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MARITIME ELECTRIC
A FORTIS COMPANY

March 4, 2024

Ms. Cheryl Mosher
Island Regulatory and Appeals Commission
PO Box 577
Charlottetown PE C1A 7L1

Dear Ms. Mosher:

2024 Capital Budget Application (UE20739
Response to Interrogatories from Commission Staff

Please find attached the Company's response to Interrogatories from Commission Staff with respect to the 2024 Capital Budget Application filed on August 4, 2023. An electronic copy will follow shortly.

Yours truly,

MARITIME ELECTRIC

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I N T E R R O G A T O R I E S

Response to Interrogatories of Commission Staff

2024 Capital Budget Application (UE20739)

Submitted March 4, 2024

IR-1 Section 3(a) of the *Electric Power Act* requires Maritime Electric to "*furnish at all times such reasonably safe and adequate service and facilities for services as changing conditions require*".

a. Does MECL consider severe weather events, such as the polar vortex experienced in February 2023, to be a changing condition under which MECL must operate?

b. What steps is MECL taking to harden the grid and prepare the grid in response to the intensifying weather systems and energy demand growth?

c. Which of the proposed 2024 Capital expenditures are related to strengthening the grid? Please quantify the reliability improvements associated with these capital expenditures.

Response:

a. Yes, Maritime Electric considers severe weather events, such as the polar vortex experienced in February 2023, to be a changing condition under which the Company must operate. However, system planning and design processes cannot always predict, or economically protect against, future extreme operating conditions that may be encountered. For example, both Hurricane Fiona ("Fiona") and the February 2023 polar vortex were record setting weather events that may not be experienced again, in the foreseeable future. As such, Maritime Electric does not plan and design the electrical system to operate through all possible events, as the system would have to be overbuilt to completely eliminate the potential for service disruptions.

Recent severe weather events serve to highlight system vulnerabilities and should prompt the review of design standards and load forecasting methodologies. Respectively, this was done following Fiona and the polar vortex, and has resulted in changes that will improve the resiliency of the electrical system.

b. Maritime Electric strategically targets the timely replacement of aged and deteriorated assets prior to failure and when doing so, ensures that all new capital infrastructure be constructed to meet or exceed current Canadian Standards Association ("CSA") standards,[1] other relevant standards, and best practices. This applies to generation equipment projects, transmission and distribution ("T&D") line construction and refurbishment projects and programs. For T&D line construction and refurbishment, grid hardening is accomplished by using engineering design software which incorporates weather variables from CSA into overhead line drawings and specifications. The Company also strengthens the grid by building redundancy into the T&D systems, such as, when substations are added or upgraded to accommodate load growth.

In recent years, Maritime Electric has also been increasing annual expenditures on vegetation management and this is planned to continue, impacting both the annual operating and capital budgets. This will include new capital programs to widen distribution and transmission corridors, as trees outside the transportation right-of-way are becoming an increased risk to the electrical system with weather systems intensifying. The

[1] CSA standards for overhead and underground electrical systems were updated in January 2022 with extensive revisions to increase infrastructure resiliency to extreme events resulting from climate change.

Company's recent and planned approaches to vegetation management are detailed in a Vegetation Management Plan Report that was filed with the Commission in December 2023.

Planning for Intensifying Weather Systems

The Company filed a Climate Change Risk Assessment with the Commission in February 2023 and is currently developing a Climate Change Adaptation Strategy. The results of the risk assessment show that the probability of hurricanes impacting PEI is expected to increase over the next 50 years. The adaptation strategy will identify measures to mitigate system impacts related to the changing conditions of hurricanes and other weather events, and will outline the Company's plan for addressing adaptation in future capital budget applications. Maritime Electric is also engaged in adaptation planning through participation in CSA, Fortis Climate Change working groups, and other local and national associations related to utility best practices and standards.

Planning for Energy Demand Growth

In 2022, Maritime Electric engaged an engineering consultant to complete a capacity resource study for the purposes of evaluating a variety of different capacity resource technologies, develop cost estimates, and recommend optimal solutions for meeting the Company's energy supply obligations. The resulting study report was filed with the Commission in February 2023 and a subsequent addendum report, which was completed following the February 2023 polar vortex event, was filed with the Commission in July 2023. These reports will form the basis of a regulatory application for new dispatchable on-Island generation, which is expected to be filed with the Commission in 2024.

