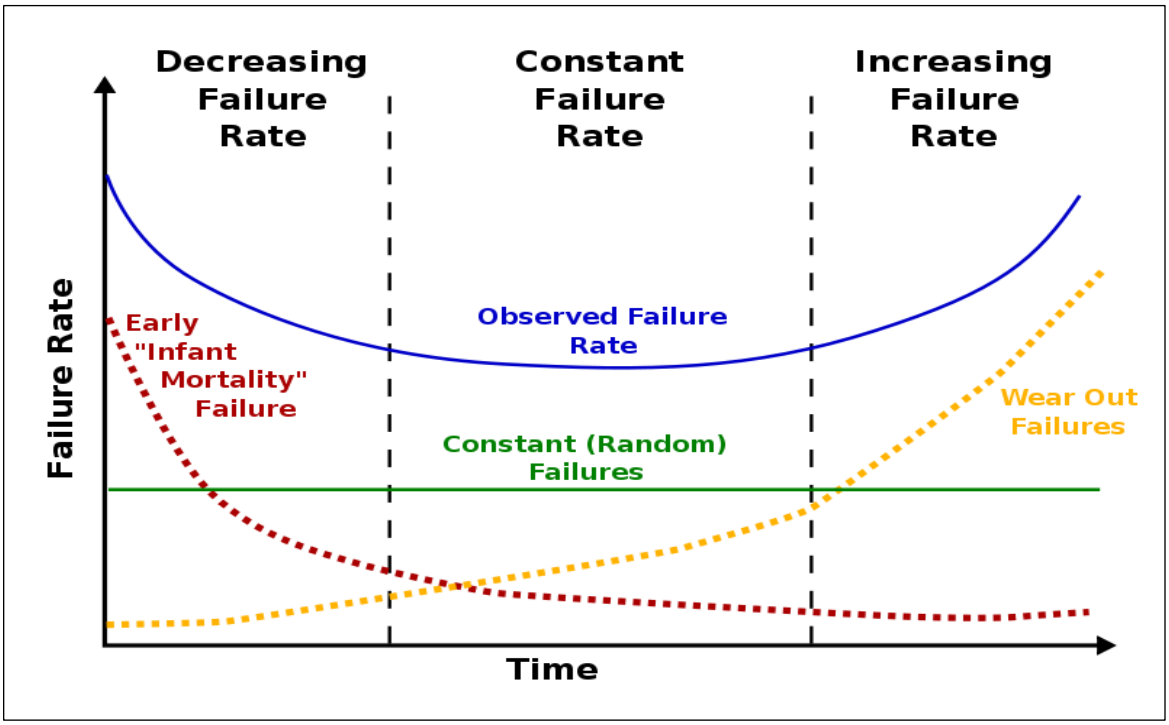


Figure 10.3.45-1 - Bathtub Curve

1201. The bathtub curve is a general statistical view of how an average asset is expected to behave. Some assets will last longer than expected, while others will fail earlier than expected. For that reason, AltaLink relies on actual condition of the assets assessed through inspections and tests in making its decisions on replacement.

1202. Assessing the age progression profile of the assets can provide another indicator of the reasonableness of the forecast equipment replacements and gives a view regarding the volume of assets that may require replacement in future periods.

1203. An age-based assessment of future replacements and asset replacement rates is obtained by profiling the total number of assets past the Average Service Life (ASL) of the asset group. The ASL has been determined by AltaLink's 2022-2023 GTA Depreciation Study.[231] 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 whether current investment levels are or are not sufficient to maintain current asset performance. A higher number of assets past ASL indicates more risk of in-service failure and potentially increase in assets showing signs of failure through inspections and tests.

1204. The age profiles of AltaLink's major assets are provided in Figure 10.3.45-2, Figure 10.3.45-3, Figure 10.3.45-4, and Figure 10.3.45-5 below. As can be seen in the figures, there is a significant volume of assets whose age is past the ASL. For the reasons described above, such assets are typically candidates for maintenance investment.

[231] Exhibit 26509-X0013, AML 2022-2023 GTA - Appendix 08 Depreciation Study.

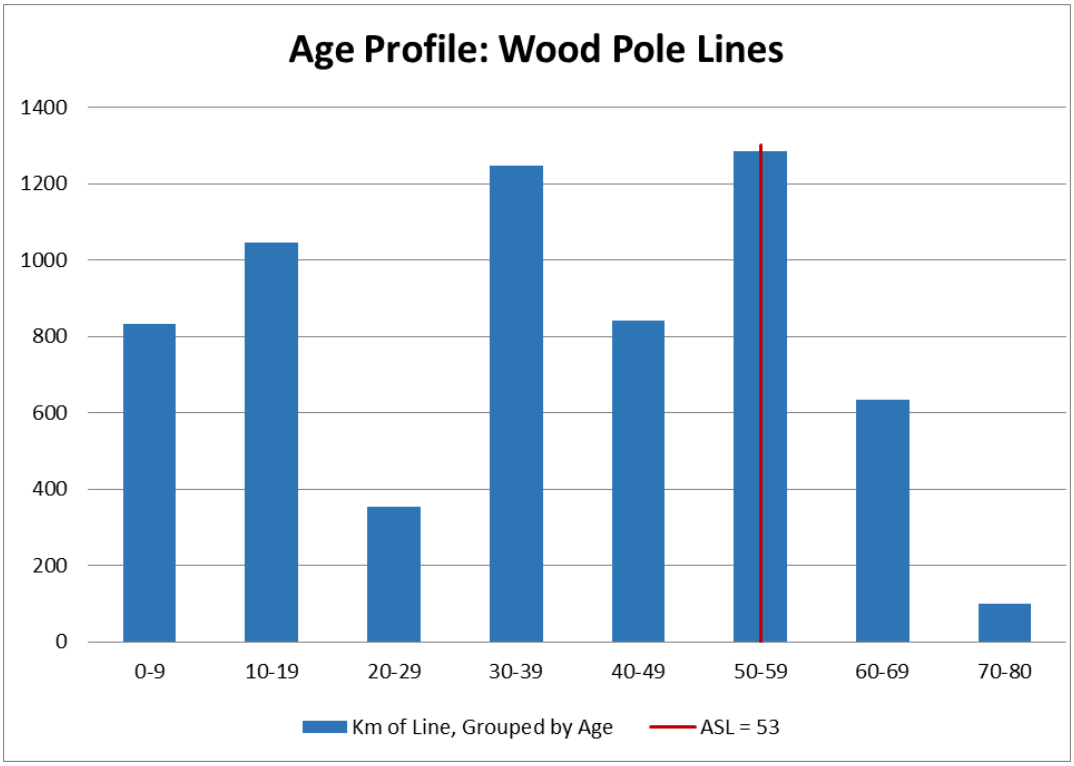


Figure 10.3.45-2 – Age Profile Wood Pole Lines

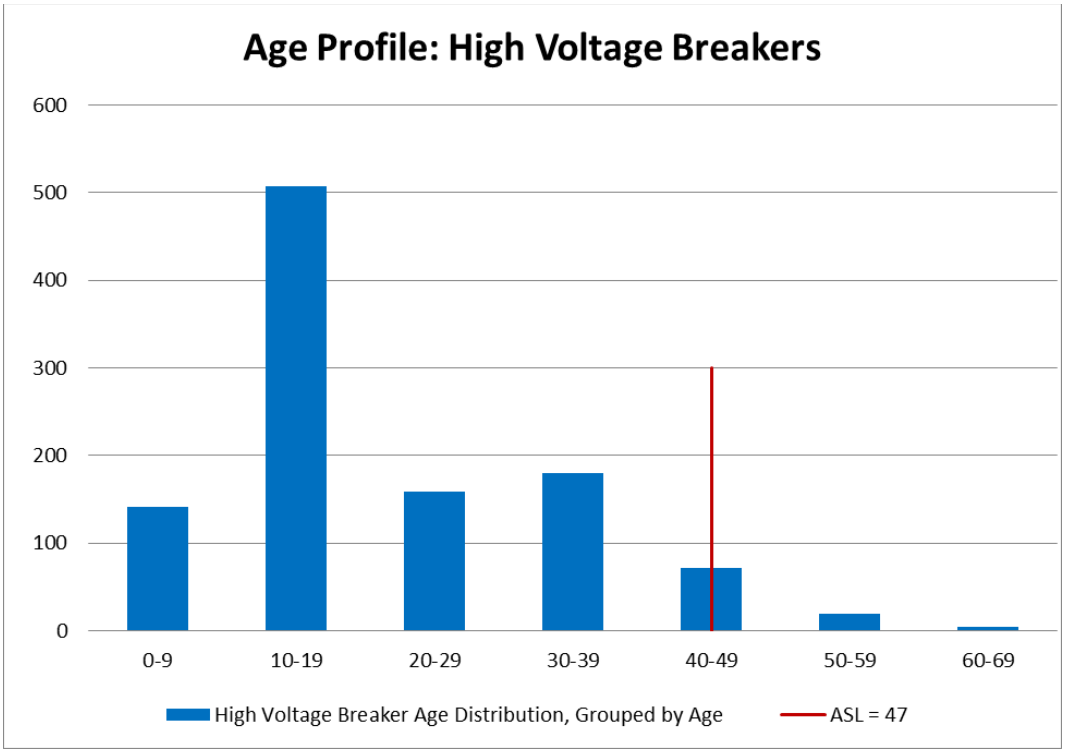


Figure 10.3.45-3 – Age Profile High Voltage Circuit Breakers

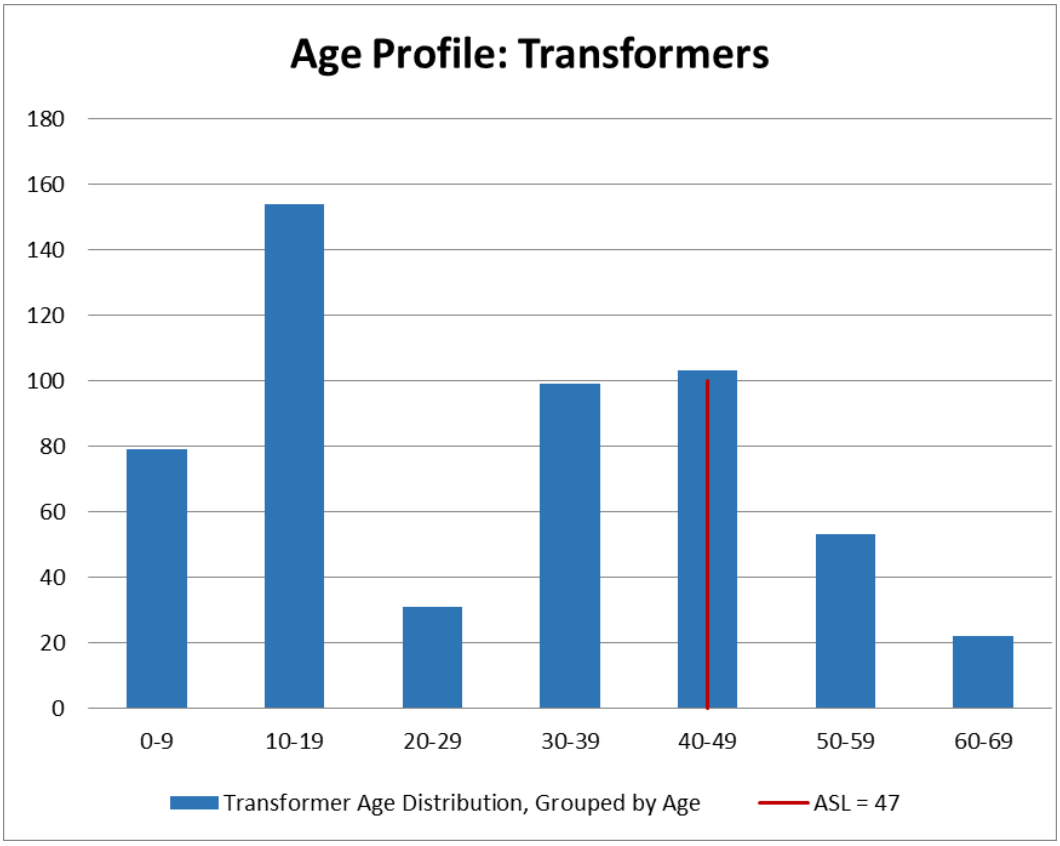


Figure 10.3.45-4 – Age Profile Transformers

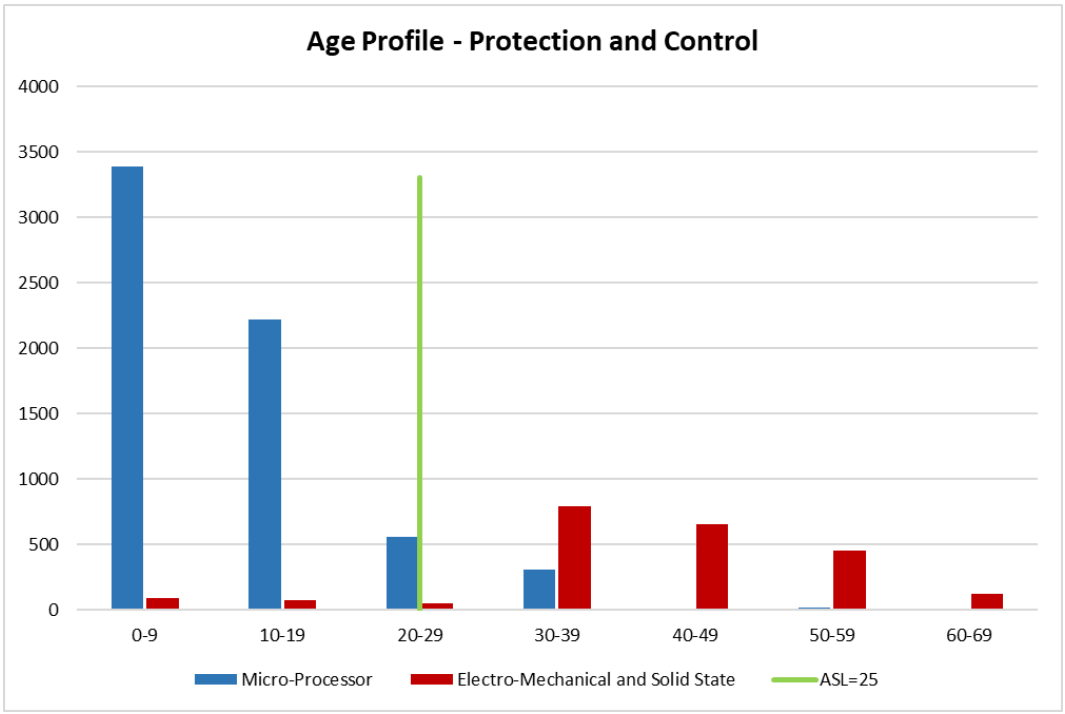


Figure 10.3.45-5 – Age Profile P&C Equipment

1205. The following 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 replacement rate that would be required to maintain a constant number (i.e. the current number) of assets past the ASL of the asset group and hence maintaining a consistent level of failure risk. These three asset classes represent a significant portion of AltaLink's CRU investment and provide a representative example of AltaLink's transmission assets.

10.3.45.1 Transformers

1206. Figure 10.3.45.1-1 and Figure 10.3.45.1-2 below show the future transformer age profile in two different scenarios: four transformer replacements per year and 10 transformer replacements per year. Figure 10.3.45.1-2 below indicates that AltaLink would have to replace 10 transformers annually to stabilize the transformer age profile over time if this method was the only approach AltaLink utilized to manage asset performance and risk. As described below and in its CRU, business cases in **Appendix 13-A**, AltaLink relies on common industry condition assessment methods to identify poor condition transformers and limit the forecast replacements to the transformers at high risk of failure. This has resulted in fewer transformer replacements than the age profile suggests.

1207. AltaLink manages its overall transformer fleet through common industry monitoring methods such as dissolved gas analysis enabling a preventative and predictive maintenance approach including total asset or select component replacements. Utilizing its condition based process and engineering assessments, AltaLink has reviewed the transformers showing signs of end of life through field tests and inspections with consideration of the design, industry shared data, condition monitoring data (e.g. dissolved gas analysis) and recent failures to identify assets with higher likelihood of failure in the next two to five years in determining its forecast for planned transformer replacements. AltaLink's maintenance and engineering processes enable AltaLink to forecast transformer replacements at four to five 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** for further details on AltaLink's Transformers and Regulators subprogram.

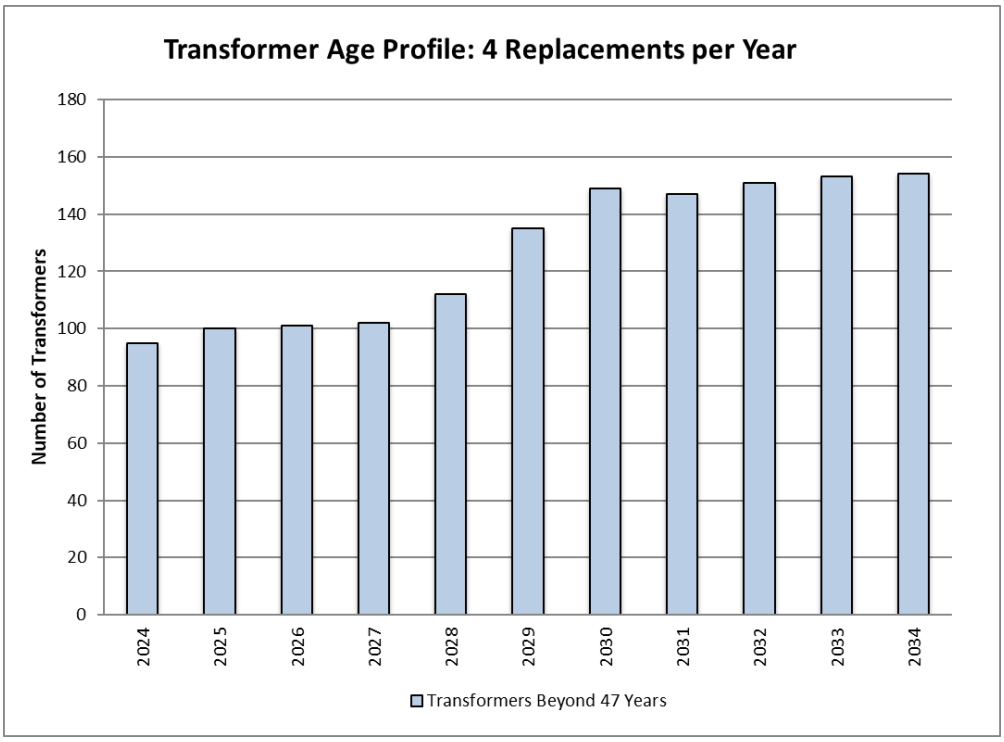


Figure 10.3.45.1-1 – Transformer Age Profile Current Replacement Rate

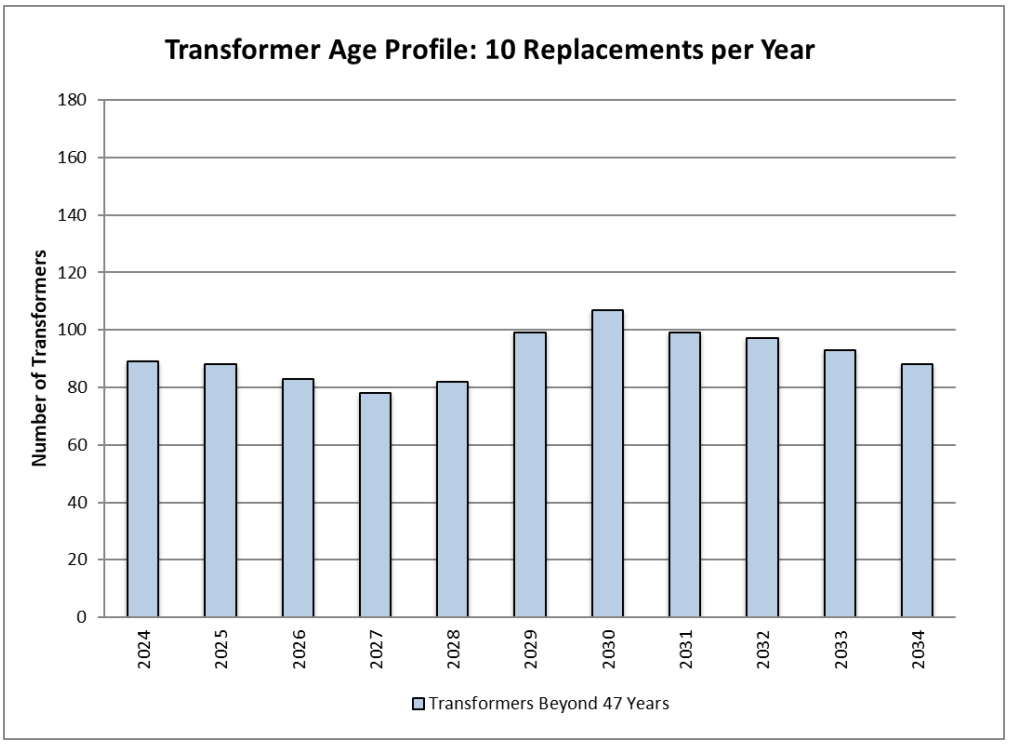


Figure 10.3.45.1-2 – Transformer Age Profile - 8 Replacements/Year Scenario

10.3.45.2 Circuit Breakers

1208. Figure 10.3.45.2-1 below provides an age profile analysis regarding high voltage circuit breakers. Figure 10.3.45.2-1 below demonstrates that the current CRU forecast, which is the replacement of 10 high voltage 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 2024. AltaLink believes this is appropriate 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 of interrupting high fault currents. Breaker failures are typically catastrophic and may cause significant consequential damage.

1209. Below is a summary of the drivers that AltaLink considers for replacing breakers:

- known manufacture model design/defects;
- poor equipment condition and inspection (e.g. leaking oil, leaking SF_6, 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.

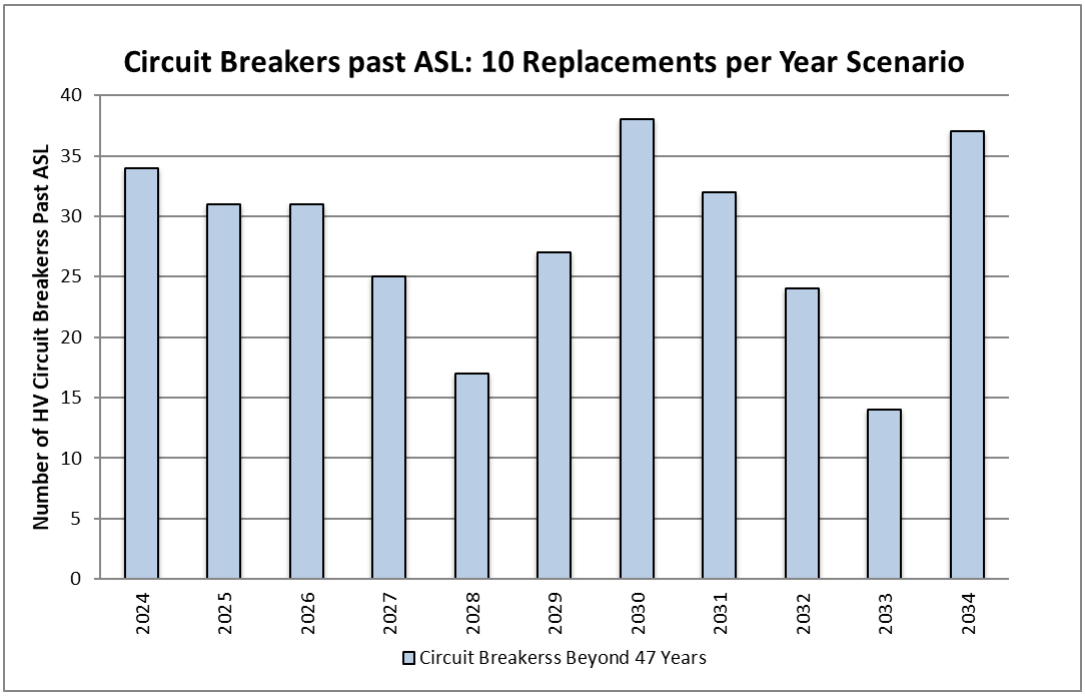


Figure 10.3.45.2-1 – Number of Circuit Breakers past ASL - 10 Replacements/Year Scenario

10.3.45.3 Wood Pole Transmission Lines

1210. Figure 10.3.45.3-1 and Figure 10.3.45.3-2 below show the kilometers of wood pole lines AltaLink operates beyond ASL assuming two different future scenarios: 36km of rebuilds per year and 100 km of rebuilds per year. The Test Period forecast of approximately 36km per year, on average, 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. As provided in detail in its CRU business cases in **Appendix 13-A**, AltaLink relies on the information from field inspections of the transmission lines to determine replacement requirements for the Test Period. Although 100km rebuild per year is required to maintain current level of wood poles past ASL, AltaLink planned 36km rebuild per year based on the condition information. 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 the current level while maintaining present performance levels. Even with the forecast of 36km being rebuild per year in the Test Period the population of wood poles past ASL continues to grow, signalling that more investment might be required in future periods.

1211. 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 reviewed the higher risk wood pole lines and is forecasting 36km, on average, of transmission line rebuild for the Test Period.

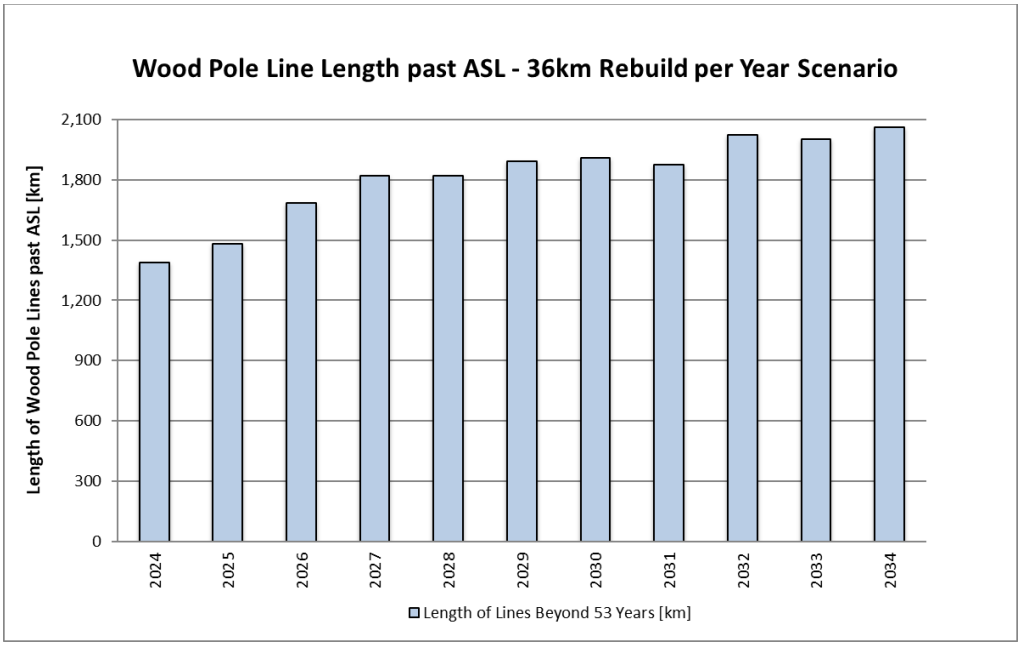


Figure 10.3.45.3-1 – Wood Pole Line Length Past ASL - 36km Rebuild/Year Scenario

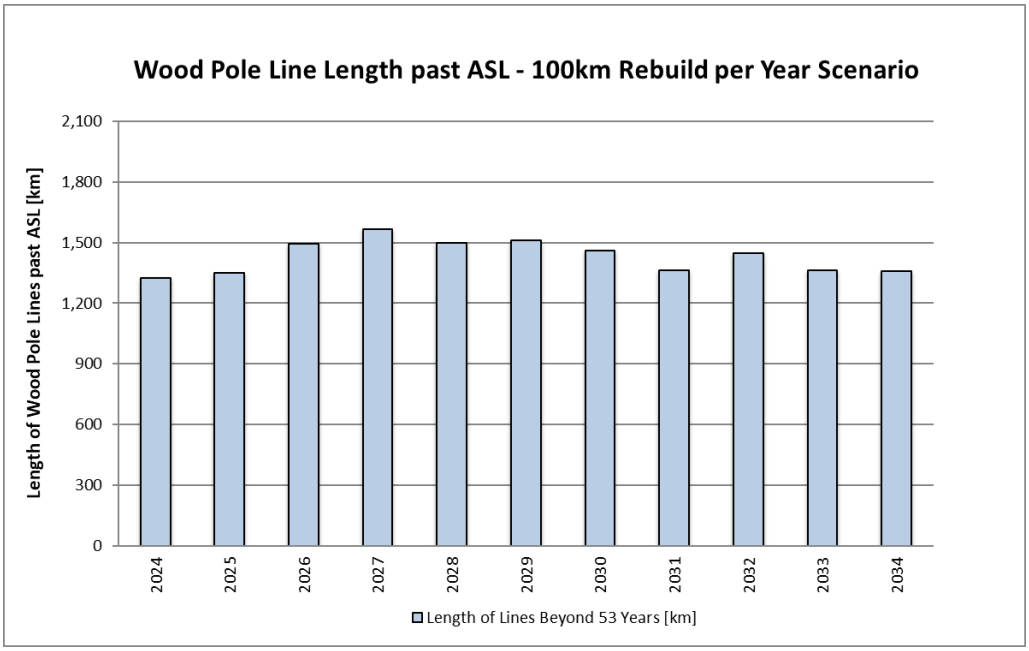


Figure 10.3.45.3-2 – Wood Pole Line Length past ASL - 100km Rebuild/Year Scenario

10.3.45.4 Summary

1212. Table 10.3.45.4-1 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. The forecast replacement rates in the Test Period are the result of the application of AltaLink's CRU forecasting methodology derived from asset condition and the likelihood of asset failure. However, as the analysis indicates, there will be potentially increased requirements in future periods based on the age and overall composition of AltaLink's transformer and wood pole lines.

Table 10.3.45.4-1 - CRU Forecast to Age Profile Comparison Examples

Description	2024-2025 Forecast Average (Units/yr)	2024-2025 Forecast Average ($M/yr)	Sustain Age Profile Average (Units/yr)	Sustain Age Profile Average ($M/yr)
Transformers	4.5	7.2	10	16.0
High Voltage Circuit Breakers	10	5.0	10	5.0
Wood Pole Lines (km)	36	22.7	100	63.1
Total		**34.9**		**84.1**

10.3.46 Customer Benefit Analysis

1213. 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, among

others. AltaLink's assessment of the safety, environment, and system reliability consequences to customers is therefore a key part of its CRU forecasting process.

1214. System performance impacting customer reliability is the largest CRU investment driver for the 2024-2025 Test Period. Over 57% 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 10.3.46-1 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.

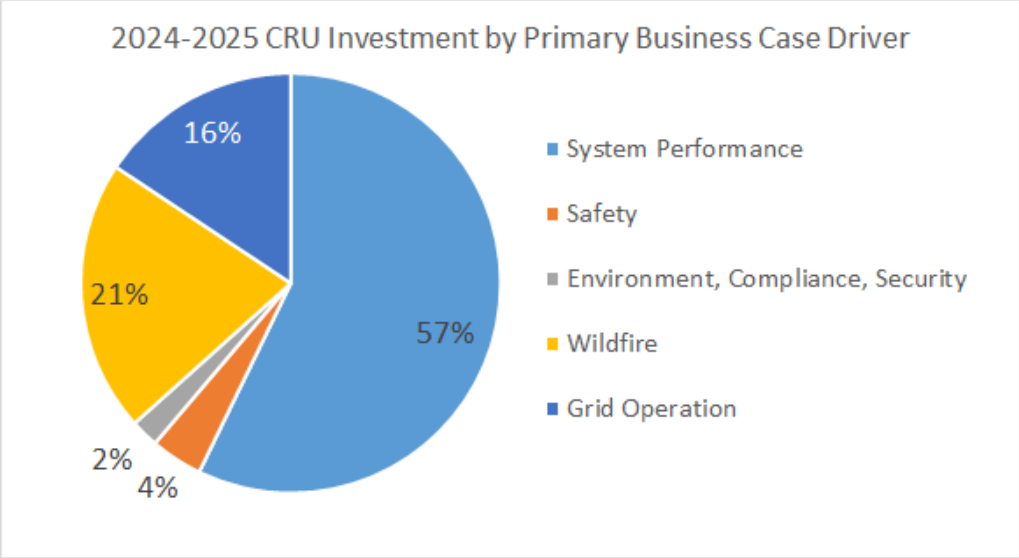


Figure 10.3.46-1 – CRU Forecast by Primary Business Case Driver

1215. AltaLink analyzed the types of customers connected to the lines and stations with forecast CRU investment in the Test Period. As shown in Figure 10.3.46-2 below, 63% of the forecast system performance related investment within AltaLink's substations and transmission line programs directly impacts Fortis, or directly connected industrial customers.

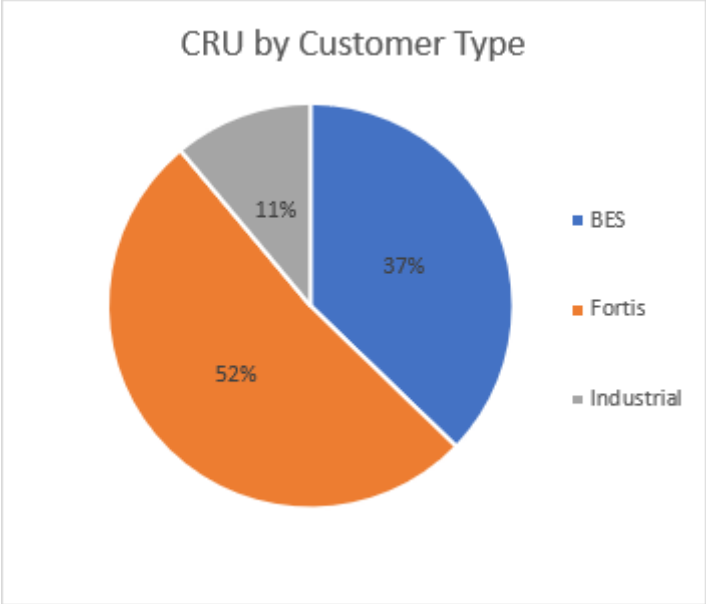


Figure 10.3.46-2 – CRU by Customer Type

- "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.

1216. 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.

1217. 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. Table 10.3.46-1 below summarizes a sample of representative data collected from 10 direct connect industrial customer meetings.

Table 10.3.46-1 – Sample of Customer Feedback

Direct Connect Industrial Customer	Load or Generator	Feedback Received From	Meeting Date	Impact of Unplanned Outages to Customer
Customer #1	Load	General Manager; Maintenance Superintendent; Chief Steam Engineer; Senior Supervisor, Reliability	November 2022	AltaLink confirmed an unplanned event will cause disruption to two other customers that share product through processes with Customer #1. 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	November 2022	AltaLink confirmed Customer #2 site is directly interconnected to Customer #1. This plant requires 48 hours to safely shut down. An unplanned event takes approximately 3-4 days to purge and clean and in winter conditions the customer would be down for weeks. In order to restart its three processing plants, Customer #2 requires Customer #1 to be restarted before it can restart. Will cost the company approximately $1M 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	September 2022	AltaLink confirmed 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 may result in environmental

Direct Connect Industrial Customer	Load or Generator	Feedback Received From	Meeting Date	Impact of Unplanned Outages to Customer
				concerns. Plants takes up to 12 hours to restart.
Customer #4	Load	Electrical Run Engineer	October 2021	AltaLink confirmed 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 2021	AltaLink confirmed 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

Direct Connect Industrial Customer	Load or Generator	Feedback Received From	Meeting Date	Impact of Unplanned Outages to Customer
				increased risk to safety during process interruptions. Before restarting its refinery, customer needs to reset system to safe-start mode which takes additional time.
Customer #6	Load	Energy Management Specialist; Area Operations Manager; Sr. Electrical Technologist; Maintenance Team Leader; Outage Planner; Maintenance Services Supervisor	October 2022	AltaLink confirmed 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 $380k per pipeline.
Customer #7	Load	Plant Manager; Chief Electrical Engineer; Training Advisor	October 2021	AltaLink confirmed 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

Direct Connect Industrial Customer	Load or Generator	Feedback Received From	Meeting Date	Impact of Unplanned Outages to Customer
				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	October 2022	AltaLink confirmed 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.
Customer #9	Load	Site Electrical Specialist; Electrical & Instrumentation Supervisor;	September 2022	AltaLink confirmed this customer's plants and gas fields are highly interdependent for its processing facilities. An unplanned event can cause

Direct Connect Industrial Customer	Load or Generator	Feedback Received From	Meeting Date	Impact of Unplanned Outages to Customer
		Field Supervisor		between $100k - $350k 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 (H_2S) gas and environmental regulation interventions. These facilities take between 24 hours to 2-3 days to bring the plant to a safe state.
Customer #10	Load	Electrical Engineer Maintenance Coordinator	October 2022	AltaLink confirmed that 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 and millions of dollars. 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.

1218. AltaLink's CRU forecast methodology, based on equipment condition and likelihood of failure, combined with consideration of the consequence of failure to customers, as summarized above and as detailed in each CRU business case in **Appendix 13-A**, demonstrates the alignment of AltaLink's forecast CRU investments in this Test Period with reducing the impact of equipment failures on AltaLink's customers.

1219. Further, AltaLink's CRU forecast methodology, based on equipment condition and likelihood of failure, 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. 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.

10.3.47 CRU Business Cases

1220. AltaLink's CRU business cases are provided in **Appendix 13-A**. AltaLink's WMP and respective business cases are provided in **Appendix 22**. In tables in the Program Costs and Schedule sections of each business cases, AltaLink has set out its forecast capital expenditures and salvage expenditures and has also reported historical units, average cost and total capital expenditures in the same subprogram levels as forecast expenditures in the Test Period. The basis of the forecast and average unit costs are further discussed in Section 10.3.1.

1221. The 2021 and 2022 actual expenditures by subprogram were derived from actual costs recorded in AltaLink's accounting system.

1222. In these business cases, AltaLink presents and explains variances between the 2024 forecast capital expenditures and the 2023 MU. Similarly, AltaLink has presented and explained variances between 2024 salvage expenditures and the 2023 MU.

10.3.47.1 CRU and Wildfire Business Case Structure Changes

1223. In response to the Commission's 2022-2023 AltaLink GTA Decision[232] AltaLink reorganized its CRU business case structure, including revisions to AltaLink's update to is WMP found in **Appendix 22**. Information specific to a program type or asset category is now organized together within the business case under one subprogram, as opposed to being dispersed throughout the business case. This has resulted in changes to the business case headings and structural changes as generally summarized in Table 10.3.47.1-1 below. When multiple subprograms are present, information and data associated with the specific subprogram has been organized sequentially. Table 10.3.47.1-1 below compares the business case structure between the 2022-23 GTA and the 2024-25 GTA.

Table 10.3.47.1-1 – CRU & WMP Business Case Structure Changes

2022-2023 CRU & WMP Business Case Structure	2024-2025 CRU & WMP Business Case Structure
1. Program Description	1. Program Description
2. Program Costs and Schedule	2. Program Costs and Schedule a. Capital Forecast b. Salvage Forecast
3. Forecast Variance	3. Program Forecast Trend a. Capital Forecast Trend b. Salvage Forecast Trend
4. Forecast Methods and Assumptions a. Subprogram 1 b. Subprogram 2	4. Subprogram 1 a. Forecast Method and Assumptions i. Unit Forecast ii. Unit Costs b. Technical and Business Drivers i. Driver 1 ii. Driver 2 c. Alternative Analysis d. Recommendation
5. Technical and Business Drivers/Site Specific Drivers a. Subprogram 1 b. Subprogram 2	5. Subprogram 2 (as required)
6. Program Benefits	6. Program Benefits
7. Sensitivities	7. Sensitivities
8. Conclusion and Recommendation	8. Conclusion and Recommendation

[232] Decision 26509-D01-2022, paragraph 277, pdf 65.

1224. Overall, AltaLink's CRU Program for 2024-2025 Test Period (**Appendix 13-A**) is organized into 12 categories with 27 programs with a business case for each program. The WMP for 2024-2025 Test Period (**Appendix 22**) is organized in one category with five programs and a business case for each program. The categories and programs are summarized in Table 10.3.47.5-1 below.

1225. Programs may be standalone or include several subprograms. Under either a program or subprogram, AltaLink provides specific asset details where the forecast cost is over $0.5M per asset. AltaLink forecast either units or assets for each program or subprogram. In very specific programs (e.g. Telecom Major), AltaLink may forecast a project.

1226. In each business case, AltaLink included the forecast salvage expenditures and units if the program has a salvage component. The forecast is based on AltaLink's salvage allocation methodology.

10.3.47.2 Opportunities for Improvement Implemented in AltaLink's CRU & WMP Business Cases

1227. In addition to the comments the Commission made regarding AltaLink's CRU business cases, the Commission also provided opportunities for improvement for specific business cases. AltaLink reviewed this feedback and has attempted to incorporate it into the business cases and the Application.

1228. For example:

- the Commission clarified expectations to provide condition assessments related to the proposed transformer replacements forecast.[233] AltaLink has included these in the Substation Major Equipment business case.[234] AltaLink has similarly reviewed and done its best effort to provide the supplemental evidence where available to assist the Commission in this GTA;
- the Commission was concerned that not all readily available data was provided to help the Commission better understand what is giving rise to SCADA notifications.[235] To address this, AltaLink has included in its filing Appendix 13-A09 Attachment (SCADA Notifications);
- the Commission indicated that it would be beneficial to identify specific individual projects proposed in the Test Period, including high level scope, the start and completion year of the project, total project costs, and justification of why a specific project was needed in the Test Period.[236] AltaLink has included the identified details within the Asset Details sections within the Substation Major Equipment business case. For example, additional details for High Voltage Breakers are provided in **Appendix 13-A12**, Section 6.3; and
- the Commission did not find the relay risk assessments to provide reliable information to determine which relays require replacement in the near term.[237] As a result, AltaLink has provided information on its condition assessment approach. This can be found in several business cases such as:
    - **Appendix 13-A15** Protection and Control Equipment, Section 4.1.1
    - **Appendix 13-A07** Substation Components, Section 5.2.1
    - **Appendix 13-A12** Substation Major Equipment, Section 4.1.1

[233] Decision 26509-D01-2022 at paragraph 263.
[234] Appendix 13-A12.
[235] Decision 26509-D01-2022 at paragraph 214.
[236] Decision 26509-D01-2022 at paragraph 278.
[237] Decision 26509-D01-2022 at paragraph 295.

- **Appendix 13-A16** Protection and Control Major Equipment, Section 4.1.1.2

10.3.47.3 Alternatives Analysis in CRU & WMP Business Cases

1229. The Commission, in the Decision, commented that "[it] expects AltaLink to include a description of all alternatives it analyzed…"[238] and it identified that "AltaLink did not provide an analysis of alternatives in support of the project".[239] AltaLink reviewed Bulletin 2006-25 and undertook an analysis of alternatives for each business case included in the 2024-2025 Test Period.

1230. AltaLink identified alternatives which were determined to be viable and addressed the risks and drivers identified in the business case. Where there are viable alternatives that address the risks and drivers identified, AltaLink provides a description of the option and where relevant the cost. AltaLink uses NPV analysis where the alternative analysis has no intangible factors which inform parts of the decision. Where the alternative analysis does have intangible factors that cannot easily be assigned a monetary value (for example, environmental or stakeholder impacts), AltaLink did not include NPV analysis.

10.3.47.4 NPV Analysis

1231. Based on the Commission's feedback in Decision 26509-D01-2022 for AltaLink's 2022-2023 GTA, AltaLink included an NPV of revenue requirement analysis for alternatives in its CRU business cases, where applicable, to illustrate economic evaluation of viable alternatives.

1232. The NPV model utilized in the CRU business cases is provided in **Appendix 13-A** Attachment 2.

1233. The general input assumptions utilized in the NPV analysis are as follows.

1234. Depreciation rates for the various asset classes are captured in Table 10.3.47.4-1 below. Depreciation rates are consistent with MFR Schedule 6-3. CCA Rates are consistent with MFR Schedule 7-4. Depreciation rates and CCA rates are reproduced below.

Table 10.3.47.4-1 – Depreciation and CCA rates used in NPV analysis

USA	Description	Approved Depreciation Rates	CCA Class	CCA Rate
350.1	Land Rights	1.90%	Class 47	8.00%
352	Structures And Improvements	2.29%	Class 47	8.00%
353	Station Equipment	2.37%	Class 47	8.00%
353.01	Station Equipment - HDVC	2.59%	Class 47	8.00%
353.1	System Communication And Control	4.48%	Class 46	5.00%
354	Towers And Fixtures	1.71%	Class 47	8.00%
354.01	Towers And Fixtures (Post 2011)	1.80%	Class 47	8.00%
355	Poles And Fixtures	2.73%	Class 47	8.00%
355.01	Steel Poles	1.90%	Class 47	8.00%
356	Overhead Conductors And Devices	1.58%	Class 47	8.00%
358	Underground Conductors And Devices	2.02%	Class 47	8.00%

[238] Decision 26509-D01-2022 at paragraph 345.
[239] Decision 26509-D01-2022 at paragraph 243.

USA	Description	Approved Depreciation Rates	CCA Class	CCA Rate
390	Structures And Improvements - General	2.28%	Class 47	8.00%
391	Office Furniture And Equipment	6.67%	Class 46	5.00%
391.1	Computer Hardware	20.00%	Class 50	55.00%
392	Transportation Equipment - Fleet Vehicles	5.19%	Class 10	30.00%
394	Tools, Shop And Lab Equipment	10.00%	Class 10	30.00%
396	Power Operated Equipment	6.57%	Class 10	30.00%

1235. Assumed debt and equity components used in the NPV analysis have been extracted from MFR Schedule 28-1 and are consistent with approved 2022-2023 GTA rates as shown in Table 10.3.47.4-2 below.

Table 10.3.47.4-2 – Equity and Debt assumptions used in 2024-2025 GTA

Regulatory Assumption	2024 & 2025
Equity Component	37.00%
Debt Component	63.00%
Equity Return	8.50%
Debt Return	3.87%
Discount Rate	5.58%

1236. The inflation rate is assumed to be 2.5% and Provincial and Federal Income Tax Rates are assumed at 10% and 15%, respectively.

1237. Specific inputs to the analysis, such as capital cost assumptions or operating expenses are detailed in each business case, as applicable.

10.3.47.5 CRU & WMP Categories and Business Case Locations

1238. AltaLink provides its business cases in **Appendix 13-A** and **Appendix 22**. Table 10.3.47.5-1 below is the summary of the business cases included and organized by category.

Table 10.3.47.5-1 – List of CRU Business Cases by Category

Category	MFR Schedule 10-4 2024 and 2025 Reference	Business Case #	Business Case Name
Transmission Urgent Repair	115 & 153	13-A01	Urgent Repair
Transmission Planned Maintenance	116 & 154	13-A02	Line Components
		13-A03	Transmission Line Rights-Of-Way
		13-A04	Transmission Line Airbreaks
		13-A05	Rebuild Older Wood Poles
		13-A17	Pipeline Interference Mitigation
Substation Planned Maintenance	117 & 155	13-A06	Condition Monitoring
		13-A07	Substation Components
		13-A08	Disturbance Analysis Equipment
		13-A09	Scada Equipment
		13-A11	Substation Grounding
		13-A12	Substation Major Equipment
		13-A13	25 Kv Bus
		13-A14	Substation Rebuild Program
		13-A15	Protection And Control Equipment
		13-A16	Protection And Control Major Equipment
		13-A30	Arc Flash Hazard Mitigation
Telecom Planned Maintenance	118 & 156	13-A10	Telecommunication Equipment
		13-A19	Telecom Major Projects
Meter Replacements	119 & 157	13-A22	Metering
System Control Centre Upgrades	120 & 158	13-A20	AltaLink Control Centre
		13-A21	AltaLink Control Centre Visibility
		13-A33	Control Centre Relocation
Transmission Line Moves	121 & 159	13-A24	Transmission Line Moves
Vehicles	122 & 160	13-A25	Transmission General Capital - Vehicles
Tools & Instruments	123 & 161	13-A23	Tools And Instruments
551L Rebuild	124 & 162	13-A31	Banff - Lake Louise 551L Rebuild
Line Clearance Mitigation	125 & 163	13-A32	Line Clearance Mitigation
Transmission Facility Modification Projects	N/A	13-A34	Transmission Facility Modification Projects
Wildfire Mitigation Plan	126 & 164	22-A1	Line Rebuilds In High Risk Fire Areas
		22-A2	Transmission Line Row Upgrades In High Risk Fire Areas
		22-A3	Transmission Line Row Upgrades In High Risk Fire Areas
		22-A4	Wildfire Situational Awareness Program

Category	MFR Schedule 10-4 2024 and 2025 Reference	Business Case #	Business Case Name
		22-A5	Top Ignition Causing Lines Upgrades

10.4 Security and Information Technology (IT) Capital Costs

1239. AltaLink's Security and IT program supports the ongoing operation and effectiveness of AltaLink's assets and workforce in providing services to customers and maintaining the resilience, reliability and security of the Alberta Integrated Electricity System.