Maritime Electric has also engaged an engineering consultant to complete a long-term transmission interconnection study. This study will include an in-depth analysis of PEI's existing transmission system, including PEI's interconnection to New Brunswick ("NB"), and suggest solutions to meet PEI's future interconnection needs. This study is expected to be completed by summer 2024.

c. Proposed 2024 capital expenditures related to strengthening the grid and planning for load growth, which are consistent with the types of projects and programs as generally described in the response to IR-1b, are:

4.2a CGS Combustion Turbine Improvements, Parts and Tools

4.4a CT1 Generator Overhaul

4.4c BGS Combustion Turbine Improvements, Parts and Tools

5.2 Distribution Transformers

5.4a Customer Driven Line Extensions

5.4b Reliability Driven Line Extensions
- Lady Slipper Drive North
- Pleasant Grove Road
- Tignish Substation Distribution

5.5a Single Phase and three Phase Line Rebuilds
- Greenmount Road (Montrose to Tignish)
- Village Green Road
- Egmont Bay (Route 11)
- Kingston Road Voltage Conversion

5.5b Distribution Line Refurbishment

5.5c Accelerated Distribution Component Replacement
- Eastern Cedar Pole Replacement Program
- Deteriorated Conductor Replacement Program
- Backlot Feed Relocation Program

5.5d Distribution Corridor Widening

5.7 Distribution Equipment
- Substation, Line and Communication Equipment
- Relay Replacement Equipment
- Switch Replacement Equipment

6.1a Woodstock Switching Station

6.1b Tignish Substation

6.1c Lorne Valley Switching Station Expansion

6.1d Sherbrooke X1 Autotransformer Replacement

6.1e Power Transformers

6.1g Substation Modernization Program

6.1h 138 kilovolt ("kV") Breaker Replacement Program

6.1i Communication Fibre – Woodstock to Alberton

6.2a 69 kV and 138 kV Switch Program

6.2b Transmission Line Refurbishment

6.2c Transmission Lines
- Tignish Substation Transmission
- Y-106 Scotchfort to Lorne Valley

6.2d Transmission Corridor Widening

7.2e Load Modelling Software

In addition, some asset replacements occur each year due to factors and requirements that are outside of Maritime Electric's direct control, such as replacements due to storms,

collisions, fire, and road alterations. When this occurs, the same approach to replacement is taken, as is done for planned work, with upgrades constructed to the latest standards and best practices, taking into account local weather conditions and how they affect the Company's electrical system.

It is not possible to quantify future reliability improvements associated with capital expenditures. In general, capital expenditures to upgrade or replace aged and deteriorated assets will provide reliability as good, or better, than would be experienced if the assets were left in operation to end of life (i.e., to failure). If an asset is left in place to end of life, there will be a negative impact on reliability at the time of failure if there is no redundancy. With few exceptions, it is not possible to quantify future reliability improvements for capital investments that strengthen the grid but are not directly associated with aged and deteriorated assets, such as line extension and new substation projects.

For larger grid resiliency or redundancy projects, where line extensions or new substations provide alternate feed options for main lines and/or complete circuits, historical reliability performance can be compared with probable performance had the proposed improvement been in place over the same time period. While this practice is time consuming and requires some subjective interpretation of whether or not the proposed improvement would have avoided, or reduced the duration of, a historical outage, it can be useful for planning and comparing potential project benefits. An example of this approach was provided in the 2023 Capital Budget Application for the Woodstock switching station project.

IR-2 Please provide a forecast, as of December 31, 2023, of the unspent portion of any previously approved capital budget that MECL intends to carryover to 2024. Please include a forecast of any remaining carryovers from prior years.

Response:

The unspent portion of any previously approved capital budget that Maritime Electric intends to carryover to 2024 is provided as IR-2 – Attachment 1, herein.

IR-3 Please comment on the recommendations made by Synapse Energy Economics, Inc. in its report entitled "Prince Edward Island Resource Planning and Maritime Electric Capital Expenditures", dated April 27, 2022, as they relate to the proposed 2024 Capital Budget.

Response:

Synapse Recommendation #1

- *The On-Island Generating Study should expand to an On-Island Capacity Resource Study to directly allow for and consider battery energy storage as an incremental capacity resource that can be charged with existing wind energy and potentially New Brunswick grid energy during off-peak hours as economically dictated.*

    - *It is critical for MECL and its contractors to have up-to-date information on battery energy storage cost options, and to conduct sensitivities assuming higher capacity and energy procurement costs from NB Power for some years.*

Sargent & Lundy Engineering ("S&L") studied battery energy storage as a capacity supply option in the On-Island Capacity Resource Study ("Capacity Resource Study") it completed for Maritime Electric, which was filed with the Commission on February 10, 2023. The Capacity Resource Study was subsequently supplemented with an Extreme Weather Event Capacity Impact addendum report, filed with the Commission on July 21, 2023.

In the Capacity Resource Study, S&L indicates that battery energy storage has the potential to help Maritime Electric meet its regional capacity obligations if the battery is primarily used for that specific purpose; however, battery energy storage should not be compared with dispatchable generation, which can operate continuously and indefinitely, if required. With regards to effectiveness of battery energy storage for responding to mainland energy supply curtailments or disconnections, this would be dependent upon on the specific circumstances of an event, but typically, backup duration of battery storage is measured in hours, not days or weeks.

Ultimately, the Capacity Resource Study did not recommend battery energy storage as part of the recommended capacity resource portfolio for two primary reasons:

1. Battery energy storage is not as effective as the other shortlisted technologies at helping Maritime Electric meet its three most critical needs:

    a. Meeting its energy and capacity obligations;
    b. Serving system load for extended periods, including during situations when PEI's electricity supply is curtailed or disconnected from the mainland; and
    c. Achieving sustainability targets.

2. Battery energy storage is a higher cost option than the other shortlisted technologies.

Cost issues aside, S&L did note in the Capacity Resource Study addendum report that battery energy storage could provide limited benefits for Maritime Electric's electrical system beyond its three most critical needs. As a result, S&L suggested that a battery energy storage demonstration project could be pursued to better assess battery energy storage functions/use cases that offer the maximum benefit for the electrical system.

Some of the potential future benefits include allowing Maritime Electric to pursue an energy arbitrage strategy for times when there is excess wind generation (which will occur more frequently as more onshore wind is installed on PEI) and providing various ancillary services and other electrical system supports.

Synapse Recommendation #2

- *MECL should continue to defer capital expenditure projection for a new on-Island CT but allow for earlier capital expenditure for battery energy storage capacity if its on-Island study finds best "first" on-Island capacity is initial utility-scale battery procurements.*

Battery energy storage has the ability to meet short-term demand response requirements for up to approximately four hours before the economics become prohibitively more expensive than conventional alternatives. Also, battery energy storage should not be compared with dispatchable generation as it cannot operate for days or weeks on end, like a dispatchable generator.

As the polar vortex event from February 3 to 5, 2023 clearly illustrated, high system loads requiring sufficient quantities of on-Island capacity can last for multiple days, while other system events such as the submarine cable repairs in 1997 and 2012 can last weeks or months.[2] During the cable repairs, dispatchable generation ran continuously for the majority of the month of December 1997, and for the months of June and July 2012.

Maritime Electric is pursuing S&L's most recent recommendation, which is to install 150 megawatts ("MW) of additional dispatchable generation as soon as possible.

Synapse Recommendations #3

- *MECL should update its ISP to directly reflect a load forecast accounting for the new EE&C plan.*
    - *MECL should prioritize managed charging and smart meter/other DR control options for peak increase limitations as heat pump installations and the number of EVs on the Island increase.*

Maritime Electric follows good utility practice when developing forecasts used for generation and transmission planning. For generation planning purposes, the effects of demand side management ("DSM") are considered and generation requirements are adjusted accordingly. For transmission planning purposes, the Company follows guidance published by the North American Electric Reliability Corporation's Modeling Working Group ("the Working Group"). The Working Group distinguishes between controllable and uncontrolled DSM. Examples of controllable DSM include the curtailment of interruptible loads and controllable demand response programs. Examples of uncontrollable DSM include energy efficient lighting and appliance programs. The Working Group states that:

> "In no instance should loads be reduced for application of controllable demand-side management, curtailment of interruptible loads, or for emergency procedures such as voltage reductions and the anticipated effects of public appeals."

[2] The high system load experienced during the polar vortex was documented in the Capacity Resource Study addendum report.

In this context, "loads" refer to modeled loads in transmission planning models. As a result, in the Company's updated 2023 load forecast for transmission planning purposes, the effect of controllable DSM is not considered. As a result, no changes are required to the Company's transmission and distribution ("T&D") expenditures as a result of controllable DSM.

Synapse Recommendation #4

- *MECL should carefully revisit T&D expenditures that are dependent on projections of load growth to defer expenditures if/as peak load growth is mitigated to amounts lower than seen in the current ISP.*

The system loads experienced during the February 2023 polar vortex event indicate that recent load growth has outpaced any gains achieved through energy efficiency and conservation during the same period. As such, some T&D capital expenditures are being accelerated, rather than deferred, to help ensure that power quality and reliability are not negatively affected.

IR-4 Section 3.3 of the application states that the 2024 capital budget forecast is $8.5 million higher than expected during the recent General Rate Application.

a. Please explain why the forecast is now $8.5 million higher than previously forecast. Include a detailed explanation for the proposed increase.

Response:

Table 1 shows the capital budget forecast for 2024 as provided in the General Rate Application ("GRA") and the 2024 Capital Budget Application ("Application"), as well the variance between the two forecasts.