1240. Table 10.4-1 below contains the four year trend of actual and forecasted capital expenditures by category within the IT & Security program.

Table 10.4-1 – Security & IT Capital Expenditures ($M)

Description ($M)	2022 Actual	2023 MU	2024 Forecast	2025 Forecast
Security	10.9	13.3	4.9	4.4
Physical Security- CIP 14 & CIP Med Impact Sites			10.4	12.4
Total Security	**10.9**	**13.3**	**15.3**	**16.9**
Lifecycle Sustainment	9.2	9.9	14.5	13.4
Process Improvement	1.5	2.3	4.4	2.2
Regulatory/Legislative	1.5	0.6	2.7	2.7
Total IT	**12.2**	**12.8**	**21.6**	**18.4**
TOTAL	**23.1**	**26.1**	**36.9**	**35.2**

1241. Security and IT program expenditures have increased in the 2024-2025 Test Period compared to the 2022-2023 test period. This increase is primarily driven by physical security measures at critical AESO identified CIP-14 substation sites and cyclical IT replacements and upgrades (such replacements and upgrades are included in the Lifecycle Sustainment category in **Appendix 13-B3**).

1242. The proposed physical security measures proactively mitigate the risk of serious physical attacks on the AIES that could cause prolonged outages and disrupt Alberta's provincial economy. The CIP-014 and CIP Medium Impact Site Physical Security business case identifies $22.8M of forecasted capital expenditures to mitigate this threat. These security measures will collectively deter, detect, delay, assess, communicate, and respond to physical attacks on AltaLink's facilities. Refer to **Appendix 13-B1-04** for further detail.

1243. IT forecasted capital expenditures in the Test Period are higher than the 2022-2023 test period due to the cyclical timing of hardware replacements and end of support software upgrades. Overall, approximately $19.6M are forecast across four business cases – Systems Upgrade Program, Data Centre and System Protection Program, Technology Refresh Program and Corporate and Operational Technology Network and Infrastructure Upgrade to address lifecycle improvements across these key systems that are required for AltaLink to effectively operate its assets in support of the AIES. Refer to **Appendix 13-B3-02**, **Appendix 13-B3-13**, **Appendix 13-B3-07** and **Appendix 13-B3-08**.

1244. Alberta Reliability Standards compliance requirements continue to evolve. AltaLink has forecast $2.7M in capital expenditures to develop, deploy and report on ARS requirements in the Test Period. In addition, AltaLink must implement the Integrated System Operations Software Addition program to comply with new AESO data requirements for planned outage submissions. The forecast capital expenditures for this program are $5M. Refer to **Appendix 13-B4-01** and **Appendix 13-B3-10**.

1245. Section 10.4 has five main sections:

- A portfolio-level overview of security and IT capital expenditures during the 2024-2025 Test Period and comparison to current 2022-2023 period (Section 10.4.1);
- Overview of security threats affecting the critical infrastructure sector and AltaLink as a TFO and Canadian and US Government's security agencies' recommendations on appropriate threat mitigation (Section 10.4.2);
- AltaLink's approach to Security and IT long range planning, project definition, resource estimation, management, and execution (Section 10.4.3);
- Recommended Security and IT capital projects for the 2024-2025 Test Period (Section 10.4.4); and
- Business case variance reporting for projects approved in the 2022-2023 GTA and other capital expenditure incurred in the 2022-2023 test period (Section 10.4.5).

10.4.1 Security and IT Capital Expenditures Overview

1246. Russia's war in Ukraine and the targeted cyber and physical attacks against Ukraine and their allies' electrical infrastructure have emphasized the importance of resilient and reliable electricity assets and systems. During 2022, security agencies in Canada and the United States reported a significant increase in cyber and physical attacks and reconnaissance against domestic electricity infrastructure. These agencies reported increasing cyber attack trends against the type of industrial control systems and vendors that underpin the operation of the AIES.[240] The increasing and evolving cyber and physical threats that were initially identified by AltaLink in the 2019-2021 GTA have continued at pace, with the increased number and sophistication of threat actors targeting critical infrastructure operators.

1247. In late 2021 and during 2022, US and Canadian security agencies published numerous directives, guidelines, and executive orders to infrastructure owners to protect critical infrastructure.[241]

[240] Canadian Centre for Cyber Security, National Cyber Threat Assessment, November 2023-2024. Available from: https://cyber.gc.ca/en/guidance/national-cyber-threat-assessment-2023-2024; Canadian Centre for Cyber Security, "Cyber threat bulletin: Cyber Centre urges Canadian critical infrastructure operators to raise awareness and take mitigations against known Russian-backed cyber threat activity" January 26, 2022. Available from: https://cyber.gc.ca/en/guidance/cyber-threat-bulletin-cyber-centre-urges-canadian-critical-infrastructure-operators-raise; Understanding and Mitigating Russian State-Sponsored Cyber Threats to U.S. Critical Infrastructure | CISA. Available from: https://www.cisa.gov/news-events/cybersecurity-advisories/aa22-011a; Government of Canada National Cyber Threat Assessment 2023-2024, November 2022, page 18. Available from: https://www.cyber.gc.ca/sites/default/files/ncta-2023-24-web.pdf; Russian State-Sponsored and Criminal Cyber Threats to Critical Infrastructure | CISA. Available from: https://www.cisa.gov/news-events/cybersecurity-advisories/aa22-110a.

[241] Canadian Centre for Cyber Security – Security Considerations for Critical Infrastructure, April 2022, Available from: https://cyber.gc.ca/en/guidance/security-considerations-critical-infrastructure-itsap10100; Sector Spotlight: Electricity Substation Physical Security, Cybersecurity & Infrastructure Security Agency. Available from: https://www.cisa.gov/resources-tools/resources/sector-spotlight-electricity-substation-physical-security; US Department of Energy – CISA: Cybersecurity Best Practices for Industrial Control Systems, Available from: https://www.cisa.gov/sites/default/files/publications/Cybersecurity_Best_Practices_for_Industrial_Control_Systems.pdf. Understanding and Mitigating Russian State-Sponsored Cyber Threats to U.S. Critical Infrastructure | CISA. Available from: https://www.cisa.gov/news-events/cybersecurity-advisories/aa22-011a; CISA, FBI, NSA, and International Partners Issue Advisory on Demonstrated Threats and Capabilities of Russian State-Sponsored and Cyber Criminal Actors | CISA. Available from: https://www.cisa.gov/news-events/news/cisa-fbi-nsa-and-international-partners-issue-advisory-demonstrated-threats-and.

The AESO is also proposing additional Alberta Reliability Standards updates which will be part of the necessary workload to protect the AIES.[242]

1248. As part of the Berkshire Hathaway Energy family of 10 utilities across the United Kingdom, Canada and the United States, AltaLink receives security briefings relevant to the threats against the AIES well above the norm of the other Albertan market participants. Until January 2023, AltaLink was the Canadian industry representative on the NERC Member Executive Committee for the Electricity Information Sharing and Analysis Centre, and one of the two Canadian companies represented at the North American-wide Electricity Subsector Coordinating Council. AltaLink continues to receive intelligence information from these agencies through the participation of the BHE Chief Information Security Officer (CISO).

1249. AltaLink takes an active role with the Alberta Critical Infrastructure Working Group sharing threat intelligence, risks, and mitigating actions with the RCMP, the AESO, and other Albertan electricity, gas pipelines, and telecoms companies.

1250. AltaLink and other critical infrastructure providers are facing active threats from nation state actors, cyber-criminals, hacktivists, and extremists which directly threaten the reliability of the AIES. Through receiving and assessing security intelligence, including intelligence through industry engagements and the Canadian security agencies' assessment, AltaLink has determined that capital investments to its security assets, systems, and operations are required, including to ensure that underlying IT systems are kept up-to-date to address these threats.

1251. More broadly, AltaLink is moving forward with data-driven strategies, automation, and workforce mobile access to data and tools to become more responsive to real time threats and shifting demands driven by renewal projects. 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, reliable, and economic operation of its transmission system.

1252. Forecast security and IT capital expenditures address the following key business requirements:

- Cyber and physical security expenditures that are needed to maintain the safe, reliable, and secure operation of the AIES;
- Security and IT expenditures needed to meet new regulatory or legislative obligations;
- IT expenditures that 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.

1253. AltaLink's Security and IT program achieves the following benefits:

- 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

[242] Alberta Reliability Standards Program Interim Work Plan, October 2022. Available from: https://www.aeso.ca/assets/Uploads/ars/RSDG/20OCT2022-ARS-Program-Interim-Work-Plan.pdf; ARS Program Enhancements Stakeholder Engagement Session, May 11, 2022. Available from: https://www.aeso.ca/assets/Uploads/ars/11MAY2022-Presentation-ARS-Program-Enhancements-Session-FINAL.pdf.

- enhances IT systems required to meet mandatory regulatory and legislative requirements.

1254. There have been many changes to AltaLink's security and IT services needs since the previous 2022-2023 GTA was submitted in April 2021, including:

- the Russian invasion of Ukraine and the specific targeting of electricity infrastructure to subjugate the Ukrainian populace and as a military response;
- the increase in attacks and reconnaissance by threat actors against North American critical infrastructure owners' ICS;
- the increased alignment and partnership between Nation-s tate threat actors and aligned Cyber Criminals;
- in September 2022, one of AltaLink's vendors was victim of a cyberattack. The threat actor gained access to the database back-up, obtained personal information, and made demands for financial compensation in exchange for destroying the data. AltaLink notified the Alberta Privacy Commissioner of this event;[243]
- The rise of Canadian (and Albertan) ideologically motivated violent extremism, visible by the protest at the Coutts border in February of 2022, in which a dozen weapons were seized and mischief charges were laid;
- Regulatory requirements continue to increase in both number and complexity of evidentiary 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.

1255. AltaLink continues to organize its IT and security business cases for the 2024-2025 Test Period into the same four categories used in the prior GTAs. There is one security category and three IT categories: Lifecycle Sustainment, Process Improvement, and Regulatory and Legislative Compliance. For execution and control purposes, each business case may translate into a single project or a program of smaller projects.

1256. The four categories of the 2024–2025 GTA IT and security business cases are described below.

10.4.1.1 Security

1257. The security business cases in the GTA Test Period urgently address the new, increasing, and evolving threats to AltaLink's corporate IT environment ("Corporate IT"), EMS, and operating technology environment, or the operating assets ("Operational Technology"), as well as the replacement, upgrade, and enhancement of security systems at AltaLink's substations.

1258. Section 10.4.2 Security provides an overview of the increasing and evolving cyber threats, physical threats, and information security threats reported by Canadian and US government security agencies. The security 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.

1259. The security category includes any new security requirement which results in a capital project, whether that security requirement is within any of the following:

- Corporate IT; and

[243] The Office of the Information and Privacy Commissioner of Alberta issued Breach Notification Decision P2023-ND-010 (File #027470). Available from: https://oipc.ab.ca/wp-content/uploads/2023/03/P2023-ND-010.pdf.

- Operational Technology.

1260. These business cases and their supporting materials are found in **Appendix 13-B1** Security, and include:

- Smart Key Implementation (**Appendix 13-B1-03**);
- CIP-014 and CIP Medium Impact Site Physical Security (**Appendix 13-B1-04**);
- Cyber Security System (**Appendix 13-B1-05**); and
- General Security Initiatives (**Appendix 13-B1-13**)

10.4.1.2 Lifecycle Sustainment

1261. This category includes projects for replacing hardware, security or IT assets or software that are end-of-life. End-of-life systems, assets, hardware, or software are inoperable, out of vendor support or no longer meet the functional requirements. 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.

1262. Following several high-profile cyber security compromises across multiple infrastructure industries, vendors have been increasing the rate of software and hardware upgrades to address vulnerabilities in their systems and to maintain an up-to-date security posture.

1263. 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 can result in unmitigated security and AIES risk.

1264. Business cases addressing these requirements are found in **Appendix 13-B3** Lifecycle Sustainment, and include:

- Systems Upgrade Program (**Appendix 13-B3-02**)
- Enterprise Asset Management (EAM) Transition Assessment Program (**Appendix 13-B3-03**)
- Grouped Initiatives Program (**Appendix 13-B3-05**)
- Technology Refresh Program (**Appendix 13-B3-07**)
- Corporate and Operational Technology Network and Infrastructure Upgrade (**Appendix 13-B3-08**)
- Learning Content Development (**Appendix 13-B3-09**)
- Integrated Systems Operations Software Addition (**Appendix 13-B3-10**)
- Data Centre and System Protection Program (**Appendix 13-B3-13**)

10.4.1.3 Regulatory and Legislative Compliance

1265. This category includes projects required to meet new regulatory or legislative requirements that are forecasted to arise during the 2024-2025 Test Period. AltaLink is obligated to comply with these requirements.

1266. In the Test Period, there is one business case supporting these projects. This business case, the Alberta Reliability Standards Compliance program (**Appendix 13-B4-01**), is in **Appendix 13-B4** Regulatory and Legislative Compliance.

10.4.1.4 Process Improvements

1267. This category includes projects for addressing customer requirements and continuous improvement requirements from AltaLink's business.

1268. Process improvement projects are needed to address new customer 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.

1269. Business cases supporting these IT projects are found in **Appendix 13-B2** Process Improvement, and include:

- Warehouse Management System (**Appendix 13-B2-06**)
- Project Portfolio Information Management System (PMIS) (**Appendix 13-B2-07**)
- Asset Performance and Investment Management (APIM) (**Appendix 13-B2-08**)

10.4.2 Security

1270. Table 10.4.2-1 below displays a breakdown of the recommended 2024-2025 Security capital programs.

Table 10.4.2-1 – Security Capital Expenditures ($M)

Description	2024	2025	Total
	Test Period		
Cyber Security System	2.2	1.6	3.8
Smart Keys Implementation	2.1	2.2	4.3
General Security Initiatives	0.5	0.6	1.1
Subtotal	**4.9**	**4.4**	**9.3**
Physical Security (CIP-014 and CIP Medium Impact Sites)	10.4	12.5	22.9
Total	**15.3**	**16.9**	**32.2**

1271. In this section, AltaLink will:

- identify the minimum regulatory security obligations which AltaLink is required to comply with as a TFO supporting the AIES;
- highlight the increasing and evolving threats against critical infrastructure, as supported by the intelligence reports from Canadian and United States security agencies;
- identify the specific risks and impacts of targeted attacks against the electricity network;
- highlight AltaLink's own evidence of attacks, reconnaissance, and compromise; and
- provide a forward view of additional threat advisories and security reports expected in 2023 Security Compliance.

1272. AltaLink's overarching security 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.

1273. In formulating its overarching security program, AltaLink utilizes the following guidelines, best practices, and requirements:

- ARS – CIP Version 5;[244]
- Canadian Centre for Cyber Security – Security Considerations for Critical Infrastructure;[245]
- Canadian Security Establishment (Canadian Centre for Cyber Security) – 2023-2024 National Cyber Threat Assessment;[246]
- US Department of Energy Cybersecurity & Infrastructure Security Agency – Cyber-Physical Security Considerations for the Electricity Sub-Sector;[247]
- US Department of Energy Cybersecurity & Infrastructure Security Agency – Cybersecurity Best Practices for Industrial Control Systems;[248]
- International Standards Organization – ISO 27001[249] and ISO 27019;[250]
- National Institute of Standards and Technology;[251]
- National Cybersecurity Centre of Excellence (NCCoE);[252] and
- Centre for Internet Security (CIS) Critical Security Controls.[253]

1274. AltaLink's cyber, physical, and information security strategy is to meet regulatory requirements at a minimum and to implement additional security measures where appropriate to further protect those assets which have the highest impact to the AIES and AltaLink customers in the event of a malicious disruption event.

1275. AltaLink is required to comply with the Alberta Reliability Standards (version 5.0) Critical Infrastructure Protection standards,[254] which have been effective since October 2017. The CIP standards are designed to mitigate the cyber security and physical security risks to Bulk Electric System (BES) facilities, systems, and equipment which, if destroyed, degraded, or otherwise rendered unavailable as a result of a security incident would affect the reliable operation of the Bulk-Power System.

[244] AESO Alberta Reliability Standards – Critical Infrastructure Protection (CIP) Version 5. Available from: https://www.aeso.ca/rules-standards-and-tariff/alberta-reliability-standards/.
[245] Canadian Centre for Cyber Security – Security Considerations for Critical Infrastructure, April 2022, Available from: https://cyber.gc.ca/en/guidance/security-considerations-critical-infrastructure-itsap10100.
[246] Canadian Centre for Cyber Security, National Cyber Threat Assessment, November 2023-2024, Available from: https://cyber.gc.ca/en/guidance/national-cyber-threat-assessment-2023-2024.
[247] Cybersecurity & Infrastructure Security Agency – Cyber-Physical Security Considerations for the Electricity Sub-Sector, June 2019. Available from: https://www.cisa.gov/sector-spotlight-cyber-physical-security-considerations-electricity-sub-sector.
[248] US Department of Energy – CISA: Cybersecurity Best Practices for Industrial Control Systems, Available from: https://www.cisa.gov/sites/default/files/publications/Cybersecurity_Best_Practices_for_Industrial_Control_Systems.pdf.
[249] Information Security Management. Available from: https://www.iso.org/isoiec-27001-information-security.html.
[250] Information technology – Security techniques – information security controls for the energy utility industry. Available from: https://www.iso.org/standard/68091.html.
[251] 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.
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.
[252] 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.
[253] The CIS Critical Security Controls, 2016. Available from: https://learn.cisecurity.org/20-controls-download.
[254] AESO Alberta Reliability Standards. Available from: https://www.aeso.ca/rules-standards-and-tariff/alberta-reliability-standards/.

1276. In October 2022, FERC published its 2022 Staff Report Lessons Learned from Commission-led CIP Reliability Audits.[255] During the CIP audits, FERC staff found that while most of the cyber security protection processes and procedures met the mandatory requirements of the CIP standards, security risks remained. Lessons learned include:

- CIP-003-8, Requirement R2: Re-evaluate policies, procedures, and controls for Low-impact Cyber Systems and associated Cyber Assets;
- CIP-007-6, Requirement R2.3 & CIP-010-4, Requirement 3.4: Address risks posed by BES Cyber Assets that have reached the manufacturer-determined end of life/service and are no longer supported by vendors;
- CIP-007-6, Requirement R3: Deploy a comprehensive malicious code prevention program for all Cyber Assets within a BES Cyber System;
- CIP-010-4, Requirement R3: Implement comprehensive vulnerability assessment processes for applicable Cyber Assets; and
- CIP-010-4, Requirement R4: Review and validate controls used to mitigate software vulnerabilities and malicious code on Transient Cyber Assets (TCAs)[256] managed by a third party. TCAs are generally portable electronic devices used for data transfer, vulnerability assessment, maintenance, or troubleshooting purposes.

1277. The AESO is currently reviewing its prioritization of reliability standards to be developed and implemented. When this prioritization work is complete, the AESO will post the updated reliability standards work plan. In its May 2022 ARS Program Enhancements Stakeholder Engagement Session,[257] the AESO identified its objectives for this prioritization work:

- Seeking opportunities to reduce regulatory burden in existing processes and reducing costs through risk-based rules and standards
- Strengthening cyber security capabilities across the industry through risk-based adoption of enhanced cyber-protection standards

1278. In its most recent ARS program interim work plan[258] issued in October 2022, the AESO has prioritized updates to:

- NERC CIP-013-2 – Supply Chain Risk Management,
- NERC CIP-003-8 – Security Management Controls
- NERC CIP-005-7 – Electronic Security Perimeter(s), and
- NERC CIP-010-4 – Configuration Change Management and Vulnerability assessments

1279. AltaLink has included a business case within the 2024-2025 Test Period application capital expenditures (**Appendix 13-B4-01**) to support the implementation of these standards. AltaLink's forecast expenditures for that program are based upon the previous costs of implementation of these standards. However, the scope of the proposed AESO updates is not known at this time. AltaLink will track these expenditures and report variances appropriately.

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[255] FERC 2022 Staff Report, Lessons Learned from Commission-Led CIP Reliability Audits, October 14, 2022. Available from: https://www.ferc.gov/news-events/news/ferc-staff-report-offers-lessons-learned-sip-reliability-audits.
[256] Alberta Reliability Standards Program Interim Work Plan, October 2022. Available from: https://www.aeso.ca/assets/Uploads/ars/RSDG/20OCT2022-ARS-Program-Interim-Work-Plan.pdf
[257] ARS Program Enhancements Stakeholder Engagement Session, May 11 2022. Available from: https://www.aeso.ca/assets/Uploads/ars/11MAY2022-Presentation-ARS-Program-Enhancements-Session-FINAL.pdf.
[258] Alberta Reliability Standards Program Interim Work Plan, October 2022. Available from: https://www.aeso.ca/assets/Uploads/ars/RSDG/20OCT2022-ARS-Program-Interim-Work-Plan.pdf

1280. In December 2022, the U.S. FERC directed the NERC[259] to study the effectiveness of the existing reliability standard for physical security of the Bulk Power System and determine whether the standard needs to be improved. This direction was in response to an increase in serious physical security attacks on the grid in North America in 2022. The order cites the need for continued vigilance against physical threats to the Bulk Power System, considering the recent increases in physical attacks on electrical substations that have cut power to tens of thousands of customers. In announcing the order, FERC Chairman Rich Glick said:

> The security and reliability of the nation's electric grid is one of FERC's top priorities," FERC Chairman Rich Glick said. "In light of the increasing number of recent reports of physical attacks on our nation's infrastructure, it is important that we fully and clearly review the effectiveness of our existing physical security standard to determine whether additional improvements are necessary to safeguard the Bulk Power System.[260]

1281. NERC had 120 days to submit a report that examines the effectiveness of the current physical security standard, specifically how physical security standards are being applied, whether improvements to existing requirements are necessary, and whether some minimal level of physical security protections should be required for all Bulk Power System (BPS) stations, substations and associated primary control centres.

1282. NERC submitted its report to FERC evaluating reliability standard CIP-014-3 on April 14, 2023. In its report, NERC did not recommend mandatory expansion of the CIP-014 applicability criteria. NERC did find that, due to the increase of physical security attacks on substations, there is a need to evaluate additional reliability, resiliency, and security measures to address the risks associated with those attacks. NERC also stated that it will continue significant efforts outside of the mandatory Reliability Standards and CIP-014 to mitigate the risks of continued physical security attacks on the grid. NERC, through the Electricity Information Sharing and Analysis Center (E-ISAC) has continually raised awareness and alert levels to its members on the physical security threats to the grid and has provided recommendations on how to enhance physical security protection and response. This guidance has been used in AltaLink's Threat Vulnerability Assessment (TVA) and Physical Security Plan under CIP-014. Refer to **Appendix 13-B1-04**, CIP-014 and CIP Medium Impact Site Physical Security for further explanation of AltaLink's TVA and Physical Security Plan.

1283. AltaLink expects that the AESO will be reviewing the outcome of the NERC physical security review and take action to update the Alberta Reliability Standards accordingly.

10.4.2.1 Increasing and Evolving Security Threats

1284. The Government of Canada and the Canadian Centre for Cyber Security have recognized the increasing threat of cybersecurity and the importance of effective threat mitigation.

1285. In February 2021, the Prime Minister of Canada and the President of the United States announced a Roadmap for a Renewed US-Canada Partnership which included a commitment to enhance cyber resilience by increasing cooperation to strengthen cybersecurity, and to confront

[259] FERC Orders Study of Effectiveness of Physical Reliability Standards for Power Grid, December 15, 2022. Available from: https://www.ferc.gov/news-events/news/ferc-orders-study-effectiveness-physical-reliability-standards-power-grid.
[260] FERC 2022 Staff Report, Lessons Learned from Commission-Led CIP Reliability Audits, October 14, 2022. Available from: https://www.ferc.gov/news-events/news/ferc-staff-report-offers-lessons-learned-cip-reliability-audits.

foreign interference and disinformation. The two countries will implement a Framework for Collaboration on Cybersecurity in the Energy Sector to enhance the security and resiliency of cross-border energy infrastructure.[261]

1286. The Government of Canada introduced new legislation with the introduction of Bill C-26, *An Act Respecting Cyber Security* (*ARCS*) to protect Canada's cyber security.

> From electronic espionage to ransomware, the threats to Canadians from malicious cyber activity, including cyberattacks, are greater than ever
>
> …
>
> This proposed legislation will protect Canadians and bolster cyber security across the financial, telecommunications, energy, and transportation sectors.[262]

1287. The Canadian Centre for Cyber Security issued the 2023-2024 National Cyber Threat Assessment (NCTA).[263] The NCTA focuses on cyber threats most relevant to Canada. The NCTA concluded that:

- Cybercrime is still the number one cyber threat activity affecting Canadians. The state-sponsored cyber programs of China, Russia, Iran, and North Korea continue to pose the greatest strategic cyber threat to Canada. Critical infrastructure is still a prime target for both cybercriminals and state-sponsored actors alike… the overall picture of the threat landscape is anything but reassuring.
- Critical infrastructure is increasingly at risk from cyber threat activity. Cybercriminals exploit critical infrastructure because downtime can be harmful to their industrial processes and the customers they serve. State-sponsored actors target critical infrastructure to collect information through espionage, to pre-position in case of future hostilities, and as a form of power projection and intimidation.
- Canadian critical infrastructure is almost certainly targeted by malicious cyber activity from nation state-backed cyber actors. While we maintain that state-sponsored cyber threat actors will very likely refrain from intentionally disrupting or destroying Canadian critical infrastructure in the absence of direct hostilities, these actors are developing the ability to disrupt the critical systems of Canada and our allies. If carried out, this activity can have significant implications for Canadians' ability to communicate and receive essential goods and services.
- State-sponsored cyber threat activity is impacting Canadians.
- Disruptive technologies bring new opportunities and new threats. Encrypted information stolen by threat actors today can be held and decrypted when quantum computers become available.
- Ransomware is a persistent threat to Canadian organizations. Cybercriminals deploying ransomware have evolved in a growing and sophisticated cybercrime ecosystem and will

[261] Roadmap for a Renewed US-Canada Partnership. Available from: https://pm.gc.ca/en/news/statements/2021/02/23/roadmap-renewed-us-canada-partnership.
[262] Government introduces new legislation to protect Canada's cyber security - Canada.ca. https://www.canada.ca/en/public-safety-canada/news/2022/06/government-introduces-new-legislation-to-protect-canadas-cyber-security0.html.
[263] 2023 – 2024 National Cyber Threat Assessment, Canadian Centre for Cyber Security, November 2022. Available from: https://cyber.gc.ca/sites/default/files/ncta-2023-24-web.pdf.

continue to adapt to maximize profits. Ransomware incidents in May 2021 against Colonial Pipeline in the United States (US) and the North American and Australian operations of JBS Foods resulted in multimillion-dollar payouts for threat actors. In June 2021, a ransomware attack resulted in a loss of essential services at an Ontario hospital. In October 2021, due to some of their servers being encrypted and locked, a municipal transit service was unable to share route and scheduling information.

1288. Figure 10.4.2-1 describes the average ransomware payments between 2020 and 2022 as reported in the 2023-24 NCTA. [264]

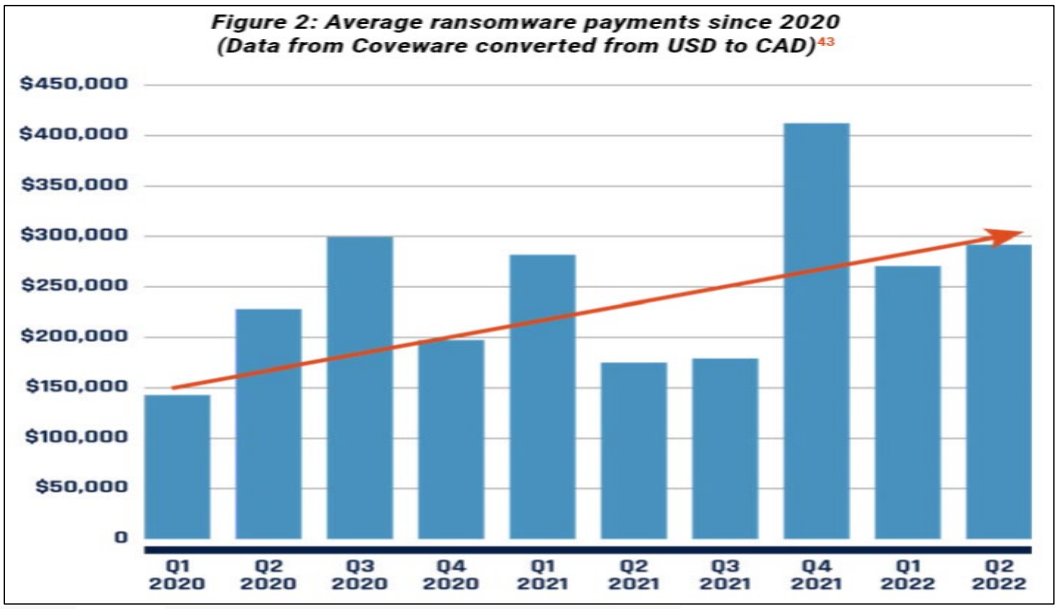


Figure 10.4.2-1 — Average Ransomware Payments since 2020

1289. The legal and regulatory consequences for hacks and data theft due to weak security has lead to major fines for companies since 2019. According to the IBM Security Cost of a Data Breach Report 2022, the estimated average cost of a data breach, a compromise that includes but is not limited to ransomware, is $5.64M USD.[265] The cost of breach includes notification, post breach response, detection and escalation, and lost business cost. The largest share of data breach costs in 2022 was detection and escalation. These costs include forensic and investigative activities; assessment and audit services; crisis management; and communications to executives and boards.[266]

1290. To illustrate the magnitude of the cost of a data breach:

- In 2017, Equifax lost personal and financial information of 150M people due to slow patching of vulnerabilities. In 2020, Equifax was made to pay further settlements relating to

[264] 2023 – 2024 National Cyber Threat Assessment, Canadian Centre for Cyber Security, November 2022, Figure 2. Available from: https://cyber.gc.ca/sites/default/files/ncta-2023-24-web.pdf.
[265] IBM Security Cost of a Data Breach Report 2022, page 12. Available from: https://www.ibm.com/reports/data-breach?utm_content=SRCWW&p1=Search&p4=43700072379268622&p5=p&gclid=CjwKCAjw__ihBhADEiwAXEazJtQJJPWOkJB8tw_HDcHx038aA5VvaEKWsgRx9oP48pltcekgpvKcmhoC-cYQAvD_BwE&gclsrc=aw.ds.
[266] IBM Security Cost of a Data Breach Report 2022, page 12. Available from: https://www.ibm.com/reports/data-breach?utm_content=SRCWW&p1=Search&p4=43700072379268622&p5=p&gclid=CjwKCAjw__ihBhADEiwAXEazJtQJJPWOkJB8tw_HDcHx038aA5VvaEKWsgRx9oP48pltcekgpvKcmhoC-cYQAvD_BwE&gclsrc=aw.ds.

the breach.[267] Timely patching of vulnerabilities across all software applications is a critical function to prevent serious data breaches as mentioned above.

- In January 2022, investment bank and financial services giant Morgan Stanley agreed to pay $60M to settle a legal claim relating to its data security.[268] The proposed claim settlement comes more than a year after Morgan Stanley was issued a separate $60M civil penalty by the Office of the Comptroller of the Currency (OCC) in relation to the same incidents.[269] The OCC stated that Morgan Stanley failed "to exercise proper oversight of the 2016 decommissioning of two Wealth Management business data centers located in the U.S. Among other things, the banks failed to effectively assess or address risks associated with decommissioning its hardware; failed to adequately assess the risk of subcontracting the decommissioning work, including exercising adequate due diligence in selecting a vendor and monitoring its performance; and failed to maintain appropriate inventory of customer data stored on the decommissioned hardware devices." This is an example of the critical need to manage service providers and assess the risk they present to the business in terms of their cyber capability or lack thereof.
- In December 2021, Capital One paid $190 million to settle a class-action lawsuit filed against it by U.S. customers over a 2019 data breach that affected 100 million people. A year earlier, the U.S. Office of the Comptroller of the Currency fined Capital One $80 million for the same breach. Alberta's *Personal Information Protection Act*[270] has stringent data protection requirements for personal information that must be met to maintain personal information of employees, contractors, customers, and landowners.
- Multiple companies paid substantive fines for breaches under the European Union's General Data Protection Regulation including Amazon ($877), Instagram ($403), Meta (formerly Facebook) ($277M) and WhatsApp ($255). The same type of information is covered under AltaLink's ISMS sensitive employee information protection.

1291. Russia's invasion of Ukraine in February 2022 provided a new understanding of how cyber activity is used to support wartime operations. Russian-sponsored malicious cyber activity against Ukraine has disrupted or attempted to disrupt organizations in government, finance, and energy, often coinciding with conventional military operations. These attacks have expanded beyond Ukraine to implicate European critical infrastructure as well.[271] For example, Russia's attack on a European satellite internet provider that resulted in a significant outage in several European countries.

1292. The invasion of Ukraine has demonstrated that Russia is increasingly willing to use cyber activity against critical infrastructure as a foreign policy lever. The Canadian Centre for Cyber Security (Cyber Centre) issued cyber threat bulletins in 2022 advising of foreign cyber threat activities,

[267] The 12 biggest data breach fines, penalties, and settlements so far | CSO Online. Available from: https://www.csoonline.com/article/3410278/the-biggest-data-breach-fines-penalties-and-settlements-so-far.html.
[268] Morgan Stanley agreed to pay $60M. Available from: https://d6jxgaftxvagq.cloudfront.net/Uploads/v/s/z/morganstanleybreachsettlement12.31.21_754269.pdf.
[269] OCC Assesses $60M Civil Money Penalty Against Morgan Stanley | Office of the Comptroller of the Currency. Available from: https://www.occ.gov/news-issuances/news-releases/2020/nr-occ-2020-134.html.
[270] Personal Information Protection Act, SA 2003, c P-6.5. Available from: https://www.canlii.org/en/ab/laws/stat/sa-2003-c-p-6.5/latest/sa-2003-c-p-6.5.html?resultIndex=1.
[271] Global Affairs Canada. "Statement on Russia's malicious cyber activity affecting Europe and Ukraine" May 10, 2022. Available from: https://www.canada.ca/en/global-affairs/news/2022/05/statement-on-russias-malicious-cyber-activity-affecting-europe-and-ukraine.html.

including by Russian state-sponsored threat actors, targeting Canadian critical infrastructure network operations and Operational Technology.[272]

1293. In 2022, the Cyber Centre opened 2,023 cyber security incident cases, an average of 5.5 per day. Of those cases, 1,154 were federal institutions and 869 were critical infrastructure. In 2021, the Cyber Centre was aware of 304 ransomware incidents against Canadian victims, with over half of them in critical infrastructure.[273]

1294. In its February 2022 Annual Threat Assessment, the United States Office of the Director of National Intelligence (ODNI) highlighted the most pressing threats to U.S. National Interests and the interests of their allies:[274]

- Russia is particularly focused on improving its ability to target critical infrastructure, including underwater cables, and industrial control systems, in the United States as well as in allied and partner countries, because compromising such infrastructure improves and demonstrates its ability to damage critical infrastructure during a crisis;
- China is almost certainly capable of launching cyber attacks that would disrupt critical infrastructure services within the United States, including against oil and gas pipelines and rail systems;
- Iran's growing expertise and willingness to conduct aggressive cyber operations makes it a major threat to the security of the U.S. and allied networks and data. Iran's opportunistic approach to cyber-attacks makes critical infrastructure owners in the United States susceptible to being targeted by Tehran; and
- North Korea probably possesses the expertise to cause temporary, limited disruption of some critical infrastructure networks and disrupt business networks in the United States.

1295. AltaLink expects that the 2023 US ODNI National Threat Assessment will be published in Q2 2023.

10.4.2.2 Increasing and Evolving Cyber Threats against Electricity Transmission

1296. 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

[272] Canadian Centre for Cyber Security. "Cyber threat bulletin: Cyber Centre urges Canadian critical infrastructure operators to raise awareness and take mitigations against known Russian-backed cyber threat activity" January 26, 2022. Available from: https://cyber.gc.ca/en/guidance/cyber-threat-bulletin-cyber-centre-urges-canadian-critical-infrastructure-operators-raise;
Canadian Centre for Cyber Security. "Cyber threat bulletin: Cyber Centre reminds Canadian critical infrastructure operators to raise awareness and take mitigations against known Russian-backed cyber threat activity" February 13, 2022. Available from: https://www.cyber.gc.ca/en/guidance/cyber-threat-bulletin-cyber-centre-reminds-canadian-critical-infrastructure-operators.

[273] Communications Security Establishment Annual Report 2021 – 2022, pdf page 29. Available from: https://cse-cst.gc.ca/en/accountability/transparency/reports/communications-security-establishment-annual-report-2021-2022.

[274] Actual Threat Assessment of the US Intelligence Community, April 9, 2021 | Office of the Director of National Intelligence. Available from: https://www.dni.gov/files/ODNI/documents/assessments/ATA-2021-Unclassified-Report.pdf.

> could result in catastrophic loss of life, adverse economic effects, and significant harm to public confidence.[275]

1297. 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.

1298. The 2020 NCTA report goes on to identify several attributes that can increase an organization's cyber security risk.[276] 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 (not applicable to AltaLink); and
- encourages remote work.

1299. As part of operating within the AIES, AltaLink has two control centres, over 300 electrical substations and 100 telecom sites. The coordinated and integrated operation of these assets relies heavily upon resilient and secure operating technology assets. Operating Technology assets directly control physical processes such as electrical assets within substations.

1300. Connecting Operating Technology devices that run the AIES to internet-connected corporate systems provides significant benefits for customers and the businesses. However, it also provides a pathway for threat actors to access and disrupt sensitive Operating Technology and ICS devices controlling the AIES. Risks include the following:

- Threat activity against the IT network can have incidental effects on the Operational Technology network;
- Operators may shut down Operational Technology processes out of caution as in the case of Colonial Pipeline ransomware attack in May 2021; and
- IT malware may accidentally spread and affect Operational Technology.

1301. Cybercriminals have deployed Operational Technology-specific ransomware, and state sponsored actors have demonstrated the capacity to deploy malware against critical infrastructure to degrade its performance and damage Operational Technology and IT assets. "Russian state-sponsored threat actors have been particularly active in developing and testing these capabilities against their neighbours, including against NATO member states."[277]

1302. Critical infrastructure providers, especially energy and utilities, are reliant on their vendors and suppliers for expertise and equipment as they operate, maintain, and modernize their Operational Technology processes. This makes them particularly vulnerable to supply chain compromises, where cyber threat actors first compromise a vendor and use that access to

[275] National Strategy for Critical Infrastructure. Available from: https://www.publicsafety.gc.ca/cnt/rsrcs/pblctns/srtg-crtcl-nfrstrctr/index-en.aspx#s0.
[276] Canadian National Cyber Threat Assessment, November 2020, Figure 4. Available from: https://www.cyber.gc.ca/en/guidance/national-cyber-threat-assessment-2020.
[277] Government of Canada National Cyber Threat Assessment 2023-2024, November 2022, page 10. Available from: https://www.cyber.gc.ca/sites/default/files/ncta-2023-24-web.pdf.

compromise one or more of their clients. Cyber threat actors target critical infrastructure supply chains for two purposes: to steal intellectual property and information about the Operational Technology deployed by a critical infrastructure provider and to obtain indirect access to networks.

1303. In terms of quantitative evidence of attacks and threats:

- a 2021 Mandiant study of over 1,300 extortion leaks released by ransomware operators against the industrial sector found that 1 in 7 of these contained at least some useful Operational Technology information.[278]
- Telus Canadian Ransomware Study in Q4 2021 of 463 Canadian organizations found that 83% reported attempted ransomware, with 67% experiencing a ransomware incident. Of the utility victims, 76% experienced a multiple extortion attack, combining both ransomware and typically extortion of publishing sensitive customer, employee or vendor sensitive data. Only 42% of victims had data fully restored.[279]
- 80% of utility businesses within the Telus Canadian Ransomware Study experienced a ransomware attack. Key threat vectors for the ransomware reported were:
    - Email links or attachments: 35%
    - Known vendor vulnerabilities: 34%
    - IT Supply Chain: 29%

1304. The Cyber Centre and the equivalent US government agencies have identified the needs to:

- take active measures to update critical software vulnerabilities and upgrade software and infrastructure systems where required; and
- to address supply chain risks and resiliency and take measures to protect confidential and sensitive information.

10.4.2.3 Increasing and Evolving Physical Security Threats Against Electricity Transmission

1305. There has been in increase in physical security attacks on the North American electrical grid in the second half of 2022. Those attacks include the following:

- on December 3rd, ballistic attacks in North Carolina occurred on two substations. This resulted in the substations being removed from service and caused outages for 45,000 customers.[280]
- The Pacific Northwest has become a "hotspot for these physical attacks". Washington and Oregon utilities reported at least 15 incidents in 2022, including 10 in the last two months of the year. Attackers hit four Washington substations on Christmas Day, forcing entry, setting fire to equipment and temporarily cutting power to thousands of customers.[281]

1306. The Electricity Information Sharing and Analysis Center (E-ISAC), operated by the NERC, released a critical broadcast bulletin on December 5, 2022, that indicated an increase in serious physical

[278] 1 in 7 Ransomware Attacks leaks Critical Operational Technology Information, December 2022. Available from: https://www.mandiant.com/resources/blog/ransomware-extortion-ot-docs.
[279] The Telus Canadian Ransomware Study, 2021. Available from: https://assets.ctfassets.net/1viphdflvgfy/6KFtVdoPfg3apLZr3NuWLL/e16da7dfa1a259afa2da50dac5177780/TELUS_Canadian_Ransomware_Study_2022__2_.pdf?cmp=soc_slin_ccybr_cdsoc_li_cybr_ebook_sta_ransomware_en_bTBS_comm.
[280] North Carolina blackouts caused by shootings could last days | AP News. Available from: https://apnews.com/article/crime-north-carolina-052f618466c84b841b467b55c222717a.
[281] Lawmakers propose 24-hour substation security after power grid attacks | Fortune. Available from: https://fortune.com/2023/01/22/lawmakers-propose-24-hour-substation-security-after-power-grid-attacks/.

security incidents on the North American electrical grid since August 2022. These serious incidents have been classified based on their level of severity including targeting electrical substations and transmission lines through vandalism, tampering, arson and ballistic damage. The E-ISAC assesses with medium confidence that such attacks are likely to continue.[282]

1307. According to a report issued by the E-ISAC in January 2023, based on their various data sources, the number of ballistic incidents is trending upwards with substations and transmission assets the most common assets experiencing ballistic incidents. The number of ballistic incidents at substations increased drastically in 2022 compared to the relatively stable average from 2016-2021.[283]

1308. Recent physical attacks in the US have highlighted the vulnerability of utility infrastructure to physical attack and confirmed the widespread harm that even isolated attacks can cause.

1309. On February 16, 2023, the Cybersecurity and Infrastructure Security Agency (CISA), published Sector Spotlight: Electricity Substation Physical Security. The document references the increase in physical attacks on electric substations relating to customer outages, and provides owners, operators, and stakeholders with updated threat information and protective measures that can help improve a substation's on-site physical security. The document also provides recommendations for the implementation of protective physical security measures and options for a layered security strategy that will ultimately reduce or minimize the impact of an attack.[284]

1310. According to a recent analysis conducted by the Electricity Information Sharing and Analysis Center (E-ISAC), the amount of physical security incidents which have resulted in some sort of measurable outage (i.e., loss of end-use consumer load) have increased by 71% since 2021. In Figure 10.4.2-2 below, the increase in events from 2021 to 2022 is driven by an uptick in ballistic damage, intrusion (tampering), and vandalism incidents.[285] This trend is expected to continue with the change in the social and economic environments and the public information available on the success of physical security attacks to take down the grid.

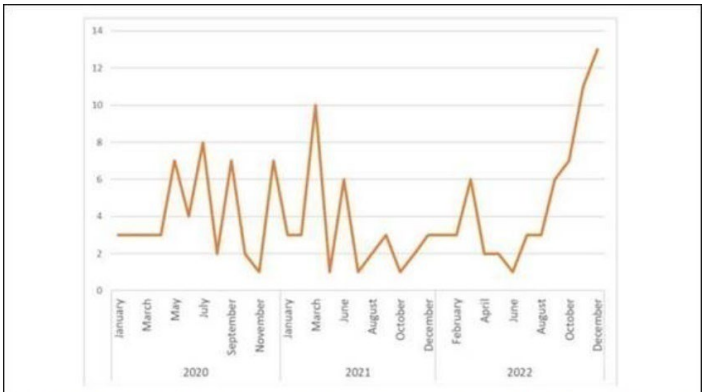


Figure 8: Quantity of Physical Security Events with Some Loss of Load for 2020–2022 [Source: E-ISAC]

Figure 10.4.2-2 – Quantity of Physical Security Events with Some Loss of Load for 2020-2022

[282] AltaLink cannot produce the report due to security sharing protocol.
[283] AltaLink cannot produce the report due to security sharing protocol.
[284] Sector Spotlight: Electricity Substation Physical Security, Cybersecurity & Infrastructure Security Agency. Available from: https://www.cisa.gov/resources-tools/resources/sector-spotlight-electricity-substation-physical-security.
[285] NERC Report on CIP-014-3. Available from: https://www.nerc.com/FilingsOrders/us/NERC%20Filings%20to%20FERC%20DL/NERC%20Report%20on%20CIP-014-3.pdf.

1311. In this application, AltaLink recommends continuing to enhance security systems needed to protect against these increasing and evolving threats and to replace and upgrade security systems implemented in prior test periods.

10.4.2.4 AltaLink's Cyber, Physical and Information Security threats

1312. AltaLink faces a high volume of day-to-day attacks on its cyber infrastructure, its physical facilities, and its information systems.

1313. In its 2022 Critical Infrastructure Year-end Report,[286] the RCMP 'K' Division for Alberta states:

> Intelligence reports indicate that it is highly likely that nation-states and/or organized crime will continue to target Alberta-based [critical infrastructure] CI stakeholder cyber networks to acquire intellectual property and/or criminal profit. There has already been a marked increase in ransomware attacks in 2020 and 2022, the same increase is expected for 2023.[287]

1314. The Integrated Terrorism Assessment Centre (ITAC), a federal organization responsible for assessing terrorism threats to Canada and Canadian interests worldwide, has assessed the terrorism threat to Canada as Medium, which indicates that "a violent act of terrorism could occur".[288]

1315. In September 2022, an AltaLink vendor that provided recruitment services was victim to a cyberattack. The threat actor gained access to a database back-up and obtained personal information. AltaLink received demands for financial compensation in exchange for destroying the data. The incident affected approximately 10,000 individuals whose information was collected in Alberta. AltaLink's internal networks were not affected. Due to the nature of the data breach, AltaLink was required to notify the Information and Privacy Commissioner of Alberta. In Decision P2023-ND-010[289], the Commissioner concluded that there was real risk of significant harm to individuals affected by the incident and that AltaLink was required to notify the individuals whose personal information was collected in Alberta pursuant to section 37.1 of the *Personal Information Protection Act*. The vendor and AltaLink have complied.

1316. AltaLink has terminated the third-party services contract.

1317. There are two primary routes for an attacker to gain access to an organization such as AltaLink:

- through phishing emails; or
- through exploiting vulnerabilities in software, firmware or infrastructure.

1318. AltaLink receives over 150,000 external emails per week, compared to 10,000 in 2018. Of these external emails, approximately 75% are classified as threat messages in Altalink's email security tool. During 2022, AltaLink's cyber security team investigated over 6,200 suspicious emails reported by employees and contractors, of which 22% were confirmed as malicious and containing malicious payload or links, an increase from 8% in 2021. The peak attack of malicious emails occurred in November 2022, with 42% of reported emails confirmed as malicious.

[286] AltaLink cannot produce the report due to security sharing protocol.
[287] AltaLink cannot produce the report due to security sharing protocol.
[288] Canada's National Terrorism Threat Levels – Canada.ca. Available from: https://www.canada.ca/en/services/defence/nationalsecurity/terrorism-threat-level.html.
[289] OIPC Decision P2023-ND-010: https://oipc.ab.ca/library/p2023-nd-010/.

1319. As the key threat vector, AltaLink must continue to update systems, email filtering, and scanning systems to deal with the increasing threat from phishing. Malicious emails need to be investigated, contained, inoculated, and communicated.