TABLE 1
2024 GRA/Capital Budget Application Comparison and Variance ($000)

	GRA 2024 Capital Budget Forecast (A)	2024 Capital Budget Application Forecast (B)	2024 Capital Budget Application Forecast Increase/(Decrease) (C = B - A)
4.0 Generation	$ 1,506	$ 1,430	$ (76)
5.0 Distribution	43,748	53,026	9,278
6.0 Transmission	15,325	17,513	2,188
7.0 Corporate	11,485	10,066	(1,419)
Subtotal	**$ 72,064**	**$ 82,035**	**$ 9,971**
General Expense Capitalized	739	844	105
Interest During Construction	950	799	(151)
Contributions	(10,250)	(10,679)	(429)
Subtotal	**$ 63,503**	**$ 72,999**	**$ 9,496**
Prior Year Carryovers	7,000	-	(7,000)
Carryovers to Following Year	(6,000)	-	6,000
TOTAL	**$ 64,503**	**$ 72,999**	**$ 8,496**

The increased capital requirement of the Application when compared to the GRA forecast is due primarily to budgeted costs in the Distribution and Transmission categories.[3] To facilitate this response, the total increase for Distribution and Transmission is $11.5 million (rounded) as shown in Table 2.

[3] The balance of the 2024 Capital Budget categories, including Generation, Corporate, General Expense Capitalized, Interest During Construction and Contributions, have a collective budget requirement that is approximately $3 million less than was forecast in the GRA.

TABLE 2 2024 GRA/Capital Budget Application Variance for Distribution and Transmission ($000)			
	GRA 2024 Capital Budget Forecast (A)	2024 Capital Budget Application Forecast (B)	2024 Capital Budget Application Forecast Increase/(Decrease) (C = B - A)
Distribution			
5.1 Replacements Due to Storms, Road Alterations	$ 1,705	$ 2,011	$ 306
5.2 Distribution Transformers	9,280	14,396	5,116
5.3 Services and Street Lighting	5,661	7,165	1,504
5.4a Customer Driven Line Extensions	1,530	2,274	744
5.4b Reliability Driven Line Extensions	2,087	2,555	468
5.5 Line Rebuilds	6,108	7,014	906
5.6 System Meters	13,290	13,271	(19)
5.7 Distribution Equipment	1,831	1,666	(165)
5.8 Transportation Equipment	2,256	2,674	418
Subtotal	**$ 43,748**	**$ 53,026**	**$ 9,278**
Transmission			
6.1 Substation Projects	11,545	14,964	3,419
6.2 Line Projects	3,781	2,549	(1,232)
Subtotal	**$ 15,326**	**$ 17,513**	**$ 2,187**
TOTAL	**$ 59,074**	**$ 70,539**	**$ 11,465**

In Section 5.0 – Distribution, estimated 2024 costs also increased based on information that was not known when the GRA forecast was prepared. This information follows.

The costing methodology for Sections 5.1, 5.3 and 5.4a (customer driven line extensions) of the Application was revised to calculate the proposed budget based on an inflation adjusted five-year average. This increased the 2024 Distribution budget by approximately $2 million.

Material and equipment price increases due to inflation increased the Application amounts for Sections 5.2 and 5.5. This increased the 2024 Distribution budget by approximately, $6 million, with the primary contributing factor being price increases for distribution transformers.

Section 5.3 has internal labour and transportation cost increases of approximately $1 million with the majority attributable to the planned addition of six new power line technicians. An explanation of the need for these new positions is provided in the response to IR-17, herein.

A new distribution corridor widening program in Section 5.5 accounts for approximately $1 million in new capital investment that was not budgeted in the GRA. Additional information and justification for this new program is provided in the response to IR-27, herein.

Increased budget requirements for Section 5.4b (reliability driven line extensions) and 5.8 total approximately $1 million. With each of these budget items, the estimated costs to complete the proposed projects and purchases increased during the period when the GRA was prepared and the Application was filed.

In Section 6.0 – Transmission, estimated 2024 costs for two multi-year projects increased by $2 million based on information that was not known when the GRA forecast was prepared. These projects are the Woodstock switching station project and the Tignish substation project. Explanations for the changes to the Woodstock switching station and Tignish substation project budgets is provided in the responses to IR-32 and IR-33, respectively and herein.

IR-5 Confidential Appendix Q-1 – The SAIDI (MED and Externally Caused Outages Excluded) table indicates that in the past six years, MECL has experienced less outage hours as compared to the Atlantic Utilities Average.

a. What is considered an industry standard measurement of SAIDI (MED and Externally Caused Outages Excluded)?

b. What is MECL's target SAIDI (MED and Externally Caused Outages Excluded)?

c. What does it mean if MECL's SAIDI (MED and Externally Caused Outages Excluded) is trending below the Atlantic Utility Average?

Response:

a. There is no established industry standard SAIDI (MED and Externally Caused Outages Excluded) value. Individual utilities are subject to unique operating parameters that affect their reliability performance including age of assets, investment in asset replacement, system design and construction standards, overhead/underground asset mix, predominant customer type, population density, localized weather events, etc. As such, unless utilities operate under reasonably common conditions, it is to be expected that each will provide a different level of reliability to its customers.

In the Application, Maritime Electric's reliability performance is compared to the Atlantic Utility average in Confidential Appendix Q-1. This comparison is reasonable given the geographic proximity, urban/rural service territory, customer mix, and other similarities shared by utilities within the region.

b. Maritime Electric's SAIDI (MED and Externally Caused Outages Excluded) target for 2024 is 2.84 hours. This target is based on 97 per cent of the average of the previous three years.

c. Trending below the Atlantic Utility Average means that Maritime Electric customers, as a whole, on average, experience fewer outage hours in a given year compared to electricity customers in Atlantic Canada, when MED and Externally Caused Outages are excluded.

Maritime Electric's SAIDI (MED and Externally Caused Outages Excluded) has been below (i.e., better than) the Atlantic utility average for nine of the past ten years and 17 per cent lower, on average, over this same period. The Company considers this to be a reasonable level of system reliability relative to the Atlantic utility average. However, not all Maritime Electric customers experience average, or better, reliability. For this reason, aged asset replacements, line conversions and extensions, and projects such as the Woodstock switching station and the Tignish substation in Western PEI, are pursued when the potential for reliability improvement warrants.

IR-6 Confidential Appendix Q-1 – MECL's SAIDI (All in) has been significantly above the Atlantic Utility Average for the last couple of years.

a. What is considered an industry standard measurement of SAIDI (All In)?

b. What is MECL's target SAIDI (All In)?

c. MECL states that it has been focusing on improving SAIDI (All In) reliability performance. What is MECL doing to improve its reliability performance during major weather events?

d. Which 2024 capital projects or expenditures will improve MECL's reliability performance during major weather events?

Response:

a. There is no established industry standard SAIDI (All In) value for similar reasons provided in the response to IR-5a, herein. In addition, due to the unpredictable nature of extreme weather events along with significantly variable localized impacts, it is unreasonable to evaluate one utility's performance against another when using SAIDI (All In).

b. Maritime Electric does not have a SAIDI (All In) target. The Company believes that because SAIDI (All In) is not normalized, it would not be prudent to establish a SAIDI (All In) target. If such a target were to be established, the Company's ability to achieve the target would be highly dependent on factors outside of its control, such as severe weather and other significant unplanned outage events.

c. Maritime Electric strives to improve its SAIDI (All In) reliability performance by replacing aged and deteriorated assets, extending lines to increase backup opportunities, establishing new substations, and regularly inspecting and upgrading system components as required. Additionally, the Company's plans to expand the scope of its vegetation management activities to extend beyond the edge of the public transportation right-of-way and implement to its Climate Change Adaptation Strategy to improve reliability performance generally, as well as during major weather events.[4]

d. The following proposed 2024 capital projects, as described in the Application, will improve Maritime Electric's reliability performance during major weather events.

- 5.4b – Reliability Driven Line Extensions
- 5.5a – Single and Three Phase Line Rebuilds
- 5.5b – Distribution Line Refurbishment
- 5.5c – Accelerated Distribution Component Replacement
  - 5.5c(i) – Eastern Cedar Pole Replacement Program
  - 5.5c(ii) – Deteriorated Conductor Replacement Program
  - 5.5c(iii) – Backlot Feed Relocation Program
- 5.5d – Distribution Corridor Widening
- 6.1a – Woodstock Switching Station

[4] The Company's ability to extend vegetation management beyond the edge of the public transportation right-of-way is contingent upon having the permission of the adjacent private landowner.

- 6.1b – Tignish Substation
- 6.1c – Lorne Valley Switching Station Expansion
- 6.1g – Substation Modernization Program
- 6.2b – Transmission Line Refurbishment
- 6.2c(iii) – Y-106 Scotchfort to Lorne Valley
- 6.2d – Transmission Corridor Widening
- 7.2e – Load Modelling Software

IR-7 Section 3.7(a) – MECL states that in Canada it is not a requirement to be FERC compliant; however, it is considered good utility practice to do so. Is MECL FERC compliant in regards to its accounting policies and maintenance of books and records?

Response:

Yes, in all material aspects, Maritime Electric is compliant with the Federal Energy Regulatory Commission ("FERC") in regard to its accounting policies and maintenance of books and records.

Maritime Electric also conforms to Canadian accounting standards for private enterprises ("ASPE") including accounting requirements established under the regulatory environment governed by the *Electric Power Act*. For disclosures subject to rate regulation, ASPE, accounting guideline AcG-19 is followed, and the Company's accounting policies and maintenance of books and records follow the guidance set out in FERC and the National Association of Regulatory Utility Commissioners.