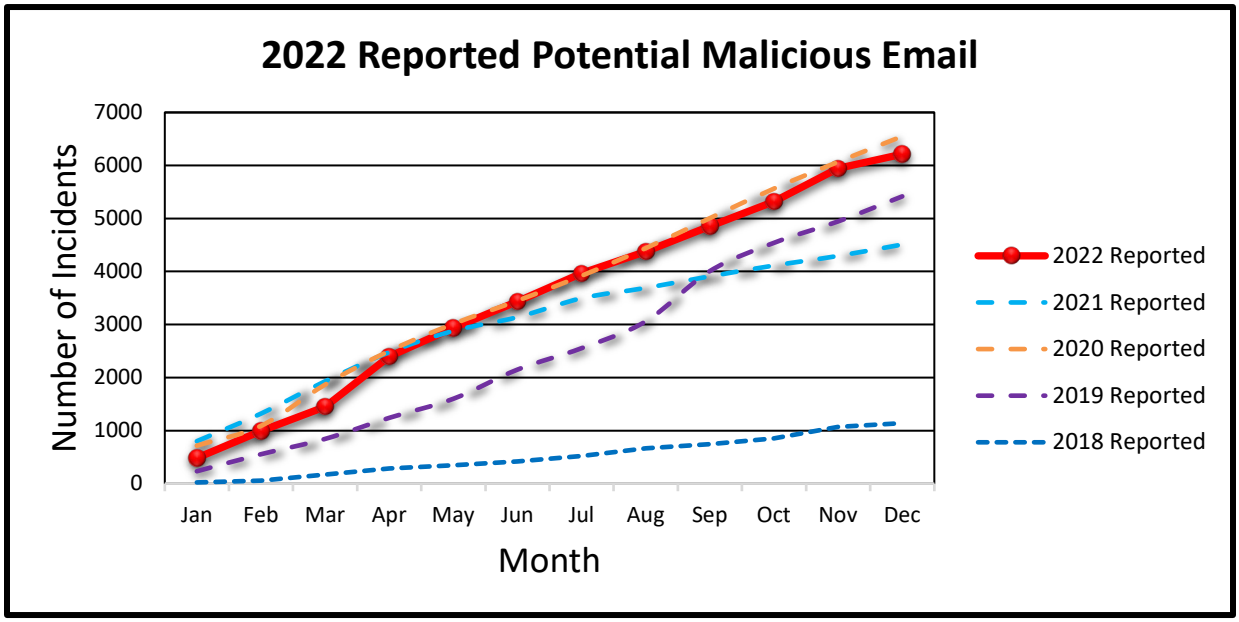


Figure 10.4.2.4-1 – 2017-2020 Cyber Security – New Malware Variant Reports

1320. AltaLink receives on average over 1,000,000 attacks on its external facing firewalls per week, compared to 120,000 in 2017. All of these 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 could then further utilize unpatched or out of date software to navigate AltaLink's networks. Per the Telus Canadian Ransomware study, misconfiguration of firewalls is the threat vector for 37% of ransomware attacks in 2021.[290] AltaLink continuously needs to upgrade firewalls, routers, and other network equipment to deal with the increasing threat.

1321. The US NIST publishes a repository of vulnerabilities from various software and hardware vendors. Established in 1999, the National Vulnerability Database[291] contains vulnerabilities with scores ranging from critical to low depending upon a number of factors.

1322. Figure 10.4.2.4-2 below shows the increasing number of vulnerabilities published by vendors and their criticality.

[290] The Telus Canadian Ransomware Study, 2021. Available from: https://assets.ctfassets.net/1viphdflvgfy/6KFtVdoPfg3apLZr3NuWLL/e16da7dfa1a259afa2da50dac5177780/TELUS_Canadian_Ransomware_Study_2022__2_.pdf?cmp=soc_slin_ccybr_cdsoc_li_cybr_ebook_sta_ransomware_en_bTBS_comm.

[291] US National Institute of Standards and Technology, National Vulnerability Database. Available from: https://nvd.nist.gov/.

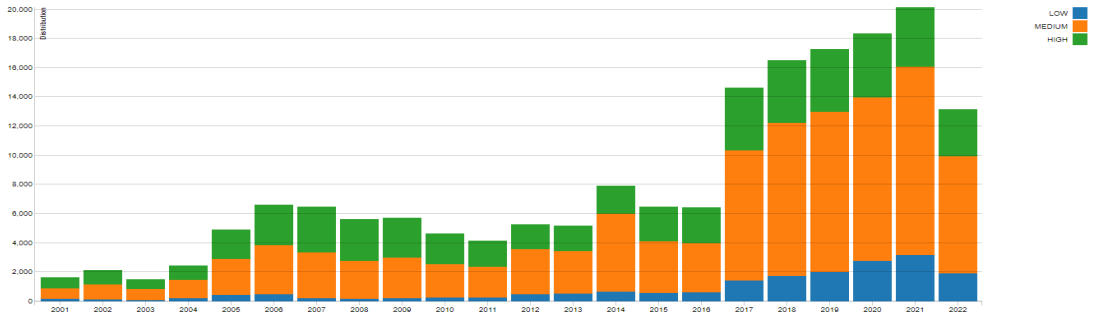


Figure 10.4.2.4-2 – Common Vulnerability Scoring System (CVSS) Severity Over Time[292]

1323. AltaLink expects the increasing trend of vulnerabilities to continue. Timely patching and management of these vulnerabilities is essential to the safe and secure operation of business. Patching software and infrastructure requires both AltaLink internal and external labour resources.

1324. 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.

1325. The Provincial Security & Intelligence Office reported that in 2022, materials theft was the most persistent criminal activity affecting critical infrastructure in Alberta.[293] The energy sector reported the vast majority of incidents, likely due to the vulnerability and remote nature of many infrastructure assets.[294] Since 2015, AltaLink has experienced 219 incidents of copper theft, 74 other thefts, 29 incidents of vandalism, and 120 other intrusions with no loss, including substation break and enters.

1326. Copper theft results in:

- reliability risk to the power system;
- potential risk of electrocution; and
- costly repairs and remediation.

1327. Each time a substation is broken into and offenders steal grounding wire or commit vandalism, there is a potential for serious injury. AltaLink had several incidents in which electrical arcs caused during copper theft incidents had the potential to seriously injure offenders. In Alberta, one fatality in 2013 resulted from a substation break-in at another utility company.[295]

1328. Copper theft is a problem that affects other transmission companies as well. In February 2021, Coronation RCMP stopped a vehicle and seized approximately 400 kilograms (900 pounds) of

[292] National Vulnerability Database, CVSS Severity Distribution Over Time. Available from: https://nvd.nist.gov/general/visualizations/vulnerability-visualizations/cvss-severity-distribution-over-time.
[293] Provincial Security & Intelligence Office (Critical Infrastructure Intelligence Report Year in Review 2022). AltaLink cannot produce the report due to security sharing protocol.
[294] Provincial Security & Intelligence Office (Critical Infrastructure Intelligence Report Year in Review 2022). AltaLink cannot produce the report due to security sharing protocol.
[295] Man electrocuted at Calgary power station - Calgary | Globalnews.ca. Available from: https://globalnews.ca/news/993398/police-probe-electrocution-at-calgary-power-station/.

copper wire and a rifle.[296] In August 2022, RCMP in central Alberta reported that an attempt to steal copper wire from an underground vault was responsible for a power failure that affected multiple neighborhoods. According to a police report, an individual broke into an enclosure in Red Deer and tried to cut live electrical wires.[297] The utility company reported that approximately six thousand customers experienced an interruption in service. In 2022, Nova Scotia Power reported vandalism at two substations that caused a six-hour power outage in the Parrsboro area that affected a number of communities.[298] Copper theft is an ongoing threat to system reliability in Alberta and in other jurisdictions.

10.4.3 Information Technology

1329. Table 10.4.3-1 below describes the forecasted Information Technology capital expenditures for the 2024-2025 Test Period by category.

Table 10.4.3-1 – IT Capital Expenditures by Category ($M)

Description	2024	2025	Total
	Test Period		
IT Regulatory & Legal	2.7	2.7	5.4
IT Lifecycle Sustainment	14.5	13.4	27.9
IT Process Improvement	4.4	2.2	6.7
Total	**21.6**	**18.4**	**40.0**

1330. In this section, AltaLink will describe:

- the IT approach to long range planning (Section 10.4.3.1)
- the AltaLink IT Long Range Plan (Section 10.4.3.2)
- AltaLink's investment roadmap for the next three GTA periods (Section 10.4.3.3)
- Security and IT project definition (Section 10.4.3.4)
- Security and IT project resourcing estimating (Section 10.4.3.5)
- Security and IT project management and execution (Section 10.4.3.6)

10.4.3.1 IT Approach to Long Range Planning

1331. In support of its objective of providing safe, reliable, economic transmission services and ensuring the resilience and security of the AIES, AltaLink manages a complex landscape of IT hardware, applications, services, and data. The IT organization is responsible for the cost-effective sustainment of this IT landscape and plans investments to ensure the IT landscape continues to deliver capabilities required by the business.

1332. To this end, AltaLink maintains IT roadmaps which describe high-level business processes, stakeholder groups, enabling technologies, target IT landscape, and plans to achieve the target end state. The roadmaps consider the following business value streams:

- business operations: ensuring AltaLink's core services provide a foundation enabled through people, processes, data, and technology to deliver reliable services to its customers;

[296] 'Three arrested on copper wire thefts,' RCMP Article (RCMP Coronation copper theft.docx. in Evidence folder) dated Feb 21, 2021.
[297] 'Red Deer RCMP Investigating Attempted Theft of Copper Wire,' Author: Galen Hartviksen, Olds, AB, Canada/ckfm.ca (Red Deer power outage.docx in Evidence folder) dated August 2, 2022.
[298] 'Theft of copper wire causes power outage in Parrsboro,' CBC News Article (Nova Scotia power outage.docx in Evidence folder) dated May 7, 2022.

- workforce & mobility: mobilizing the workforce to function efficiently by providing safe, reliable and secure access to data and the tools for integrating information from any location;
- facilities & asset performance: optimizing performance through the full lifecycle of an AltaLink facility or asset through structured monitoring and planning of risk, cost and reliability;
- business strategy & planning: evolving the business through strategically informed decisions and trusted data that will further benefit its customers;
- grid intelligence & control: the management of all Operational Technology and processes that support AltaLink's critical infrastructure and the reliable delivery of electricity to customers.

1333. AltaLink's IT roadmaps are used to plan sustainment activities and new IT-enabled business capabilities. These roadmaps consider critical inter-dependencies such as business processes, data, application integration, reporting, and data analytics. They also consider the impact of upcoming changes in the landscape and inform cost-optimized decision-making. For instance, the Enterprise Asset Management (EAM) and the Enterprise Resource Planning (ERP) platforms require significant upgrades or replacements prior to 2030, as described below and in **Appendix 13-B3-03.**

1334. AltaLink considers the following principles when establishing the IT Roadmaps and defining the target IT landscape:

- Lifecycle Sustainment and End of Life
- Cloud First
- Composable Architecture
- Technical Compatibility and Minimal Re-incurrence of Cost

IT Lifecycle Sustainment and End of Life

1335. When 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. This requires the replacement of hardware, security assets, IT assets, and software that are end-of-life. AltaLink defines end of life as systems that are inoperable, out of vendor support, or where they no longer meet AltaLink's functional requirements. End of life is determined considering the following factors:

- End of Sale: This is the date when a product or service is no longer available for purchase. Procuring products or services which are approaching end of sale creates operational risk associated with lack of availability of full replacements or components.
- End of Support: This is the date when the vendor no longer provides technical or other support of a product or service to customers. Operating a product or service after this date carries operational risk associated with the inability to receive expert advice, repair services, or other support considerations from the vendor.
- End of Updates/Patches: This is the date when the vendor no longer provides updates to typically software or firmware associated with bug fixes, security patches, or feature enhancements. This generally means the vendor has stopped investing in the development of the product line.
- Retirement of protocols, ciphers, interfaces, or similar: This is when the underlying components of a product or service are no longer considered the current standard. This can

be due to technology advancement, standardization, obsolescence, compromise, or other factors that make the product ineffective, insecure, overly expensive, or difficult to interface with.

1336. Vendors and industry standards groups typically publish dates associated with one or more of these factors listed above to notify consumers and allow them to plan technology roadmaps, upgrades, and replacements. Each end-of-life factor is associated with increased risks depending on the nature of the product or service, how and where the product is used, how prevalent it is in the market or environment, how integrated it is with other products or services, and how close to one of these dates it will be operated. AltaLink considers all factors when determining when to upgrade core network devices or systems.

1337. AltaLink also considers compatibility and interoperability with other systems to ensure AltaLink is proceeding with an enterprise view ensuring consistent, reliable, and predictable behavior for interconnected systems. Other factors contributing to the analysis include capacity planning, feature requirements to support business needs, cybersecurity requirements, compliance requirements, license agreements, and standardization for efficient and financially prudent operations.

1338. Mainstream maintenance of AltaLink's SAP implementation, SAP Business Suite 7 (ERP 6.0) expires year-end 2027. Optional extended maintenance[299] is available to the end of 2030.

Cloud-First

1339. Cloud first means that AltaLink assesses cloud solutions whenever appropriate. Cloud technologies offer companies the ability to quickly scale their computing resources up or down as needed and can be lower cost than traditional on-premise solutions both from a maintenance and upfront investment perspective.

1340. Gartner, a leading research and advisory company[300] forecasts that by 2025, over 50% of enterprise will have shifted from traditional solutions to the public cloud, compared to 41% in 2022. Almost two-thirds of spending on application software will be directed toward cloud technologies in 2025, up from 58% in 2022.[301]

1341. The following benefits can be achieved through a cloud-first approach:

- Scalability: Cloud deployment can provide scalability, which would allow AltaLink to quickly adjust the number of users and resources as needed, which can be particularly useful for larger projects or temporary teams.
- Accessibility: With cloud deployment, applications and data can be accessed from any approved location with an internet connection, such as supporting employees in a hybrid work environment, making it easier for teams to collaborate on projects.
- Capital cost savings: Cloud deployment eliminates the need for on-premise hardware and infrastructure.

[299] Innovation Commitment for SAP S/4HANA until 2040. Available from: https://support.sap.com/en/release-upgrade-maintenance/maintenance-information/maintenance-strategy/s4hana-business-suite7.html.
[300] 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.
[301] Gartner Says More Than Half of Enterprise IT Spending in Key Market Segments Will Shift to the Cloud by 2025. Available from: https://www.gartner.com/en/newsroom/press-releases/2022-02-09-gartner-says-more-than-half-of-enterprise-it-spending.

- Security: Cloud providers have robust security measures in place, which can help ensure that project data is kept secure.

1342. Standard configuration ("off-the shelf") is preferred when adopting cloud solutions. Past industry practice was to adapt systems to legacy business processes through system customization. Customization introduces sustainment cost, undermines intended capabilities of the system, and prevents the organization from readily exploiting new system features. Standard configuration is required to take full advantage of the benefits associated with automatic security and functionality updates.

1343. AltaLink must also consider if cloud services meet regulatory requirements. Certain Alberta Reliability Standards CIP are difficult for cloud service providers to comply with, and accordingly, AltaLink avoids storing BCSI information in the cloud, using only on-premise solutions to store critical asset information.

1344. AltaLink's 20+ year SAP system is highly customized, with over 800 customizations in the Enterprise Resource Planning and Enterprise Asset Management modules. The EAM module relies on BCSI information and therefore the entire SAP environment (ERP and EAM) is currently configured on-premise, with an extensive server and storage landscape. This configuration inhibits AltaLink's access to cloud benefits for ERP functionality.

Composable Architecture

1345. A monolithic architecture is a unified design intended to provide all required function in a single platform, eliminating the need to design, build and maintain multiple interfaces and data models.

1346. However, not all monolithic functionality is best-in-class, defined as the recognized superior product within a category of hardware or software. Many companies address this through customization and supplementing system function with adjacent applications. High levels of customization and integration re-introduce many issues seen in earlier "best-in-class" architectures, namely higher cost, lower flexibility, and difficulty maintaining the system at current levels.

1347. Composable solutions utilize a common framework for integration, security, data models and development extension, enabling rapid and flexible integration of different software modules. A composable architecture addresses many shortcomings of "best-in-class" and monolithic architectures, simplifying the IT landscape and enabling rapid integration, flexibility, and extensibility while reducing system complexity and sustainment cost.

1348. AltaLink's 20+ year SAP system is monolithic and significantly customized. The current SAP Enterprise Asset Management functionality is inflexible and limits AltaLink's ability to optimize asset management portfolio assessments. Multiple adjacent systems have been added to address the gap in EAM functionality. EAM applications have improved significantly since 2002 and are now separate from ERP (Enterprise Resource Planning) applications with significantly more functionality. As EAM function relies on BCSI information, it must be implemented as an on-premise solution.

1349. The ERP functions of Finance, SCM, and HR are not unique to the utility industry and as such can be adopted off the shelf from the ERP provider and be based in the cloud.

1350. The advent of composable ERP architecture allows AltaLink to assess replacement of the current SAP environment in multiple independent phases, EAM and ERP. Separation of the ERP and EAM

environments would significantly improve sustaining cost, flexibility, responsiveness, and security of the ERP / EAM landscape.

Technical Compatibility and Minimized Cost Re-incurrence

1351. Long range planning of the IT landscape helps to inform current decisions with future system change considerations. This ensures new technologies being adopted will be compatible with the current and anticipated future landscape and minimizes the need to replace IT components and re-incur costs when changes are implemented. Refreshing technical standards is the established approach used by AltaLink to provide effective guidelines for selecting technologies.

1352. AltaLink's current SAP system is approaching end-of-life with a planned replacement prior to 2030. AltaLink will test all investments in the intervening test periods to ensure all implemented technologies will be compatible with the ERP and EAM systems under consideration.

10.4.3.2 AltaLink's IT Long Range Plan

1353. AltaLink's current version of SAP, Business Suite 7, is approaching end of life. SAP has announced the end of mainstream support effective year-end 2027 with optional extended maintenance available to year-end 2030.

1354. AltaLink uses SAP to manage both Enterprise Resource Planning and Enterprise Asset Management capabilities. ERP functions include Finance, Treasury, Business Planning and Consolidation (BPC), Projects, Materials Procurement & Warehouse Management, Human Resources and Learning Management. EAM functions include Plant Maintenance, Multi-Resource Scheduling, Linear Asset management, Work Manager, and integration with many of the ERP functions above. AltaLink's current implementation of SAP has been heavily customized over the past 20 years in order to meet operational requirements.

1355. In the 2022-2023 GTA, AltaLink requested approval of forecast expenditures to transition its SAP system to a BHE Oracle cloud through the proposed Enterprise Resource Planning Replacement Program.[302] AltaLink also sought approval for forecast expenditures for transition to a Maximo enterprise asset management system, which would be integrated with Oracle, through the proposed Enterprise Asset Management Replacement Program.[303] The Commission did not approve the programs, finding that, among other things, AltaLink did not need to begin work in the 2022-2023 test period and had not considered suitable alternatives.[304]

1356. Significant elements of AltaLink's IT strategy were integrated with the Enterprise Resource Planning Replacement Program and Enterprise Asset Management Replacement Program. The denial of these programs required AltaLink to reassess how to progress improvements in Enterprise Asset Management capabilities, EMS outage management, and asset performance and investment management (APIM) optimization.

1357. AltaLink has thoroughly reconsidered the impending end-of-life of its SAP system and affected adjacent systems. The revised strategy is phased (as opposed to "big-bang") and considers how to implement this phased strategy effectively and efficiently over the three GTA test periods leading to 2030. The following criteria inform this strategy:

- Prioritize highest value capabilities
- Achieve lowest overall cost

[302] Exhibit 26509-X0033, Appendix 13-B3-03, Enterprise Resource Planning (ERP) Replacement Program, pdf 110.
[303] Exhibit 26509-X0033, Appendix 13-B3-11, Enterprise Asset Management Replacement, pdf 174.
[304] Decision 26509-D01-2022, para 523.

- Minimize risk of disruption to business operations
- Ensure technical compatibility and minimal cost re-incurrence

1358. AltaLink's primary business is centred on its transmission assets. Optimizing the build, maintenance, and operations of these transmission assets directly impacts reliability, security, and cost-effectiveness of AltaLink services to Alberta ratepayers. The primary IT systems supporting these functions are the Energy Management System and the Enterprise Asset Management system.

1359. Investments over the next two test periods (2024-2025 and 2026-2027) focus on improving the capability of the two primary asset management systems – the EMS and EAM. The current SAP EAM implementation is not flexible and limits AltaLink's ability to optimize asset portfolio management. EAM applications have improved significantly since 2002 and are now separate from ERP applications.

1360. Investments in the 2028-2029 test period focus on the ERP functions of Finance, SCM, and HR. These capabilities are not unique to the utility industry, and as such, can be adopted as off-the-shelf from the ERP provider and be based in the cloud.

1361. Figure 10.4.3.2-1 and Figure 10.4.3.2-2 below provide a high-level view of the current IT landscape and the future IT landscape that AltaLink is targeting as the current SAP moves to end of extended support in 2030. The roadmaps section places proposed investments in context of the IT landscape.

1362. AltaLink's current landscape is shown in Figure 10.4.3.2-1 below.

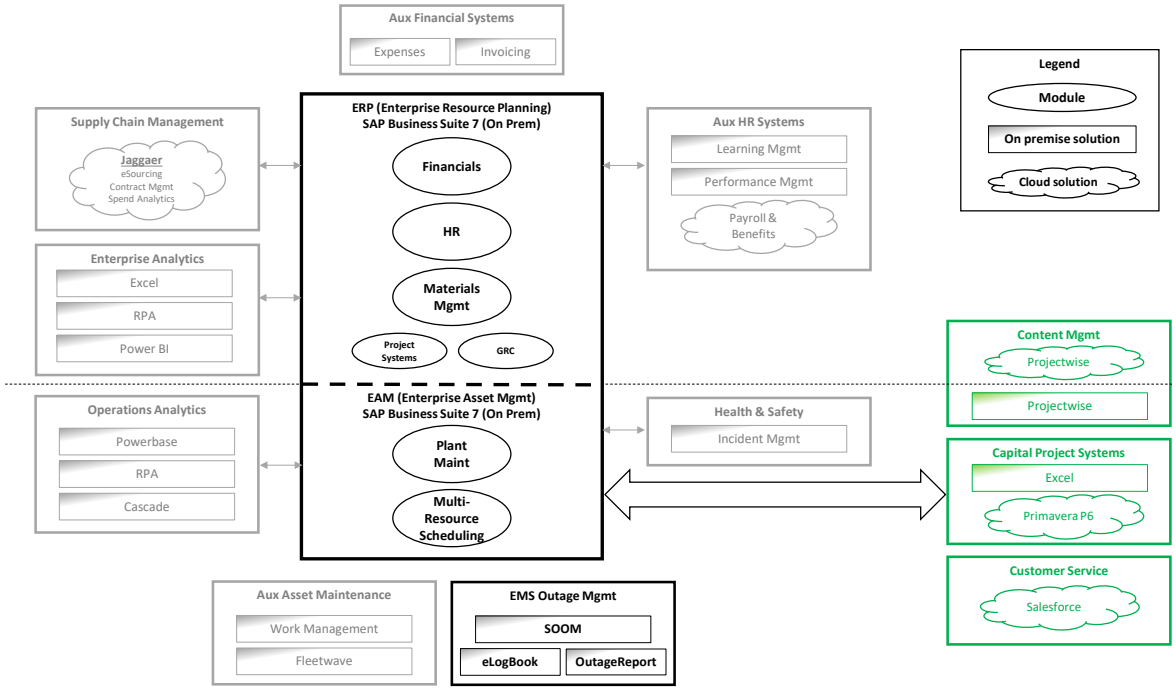


Figure 10.4.3.2-1 – Current IT Landscape

1363. The current landscape is dependent on AltaLink's monolithic and highly customized SAP system, which limits AltaLink's responsiveness to business change, increasing vulnerability to security threats and increases the overall cost of sustainment. Many adjacent systems have been

implemented to further address SAP functionality, requiring the sustainment of complex interfaces and fragmented data. The SAP is fully implemented on-premise with an extensive and expensive hardware landscape, and is precluded from exploiting the benefits of cloud.

1364. AltaLink's target (2030) IT landscape is shown in Figure 10.4.3.2-2 below.

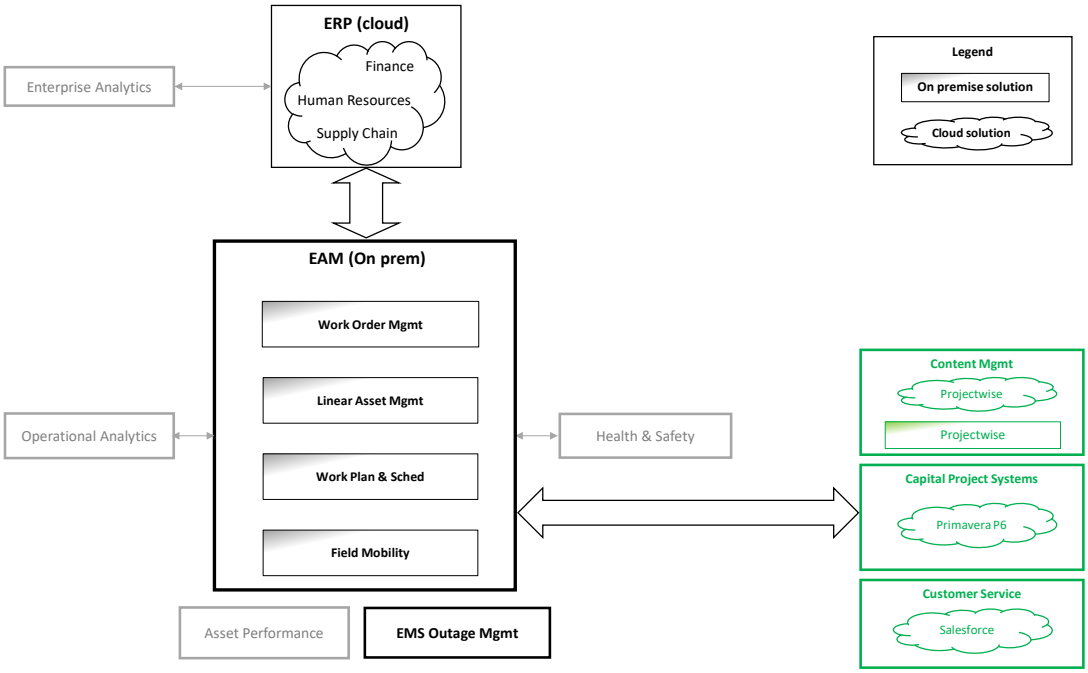


Figure 10.4.3.2-2 – Future IT Landscape

1365. The 2030 target landscape is simplified, with fewer systems, fewer integration points and reduced fragmentation of business process and data. Adoption of streamlined industry-standard processes will result in reduced customization. Cloud-first architecture will ensure systems are maintained at the most current level and with fewer security vulnerabilities. The reduced number of adjacent systems connected via a composable architecture will require less integration, data mapping, and sustaining cost, and will be more secure by design. The 2030 IT landscape is expected to be more responsive to changing business conditions and less costly to enhance and maintain.

1366. The focus of this EAM platform will enable the optimization of building, maintaining, and operating AltaLink's transmission assets. Industry best-practice processes will be adopted (as opposed to adapting the system to AltaLink's legacy processes), and the number of EAM-adjacent platforms will be reduced. Asset management and performance optimization capabilities are inherent in the new landscape. Due to BCSI data dependencies, the EAM system will be implemented on-premise.

1367. The focus of the ERP is efficient back-office support including Finance, Human Resources, and Supply Chain. Industry best-practice processes will be adopted (vs adapting the system to AltaLink's legacy processes), and the number of ERP-adjacent platforms will be reduced. As a cloud platform, the future ERP subscription will be maintained at the latest function and security level, minimizing risk and maintenance costs. The future ERP is part of a composable architecture, and as such, its enterprise data will be readily available to other composable

modules integrated into the IT landscape, more cost-effectively supporting cross-platform business processes.

10.4.3.3 AltaLink's investment roadmap for the next three GTA test periods

1368. The following section describes key capital investment programs which progress AltaLink's current state to the target IT landscape. Investments are phased to ensure end life of the current SAP system is managed cost-effectively while prioritizing highest value business capabilities and minimizing the risk of operational disruptions.

1369. A representation of the IT roadmap is shown in Figure 10.4.3.3-1 below. The recommended IT Roadmap for capital projects is shown in Table 10.4.3.3-1 below.

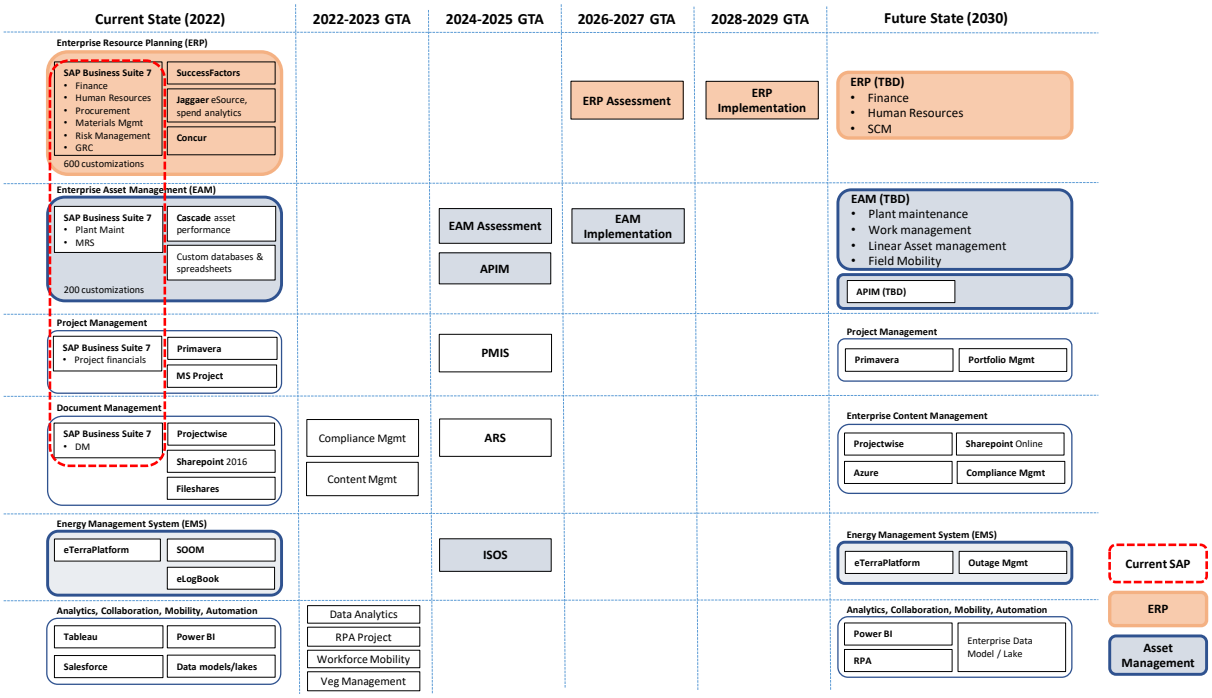


Figure 10.4.3.3-1 IT Roadmap

Table 10.4.3.3-1 – Recommended IT Roadmap Capital Projects

Capital Investment Program	Description
SAP Transition (EAM, ERP)	SAP mainstream support expires 2027, extended support expires 2030. In 2024-2025 AltaLink intends to plan for improved EAM capabilities. In 2026-2027 AltaLink intends to implement the EAM solution and plan for improved ERP capabilities. In 2028-2029 AltaLink plans to implement the ERP solution.
PMIS: Portfolio Management Information System	Portfolio management capability of brownfield projects which overlap in substation and require additional co-ordination and planning. This system is compatible with any ERP/EAM system.
ARS: Alberta Reliability Standards Compliance Management	The Compliance Management System was initiated in the 2022-2023 test period and will be completed in the 2024-2025 Test Period. This system is compatible with any ERP/EAM system.

Capital Investment Program	Description
ISOS: Integrated Systems Operations Software	Critical outage planning functionality to meet new AESO system communications. This system is compatible with any ERP/EAM system.
APIM: Asset Performance and Investment Management	Supporting analytics capability to optimize asset management investments based on asset risk assessments. This system is compatible with any ERP/EAM
Warehouse Management	RF bar code scanning capability to address increased inventory volumes. This system is compatible with any ERP/EAM system.

10.4.3.4 Security and IT Project Definition

1370. AltaLink develops initial project forecasts one to three years in advance of execution and bases them on the scope, cost and schedule information known and available at that time. The work scope definition may be at a preliminary stage, given the timing of future regulatory, customer or business requirements. Technology in the IT space moves very quickly such that new solutions may exist in the time between applying for funding and approval to implement the project. The Security and IT program also encompasses a large volume of minor projects where it is not practical or cost-effective to complete functional requirements or technical design several years in advance of the development activities.

1371. The forecasted capital expenditure business cases in **Appendix 13-B** will reflect a forecast accuracy based upon: 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.

1372. AltaLink forecasts and intends Security and IT projects to be executed within the Test Period for which those expenditures are approved. At times, circumstances can arise that result in delays of a project into a subsequent test period. Occasionally, a particular Security or 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).

1373. For projects that replace or upgrade existing systems (Lifecycle Sustainment Appendix 13-B3), the forecasted capital expenditures are 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.

1374. For projects in the categories of Security, Process Improvement and Regulatory & Legislative, the forecasted capital expenditures are based on subject matter expert estimates. These initial estimates may be further refined through an RFI (Request for Information) market engagement depending on the scope of the project.

10.4.3.5 Security and IT Project Resource Estimation

1375. In Decision 26509-D01-2022 the Commission stated its expectation that in future GTAs AltaLink will explain how it derived its IT capital labour expenditure forecasts for IT capital projects.[305] To meet this expectation, AltaLink has provided separate explanations for forecast internal labour

[305] Decision 26509-D01-2022, para 568.

and external labour (i.e., contracted labour) in its Security and IT program business cases in **Appendix 13-B**.

1376. The internal labour forecasts and external labour forecasts were based on the type of forecast work required for each program or project.

1377. Internal labour includes work carried out by program managers, project controls analysts, business analysts, architects, technical analysts, subject matter experts, and procurement personnel. Subject matter experts include business users assigned to projects to help develop requirements, to provide guidance and clarifications, and to perform user acceptance testing of the products delivered.

1378. External labour includes work carried out by project managers, business analysts, organizational change management, and technical analysts. External labour also includes vendors supporting the configuration and implementation of purchased application. Technical analysts include developers, system integrators, quality analysts, security specialists, operations personnel, and/or specialized implementation personnel.

1379. AltaLink's proportionate use of internal and external labour may change as capital projects progress. As described above, initial project forecasts are made one to three years in advance of execution. AltaLink's Security and IT program employs a flexible professional services staffing model which allows AltaLink to maintain a relatively flat internal workforce for project delivery by supplementing with external labour resources as required by project volumes. This approach allows AltaLink to adjust its resource capacity and capabilities as required to execute a changing portfolio of projects. The flexible staffing model is supported through Master Service Agreements (MSAs) which have been competitively procured with three-year, fixed term contracts. AltaLink's MSA partners provide ready access to specialized labour resources required for capital project delivery.

1380. When work can be executed by either AltaLink employees or external labour, AltaLink allocates work with the overall objective of ensuring that AltaLink employees are fully utilized. In other words, AltaLink uses external labour to augment the capacity of AltaLink employees after those employees have been fully deployed. If any of AltaLink's proposed capital projects do not proceed, AltaLink will redeploy internal labour resources to other capital projects.[306] The Commission has accepted this approach to determining the labour resource mix for forecast capital projects.[307]

1381. As noted in AltaLink's 2022-2023 GTA, external labour (professional services personnel) is also relied on to augment AltaLink employee capabilities where, for example, specialized skills are required for a capital project that AltaLink employees do not have.

1382. AltaLink is continuously evaluating options to gain efficiencies in the execution of its capital projects. A critical success factor to this process is maintaining core competencies and managing risk. Knowledge retention is critical to maintaining best practices and ensuring optimal performance of AltaLink employees. The approach described above, of maintaining the current base level of employees and leveraging external labour for work activity levels above that threshold is effective in the current environment. This approach allows AltaLink to easily adapt

[306] AltaLink has previously described this strategy in Exhibit 27174-X003.01, B-40 Attachment 1 (AUC Directive 40), pdf 38-42; and Exhibit 27174-X0024, AML-AUC-2022MAR10-007.
[307] Decision 27174-D01-2022, AML, KLP and PLP 2022-2023 GTA Compliance Filing, para 33.

to changes in project volumes. Additionally, AltaLink's stable internal workforce helps to serve as an anchor, stabilizing costs even as the volume of projects may change or fluctuate over time.

10.4.3.6 Security and IT Project Management and Execution

1383. AltaLink's IT organization has a mature project delivery model, managed by the S&IS Capital Delivery organization. AltaLink's project management framework is based on the Project Management Institute's Project Management Book of Knowledge. Each project has a sponsor-approved charter, detailed execution plan, resource plan and capital budget. Regular project steering and reporting occurs for the entire capital investment portfolio ensuring effective oversight of schedule, budget, quality, scope, and risk management.

10.4.4 Recommended Security & IT investments for the 2024-2025 Test Period

1384. Table 10.4.3.6-1 summarizes the recommended 2024-2025 Information Services and Security capital investments by category and program.

Table 10.4.3.6-1 – Recommended IT Capital Investments by Category and Program ($M)

Appendix #	Business Case	2024	2025	Total
Security Business Cases				
13-B1-05	Cyber Security System	2.2	1.6	3.8
13-B1-03	Smart Key Implementation	2.1	2.2	4.3
13-B1-13	General Security Initiatives	0.5	0.6	1.1
Subtotal		**4.9**	**4.4**	**9.3**
13-B1-04	Physical Security (CIP-014 and CIP Medium Impact Sites)	10.4	12.4	22.9
Security Total		**15.3**	**16.9**	**32.2**
Process Improvement Business Cases				
13-B2-08	Asset Performance & Investment Managements (APIM)	3.1	1.7	4.8
13-B2-07	Portfolio Management Information Systems (PMIS)	0.8	0.2	1.1
13-B2-06	Warehouse Management System	0.5	0.3	0.8
Process Improvement Total		**4.4**	**2.2**	**6.7**
Lifecycle Sustainment Business Cases				
13-B3-08	Corporate and OT Network and Infrastructure Upgrade	0.6	0.9	1.5
13-B3-13	Data Centre System Protection Program	2.8	4.0	6.8
13-B3-05	Grouped Initiatives Program	1.0	1.1	2.1
13-B3-10	Integrated Systems Operations Software	4.7	0.3	5.0
13-B3-09	Learning Content Development	0.3	0.3	0.6

Appendix #	Business Case	2024	2025	Total
13-B3-02	Systems Upgrade Program	3.2	5.1	8.3
13-B3-07	Technology Refresh Program	1.5	1.5	3.0
13-B3-03	ERP / EAM Transition	0.3	0.2	0.5
Lifecycle Sustainment Total		**14.5**	**13.4**	**27.9**
Regulatory and Legislative Business Cases				
13-B4-01	Alberta Reliability Standards Compliance Management	2.7	2.7	5.4
Regulatory and Legislative Total		**2.7**	**2.7**	**5.4**
2024-2025 GTA Total		**36.9**	**35.2**	**72.1**

10.4.5 2021 Actuals to Approved 2021 MU

1385. Table 10.4.5-1 below provides a breakdown of the 2021 actuals to the 2021 MU as forecast in the 2022-2023 GTA. The table demonstrates that the 2021 actuals achieved 1% variance to the 2021 MU.

Table 10.4.5-1 – 2021 MU to 2021 Actual Security and IT Capital Expenditures ($M)

Category	2021 MU	2021 Actuals	Variance ($)	Variance (%)
	(A)	(B)	(C)=(A-B)	(C/A) * 100
Security	6.3	5.1	1.2	19%
Process Improvement	2.0	2.8	-0.8	-38%
Lifecycle Sustainment	7.6	8.1	-0.6	-7%
Regulatory and Legislative Compliance	1.3	1.3	0	0%
Grand Total	**17.1**	**17.2**	**-0.1**	**-1%**

Totals may not add due to rounding.

1386. In 2021, COVID restrictions continued to impact normal operations. AltaLink used management judgement to re-prioritize projects within the Security, Process Improvement and Lifecycle Sustainment categories to meet changing business requirements and stay within the approved test period capital expenditures.

1387. Capital Expenditures within the Security category were $1.2M less than forecast for 2021. Two projects within the Security portfolio, Appendix 13-B1-04 ARS – CIP and Appendix 13-B1-02 ICSS business cases were partially deferred into 2022 to match staff availability. In the 2022-2023 application, AltaLink identified that progress with AltaLink's ICSS program was hampered due to COVID-19 limitations on crew size and access to customer sites.[308] These two business cases contained the majority of the Security portfolio's closing balance[309] brought forward into 2022.

[308] Exhibit 26509-X0002.01, 2022-2023 General Tariff Application, paras 826 and 921.
[309] MFR Schedule 10-4A, lines 56 and 60.

1388. The decrease in Security expenditures was offset by expenditure increases in the Lifecycle Sustainment and Process Improvement programs.

1389. Capital expenditures within the Process Improvement category were $0.8M higher than forecast for 2021. In the 2022-2023 application, AltaLink indicated that additional projects were being undertaken to automate manual-intensive processes. Of the additional projects executed, the Inventory Control Forms project executed under the Appendix 13-B2-02 Asset Information Management (AIM) business case and the Celonis Additions and Enhancement project executed under Appendix 13-B2-08 Data Analytics & Reporting business case were the main contributors to expenditures above forecast. Celonis is a data mining tool used to map processes and find supply chain efficiencies and is also described in Section 30.3. Cost increases related to the Inventory Control Forms project were a result of that project's complex implementation.

1390. Capital expenditures within the Lifecycle Sustainment category were $0.6M higher than forecast for 2021. In the 2022-2023 application, AltaLink prioritized the M365 Online deployment in 2021 to better enable workers who were working from home during the COVID-19 pandemic. Costs for the M365 project were higher than forecast as a result of project scope changes necessary to ensure business continuity, maintain data security, and minimize end-user impact.

10.4.6 Security and IT Capital Expenditure Variances from 2022-2023 Forecast

1391. As AltaLink's Security and IT project forecasts were made two to three 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.

1392. AltaLink exercised management judgement to reprioritize approved capital expenditures to address priority business needs or re-sequence work to accommodate projects that were delayed. In some cases, project execution was deferred into the following year. In addition, following Decision 26509-D01-2022 in which the Commission did not approve AltaLink's proposed Enterprise Resource Planning Replacement Program and Enterprise Asset Management Replacement Program, AltaLink had to to ensure that continuity of application support was in place.

1393. As outlined above in Section 10.4.3.6, AltaLink has established project management and IT development practices that are consistent with and supported by industry standard procurement processes. In the sections below, AltaLink provides the variance of its reasonably incurred actual costs and the basis for the changes from the initial 2022-2023 Security and IT program forecasts for each business case for the prior test period.

1394. AltaLink has identified carry-over expenditures, which were incurred in the 2022-2023 test period in order to complete a project that the Commission approved for the 2019-2021 test period (the "Carry-over Projects"). AltaLink has also described all new projects or programs for which costs were incurred in the 2022-2023 test period, but not included in a previous capital forecast (the "Net New Initiatives").

1395. Table 10.4.6-1 below provides a summary of the variances for the 2022-2023 test period, broken down by category. AltaLink is forecasting to complete the 2022-2023 GTA test period Security and IT capital expenditures at $49.1M against an approved amount of $49.1M. As described above, AltaLink may use management judgement to reprioritize capital expenditures among projects and categories based on evolving business requirements.

Table 10.4.6-1 - 2022-2023 Security and IT Capital Expenditures Approved versus Actual/MU Variance Summary ($M)

Category	2022-2023 Approved	2022-2023 Actual/MU	Variance ($)	Variance (%)
	(A)	(B)	(C)=(A-B)	(C/A) * 100
Security	24.6	24.2	-0.4	-1%
Process Improvement	5.7	3.7	2.0	35%
Lifecycle Sustainment	17.1	19.1	-2.0	-11%
Regulatory and Legislative Compliance	1.7	2.1	0.4	25%
Grand Total	**49.1**	**49.1**	**0**	**0%**

Totals may not add due to rounding.

1396. AltaLink has presented and compared its Security and IT approved forecast capital expenditures to its actual/MU expenditures for the 2022-2023 test year period for each business case. AltaLink also described all Carry-over Projects and Net New Initiatives in the 2022-2023 test period. Table 10.4.6-2 below provides a tabular summary of the variances, Carry-over Projects and Net New Initiatives for the 2022-2023 test period, broken down by business case. Sections 10.4.7 to 10.4.10 provide variance drivers and explanation for each Security and IT Capital business case. Variances are explained by category and projects.

Table 10.4.6-2 – 2022-2023 Approved versus Actual/MU Variance Summary ($M)

Appendix #	Business Case	22-23 GTA Approved	2022 Actual + 2023 MU	Variance ($)	Variance (%)
Security Business Cases					
13-B1-01	ISMS	1.1	0.7	(0.4)	-40%
13-B1-02	Substation Security Controls	6.2	7.5	1.3	21%
13-B1-03	Smart Keys	3.6	1.8	(1.8)	-50%
13-B1-04	CIP-014 and CIP Medium Impact Physical Security	1.3	1.4	0.2	12%
13-B1-05	Cyber Security System	3.3	3.3	0.0	0%
13-B1-06	Physical Security System	1.6	1.6	0.0	0%
13-B1-07	Project Lighthouse	0.2	0.1	(0.1)	-49%
13-B1-08	Supply Chain Security	0.8	0.5	(0.3)	-42%
13-B1-09	Alberta Reliability Standards - CIP	6.5	6.1	(0.4)	-5%
	Net New Initiative - XDR	0.0	0.6	0.6	
	Net New Initiative - iERP	0.0	0.6	0.6	
	Security Total	**$24.6**	**$24.2**	**($0.4)**	**-1%**
Process Improvement Business Cases					
13-B2-01	Workforce Mobility & Collaboration	1.5	0.4	(1.1)	-75%
13-B2-02	RPA Program	2.2	0.7	(1.4)	-66%
13-B2-03	Vegetation Management System	0.8	0.8	0.0	0%
13-B2-04	Data Analytics and Management Program	1.3	1.3	0.0	0%
	Net New - Control Center Situational Awareness	-	0.3	0.3	
2019-2021 GTA 13-B2.02[310]	Carryover - Inventory Control Process	-	0.1	0.1	
2019-2021 GTA 13-B2.02[311]	Carryover - Digitize Fieldwork Planning Forms	-	0.2	0.2	
	Process Improvement Total	**$5.7**	**$3.7**	**($2.0)**	**-35%**

[310] Exhibit 23848-X0018, Appendix 13-B2.02, pdf 43.
[311] Exhibit 23848-X0018, Appendix 13-B4.05, pdf 147.

Appendix #	Business Case	22-23 GTA Approved	2022 Actual + 2023 MU	Variance ($)	Variance (%)
Lifecycle Sustainment Business Cases					
13-B3-01	Content Management	1.7	1.7	0.0	0%
13-B3-02	Systems Upgrade	4.9	4.9	0.0	0%
13-B3-03	ERP Replacement Program - Not Approved	0.0	0.0	0.0	
13-B3-04	Voice System Replacement	2.4	2.4	0.0	0%
13-B3-05	Grouped Initiative Program	2.0	1.0	(1.0)	-48%
	Net New - Data Storage Program	0.0	1.0	1.0	100%
13-B3-07	Technology Refresh	3.2	3.2	0.0	0%
13-B3-08	Corp and OT Network Infrastructure Upgrade	2.3	2.3	0.0	0%
13-B3-09	Learning Content Development	0.7	0.7	0.0	0%
13-B3-10	Outage Management Replacement	0.0	0.0	0.0	
	Net New - Project Planning & Execution Tools and Upgrade	0.0	0.7	0.7	
2019-2021 GTA 13-B3.01[312]	Carryover - Digital Signage	-	0.3	0.3	
	Net New - Projectwise Consolidation	0.0	0.6	0.6	
	Net New - SAP Update	0.0	0.3	0.3	
	Lifecycle Sustainment Total	**$17.1**	**$19.0**	**$1.9**	**11%**
Regulatory and Legislative Business Cases					
13-B4-01	ARS Non-CIP	1.0	1.2	0.2	16%
13-B4-02	Capital Accounting Process Enhancements	0.7	0.2	(0.5)	-71%
	Net New - SAP Plant Maintenance Enhancements	-	0.4	0.4	
2019-2021 GTA 13-B4.05	Carryover - EMS and Netcom Change Tool	-	0.4	0.4	
	Regulatory and Legislative Compliance Total	**$1.7**	**$2.1**	**$0.4**	**25%**
2022-2023 GTA Total		**$49.1**	**$49.1**	**($0.0)**	**0%**

10.4.7 Security Variances from 2022-2023 Forecast

1397. Overall, AltaLink is forecasting a -1% variance in Security capital expenditures in the 2022-2023 test period. As shown in

[312] Exhibit 23848-X0018, Appendix 13-B3.01, pdf 84.

1398. Table 10.4.6-2 above, AltaLink re-allocated funds among several security business cases and is executing two Net New Initiatives in the test period. Sections 10.4.7.1 to 10.4.7.10 below provide variance drivers and explanations for each business case.

10.4.7.1 13-B1-01 ISMS Expansion Variance

Table 10.4.7.1-1 – 2022-2023 ISMS Expansion Business Case Capital Expenditures versus Approved ($M)

Year	22-23 GTA Approved	GTA Actual/Forecast	Forecast Variance	Variance %
	(A)	(B)	(B-A)	(B-A) / (A)
2022 Actual	0.7	0.2	(0.5)	-68%
2023 MU	0.4	0.5	0.0	3%
Total	**1.1**	**0.7**	**(0.4)**	**-40%**

Totals may not add due to rounding.

1399. In the 2022-2023 GTA, AltaLink was approved for forecasted capital expenditures for the ISMS Expansion project under Appendix 13-B1-01, which included the expansion of the ISMS into the operational technology network and vendor systems.

1400. Subsequent to the 2022-2023 GTA proceeding, the International Organization for Standardization (ISO) issued an updated standard (ISO27001:2022[313]). AltaLink could not have anticipated the issuance of this update. As a result of the updated standard, AltaLink partially deferred the operational technology network component of the project into the 2024-2025 Test Period to allow for sufficient time for a review and analysis of the updated standard and effective implementation of the program. In the result, AltaLink underspent in the 2022-2023 test period by 40%.