IR-8 Section 3.7(b) – Have there been any changes to how MECL calculates and allocates labour between capital and operating, as well as between various capital projects? If yes, provide details and support.

Response:

There have been no changes to the methodology used by Maritime Electric to calculate and allocate internal labour and transportation costs between capital and operating, as well as between various capital projects. As discussed in Section 3.7b of the Application, the Company budgets internal labour and transportation costs to the appropriate accounts based on the planned capital and operating activities for the budgeted year.

However, there are two internal labour and transportation employee groups where the allocation between planned capital and operating activities have significantly changed in 2024 compared to 2023, as shown in Table 2, based on changes to Company activities.

TABLE 2
Material Changes in Allocation of Capital and Operating
Internal Labour and Transportation – 2023 to 2024 (%)

Description	2023		2024	
	Capital	Operating	Capital	Operating
Generation and Energy Control	34.1	65.9	28.3	71.7
Technical Services	68.1	31.9	66.5	33.5

Generation and Energy Control
In 2023, planned allocations to capital included activities related to the decommissioning of the Charlottetown Thermal Generation Station ("CTGS"). This included management time to obtain required environmental impact assessment approvals, time to perform the pre-qualification process for demolition contractors, as well as tendering and final selection of same. In addition, internal union labour completed "make safe" work inside the CTGS to prepare for demolition to begin. In 2024, the internal labour and transportation needed to support demolition activities is planned to be less, as the approved demolition contract work is underway resulting in a lower allocation to capital and retirement activities and a higher allocation to operating.

Technical Services
Several employees at the CTGS have been redeployed to technical services over the last few years as the CTGS was placed in long-term layup and eventually retired. In 2023, it was planned for these employees to assist with the CTGS "make safe" work. In 2024, these employees are fully allocated to Technical Services activities resulting in slightly lower allocation to capital and a slightly higher amount to operating.

Table 3 provides a comparison of the percentage of the total capital internal labour and transportation allocated to each capital project category.

TABLE 3 Allocation of Internal Labour and Transportation to Projects (%)			
Capital Budget Items	**2023**	**2024**	**Change**
4.1 CGS – Buildings and Site Services	0.1	0.2	0.1
4.2 CGS – Turbine Generator	0.2	0.1	-0.1
4.3 BGS – Buildings and Site Services	0.1	0.1	0.0
4.4 BGS – Turbine Generators	0.2	1.5	1.3
5.1 Replacements Due to Storms, Collisions, Fire and Road Alterations	5.8	5.2	-0.6
5.2 Distribution Transformers	6.2	7.3	1.1
5.3 Services and Street Lighting	24.5	25.8	1.2
5.4 Line Extensions	7.5	7.6	0.1
5.5 Line Rebuilds	8.7	8.8	0.1
5.6 System Meters	2.1	2.0	-0.1
5.7 Distribution Equipment	1.5	1.4	-0.1
5.8 Transportation Equipment	0.3	0.5	0.2
6.1 Substations	2.8	3.4	0.6
6.2 Transmission Lines	7.2	7.8	0.6
7.1 Corporate Services	0.1	0.1	0.0
7.2a IT – Hardware	0.4	0.5	0.1
7.2b IT – Software	0.7	0.6	-0.1
7.2c IT – Other	2.0	1.8	-0.2
Capitalized General Expense	4.4	4.4	0.0
Retirement	25.2	20.9	-4.4
TOTAL	**100.0**	**100.0**	**0.0**

For the vast majority of capital budget items, the percentage of total internal labour and transportation allocated is not materially different in 2024 than in 2023, and therefore involves only minor adjustments to standard distribution of employee time to better reflect the planned work to be performed.[5]

The increase in the internal labour and transportation budget in Section 4.4 – BGS - Turbine Generators is based on an estimate of the type and quantity of resources required to complete the CT1 generator overhaul project, a non-recurring capital activity.

The increase in the internal labour and transportation budget in Section 5.2 – Distribution Transformers is a reflection of the steady growth in recent years related to new service connections.

As discussed in the Application, the 2024 budget for internal labour and transportation in Section 5.3 – Services and Street Lighting is based on a five-year historical average plus additional costs associated with six new powerline technician positions that have been added to meet increased customer demand for service work and street lighting.

The lower allocation to retirement reflects the expected reduction in supervision and make-safe work related to the retirement of the CTGS in 2024, compared to 2023.

[5] For the purpose of this response, a material change in allocation between capital (including retirement) and operating is more than 1 per cent.

IR-9 Section 3.7(b) – Provide a detailed comparison of 2022 and 2023 budgeted labour and transportation costs included in the 2022 & 2023 Capital Budgets as compared to 2022 actual and 2023 forecasted labour and transportation costs in the respective capital budgets. If there are significant variances, provide a detailed explanation for the variance.

Response:

An internal labour and transportation comparison of budgeted to actual 2022 and 2023 Capital Budget costs, including comments on material variances (i.e., greater than $30,000 and 15 per cent), is provided as IR-9 – Attachment 1.

As indicated in Section 3.7b of the Application, under Standard Distribution of Costs, internal labour and transportation costs are budgeted using a standard distribution approach based on estimates and/or prior year budgets. During a given budget year, department managers monitor and adjust internal labour and transportation costs for individual budget items to help ensure that it provides a reasonable reflection of work completed. As Maritime Electric does not use a time tracking system for regular day-to-day work, there is a degree of subjectivity under this approach; however, with managerial monitoring and adjusting, and the use of exception timesheets,[6] standard distribution is a cost-effective approach for allocating internal labour and transportation to operating and capital activities.

[6] Maritime Electric employees complete exception timesheets for work deviant from regular day-to-day work, or work that will be billed to a customer or third party.

IR-10 Section 4 – Generation – A number of the capital projects for Generation include a contingency of 15 percent. Please provide further justification for a contingency of this magnitude, and explain how MECL determined the contingency for these projects.

Response:

The Section 4 – Generation project budgets were developed using a combination of vendor quotations and professional engineering estimates. Projects were scoped for the purpose of budget authorization, with an expected accuracy range that is based upon published references and standards. The reference used by Maritime Electric, the American Association of Cost Estimating ("AACE") International's Recommended Practice 18R-97,[7] classifies the Generation project budgets as being a Class 3 estimate.

A 15 per cent contingency was used for all Generation projects because the Company did not have a detailed set of engineered plans or final costs from a similar project to aid in creating the project definition or budget. As 15 per cent is in the mid-range of a Class 3 estimate, the Company believes it provides a prudent and reasonable contingency.

In addition, most Capital Budget projects are estimated using currently available material and labour pricing and an annual cost escalation rate of approximately 3 per cent. This has worked reasonably well in the past when inflation was low and relatively consistent across budgeted items. This has changed since the COVID-19 pandemic and there is now much more uncertainty when project budgets are estimated using historical costs or expired quotations.[8]

[7] The AACE International's Recommended Practice 18R-97 is provided in the Application as Table 11 on page 46.

[8] For Capital Budget purposes, vendor quotations have to be obtained at least six months (or more) before a project can begin. These quotes are often valid for a limited time, typically 30 to 90 days, and have to be refreshed when the project is ready to proceed. This sometimes results in new pricing that exceeds the 3 per cent rate of inflation that was used for budgeting.

IR-11 Section 4.4(a) – CT1 Generator Overhaul:

a. Will this project extend the life of the asset?
b. There is a quote for materials in addition to a significant internal labour and transportation budget. Will this overhaul be completed in-house by MECL staff or will a third party be completing the work?

Response:

a. No, this project will not extend the life of the asset. Rather, the CT1 Generator Overhaul project is necessary to prevent premature failure of the asset. This asset is currently planned to remain in service until 2031 when it will have reached end of life.[9]

It is industry practice to perform an overhaul inspection and testing on generators at regular intervals, with the frequency based on a variety of operating considerations. The last time this was done for CT1 was in 2007. The inspection will involve testing the generator and rotor, and completing a bore-scope inspection on the bearings and gearbox. During inspection, it is expected that some equipment components will be found to be degrading. To mitigate premature failure of CT1, degrading components will be replaced.

b. The CT1 Generator Overhaul project will be completed using both internal and external labour. A contracted turbine field engineer will direct the project and utilize their expertise, specialty tools, and background of resources. Other third-party specialty resources will be utilized as needed. Maritime Electric staff will be responsible for supervision, electrical work, rigging, and hiring a crane/lift operator. Other Company staff will assist as required.

[9] Given the immediate need for additional on-Island dispatchable generation, per the Capacity Resource Study, it is even more critical that existing generation is maintained.

IR-12 Section 5 – Distribution – Explain how the proposed 2024 Capital Budget is in line with the 2020 ISP and with DAMP. Identify any deviations.