10.4.7.2 13-B1-02 Substation Security Controls Variance

Table 10.4.7.2-1 – 2022-2023 Substation Security Controls Business Case Capital Expenditures versus Approved ($M)

Year	22-23 GTA Approved	GTA Actual/Forecast	Forecast Variance	Variance %
	(A)	(B)	(B-A)	(B-A) / (A)
2022 Actual	3.5	3.3	(0.2)	-7%
2023 MU	2.7	4.3	1.6	58%
Total	**6.2**	**7.5**	**1.3**	**21%**

1401. In the 2022-2023 GTA, AltaLink was approved for forecasted capital expenditures for the Substation Security Controls project under Appendix 13-B1-02. This continued investment in the physical and cyber security protection of substations addresses this increasing and evolving security risk. Specifically, this project is focused on additional firewall and substation computer deployment; new hardware security for outdoor cabinets; rewiring of door contacts, motion sensors and alarm points; rewiring of Fusion alarm panels; and the replacement of end-of-life Security in a Box (SIB) devices with Substation Secure Access Control Panel (SSAC) devices, as well as security upgrades at two HVDC sites, 510S Sunnybrook and 511S Crossings.

[313] ISO 27001:2022 standard. Available from https://www.iso.org/standard/27001.

1402. AltaLink is forecasting to complete the project in the 2022-2023 test period over budget with a variance of 21%. The project cost increases are attributed to higher than forecasted EPC contractor costs to execute the scope of work. As AltaLink engaged its competitively procured EPCs and progressed to detailed design, it became apparent the initial estimate was low for the scope of work. Additionally, $0.3M in trailing costs for ICSS are included in Table 10.4.7.2-1 in the 2022 actuals. Trailing costs for ICSS are reported separately in MFR Schedule 10-4A and MFR Schedule 10-4. The trailing costs were added to this project because the last project component of ICSS was dependent of the scope of the Substation Security work that was completed in 2022.

10.4.7.3 13-B1-03 Smart Keys Implementation Project Variance

Table 10.4.7.3-1 – 2022-2023 Smart Keys Implementation Project Business Case Capital Expenditures versus Approved ($M)

Year	22-23 GTA Approved	GTA Actual/Forecast	Forecast Variance	Variance %
	(A)	(B)	(B-A)	(B-A) / (A)
2022 Actual	1.7	0.2	(1.5)	-90%
2023 MU	1.9	1.7	(0.3)	-14%
Total	**3.6**	**1.8**	**(1.8)**	**-50%**

1403. In the 2022-2023 GTA, AltaLink was approved for forecasted capital expenditures for the Smart Keys implementation project under Appendix 13-B1-03 to implement a microelectronic and programmable locking and intelligent access control platform at AltaLink's facilities.

1404. AltaLink is forecasting a variance of -50% for the Smart Keys project in the 2022-2023 test period due to delays in 2022 in closing the procurement process to select a system provider. The procurement process was delayed because the vendors were unable to meet AltaLink's technical requirements. AltaLink's technical and procurement teams engaged in an eight month process to identify a technically compliant vendor. Vendor selection will be complete in Q1 2023.

1405. A portion of Smart Keys' implementation project was implemented in the 2022-2023 test period in accordance with the approved project expenditures. In addition to vendor selection through a competitive bid procurement process, AltaLink is forecasting to finalize detailed project requirements and execute Smart Key implementation at 72 substations and two office facilities by the end of 2023. AltaLink is forecasting to complete the Smart Keys implementation project in the 2024-2025 Test Period as outlined in **Appendix 13-B1-03**.

10.4.7.4 13-B1-04 CIP-014 Physical Security Enhancements Variance

Table 10.4.7.4-1 – 2022-2023 CIP-014 Physical Security Enhancements Business Case Capital Expenditures versus Approved ($M)

Year	22-23 GTA Approved	GTA Actual/Forecast	Forecast Variance	Variance %
	(A)	(B)	(B-A)	(B-A) / (A)
2022 Actual	0.2	0.1	(0.1)	-46%
2023 MU	1.1	1.3	0.2	21%
Total	**1.3**	**1.4**	**0.2**	**12%**

1406. In the 2022-2023 GTA, AltaLink was approved for forecasted capital expenditures for the CIP-014 Physical Security Enhancements project under Appendix 13-B1-04. The project implements the physical security enhancements at eight sites as required by the Alberta Reliability Standards (ARS) CIP standards CIP-014-AB-212 (CIP-014) to protect the reliability of the AIES. This project deploys a combination of a monitoring solution (radar or motion sensor) and camera solution to safeguard the yards and Physical Security Perimeters (PSP) at the eight CIP-014 identified substations.

1407. AltaLink is forecasting to complete the project scope proposed in the 2022-2023 test period with a 12% variance. The project cost increases are attributed to higher than forecasted EPC contractor costs to execute the scope of work. Increased EPC costs reflect the market conditions in the test period with higher cost due to supply chain constraints and inflation.

10.4.7.5 13-B1-05 Cyber Security System Variance

Table 10.4.7.5-1 – 2022-2023 Cyber Security System Business Case Capital Expenditures versus Approved ($M)

Year	22-23 GTA Approved	GTA Actual/Forecast	Forecast Variance	Variance %
	(A)	(B)	(B-A)	(B-A) / (A)
2022 Actual	1.6	1.7	0.1	3%
2023 MU	1.7	1.6	(0.1)	-3%
Total	**3.3**	**3.3**	**0.0**	**0%**

1408. In the 2022-2023 GTA, AltaLink was approved for forecasted capital expenditures for the Cyber Security System Program under Appendix 13-B1-05 to proactively protect AltaLink's organization and respond to cyber threats. The program consists of a number of projects which aim to proactively identify, detect, prevent, and mitigate security risks, threats, and vulnerabilities through compliance with the ISO 27001[314] and 27019[315] standards and the CIS Cyber Security Controls standards.

1409. AltaLink is forecasting a 0% variance in the 2022-2023 test period.

10.4.7.6 13-B1-06 Physical Security System Variance

Table 10.4.7.6-1 – 2022-2023 Physical Security System Business Case Capital Expenditures versus Approved ($M)

Year	22-23 GTA Approved	GTA Actual/Forecast	Forecast Variance	Variance %
	(A)	(B)	(B-A)	(B-A) / (A)
2022 Actual	0.8	0.6	(0.2)	-21%
2023 MU	0.8	0.9	0.2	23%
Total	**1.6**	**1.6**	**0.0**	**0%**

1410. In the 2022-2023 GTA, AltaLink was approved for forecasted capital expenditures for the Physical Security System Program under Appendix 13-B1-06 to review and upgrade the physical defensive systems and technologies in use by AltaLink, determine their suitability for future

[314] ISO 27001. Available from https://www.iso.org/isoiec-27001-information-security.html.
[315] ISO 27019. Available from https://www.iso.org/standard/68091.html?browse=tc.

protective capability and identify, select, and implement new systems, technologies or improve existing technologies as required.

1411. AltaLink is forecasting a 0% variance in the 2022-2023 test period.

10.4.7.7 13-B1-07 Project Lighthouse Variance

Table 10.4.7.7-1 – 2022-2023 Project Lighthouse Business Case Capital Expenditures versus Approved ($M)

Year	22-23 GTA Approved	GTA Actual/Forecast	Forecast Variance	Variance %
	(A)	(B)	(B-A)	(B-A) / (A)
2022 Actual	0.1	0.0	(0.1)	-58%
2023 MU	0.1	0.1	(0.0)	-40%
Total	**0.2**	**0.1**	**(0.1)**	**-49%**

1412. In the 2022-2023 GTA, AltaLink was approved for forecast capital expenditures for the Project Lighthouse Business Case under Appendix 13-B1-07. In the Lighthouse model, electricity companies share network 'traffic metadata' with the Communications Security Establishment (CSE) and the Canadian Centre for Cyber Security (CCCS), who use the data to perform real-time analytics and provide actionable intelligence back to the participating companies.

1413. In the 2022-2023 test period, AltaLink implemented the same information sharing mechanisms with the CSE/CCCS to avail of their specialized cyber defence tools, analytics, and technology to identify and anticipate cyber threats on a near real-time basis. AltaLink is forecasting a 49% variance and lower than expected capital expenditures in the 2022-2023 test period. AltaLink assumed hardware costs to purchase servers for this project. AltaLink was able to execute the project without additional hardware which contributed to the lower than forecasted costs. The project will be completed in the 2022-2023 test period.

10.4.7.8 13-B1-08 Supply Chain Security Variance

Table 10.4.7.8-1 – 2022-2023 Supply Chain Security Business Case Capital Expenditures versus Approved ($M)

Year	22-23 GTA Approved	GTA Actual/Forecast	Forecast Variance	Variance %
	(A)	(B)	(B-A)	(B-A) / (A)
2022 Actual	0.2	0.0	(0.1)	-90%
2023 MU	0.7	0.5	(0.2)	-31%
Total	**0.8**	**0.5**	**(0.3)**	**-42%**

1414. In the 2022-2023 GTA, AltaLink was approved for forecasted capital expenditures for the Supply Chain Security Business Case under Appendix 13-B1-08. The project supports the necessary additional controls in supply chain security to ensure the cyber integrity of software, hardware, and services provided to AltaLink by vendors and contractors.

1415. In the 2022-2023 test period, AltaLink is forecasting to complete a secure communications channel in the event of a disaster where telecom is no longer viable, and procurement of additional hardware and software to add to the OT lab to further test security on supplier firmware patches and updates.

1416. AltaLink is forecasting a 42% variance and lower capital expenditures of $300k in the 2022-2023 test period. As AltaLink progressed the project, it became apparent that standing up a cyber test lab would entail a larger and more complex scope of work than originally planned. As such, AltaLink did not proceed with the cyber test lab implementation and is assessing an alternative approach.

10.4.7.9 13-B1-09 Alberta Reliability Standards (CIP) Variance

Table 10.4.7.9-1 – 2022-2023 Alberta Reliability Standards (CIP) Business Case Capital Expenditures versus Approved ($M)

Year	22-23 GTA Approved	GTA Actual/Forecast	Forecast Variance	Variance %
	(A)	(B)	(B-A)	(B-A) / (A)
2022 Actual	3.4	3.8	0.5	14%
2023 MU	3.1	2.3	(0.8)	-27%
Total	**6.5**	**6.1**	**(0.4)**	**-5%**

1417. In the 2022-2023 GTA, AltaLink was approved for forecasted capital expenditures for the Alberta Reliability Standards (ARS) Critical Infrastructure Protection (CIP) Compliance Business Case under Appendix 13-B1-09 which is an ongoing program of updates and improvements that ensures that AltaLink remains compliant to the ARS CIP standards. There were three components to this business case. Two components proceeded as planned and one component will complete in 2024.

1418. AltaLink is forecasting a 5% variance in the 2022-2023 test period; however, the entire scope of work forecast in the ARS CIP Compliance Business Case will not be completed.

1419. The ARS-CIP (2022 and 2023) and CIP Program Refresh Phase 2 projects are proceeding as forecast.

1420. The Compliance Management System (CMS) Implementation project will not complete all scope forecasted within the 2022-2023 test period due to delays in closing the procurement process to select a system provider in 2022. Contract negotiations to close the terms of the contract took significantly longer than expected. In addition, the implementation of the system will need to be extended to accommodate the AESO CIP audit in the fall of 2023. AltaLink anticipates that six of the 11 CIP ARS standards will be transitioned to the new system for evidence collection in 2023. The remaining will be completed in 2024. Refer to **Appendix 13 B4-01** Alberta Reliability Standards and Compliance program business case for additional details of the 2024-2025 scope.

10.4.7.10 Net New Security Initiatives

1421. In the 2022-2023 test period, AltaLink initiated two Net New security initiatives:

- XDR Deployment Project
- iERP Project

1422. AltaLink did not request approval of capital expenditures for these projects in the 2022-2023 GTA. AltaLink prudently incurred such expenditures to meet the immediate needs of the business and requests they be approved as filed.

1423. The business requirements for these projects were not known or planned at the time of the filing of the 2022-2023 GTA. AltaLink exercised management judgement to reprioritize approved

capital expenditures to address priority business needs or re-sequence work to accommodate projects that were delayed.

10.4.7.10.1 XDR Deployment Project (Endpoint Detection Response)

Table 10.4.7.10-1 – 2022-2023 Net New Security Initiatives – XDR Deployment Capital Expenditures ($M)

Year	22-23 GTA Approved	GTA Actual/Forecast	Forecast Variance	Variance %
	(A)	(B)	(B-A)	(B-A) / (B)
2022 Actual	0.0	0.6	0.6	100%
2023 MU	0.0	0.0	0.0	100%
Total	**0.0**	**0.6**	**0.6**	**100%**

1424. This project provides AltaLink with a cyber monitoring tool that is critical to detecting and preventing malicious actors from accessing AltaLink's systems. The endpoint detection response (EDR) tool gives AltaLink complete visibility over network traffic, user behavior, and endpoint activity. It simplifies threat investigation by correlating logs from locally installed agents to reveal threat causalities and timelines. This enables the cyber security team to easily identify the root cause of every alert and perform immediate response actions such as isolating the machine where the alert came from to stop the threat. To prevent future attacks, the cyber security team can pro-actively define rules to detect and respond to malicious activity.

1425. Prior to executing the project, AltaLink' s practice was to use device logs and a group of segregated tools to trace activity and correlate logs. This practice delayed forensic investigations due to the need to manually consolidate logs.

1426. The project was included in Cyber Protection Systems Enhancements Business Case (Appendix 13-B1.05) in the 2019-2021 GTA. At the time of filing the 2022-2023 GTA, AltaLink expected to complete the project in the 2019-2021 test period. On this basis, AltaLink did not seek approval of forecast expenditures in the 2022-2023 test period.

1427. AltaLink subsequently delayed the project into the 2022-2023 test period in order to review and assess the results of the BHE GSOC's evaluation of EDR tools. On AltaLink's recommendation, BHE included the XDR tool in its evaluation.

1428. BHE's GSOC evaluated XDR and three other products using criteria that matched AltaLink's. BHE provided AltaLink with the results of its evaluation and AltaLink completed an independent evaluation of XDR, which was the highest ranked solution. AltaLink also met with the vendor to ensure AltaLink's detailed business requirements would be met. AltaLink determined that XDR fully met its business requirements with minimal customization and negotiated its own vendor contract with BHE discount pricing. Further detail with respect to affiliate involvement in this project is included in Section 30.3.

1429. AltaLink forecast capital expenditures in the 2022-2023 test period are $0.6M to implement the XDR Deployment project. The capital expenditures cost breakdown for the XDR project is found in Table 10.4.7.10-2

Table 10.4.7.10-2 – XDR Deployment Capital Expenditures ($M)

Description	2022 Actual	2023 Forecast
Labour – Internal	0.17	0.01
Labour – External	0.16	0.03
Software Costs	0.25	0.00
Hardware Costs	0.00	0.00
Total	**0.58**	**0.04**

10.4.7.10.2 iERP Project

Table 10.4.7.10-3 – 2022-2023 Net New Security Initiatives – iERP Project Capital Expenditures ($M)

Year	22-23 GTA Approved	GTA Actual/Forecast	Forecast Variance	Variance %
	(A)	(B)	(B-A)	(B-A) / (B)
2022 Actual	0.0	0.3	0.3	100%
2023 MU	0.0	0.2	0.2	100%
Total	**0.0**	**0.6**	**0.6**	**100%**

1430. AltaLink is forecasting to incur $0.6M in Capital Expenditures not forecast in the 2022-2023 GTA to implement an integrated emergency response plan (iERP) incident management software solution.

1431. AltaLink participates in bi-annual NERC GridEx security exercises as part of AltaLink's emergency and business continuity preparedness and planning. GridEx gives participating North American utilities a forum to practice how they would respond and recover from coordinated cyber and physical threats and incidents. Lessons learned from these exercises are used to improve AltaLink's and all utility sector participants' response capabilities. As a result of the November 2021 GridEx exercise, AltaLink determined it urgently required a better solution to manage a large-scale power system disruption event or business continuity event.

1432. Prior to this initiative, iERP documentation, processes, and the incidents or events were managed through SharePoint document repositories, spreadsheets, meeting minutes, and manually generated documents. The November 2021 GridEx exercise demonstrated that AltaLink required an automated solution or software tool to better manage iERP documentation, any iERP event (or exercise), and the resulting after-action activities. GridEx exercises are complex, multiday simulations designed to test a company's ability to respond and co-ordinate communication across other utilities and emergency response organizations. Manual activity tracking processes were not effective under these circumstances which simulate real life scenarios. The difficulty encountered managing the 2021 GridEx exercise highlighted the urgency to update and automate iERP processes in the event of a significant power system disruption requiring multiparty, multiday co-ordination.

1433. AltaLink participated in a joint RFP event with BHE to select a software application that would meet AltaLink requirements and project objectives as described above. Further detail with respect to affiliate involvement in this project is included in Section 30.

1434. In 2022 and 2023, AltaLink forecasts to implement the following scope for the iERP Incident Management Project:

- Implementation of B. Riley's BOLDPlanning tool for Business Continuity Plan (BCP), Emergency Operation Plan (EOP) and IT Disaster Recovery (ITDR)
- Implementation of Veoci's tool for Crisis Management or Incident Management
- Setup of regular uploads to the tool to keep foundational information up-to-date, such as: Contacts, Suppliers, Applications and Facilities.
- Processes and training for sustainment after the systems are implemented.

1435. Forecast capital expenditures in the 2022-2023 test period are $0.6M. The cost breakdown for the iERP project is found in Table 10.4.7.10-4.

Table 10.4.7.10-4 – iERP Project Capital Expenditures ($M)

Description	2022 Actual	2023 Forecast
Labour – Internal	0.16	0.11
Labour – External	0.13	0.12
Software Costs	0.04	0.01
Hardware Costs	0.02	0.00
Total	**0.35**	**0.23**

10.4.8 Process Improvement Variances from 2022-2023 Forecast

1436. For the Process Improvement category, AltaLink is forecasting capital expenditures of $3.7M in the 2022-2023 test period compared to a GTA approved $5.7M, resulting in an overall underspend in the category of $2.0M. Sections 10.4.8.1 to 10.4.8.5 below provide variance drivers and explanations for each business case.

10.4.8.1 Appendix 13-B2-01 Workforce Mobility and Collaboration Variance

Table 10.4.8.1-1 – 2022-2023 Workforce Mobility and Collaboration Business Case Capital Expenditures versus Approved ($M)

Year	22-23 GTA Approved	GTA Actual/Forecast	Forecast Variance	Variance %
	(A)	(B)	(B-A)	(B-A) / (A)
2022 Actual	1.0	0.1	(0.8)	-87%
2023 MU	0.5	0.3	(0.3)	-52%
Total	**1.5**	**0.4**	**(1.1)**	**-75%**

1437. In the 2022-2023 GTA, AltaLink was approved for forecasted capital expenditures for the Workforce Mobility and Collaboration Business Case under Appendix 13-B2-01 to improve connectivity, communication and data availability for AltaLink staff while working out of the office.

1438. AltaLink is expecting to underspend capital expenditures by $1.1M in the 2022-2023 test period. The program included five projects, two of which were cancelled and the implementation of one project was delayed and initiated in 2023. The Business Analyst/Quality Assurance Enhancement Tool and the Fleet Operations Mobile Data Entry projects were cancelled after the technical evaluations concluded that vendors could not meet the technical project requrirements. The Field Work Execution project was delayed to review the scope and technical requirements of the project. AltaLink originally planned the project to integrate with the Enterprise Asset Management module that AltaLink applied for in the 2022-2023 GTA. Following Decision 26509-D01-2022 in which the Commission did not approve AltaLink's proposed Enterprise Asset

Management Replacement program, AltaLink reviewed the scope of the Field Work Execution project to confirm the technical requirements would still be delivered following the change in Enterprise Asset Management strategy.

1439. AltaLink has described the cost savings arising from the Workforce Mobility and Collaboration projects in response to Directive 43, in Section 2 of the Application.

10.4.8.2 Appendix 13-B2-02 Robotic Process Automation Program Variance

Table 10.4.8.2-1 – 2022-2023 RPA Program Business Case Capital Expenditures versus Approved ($M)

Year	22-23 GTA Approved	GTA Actual/Forecast	Forecast Variance	Variance %
	(A)	(B)	(B-A)	(B-A) / (A)
2022 Actual	1.1	0.3	(0.8)	-69%
2023 MU	1.1	0.4	(0.7)	-63%
Total	**2.2**	**0.7**	**(1.4)**	**-66%**

1440. In the 2022-2023 GTA, AltaLink was approved for forecasted capital expenditures for the Robotic Process Automation (RPA) Program Business Case under Appendix 13-B2-02 to automate standard, repetitive, and manual tasks identified throughout the enterprise to drive process efficiencies and absorb new workload as required.

1441. AltaLink is expecting to underspend capital expenditures by $1.1M in the test period, a 63.5% variance. The variance is due to a late start on projects and availablity of business resources in 2022 post-COVID restrictions.

1442. AltaLink forecast completing 24 RPA projects per year to achieve approximately 10,000 labor hours of savings per year. Only three RPA projects were completed in 2022 compared to the 24 that were planned. Project execution was constrained by availability of resources. The IT team was impacted by early retirements, staff departures, and employee availability after COVID restrictions were lifted. This impacted the pace of RPA project delivery. The program is forecast to continue with new projects in 2023 but at a slower pace as AltaLink rebuilds the team.

1443. Four RPA projects are in progress in 2023: email quarantine automation, project admin automation, engineering drawing upgrade automation, and aerial file transfer for ProjectWise automation. These four projects are forecasted to generate $700k of savings identified in Directive 43.

1444. AltaLink has provided additional details on the Robotic Process Automation program and forecast benefits in response to Directive 43, in Section 2 of the Application.

10.4.8.3 Appendix 13-B2-03 Vegetation Management System Variance

Table 10.4.8.3-1 – 2022-2023 Vegetation Management System Business Case Capital Expenditures versus Approved ($M)

Year	22-23 GTA Approved	GTA Actual/Forecast	Forecast Variance	Variance %
	(A)	(B)	(B-A)	(B-A) / (A)
2022 Actual	0.8	0.2	(0.6)	-80%
2023 MU	0.0	0.6	0.6	100%
Total	**0.8**	**0.8**	**0.0**	**0%**

1445. In the 2022-2023 GTA, AltaLink was approved for forecasted capital expenditures for the Vegetation Management System Business Case under Appendix 13-B2-03 to modernize the vegetation management process with an industry standard digital solution. A new vegetation management system will integrate with AltaLink's GIS (geographical information system) and databases, centralize all information related to vegetation management and be accessible to the appropriate field crews.

1446. AltaLink will complete the forecasted scope of work and incur the forecasted expenditures in the 2022-2023 test period with a 0% variance.

10.4.8.4 Appendix 13-B2-04 Data Analytics and Management Program Variance

Table 10.4.8.4-1 – 2022-23 Data Analytics and Management Program Business Case Capital Expenditures versus Approved ($M)

Year	22-23 GTA Approved	GTA Actual/Forecast	Forecast Variance	Variance %
	(A)	(B)	(B-A)	(B-A) / (A)
2022 Actual	0.8	0.5	(0.3)	-34%
2023 MU	0.5	0.8	0.3	52%
Total	**1.3**	**1.3**	**0.0**	**0%**

1447. In the 2022-2023 GTA, AltaLink was approved for forecasted capital expenditures for the Data Analytics and Management Program Business Case under Appendix 13-B2-04 to respond to the evolving and changing needs in the way AltaLink's data is managed, requested, accessed, and used for reporting and analytics purposes.

1448. AltaLink will complete the forecasted scope of work (three to four use cases) and incur the forecasted expenditures in the 2022-2023 test period with a 0% variance.

10.4.8.5 Net New and Carry Over Initiatives

1449. In the 2022-2023 test period, AltaLink initiated one Net New Process Improvement initiative as described below.

1450. In the 2022-2023 test period, AltaLink also has two projects, Digitize Fieldwork Planning Forms, and Inventory Control Process, that have expenditures that carry over from the prior test period.

1451. AltaLink did not include or request approval for capital expenditures for these projects as part of the 2022-2023 GTA. However, AltaLink prudently incurred such expenditures and requests that they be approved as filed.

1452. The business requirements for the Net New Initiatives were not known or planned at the time of the filing for the 2022-2023 GTA. AltaLink exercised management judgement to reprioritize approved capital expenditures to address higher priority business needs or re-sequence work to accommodate projects that were delayed.

10.4.8.5.1 Control Center Situational Awareness

Table 10.4.8.5-1 – 2022-2023 Net New Process Improvement Initiatives – Control Center Situational Awareness Project Capital Expenditures ($M)

Year	22-23 GTA Approved	GTA Actual/Forecast	Forecast Variance	Variance %
	(A)	(B)	(B-A)	(B-A) / (B)
2022 Actual	0.0	0.1	0.1	100%
2023 MU	0.0	0.2	0.2	100%
Total	**0.0**	**0.3**	**0.3**	**100%**

1453. AltaLink manages and maintains a broad portfolio of real-time information which is time consuming to gather during system outages. This initiative aggregates those datasets into a comprehensive view. During system outages it will automate the gathering of data into an information portal (report center) which will be used to provide situational awareness for ACC operators to make and communicate informed decisions in a timelier manner than currently available.

1454. The Situational Awareness portal will provide ACC operators the ability to comprehensively identify and correlate anomalous conditions related to industrial control systems, facilities, IT systems, vehicle location, weather stations, Alberta fire, geospatial data, lightning protection, and other essential business information and assist the ACC operators to make faster and more informed decisions to manage the energy flows across the grid.

1455. The Situational Awareness project had been contemplated for a future test period but as other projects were delayed or cancelled as described above, AltaLink determined that it would execute the Situational Awareness project in the 2022-2023 test period. Simplifying consolidation of information for the ACC operators to effectively operate the power system is high priority in deploying IT applications. Once complete, this Situational Awareness portal will allow operators to have real time information enabling them to make and communicate informed decisions in a timelier manner than currently available. This project will also reduce outage duration due to more real time decision making which contributes to more reliable service.

1456. Forecast capital expenditures in the 2022-2023 test period are $0.3M. The cost breakdown for the Control Center Situational Awareness project is found in Table 10.4.8.5-2.

Table 10.4.8.5-2 – Control Center Situational Awareness Project Capital Expenditures ($M)

Description	2022 Actual	2023 Forecast
Labour – Internal	0.05	0.06
Labour – External	0.05	0.12
Software Costs	0.00	0.02
Hardware Costs	0.00	0.00
Total	**0.10**	**0.20**

10.4.8.5.2 Inventory Control Process

Table 10.4.8.5-3 – 2022-2023 Carryover Process Improvement Initiatives – Inventory Control Process Project Capital Expenditures ($M)

Year	22-23 GTA Approved	GTA Actual/Forecast	Forecast Variance	Variance %
	(A)	(B)	(B-A)	(B-A) / (B)
2022 Actual	0.0	0.1	0.1	100%
2023 MU	0.0	0.0	0.0	100%
Total	**0.0**	**0.1**	**0.1**	**100%**

1457. This project is a continuation from the 2019-2021 GTA Appendix 13-B2-02 Asset Information (AIM) Program Business Case. AltaLink was not forecasting the project to incur costs in 2022 at the time of filing the 2022-2023 GTA. These costs are trailing costs from the activity of the prior period. The project was forecasted to complete at the end of 2021. However, due to illness, the individual completing the close out was unable to complete the close out work by year end. As a result, the close out activity occurred in the 2022-2023 test period.

1458. The project evaluates the overall Inventory Control Process; determines areas for optimization and expansion of use; improves the workflow and timeliness of return data; reviews and update ssupporting workflow and tools; and defines mandatory asset data entry information that must be contained within submitted forms and captured in AltaLink's system of record.

1459. Forecast capital expenditures in the 2022-2023 test period are $0.1M. The cost breakdown for the Inventory Control project is found in Table 10.4.8.5-4.

Table 10.4.8.5-4 – Inventory Control Process Project Capital Expenditures ($M)

Description	2022 Actual	2023 Forecast
Labour – Internal	0.03	0.00
Labour – External	0.05	0.00
Software Costs	0.00	0.00
Hardware Costs	0.00	0.00
Total	**0.07**	**0.00**

10.4.8.5.3 Digitize Fieldwork Planning Forms

Table 10.4.8.5-5 – 2022-2023 Carry Over -Process Improvement Initiatives – Digitize Fieldwork Planning Forms Project Capital Expenditures ($M)

Year	22-23 GTA Approved	GTA Actual/Forecast	Forecast Variance	Variance %
	(A)	(B)	(B-A)	(B-A) / (B)
2022 Actual	0.0	0.2	0.2	100%
2023 MU	0.0	0.0	0.0	
Total	**0.0**	**0.2**	**0.2**	**100%**

1460. This project is a continuation from the 2019-2021 GTA Appendix 13-B2-02 Asset Information (AIM) Program Business Case. At the time of filing its 2022-2023 GTA, AltaLink expected to complete execution of the Program in the 2019-2021 test period.

1461. The Digitize Fieldwork Planning Form project is required to automate safety planning, tracking, and reporting. The tool requirement was anticipated to be straightforward. However, the implementation of the solution took longer than expected due to technical issues, specifically "single sign-on" security requirements delaying the close out of the project.

1462. Forecast capital expenditures in the 2022-2023 test period are $0.2M. The cost breakdown for the Inventory Control project is found in Table 10.4.8.5-6.

Table 10.4.8.5-6 – Carry Over Digitize Fieldwork Planning Forms Project Capital Expenditures ($M)

Description	2022 Actual	2023 Forecast
Labour – Internal	0.06	0.00
Labour – External	0.04	0.00
Software Costs	0.00	0.00
Hardware Costs	0.06	0.00
Total	**0.16**	**0.00**

10.4.9 Lifecycle Sustainment Variances from 2022-2023 Forecast

1463. For the Lifecycle Sustainment category, AltaLink is forecasting capital expenditures of $19.1M in the 2022-2023 test period, compared to a GTA approved $17.1M, resulting in an overspend in the category by $2.0M. Sections 10.4.9.1 to 10.4.9.9 below provide variance drivers and explanations for each business case.

10.4.9.1 Appendix 13-B3-01 Content Management Variance

Table 10.4.9.1-1 – 2022-2023 Content Management Business Case Capital Expenditures versus Approved ($M)

Year	22-23 GTA Approved	GTA Actual/Forecast	Forecast Variance	Variance %
	(A)	(B)	(B-A)	(B-A) / (A)
2022 Actual	1.2	1.1	(0.0)	-1%
2023 MU	0.5	0.5	0.0	3%
Total	**1.7**	**1.7**	**0.0**	**0%**

1464. In the 2022-2023 GTA, AltaLink was approved for forecasted capital expenditures for the Content Management Business Case under Appendix 13-B3-01 upgrade AltaLink's on-premises SharePoint server 2013 and outline a strategy for managing the increasing volume of digital content company-wide.

1465. AltaLink will complete the forecasted scope of work and incur the forecasted expenditures in the 2022-2023 test period with a 0% variance.

10.4.9.2 Appendix 13-B3-02 Systems Upgrade Variance

Table 10.4.9.2-1 – 2022-2023 Systems Upgrade Business Case Capital Expenditures versus Approved ($M)

Year	22-23 GTA Approved	GTA Actual/Forecast	Forecast Variance	Variance %
	(A)	(B)	(B-A)	(B-A) / (A)
2022 Actual	3.1	2.3	(0.8)	-26%
2023 MU	1.8	2.6	0.8	44%
Total	**4.9**	**4.9**	**0.0**	**0%**

1466. In the 2022-2023 GTA, AltaLink was approved for forecasted capital expenditures for the Systems Upgrade Program under Appendix 13-B3-02 to upgrade a wide variety of software products to the vendor supported version of a specific technology/software.

1467. AltaLink forecast 18 Systems Upgrade projects in the 2022-2023 test period which are proceeding as planned.

1468. AltaLink will complete the forecasted scope of work and incur the forecasted expenditures in the 2022-2023 test period with a 0% variance.

10.4.9.3 Appendix 13-B3-04 Voice System Replacement Variance

Table 10.4.9.3-1 – 2022-2023 Voice System Replacement Business Case Capital Expenditures versus Approved ($M)

Year	22-23 GTA Approved	GTA Actual/Forecast	Forecast Variance	Variance %
	(A)	(B)	(B-A)	(B-A) / (A)
2022 Actual	1.0	0.3	(0.8)	-74%
2023 MU	1.4	2.2	0.8	53%
Total	**2.4**	**2.4**	**0.0**	**0%**

1469. In the 2022-2023 GTA, AltaLink was approved for forecasted capital expenditures for the Voice System Replacement Business Case under Appendix 13-B3-04 to ensure AltaLink's voice system is up to date and appropriately structured and implemented to support the safe and reliable operation of the AIES.

1470. AltaLink will complete the forecasted scope of work and incur the forecasted expenditures in the 2022-2023 test period with a 0% variance.

10.4.9.4 Appendix 13-B3-05 Grouped Initiatives Program Variance

Table 10.4.9.4-1 – 2022-2023 Grouped Initiatives Program Business Case Capital Expenditures versus Approved ($M)

Year	22-23 GTA Approved	GTA Actual/Forecast	Forecast Variance	Variance %
	(A)	(B)	(B-A)	(B-A) / (A)
2022 Actual	1.0	0.5	(0.5)	-45%
2023 MU	1.0	0.5	(0.5)	-50%
Total	**2.0**	**1.0**	**(1.0)**	**-48%**

1471. In the 2022-2023 GTA, AltaLink was approved for forecasted capital expenditures for the Grouped Initiatives Program Business Case under Appendix 13-B3-05 to provide on-going support of AltaLink's information systems and processes. The Grouped Initiatives Program includes various projects that enhance and prolong system use.

1472. In 2022, AltaLink executed 44 projects under the Grouped Initiatives Program and expects to execute between 35 and 45 projects in 2023, with 22 current requests spanning multiple business areas. AltaLink is forecasting a -48% variance in the 2022-2023 test period. AltaLink reprioritized funding and accommodated higher priority Net New Initiatives as outlined in Section 10.4.9.9 where those requirements were not known at the time of filing.

1473. AltaLink is applying to sustain the Grouped Initiatives Program in the 2024-2025 Test Period. Refer to the **Appendix 13-B3-05**, Grouped Initiatives Program Business Case for additional details on the 2024-2025 Test Period scope.

10.4.9.5 Appendix 13-B3-06 Data Storage Program

Table 10.4.9.5-1 – 2022-2023 Data Storage Program Business Case Capital Expenditures ($M)

Year	22-23 GTA Approved	GTA Actual/Forecast	Forecast Variance	Variance %
	(A)	(B)	(B-A)	(B-A) / (B)
2022 Actual	0.0	1.0	1.0	100%
2023 MU	0.0	0.0	0.0	100%
Total	**0.0**	**1.0**	**1.0**	**100%**

1474. In the 2022-2023 GTA, AltaLink requested capital expenditures for the Data Storage Program Business Case under Appendix 13-B3-06 to: (i) add data storage capacity; and (ii) replace the end-of-life storage systems, including Dell's VNX 5400 storage arrays (the "VNX Arrays").

1475. In Decision 26509-D01-2022, the Commission did not approve AltaLink's forecast capital expenditures for the Data Storage systems.

1476. VNX storage arrays store files including bulk electric system cyber system information and internal business files that are sensitive and confidential. Data corruption or the loss of access to these files would have a significant impact on AltaLink's ability to perform day-to-day functions and the operation of the AIES. AltaLink has two VNX Arrays, both of which are Dell systems. Dell determined that its end of vendor software and hardware support for this VNX model would occur on January 31, 2023.

1477. Given the critical role of the VNX data storage, AltaLink determined that replacement of the VNX Arrays was required in the 2022-2023 test period and could not be further delayed to the next test period. Without vendor support AltaLink would not receive Dell software updates, firmware, and security patches to address known VNX vulnerabilities, nor would AltaLink receive technical support from Dell to resolve software and hardware incidents. Such incidnts could affect the confidentiality, integrity, and availability of business-critical files.

1478. While the vendor offered limited hardware support services beyond January 31, 2023, AltaLink assessed that option and determined that the support was insufficient to effectively and securely maintain VNX Arrays.

1479. Without vendor support, AltaLink's infrastructure support team would be unable to remediate all software incidents. Over the previous three years, software incidents made up one third of

AltaLink's VNX incidents of this critical business function. In most of these incidents, the VNX Arrays would have been inoperable had Dell technical support not been able to address them. Continuing to use VNX Arrays past January 31, 2023 placed AltaLink at greater risk for future software incidents, as well as security-related threats. Unremediated software incidents impact the integrity, security, and availability of files integral to AltaLink's business and the AIES.

1480. After an analysis of alternatives, AltaLink decided to replace the VNX Arrays with a solution with full vendor support. Ultimately, the prudence of this decision was demonstrated when AltaLink experienced a failure of the VNX storage array in early 2023.

1481. The capital expenditures to replace the end-of-life VNX Arrays were required to ensure continuous security and vendor support for storage of BCSI and sensitive information. AltaLink requests the AUC approve the Capital Expenditures as part of AltaLink's 2024 Opening Rate Base.

1482. Forecast capital expenditures in the 2022-2023 test period are $1.0M. The cost breakdown for the Data Storage Program is found in Table 10.4.9.5-2.

Table 10.4.9.5-2 – Data Storage Program Capital Expenditures $M

Description	2022 Actual	2023 Forecast
Labour – Internal	0.24	0.01
Labour – External	0.09	0.02
Software Costs	0.08	0.00
Hardware Costs	0.58	0.00
Total	**0.98**	**0.03**

10.4.9.6 Appendix 13-B3-07 Technology Refresh Variance

Table 10.4.9.6-1 – 2022-23 Technology Refresh Program Business Case Capital Expenditures versus Approved ($M)

Year	22-23 GTA Approved	GTA Actual/Forecast	Forecast Variance	Variance %
	(A)	(B)	(B-A)	(B-A) / (A)
2022 Actual	1.6	2.0	0.5	29%
2023 MU	1.6	1.1	(0.5)	-29%
Total	**3.2**	**3.2**	**0.0**	**0%**

1483. In the 2022-2023 GTA, AltaLink was approved for forecasted capital expenditures for the Technology Refresh Program under Appendix 13-B3-07 to replace end-of-life and obsolescent computing infrastructure as required and on a routine basis to ensure technology is maintained in accordance with original equipment manufacturer standards and industry best practice.

1484. AltaLink will complete the forecasted scope of work and incur the forecasted expenditures in the 2022-2023 test period with a 0% variance.

10.4.9.7 Appendix 13-B3-08 Corporate and OT Network and Infrastructure Upgrade Variance

Table 10.4.9.7-1 – 2022-2023 Corporate and OT Network and Infrastructure Upgrade Business Case Capital Expenditures versus Approved ($M)

Year	22-23 GTA Approved	GTA Actual/Forecast	Forecast Variance	Variance %
	(A)	(B)	(B-A)	(B-A) / (A)
2022 Actual	0.7	0.5	(0.3)	-36%
2023 MU	1.5	1.8	0.3	18%
Total	**2.3**	**2.3**	**0.0**	**0%**

1485. In the 2022-2023 GTA, AltaLink was approved for forecasted capital expenditures for the Corporate and OT Network Infrastructure Upgrade Program under Appendix 13-B3-08 to ensure that AltaLink's corporate and OT networks and supporting infrastructure are positioned to continue providing critical services for daily business functionality in a reliable, cost effective, secure, and sustainable way. The program requires equipment upgrades and associated software and services enhancements across the corporate and operations network.

1486. AltaLink will complete the forecasted scope of work and incur the forecasted expenditures in the 2022-2023 test period with a 0% variance.

10.4.9.8 Appendix 13-B3-09 Learning Content Development Variance

Table 10.4.9.8-1 – 2022-2023 Learning Content Development Program Business Case Capital Expenditures versus Approved ($M)

Year	22-23 GTA Approved	GTA Actual/Forecast	Forecast Variance	Variance %
	(A)	(B)	(B-A)	(B-A) / (A)
2022 Actual	0.4	0.3	(0.1)	-22%
2023 MU	0.4	0.4	0.1	22%
Total	**0.7**	**0.7**	**0.0**	**0%**

1487. In the 2022-2023 GTA, AltaLink requested approval for the Learning Content Development Program under Appendix 13-B3-09 to ensure training content is compliant with current standards, legislation, and internal procedural best practices.

1488. In the 2022-2023 test period, AltaLink will complete the Learning Content Program as approved and is forecasting a 0% variance. AltaLink will have developed a total of 39 new or updated training courses and capability modules during the test period.

10.4.9.9 Net New and Carryover Initiatives

1489. In the 2022-2023 test period, AltaLink initiated three Net New Lifecycle Sustainment initiatives (Project Planning and Execution Tools and Upgrades, ProjectWise Consolidation and SAP Update).

1490. In the 2022-2023 test period, AltaLink has one project, Digital Signage Project, that has expenditures that carryover from the prior test period.

1491. AltaLink did not include or request approval for capital expenditures for these projects as part of the 2022-2023 GTA. However, AltaLink prudently incurred such expenditures and requests they be approved as filed.

1492. The business requirements for these projects were not known or planned at the time of the filing of the 2022-2023 GTA. AltaLink exercised management judgement to reprioritize approved capital expenditures to address higher priority business needs or re-sequence work to accommodate projects that were delayed.

10.4.9.9.1 Project Planning & Execution Tools and Upgrade

Table 10.4.9.9-1 – 2022-23 Net New Lifecycle Sustainment Initiatives – Project Planning & Execution Tools Upgrade Capital Expenditures ($M)

Year	22-23 GTA Approved	GTA Actual/Forecast	Forecast Variance	Variance %
	(A)	(B)	(B-A)	(B-A) / (B)
2022 Actual	0.0	0.7	0.7	100%
2023 MU	0.0	0.0	0.0	
Total	**0.0**	**0.7**	**0.7**	**100%**

1493. AltaLink uses Microsoft Project Portfolio Management (PPM) 2013 to manage the lifecycle of Security and IT Capital projects. The MS Project Server 2013 will be unsupported after April 11, 2023. The PPM version of the software that AltaLink uses has been superseded by new versions. It has become imperative to upgrade the tool to support the ongoing project management of IT capital projects. Without vendor support, AltaLink would not receive software updates and security patches, nor would AltaLink receive technical support from Microsoft to resolve software incidents.

1494. AltaLink had planned to transition to the project planning capability of the new Enterprise Resource Planning solution proposed in Appendix 13-B3-03 ERP Replacement Program in the 2022-2023 GTA. Following Decision 26509-D01-2022 in which the Commission did not approve AltaLink's proposed Enterprise Resource Planning Replacement Program, AltaLink upgraded the PPM tool that would be out of support in April 2023. As described in Section 10.4.3, AltaLink is not planning a new Enterprise Resource Planning solution until 2027. An upgrade to the tool is required to maintain the appropriate vendor support for security patching of the application.

1495. Forecast capital expenditures in the 2022-2023 test period are $0.7M. The cost breakdown is found in Table 10.4.9.9-2.

Table 10.4.9.9-2 – Project Planning & Execution Tools Upgrade Capital Expenditures ($M)

Description	2022 Actual	2023 Forecast
Labour – Internal	0.2	0.0
Labour – External	0.5	0.0
Software Costs	0.0	0.0
Hardware Costs	0.0	0.0
Total	**0.7**	**0.0**

10.4.9.9.2 ProjectWise Consolidation

Table 10.4.9.9-3 – 2022-2023 Net New Lifecycle Sustainment Initiatives – Projectwise Consolidation Project Capital Expenditures ($M)

Year	22-23 GTA Approved	GTA Actual/Forecast	Forecast Variance	Variance %
	(A)	(B)	(B-A)	(B-A) / (B)

2022 Actual	0.0	0.1	0.1	100%
2023 MU	0.0	0.5	0.5	100%
Total	**0.0**	**0.6**	**0.6**	**100%**

1496. In 2022, AltaLink initiated the ProjectWise Consolidation project to consolidate various document repositories, move off SharePoint sites that were becoming obsolete, leverage the document management capability of ProjectWise cloud application, and address 12 non-conformances with ARS CIP-010.

1497. The main objectives of the ProjectWise Consolidation project included:

- Migration and consolidation of existing document repositories to ProjectWise Cloud such as engineering return data documents, engineering drawing, workflows from ProjectWise on-premises, and data from other SharePoint sites wherever possible
- Improvement of ARS CIP-010 compliance addressing mitigation for the 12 non-conformances with CIP-010
- Reduction in software licensing cost and reduction of on premise data storage requirements from consolidation of the various document repositories

1498. Forecast capital expenditures in the 2022-2023 test period are $0.6M. The cost breakdown for ProjectWise Consolidation is found in Table 10.4.9.9-4.

Table 10.4.9.9-4 – ProjectWise Consolidation Capital Expneditures ($M)

Description	2022 Actual	2023 Forecast
Labour – Internal	0.02	0.23
Labour – External	0.06	0.27
Software Costs	0.00	0.00
Hardware Costs	0.00	0.00
Total	**0.08**	**0.50**

10.4.9.9.3 SAP Update

Table 10.4.9.9-5 – Net New Lifecycle Sustainment Initiatives – SAP Update Project Capital Expenditures ($M)

Year	22-23 GTA Approved	GTA Actual/Forecast	Forecast Variance	Variance %
	(A)	(B)	(B-A)	(B-A) / (B)
2022 Actual	0.0	0.1	0.1	100%
2023 MU	0.0	0.2	0.2	100%
Total	**0.0**	**0.3**	**0.3**	**100%**

1499. In 2022, the AltaLink SAP team identified several SAP related systems that require updates to maintain support and extend asset life. SAP AG vendor supplies corrections and improvements to its software via “support pack”. Keeping the software updated ensures increased security and avoids additional costs on support and sustainment activities. These updates include but are not limited to updating the SAP environment to the latest support package.

1500. AltaLink did not forecast expenditures for these SAP upgrades in the 2022-2023 test period due to the Appendix 13-B3-03 ERP Replacement Program business case which proposed a transition to a new Enterprise Resource Planning system. In order to prudently transition between

technologies, AltaLink expected to incur minimal SAP expenditures and capital additions in 2021-2022 because of the anticipated transition to the new Enterprise Resource Planning system. Following Decision 26509-D01-2022 in which the Commission did not approve AltaLink's proposed Enterprise Resource Planning Replacement Program, AltaLink initiated additional upgrades to its current SAP system to be able to maintain the required security and support patching.

1501. Forecast capital expenditures in the 2022-2023 test period are $0.3M. The cost breakdown for SAP Update Project is found in Table 10.4.9.9-6.

Table 10.4.9.9-6 – SAP Update Project Capital Expenditures ($M)

Description	2022 Actual	2023 Forecast
Labour – Internal	0.04	0.14
Labour – External	0.03	0.10
Software Costs	0.00	0.00
Hardware Costs	0.00	0.00
Total	**0.07**	**0.24**

10.4.9.9.4 Carryover – Digital Signage

Table 10.4.9.9-7 – 2022-2023 Carryover - Lifecycle Sustainment Initiatives – Digital Signage Capital Expenditures versus Approved ($M)

Year	22-23 GTA Approved	GTA Actual/Forecast	Forecast Variance	Variance %
	(A)	(B)	(B-A)	(B-A) / (B)
2022 Actual	0.0	0.3	0.3	100%
2023 MU	0.0	0.0	0.0	
Total	**0.0**	**0.3**	**0.3**	**100%**

1502. AltaLink initiated the Digital Signage project under the 2019-2021 Appendix 13-B3-01 Technology Refresh business case. This project was to provide new software and hardware to manage the digital signs (monitors) in the common areas of AltaLink's buildings (AltaLink Plaza, AltaLink East, ACC, Janet, Acheson, Red Deer, and Lethbridge) and to install additional screens in some areas where needed. The PCs driving the existing displays, and the existing displays themselves, had reached end-of-life. The new signage locations required network and power installation.

1503. The project, which was planned to complete in the prior test period, was delayed in 2021 due to COVID restrictions which limited access to the AltaLink facilities. The project was completed in 2022 when AltaLink's office buildings reopened in May of 2022.

10.4.10 Regulatory and Legislative Compliance Variances from 2022-2023 Forecast

1504. Overall, AltaLink forecasts a 25% variance in Regulatory and Legislative Compliance capital expenditures in the 2022-2023 test period.

10.4.10.1 Appendix 13-B4-01 Alberta Reliability Standards (Non-CIP) Variance

Table 10.4.10.1-1 – 2022-23 ARS Non-CIP Business Case Expenditures versus Approved ($M)

Year	22-23 GTA Approved	GTA Actual/Forecast	Forecast Variance	Variance %
	(A)	(B)	(B-A)	(B-A) / (A)

2022 Actual	0.5	1.1	0.6	120%
2023 MU	0.5	0.1	(0.4)	-87%
Total	**1.0**	**1.2**	**0.2**	**16%**

1505. In the 2022-2023 GTA, AltaLink was approved for forecasted capital expenditures for the Alberta Reliability Standards (Non-CIP) Program under Appendix 13-B4-01 to implement, improve, and maintain Power System (Non-CIP) Alberta Reliability Standards that are required by the AESO. AltaLink anticipated there would be a total of five Power System ARS (Non-CIP) projects of varying scope released by the AESO for implementation in the test period. However, the AESO has not released updates to five standards as expected, instead releasing only one update (COM 001 AB 3). AltaLink was able to implement the required update with operating expenditures. The updates originally anticipated are now planned for the next test period.

1506. AltaLink's capital expenditures in the 2022-2023 test period for the Alberta Reliability Standards (Non-CIP) program were required for the ongoing implementation of the FAC-008 and PRC-005 standards. In the 2019-2021 test period AltaLink initiated implementation of the FAC-008 and PRC-005 standards. At the time of filing the 2022-2023 GTA, AltaLink expected to complete implementation of both standards in the 2019-2021 test period. Ultimately, both projects were significantly more complex than expected and continued into the 2022-2023 test period. Estimating the implementation challenge for both standards has been extremely difficult given the complexity of the data required to be consolidated, analysed and tracked to adequately meet the defined compliance requirements in the standards.

1507. FAC-008-AB-3 is an Alberta Reliability Standard focusing on transmission Facility Ratings, the purpose of which is to ensure that the facility ratings used in the reliable planning and operation of the transmission system are determined based on technically sound principles and data. Each facility has an ID and is an entity comprised of all of the pieces of equipment that make up that facility and a calculated total of all of the individual ratings of each piece. When the rating of one piece changes, the rating of the facility may change. An accurate facility rating is a critical component in the determination of system operating limits.

1508. In January 2022, as part of the implementation of FAC-008-AB-3, AltaLink determined that a change in methodology would simplify the labour-intensive processes to create a facility ID, retrieve data extracts from SAP, build calculations, notifications, and compliance reports. This resulted in the AltaLink Ratings Management System tool (ARMS) which achieves the basic evidentiary compliance requirements of AESO notifications for facility rating changes

1509. AltaLink identified additional enhancements for improved compliance audit, evidence collection effectiveness and analysis as it worked to ensure the solution meets reporting requirements for AltaLink's facility ratings (FAC-008) including during the time between pre-energization and SAP data entry, as well as to capture the data and the changes to all facility ratings both to improve transmission system reliability and support the effectiveness of the process. The improved reporting will support compliance, including by providing the necessary evidence that AltaLink is in compliance and avoid requirements for incremental operating resources to maintain compliance. AltaLink is forecasting project completion in 2023.

1510. PRC-005-AB1-6 is an Alberta Reliability Standard with five requirements focussed on ensuring legal owners of transmission facilities document and implement programs for the maintenance of all associated protection systems, automatic reclosing, and sudden pressure relays affecting

the reliability of the transmission system. AltaLink anticipated completing the standards update in the 2019-2021 test period; however, implementation was also more complex than anticipated with the result that close out activities continued into the 2022-2023 test period.

1511. As described above, the 2022-2023 GTA included a variance to opening rate base driven by meeting the requirements of FAC-008 and PRC-005.

1512. Overall forecast capital expenditures for FAC-008 implementation over the 2019-2021 test period and the 2022-2023 test period total $2.1M ($1.1M and $1M respectively).

1513. Overall forecasted capital expenditures for PRC-005 implementation over the 2019-2021 test period and the 2022-2023 test period total $2.8M ($2.75M and $0.04M respectively).

1514. Implementation for FAC-008 and PRC- 005 will be completed in the 2022-2023 test period.

10.4.10.2 Appendix 13-B4-02 Capital Accounting Process Enhancements Variance

Table 10.4.10.2-1 – 2022-2023 Capital Accounting Process Enhancements Business Case Expenditures versus Approved ($M)

Year	22-23 GTA Approved	GTA Actual/Forecast	Forecast Variance	Variance %
	(A)	(B)	(B-A)	(B-A) / (A)
2022 Actual	0.4	0.0	(0.4)	-99%
2023 MU	0.3	0.2	(0.1)	-28%
Total	**0.7**	**0.2**	**(0.5)**	**-71%**

1515. In the 2022-2023 GTA, AltaLink was approved for forecasted capital expenditures for the Capital Accounting Process Enhancements project under Appendix 13-B4-02 to continue to improve AltaLink's capital accounting by automating and reducing duplication and manual effort wherever possible.

1516. The execution of the project in 2022 was delayed due to employee turnover in the Finance group. During the test period a significant number of Finance business resources left the team creating resource constraints for project implementation. AltaLink expects that new resources will be available for 2023, and process enhancements will be completed within the test period.

1517. One of the main process improvements identified for the test period was for Salvage Data Quality. In reviewing the scope of the project, the team identified the opportunity to consolidate the project as a use case under the Data Analytics & Management Program Business Case. The Finance project scope was integrated and delivered as the Salvage and Financial Asset Retirement Data Modernization project.

1518. AltaLink is forecasting a 71% variance to the Capital Accounting Process Enhancements Business Case due to the consolidation of scope with the Data Analytics project.

10.4.10.3 Net New and Carryover Initiatives

1519. In the 2022-2023 test period, AltaLink initiated one Net New Regulatory and Legislative Compliance initiative: the SAP Plant Maintenance Enhancements project.

1520. In the 2022-2023 test period, AltaLink completed one project in Regulatory and Legislative Compliance initiative that was a carry over for expenditures from the prior test period: EMS and Network Change Tool.

1521. AltaLink did not include or request approval for capital expenditures for these projects as part of the 2022-2023 GTA. However, AltaLink prudently incurred such expenditures and requests they be approved as filed.

1522. The business requirements for these projects were not known or planned at the time of filing the 2022-2023 GTA. AltaLink exercised management judgement to reprioritize approved capital expenditures to address higher priority business needs or re-sequence projects to accommodate projects that were delayed.

10.4.10.3.1 Net New – SAP Plant Maintenance (PM10) Enhancements

Table 10.4.10.3-1 – 2022-2023 Net New Regulatory and Legislative Compliance Initiatives – SAP Plant Maintenance Enhancements Project Expenditures ($M)

Year	22-23 GTA Approved	GTA Actual/Forecast	Forecast Variance	Variance %
	(A)	(B)	(B-A)	(B-A)/ (B)
2022 Actual	0.0	0.1	0.1	100%
2023 MU	0.0	0.3	0.3	100%
Total	**0.0**	**0.4**	**0.4**	**100%**

1523. AltaLink is obligated to coordinate planned outages with AESO in accordance with ISO Rule 306.4.[316] In 2021, AltaLink received written notice from AESO that it planned to implement a new interface for submission of planned outage details. In 2022, the AESO communicated a list of requirements to AltaLink which included:

- additional information fields for planned outage changes and cancellations;
- weekly planned outage submissions will be only permitted via the new AESO Control Room Operations System (CROW) application programming interface (API) or its web interface;
- all weekly data submissions must use new AESO's naming convention for power system elements and isolation devices;
- all power system elements within the outage zone must be listed individually; and
- all controllable devices within the outage zone must be listed individually in addition to isolation points.

1524. AESO required AltaLink to implement these requirements by April 2023. As noted in AltaLink's 2024-2025 Business Case, Appendix 13-B3-10 Integrated System Operations Software (ISOS), AltaLink completed a detailed assessment of the requirements and determined that the only requirement that could be automated using AltaLink's existing tools was the requirement for additional information fields for planned outage changes and cancellations.

1525. As a result of AltaLink's software limitations and large number of outages, AESO granted AltaLink an extension until 2025 to fully implement the requirements. In the interim, AltaLink agreed with AESO that AltaLink would automate additional information fields by April 2023. This enhancement is complementary and not duplicative to the Integrated Systems Operations Software project (Appendix 13-B3-10) business case and will interface with the ISOS solution to meet the full AESO requirements.

[316] Available from: https://www.aeso.ca/rules-standards-and-tariff/iso-rules/section-306-4-transmission-planned-outage-reporting-and-coordination/.

1526. In 2022, AltaLink initiated the SAP Plant Maintenance Enhancements project to automate additional information fields within its current PM10 application. This is the first step in meeting AltaLink's compliance obligation to the new ISO Rule 304.6.

1527. Forecast capital expenditures in the 2022-2023 test period are $0.4M. The cost breakdown for SAP Plant Maintenance Enhancement Project is found in Table 10.4.10.3-2.

Table 10.4.10.3-2 – SAP Plant Maintenance Enhancement Project Capital Expenditures ($M)

Description	2022 Actual	2023 Forecast
Labour – Internal	0.04	0.16
Labour – External	0.03	0.16
Software Costs	0.00	0.00
Hardware Costs	0.00	0.00
Total	**0.07**	**0.33**

10.4.10.3.2 Carryover – EMS and Netcom Change Tool

Table 10.4.10.3-3 – 2022-2023 Carryover – Regulatory and Legislative Compliance – EMS and Network Change Tool Expenditures ($M)

Year	22-23 GTA Approved	GTA Actual/Forecast	Forecast Variance	Variance %
	(A)	(B)	(B-A)	(B-A)/ (B)
2022 Actual	0.0	0.4	0.4	100%
2023 MU	0.0	0.0	0.0	
Total	**0.0**	**0.4**	**0.4**	**100%**

1528. In 2020, AltaLink initiated the EMS and Netcom Change Tool project under the 2019-2021 Appendix 13-B4-05 System Operations Productivity Enhancements business case. This project was to select and implement a change ticket and tracking tool to meet the requirements of both the EMS and NetCom teams which includes CIP and BCSI data storage compliance. Prior to project implementation, both the EMS and NetCom teams were using solutions that did not fully meet compliance requirements by ensuring all support people accessing the system were CIP certified.

1529. The project did not complete in 2021 due to delays in selecting a vendor and closing the procurement contracting process. The project was completed in 2022.

10.5 Facilities Capital Expenditures

1530. AltaLink's facilities capital expenditures are driven by ongoing lifecycle building maintenance, replacements, and upgrades to maintain its day-to-day facilities operations and to extend the useful life of AltaLink's facility assets. The capital expenditures are needed to provide a safe, healthy, and productive work environment for its employees and equipment and to comply with applicable building codes, fire codes, and Occupational Health and Safety Guidelines.

AltaLink's commitment to environmental stewardship provides further impetus to ensure our facilities are maintained and operated in a manner that reduces consumption of electricity, natural gas, and water as much as possible. AltaLink, in line with the utility sector across Canada, is proactively planning to reduce greenhouse gas emissions by upgrading its fleet of vehicles to high efficiency and where possible, zero emission vehicles. This will require infrastructure such as fast charging stations to be strategically located at all our facilities to support this growing portion of our fleet over time.

1531. The AltaLink head office in Calgary is composed of two leased low-rise buildings that are located adjacent to each other (together, the "Head Office"). The buildings are over 25 years old and combined provide approximately 165,018 square feet of workspace. The Head Office has maximum capacity of 712 workstations and is currently at 89% occupancy between the two buildings during designated office days. AltaLink has moved to a hybrid work schedule which allows employees to work from home on Monday and Friday unless required to be physically present in the office. AltaLink has designated mandatory office days of Tuesday to Thursday. These days are used for in-person team meetings to advance projects, support customer meetings, and perform day-to-day operations.

1532. AltaLink's facility team meets regularly with the building operator to assess projects that may be required to ensure the Head Office buildings continue to operate effectively and safely. These meetings provide AltaLink an opportunity to identify deficiencies that require maintenance to maintain overall building safety, security, and efficiency. Items assessed include but are not limited to mechanical, electrical, plumbing, physical security, landscaping (drainage), and the overall building envelope.

1533. 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 10.3.4-1 below captures the specifics of each leased Head Office building.

Table 10.5-1 - AltaLink leased Head Offices

Building	Building Age	Size (Square feet)	Occupancy
AltaLink Plaza	25 yrs	95,225	91%
AltaLink East	26 yrs	69,793	88%

1534. Even though peak occupancy occurs during Tuesday to Thursday, building expenditures are fixed for the seven-day period, as employees and contractors continue to be in the buildings Friday through Monday. This means that heating and other general building expenditures do not vary significantly with attendance.

1535. AltaLink has eight other field buildings/offices located throughout the province to position field staff and warehouse staff along with equipment and materials to provide optimum customer response in the north, central area, and south of the province. Refer to Table 10.5-2 below for a list of facilities. Of the eight buildings, two are leased and six are owned by AltaLink, for a total

208,293 square feet and a capacity of 186 workstations. The current occupancy of these eight field locations is approximately 86%. AltaLink's facilities team regularly inspects the buildings for deficiencies to determine requirements for 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.

Table 10.5-2 – AltaLink owned field offices and warehouses

Building	Type	Building Age	Size (Sq ft)	Occupancy
Acheson Warehouse	Owned	35 years	20,748	100%
Acheson	Owned	14 years	23,820	94%
Red Deer	Leased	8 years	11,200	69%*
Crossings	Owned	5 years	11,870	100%
Sunnybrook	Owned	5 years	12,300	100%
Lethbridge	Leased	4 years	10,000	63%*
Janet Service Center	Owned	1 year	75,000	85%
Langdon Warehouse	Owned	23 years	6,613	100%

*These locations have drop in desks for rotating staff.

1536. 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 and equipment. 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.

1537. AltaLink's general facility maintenance and general capital improvement projects are primarily driven by the need to extend the life of facilities' assets while delivering safe, secure, and efficient operations of the facilities. Projects are prioritized on a risk assessed basis. AltaLink determines whether the projects are required in the test period in accordance with the maintenance schedules of the large facilities' systems and advice of qualified maintenance service providers. Projects are planned to mitigate risk to the life of the asset and ensure the safety and security of the facilities.

1538. AltaLink's historical and forecast capital facilities project expenditures are shown in Table 10.5-3 below.[317] Individual capital projects with capital expenditures greater than $500k are identified separately from general facilities maintenance.

Table 10.5-3 – 2020-2025 Facilities Capital Expenditures Forecast ($M)

Description	2020 Actual	2021 Actual	2022 Actual	2023 MU	2024 Forecast	2025 Forecast
General Facilities Maintenance	$4.3	$3.5	$3.5	$3.3	$3.15	3.0
Acheson Bushing Building	$0.0	$0.0	$0.0	$1.4	$0.0	$0.0
Quonset- Field Support	$0.0	$0.0	$0.5	$0.0	$0.0	$0.0
Grand Total	**$4.3**	**$3.5**	**$4.0**	**$4.7**	**$3.15**	**$3.0**

Totals may not add due to rounding.

[317] Excludes Substation Buildings and Security cost categories which are now included in Appendix 13-B.

1539. The Commission approved two facilities capital projects with forecast expenditures greater than $500k in the 2022-2023 test period. Both of those projects will be completed by the end of 2023 as planned. AltaLink's application for this Test Period does not include any individual facilities projects with forecast capital expenditures over $500k. All of AltaLink's forecast capital expenditures for facilities are included in its General Facilities Maintenance business case.

1540. Generally, variations in year-to-year General Facilities Maintenance capital expenditures reflect the cyclical nature of upgrading and replacing facilities systems which are at end-of-life, or out of compliance with statutory requirements or codes.

1541. The forecasted facilities capital expenditures in the Test Period reflect the broadly stable capital expenditure requirements across all facilities. The 2024-2025 forecasted capital expenditures are $1.5M lower than the annual forecast capital expenditures for 2023. This reduction reflects the good working condition of all of AltaLink's major facility systems across our facilities during this period. General Facilities Maintenance will continue to focus on ongoing lifecycle building maintenance, small replacements, renovations, and upgrades to maintain its day-to-day transmission operations to provide a safe, secure and productive work environment for its employees.

1542. For a detailed explanation of the 2024-2025 forecast for General Facility Maintenance projects identified in Table 10.5-3 above, refer to the corresponding Table 10.5-4

Table 10.5-4 – 2020-2025 General Facility Maintenance Forecast Capital Expenditures ($M)

Description	2020 Actual	2021 Actual	2022 Actual	2023 Forecast	2024 Forecast	2025 Forecast
Head Office	$2.9M	$2.15M	$1.4M	$1.4M	$1.5M	$1.1M
Field Office Building Maintenance	$1.2M	$1.1M	$1.1M	$1.6M	$1.35M	$1.6M
Material Storage/Yards	$0.2m	$0.25M	$0.25M	$0.3M	$0.3M	$0.3M
Total Capital Expenditures	**$4.3M**	**$3.5M**	**$3.5M**	**$3.3M**	**$3.15M**	**$3.0M**

10.5.1 Actual/Approved Variance

1543. A summary of AltaLink's 2022-2023 facilities projects is provided in Table 10.5-5 below. Any variances are explained in further detail below.

Table 10.5-5 – 2022-2023 Facilities Capital Expenditures versus Approved ($M)

Description	2022-2023 Approved	2022-2023 Actuals/ MU	Variance (%)	Annual Actual Average 2022-2023
General Facilities Maintenance	$6.8	$6.8	0%	$3.4
Quonset – Field Support	$0.5	$0.5	0%	$0.25
Acheson Bushing Building Expansion	$1.4	$1.4	0%	$0.7
Grand Total	**$8.7**	**$8.7**	**0%**	**$4.35**

Totals may not add due to rounding.

1544. AltaLink will complete the facilities capital projects as forecast in the 2022-2023 test period:

- General Facilities Maintenance – The General Facilities Maintenance Program will be completed as forecast in Appendix 13-C1-01, General Facility Maintenance.[318] As a result of delays in material delivery, AltaLink shifted some expenditures forecasted for 2022 to 2023. AltaLink expects all work to be completed and expenditures incurred by the conclusion of 2023.
- Acheson Quonset Project – The Acheson Quonset Project was completed as forecast in Appendix 13-C1-04 Acheson Quonset Project.[319]
- Bushing Building Expansion – the Bushing Building Expansion was completed as forecast in Appendix 13-C1-03 Bushing Building Expansion.[320]

1545. In the 2024-2025 Test Period, AltaLink has not forecast any major capital build or upgrade projects. Primarily on this basis, the forecast annual average facilities capital expenditures for the 2024-2025 Test Period are 31% lower than the actual average facilities capital expenditures for the 2022-2023 test period.

[318] Exhibit 26509-X0038, Appendix 13-C1-01, pdf 2.
[319] Exhibit 26509-X0038, Appendix 13-C1-04, pdf 13.
[320] Exhibit 26509-X0038, Appendix 13-C1-03, pdf 8.

10.6 Transmission Inventory

10.6.1 Overview

1546. AltaLink owns and operates more than 13,000 km of transmission lines and over 300 substations and telecom sites, all of which form the critical assets of AltaLink's transmission system. Despite best efforts to maintain the system through preventative measures, there is always a risk of equipment failures resulting from factors outside of AltaLink's control. These factors range from changes in asset condition to failure due to external factors such as exposure to the operating environment and weather.

1547. As part of its efforts to mitigate the risks of equipment failure, AltaLink maintains emergency response plans, which are intended to support a well-planned, safe, and efficient return to normal operating conditions and are supported by AltaLink's Transmission Inventory.

1548. AltaLink, as a TFO in Alberta, is obligated, under the EUA, to operate and maintain the transmission system and related facilities in a manner that is consistent with safe, reliable and economic operation of the interconnected electric system. In addition, AltaLink complies with the standards and practices established by the AESO to assist the AESO to perform its duties, responsibilities and functions.

1549. AltaLink provides a yearly certification to the AESO. This certification is a required confirmation that AltaLink's transmission system and related facilities are being operated and maintained in accordance with good electric utility operating practice and that adequate spares and resources are available to respond in a timely fashion to system emergencies.

1550. Based on the uniform systems of accounts, inventory is categorized as follows:

- Plant equipment held for emergency in stores; and
- Plant materials and operating supplies.

1551. Plant equipment held for emergency in stores are non-rotational inventory classified as capital assets and as such, are included in Plant in service when acquired. Plant equipment held for emergency in stores are depreciated at the standard rate for the specific asset class. Example items include transformers, meters, current transformers/potential transformers, circuit breakers, regulators, conductors, and tower materials. Utilities must disclose the value of emergency stores in each asset class, if requested.[321]

1552. Plant materials and operating supplies are rotational and include the cost of materials purchased primarily for use in construction, operation, and maintenance purposes.

- Plant materials – materials used in construction of capital assets. This inventory is depreciated when the associated capital project they are used to construct is placed in service.
- Operating supplies – materials used in and expensed to general operations and maintenance. This inventory is not subject to depreciation.

1553. During the preparation of this section of the Application in response to the Commission's Directive 9 from the 2022-2023 GTA Decision[322] and AltaLink's 2024-2025 inventory forecast,

[321] EUB Bulletin 2006-25 Consensus Documents referred to in Bulletin 2006-25, General Instructions, Section 17. Plant Equipment Held For Emergency in Stores, pdf 19.
[322] Decision 26509-D01-2022, para 158, pdf 42.

AltaLink identified the need to reclassify $10.6M net of equipment between several USA codes to align with the Commission's Bulletin 2006-25 Consensus Document. AltaLink provides more details in relation to this re-classification at Section 10.6.8.1. AltaLink proposes this reclassification at the end of 2023. AltaLink's 2024-2025 forecasts is consistent with the reclassification.

10.6.2 Plant equipment held for emergency in stores

1554. AltaLink's plant equipment held for emergency in stores is a critical component to enable AltaLink to fulfill its obligations as required under the *EUA*. The lengthy delivery times and supply chain challenges, which continue to increase, highlight the critical importance of AltaLink's plant equipment held for emergency in stores.

1555. The risks associated with timely restoration from unplanned equipment failures have increased and, in some cases, AltaLink reviewed its inventory requirement analysis and identified changes in its inventory requirements, as discussed in **Appendix 13-D** and below.

1556. Without sufficient and readily available plant equipment held for emergency in stores, a failure of a critical transmission component could result in prolonged outages. This is a risk to the reliability of the AIES and to the customers that rely upon it.

1557. AltaLink's plant equipment held for emergency in stores covers materials and equipment across several different transmission asset classes for the transmission asset base including, lines, substations, telecommunications, and SCADA and security system requirements. Each asset class provides unique functionalities to keep the transmission system operational.

1558. Customers directly benefit from AltaLink's plant equipment held for emergency in stores that collectively:

- enables timely replacements of equipment identified as failed or identified to be imminently failing through AltaLink's Asset Health Monitoring program to reduce the likelihood of damage to equipment and property;
- minimizes duration of outages due to equipment failure;
- enables return to safe operations of energized assets after equipment failure or near failure; and
- restores asset functionality.

1559. Transmission system growth and continued aging of equipment from ongoing service causes sparing requirements to evolve over time. AltaLink maintains an inventory of plant equipment held for emergency in stores based on inventory analysis, risk analysis and sparing approach. AltaLink uses models to support the transformer and circuit breaker sparing risk assessments. AltaLink's sparing models include quantities within sparing families (i.e., similar ratings and configurations), sparing family failure rates calculated internally and compared against industry failure data and equipment replacement lead times based on procurement market data. Consistent with ATCO,[323] AltaLink analyzes its sparing analysis and determines the need to add plant equipment held for emergency in stores when existing plant equipment held for emergency in stores need replenishment or when the probability of having a spare available is less than 95%. The risk associated with each sparing family is analyzed to verify or adjust the

[323] Exhibit 27062-X0196, ATCO Electric 2-1 to 2-22 - TCM Business Cases, Appendix L - Transmission Emergency Apparatus Program business case, pdf 276.

number of spares required based on the consequence to the bulk electric system and customer load impacts.

1560. For protection and control equipment, an analysis is performed to ensure adequate spares are available based on current experience and failure rates.

1561. Transmission line structures and components spare equipment adequacy is assessed by reviewing historical maintenance records, industry best practices, historical major events, system exposure and adequacy of previous sparing levels, amongst other factors. As an example, for emergency inventory levels, AltaLink maintains a "storm readiness" approach and plans emergency spares based on the ability to restore a certain length of line consistent with recommendations published by the Centre for Energy Advancement through Technical Innovation (CEATI).[324]

1562. When spare equipment and material is procured, it is transported to its intended storage location and is stored and maintained until it is deployed in an emergency.

1563. For the 2024-2025 Test Period, AltaLink forecasts $2.4M and $9.4M of additional plant equipment held for emergency in stores for 2024 and 2025, respectively. This forecast is based on requirements identified for plant equipment held for emergency in stores and is detailed in **Appendix 13-D01**.

1564. AltaLink's 2019-2023 historical and 2024-2025 forecast plant equipment held for emergency in stores values are provided in Table 10.6.5-1 and Table 10.6.5-2 below.

10.6.3 Plant materials and operating supplies

1565. Plant materials are critical to AltaLink's capital program as these materials and equipment needed for construction must be available to meet construction schedules and planned in-service dates. Like all inventory types, the criticality of AltaLink's plant materials inventory becomes even more apparent given that many transmission system components have lengthy delivery times which have increased significantly during and after the COVID-19 pandemic and the subsequent supply chain challenges currently being experienced. Additionally, project delays due to insufficient materials may cause stand-by or mobilization and de-mobilization costs with construction partners resulting in overall increased project costs and timelines.

1566. Operating supplies support the execution of general operations and capital maintenance. These inventory items are not considered plant materials but share the same criticality to the completion of maintenance. Additionally, these materials have also seen an increase of general lead times to a lesser degree than plant equipment but still require the same level of management and planning.

1567. Given extended lead times to procure new material and equipment, AltaLink reviewed and adjusted the timing and sequencing of material and equipment procurement for effective delivery of the CRU program.

1568. To ensure materials are available to execute planned work, longer lead materials are being procured earlier in the planning cycle and in advance of the test period as required to ensure they arrive early enough in the test period for construction to be completed.

[324] Spare Parts Strategies for Transmission Line Assets, CEATI Report No. T113700-3237, March 2015 (membership required).

1569. AltaLink's plant materials and operating supplies are captured in USA 154. Plant materials are often ordered ahead of detailed engineering and are held in this inventory category until they are moved to a capital project for construction execution.

1570. AltaLink endeavours to minimize the amount of time materials and equipment sit in plant materials; however, this inventory can be impacted by changes in construction including schedule changes, cancellations and deferrals.

1571. When plant materials and operating supplies are procured, they are transported to their intended storage location and are stored and maintained until they are deployed either to a construction project for plant materials or are consumed as part of general operations and maintenance for operating supplies.

1572. For the 2024-2025 Test Period, AltaLink forecasts $0.8M of additional plant materials and operating supplies. This forecast is based on requirements identified for plant materials and operating supplies and is detailed in **Appendix 13-D01**.

1573. AltaLink's 2019-2023 historical and 2024-2025 forecast plant materials and operating supplies values are provided in Table 10.6.5-3 and Table 10.6.5-4 below.

10.6.4 Transmission Inventory Management Approach

1574. AltaLink's plant equipment held for emergency in stores includes materials and equipment that are being held for the purpose of ensuring emergency restoration and urgent repairs to the transmission system. Plant equipment held for emergency in stores includes transmission equipment such as instrument transformers (current transformers and potential transformers), circuit breakers, power transformers and voltage regulators, conductor, and transmission towers that are captured within the following USA codes: 353 Station equipment, 353.1 System communication & control, 354 Towers and fixtures, 355 Poles and fixtures, 356 Overhead conductors and devices, and 358 Underground conductors and devices. Pursuant to Section 17 of the Uniform System of Accounts, plant equipment held for emergency in stores are considered capital assets and are depreciable.

1575. Plant material and operating supplies includes materials and equipment used in construction and can include transmission equipment such as instrument transformers (current transformers and potential transformers), circuit breakers, power transformers and voltage regulators, and telecommunications and system control devices and are captured within USA code 154.

1576. Over the past three years there has been an average of 5,200 transactions per year for the use of materials and equipment to address emergency restoration, urgent repairs and corrective maintenance. This includes the replenishment of materials and equipment to plant equipment held for emergency in stores to maintain required emergency stores levels. When emergency materials or equipment is required from AltaLink's plant equipment held for emergency in stores, materials and equipment are removed from the emergency stores storage locations and deployed for use in the restoration of service. Subsequent to deployment and use, the residual financial value of the depreciated emergency stores asset is transferred to the new location.

1577. Depending on inventory level requirements, it may be necessary to procure equipment to replenish plant equipment held for emergency in stores that was consumed. While emergency sparing inventory levels generally stay consistent, some year over year fluctuations in actuals may occur because of changes in timing between the removal of the plant equipment held for emergency in stores and the timing of replenishment of plant equipment held for emergency in

stores based on procurement and delivery timing delays as well as removal of large materials and equipment such as transformers or transmission towers which have long lead times to replace.[325] An example of some current lead times are in Table 10.6.4-1 below. AltaLink is experiencing ever increasing lead times and currently most suppliers will not guarantee a lead time until a firm order is placed.

Table 10.6.4-1 – Current Equipment Lead Times February 2023

Equipment Type	2020-2021 Lead Times (Weeks)	2023 Lead Time (Weeks)
≤ 50 MVA Transformers	40-44	118
> 50 MVA Transformers	65	110-150
25 kV Dead tank Circuit Breakers	24	28
69 kV Dead tank Circuit Breakers	27	66+
138 kV Dead Tank Circuit Breakers	20	70
138 kV Live Tank Circuit Breakers	32	34
240 kV Live Tank Circuit Breakers	32-38	38-70
CTs/VTs Low Voltage	10-18	28-32
CTs/VTs High Voltage	32-36	65-75
Line Hardware	8-12	18-20
Conductor	12	50
Control Cable	8	16

1578. Table 10.6.5-1 and Table 10.6.5-2 below outline the plant equipment held for emergency in stores net additions for 2019-2025 by USA code. Table 10.6.5-1 below highlights notable transactions for years 2019, 2020, 2021, 2022, and 2023 per USA code for plant equipment held for emergency in stores.

1579. Expenditures on transmission inventory are initiated in two different ways. First, when equipment or material is consumed then replenished to maintain inventory levels. The second is that expenditures are initiated through the identification of new requirements based on sparing requirements, capital project plans or emerging business needs.

10.6.5 Transmission Inventory Capital Forecast

1580. AltaLink's historical 2019-2023 and forecast 2024-2025 plant equipment held for emergency in stores is shown in Table 10.6.5-1 and Table 10.6.5-2 below.

[325] Exhibit 26509-X0309, AML Rebuttal Evidence, para 1437, pdf 306-307.

Table 10.6.5-1 – Plant equipment held for emergency in stores inventory net additions 2019-2023 by USA code ($000)

USA Code	2019 Actual	2020 Actual	2021 Actual	2022 Actual	2023 MU *
353 - Station equipment	2,973	(970)	(710)	3,249	1,760
354 - Towers and fixtures	2,374	3,868	(164)	4,737	1,097
356 - Overhead conductors and devices	74	758	(143)	(264)	(199)
Total	**5,421**	**3,656**	**(1,018)**	**7,722**	**2,658**

*Does not include the $10.6M of reclassification.

Table 10.6.5-2 – Plant equipment held for emergency in stores inventory forecast net additions 2024-2025 by USA code ($000)

USA Code	2024 Forecast	2025 Forecast
353 - Station equipment	975	8,295
353.1 – System communication & control	150	150
354 - Towers and fixtures	750	950
355 – Poles and fixtures	0	0
356 - Overhead conductors and devices	0	0
358 - Underground conductors and devices	500	0
Total	**2,375**	**9,395**

1581. AltaLink's historical 2019-2023 and forecast 2024-2025 plant materials and operating supplies is shown in Table 10.6.5-3 and Table 10.6.5-4 below.

Table 10.6.5-3 – Plant materials and operating supplies inventory net additions 2019-2023 by USA code ($000)

USA Code	2019 Actual	2020 Actual	2021 Actual	2022 Actual	2023 MU *
154 - Plant Materials and Operating Supplies	1,494	3,123	940	2,955	2,876

Table 10.6.5-4 – Plant materials and operating supplies inventory forecast net additions 2024-2025 by USA code ($000)

USA Code	2024 Forecast	2025 Forecast
154 - Plant Materials and Operating Supplies	400	400

10.6.6 Capital Forecast Trend

10.6.6.1 Plant Equipment held for emergency in stores

1582. AltaLink forecast a 4.2% increase in 2024 plant equipment held for emergency in stores values over 2023MU followed by a 15.8% increase in 2025. Forecast capital expenditures are shown in Table 10.6.6.1-1 below. The forecasted increase in 2024 is driven by additions in towers and fixtures, underground conductors and devices, station equipment, and system communication and control. The forecasted increase in 2025 is primarily driven by purchase of two additional power transformers, one to replenish a large 400 MVA power transformer previously held in spares and deployed in 2017 and the second to purchase a new 42 MVA power transformer emergency spare to support the installed fleet. Other forecasted increases in 2025 are related to station equipment, system communication and control, and towers and fixtures additions. The major expenditure variances for plant equipment held for emergency in stores and the forecast for the Test Period, as described in Section 10.6.8 below.

Table 10.6.6.1-1 - Plant equipment held for emergency in stores Capital Expenditure Variance (%)

Description	2024 Forecast	2025 Forecast
Total Capital Expenditures	4.2%	15.8%

10.6.6.2 Plant materials and operating supplies inventory

1583. AltaLink forecasts a 1.4% increase in 2024 plant materials and operating supplies values over 2023MU followed by another 1.4% increase in 2025. Forecast capital expenditures are shown in Table 10.6.6.2-1 below. The forecast increase in both 2024 and 2025 is driven by the need to purchase station equipment planned for use in construction in 2024 and 2025 earlier than normal given increasing lead times. This need also occurred in 2023 and is recognized in AltaLink's 2023MU. It is unknown if earlier than normal procurement of materials and equipment for the future test periods of 2026-2027 will be required in 2024 and 2025. This will be determined based on market conditions and manufacturer lead times during the 2024-2025 Test Period and any resulting variances will be addressed in future applications.

Table 10.6.6.2-1 – Plant materials and operating supplies Capital Expenditure Variance (%)

Description	2024 Forecast	2025 Forecast
Total Capital Expenditures	1.4%	1.4%

10.6.7 Transmission Inventory Actual/Approved Variances

1584. AltaLink replenishes spares that are consumed through unplanned work and forecasts for future sparing requirements. While there are many transactions that occur every year as material is moved in and out of plant equipment held for emergency in stores, it is important to note that AltaLink does not forecast for the movement of all materials. Instead, forecasts are assessed for major equipment and significant transactions across the impacted USA codes and highlights the procurement of new plant equipment held for emergency in stores and plant materials and operating supplies in the variance tables below.

1585. In 2022, AltaLink responded to a mutual aid request from BC Hydro for a 500 kV live tank circuit breaker to replace a failed unit at a critical BC Hydro site. AltaLink sold BC Hydro a 500 kV breaker from its plant equipment held for emergency in stores and ordered a new replacement unit under an existing materials supply agreement with all additional costs associated with engineering, shipping and purchasing being borne by BC Hydro. Once received, AltaLink will

have a new 500 kV live tank circuit breaker in its plant equipment held for emergency in stores with no expenditures borne for this unit by AltaLink or its customers.

1586. Refer to Table 10.6.7-1 to Table 10.6.7-7 for the significant transmission inventory for 2019-2022 and the forecast for 2023-2025.

Table 10.6.7-1 - USA 353 Station Equipment explanation of major transactions completed in 2019-2022 and forecast for 2023-2025 ($000)

Year	Net Additions	Explanation
2019	3,241	Assessed and replaced equipment spares issued from emergency stores due to equipment failures primarily consisting of: Addition of a 240/138 kV 200 MVA transformer spare. Addition of a 138/6.9 kV 33 MVA transformer spare.
2020	(970)	Use of a 138/69 kV 42 MVA transformer to address emergency restoration or urgent repair.
2021	(710)	Use of a 138/25 kV 42 MVA transformer to address emergency restoration or urgent repair.
2022	3,249	Replacement of a 138/25 kV 42 MVA transformer spare to replace one used in 2021. Replacement of a 138/69 kV 50 MVA transformer spare to replace one used in 2020. Addition of a 69/25 kV 25 MVA transformer spare to ensure adequate emergency stores inventory. Sale of a 500 kV Breaker to BC Hydro for an urgent restoration. Use of a 138/4.16 kV 25 MVA transformer to address emergency restoration or urgent repair. Net addition to provide spares for a new model of revenue meters.
2023	1,760	Replacement of 500 kV Breaker sold to BC Hydro in 2022. Addition of breakers required for delivery of CRU program in 2023 and 2024.
2024	975	Addition of breaker parts, bushings, switches, and capacitors to ensure adequate support for emergency restoration.
2025	8,295	Replacement of 240/138 kV 400 MVA transformer spare that was put into service in 2017, see **Appendix 13-D01**. Addition of a 138/25 kV 42 MVA transformer spare to ensure adequate emergency stores inventory, see **Appendix 13-D01**. Addition of breaker parts, bushings, switches, and capacitors to ensure adequate support for emergency restoration.

Table 10.6.7-2 - USA 353.1 System communication & control explanation of major transactions forecast for 2024-2025 ($000)

Year	Net Additions	Explanation
2024	150	Addition of new spares to replace obsolete spares.
2025	150	Addition of new spares to replace obsolete spares.

Table 10.6.7-3 - USA 354 Towers and fixtures explanation of major transactions executed in 2019-2022 and forecast for 2023-2025 ($000)

Year	Net Additions	Explanation
2019	2,374	Receipt of emergency spare transmission towers to ensure adequate emergency stores inventory for 240 kV and 500 kV tower types not previously spared.
2020	3,868	Receipt of emergency spare transmission towers to ensure adequate emergency stores inventory for 240 kV and 500 kV tower types not previously spared.
2021	0	No significant transactions.
2022	4,737	Use and replacement of emergency stores tower structures due to equipment failures and forecast replacements. The additions for replacement of emergency spare tower structures is a continuation of the order partially received in 2019 and 2020. The towers forecast for receipt in 2021 have been delayed due to supply chain disruptions. Partial delivery was received in 2022, and the order is now anticipated to be complete in 2023.
2023	1,097	Completion of the order that was partially received in 2019, 2020, 2022, and 2023.
2024	750	Addition of tower hardware spares to ensure the right materials are available for emergency restoration.
2025	950	Addition of tower hardware spares to ensure the right materials are available for emergency restoration.

Table 10.6.7-4 – USA 355 Poles and fixtures explanation of major transactions forecast for 2024-2025 ($000)

Year	Net Additions	Explanation
2024	0	Nothing planned or forecasted at this time.
2025	0	Nothing planned or forecasted at this time.

Table 10.6.7-5 – USA 356 Overhead conductors and devices explanation of major transactions executed in 2019-2022 and forecast for 2023-2025 ($000)

Year	Net Additions	Explanation
2019	74	AltaLink used and replaced materials and equipment due to power system requirements.
2020	759	Replacement of underground conductor utilized in a cable failure replacement to restore the level of emergency stores materials.
2021	(143)	AltaLink used some emergency stores to address equipment failures without the chance to replenish the inventory.
2022	(264)	AltaLink used some emergency stores to address equipment failures without the chance to replenish the inventory.
2023	(199)	AltaLink will use some emergency stores to address equipment failures.
2024	0	Nothing planned or forecasted at this time.
2025	0	Nothing planned or forecasted at this time.

Table 10.6.7-6 – USA 358 Underground conductors and devices explanation of major transactions forecast for 2024-2025 ($000)

Year	Net Additions	Explanation
2024	500	Replenishment and addition of underground conductor to ensure adequate spares for emergency restoration.
2025	0	Nothing planned or forecasted at this time.

Table 10.6.7-7 – USA 154 Plant materials and operating supplies explanation of major transactions executed in 2019-2022 and forecast for 2023-2025 ($000)

Year	Net Additions	Explanation
2024	400	Additional substation materials and supplies to ensure CRU project execution.
2025	400	Additional substation materials and supplies to ensure CRU project execution.

10.6.8 2022-2023 Variances

10.6.8.1 Plant Equipment held for emergency in stores

1587. AltaLink provides an overview of its plant equipment held for emergency in stores in Table 10.6.8-1 below and includes the variances of the reasonably incurred actual costs and the basis for change from the initial plant equipment held for emergency in stores for the 2022 actuals and 2023 MU.

Table 10.6.8-1 – 2022-2023 Plant equipment held for emergency in stores capital net additions versus forecast ($000)

USA Code	2022 Forecast	2022 Actual	2022 Forecast-Actual Variance	2023 Forecast	2023 MU	2023 Forecast-MU Variance
353 – Station equipment	714	3,249	2,535	0	1,760	1,760
354 – Towers and fixtures	0	4,737	4,737	0	1,097	1,097
356 – Overhead conductors and devices	0	(264)	(264)	0	(199)	(199)
Total	**714**	**7,722**	**7,008**	**0**	**2,658**	**2,658**

1588. The 2022 actual capital net additions were a $7.01M increase over forecast. This was primarily due to the following which was not anticipated at the time of the forecast:

- 69/25 kV 25 MVA TX forecasted at $0.7M and the actual cost incurred was $1.1M based on market conditions, $0.4M;
- replenished two transformers that were required to be put into service in 2020 and 2021 to address emergency outages not forecast at the time of filing the 2022-2023 GTA, $2.7M;
- a 500 kV breaker was sold to BC Hydro for emergency restoration not anticipated at the time of the previous forecast, ($0.3M);
- requirements to spare a new model of serialized revenue meters, $0.3M;
- a spare transformer was used for emergency restoration and not replaced in the year, ($1M);
- AltaLink received the majority of tower steel spares in 2022 previously on order and delayed from expected delivery in 2019. Delays arose due to market conditions impacted, in part, by the pandemic. As well, drawing deficiencies were unexpectedly identified during part manufacturing causing changes in delivery timing and costs. All towers were originally anticipated to have been received in 2019. In 2022, AltaLink received the majority of remaining tower steel spares, $4.7M; and
- emergency spare underground conductor was required to be issued for emergency restoration after a cable failure, ($0.3M).

1589. The 2023MU capital net additions are currently forecast $2.7M higher than previously forecast. This is the result of the following primary impacts:

- addition of breakers required for delivery of CRU program in 2023 and 2024, $1.5M;
- replenishing the 500 kV breaker provided to BC Hydro in 2022, $0.3M;
- forecast completion of the tower steel order described above, originally anticipated for delivery in 2019, $1.4M; and
- emergency spare conductor required for emergency restoration after a cable failure, ($0.2M).

1590. The $10.6M reclassification of equipment between USAs was due to AltaLink identifying that a portion of its materials and supplies inventory are non-rotational in nature and should be properly classified as “plant equipment held for emergency” as set out in the USA. These emergency spares include circuit breakers, regulators, conductors, and tower materials, and are separate from the larger capital spares which include transformers, current transformers, potential transformers, etc.

1591. There was an undercapitalization because of the misclassification of equipment between USA codes. AltaLink is not proposing any historical correction to this error.

1592. AltaLink proposes to reclassify $16.3M from materials and supplies inventory to plant equipment held for emergency at the end of 2023. Also, as a result of this review, AltaLink found that certain materials for capital projects have been included in plant equipment held for emergency previously and are rotational in nature, as they are deployed to capital projects in less than one year. AltaLink proposes to reclassify $5.7M from plant equipment held for emergency to materials and supplies inventory at the end of 2023.

1593. AltaLink requests Commission approval of the net transfer of $10.6M from materials and supplies inventory to plant equipment held for emergency ($16.3M less $5.7M), to comply with USA requirements set out in AUC Bulletin 2006-25. Refer to MFR Schedule 10-2, Schedule of Transmission Property, Plant & Equipment.

10.6.9 Transmission Inventory Business Cases

1594. AltaLink’s Transmission Inventory business case is provided in **Appendix 13-D**. In the business case, AltaLink has set out its forecast plant equipment held for emergency in stores and plant materials and operating supplies additions. This business case includes both replenishment of existing inventory and additions to inventory balances. Refer to **Appendix 13-D**.

10.7 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 10-4A Schedule of Transmission Capital Expenditures by Project

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

1595. 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

1596. For purposes of this GTA, AltaLink has revised its Necessary Working Capital requirements and provided its updates as **Appendix 7**, Lead/Lag Study.

1597. The previous Lead/Lag Study was undertaken by AltaLink in 2021 (based on 2020 actual data).[326] To ensure that up-to-date cash working capital requirements were captured for the 2024-2025 Test Period, AltaLink completed a new Lead/Lag Study in 2022 (based on 2021 actual data).

1598. The results of this study demonstrate a slight increase to the cash working capital requirement. Utilizing the 2022 Lead/Lag Study days, as compared to the 2021 Lead/Lag study days, results in an overall decrease to the necessary working capital of $0.9M in 2024 versus that approved for 2023, and a decrease of $0.5M in 2025 versus the 2024 forecast, with an average decrease of $0.7M per year over the Test Period. For a detailed breakdown, refer to Table 11.2-2 below. The working capital allowance for a net lag is added to Rate Base and the equity return and equity ratio are applied to provide AltaLink with a reasonable opportunity to recover the cost of the related investor-supplied funding.

1599. 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, GST remittances, interest payments, equity distributions, retained earnings and depreciation. The methodology utilized for the 2022 Lead/Lag Study is consistent with the methodology utilized in all AltaLink's previous Lead/Lag studies and was most recently approved in AUC Decision 27174-D01-2022.[327]

1600. The working capital allowance represents the average amount of capital necessary, beyond that required for 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.

1601. AltaLink's 2022 Lead/Lag Study analyzed transactions from January 2021 through December 2021 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).

1602. 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 and a net lead position is subtracted from Rate Base.

[326] Exhibit 26509-X0002, AML 2022-2023 GTA Application, para 963, pdf 291.
[327] Decision 27174-D01-2022, AltaLink Management Ltd. 2022-2023 General Tariff Application and 2020 Direct Assigned Capital Deferral Account Reconciliation Application Compliance Filing, Appendix 2, Direction 53, pdf 24.

1603. 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 2021 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 2021 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 (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 (refer to MFR Schedule 11-2).

1604. The resulting net (lead)/lag days from the 2022 Lead/Lag Study are summarized and compared to the 2021 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

1605. The summary in Table 11.2-1 below sets out the Lead/Lag Study Results (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			
	2022 Study	**2021 Study**	**Difference**
Operating Expenses	29.0 days	30.4 days	(1.4) days
Debt Interest Payments	(46.4) days	(47.8) days	1.4 days
Retained Earnings & Depreciation	44.2 days	44.3 days	(0.1) days
Distributions & Income Tax Payments	(0.8) days	(0.5) days	(0.3) days
Goods & Services Tax	(0.4) days	0.9 days	(1.3) days

1606. The results summarized in Table 11.2-1 illustrate that there are several changes in Lead/Lag Study components when comparing the 2022 and 2021 Lead/Lag Study results. As noted in Section 11.1, these changes result in an overall average decrease to the necessary working capital of $0.7M per year in the Test Period.

1607. The changes in necessary working capital are noted in the table below, along with the related variance explanations.

Table 11.2-2 – Working Capital Dollar Impact of Changes in Lead/Lag Study

Average Increase (Decrease) in Necessary Working Capital ($M) per year			
	2024 Forecast vs 2023 Approved - Variance	**2025 Forecast vs 2024 Forecast - Variance**	**Test Period Average - Variance**
Operating Expense	0.0	0.2	0.1
Distributions & Income Tax Payments	(0.1)	0.0	(0.1)
Good & Services Tax	(0.3)	0.0	(0.1)
Debt Interest Payments	(1.0)	(0.1)	(0.6)
Retained Earnings & Depreciation	(1.6)	1.5	(0.0)
Unamortized Computer System Costs *	1.3	(3.7)	(1.2)
Unamortized Financing Fees *	1.2	1.6	1.4
Materials and Supplies *	(0.4)	(0.0)	(0.2)
Total (may not add due to rounding)	**(0.9)**	**(0.5)**	**(0.7)**

* Lead/Lag days are not applied to these three components in determining necessary working capital requirements.

1608. **Operating Expenses (net of revenue offsets)** – Overall, the working capital requirement for operating expenses has increased, 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 2021 Report of Finances & Operations. There was a decrease in weighting on expenses with longer lag times, thereby resulting in an increase to the working capital requirement. This is because the shorter an expense lag, or the longer an expense lead, the more time AltaLink is financing the expenses until the corresponding revenue is received.

1609. **Equity Distributions & Income Tax Payments** – 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 quarterly equity distributions paid to the partners. As a result, the equity distribution lag is also applied to the income tax payments component. The necessary working capital requirement for equity distributions and income tax payments is generally consistent, with an average decrease of $0.1M per year in the Test Period.

1610. **Goods & Services Tax Remittances** – The necessary working capital requirement for GST is generally consistent (average decrease $0.1M per year in the Test Period) due to consistently being in a remittance position in 2021 as compared to 2020. In the previous studies, 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.

1611. **Interest Payments** – The decrease in the working capital requirement for interest payments is due to an increased payment lag on long-term debt interest. The longer the period between when interest expenses are incurred and payments are made, the greater the overall lag for those payments, and the shorter the amount of time that AltaLink is financing the interest expense for until the corresponding revenue is received.

1612. **Retained Earnings & Depreciation** – These items are assigned a zero-expense lag. The revenue lag in the 2022 study is 44.2 days which is a slight decrease in revenue days compared to the 2021 study of 44.3 days. The average increase in necessary working capital for the Test Period is $0.0M per year.

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

1613. 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

1614. 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	2021 Actual	2022 Actual	2023 MU	2024 Test Year	2025 Test Year
Labour	22.0	20.9	21.9	22.7	23.5
Contracted Manpower	5.4	6.0	6.0	6.3	6.5
Other GOE	18.7	20.2	22.1	23.4	22.6
Total	**46.1**	**47.2**	**50.0**	**52.4**	**52.6**

25.1.1.1 Labour

Table 25.1.1.1-1 – Administrative and General - Labour Expenses ($M)

Expense	2021 Actual	2022 Actual	2023 MU	2024 Test Year	2025 Test Year
920 – Admin & General	14.8	14.0	13.8	14.4	14.9
926 - Employee Pensions	3.3	3.3	3.5	3.7	3.8
934 - IT General & Admin	3.7	3.4	4.3	4.5	4.6
935 – General Plant	0.2	0.3	0.2	0.2	0.2
Labour	**22.0**	**20.9**	**21.9**	**22.7**	**23.5**

Table 25.1.1.1-2 – Administrative and General - Labour Forecast Increase ($M)

Forecast Increase	2023 MU versus 2022 Actual	2024 Test Year versus 2023 MU	2025 Test Year versus 2024 Test Year	2 Test Year Average
Inflation	0.9	0.8	0.8	0.8
Other	0.1	0.1	(0.0)	0.0
Total	**1.0**	**0.9**	**0.8**	**0.8**

1615. A&G labour is forecast to increase by $1.0M from 2022 to 2023 primarily due to escalation and filling vacancies which were difficult to close as a result of the COVID-19 pandemic and the subsequent tight labour market. A&G labour is also on average for the Test Period forecast to increase by $0.8M primarily due to escalation.

1616. Refer to Section 25.2.1 for a detailed description of A&G labour forecasts for USA code 920, Section 25.2.13 for USA code 934 and Section 25.2.14 for USA code 935.

Table 25.1.1.1-3 – Administrative and General - FTE Year End Summary

Operating FTEs	2021 Actual	2022 Actual	2023 MU	2024 Test Year	2025 Test Year
920 – Admin & General	75.8	78.0	80.0	80.0	80.0
934 - IT General & Admin	25.0	22.0	31.0	31.0	31.0
935 – General Plant	2.0	2.0	2.0	2.0	2.0
Total Year End FTEs	**102.8**	**102.0**	**113.0**	**113.0**	**113.0**

1617. AltaLink is forecasting FTEs to remain stable in the Test Period with 113.0 operating FTEs. At the end of 2022, there were 2.0 FTE vacancies in USA account 920 and 9.0 in USA Account 934. The vacancies have or will be filled in 2023. The delta in FTEs from 2022 to 2023 is described in **Appendix 2-B** and corresponding job descriptions and business need in **Appendix 2-D**.

1618. 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	2021 Actual	2022 Actual	2023 MU	2024 Test Year	2025 Test Year
923 - Outside Services Employed	2.3	3.1	3.2	3.2	3.3
934 - IT General & Admin	2.1	1.9	1.8	2.0	2.1
935 – General Plant	0.9	1.0	1.0	1.1	1.1
Contracted Manpower	**5.4**	**6.0**	**6.0**	**6.3**	**6.5**

Table 25.1.1.2-2 – Administrative and General - Contracted Manpower Increase ($M)

Forecast Increase	2023 MU versus 2022 Actual	2024 Test Year versus 2023 MU	2025 Test Year versus 2024 Test Year	2 Test Year Average
Inflation	0.1	0.1	0.1	0.1
Other	(0.1)	0.1	0.1	0.1
Total	**(0.0)**	**0.2**	**0.2**	**0.2**

1619. 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 25.2.4 for added detail). Increase in 934 – IT General and Administration is mainly due to higher costs for third party services such as service desk and other back office activities. In 935 – General Plant, costs increased in 2022 due to enhanced cleaning and maintenance practices as employees returned to the office following the COVID-19 pandemic.

1620. Refer to Section 25.2.4 for a detailed description of Contracted Manpower forecasts for USA code 923, Section 25.2.13 for USA code 934 and Section 25.2.14 for USA code 935.

25.1.1.3 Other GOE

Table 25.1.1.3-1 – Administrative and General Expenses ($M)

Expense	2021 Actual	2022 Actual	2023 MU	2024 Test Year	2025 Test Year
921 - Office Supplies	1.0	1.5	1.5	1.6	1.6
924 - Insurance	5.1	5.6	6.3	6.6	7.1
925 - Injuries & Damages	0.0	0.0	1.0	1.0	1.0
928 - Commission	1.1	1.1	0.5	1.4	0.0
930.1 - General	0.0	0.0	0.0	0.0	0.0
930.2 - Misc. General	1.2	0.9	1.2	1.2	1.2
931 - Rent Expense	0.1	0.1	0.1	0.1	0.1
931.1 - Head Office Rent	1.2	1.3	1.3	1.3	1.3
934 - IT General & Admin	5.6	6.8	6.9	6.9	6.9
935 - General Plant	3.3	2.9	3.3	3.3	3.4
Other GOE	**18.7**	**20.2**	**22.1**	**23.4**	**22.6**

Table 25.1.1.3-2 – Administrative and General - Other GOE Forecast Increase ($M)

Forecast Increase	2023 MU versus 2022 Actual	2024 Test Year versus 2023 MU	2025 Test Year versus 2024 Test Year	2 Test Year Average
Inflation	0.2	0.5	0.5	0.5
Other	1.7	0.8	(1.3)	(0.2)
Total	**1.9**	**1.3**	**(0.8)**	**0.3**

1621. O&M Other GOE is forecast to increase by $1.9M from 2022 to 2023 mostly due to escalation, higher injuries and damages, general plant costs and insurance costs (refer to Section 25.2.5 as well as **Appendix 3** for further details). AltaLink has forecast an average annual $0.3M increase due to escalation in O&M Other GOE, which is offset by the change in hearing costs from 2024 to 2025.

1622. 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

1623. 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 commercial and government relations;

- 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

1624. USA 920 is wholly attributable to labour expenses. 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. As per the following Table 25.2.1-1, consistent with the AUC's direction pursuant to AML-AUC-2021AUG20-066, AltaLink has added the following forecasts to this 2024-2025 GTA.[328]

[328] AUC Decision 26509-D01-2022 Corrigenda, Directive No. 3, para 112.

Table 25.2.1-1 – USA 920 – Administrative and General Salaries by Department ($M)

Expense	2021 Actual	2022 Actual	2023 MU	2024 Test Year	2025 Test Year
CEO	3.1	2.3	1.7	1.7	1.8
CFO	4.5	4.1	4.1	4.3	4.4
Commercial & Govt Relations	0.6	0.8	1.1	1.1	1.1
Customer Service	0.6	0.7	0.6	0.7	0.7
External Engagement	0.7	0.7	0.8	0.8	0.9
Human Resources	0.7	0.7	0.8	0.9	0.9
Law, Regulatory & Compliance	4.6	4.7	4.7	4.9	5.1
Total	**14.8**	**14.0**	**13.8**	**14.4**	**14.9**

Table 25.2.1-2 – USA 920 - Administrative and General Salaries Labour Forecast Increase ($M)

Forecast Increase	2023 MU versus 2022 Actual	2024 Test Year versus 2023 MU	2025 Test Year versus 2024 Test Year	2 Test Year Average
Inflation	0.6	0.5	0.5	0.5
Other	(0.7)	0.0	(0.0)	0.0
Total	**(0.1)**	**0.5**	**0.5**	**0.5**

1625. Administrative and General Salaries are forecast to stay flat in 2023, mainly due to new employees with lower average salaries partially offset by inflation. In 2024 and 2025, Administrative and General Salaries are forecast to increase due to inflation.

1626. 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

	2021 Actual	2022 Actual	2023 MU	2024 Test Year	2025 Test Year
CEO	5.0	4.0	4.0	4.0	4.0
CFO	25.2	29.0	29.0	29.0	29.0
Commercial & Govt Relations	5.0	5.0	6.0	6.0	6.0
Customer Service	5.0	3.0	4.0	4.0	4.0
External Engagement	5.0	5.0	5.0	5.0	5.0
Human Resources	4.0	4.0	5.0	5.0	5.0
Regulatory/Legal	26.6	28.0	27.0	27.0	27.0
Total Year End FTEs	**75.8**	**78.0**	**80.0**	**80.0**	**80.0**

1627. 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. In the following sections 25.2.1.1 to 25.2.1.8, consistent with the AUC's direction pursuant to AML-CCA-2021JUN25-001(b), AltaLink has added the following FTE information. Consistent with the AUC's direction pursuant to AML-CCA-2021JUN25-002(a) AltaLink has also added key activity volumes to this 2024-2025 GTA.[329]

1628. The departments in USA 920 reflect the current organizational structure and are:

- Corporate Finance;
- Human Resources;
- Customer Service;
- Communications and External Engagement;
- Commercial & Government Relations;
- Law, Regulatory and Compliance; and
- CEO.

25.2.1.1 Corporate Finance

1629. The Corporate Finance group departments forecasts 29 operating FTEs in USA 920, remaining at 2022 and 2023 GTA approved and forecast levels as shown in Table 25.2.1.1-1 and Table 25.2.1.1-2 below.

Table 25.2.1.1-1 – USA 920 - Administrative & General – CFO FTEs

	2021 Actual	2022 Actual	2023 MU	2024 Test Year	2025 Test Year
Sr Management	2.0	2.0	2.0	2.0	2.0
Management	7.0	7.0	7.0	7.0	7.0
Admin	1.6	2.0	2.0	2.0	2.0
Auditor	2.0	3.0	3.0	3.0	3.0
Specialist	4.6	6.0	6.0	6.0	6.0
Analyst	6.0	7.0	7.0	7.0	7.0
Payroll	2.0	2.0	2.0	2.0	2.0
Total Year End FTEs	**25.2**	**29.0**	**29.0**	**29.0**	**29.0**

[329] Exhibit 26509-X0208, AUC Ruling on Further and Better IRs - Appendix A CCA Motion, pdf 1 and pdf 7.

Table 25.2.1.1-2 – USA 920 – Corporate Finance FTEs by Team

	2022 Approved	2023 Approved	2024 Test Year	2025 Test Year
Financial Reporting & Tax	6	6	6	6
Capital Accounting	0	0	0	0
General Accounting	4	4	4	4
Financial Planning	4	4	4	4
Financial Systems	1	1	1	1
Payroll	3	3	3	3
Senior Accounting Administration & Executive assistant	3	3	3	3
Treasury	3	3	3	3
Internal Audit & Enterprise Risk Management	5	5	5	5
Operating Corporate Finance FTEs	**29.0**	**29.0**	**29.0**	**29.0**

1630. **Financial Reporting & Tax** – This group is responsible for maintaining the financial records and preparing quarterly and annual formal financial statements and Management's Discussion and Analysis of AltaLink L.P. as a Reporting Issuer, and its general and limited partners. It also prepares financial statements for the partnership's pension plans and joint ventures. It prepares the backup and validates information for Regulatory filings, the Rule 005 Report on Operations, sections of the AIF, 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. This group also deals with all tax related matters including limited partnership returns, corporate returns, GST withholding taxes, etc.

1631. **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 deferral account, asset account reconciliations as well as management and external capital reporting.

1632. **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.

1633. **Financial Planning** – This group is responsible for coordinating the annual budgeting process, quarterly forecast updates, long-range planning, monthly analysis of results compared to budget, 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.

1634. **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. 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, running monthly SAP routines for financial reporting and quarterly for forecasting, and various changes required to system generated reports.

1635. **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.

1636. **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 including C-SOX, liaising with AltaLink's external auditors, resolving accounting issues and providing regulatory information and support.

1637. **Treasury** – The Treasury group's activities include daily 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 management, and regulatory support. 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.

1638. **Internal Audit and Enterprise Risk Management** – 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.

1639. 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.

Table 25.2.1.1-3 – Key Finance Activities

Key Activity Volumes	2020 Actual	2021 Actual	2022 Actual	2023 Forecast	2024 Forecast	2025 Forecast
A/P transactions	38,557	36,646	36,510	38,800	38,800	38,800
Asset retirements	576	1,017	736	600	600	600
Customer contribution receipts and refunds	269	323	362	300	300	300
Miscellaneous revenue receipts	1,122	1,888	1,427	1,550	1,550	1,550
Payroll payments	17,802	17,535	16,952	16,600	17,000	17,000
Treasury transactions	541	574	531	531	531	530
Financial statements, MD&A and management report pages—***for complexity see www.SEDAR.com***	436	434	413	420	420	420
Reconciliations	1,451	1,491	1,506	1,500	1,500	1,500
Corporate cost centres analyzed monthly (budget-to-actual)	91	95	103	103	103	103
C-SOX key controls tested	123	123	122	122	122	122
Internal audits or advisory projects	11	14	12	16	16	16

25.2.1.2 CEO

1640. AltaLink's CEO department forecasts 4.0 operating FTEs in USA 920, remaining at 2022 and 2023 levels which are below the 2022-2023 GTA approved levels as shown in Table 25.2.1.2-1 below.

1641. The CEO department consists of AltaLink's Executive Leadership team and is not expected to change during the Test Period. 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.

Table 25.2.1.2-1 – USA 920 - Administrative & General – CEO FTEs

	2021 Actual	2022 Actual	2023 MU	2024 Test Year	2025 Test Year
Sr Management	2.0	2.0	2.0	2.0	2.0
Management	1.0	1.0	1.0	1.0	1.0
Admin	2.0	1.0	1.0	1.0	1.0
Total Year End FTEs	**5.0**	**4.0**	**4.0**	**4.0**	**4.0**

25.2.1.3 Commercial and Government Relations

1642. AltaLink's Commercial and Government Relations department forecasts 6 operating FTEs in USA 920. The increase of one FTE in 2023 is related to a vacancy for an Executive Assistant in Commercial and Government Relations which was hired in 2023. The job description is provided in **Appendix 2-D**.

Table 25.2.1.3-1 – USA 920 - Administrative & General – Commercial & Government Relations FTEs

	2021 Actual	2022 Actual	2023 MU	2024 Test Year	2025 Test Year
Admin	0.0	0.0	1.0	1.0	1.0
Sr Management	1.0	1.0	1.0	1.0	1.0
Management	2.0	2.0	2.0	2.0	2.0
Engineer	1.0	1.0	1.0	1.0	1.0
Total Year End FTEs	**5.0**	**5.0**	**6.0**	**6.0**	**6.0**

1643. The Government Relations group 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 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.

1644. The Commercial group is responsible for development and management of third-party service contracts and pricing, oversight of miscellaneous revenue, market participant choice (MPC) commercial contracts, development of regulated energy storage projects, asset sales to or purchases from customers (MPC) or other utilities. AltaLink has approximately 65 MPC projects and more than 100 agreements including service, metering, mobile communication, control centre, joint use, co-locate, operating & maintenance, and network services agreements.

Table 25.2.1.3-2 – Key Commercial Activities

Key Activity Volumes	2020 Actual	2021 Actual	2022 Actual	2023 Forecast	2024 Forecast	2025 Forecast
Active contracts managed	77	81	85	101	103	107
Market participant choice projects	20	43	60	65	70	73

25.2.1.4 Business Development (or Corporate Development)

1645. The Business Development employees were terminated from AltaLink and hired by BHE Canada. They are not included in this Application.

25.2.1.5 Human Resources

1646. AltaLink's Human Resource department forecasts 5 operating FTEs in USA 920, remaining at the 2023 levels as shown in Table 25.2.1.5-1 below.

Table 25.2.1.5-1 – USA 920 - Administrative & General – Human Resources FTEs

	2021 Actual	2022 Actual	2023 MU	2024 Test Year	2025 Test Year
Management	1.0	1.0	1.0	1.0	1.0
Admin	0.0	0.0	1.0	1.0	1.0
Advisor	3.0	3.0	3.0	3.0	3.0
Total Year End FTEs	**4.0**	**4.0**	**5.0**	**5.0**	**5.0**

1647. 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 and has updated the allocation of FTEs between operating and capital based on 2023 MU and Test Period activities. The FTE variances from 2022 actual to 2023 MU in Table 25.2.6-1 are due to the reassessment of the primary focus of each FTE as either operating or capital for the Test Period even though the positions within this USA support both types of work. This update correctly reflects the amount of capital and operating FTEs that are represented in the financial forecast for 2023MU and the Test Period. For further details please refer to Appendix 2A through 2D.

1648. At year end 2022, HR had 12 FTEs. Based on the operating/capital split of approximately 39%/61% applied to all HR employees, this would equate to five operating FTEs and seven capital FTEs. However, as mentioned above, AltaLink's practice is to assign a primary focus for each FTE as either operating or capital. For this reason the 2022 year end FTEs reflects four operating and eight capital FTEs. This does not reflect the cost charges to operating and capital as each HR position charges at 39% operating and 61% capital. The 2022 cost charges to operating and capital for HR were five operating and seven capital. HR is maintaining a forecast of 12 FTEs for the Test Period, 5 operating FTEs and 7 capital FTEs.

1649. 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 overall 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.

Table 25.2.1.5-2 – Key HR Activity

Key Activity Volume	2020 Actual	2021 Actual	2022 Actual	2023 Forecast	2024 Forecast	2025 Forecast
Employees served by HR (net of vacancies)	725	706	685	693	707	707

25.2.1.6 Customer Service

1650. The Customer Service and External Engagement department forecasts 4 Operating FTEs in USA 920 for the Test Period, remaining at the 2023 levels as shown in Table 25.2.1.6-1 below.

Table 25.2.1.6-1 – USA 920 - Administrative & General - Customer Service FTEs

	2021 Actual	2022 Actual	2023 MU	2024 Test Year	2025 Test Year
Admin	1.0	0.0	0.0	0.0	0.0
Acct Rep	4.0	3.0	4.0	4.0	4.0
Total Year	**5.0**	**3.0**	**4.0**	**4.0**	**4.0**

1651. The increase of one FTE in 2023 is related to a vacancy for an Account Representative position which was hired in 2023. The job description is provided in **Appendix 2-D**.

1652. 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.

1653. The workload drivers in support of this role include the following:

a) AltaLink has implemented a segmented customer satisfaction survey process including over 100 surveys 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 approximately 300 projects 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 2022 customer satisfaction survey 99.9% of customers rated AltaLink's overall customer service as >8 on a scale of 0-10 where 10 is highest. About 65% of the surveys rated us 10. 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. As the industry is changing, AltaLink is working with its customers to support them as they adapt to changes such as decarbonization and the associated impact to the Alberta Interconnected Electric System.

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.

g) While the number of customer projects is forecast to decrease as shown in Table 25.2.7-1 below, the size, scope and complexity of the projects is expected to increase mainly due to the decarbonization of the grid, with most projects expected to be solar or wind, thereby still requiring significant effort, time, and resources from the Customer Service group to support the projects.

Table 25.2.1.6-2 – Key Customer Service Activities

Key Activity Volumes	2020 Actual	2021 Actual	2022 Actual	2023 Forecast	2024 Forecast	2025 Forecast
Customer projects executed	240	238	307	250	210	200
Customer surveys conducted	123	179	151	194	150	150

25.2.1.7 Communications and Stakeholder Engagement

1654. AltaLink's Communications department forecasts 5 operating FTEs in USA 920, remaining at 2022 and 2023 levels as shown in Table 25.2.1.7-1 below.

Table 25.2.1.7-1 – USA 920 - Administrative & General - External Engagement FTEs

	2021 Actual	2022 Actual	2023 MU	2024 Test Year	2025 Test Year
Management	1.0	2.0	2.0	2.0	2.0
Admin	1.0	1.0	1.0	1.0	1.0
Advisor	3.0	2.0	2.0	2.0	2.0
Total Year End FTEs	**5.0**	**5.0**	**5.0**	**5.0**	**5.0**

1655. 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.

1656. AltaLink has approximately 685 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.

1657. 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.

1658. The Stakeholder engagement team consults on capital projects and the maintenance of our existing facilities with the 19 First Nations, 2 Metis settlements, and 4 Regions of the Metis Nation of Alberta that are located in AltaLink's service territory.

Table 25.2.1.7-2 – Key Communication Activities

Key Activity Volumes	2020	2021	2022	2023F	2024F	2025F
Employees served by Communications (net of vacancies)	725	706	685	693	707	707

25.2.1.8 Law and Regulatory

1659. The Law and Regulatory department forecasts 27.0 operating FTEs in USA 920, a decrease of 0.6 FTEs from 2023 approved levels as shown in Table 25.2.1.8-1. This decrease is explained below.

Table 25.2.1.8-1 – USA 920 - Administrative & General - Law and Regulatory FTEs

	2021 Actual	2022 Actual	2023 MU	2024 Test Year	2025 Test Year
Sr Management	3.0	3.0	3.0	3.0	3.0
Management	2.0	2.0	2.0	2.0	2.0
Admin	6.0	6.0	5.0	5.0	5.0
Engineer	3.0	3.0	3.0	3.0	3.0
Specialist	3.0	3.0	3.0	3.0	3.0
Analyst	5.0	5.0	5.0	5.0	5.0
Lawyer	4.6	6.0	6.0	6.0	6.0
Total Year End FTEs	**26.6**	**28.0**	**27.0**	**27.0**	**27.0**

1660. In AltaLink's 2022-2023 GTA, the Commission directed AltaLink to reduce its forecast O&M expenditures for the Law and Regulatory department by 10%[330]. In AltaLink's Compliance Filing application, AltaLink indicated that it applied the 10% reduction, which is equivalent to 3 FTEs.[331] This reduced AltaLink's 2022 and 2023 originally applied-for FTE counts from 30.6 to 27.6 in each year.

1661. Given the Commission's direction, AltaLink eliminated three positions in 2022 that were vacant at the end of 2021. The positions included one lawyer position, one analyst position and one admin position. Eliminating these positions reduced AltaLink's 2022 actual FTE count by 3.0 FTEs.

1662. In 2022, AltaLink filled a lawyer position that was vacant at the end of 2021 as a result of a retirement, increasing its 2022 actual FTE count by 1.0.

1663. In 2022, AltaLink also replaced a part-time lawyer with a full-time lawyer when the incumbent retired, increasing its 2022 actual FTE count by 0.4 which resulted in 28.0 FTEs as reflected in Table 25.2.1.8-1 above. The part-time lawyer had fulfilled AltaLink's Corporate Secretary role. When the individual retired, AltaLink hired a full-time lawyer to assume the Corporate Secretary role and take on other workload, both regulatory and corporate, handled by the legal group described later in this section.

1664. With these changes, AltaLink's actual FTE count in 2022 was 28.0 FTEs which is roughly 3 FTE positions lower than what AltaLink applied for in its 2022-2023 GTA and aligns with the 2023 approved levels.

1665. In 2023, AltaLink eliminated an FTE, a Hearing Support position, reducing its actual FTE complement to 27.0, or 0.6 FTEs below the level approved by the Commission for 2023. AltaLink is forecasting to maintain this FTE level in the Test Period.

1666. Post execution of the Big Build, AltaLink has entered its go-forward status as a growing yet stabilized operating entity and was able to further reduce its level of regulatory hearing support personnel from that required during the Big Build phase. However, AltaLink as a TFO continues to face increasing challenges and complexities that are putting and will continue to put

[330] Decision 26509-D01-2022, Directive 3, para 112.
[331] Exhibit 27174-X0003, AltaLink 2022-2023 GTA Compliance Filing – Section B Directives.

substantial upward pressure on the Law & Regulatory group's workload in the Test Period. Examples include:

- Evolving Alberta ARS/CIP compliance requirements, increasing cyber and physical security threats, ongoing cloud computing transformation, and wildfire risk management.
- Increasing volume and complexity of procurement activities and supply chain issues, including increasingly complex commercial negotiations and contractual agreements with suppliers in the constrained equipment and materials market.
- Increasing volume and complexity of contractual disputes.
- Increasing volume and complexity of market participant choice customer build projects, including increasing complexity and challenges driven by system constraints.
- Increasing number and complexity of congestion and reliability issues to be addressed on the Alberta transmission system, including the complexity and prevalence of RAS schemes, intertie congestion issues, etc.
- Complex AESO consultation processes now underway and anticipated to require significant regulatory workload during the Test Period, including the bulk and regional tariff re-design process, adjusted metering practice, energy storage, etc.
- New and complex Commission proceedings that are likely to arise from regulatory matters currently or recently before the Alberta Court of Appeal, including those in relation to the Commission's UAD policy and DFO to TFO contributions.
- The Law and Regulatory Department is also responsible for the development and defense of complicated applications such as AltaLink's General Tariff Applications, Generic Cost of Capital proceedings and Rule 005 AUC submission requirements. These also include the PLP and KLP GTA Applications, and similarly the Rule 005 submissions that, although they are not as complex and large as the AML submissions, also require significant effort, diligence and time to ensure they meet the standards to stand up to regulatory scrutiny.

1667. Law & Regulatory includes

- Legal
- Regulatory
- Compliance
- Data Integrity
- Hearing Support

1668. Table 25.2.1.8-2 below provides a breakdown of AltaLink's Law & Regulatory FTEs by area. AltaLink describes the primary activities in each area in more detail below.

Table 25.2.1.8-2 – Operating FTEs per Group

	2021 Actual	2022 Actual	2023 MU	2024 Test Year	2025 Test Year
Legal	6.6	9	8	8	8
Regulatory	10	9	10	10	10
Compliance	6	6	6	6	6
Data Integrity	0	0	0	0	0
Hearing Support	2	2	1	1	1
Legal Admin Assistants	2	2	2	2	2
Total Year End FTEs	**26.6**	**28**	**27**	**27**	**27**

1669. **Legal** - The legal department is required to provide services for all aspects of AltaLink's business.

1670. AltaLink's regulatory lawyers provide support in six core areas:

i. Regulatory – advise on all regulatory matters, legal rights, and requirements under the legislation in relation to the AUC, the AESO, our external stakeholders, contractors, and municipal entities. Develop and defend applications with the AUC and Court of Appeal. Participate and intervene in AESO tariff and other utility applications. Provide advice related to participation in AESO consultation on rules and other matters. Provide legal support for all submissions related to consultation on AUC rules and processes.

ii. Human resources – provide legal advice related to human resource matters including any issues affecting AltaLink's workforce; for example, human rights, union issues, occupational health and safety, and pension-related matters.

iii. Indigenous Relations & Environment – advise on Indigenous consultation issues, environmental and Indigenous traditional knowledge. Negotiate and draft land use agreements. Assess if environmental-related matters are claimable.

iv. Litigation and Disputes – engage in litigation arising in the ordinary course of business. Advise on AltaLink's liability with respect to potential contractual or tort disputes. Analyze AltaLink's rights under contracts and ensure contractual rights are enforced. Advise on all land disputes and all matters in relation to the Land and Property Rights Tribunal.

v. Projects – provide legal support and advise on all aspects and issues related to capital project applications, to all departments involved in project development - including Finance, Operations, Land, Projects, and Stakeholder Relations.

vi. Compliance – Manage and direct AltaLink's compliance program and privacy law matters, including monitoring compliance as well as collecting and validating compliance evidence, acting as the key point of contact for the AESO, the AUC and the MSA on all compliance matters – see further details in paragraph 65.

1671. AltaLink's corporate lawyers support the organization in seven core areas:

i. Procurement - Approximately 60% of AltaLink's corporate legal group work is carried out supporting AltaLink's procurement needs, and the contracts involved in those processes.

ii. Corporate Governance and Compliance - AltaLink's corporate legal group includes the office of the corporate secretary which role includes management of all AML and AIML board matters including annual governance reviews, annual policy reviews and board orientations. Falling under this area are also issues related to AltaLink's compliance with its Inter-affiliate Code of Conduct and the management of AltaLink's compliance plan committee. On a yearly basis the corporate legal group is also responsible for the preparation and filing of AltaLink's Annual Information Form as well as for the legal aspects of all AML and AIML financings.

iii. Legislative Compliance - The corporate law groups involvement in this area involves ensuring compliance with any and all corporate based legislation applicable to AltaLink's operations. Larger items include oversight of the legal aspects of AltaLink's lobbyist operations and registrations as well as the responsibility for yearly updating, training on, and the ensuring of compliance with, AltaLink's prohibited business practices policy.

iv. Ethics - The management of AltaLink's ethics program falls within the gambit of the corporate legal group. Involvement in the area includes the updating of AltaLink's Code of Ethics as required, training of the employee based on compliance with same, management of AltaLink's reporting hotline for ethics matters and the handling of issues raised thereunder in conjunction with AltaLink's ethics committee. The administration of AltaLink's ethics committee also falls within the purview of the corporate legal group.

v. Customer Service - This area of service includes AltaLink's participation in the Market Participant Choice program (15 projects in 2022) as well as the drafting of various documentation as required for and related to the financing and construction of connection facilities by AltaLink outside of the Market Participant Choice program. Additional contract work in this area involves the regular preparation of interconnection agreements, network services agreements and co-location agreements.

vi. Operations/Commercial Development - AltaLink's corporate legal group supports AltaLink's operations department on an as needed basis through the provision of legal advice on matters as requested. Additionally, from time-to-time AltaLink looks at various commercial projects which require the support of AltaLink's corporate legal group. E.g., since 2018 AltaLink's corporate legal group has been actively supporting efforts relating to the possible acquisition of certain TransAlta transmission assets located on First Nations lands.

vii. Land Issues - AltaLink's corporate legal group is involved in the preparation and interpretation of various land agreements as requested from time to time by AltaLink's land department, or which otherwise arise through AltaLink's operations. These include crossing agreements, land use agreements, leases, rights of way and purchase and sale agreements.

1672. **Regulatory** - The regulatory group is integrally involved in all of AltaLink's ongoing matters arising from the regulation of its business. The associated activities are extensive and are included within two broad categories: regulatory applications and regulatory policy, strategy, and electric transmission industry Issues.

i. Regulatory Applications

- Prepare and coordinate applications and all other supporting evidence for General Tariff Applications, including information requests and responses, hearing undertakings written evidence, cross-examination, final argument, review, and analysis of all material.
- Prepare and coordinate all other applications and filings with the AUC, including but not limited to the Direct Assign Capital Deferral Account Applications, Generic Cost of

Capital, Annual Report on Operations and Finance, Facility Applications, AUC Bulletins, etc.

- Maintain all mathematical models required to calculate the information included in the GTA and all other regulatory reports and applications.
- Coordinate and manage AUC Decision implementation projects.
- Lead and develop economic and financial analysis to support decision making concerning regulatory applications and filings.
- Perform research and follow other utilities and industry regulatory applications or industry developments regarding various issues and topics that are relevant to AltaLink's applications and submissions. This is an important aspect of this group's work so that complete up to date information is available to decision makers to ensure regulatory applications and submissions are robust.
- A significant component of this group's work involves supporting other AltaLink departments with respect to regulatory information (financial, operational, tariffs) that they require to support their information requirements. This also includes ad hoc requests which requires significant time and effort to respond to as this information needs to be well supported into order to support proper decision making. This research encompasses a broad variety of issues and topics that can take a significant amount of resource time to research, analyze and synthesize into reports.

ii. Regulatory Policy, Strategy and Electric Transmission Industry Issues

- Perform regulatory intelligence assessments that review regulatory precedent and current proceedings, Commission opinions, and industry practices, and monitor and analyze regulatory proceedings in Alberta that are relevant to AltaLink as an Alberta TFO and its rate payers, to guide the development of successful company regulatory policy and strategy, successful participation in industry consultations and ongoing AUC efficiency initiatives, and the preparation of successful tariff applications. Relevant matters include AESO tariff proceedings, distributed energy resources applications, renewable and conventional generation applications, transmission facility applications, applications related to managing congestion and reliability of the AIES, industrial system designation proposals and applications, energy transition and grid modernization-related matters, and Alberta utilities' tariff-related applications.
- Prepare analyses of AUC decisions concerning AltaLink and other regulated utility applications within Alberta and perform economic research and analysis on policy and business initiatives that may impact AltaLink or Alberta's electric transmission facility owners.
- Monitor and prepare analysis related to the North American electric utility industry that may affect AltaLink or Alberta's electric transmission companies.
- Compare policy options to positions taken by the provincial government, the Commission, other transmission companies, customer intervener groups and other major parties in the regulatory arena on similar matters to develop recommendations.
- Research initiatives and activities aimed at achieving a more efficient, modernized, and environmentally sustainable electricity system, including energy efficiency, renewable energy and storage, grid modernization, net metering, and the interconnection of distributed generation.

- Applications submitted by other market participants involve significant levels of effort and expertise including analysis of numbers, understanding principles of the application, legal issues and impacts to the industry and customers. For instance, in 2022 AltaLink followed and analyzed the developments of 27 applications to the AUC that include such matters as the AESO Tariff, new ISDs, DCG connections, intermittent generation resource applications and other utilities rate applications (e.g., PBR). This represents a 50% increase compared to the amount of prior years' analysis that AltaLink conducted regarding the following of such applications. This analysis is performed to assess the impacts to the transmission grid, issues that may set regulatory precedents and also to determine the impacts such changes could have on the AESO tariff. This type of analysis is important to help identify issues such as transmission cost bypass. Given the industry changes regarding decarbonization of the grid, the reading and following of these applications require time and expertise in order to properly assess and analyze the details, followed by compiling data and information. This information is then shared with various AltaLink departments in order to assist them with their business needs. All of these applications are very technical in nature and require significant reading, research, and analysis. This work involves investigating prior historical proceedings and decisions. Another element that is very time consuming, is ensuring staff acquire the level of understanding that is required to assess these complex issues. Various departments within AltaLink rely on the Law and Regulatory Department to inform them of new industry developments and provide context and understanding of issues, rules and regulations. All of these activities require significant time and effort from its employees.

1673. **Compliance** - This group collects and validates the evidence required for the ARS. It is the contact for AESO compliance and manages the AESO ARS annual self-certification and tri-annual audits. Similarly, it is the contact for the MSA and manages all self-reports, AESO referrals and the related mitigation plans. The Compliance department is active in all AESO ARS consultations and supports AESO Rules consultation. The Compliance department provides technical advice and assistance to AltaLink's operations teams to improve the ARS program. In addition to ARS and AESO Rules work, the Compliance department conducts compliance program reviews of other areas and/or assists in the development of compliance programs as required for areas such as Safety Codes, AEPGA, AC Mitigation, Privacy and Market Participant Choice.

1674. The current FTE complement has been able, through additional experience and technology, to validate an increasing number of ARS requirements and to manage the significantly more extensive AESO audits. AESO audits have increased in length and complexity. In 2017, the AESO audit lasted 154 days, from notice of audit to final audit report and consisted of 34 IRs with 748 subparts. In 2020, the AESO audited both the Power System ARS and CIP ARS. The 2020 Power System audit lasted 236 days and consisted of 66 IRs with 940 subparts and the CIP audit lasted 303 days and consisted of 71 IRs with 5,244 subparts. Overall, AltaLink was in an AESO audit - Power System overlapped by CIP - for 483 days from the first notice of audit until the final audit report. This effort excludes preparation for the audit and the work required to mitigate any findings, including communication with the MSA.

1675. AltaLink anticipates the 2024-2025 Test Period to have increasing challenges. Each year, new or revised ARS are added to the AESO's workplan. The AESO has embarked on an ARS Enhancement initiative that revamps the process from standard adoption to the AESO's

compliance monitoring program. The ARS Enhancement initiative includes incorporating a risk-based approach and aligning Alberta ARS with the current NERC standards. There will be extensive consultation required on the process and, more importantly, on the individual standards that will be introduced or revised. The AESO has announced it is piloting the new process by adopting CIP-013 and revising CIP-003, CIP-005 and CIP-010. The effective date for these changes is Q3 2024 to Q2 2025. Other standards are under development and eventually all CIP and several other existing ARS will be updated to the current NERC version. This will require extensive consultation with the AESO and support to AltaLink operations to ensure efficient program development and evidence creation.

1676. AltaLink's next AESO audit cycle is 2023 and while the AESO and AltaLink are working together to manage the scope, it remains a significant effort. At this point AltaLink expects that the two audits will start mid-2023 and continue into mid-2024. Following the final audit report, the Compliance department will be engaged in the development and monitoring of mitigation plans.

1677. Overall, AltaLink anticipates the workload for the Compliance to increase rather than decrease during 2024 and 2025. As before, AltaLink expects additional technology such as the Compliance Management System (see Section 25.2.13.8[332]) and technology available through M365 to allow it to manage the additional workload with the same compliment of FTEs.

1678. **Data Integrity** - This group provides support in two key areas: stakeholder consultation compliance and commitment tracking.

i. Stakeholder Consultation Compliance - Data Integrity is responsible for ensuring consultation documentation for projects complies with AUC Rule 007 requirements. This includes maintaining the consultation database, cataloging all evidence of stakeholder consultation, validating the consultation records for compliance, and providing evidence during project-related proceedings as required. Data Integrity must also ensure all consultation aligns with privacy law and all files and documents are handled in accordance with AltaLink policy and applicable government rules and regulations. Activities include:
   - creating and maintaining the project consultation database, reviewing land titles, encumbrances, and title maps for all projects;
   - creating stakeholder correspondence, including the Notice of Filing and Notice of Application;
   - completing the mailout to project stakeholders, and reviewing and processing returned mail; and
   - preparing data and records for Facility Applications.

ii. Commitment tracking - Commitments include promises, arrangements and/or agreements made between stakeholders and AltaLink. They take into consideration agency and landowners' concerns regarding proposed facility additions, and guide AltaLink to take appropriate actions to ensure timely construction and energization of the proposed facilities. Commitment tracking was previously tracked by each separate department that engaged in the commitment but has now been centralized within the Data Integrity group to gain efficiencies and ensure consistent, standardized, and measurable processes to track, manage, and fulfill all commitments.

[332] Security and IT A&G Expenses – Activity Drivers and Volume Trends.

1679. **Hearing Support** - This group provides overall management of documentation for regulatory applications and processes. This includes the following activities:

- conducting front-line research and review of regulatory issues;
- managing and organizing the hardcopy and electronic regulatory library;
- providing information retrieval services for the regulatory team, external counsel, hearing team and other AltaLink departments;
- providing information management and document control for regulatory electronic and hardcopy material;
- managing the regulatory proceedings and processes calendar;
- coordinating hearing preparation tasks, including logistics, exhibit binder production (hard copy and electronic), information organization and information retrieval;
- providing support to the hearing team throughout proceedings;
- filing regulatory applications and all other submissions with the AUC;
- tracking interveners, including creating & maintaining intervener lists, and updating intervener records; and
- coordinating the printing, production, distribution and tracking of hardcopy binders and electronic hearing exhibit resources for all regulatory projects.

25.2.2 USA 921 - Administration Corporate/Office Supplies and Expenses

1680. 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.

1681. The revenue requirement for 2024 and 2025 does not include any amount for charitable donations nor sponsorships. The views of the Board in Decision 2003-061 (pages 15-16)[333] and Decision 2007-012 (pages 41-42)[334] state that the Board considers that donations are non-utility costs and should be removed from revenue requirements.

333 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.

334 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.

Table 25.2.2-1 - USA 921 - Office Supplies and Expenses ($M)

Expense	2021 Actual	2022 Actual	2023 MU	2024 Test Year	2025 Test Year
Office	0.2	0.1	0.3	0.3	0.3
Staff Related	0.2	0.7	0.9	0.9	0.9
Training & Professional Development	0.0	0.1	0.1	0.1	0.1
Other	0.7	0.5	0.4	0.4	0.4
Total	**1.0**	**1.5**	**1.5**	**1.6**	**1.6**

1682. Office supplies and expenses were lower in 2021 as a result of deferring activities due to the pandemic. Expenses are forecasted to return to the pre-pandemic levels of 2019, slightly below 2022-2023 approved levels, as things get back to normal and employees return to the office. During 2021 and a portion of 2022, staff expenses were lower due to the pandemic and the cancellation of all business-related travel as well as all customer and employee events. AltaLink has incorporated sustainable cost savings into its 2024-2025 forecast achieved through new business practices experienced in the last few years. Training and professional development is a requirement for a number of professionals such as; engineers, lawyers and accountants, in order to maintain their designations. Training and professional development was less than $0.05M in 2021 due to the pandemic. 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 25.2.2-2 - USA 921 - Office Supplies and Expenses Forecast Increase ($M)

Forecast Increase	2023 MU versus 2022 Actual	2024 Test Year versus 2023 MU	2025 Test Year versus 2024 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 due to rounding.

25.2.3 USA 922 - Administrative Expense Transferred - Credit

1683. There are no administrative expenses transferred. USA 920 includes operating administrative and general salaries which does not include salaries attributed to capital charges.

25.2.4 USA 923 - Outside Services Employed

1684. 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.

1685. 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.

1686. 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 25.2.4-1 - USA 923 - Outside Services Employed ($M)

Expense	2021 Actual	2022 Actual	2023 MU	2024 Test Year	2025 Test Year
Audit Fees	0.5	0.5	0.6	0.6	0.6
Legal Fees	0.7	1.4	1.5	1.6	1.6
Consultants	1.2	1.1	1.0	1.0	1.1
Total	**2.3**	**3.1**	**3.2**	**3.2**	**3.3**

Table 25.2.4-2 - USA 923 - Outside Services Employed Contracted Manpower Forecast Increase ($M)

Forecast Increase	2023 MU versus 2022 Actual	2024 Test Year versus 2023 MU	2025 Test Year versus 2024 Test Year	2 Test Year Average
Inflation	0.0	0.1	0.1	0.1
Other	(0.0)	0.0	0.0	0.0
Total	**0.0**	**0.1**	**0.1**	**0.1**

Totals may not add due to rounding.

1687. The changes in USA 923 are addressed by category: Audit fees, Legal fees and Other contractors. Audit fees: After a few years with minimal or no increases, audit fees are forecast to increase 9% in 2023. This is mainly due to inflation and increased audit work regarding cloud computing, IFRS exposure drafts, and new accounting standards. During the Test Period, audit fees are expected to remain flat at $0.6M. AltaLink will continue to leverage the negotiating power of its parent company, Berkshire Hathaway Energy, with its external auditors to keep fees low.

1688. Legal fees: AltaLink incurred lower legal fees of $0.7M in 2021, mainly related to lower costs associated with commercial disputes and other business matters, as some of these matters slowed or were paused due to the onslaught of Covid-19 and the economic downturn. The 2022 actuals show a gradual return to more normal commercial activities with expenditures of $1.4M. Moving forward, as normal commercial activity continues, AltaLink is forecasting legal expense to remain relatively flat at $1.6M which is below the 2019 level. The $1.6M in legal costs for the Test Period represents the level of legal fees in the ongoing operation of AltaLink's business.

1689. Other contractors: The decrease in contractor costs in 2022 and 2023 is due to cost saving initiatives, with internal resources providing some of the third-party services. For the Test Period, costs are forecast to remain relatively flat at $1.0M to $1.1M, as AltaLink continues its cost saving efforts including the use of its experienced internal resources to perform the work.

25.2.5 USA 924 - Insurance Premiums

1690. USA Activity Code 924 includes the cost of insurance premiums. AltaLink's forecast insurance premiums for 2023-2025 are set out in Table 25.1.1-1 below.

Table 25.2.5-1 - USA 924 - Insurance Premiums ($M)

Expense	2021 Actual	2022 Actual	2023 MU	2024 Test Year	2025 Test Year
Total	**5.1**	**5.6**	**6.3**	**6.6**	**7.1**

1691. Additional details on insurance coverage, limits, deductibles, and insurance market conditions are provided in **Appendix 3**.

25.2.6 USA 925 - Injuries and Damages

1692. USA 925 includes 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.

1693. Costs found in USA 925 include both SIR and small damage claims. A summary of each can be found in the tables below.

1694. AltaLink is forecasting SIR funding of $0.9M for each of 2024 and 2025 as per Table 25.2.6-1 below. Funding of the SIR is based on the average cost of the actual SIR claims since the inception of AltaLink. Claims are forecast at $0.9M for each of 2024 and 2025. Refer to Schedule 29-2[335] for the SIR continuity schedule. The SIR policy can be found in **Appendix 3-C**.

1695. As per Table 25.2.6-2 below small damage claims are forecast at $0.1M for each of 2024 and 2025.

[335] MFR Schedules, Schedule 29-2, Schedule of Reserve for Injuries and Damages (SIR).

Table 25.2.6-1 – USA 925 – Self Insurance Reserve ($M)

Expense	2021 Actual	2022 Actual	2023 MU	2024 Test Year	2025 Test Year
Funding	1.1	0.9	0.9	0.9	0.9
SIR Claims (net of insurance proceeds)	0.0	0.0	0.9	0.9	0.9

Table 25.2.6-2 – USA 925 – Small Damage Claims ($M)

Expense	2021 Actual	2022 Actual	2023 MU	2024 Test Year	2025 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 25.2.6-3 – USA 925 – Total Claims ($M)

Expense	2021 Actual	2022 Actual	2023 MU	2024 Test Year	2025 Test Year
SIR Claims (net of insurance proceeds)	0.0	0.0	0.9	0.9	0.9
Small Damage Claims	0.0	0.0	0.1	0.1	0.1
Total Claims	0.0	0.0	1.0	1.0	1.0

25.2.7 USA 926 - Employee Pension and Benefits

1696. 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.

1697. Refer to Section 1.9.11 for a comprehensive write-up of pensions and PRB.

1698. Employee pension and benefits are expected to increase due to inflation. The inflation increase is due to salary increases as detailed in Section 1.9.5. Other changes are primarily due to filling vacant employee positions. As detailed in Section 1.9.7, AltaLink does not forecast any changes to its DC Plan and PRB Plan.

Table 25.2.7-1 – USA 926 - Employee Pensions and Benefits ($M)

Expense	2021 Actual	2022 Actual	2023 MU	2024 Test Year	2025 Test Year
Total	**3.3**	**3.3**	**3.5**	**3.7**	**3.8**

Table 25.2.7-2 – USA 926 - Employee Pensions and Benefits Forecast Increase ($M)

Forecast Increase	2023 MU versus 2022 Actual	2024 Test Year versus 2023 MU	2025 Test Year versus 2024 Test Year	2 Test Year Average
Inflation	0.1	0.1	0.1	0.1
Other	0.1	0.0	(0.0)	0.0
Total	**0.3**	**0.2**	**0.1**	**0.1**

25.2.8 USA 928 - Commission Expenses (Hearing Costs)

1699. 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[336]. Forecast expenses are discussed in Section 29.6 as part of the HCR.

1700. 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 significantly varying year-over-year depending upon known and anticipated regulatory proceedings.

1701. Schedule 29-7[337] in this Application includes a detailed listing of the actual/approved and forecast Commission hearing cost expenses for the period 2021 to 2025, and it also details the year-to-year changes in AltaLink's HCR funding requirement over the 2021 to 2025 period.

1702. Table 25.1.1-1 below summarizes AltaLink's forecast hearing cost expenses in the current 2024-2025 GTA. As shown, AltaLink is forecasting a hearing cost expense, which includes both the AltaLink and intervener amounts, of $1.400M in 2024 and zero dollars in 2025.

Table 25.2.8-1 – USA 928 – Commission Hearing Cost Expenses ($M)

Expense	2021 Actual	2022 Actual	2023 MU	2024 Test Year	2025 Test Year
Total	**1.1**	**1.1**	**0.5**	**1.4**	**0.0**

1703. The details concerning the forecast hearing cost expenses for 2024 and 2025 along with the required funding amounts and resulting closing balances in the HCR are described below.

2024 and 2025 Funding Forecast

1704. Due to the sharp reduction in actual hearing cost expenses in the 2019-2021 GTA compared to the forecast amount in this period ($4.304M in actual versus $8.805M in forecast expenses), AltaLink's HCR had a surplus closing balance of $5.605M at the end of 2021.

1705. As a result of this surplus, which is shown below in Table 25.1.1-2, at the end of 2022 AltaLink made an HCR Settlement Account Adjustment of $3.760M and in the 2022-2023 GTA (filed April 30, 2021)[338]. AltaLink did not forecast a requirement for additional funding for hearing cost expenses in both the 2022 and 2023 test years.

[336] AUC Rule 022: Rules on Costs in Utility Rate Proceedings.
[337] MFR Schedules, Schedule 29-7 Schedule of Rate Hearing Costs - Total.
[338] Exhibit 26509-X0002.01, Section 25.2.15, pdf 321-323.

Table 25.2.8-2 – USA 928 – Actual and Forecast Hearing Cost Expenses, 2021-2025 ($M)

Description	2021 Actuals	2022 Actuals	2023 MU	2024 Forecast	2025 Forecast
Opening Balance	5.318	5.605	0.735	0.242	-
Approved/Proposed Funding Provisions	1.400	-	-	1.158	-
Total Available Funds	6.718	5.605	0.735	1.400	-
Less Total Payments & Adjustments					
Payments	(1.113)	(1.110)	(0.493)	(1.400)	-
Settlement Account Adjustment	-	(3.760)	-	-	-
Less Total Payments & Adjustments	(1.113)	(4.870)	(0.493)	(1.400)	-
Closing Balance	5.605	0.735	0.242	-	-

*Totals may not add due to rounding.

1706. As shown above, in the current 2024-2025 GTA Test Period, forecast hearing cost expenses (or payments) are expected to total $1.400M over this two-year period ($1.400M in 2024 and with no expense or zero dollars forecast in 2025). This forecast expense represents a decrease of $0.203M or almost 13% compared to the prior 2022-2023 GTA which has $1.603M in actual and forecast hearing cost expenses.

1707. With an anticipated 2024 opening balance of $0.242M in the HCR coupled with $1.400M in forecast hearing cost expenses in 2024, AltaLink is forecasting that in 2024 this account will require $1.158M in additional funding to cover the forecast expenses. This level of funding will result in the HCR having a zero dollar closing balance at the end of 2024.

1708. For 2025, AltaLink is not anticipating any hearing cost expenses which will require funding from the HCR. Consequently, with a forecast 2025 opening balance of zero dollars coupled with no forecast expenses and no funding requirement in 2025, AltaLink will maintain a zero dollar closing balance in the HCR at the end of 2025.

AUC Actual Cost Decisions 2021-2023

1709. Table 25.1.1-3 below, provides a list of cost decisions issued by the AUC from January 1, 2021, to March 31, 2023.

Table 25.2.8-3 – USA 928 – Actual Cost Decisions & Expenses

2021 Calendar Year Cost Decisions	Amount
26098-D01-2021 - 2019-2021 GTA NSA R&V of Decision 23848 - AltaLink Expense	0.022
26098-D01-2021 - 2019-2021 GTA NSA R&V of Decision 23848 - Intervener Expense	0.004
25947-D01-2021 Deferrals 2016-2018 - AltaLink Expense	0.233
25947-D01-2021 Deferrals 2016-2018 - Intervener Expense	0.538
25973-D01-2021 Deferrals 2016-2018 Edm Region - AltaLink Expense	0.181
25973-D01-2021 Deferrals 2016-2018 Edm Region - Intervener Expense	0.018
26445-D01-2021- 2021 Tariff Relief Application - AltaLink Expense	0.036
26445-D01-2021 - 2022 Tariff Relief Application - Intervener Expense	0.030
26476-D01-2021 Deferrals 2016-2018 Compliance - AltaLink Expense	-
26476-D01-2021 Deferrals 2016-2018 Compliance - Intervener Expense	0.007
26245-D01-2021 - Deferrals 2019 - AltaLink Expense	0.026
26245-D01-2021 - Deferrals 2019 - Intervener Expense	0.013
26432-D01-2021 - 2022 Generic Cost of Capital - AltaLink Expense	0.002

26432-D01-2021 - 2022 Generic Cost of Capital - Intervener Expense	0.003
Total for 2021 Period	**1.113**
2022 Calendar Year Cost Decisions	**Amount**
26985-D01-2022 - 2022-2023 GTA & 2020 DACDA - AltaLink Expense	0.429
26985-D01-2022 - 2022-2023 GTA & 2020 DACDA - Intervener Expense	0.564
27084-D01-2022 - 2023 Generic Cost of Capital (Stage 1) - AltaLink Expense	0.011
27084-D01-2022 - 2023 Generic Cost of Capital (Stage 1) - Intervener Expense	0.004
27401-D01-2022 2022-2023 GTA & 2020 DACDA Compliance - AltaLink Expense	0.028
27401-D01-2022 2022-2023 GTA & 2020 DACDA Compliance - Intervener Expense	0.009
27302-D01-2022 2022-2023 GTA R&V of Decision 26509-D01-2022 - AltaLink	0.019
27302-D01-2022 2022-2023 GTA R&V of Decision 26509-D01-2022 - Intervener	-
27427-D01-2022 2022-2023 GTA R&V Stage 2 - AltaLink Expense	0.010
27427-D01-2022 2022-2023 GTA R&V Stage 2 - Intervener Expense	-
27406-D01-2022 2022-2023 GTA R&V Tariff Refund - AltaLink Expense	0.021
27393-D01-2022 2022-2023 GTA R&V Tariff Refund - Intervener Expense	0.016
Total for 2022 Period	**1.110**
2023 YTD Calendar Year Cost Decisions	**Amount**
No cost decisions anticipated in Q1 2023.	-
Total for 2023 YTD Period (January 1, 2023 to March 31, 2023)	**-**

*Totals may not add due to rounding.

1710. Table 25.2.8-3 above, shows that in the period January 1, 2023, to March 31, 2023, AltaLink does not anticipate any hearing cost decisions to be issued by the AUC. Beyond the first quarter of 2023, Table 25.2.8-2 and MFR Schedule 29-7 both show that AltaLink anticipates hearing cost expense of $0.493M over the remaining balance of the year 2023.

25.2.9 USA 930.1 – General Advertising Expenses

1711. USA Activity Code 930.1 includes the cost of advertising and related activities not provided for elsewhere.

1712. USA 930.1 is primarily driven by activities that include media advertising (newspapers, periodicals, billboards, and radio), developing advertising material, safety awareness campaigns, and retaining the services of advertising agencies and commercial artists.

1713. 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.

1714. **Table 25.2.9-1 – USA 930.1 – General Advertising Expenses ($M)**

Expense	2021 Actual	2022 Actual	2023 MU	2024 Test Year	2025 Test Year
Total	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

1715. General Advertising Expenses are minimal and expected to remain at the same level as shown in Table 25.2.9-1 above, averaging under $0.005M annually for the Test Period.

25.2.10 USA 930.2 – Miscellaneous General Expenses

1716. 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 25.2.10-1 – USA 930.2 – Miscellaneous General Expenses ($M)

Expense	2021 Actual	2022 Actual	2023 MU	2024 Test Year	2025 Test Year
Directors Fees	0.6	0.6	0.6	0.6	0.7
Credit Facility	0.3	0.3	0.3	0.3	0.3
Associated Dues & Other	0.3	0.0	0.2	0.3	0.3
Total	**1.2**	**0.9**	**1.2**	**1.2**	**1.2**

*Totals may not add due to rounding.

1717. During the Test Period, these expenses are expected to remain stable at 2023 expenditure levels. Directors' fees are forecast to be consistent with a 2.5% increase. Credit facilities are discussed in detail in Section 28.4. Other expenses are lower in 2022 due to cost savings and timing of invoices from some educational partnerships and company memberships for certain organizations. These expenses are forecast to return in 2023 and beyond.

Table 25.2.10-2 – USA 930.2 – Miscellaneous General Expenses Forecast Increase ($M)

Forecast Increase	2023 MU versus 2022 Actual	2024 Test Year versus 2023 MU	2025 Test Year versus 2024 Test Year	2 Test Year Average
Inflation	0.0	0.0	0.0	0.0
Other	0.3	(0.0)	0.0	(0.0)
Total	**0.3**	**0.0**	**0.0**	**0.0**

*Totals may not add due to rounding.

25.2.11 USA 931 - Rents (Other Than Head Office)

1718. 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.

Table 25.2.11-1 – USA 931 – Rents (Other Than Head Office) ($M)

Expense	2021 Actual	2022 Actual	2023 MU	2024 Test Year	2025 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**

1719. As shown in Table 25.2.11-1 above, there are no forecast expenses for labour and contracted manpower in USA Activity Code 931.

1720. 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.

1721. AltaLink rents facilities in three locations outside the Head Office complex:

- AESO Facilities (AltaLink Emergency Control Centre - AECC);
- Red Deer; and
- Lethbridge.

1722. The AECC contains no AltaLink staff. The AECC facility ensures an alternate site in case of a disaster, or if AltaLink's primary control centre site is not accessible.

1723. 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.

1724. 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 25.2.11-2 – USA 931 – Rents (Other than Head Office) Forecast Increase ($M)

Forecast Increase	2023 MU versus 2022 Actual	2024 Test Year versus 2023 MU	2025 Test Year versus 2024 Test Year	2 Test Year Average
Other GOE	(0.0)	0.0	0.0	0.0
Total	**(0.0)**	**0.0**	**0.0**	**0.0**

1725. As shown in Table 25.2.11-2 above, there are no forecast increases in the Test Period.

25.2.12 USA 931.1 - Head Office Rent

1726. 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 25.2.12-1 – USA 931.1 – Head Office Rent ($M)

Expense	2021 Actual	2022 Actual	2023 MU	2024 Test Year	2025 Test Year
Other GOE	1.2	1.3	1.3	1.3	1.3
Total	**1.2**	**1.3**	**1.3**	**1.3**	**1.3**

*Totals may not add due to rounding.

1727. As shown in Table 25.2.12-1 above, there are no forecast expenses for labour and contracted manpower in USA Activity Code 931.1.

1728. The expense recorded in USA Activity Code 931.1 is attributable to office space requirements of AltaLink staff at the committed lease rates.

1729. 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 Southeast.

AltaLink Plaza is a 95,225 square foot building and is 25 years old. AltaLink East building is a 69,793 square foot, two story low rise building which is 26 years old.

Table 25.2.12-2 – USA 931.1 – Head Office Rent Forecast Increase ($M)

Forecast Increase	2023 MU versus 2022 Actual	2024 Test Year versus 2023 MU	2025 Test Year versus 2024 Test Year	2 Test Year Average
Other GOE	0.1	0.0	0.0	0.0
Total	**0.1**	**0.0**	**0.0**	**0.0**

*Totals may not add due to rounding.

1730. As shown in Table 25.2.12-2 above, the Head Office rent expenses are forecast to remain stable for the Test Period with minimal fluctuations year to year.

25.2.13 USA 934 – Security and IT A&G Expenses

25.2.13.1 Security and IT A&G Expenses – Overview

1731. This account includes the necessary operating expenses to support AltaLink's security, asset management, operational, financial, and corporate systems which underpin AltaLink's ability to operate a safe and reliable AIES.

1732. 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. AltaLink must also continue to resource and invest in Security and IT operations to ensure the reliability of the AIES against the increasing and evolving threats highlighted in Section 10.4, as well as meet the growing needs of the AESO[339] and the business.

1733. This account includes: compensation (salaries and expenses) for employees of the security & information technology department related to Administrative & General (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 security & information technology functions; and general operating expenses which include software and licence support costs.

1734. AltaLink is forecasting an average annual increase over 2024-2025 Test Period of $0.2M for compensation for employees of security & information technology due to inflation.

1735. In 2022, AltaLink's security and information technology team experienced significant changes in staffing due to early retirement and departures which were more frequent in the post COVID-19 environment. The vacancy rate for the team was approximately 16%. Recruitment is ongoing with four operating positions currently in different stages of the recruitment process. AltaLink expects to reach full complement of operating staff for security and information technology in Q2 of 2023.

[339] AESO Reliability Standards Work Plan: https://www.aeso.ca/assets/Uploads/March-2021-ARS-Work-Plan.pdf

1736. AltaLink is forecasting an average annual increase over 2024-2025 Test Period of $0.1M for contracted manpower due to cost increases driven by suppliers.

1737. AltaLink is forecasting it will offset cost increases driven by inflation with other savings to keep general operating expenses in security and information technology consistent with 2023 levels through the 2024-2025 Test Period.

1738. In 2022, AltaLink's security and information technology team generated $330,000 of operating cost savings through RPA initiatives to offset some cost increases from licence and support costs associated with new security and IT systems implemented in 2022.

25.2.13.2 IT A&G Expenses – Forecast Expenditures for 2024–2025

1739. Table 25.2.13.2-1 below displays a breakdown of the 2021–2025 USA 934 - IT A&G Expenses.

Table 25.2.13.2-1 - USA 934 – Security and IT Administrative & General Expenses ($M)

Expense	2021 Actual	2022 Actual	2023 MU	2024 Test Year	2025 Test Year
Labour	3.7	3.4	4.3	4.5	4.6
Contracted Manpower	2.1	1.9	1.8	2.0	2.1
Other GOE	5.6	6.8	6.9	6.9	6.9
Total	**11.5**	**12.1**	**13.0**	**13.4**	**13.7**

Totals may not add due to rounding.

1740. AltaLink's 2023 Management Update increased approximately $0.9M from 2022. This increase is driven primarily by $0.8M in labour with the shift of capital employees to operating employees following the completion of IT capital projects related to IT security in 2021 and a slower start to capital projects in 2022 due to staffing departures in Q2 following the return to office transition. Shifts of employees between capital and operating are normal as AltaLink maintains a critical mass of IT staff and subject matter experts to execute work to maintain IT support requirements to ensure the reliability of the AIES.

1741. Software costs increased by approximately $0.9M in the 2022-2023 test period. These cost increases were driven by inflation and additional cybersecurity software required to protect AltaLink's network against emerging, severe, and more frequent external threats.

1742. Approximately 34% of USA 934 in the 2024 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.

Table 25.2.13.2-2 - USA 934 – Security and IT Administrative & General Expense Forecast Increase ($M)

Forecast Increase	2023 MU versus 2022 Actual	2024 Test Year versus 2023 MU	2025 Test Year versus 2024 Test Year	2 Test Year Average
Labour	0.9	0.2	0.1	0.2
Contracted Manpower	(0.1)	0.1	0.1	0.1
Other GOE	0.2	0.0	0.0	0.0
Total	**0.9**	**0.3**	**0.3**	**0.3**

Totals may not add due to rounding.

1743. The effort and expenses within this account are for full-time labour, contracted labour (Contracted Manpower), and general operating expenses, including software licencing, and support and maintenance, to deliver the security and IT services. AltaLink is forecasting an annual average increase of operating expenses over the 2024–2025 Test Period of $0.3M. Of this, an increase of $0.2M is attributable to Labour, an average increase of $0.1M is attributed to Contracted Manpower, and GOE costs are expected to remain relatively flat. Further details about Labour, Contracted Manpower and Other GOE are discussed below. The reduction of $0.1M in Contracted Manpower in 2023 is due to a recategorization of physical security to USA code 935 in September of 2022.

25.2.13.3 Labour

Table 25.2.13.3-1 - USA 934 – Security and IT Administrative & General Expense Labour Forecast Increase ($M)

Forecast Increase	2023 MU versus 2022 Actual	2024 Test Year versus 2023 MU	2025 Test Year versus 2024 Test Year	2 Test Year Average
Inflation	0.1	0.1	0.2	0.2
Other	0.8	0.0	(0.0)	0.0
Total	**0.9**	**0.2**	**0.1**	**0.2**

Totals may not add due to rounding.

1744. The $0.8M increase in forecast labour expenditures between 2022 actuals and 2023 MU is due to 2022 vacancy levels and the reduction in capitalization rate. In Q3 and Q4 2022, AltaLink's Security and Information Technology team experienced a high level of staff retiring or seeking other jobs following a return to the office post-COVID-19. The vacancy rate reached over 29% with nine operating vacancies in 2022. Significant recruitment efforts are underway to fill vacancies. All vacancies for operating positions are currently progressing through recruitment with four positions remaining to be closed. In addition, there was a 3.3% reduction in the capitalization rate of security and Information technology staff in 2023 as staff activities shift to maintain the IT systems and applications deployed in 2022.

1745. AltaLink forecasts Labour expenditure to increase annually by $0.2M in the 2024-2025 Test Period due to inflation.

1746. AltaLink is forecasting no increase in FTEs during the 2024-2025 Test Period over the 2023 management update. The forecast FTEs will enable AltaLink 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 2-B** and **Appendix 2-D** of this Application.

Table 25.2.13.3-2 - USA 934 - Operation & Maintenance Security and IT Support FTEs

	2021 Actual	2022 Actual	2023 MU	2024 Test Year	2025 Test Year
Management	2.0	1.0	2.0	2.0	2.0
Specialist	5.0	5.0	6.0	6.0	6.0
Analyst	6.0	4.0	8.0	8.0	8.0
Developer	2.0	2.0	2.0	2.0	2.0
Security	10.0	10.0	13.0	13.0	13.0
Total Year End FTEs	**25.0**	**22.0**	**31.0**	**31.0**	**31.0**

25.2.13.4 Contracted Manpower

1747. Managed services continue to be required to augment the demand for resourcing and the ability to secure hard-to-hire skills.

1748. The use of Managed Services is the practice of transferring day-to-day related management responsibility from AltaLink to a contracted third party as a strategic method for improved, effective and efficient operations.

1749. AltaLink remains accountable, for the functionality and performance of the managed service and does not relinquish the overall management responsibility of the organization or system to the service provider.

1750. The benefits of a managed service are:

- efficiently ramp up and down resource capacity based on growth and technical competencies;
- timely access to a variety of seasoned, senior, certified technical skills;
- reduces dependencies on skills market variability; and
- focuses full-time staff on core AltaLink activities and provides additional on the job training for AltaLink employees.

1751. Contracted Manpower for this account includes activities for:

- service desk and desk-side services as a front-line central service and problem resolution center for IT issues which include computer problems, system and hardware, network issues, access to data servers, printing services, software problems;
- response to security events and software and infrastructure patching;
- support and maintenance of servers; and
- select managed services to support business systems.

1752. 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.

Table 25.2.13.4-1 - USA 934 – Security and IT General & Administrative Expense Contract Manpower Forecast Increase ($M)

Forecast Increase	2023 MU versus 2022 Actual	2024 Test Year versus 2023 MU	2025 Test Year versus 2024 Test Year	2 Test Year Average
Inflation	0.0	0.0	0.0	0.0
Other	(0.1)	0.1	0.1	0.1
Total	**(0.1)**	**0.1**	**0.1**	**0.1**

Totals may not add due to rounding.

1753. AltaLink is forecasting an average annual increase of $0.1M in Contracted Manpower for USA 934 for the Test Period due to annual inflationary cost increases driven by suppliers.

25.2.13.5 Other GOE

1754. 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.

1755. 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 25.2.13.5-1 - USA 934 – Security and IT General & Administrative Expense GOE Forecast Increase ($M)

Forecast Increase	2023 MU versus 2022 Actual	2024 Test Year versus 2023 MU	2025 Test Year versus 2024 Test Year	2 Test Year Average
Inflation	0.1	0.2	0.2	0.2
Other	0.1	(0.1)	(0.1)	(0.1)
Total	**0.2**	**0.0**	**0.0**	**0.0**

Totals may not add due to rounding.

1756. 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 2022–2023 test period, operating costs have correspondingly increased to support these new projects. However, these costs have been offset in some part by AltaLink's efficiencies in the management of hardware, software licences and contractor costs.

1757. As a result of these offsets, AltaLink is forecasting Other GOE over the 2024–2025 Test Period will remain consistent with the 2023 Management Update.

25.2.13.6 Security and IT A&G Expenses – Scope of Services

1758. In the support of a reliable AIES, AltaLink must ensure a high level of reliability and performance of security and information technology systems. The main list of security and information technology systems under this account are:

Security Systems:

- Alberta Reliability Standards Critical infrastructure protection systems[340]
- Cyber Security and vulnerability management systems
- Physical security access management systems (facilities)
- Telecommunications network security systems
- Information security standards and compliance (ISO 27001/19)

Information Technology Systems:

- Safety and incident management systems
- Asset Management
- Work Management
- Engineering systems
- Business process & data analytics systems
- Outage Management Planning systems
- Procurement and materials management
- Project Management systems
- Geospatial Information Systems
- Document/records management
- Mobility systems
- Enterprise and Digital Workplace Systems
- Customer support systems – connection process[341]
- Office productivity tools and systems (email, calendar, Microsoft 365 technologies)
- Enterprise back office (file servers, print services, remote web access, etc)
- Risk management and internal audit
- HR and Payroll systems
- Learning management systems
- General Ledger and Financial reporting systems
- Treasury systems
- Accounts Payable

25.2.13.7 Security and IT A&G Expenses – Trends and Changes Since Previous Application

1759. Three main trends have contributed to the change in Operating expenditure activities since AltaLink submitted its 2022-2023 GTA. Overall, AltaLink continues to find ways to drive efficiencies to absorb increasing workload without increasing staffing. The trends are described below.

Security:

- increased volume of preventative, mitigating and responsive measures to protect AltaLink's network against more frequent and severe cyber threats. As described in Section 10.4,

[340] AESO Alberta Reliability Standards: https://www.aeso.ca/rules-standards-and-tariff/alberta-reliability-standards/.
[341] AESO Connection Process: https://www.aeso.ca/grid/connecting-to-the-grid/connection-process/

Russia's invasion of Ukraine in February 2022 and the relentless targeting of Ukraine's critical infrastructure, specifically electricity facilities, has demonstrated the utmost importance of protecting and maintaining the electricity grid against all threats – nation state, cyber criminals, hacktivists and increasingly ideologically motivated violent extremists. The increasing and evolving level of cyber and physical threats is directly driving higher volumes of preventative, mitigating and responsive measures in USA 934;

- increased workload levels to secure AltaLink's OT network against cyber reconnaissance against industrial controls systems used by critical infrastructure owners. Since 2021, IBM has reported a 2204% increase in cyber reconnaissance against these types of systems;[342]
- increased level of software and firmware patching of vulnerabilities in AltaLink's assets to respond to increasing and evolving cyber threats targeting critical infrastructure;
- increased number of supply chain security audits/reviews; tighter onboarding procedures for new suppliers and vendors; revised contract terms and conditions for cyber protection and notification; and scrutiny of the vendor performance against these agreements to respond to the increasing number of attacks against critical infrastructure supply chain;
- invested in additional, defensive and recovery technologies to respond to the increasing level of sophistication of cyber attackers; and
- increased workload for patching and system upgrades, requiring additional labour and CMP resources to respond to increasing an evolving cyber security threat as shown in Section 10.4.

Compliance:

- Investments in enhanced, integrated and automated systems with the subsequent additional Security and IT operational expenditures (e.g. ARS CIP requirements, PRC-005 and FAC-008) to comply with increased regulatory requirements.

Pandemic:

- Investments in additional business capabilities to seamlessly 'work from anywhere' and added changes in the traditional support model, software licenses and an increased footprint in AltaLink's cyber threat surface to respond to the impact of the COVID-19 pandemic in March 2020 with the public health orders and the adoption of working from home policies.

25.2.13.8 Security and IT A&G Expenses – Activity Drivers and Volume Trends

1760. AltaLink's security & information technology functions within USA 934 are grouped into:

- Operational Information Systems;
- Infrastructure Operations and Architecture Support;
- Enterprise Applications and Digital Workplace;
- Security Operations;
- ISMS; and
- Compliance.

1761. AltaLink has included activity and metrics for the key security and IT activities within USA 934 in the information below. Support tickets are one indicator of activity volume, but they can vary

[342] IBM Security X-Force Threat Intelligence Index 2022 Full Report, pdf 24: https://www.ibm.com/downloads/cas/ADLMYLAZ?_ga=2.188305966.703025608.1677952898-666551392.1677952898

significantly based on a variety of factors such as complexity, volume, and urgency. Historical data trends indicate that on average the volumes presented are indicative of the future demands.

1762. Overall work activities per area are generally stable except for the security operations and compliance area. The increase in activity in these areas is driven by the significant increase in both cyber and physical security threats which then drives the increase in ARS compliance requirements from the AESO that must be implemented, maintained, and evidenced for compliance.

1763. **Operational Information Systems (OIS**): are those processes, systems and resources which support the provision and processing of operational information, asset information, geospatial information and work information needed to support the operating activities underpinning the safe and reliable operation of the AIES. The major OIS systems deployed at AltaLink include:

- **GIS:** AltaLink maintains geo-spatial information and attributes of linear assets in the GIS. AltaLink averages almost 2,000 GIS change requests annually and expects this stable work volume trend to continue.
- **PI System:** AltaLink's PI system manages and analyzes AltaLink's real-time performance from each of AltaLink's SCADA systems deployed within the control centres, telecommunication sites and substations. During the last three years, there has been an average of 116 PI Support tickets annually. AltaLink expects this stable work volume trend to continue.
- **ProjectWise:** AltaLink manages asset drawings, project drawings and vendor manuals within the ProjectWise asset repository. The volume of data stored in the ProjectWise environments is driven by the volume of new DA projects, CRU projects, or by the transfer of old SharePoint repositories into the ProjectWise environment. During the past three years, AltaLink has averaged approximately 470 ProjectWise Support Tickets annually. AltaLink expects this volume to increase to an average of 480 during the 2024-2025 test period as more SharePoint documents are transferred to ProjectWise.

1764. **Infrastructure Operations and Architecture Support**: provides the technology backbone with the necessary desktop software, laptop and workstation devices, data centre infrastructure, mobile telecommunications, databases and help desk support:

- **Desktop, Help Desk and Infrastructure support:** activity volumes are driven by the number of devices (laptops, desktops, iPads, servers, mobile devices etc.) that are used by employees and contractors to support the business. Since 2021, AltaLink's Help Desk has averaged 31,000 support tickets each year, or an average of more than 120 tickets per working day. AltaLink expects this level of activity to continue through the 2024-2025 test period.
- **Infrastructure & Data Centre:** In support of the safe, reliable, and secure operation of the AIES, AltaLink is required to maintain data centres, telecommunication networks and support business activities both within operations and in the corporate centre. Key activities in relation to this support include:
    - **Data Storage**: AltaLink has both on-premise data storage capabilities within AltaLink's data centre and backup data centres, as well as increasing usage of cloud storage where it is economically and technically feasible to do so. AltaLink is required under the Alberta Reliability Standards (v5) Critical Infrastructure Protection standards to maintain BCSI records in on-premise data centre storage, as well as operate AltaLink's Energy

Management System using on-premise data centre resources. AltaLink is not forecasting growth in on-premise data storage requirements during the 2024-25 Test Period. AltaLink will operate, maintain and replace end-of-life data centre equipment in order to meet the CIP-001 BCSI regulations.

- **Security Vulnerability Patching**: Section 10.4.2 Security of this Application describes the increasing and evolving cyber threat specifically targeting critical infrastructure such as the AIES. To protect AltaLink's systems, AltaLink must undertake an increased level of software and firmware patching of asset. The increasing level of sophistication of cyber attackers is also requiring AltaLink to invest in additional, defensive and recovery technologies to address the threat. 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.

1765. AltaLink tracks the volumes of this activity. A graph of this patching activity is provided in Figure 25.2.13.8-1:

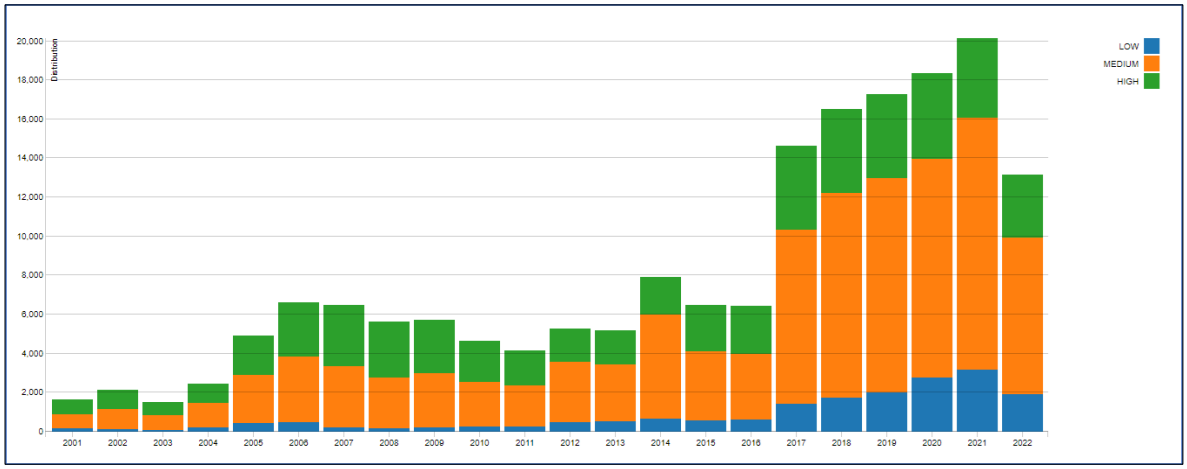


Figure 25.2.13.8-1– Volume of patching assessments – 2015-2025

- **Device management:** AltaLink manages desktop, mobile devices, ruggedized field devices, multi-media devices and servers to meet the business' requirements. AltaLink provides the necessary devices to employees and contractors to access AltaLink's systems, including access to BCSI information in line with the Alberta Reliability Standards Critical Infrastructure Protection Requirements (CIP-011, CIP-004, CIP-005, CIP-008 and CIP-010).
- **Vendor & Licence Management:** AltaLink defines requirements, procures, and manages software and cloud subscription services to meet the needs of the business. Since 2015 there has been a significant increase in the number of security software and systems deployed by AltaLink in line with the increasing and evolving threats described in Section 10.4.2. In addition, AltaLink has implemented a compliance management system to meet the Alberta Reliability Standards with a large number of high-volume, complex process and evidence data requirements (ARS CIP, PRC-005 and FAC-008).

  Since 2015, AltaLink has also seen a number of vendor-driven changes to software licencing structures, which may be based upon users, accounts, data storage, or per use-

based charges. The increase in subscription cost and impact of cost mitigation efforts is evident in Figure 25.2.13.8-2 below.

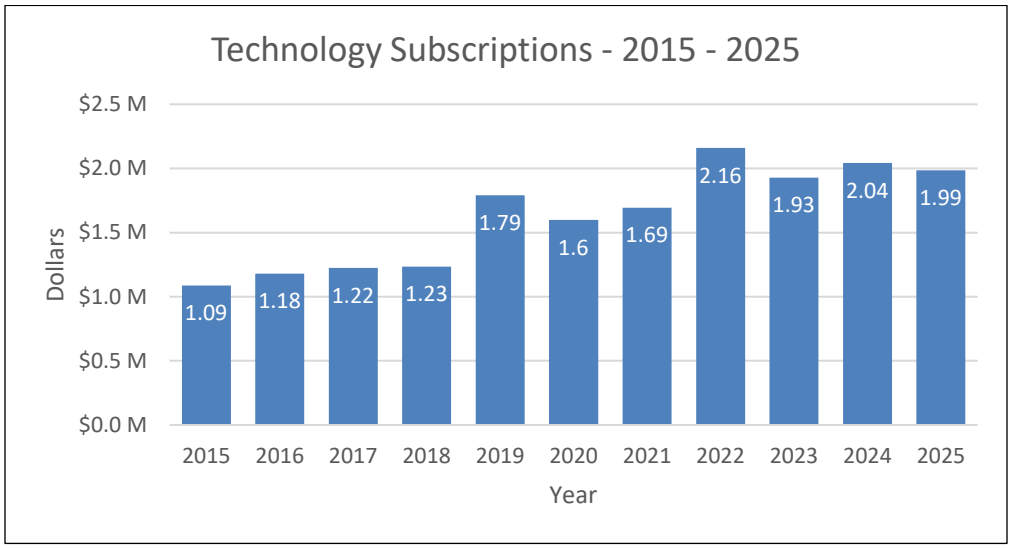


Figure 25.2.13.8-2 – Technology Subscriptions – 2015-2025

- **Engineering Apps support:** AltaLink manages and provides support for engineering applications used in the management and operation of the AIES. In recent years, the effort of ensuring that these engineering applications, which support industrial control systems in all our facilities, remain secure has increased as vendors may no longer provide security patches for systems which are out of support. AltaLink manages 220 engineering field applications.
- **Databases:** AltaLink has developed and manages more than 700 databases internally to correlate data and information from a number of systems where it has been too expensive to customize the source system with extensive modifications.

1766. **Enterprise Applications and Digital Workplace:** support corporate applications including back-office functions like finance, HR, procurement, payroll, Enterprise Asset Management, and as well as desktop and cloud Office applications, etc., that are needed to support the effective operation of the business. There are two principal areas that are supported:

- **SAP application support ticket trends:** included within this is the ERP systems for finance, treasury, payroll, and asset management, etc. The number of SAP/Enterprise support tickets have averaged 248 tickets per year for the last 3 year and the trend is expected to remain stable in the Test Period.
- **Digital workplace support ticket trends:** included within this is support for AltaLink's collaboration tools such as Microsoft M365 (Teams, SharePoint, Yammer, Exchange, Azure). AltaLink tracks the number of digital workplace support tickets. These have averaged 136 tickets per year for the last 3 year and the trend is expected to remain stable in the Test Period.

AltaLink is required to perform regular updates to these enterprise systems on both a scheduled and immediate basis to ensure that the supported version of the software and any vulnerabilities are addressed, ensuring the business is able to operate a safe and reliable AIES.

1767. **Security Operations**: provide the 24/7 cyber and information security operations, security operations centre, emergency response and external agency coordination required to ensure the secure and reliable operation of the AIES. These security operations cover both IT security, and security of the operating functions as one seamless response function:

- **Cyber Security Tickets:** support a wide variety of cyber security requests including investigation and resolution of security of applications, access approvals, privileged access requests, and external email security assessments. Cyber Security Tickets have averaged 393 tickets per year over the last 3 years. AltaLink forecasts an increasing trend of more than 450 Cyber Security Tickets annually during each of 2024 and 2025.
- **Common Vulnerabilities and Exposures (CVE) issued and evaluated:** this involves evaluation of CVEs to determine if relevant to AltaLink, and creation of tickets for remediation/mitigation. AltaLink tracks the number of cyber security alerts as shown in the graph below.

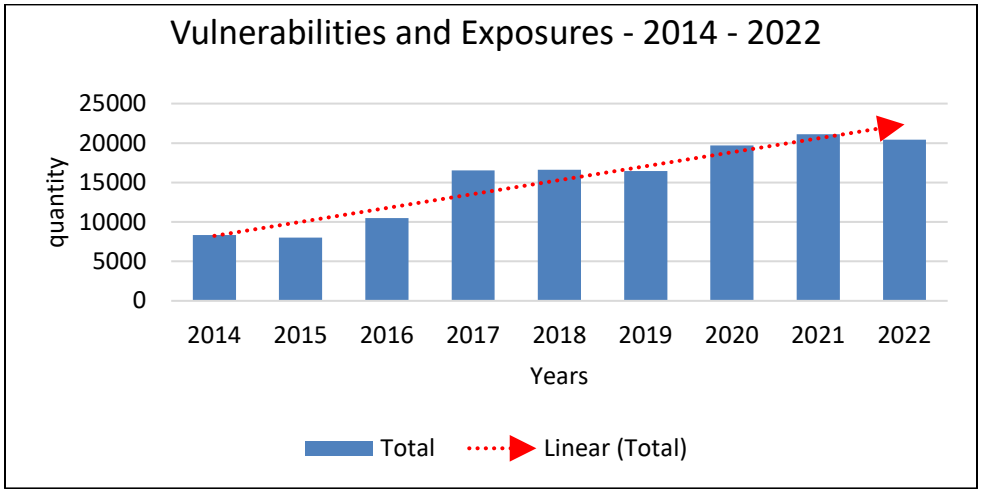


Figure 25.2.13.8-3– Vulnerabilities and Exposures – 2014 - 2022

- **Number of reported suspicious emails:** employee/contractor reported suspicious emails require review and investigation with mitigation actions if found to be malicious. AltaLink tracks the number of quarantine emails as described in Section 10.4**.**
    - **Physical security:** This team is responsible for ensuring AltaLink's facilities and assets are secured. This includes compliance with physical security CIP requirements, managing access control to facilities and substations, responding to physical security incidents and threats, managing a security guard force, monitoring video surveillance, motion detectors and other alarming systems for possible intrusions; and working with a security systems integrator to ensure physical security devices are working properly. The physical security team was charged to 934 until September 2022 when it was moved to USA 935.
- **Information Security Management System (ISMS) Sustainment:** supports the sustainment of the ISMS including ISO 27001/27019 external certification, internal and external audits, risk assessments, scope expansion, and continuous improvement items:
    - Identification of non-conformities and continuous improvement items: through internal and external audits, stakeholder comments, near misses and incidents.

- Complete mitigation actions for non-conformities and continuous improvement items: track and complete actions related to identified non-conformities and continuous improvement items.
- AltaLink anticipates work activity to remain stable as the ISMS is well established.

- **Regulatory Compliance:** supports the implementation, maintenance and support for the Alberta Reliability Standards Critical Infrastructure Compliance (v5) standards, including compliance reporting, investigations and remediation. AltaLink has improved its performance in these areas and expects its annual self-reports, contraventions and milestone actions to decline in the 2024-2025 Test Period, demonstrating improved security for the AIES.
  - **CIP Controls Evidence reported:** As part of the performance of the activities relating to maintaining compliance to the ARS/CIP standards and requirements and as part of the Compliance Management Program, AltaLink collects, reviews, reconciles, and stores regulatory evidence against each requirement through a series of 126 CIP-specific controls. These controls are performed on a periodic basis ranging from bi-weekly to annually for each self-certification period and represent the activity required to demonstrate continuing compliance with the ARS.
  - **CIP AESO Audit – IR responses:** The AESO conducts triannual audits of AltaLink's conformance to the ARS standards. This is a period of intense workload which can extend over many months. The last two audits have averaged approximately 5000 questions.

25.2.13.9 Security and IT A&G Expenses Summary

1768. Customers benefit from effectively operated and well-maintained security and IT systems in the following ways:

- 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 keep pace with technology changes as vendors move their product or service offerings to the cloud.

1769. AltaLink's Security and IT systems support the ongoing operation and effectiveness of AltaLink's assets and workforce in providing services to customers.

25.2.14 USA 935 - General O&M Expenses

1770. 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 - Salvage 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.

1771. 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.[343]

Table 25.2.14-1 – USA 935 – Maintenance of General Plant ($M)

Expense	2021 Actual	2022 Actual	2023 MU	2024 Test Year	2025 Test Year
Labour	0.2	0.3	0.2	0.2	0.2
Contracted Manpower	0.9	1.0	1.0	1.1	1.1
Other GOE	3.3	2.9	3.3	3.3	3.4
Total	**4.4**	**4.1**	**4.5**	**4.6**	**4.7**

*Totals may not add due to rounding.

1772. Approximately 4% of USA 935 is attributable to labour expenses with an additional 22% 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 25.2.14-2 – USA 935 – Maintenance of General Plant Forecast Increase ($M)

Forecast Increase	2023 MU versus 2022 Actual	2024 Test Year versus 2023 MU	2025 Test Year versus 2024 Test Year	2 Test Year Average
Labour	(0.1)	0.0	0.0	0.0
Contracted Manpower	0.1	0.0	0.0	0.0
Other GOE	0.4	0.0	0.0	0.0
Total	**0.4**	**0.1**	**0.1**	**0.1**

*Totals may not add due to rounding.

1773. AltaLink forecasts operating expenses to increase on average in USA 935 by $0.1M over the Test Period due to inflation.

Labour

Table 25.2.14-3 – USA 935 – Maintenance of General Plant Labour Forecast Increase ($M)

Forecast Increase	2023 MU versus 2022 Actual	2024 Test Year versus 2023 MU	2025 Test Year versus 2024 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

[343] Occupational Health And Safety Act, SA 2020, c O-2.2; Occupational Health And Safety Regulation, Alta Reg 62/2003, s 1; Occupational Health And Safety Code, Alta Reg 191/2021; OSHA Employer Responsibilities, available from: https://www.osha.gov/as/opa/worker/employer-responsibility.html

Table 25.2.14-4 – USA 935 – Maintenance of General Plant FTEs

	2021 Actual	2022 Actual	2023 MU	2024 Test Year	2025 Test Year
Admin	1.0	1.0	1.0	1.0	1.0
Maintenance	1.0	1.0	1.0	1.0	1.0
Total Year End FTEs	**2.0**	**2.0**	**2.0**	**2.0**	**2.0**

*Totals may not add due to rounding

1774. AltaLink has reviewed the current forecasted workloads and work processes for the Test Period and confirmed current FTEs are sufficient.

Contracted Manpower

Table 25.2.14-5 – USA 935 – Maintenance of General Plant Contract Manpower Forecast Increase ($M)

Forecast Increase	2023 MU versus 2022 Actual	2024 Test Year versus 2023 MU	2025 Test Year versus 2024 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.

1775. AltaLink is forecasting on average Contracted Manpower expenses to remain stable for the Test Period. The increase of $0.1M in Other from 2022 Actuals to 2023 MU is primarily due to a reclass of physical security costs, which moved from USA 934 to USA 935.

1776. The physical security team is responsible for ensuring AltaLink's facilities and assets are secured. This includes compliance with physical security CIP requirements, managing access control to facilities and substations, responding to physical security incidents and threats, managing a security guard force, monitoring video surveillance, motion detectors and other alarming systems for possible intrusions. The security team works also with a security systems integrator to ensure physical security devices are working properly.

Other GOE

Table 25.2.14-6 – USA 935 – GOE Actual and Forecast Expenditure Detail ($M)

Category	2021 Actual	2022 Actual	2023 MU	2024 Test Year	2025 Test Year
Office	0.1	0.1	0.0	0.0	0.0
Staff Related	0.0	0.0	0.0	0.0	0.0
Building Operating Expenses	2.9	2.5	2.9	3.0	3.0
Telecom	0.3	0.3	0.3	0.4	0.4
Other	0.0	0.0	0.0	0.0	0.0
Total	**3.3**	**2.9**	**3.3**	**3.3**	**3.4**

*Totals may not add due to rounding.

Table 25.2.14-7 – USA 935 – Maintenance of General Plant GOE Forecast Increase ($M)

Forecast Increase	2023 MU versus 2022 Actual	2024 Test Year versus 2023 MU	2025 Test Year versus 2024 Test Year	2 Test Year Average
Inflation	0.0	0.1	0.1	0.1
Other	0.4	(0.0)	(0.0)	(0.0)
Total	**0.4**	**0.0**	**0.0**	**0.0**

*Totals may not add due to rounding.

1777. AltaLink is forecasting on average Other GOE Expenses to remain stable for the Test Period. The increase of $0.4M from 2022 actuals to 2023 MU is mainly due to 2022 benefiting from one-off favourable true-up adjustments for 2020 and 2021 building operating expenses and expected increases in operating costs as a result of inflation pressures.

25.3 Corporate Costs

1778. Refer to Schedule 25-4.

25.4 Corporate Manpower – Full Time Equivalents

1779. 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

1780. 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

1781. In GCOC Decision 27084-D01-2022,[344] AltaLink's deemed capital structure and ROE was set at 37% and 8.5% respectively for 2023.

1782. AltaLink has reflected a placeholder equity ratio of 37% and placeholder ROE of 8.5% in its MFR schedules for 2024 and 2025. In addition, the 2024-2025 MFR schedules continue to target a minimum FFO to Debt ratio of 11.1%.

1783. 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."[345]

1784. To date, AltaLink has been able to maintain its "A" category credit rating. This has allowed AltaLink to access the market and issue $3.9 billion worth of long-term debt in the 2013-2022 test years, at very favourable interest rates as demonstrated in Schedule 28.2 of this Application,[346] which translates into significant long-term cost savings for ratepayers.

28.2 FFO/Debt Ratio

1785. Based on the forecast reflected in the 2024-2025 GTA, and utilizing the approved ROE of 8.5% and approved equity ratio of 37% for 2023, placeholder ROE of 8.5% and placeholder equity ratio of 37% for 2024 and 2025, 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

	2021A	2022A	2023MU	2024F	2025F
Equity Ratio	37%	37%	37%	37%	37%
Actual Return on Equity	8.5%	8.5%	8.5%	8.5%	8.5%
FFO / Debt Ratio*	11.1%	11.1%	11.0%	11.1%	11.0%

* Source: Schedule 31.1-E of the 2024-2025 GTA MFR Schedules

1786. AltaLink believes there can be no deterioration in its credit metrics without putting at risk its "A" credit rating.

28.3 Financing Plan

28.3.1 2022-2023 GTA

1787. The following debt issues were forecast in Schedule 28-2 of the 2022-2023 ALP MFR Schedules.[347]

[344] Decision 27084-D01-2022, 2023 Generic Cost of Capital, March 31, 2022, para 59, pdf 16.
[345] Decision 22570-D01-2018, 2018 Generic Cost of Capital, August 2, 2018, para 689, pdf 145.
[346] MFR Schedules, Schedule 28-2, Schedule of Debt Capital Employed and Embedded Cost.
[347] Exhibit 27548-X0007, AML 2022-2023 GTA 2nd Compliance Filing Attachment 6, ALP MFR Schedules, Sch. 28-2.

Table 28.3.1-1 - 2022-2023 GTA Forecast Long-Term Debt Issues

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	250.0	2.010%	0.910%	2.920%	0.40%	$1,000,000	$891,250
Nov 6, 2023	Nov 6, 2053	30	450.0	2.450%	1.288%	3.738%	0.50%	$2,250,000	$1,076,250

1788. Actual long-term debt issuance during the 2022-2023 Test Period was as follows:

Table 28.3.1-2 - 2022-2023 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
Nov 28, 2022	Nov 28, 2032	10	275.0	3.212%	1.480%	4.692%	0.40%	$1,100,000	$791,497

1789. 2023 MU Long-Term Debt Issue:

Table 28.3.1-3 – 2023 MU 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 6, 2023	Nov 6, 2053	30	500.00	3.010%	1.624%	4.634%	0.50%	$2,500,000	$1,017,500

28.3.2 2024-2025 GTA Forecast Financing Plan

1790. AltaLink's forecast long-term debt issues during the Test Period are as follows:

Table 28.3.2-1 - 2024-2025 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
June 6, 2024	June 6, 2054	30	350.0	3.000%	1.624%	4.624%	0.50%	$1,750,000	$857,750

1791. In 2024, AltaLink is forecasting the issuance of 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

> reduce rate-payer costs. In addition, this practice serves to diversi[fy] the maturity structure of the debt portfolio and reduce rollover risk.[348]

1792. AltaLink has inquired into potential debt financing for the Central East Transfer Out and SE 240 kV Development projects. At this stage, it is too preliminary to say with certainty that financing will be provided in the Test Period or at all. If a transaction were to occur, AltaLink expects it to be lower cost than our conventional debt financing and likely to include an amortizing structure. Any transaction with a third-party investor will be fully disclosed in an AltaLink debt application. The ratepayer would benefit from any lower cost debt provided by a third-party investor through the operation of the long-term debt deferral account.

1793. 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.[349]

1794. AltaLink's forecast and historical long-term debt issues can be found in Schedule 28.2.[350] 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.[351]

28.3.3 Forecast Long-Term Debt Interest Rates

1795. 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

1796. 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 22 basis points for the current Government of Canada Treasury Bill/Commercial Paper credit spread, and nine 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
2024	2.89%	0.22%	3.11%	0.09%	3.20%
2025	2.89%	0.22%	3.11%	0.09%	3.20%

[348] Exhibit 3524-X0551, AML 2015-2016 GTA Application Update Oct 24, 2015, para 905, pdf 280.
[349] Decision 2009-151, AltaLink Management Ltd. and TransAlta Corporation, 2009 and 2010 Transmission Facility Owner Tariffs, October 2, 2009, para 651, pdf 119.
[350] MFR Schedules, Schedule 28-2, Schedule of Debt Capital Employed and Embedded Cost.
[351] 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)*

	Embedded Cost of Debt (Year-End)	Embedded Cost of Debt (Mid-Year)
2021A	2.250%	4.097%
2022A	0.850%	1.340%
2023MU	1.503%	1.078%
2024F	3.200%	2.788%
2025F	3.200%	3.200%

* Source: Schedule 28-2 of the 2024-2025 GTA MFR Schedules.

28.4 Credit Facilities

28.4.1 2022-2023 GTA

1797. In the 2022-2023 GTA, AltaLink forecast the following credit facility amounts (refer to Table 28.4.1-1 below).

Table 28.4.1-1 – 2022-2023 GTA Forecast and Actual Credit Facility Amounts ($M)

	2021F	2021A	2022F	2022A	2023F	2023MU
Beginning of Year	575	675	575	575	575	575
End of Year	575	575	575	575	575	575

1798. AltaLink's credit facilities include a $500M commercial paper backstop facility and a $75M operating line which supports AltaLink's day-to-day cash management activities. On April 27, 2020, AltaLink entered into a $100M 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 $100M revolving credit facility were borne by AltaLink's shareholder. The $100M revolver matured on April 27, 2021.

1799. 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 – 2022-2023 GTA Forecast and Actual Credit Facility Costs ($)

	2021F	2021A	2022F	2022A	2023F	2023MU
Standby Fees	920,000	1,013,180	920,000	927,270	920,000	920,000
Other Fees	325,000	306,015	295,000	277,360	266,250	266,250

28.4.2 2024-2025 GTA Forecast

1800. AltaLink's forecast credit facility amounts for the 2024-2025 GTA are shown in Table 28.4.2-1 below.

Table 28.4.2-1 – 2024-2025 GTA Forecast Credit Facility Amounts ($M)

	2024F	2025F
Beginning of Year	575	575
End of Year	575	575

1801. The costs associated with the above credit facility amounts are shown in Table 28.4.2-2 below.

Table 28.4.2-2 – 2024-2025 GTA Forecast Credit Facility Costs ($)

	2024F	2025F
Standby Fees	920,000	920,000
Other Fees	266,250	266,250

Sizing of credit facilities

1802. 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 (CP) market access and daily banking operations

1803. AltaLink's CP 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 CP backstop credit facility and the CP program limit were both reduced to $500M in December 2018. For further information on DBRS required liquidity support refer to **Appendix 4-C2**.

1804. 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

1805. 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 a forecast new long-term debt issue of $350M in 2024, 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.

1806. AltaLink's liquidity must be sufficient from a rating agency perspective or AltaLink risks a credit rating downgrade.

1807. DBRS liquidity guidelines are reflected in their publication titled "DBRS Morningstar Global Criteria: Commercial Paper Liquidity Support for Non-Bank Issuers" which can be found at **Appendix 4-C2**. 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-C2**, page 2, paragraph 3[352]) and that "bank lines would be available at the necessary level when and

[352] Appendix 4, pdf 53.

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-C2**, page 2, paragraph 5[353]).

1808. 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 "Methodology and Assumptions: Liquidity Descriptors For Global Corporate Issuers" report (paragraph 93 on page 13),[354] 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.

1809. 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 - 2024-2025 Forecast Required Credit Facility Amounts using S&P Methodology ($M)

	2024	2025
Required Credit Facilities	519	124

1810. The numbers in the table above are understated as they do reflect an adjustment for the possibility that actual cashflows will be lower than forecast.

1811. 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:

1812. 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 2024 and 2025.

Credit Facilities Maturity Date:

1813. AltaLink's credit facilities mature in December 2027 (5-year term). Each December it is customary for AltaLink to renew its credit facilities for an additional year thereby re-establishing a 5-year term. AltaLink was able to avoid a significant increase in credit facility costs during the COVID-19 pandemic simply by postponing its regular annual renewal until credit conditions normalized. The 5-year maturity provides AltaLink, and ratepayers cost certainty and credit availability though December 2027.

28.5 Credit Rating Reports

1814. Refer to **Appendix 4** for the credit rating reports.

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

[353] Appendix 4, pdf 53.
[354] Appendix 4, pdf 110.

Schedule 28-4 Schedule of Subordinated Debt

29. NO COST CAPITAL

1815. 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

1816. Schedule 29-1[355] lists the component accounts treated as No Cost Capital included in this Application. The No Cost Capital mid-year balances for 2024 and 2025 are stable, with minimal changes, compared to prior years.

29.2 Self Insurance Reserve

1817. A copy of AltaLink's SIR (Self Insurance Reserve) Policy is provided in **Appendix 3-C**.

1818. The general framework for use of the SIR is as follows:

- Funding: AltaLink forecasts funding for the SIR of $0.9M for each of 2024 and 2025 (to fund individual losses in excess of $0.1M which meet the SIR eligibility criteria). Refer to Schedule 29-2[356] for further details. Losses are expected to be $0.9M in each of 2024 and 2025;
- Charges to SIR: losses which meet criteria for SIR eligibility;
- Target Balance: the EUB, in Decision 2007-012,[357] 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.

1819. 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.

1820. AltaLink's SIR continuity schedule is provided as Schedule 29-2.[358]

29.3 Future Income Tax

1821. The future income tax account mid-year balances for 2024 and 2025 are stable, with minimal changes, compared to prior years, due to the continued use of the "flow-through" method of determining income taxes for regulatory purposes.

29.4 Pension/Post Retirement Benefit

1822. AltaLink's post retirement forecast expense increase reflects FTE changes and additional service provide by employees. These are set out in Schedule 29-4.[359]

29.5 Rainbow Reserve

1823. This Application treats Rainbow Eligible Expenditures in the same manner as AltaLink's 2013-2014 GTA.[360] In EUB Decision 2005-019,[361] the Board directed AltaLink not to capitalize the four

[355] MFR Schedules, Schedule of Mid-Year No Cost Capital.
[356] MFR Schedules, Schedule of Reserve for Injuries and Damages (SIR).
[357] 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.
[358] MFR Schedules, Schedule of Reserve for Injuries and Damages (SIR).
[359] MFR Schedules, Schedule of Pension/Post Retirement Benefits.
[360] Exhibit 0003.00.AML-2044, AML 2013-2014 GTA Application Volume 1, Section 29.5, pdf 405.
[361] Decision 2005-019, AltaLink Management Ltd. and TransAlta Utilities Corporation, 2004-2007 General Tariff Application, pp. 59-60, pdf 65-66.

programs which would otherwise be capitalized as rainbow expenses, but treat them as operating expenses.

29.6 Hearing Cost Reserve

1824. Refer to Schedule 29-7[362] for the HCR (Hearing Cost Reserve) funding. The details for the payments and the funding requirements are provided in Section 25.2.8

29.7 Salvage Reserve

1825. In Decision 26509-D01-2022, the Commission did not approve AltaLink's 2019-2021 actual CRU net salvage expenditures on the basis of its determination that AltaLink had not provided sufficient information to test the prudence of those expenditures.[363] The Commission directed AltaLink to remove its 2019-2021 actual CRU salvage expenditures in the amount of $98.9M from its 2019-2021 net salvage reserve account (Directive 52).[364] The Commission stated, however, that it would test the prudency of the 2019-2021 net salvage costs in AltaLink's next GTA if AltaLink provides the necessary support for its actual 2019-2021 net salvage costs.

1826. AltaLink has developed detailed salvage summary reports for each CRU business case from the 2019-2021 GTA explaining the variances from forecast to 2019-2021 actual salvage expenditures and demonstrating the prudence of those expenditures. The salvage summary reports are discussed in Section 10.3.7 and are provided in **Appendix 18-B**. AltaLink also provides additional relevant information in Sections 10.3.1 and 10.3.4.

1827. AltaLink's "as-filed" 2022 opening salvage reserve account balance was $210.4M. In accordance with the Commission's directive, AltaLink removed the $98.9M amount, resulting in a revised opening balance of $309.3M.

1828. AltaLink submits that it has demonstrated the prudence of its 2019-2021 actual CRU salvage expenditures and, on that basis, requests Commission approval of the following: First, approval to include the $98.9M amount in its 2024 opening salvage reserve account balance. Second, approval to recover the $11M in return and depreciation incurred over the 2022-2023 test period applicable to these prudent 2019-2021 actual salvage expenditures. AltaLink has reflected the requested approvals in its MFR schedules by incorporating the $98.9M into Schedule 29-8 at line 14 and the $11M into Schedule 3-1 at line 17.

1829. Also, the Commission Decision 25870-D01-2020 directed AltaLink in future GTAs or DACDAs 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.[365]

1830. Schedule 29-8 provides a breakdown of salvage by USA code and the amount of salvage associated with the terminal asset retirement. AltaLink defines terminal salvage as the cost of removing equipment that is not going to be replaced. Examples of terminal salvage are: disposing of salvaged material; environmental disposal costs; and removing a line that is being

[362] MFR Schedule, Schedule of Rate Hearing Costs – Total.
[363] Decision 26509-D01-2022, para 684.
[364] Decision 26509-D01-2022, para 686.
[365] Decision 25870-D01-2020, Stage 2 Review and Variance of Decision 23848-D01-2020, AltaLink Management Ltd., 2019-2021 GTA, Appendix 2, 1(ii), p 12, pdf 15.

relocated to a different right of way. Terminal salvage is rare. It only occurs when a decision is made that a transmission asset is no longer required. This will be reviewed and approved through AltaLink's internal governance process. Terminal salvage is identified in the planning stage of the project, then presented and reviewed at internal stage gate meetings. Data fields in AltaLink's ERP are used to track terminal salvage separately to interim salvage as well as by USA asset code.

1831. AltaLink has one Discontinued from Use project related to DA projects during the Big Build. AltaLink's Discontinued from Use project for 80L continues in the 2024-2025 Test Period with the removal of structures and reclamation and remediation work. Refer to **Appendix 18-C** for the Discontinued from Use business case.

1832. In Sections 10.3.7 to 10.3.41 the salvage expenditure variances between 2022-2023 GTA forecast and 2022 actuals/2023 management update are explained.

1833. AltaLink's CRU forecasts (capital and salvage) are specific to the type of CRU project as described in the CRU 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.

1834. During the period of transition, AltaLink continues to request pre-collection of salvage to achieve a 11.1% FFO/Debt ratio. Refer to Section 1.1.4 of the Application and Section 6.5 for further details on AltaLink's transition to its capitalized and expense salvage methodology and its request for the funding of the salvage reserve.

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

30. AFFILIATE TRANSACTIONS

1835. Section 30 of AltaLink's Application addresses the following:

30.1 Minimum Filing Requirements

30.2 Affiliate Collaboration – Procurement

30.3 Affiliate Collaboration – IT Projects

30.4 Affiliate Transaction Schedules

30.1 Minimum Filing Requirements

1836. A copy of AltaLink's IACC, approved in EUB Decision 2004-068,[366] is included in this Application within **Appendix 15-1**. AltaLink's IACC annual compliance reports for each of the 2021 and 2022 periods (filed with the Commission on April 29, 2022, and April 28, 2023 respectively) (collectively, the Compliance Reports), are included in this Application at **Appendix 15-1** and **Appendix 15-2**.

1837. AltaLink is an indirectly wholly owned subsidiary of BHEC Holdings, which in turn is an indirectly wholly owned subsidiary of BHE. AltaLink's organizational chart is included in this Application at **Appendix 1**.

Services Agreements

1838. AltaLink provides services to affiliates under the following Services Agreements:

a. Services Agreement dated October 30, 2012, between AML and AltaLink Investment Management Ltd (refer to **Appendix 15-3**).

   AltaLink provides Accounting, Treasury and Operations services under this agreement. Refer to "Pricing Methods" below for a description of pricing methods.

b. Master Services Agreement dated March 13, 2015, between AML and BHEC Holdings (refer to **Appendix 15-4-1)** and a Request for Services dated January 1, 2023 (refer to **Appendix 15-4-2**)

   AltaLink provides all of the types of services listed in "Pricing Methods" below under this agreement. Refer to "Pricing Methods" below for a description of pricing methods.

c. Limited Partnership Agreement dated March 6, 2017, forming KainaiLink, L.P.(KLP) (refer to **Appendix 15-5-1**).

   i. Loan Agreement dated January 1, 2020, between ALP and KLP (refer to **Appendix 15-5-2**).

   AltaLink provides Operations services under to this agreement.

d. Limited Partnership Agreement dated March 6, 2017, forming PiikaniLink, L.P.(PLP) (refer to **Appendix 15-6-1**).

   i. Loan Agreement dated June 1, 2019, between ALP and PLP (refer to **Appendix 15-6-2**).

   AltaLink provides Operations services under this agreement.

e. Services Agreement as amended and restated on March 7, 2019, between ALP and Montana Alberta Tie Ltd. (MATL) (refer to **Appendix 15-7**).

   AltaLink provides Operations services under this agreement.

1839. AltaLink obtains services from affiliates under the following Services Agreements:

a. Intercompany Administrative Services Agreement (IASA) dated March 31, 2006 (refer to **Appendix 15-8-1**).

[366] Decision 2004-068, AltaLink Management Ltd., Code of Conduct, August 31, 2004.

i. Limited Participation IASA dated March 23, 2018, for Procurement Services provided to AltaLink (refer to **Appendix 15-8-2**).

1. As amended on December 8, 2022, for EPRI (refer to **Appendix 15-8-3**).

ii. Limited Participation IASA dated January 1, 2019, for Visual Lease Software (refer to **Appendix 15-8-4**).

iii. Limited Participation IASA dated October 20, 2020, for Shared Information Services (refer to **Appendix 15-8-5**).

1. Amended and restated Request for Services dated April 24, 2023, for Data Management Protocol and IT Projects (refer to Appendix 15-8-6).

iv. Limited Participation IASA dated January 1, 2021, for Shared Executive Services (refer to Appendix 15-8-7).

b. Professional Services Agreement dated January 1, 2016 (as amended December 31, 2022), between BHE Canada, L.P. and AltaLink (refer to **Appendix 15-9**).

AltaLink obtains Executive Services under this agreement, for example, in connection with litigation support.

c. Intercompany Funding Facility dated March 31, 2023, in respect of AILP agreeing to lend monies to AltaLink if requested by AltaLink for liquidity purposes (refer to **Appendix 15-10**).

Pricing Methods

1840. When AltaLink provides services to its affiliates under the services agreements, AltaLink prices and charges the services and cost recoveries to the affiliate as follows:

Type of Service	Pricing Method
Accounting, Treasury, Procurement, Security, Communications, Operations, Government Relations, Legal & Regulatory, EH&S, Business Development, Employee Secondments	AltaLink employees track hours spent on affiliate matters. Annual salaries are converted to an effective hourly rate and the affiliate is charged 2.0x that hourly rate. The AUC deemed the 2.0x multiplier to be a reasonable proxy for establishing the fair market value for services (Decision 2005-019[367]).
Executive Services	Executives track hours spent on affiliate matters. Annual salaries are converted to an effective hourly rate and the affiliate is charged 2.2x that hourly rate (2.7x when applied to the CEO) to account for the derivation of a higher proportion of executive compensation from non-salary amounts.

[367] Decision 2005-019, AltaLink Management Ltd. and TransAlta Utilities Corporation, 2004-2007 General Tariff Application, March 12, 2005 (Decision 2005-019), p. 56, pdf 62.

Type of Service	Pricing Method
Insurance	Allocated by AltaLink to the affiliate based on the incremental increase in insurance premiums.
IT Services	Annual base amount charged to affiliates for all software use and IT support based on the Opex budget for Information Services, multiplied by the ratio of the number of affiliate mailboxes divided by the total number of all AltaLink and affiliate mailboxes.
Netcom	Annual base amount charged to affiliates for Netcom services based on 2.0x the salary budget for support, internet and support maintenance, multiplied by the ratio of affiliate employees divided by the total of all AltaLink and affiliate employees.
Human Resources	Annual base amount charged to affiliates for all basic HR support services based on 2.0x the salary budget for the HR department, multiplied by the ratio of the total of all affiliate salaries divided by the total of all AltaLink salaries.
Employee Benefits	Benefit costs for medical, dental and wellness coverage are allocated to affiliates based on the ratio of affiliate labour divided by the total of all AltaLink and affiliate labour.
Cost Recoveries	AltaLink is reimbursed for any Netcom or IT equipment dedicated to an affiliate. AltaLink is reimbursed for Netcom eVPL services, analog voice services, land lines and conference lines based on the direct cost of 3rd party invoices.

1841. When AltaLink acquires services from its affiliates under services agreements, the affiliate prices and charges the services and cost recoveries to AltaLink as follows:

Type of Service	Pricing Method
Executive Services	Affiliate employees track hours spent on AltaLink matters. Annual salaries are converted to an effective hourly rate and AltaLink is charged 2.0x that hourly rate. The AUC deemed the 2.0x multiplier to be a reasonable proxy for establishing the fair market value for services (Decision 2005-019[368]).
Procurement Services	BHE's e-auction and aggregation analysis Centre of Excellence costs are based on the actual cost of the service provided and are either 1) Pro-rated dependent on the portion of aggregated event spend AltaLink undertakes; or 2) allocated 100% to AltaLink when related to an event that is conducted solely for AltaLink.

[368] Decision 2005-019, p. 56, pdf 62.

Type of Service	Pricing Method
	Affiliate employees track hours spent on AltaLink procurement matters. Annual salaries are converted to an effective hourly rate and AltaLink may be charged no greater than 1.64x that hourly rate.
Global Security Operations Centre	The basic monitoring service is priced based on the Global Security Operations Centre (GSOC) labour budget, multiplied by the ratio of AltaLink employees divided by the total of all AltaLink and BHE employees. The amount is capped at the agreed price irrespective of whether the GSOC budget increases. 3rd party vendor O&M costs are allocated to AltaLink based on the number of licenses and the pro-rata number of AltaLink user accounts over the overall BHE user accounts. AltaLink reimburses BHE for licences purchased for AltaLink on a cost-recovery basis.
M365 Data Protection and Backup	The service is priced based on 3rd party licence costs, multiplied by the ratio of the number of AltaLink mailboxes divided by the total number of AltaLink and affiliate mailboxes.
M365 Support	The service is priced based on the effective hourly cost of applicable BHE IT personnel. The BHE Rate Card (as defined below) is set at US$50 per hour for the use of affiliate Service Desk personnel and US$85 per hour for the use of affiliate IT Resource Support personnel.
IT and Network	AltaLink reimburses BHE for direct costs based on 3rd party invoices.
Other Cost Recoveries	AltaLink reimburses BHE for direct costs based on 3rd party invoices.

1842. Schedule 30-1[369] lists the dollar amount of charges to affiliates for services provided by AltaLink. Schedule 30-2[370] lists the dollar amount of charges to AltaLink for services provided by affiliates.

30.2 Affiliate Collaboration – Procurement

30.2.1 Cross-Company Aggregated Events and E Auctions

1843. As described in AltaLink's General Tariff Applications (each a GTA), as a supplement to its existing procurement processes AltaLink participates with BHE affiliates in cross-company aggregated events and e-auctions for the competitive procurement of some of the materials and equipment that AltaLink requires to provide transmission service (Competitive Procurement Events). Since 2018, AltaLink has participated in BHE's e-Auction Centre of Excellence (COE) which centralizes e-auctions and procurement aggregation analysis and services for BHE

[369] MFR Schedules, Schedule of Transmission Charges to Affiliate.
[370] MFR Schedules, Schedule of Transmission Affiliate O&M Costs Charged from Affiliate.

affiliates. Upon the conclusion of a Competitive Procurement Event, AltaLink retains the discretion to complete the procurement and is not obligated to do so. When AltaLink decides to complete the procurement it enters into its own contract with the vendor.

1844. As noted in AltaLink's 2022-2023 GTA: "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[s] and e-auctions."[371] AltaLink participates in e-auctions through the Jaggaer tool (as described below) which allows collaboration with BHE affiliates to obtain these procurement savings. As a result of supply chain disruptions, there were significantly fewer collective procurement events in 2021 and 2022. During that time, AltaLink participated in $0.4M of collective procurement events with the BHE utilities and this has saved Alberta customers $15k. As supply chain conditions improve and return to normal, AltaLink intends to continue to participate in such Competitive Procurement Events in the Test Period in order to achieve further cost savings for Alberta ratepayers.

1845. To date, AltaLink has not been charged by BHE for its participation in these procurement events. Any services provided and charges levied by BHE will be in accordance with the Limited Participation IASA dated March 23, 2018, for Procurement Services provided to AltaLink.

30.3 Affiliate Collaboration - IT Projects

1846. In this section, AltaLink describes a number of IT projects AltaLink has undertaken or is planning to undertake that involve collaboration with affiliates. As noted in AltaLink's 2022-2023 GTA,[372] when other BHE utilities are procuring new systems where collaboration may be beneficial to AltaLink, AltaLink will consider participating if (i) AltaLink has identified a need for IT functionality to enable it to meet its statutory service obligations as a TFO; (ii) the arrangement under which the project will be undertaken is cost effective; and (iii) AltaLink's stringent requirements for the integrity and confidentiality of data can be satisfied.

1847. The extent of affiliate involvement in AltaLink's IT projects has and is expected to continue to range from (i) simple price-matching where AltaLink asks its current vendors to match a BHE volume pricing discount for a new or renewed independent contract with AltaLink; to (ii) the acquisition of software licences and vendor management and support through Competitive Procurement Events combined with on-site implementation of a shared tenancy; to (iii) a full RFP process conducted jointly that results in a shared tenancy under which AltaLink and its affiliates share the same application, database and authorized administrators.

1848. AltaLink's IT forecasts are generally prepared years in advance of completing and adding a project to rate base. As a result, AltaLink may not know at the time it first identifies and includes the required functionality in a GTA whether the project could or will be undertaken in collaboration with affiliates or under another approach. Even if AltaLink becomes involved in the collaborative evaluation of a potential IT project, AltaLink always retains the independent discretion to proceed with the results of any design and/or procurement process or pursue some other alternative.

1849. AltaLink has rigorous data management safeguards in relation to each IT project where required to protect its utility information and other confidential information in accordance with the

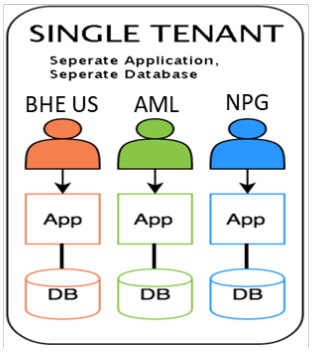
[371] Exhibit 26509-X0002.01, Application Updated Sep2021, para 890, pdf 273.
[372] Exhibit 26509-X0002.01, Application Updated Sep2021, para 891, pdf 274.

requirements of section 6 of the IACC. This includes AltaLink's Data Management Protocol which also incorporates CIP and BCSI protection requirements.

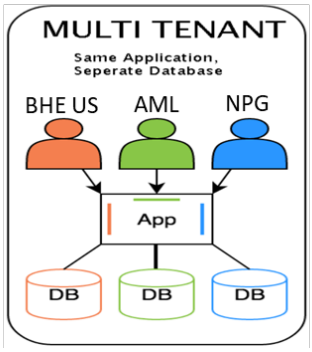
1850. The following scenarios illustrate the range of potential approaches to implementing required IT functionality in collaboration with affiliates. AltaLink provides these scenarios as an aid to understanding the project descriptions which follow.

- Scenario 1 – Single Tenancy: Typically applicable when AltaLink has participated in an aggregated procurement exercise and the procured software will be installed on AltaLink premises. There is no access by affiliates to AltaLink systems or data.
- Scenario 2 – Multi Tenancy (shared application but separate data bases): There is separation or partitioning of AltaLink's data (physically or logically) so that no affiliate has access to AltaLink's data. Global system administrator(s) may be appointed to manage the central system or application but do not have access to AltaLink data.
- Scenario 3 – Shared Tenancy (shared application and shared data base): a shared application and a shared database, however affiliate user-level access is restricted to that affiliate's data. Scenarios 3(A) and 3(B) contemplate AltaLink granting authorized access to certain affiliate personnel to perform specified services for AltaLink:
    - Scenario 3(A) - System administration access: global system administrator(s) are authorized to undertake privileged system control, access and upgrades.
    - Scenario 3(B) Global services account: accounts are authorized to see AltaLink's database in order to perform a service for AltaLink without necessarily having privileged system control and access.

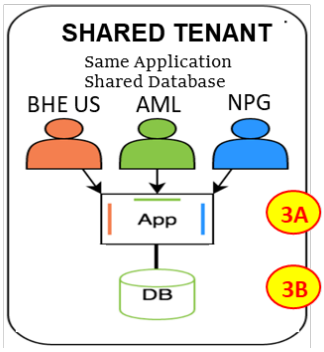
Scenario 1: No System Access – No Data



Scenario 2: System Access – No Data



Scenario 3: System Access / Data Access



1851. In each scenario, AltaLink data will not be shared with the affiliate for any reason other than to enable the affiliate to provide or support the IT System for the benefit of AltaLink (similar to a 3rd party managed service or cloud offering). The use of authorized administrative agent (AAA) accounts by affiliate personnel is logged and provided to AltaLink. In addition, authorized administrators undertake IACC training and attest to compliance with the Data Management Protocol annually.

30.3.1 2019-2021 Completed Projects

30.3.1.1 Microsoft M365 (Lifecycle Sustainment)

1852. This project provides AltaLink with a cloud- and subscription-based implementation of Microsoft's M365 applications to replace AltaLink's former on-premises implementation of

Microsoft Office and email exchange servers. M365 services provide a common service platform for staff collaboration and meeting technology, while offering end-users a singular computing experience irrespective of workplace location or corporate device type.

1853. The project was included in Appendix 13-B3.02 System Upgrades business case within the Lifecycle Sustainment category in the 2019-2021 GTA.[373] It was completed and added to rate base in 2021.

1854. The project was structured as a Shared Tenancy (Scenario 3) with BHE affiliates. Affiliate involvement in the evaluation, development and implementation of the project included BHE determining scope of work to achieve a cloud-based solution, determining and resolving technical design issues, including compatibility, migration, security, audit and Data Management Protocol matters, and negotiating a volume pricing arrangement with Microsoft.

1855. AltaLink has its own M365 Licence contract with Microsoft Canada which incorporates BHE's volume pricing arrangement with Microsoft. BHE provides support and administration services under the Limited Participation IASA dated October 20, 2020, for Shared Information Services.

1856. Support services are divided into Tier 1 / 2 / 3. Tier 1 service including application installs, initial troubleshooting and service requests are performed by AltaLink personnel and Longview Systems (LVS), its current local support service provider. Tier 2 services include (i) service requests that require escalation to the BHE service desk; and (ii) IT Resource Support consisting of Digital Workspace, Cloud platform, Network BMC and Remedy Discovery Administration. Tier 3 services include BHE administrative services for the shared tenancy.

1857. Tier 2 services were set based on the effective hourly cost of applicable BHE IT personnel and then compared by AltaLink to rates for similar services from LVS to ensure the BHE rate was the same or lower (the BHE Rate Card). The BHE Rate Card for Tier 2 services was set at US$50 per hour for Service Desk personnel and US$85 per hour for IT Resource Support personnel.

1858. To date, BHE has not charged AltaLink for any Tier 2 services that AltaLink has requested pursuant to the BHE Rate Card. BHE does not charge AltaLink for Tier 3 / M365 global tenant administration services.

1859. AltaLink reimbursed BHE for the cost of Microsoft software patches purchased under BHE's Premier Service arrangement with Microsoft. These payments were made between 2015 and 2021 and were described in AltaLink's 2021 Compliance Report, see **Appendix 15-1**.[374]

1860. In 2022, AltaLink paid the following amounts to BHE: (i) $0.09M for data protection for 2021-2022; (ii) $0.113M as prepayment for data protection for 2023-2025; and (iii) $0.06M for extended support. The charges were in accordance with the Limited Participation IASA dated October 20, 2020, for Shared Information Services. The project involves ongoing annual operating costs payable by AltaLink to BHE which AltaLink forecasts as follows: (i) $0.038M for data protection; and (ii) $0.06M for extended support. The charges will be in accordance with the Limited Participation IASA dated October 20, 2020, for Shared Information Services. These amounts are reflected in Schedule 30-2.[375]

[373] Exhibit 23848-X0018.01, AML 2019-2021 GTA – Appendix 13-B Updated, IT Business Cases, pdf 89.
[374] Appendix 15-1, 2021 Compliance Report, Section 2.0 AltaLink Compliance Report (g).
[375] MFR Schedules, Schedule of Transmission Affiliate O&M Costs Charged from Affiliate.

30.3.1.2 Vulnerability Management (Security)

1861. This project is a vulnerability scanning tool (the VM Tool). The VM Tool allows AltaLink to (i) identify its own vulnerabilities; and (ii) identify vulnerabilities other BHE affiliates experience. This allows AltaLink to anticipate security issues before they occur.

1862. The project was included in Appendix 13-B1.05 Cyber Protection System Enhancements business case within the Security category in the 2019-2021 GTA[376]. It was completed and added to rate base in 2020 and 2021.

1863. The project was structured as a Shared Tenancy (Scenario 3A). The project consisted of on-premises installation of the VM Tool on AltaLink devices and local scanning, with data sent to BHE's Azure shared tenancy to communicate with the centralized instance of the VM Tool which is managed by the BHE Chief Security Office. Affiliate involvement in the evaluation, development and implementation of the project included BHE identifying the vendor and negotiating the commercial terms and price based on its bulk purchasing power. There are no ongoing affiliate services/transactions associated with this tool.

30.3.1.3 Global Security Operations Centre (Security)

1864. This project provides AltaLink with cyber security monitoring services by BHE's GSOC using security information and event management (SIEM) applications. The common platform across BHE affiliates allows centralized detection of patterns of malicious attack on a broader scale due to the number of utilities involved and provides earlier warnings; incident handling; threat and vulnerability management; network forensic analysis; advanced Threat Vulnerability Management including Adversary Tracking, application security assessment, cyber intel management; and insider threat investigation including suspicious behavior detection. GSOC collaboration provides 24/7 monitoring of Tier 1 alerts on AltaLink's Corporate Network and the option for AltaLink to expand monitoring to include its EMS, OT and NETCOM networks in the future. In addition, GSOC provides specific critical infrastructure threats and trend analysis for the electricity industry, with GSOC receiving threat intelligence directly from NERC's E-ISAC. Due to the common applications and GSOC monitoring, if other BHE affiliates experience vulnerabilities, GSOC investigates similar issues for AltaLink and escalates them as required.

1865. This project was included in Appendix 13-B1.05 Cyber Protection System Enhancements business case within the Security category in the 2019-2021 GTA[377]. It was completed and added to rate base in 2021.

1866. The project involves ongoing annual operating costs to AltaLink of $0.04M in vendor O&M costs (paid by BHE to the vendor and allocated by BHE to AltaLink based on AltaLink alarm volumes and user numbers). These amounts are reflected in Schedule 30-2.[378]

1867. In addition, AltaLink is obligated to reimburse BHE up to $0.13M in BHE O&M costs (allocated to AltaLink based on AltaLink's employee headcount relative to BHE total employee headcount) and $0.13M in capital license costs.

1868. To date, BHE has not charged AltaLink for prior year GSOC annual operating costs other than the $0.04M of vendor O&M, but remains entitled to do so for 2023 in accordance with the Limited

[376] Exhibit 23848-X0018.01, AML 2019-2021 GTA – Appendix 13-B Updated, IT Business Cases, pdf 26.
[377] Exhibit 23848-X0018.01, AML 2019-2021 GTA – Appendix 13-B Updated, IT Business Cases, pdf 26.
[378] MFR Schedules, Schedule of Transmission Affiliate O&M Costs Charged from Affiliate.

Participation IASA dated October 20, 2020, for Shared Information Services. The project was structured as a Shared Tenancy (Scenario 3A) with BHE affiliates in a private cloud. The shared tenancy is hosted by BHE. Tier 1 monitoring is undertaken by GSOC personnel and escalated to AltaLink personnel to implement Tier 2 or Tier 3 actions as warranted. Account provisioning and SIEM application licence management and renewal are undertaken by GSOC personnel.

1869. Affiliate involvement in the evaluation, development and implementation of the project included BHE identifying the vendors and negotiating the commercial terms and price based on its bulk purchasing power.

1870. In 2022 AltaLink executed the GSOC Network Monitoring Expansion project to expand the SIEM system logs that GSOC monitors to include its EMS, OT and NETCOM networks. This expansion project is described below.

30.3.1.4 Application Control (Security)

1871. This project provides AltaLink with an application control (App Control) tool to protect workstations, critical servers and all endpoints. The App Control tool is common to all BHE affiliates allowing AltaLink to benefit from the sharing of best practices and effective mitigation measures to identified common threats.

1872. The project was included in Appendix 13-B1.05 Cyber Protection System Enhancements business case within the Security category in the 2019-2021 GTA.[379] It was completed and added to rate base in 2021.

1873. The project was structured as a Single Tenant solution (Scenario 1) installed on AltaLink's premises. Affiliate involvement in the project was limited to BHE negotiating commercial terms and discounted pricing with the software vendor. AltaLink purchased the software directly based on the BHE discounted pricing. For security reasons, the tool resides on AtlaLink's networks. There are no ongoing affiliate services/transactions associated with this tool.

30.3.1.5 Jaggaer (Process Improvement)

1874. This project provides AltaLink with total contract management and e-Sourcing functionality. This allows AltaLink to participate in the Competitive Procurement Events which leverage the buying power of the combined BHE affiliates that use the Jaggaer tool.

1875. The project was included in Appendix 13-B2.06 Purchase Order Automation business case within the Process Improvement category in the 2019-2021 GTA.[380] It was completed and added to rate base in 2019 and 2020.

1876. The project was structured as a Shared Tenancy (Scenario 3) with BHE affiliates in a private cloud. Affiliate involvement included providing AltaLink with free technical expertise to identify and evaluate alternative vendor solutions and conducting an RFP process and negotiating volume pricing with the successful vendor. During implementation in the U.S., significant cyber vulnerabilities were identified and the contracts were cancelled. BHE and AltaLink then turned to the second-place compliant bidder from the procurement process.

1877. AltaLink has its own licence contract with the vendor which incorporates BHE's volume pricing. BHE has not charged AltaLink any amounts related to Jaggaer (including no charges for

[379] Exhibit 23848-X0018.01, AML 2019-2021 GTA – Appendix 13-B Updated, IT Business Cases, pdf 26.
[380] Exhibit 23848-X0018.01, AML 2019-2021 GTA – Appendix 13-B Updated, IT Business Cases, pdf 64.

implementation, maintenance or support). There are no ongoing affiliate services/transactions associated with this project.

30.3.1.6 Remedy Service Management (Process Improvement)

1878. This project provides AltaLink with a consolidation and standardization of all AltaLink's service management into one instance of the Remedy service management platform. This allows AltaLink to respond to service requests and fix issues more quickly and efficiently, and allows assets to be loaded into the system and updated on a regular basis.

1879. The project was included in Appendix 13-B2.09 IS Help Desk Enhancement business case within the Process Improvement category in the 2019-2021 GTA.[381] It was completed and added to rate base in 2021.

1880. The project was structured as a Shared Tenancy (Scenario 3) with other BHE affiliates in a private cloud. The shared tenancy is hosted by BHE on PacifiCorp servers in its data centers. Affiliate involvement in the evaluation, development and implementation of the project included BHE's negotiation of commercial terms including price. The commercial terms addressed specific AltaLink requirements. AltaLink entered into a separate Canadian contract with the vendor, BMC, using the BHE negotiated commercial terms, including price.

1881. The BHE Rate Card applicable to M365 described above also applies to the BHE Service Desk and IT Resource Support personnel if AltaLink request support from BHE for Remedy. AltaLink appoints BHE AAAs to provide Tier 2 services (provisioning BMC Discovery and BMC Remedy Administrative services and central access and reporting/log collection) and Tier 3 services (global tenant administration). To date BHE has not charged any amounts for Remedy support.

30.3.1.7 Celonis Process and Asset Management Optimization (Process Improvement)

1882. This project provides AltaLink with a process mining system that identifies trends and reduces errors in business processes, and drives process optimization.

1883. The project was completed in three stages. Stage 1 – Procure to Pay was included in Appendix 13-B2.01 Invoicing Automation business case within the Process Improvement category in the 2019-2021 GTA.[382] It was completed and added to rate base in 2020.

1884. Stage 2 – Asset Management was included in Appendix 13-B2.02 Asset Information Management AIM Program business case within the Process Improvement category in the 2019-2021 GTA.[383] It was completed and added to rate base in 2021.

1885. Stage 3 – Additions and Enhancements was included in Appendix 13-B2.08 Data Analytics & Reporting business case within the Process Improvement category in the 2019-2021 GTA.[384] It was completed and added to rate base in 2021.

1886. The project was structured as a Shared Tenancy (Scenario 3) with other BHE affiliates in a public cloud hosted by a third party. Affiliate involvement in the evaluation, development and implementation of the project included BHE providing technical expertise in identifying and evaluating vendor solutions, conducting an RFP and negotiating pricing with Celonis. AltaLink contracted directly with Celonis for software licensing and support and maintenance services

[381] Exhibit 23848-X0018.01, AML 2019-2021 GTA – Appendix 13-B Updated, IT Business Cases, pdf 78.
[382] Exhibit 23848-X0018.01, AML 2019-2021 GTA – Appendix 13-B Updated, IT Business Cases, pdf 36.
[383] Exhibit 23848-X0018.01, AML 2019-2021 GTA – Appendix 13-B Updated, IT Business Cases, pdf 43.
[384] Exhibit 23848-X0018.01, AML 2019-2021 GTA – Appendix 13-B Updated, IT Business Cases, pdf 72.

based on the pricing negotiated by BHE. There are no ongoing affiliate services/transactions associated with the Celonis functionality. In 2021 AltaLink made a one-time $1,907 payment to BHE reflecting the true-up of licence fees relating to Celonis-related software procured through a cross company aggregated event. This one-time payment was described in 2021 Compliance Report, see **Appendix 15-1**.[385]

30.3.2 2022-2023 Projects

30.3.2.1 Voice Replacement (Lifecycle Sustainment)

1887. This project replaces the on-premise voice system that spans the AltaLink Corporate and Operations network, including obsolete hardware and software, as well as handsets and the recording system used by ACC operators. This project enables AltaLink to meet its compliance obligations under ARS COM-001 standards as the primary emergency telephony provider for large power system market participants.

1888. The project was included in Appendix 13-B3-04 Voice System Replacement business case within the Lifecycle Sustainment category in the 2022-2023 GTA.[386]

1889. In addition to meeting its own operating needs, AltaLink is a telephone project service provider for BHE Canada and its subsidiaries under the Master Services Agreement dated March 13, 2015, described earlier in this section. This project includes the purchase of handsets for BHE Canada, the costs of which will be passed through to BHE Canada, in addition to a portion of the capital costs that relate to services provided to BHE Canada using a cost allocation methodology that is based on the relative number of user accounts.

30.3.2.2 Azure Compute Projects (Process Improvement and Regulatory & Legislative)

1890. Azure Compute provides AltaLink with data storage and development tools to give AltaLink the capability to create applications, make data easily accessible to users and to support a wide range of data analytics. Access to the Azure Power Platform as a shared service is part of the shared M365 tenancy with BHE affiliates and AltaLink's M365 licences described earlier. AltaLink is undertaking two projects (applications) that will reside and operate within the Azure Power Platform.

1891. The first application was included in Appendix 13-B2-04 Data Analytics and Management Program within the Process Improvement category in the 2022-2023 GTA.[387] The application created a workflow to improve the accuracy, timeliness & efficiency of the financial asset retirement process by increasing ownership, visibility, accountability and building collaboration between the key stakeholders. It was completed and added to rate base in 2022.

1892. The second application called ARS-FAC-008 was included in Appendix 13-B4-01 Alberta Reliability Standards Compliance business case within the Regulatory and Legislative category in the 2022-2023 GTA.[388] Further detail about this project is provided in Section 10.4.1. The project was completed and added to rate base in 2022.

1893. Affiliate involvement in these projects included BHE completing the work necessary to facilitate the installation of these applications on, and troubleshooting them within, the Azure Power

[385] Appendix 15-1, 2021 Compliance Report, Section 2.0 AltaLink Compliance Report (k).
[386] Exhibit 26509-X0033, Appendix 13-B, pdf 124.
[387] Exhibit 26509-X0033, Appendix 13-B, pdf 89.
[388] Exhibit 26509-X0033, Appendix 13-B, pdf 186.

Platform. The BHE Rate Card applicable to M365 described above applies to the Azure Power Platform if AltaLink requests support from BHE for Azure. In addition, BHE charges AltaLink on a flow-through cost-recovery basis for charges from Microsoft that are based on the amount of time AltaLink applications are used (CPU Time Charges).

1894. In 2022, AltaLink paid BHE $0.024M as reimbursement for CPU Time Charges related to the two applications described above. The project involves ongoing annual operating costs payable by AltaLink to BHE for CPU Time Charges on existing and anticipated additional applications which AltaLink forecasts as follows: $0.054M in 2023, $0.081M in 2024 and $0.122M in 2025. These amounts are reflected in Schedule 30-2.[389]

30.3.2.3 GSOC Network Monitoring Expansion (Security)

1895. In 2022 AltaLink expanded the SIEM system logs that GSOC monitors to include its EMS, OT and NETCOM networks. The expansion could require AltaLink to reimburse BHE up to $0.04M of project capital and up to $0.008M per year of vendor O&M on a cost-recovery basis if BHE were required to acquire an additional SIEM application licence. Whether an additional licence is needed is determined by the number of events per second that are reported due to the additional networks and logs. At the date of this filing, no additional licence has been required. GSOC does not charge AltaLink for monitoring the additional logs.

1896. The project was included in Appendix 13-B1-05 Cyber Security System business case within the Security category in the 2022-2023 GTA.[390] It is forecasted to be completed and added to rate base in 2023.

30.3.2.4 XDR Deployment – Endpoint Detection Response (Security)

1897. This project provides AltaLink with a cyber monitoring tool that is critical to detecting and preventing malicious actors from accessing AltaLink's systems. An endpoint detection response (EDR) tool enables the cyber security team to easily identify the root cause of every alert and perform immediate response actions. The cyber security team can use the tool to pro-actively define rules to detect and respond to malicious activity.

1898. The project was included in Appendix 13-B1.05 Cyber Protection Systems Enhancements business case in the 2019-2021 GTA.[391] At the time of filing the 2022-2023 GTA, AltaLink expected to complete the project in the 2019-2021 test period. On this basis, AltaLink did not seek approval of forecast expenditures in the 2022-2023 test period. AltaLink delayed the project into the 2022-2023 test period in order to review and assess the results of the BHE GSOC's evaluation of different EDR tools. The project was completed and added to rate base in 2022. Further detail with respect to the project and its associated costs is included in Section 10.4.

1899. Affiliate involvement in the evaluation, development and implementation of the project included BHE evaluating potential EDR tools and determining that XDR was the highest ranked solution, and negotiating a price discount for licences from the vendor. AltaLink reviewed the results of the BHE evaluation and completed its own independent evaluation of XDR. AltaLink

[389] MFR Schedules, Schedule of Transmission Affiliate O&M Costs Charged from Affiliate.
[390] Exhibit 26509-X0033, Appendix 13-B, pdf 33.
[391] Exhibit 23848-X0018.01, AML 2019-2021 GTA – Appendix 13-B Updated, IT Business Cases, pdf 26.

negotiated a standalone contract for XDR licences with one of its current value-added resellers, based on BHE's negotiated discounted pricing.

1900. BHE's GSOC monitors alerts from the XDR tool at no cost to AltaLink. GSOC is structured as a Multi-Tenant implementation (Scenario 2). AltaLink has its own tenant of XDR and allows role-based user access to the application by BHE AAAs to fulfill their roles and responsibilities. To date, BHE has not charged AltaLink for BHE AAA activity, but remains entitled to do so for 2023 in accordance with the Limited Participation IASA dated October 20, 2020, for Shared Information Services.

30.3.2.5 IERP Incident Management and Business Continuity (Security)

1901. This project provides AltaLink with an integrated emergency response plan (iERP) incident management software solution to manage large-scale power system disruption events or business continuity events.

1902. This project was not included in the 2022-2023 GTA forecast as it was not anticipated at that time. It was completed and added to rate base in two phases in 2022 and 2023, respectively.

1903. The project was structured as a Shared Tenancy (Scenario 3B). AltaLink shares two iERP tools with BHE affiliates in the same tenancy, same application and same database all hosted by the vendor. AltaLink's administrators manage and control access to AltaLink's incident and situational data. The BHE administrators have access to AltaLink's incident and situational data which is shared across BHE, subject to the training and control requirements of Scenario 3B.

1904. Affiliate involvement in the evaluation, development and implementation of the project included BHE conducting a joint RFP for the solution. AltaLink selected the iERP tools following its review and evaluation of the results of the joint RFP. AltaLink independently negotiated a standalone contract with the iERP tool vendor for licencing of the iERP tools at the BHE negotiated price with the vendor. There are no ongoing affiliate services/transactions associated with this solution.

30.3.2.6 Vegetation Management (Process Improvement)

1905. This project digitizes data and automates the process for AltaLink's Vegetation Management using software and hosting by the vendor GeoDigital. This industry standard digital solution will integrate with AltaLink's GIS (geographical information system) and databases, centralize all information related to vegetation management and be accessible to the appropriate field crews.

1906. The project was included in Appendix 13-B2-03 Vegetation Management business case within the Process Improvement category in the 2022-2023 GTA.[392]

1907. The project involved a shared evaluation and procurement process with BHE affiliates to obtain volume pricing. AltaLink led a joint RFP process where AltaLink's requirements were reflected in the joint specifications. The RFP met AltaLink's requirements and no extra scope was included. AltaLink then entered into a separate Canadian contract with the vendor negotiated solely by AltaLink reflecting the volume pricing. There are no ongoing affiliate services/transactions associated with this solution.

[392] Exhibit 26509-X0033, Appendix 13-B, pdf 82.

30.3.3 2024-2025 Forecast Projects

30.3.3.1 Asset Performance and Investment Management

1908. AltaLink will evaluate participating in a BHE shared service as the solution for the Asset Performance and Investment Management project as described in **Appendix 13-B2-08**.

30.3.3.2 Enterprise Asset Management (EAM) Transition Assessment

1909. AltaLink will evaluate participating in BHE's Maximo EAM solution as described in **Appendix 13-B3-03**.

30.4 Affiliate Transactions Schedules

Schedule 30-1 Schedule of Transmission Charges to Affiliate

Schedule 30-2 Schedule of Transmission O&M Costs Charged from Affiliate

31. SUPPLEMENTARY INFORMATION

1910. 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

1911. This Section provides information with respect to reference and other supplemental material that supports this Application.

31.2 Customer Engagement Process

1912. In April 2023, AltaLink engaged various external parties in order to provide them with a draft cursory high-level overview of AltaLink's 2024-2025 GTA. The parties that engaged in such discussions were:

- The UCA (Office of the Utilities Consumer Advocate);
- The ADC;
- The IPCAA (Industrial Power Consumers Association of Alberta); and
- The CCA (Consumers' Coalition of Alberta).

1913. The meetings also provided an opportunity for these customers to ask questions and engage in discussions with respect to the high level 2024-2025 GTA drivers presented in the meeting. Refer to **Appendix 16** for a copy of the draft 2024-2025 GTA overview.

31.3 Annual Report of Finances and Operations

1914. Refer to **Appendix 6-A3** and **Appendix 6-A4** for the 2021 and 2022 Report on Finances and Operations respectively.

31.4 Operational Statistics of Report on Finances and Operations

1915. Refer to **Appendix 6-A1** and **Appendix 6-A2** for AltaLink's 2021 and 2022 Operational Statistics of Report on Finances and Operations respectively.

31.5 Accounting Policies

1916. AltaLink's Capitalization Policy is attached at **Appendix 17**.

1917. The following general principles have been summarized as AltaLink's accounting policies in the Notes to AltaLink's Financial Statements.[393]

Financial Reporting

1918. AltaLink maintains financial accounting records that fully and accurately reflect all the transactions and businesses 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.

1919. AltaLink's financial statements are prepared on the historical cost basis except for employee retirement benefits liabilities and cash, which are measured at fair value.

1920. AltaLink's financial statements are presented in Canadian dollars, which is its functional currency.

[393] Appendix 6-B2, Audited Annual Financial Statements December 2022.

Use of Estimates and Judgement

1921. 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, revenues and expenses. Actual results may differ from these estimates.

1922. 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 adjustment in the next year are disclosed, where applicable, in the relevant notes to the financial statements.

1923. 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.

1924. 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 reasonable assumptions. 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 and judgements 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 future income taxes and prudence reviews by the AUC of direct assigned capital deferral account applications;
- key economic assumptions used in cash flow projections 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 direct assigned projects that have been cancelled or delayed in the regulatory process; and
- the accruals for capital projects.

1925. 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 the change.

Regulation of Transmission Tariff

1926. 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 based on 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. The annual transmission tariff is received from the AESO in equal monthly installments and is included in accounts receivable as it falls due.

1927. 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

1928. 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 change. Operations revenue is 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.

1929. 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.

1930. 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.

1931. Other revenue represents revenue received from third parties and includes, but is not limited to, amortization of third party contributions, cost recoveries for services provided to other utilities, and rental income. 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. Cost recovery 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

1932. 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.

1933. 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.

1934. 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

1935. PP&E is 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.

1936. 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 in the period the changes were identified.

1937. 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 or 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.

1938. Reviews of PP&E 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

1939. 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

1940. 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

1941. 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 in the period the changes were identified.

- 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 in the period the changes were identified.

Third party deposits

1942. 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, as follows:

- 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.
- 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

1943. 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

1944. Provisions are recognized when AltaLink has a present obligation (legal or constructive) because 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 Benefit Obligations

1945. AML employs staff and provides administrative and operational services to AltaLink on a cost reimbursement basis. AltaLink bears all the related expenses and the risk and reward of 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.

1946. Defined Contribution 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 statement of comprehensive income in the periods during which services are rendered by employees.

1947. 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.

1948. 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 because of past service provided by employees, and the obligation can be estimated reliably.

Short-Term and Long-Term debt

1949. 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.

Income Taxes

1950. As a limited partnership, AltaLink does not pay income taxes. Instead, the tax consequences of its operations are borne by its corporate 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 corporate partners.

Foreign Currency Translation

1951. 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

AltaLink as lessee

1952. 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.

1953. 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 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.

1954. 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 PP&E in the consolidated statement of financial position.

1955. AltaLink applies IAS 36 to determine whether a leased asset is impaired and accounts for any identified impairment loss as described in the PP&E policy.

Capitalized Borrowing Costs

1956. 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

1957. 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 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

1958. 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

1959. AltaLink is requesting the Commission to approve the continuation of the following reserve accounts for 2024 and 2025:

- Commission Expenses (Hearing Costs) – USA Activity Code 928 (refer to Section 25.2.8);
- PRB Plan liability and Supplemental Pension Liability – USA Activity Code 926 (refer to Section 25.2.7);
- Injuries and Damages (SIR) – USA Activity Code 925 (refer to Section 25.2.6); and
- Net Salvage – approved in the 2019-2021 GTA[394] (refer to Section 29.7).

[394] Decision 25870-D01-2020, Stage 2 Review and Variance of Decision 23848-D01-2020, AltaLink Management Ltd., 2019-2021 General Tariff Application, November 19, 2020.

31.7 Deferral Accounts

1960. In this Application, AltaLink requests the continuation of the five previously approved deferral accounts for 2024 and 2025:

- 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 AUC Rule 026.

1961. AltaLink is forecasting a 30 year $350M long-term debt issue in the Test Period which replaces the $350 Series 2014-1 debt maturity on June 6, 2024. The $350M of forecast new long-term debt issuance represents 7.4% of current outstanding long-term debt of $4.75 billion. AltaLink notes that a 1% interest variance on the $350M of forecast debt issuance is significant at $3.5M per year ($1.75M in 2024 due to mid-year accounting). In addition, AltaLink, in Section 28.3.2, has described potential below market debt financing that may be available during the Test Period. The continuation of the LTDDA during the Test Period will allow ratepayers to fully benefit from this potential financing should it prove to be available.

1962. 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:[395]

- the materiality of the forecast amount;
- uncertainty regarding the accuracy of the forecast amount;
- uncertainty regarding the ability of the utility to forecast the amount;
- whether or not the factors affecting the forecast are typically beyond the utility's control; and
- whether or not the utility is typically at risk with respect to the forecast amount.

1963. 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 2010-189 should also be considered, as "symmetry must exist between costs and benefits for both the Company and its customers." 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.[396]

1964. 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

[395] Decision 22570-D01-2018, 2018 Generic Cost of Capital, August 2, 2018 (Decision 22570-D01-2018), para 103, pdf 26.
[396] Decision 22570-D01-2018, para 116, pdf 29. Footnotes omitted.

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.[397] This represents a lengthy period of time for which both AltaLink and ratepayers have typically not been at risk for this forecast amount.

1965. 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 the 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

[397] Decision 2005-019, AltaLink Management Ltd. and TransAlta Utilities Corporation, 2004-2007 General Tariff Application, March 12, 2005, pdf 111.