Response:

The 2024 Capital Budget is consistent with the Distribution Asset Management Program ("DAMP") through programs and projects that involve distribution asset upgrades and replacements. Examples include the following:

- Replacement of deteriorated and PCB-potential transformers;
- Distribution line rebuilds and voltage conversions;
- Distribution line inspection and refurbishment cycle;
- Targeted asset upgrade and replacement and programs, including the eastern cedar pole replacement, deteriorated conductor replacement, backlot feed relocation, distribution corridor widening, substation oil containment and substation modernization programs;
- Distribution equipment life extension or replacement based on maintenance cycles, inspection and quantitative asset testing and evaluation; and
- Upgrading and replacement of substation power transformers where units have reached end of life or maximum capacity.[10]

The 2024 Capital Budget is consistent with the Integrated System Plan ("ISP") through programs and projects that involve generation, distribution and transmission asset additions, upgrades and replacements. Examples include the following:

- Combustion turbine #1 generator overhaul and safety upgrades at Borden generating station;
- Reliability driven line extensions and three phase conversions;
- The addition of the Tignish substation with three feeders to address load growth in the West Prince area;[11]
- The Woodstock switching station project to improve transmission system reliability and provide voltage support in western PEI;[12]
- The Lorne Valley switching station expansion to improve system reliability and provide voltage support in central and eastern PEI;[13]
- The Sherbrooke X1 autotransformer replacement will replace an existing asset that is now at capacity, in deteriorated condition, and will be 50 years old in 2026;[14]
- The 138 kV breaker program proposes the purchase of a critical spare as the delivery lead time is currently around 52 weeks;
- Transmission line inspection and refurbishment; and
- Y-106 Scotchfort to Lorne Valley will replace transmission line T-4 which is at end of life, with the rebuilt line upgraded to 138 kV in coordination with the Lorne Valley switching station expansion project.[15]

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10 The 2024 Capital Budget includes power transformer upgrading/replacement projects for substations in Albany, Kensington and Wellington.

11 The ISP indicates a 2026 timeline for this project; however, it is occurring earlier to accommodate system load growth and improve reliability for customers currently connected to the Alberton substation's Tignish West feeder.

12 This project is referenced in the ISP as the O'Leary/Mount Pleasant 138/69 kV substation.

13 The ISP indicates a 2027-plus timeline for this project; however, it is occurring earlier to accommodate system load growth and improve reliability for customers in central and eastern PEI.

14 The ISP indicates Sherbrooke X1 will be replaced with 75 MVA unit in the 2027 to 2030 timeframe.

15 The ISP does not specify the replacement timeframe for T-4; however, it does note that the line was constructed in 1969.

IR-13 Section 5.1 – Replacements Due to Storms, Collisions, Fire and Road Alterations – The total identified in the header of section 5.1 is $2,011,000; however, the total per Table 23 is $2,170,000.

a. Please explain the difference between the two amounts.

Response:

a. The $2,011,000 budget amount in the header of Section 5.1 is correct and the $2,170,000 amount shown in Table 23 of the 2024 Capital Budget Application is incorrect.

A corrected Table 23 follows.

TABLE 23
Historical and Proposed Capital Expenditures
Replacements Due to Storms, Collisions, Fire and Road Alterations

Description	2019	2020	2021	2022	2023 Budget	2024 Budget
Material	$ 406,239	$ 411,621	$ 483,296	$ 302,165	$ 335,000	$ 458,000[a]
Contractor Labour	703,015	517,043	528,127	346,180	538,000	580,000
Internal Labour and Transportation	947,426	873,796	726,159	1,344,865	967,000	973,000[b]
Other	63,048	13,624	2,473	82,666	-	-
TOTAL	**$2,119,728**	**$1,816,084**	**$1,740,055**	**$2,075,876**	**$1,840,000**	**$ 2,011,000**

a. Includes the five-year average amount for “Other” expenditures.
b. Reduced by $89,985, the five-year average amount for “Less: Significant Storm Events” in Table 24.

IR-14 Section 5.1(a) – Replacements Due to Storms, Fire and Collisions:

a. Please provide a forecast of actual 2023 expenditures as of December 31, 2023. Provide an explanation if the forecast is over/under budget.

Response:

a. The 2023 capital expenditures for 5.1a – Replacements Due to Storms, Fire and Collisions, a provisional budget category, was $1,933,449, which represents an over-budget variance of $935,449.

The over-budget variance is attributed to the amount of restoration activity required due to winter weather events in January and February, several high wind events in December. The increased expenditures in 2023 also included capital repairs to seasonal customer connections that were not known to be required until cottages were opened up in the spring, and removal of danger trees that posed an inherent risk to the distribution line as a result of Hurricane Fiona.

IR-15 Section 5.1(b) – Replacements Due to Road Alterations:

a. Provide a forecast of actual 2023 expenditures as of December 31, 2023. Provide an explanation if the forecast is over/under budget.

b. Has the Province of PEI finalized their 2024 plans for infrastructure work? If so, what (if any) impact does this have on MECL's proposed 2024 budget?

Response:

a. The 2023 capital expenditures for 5.1b – Replacements Due to Road Alterations, a provisional budget category, was $979,108, which represents an over-budget variance of $137,108. The forecast over-budget variance is attributed primarily to a higher-than-expected volume of work required in 2023, which increased material and contractor labour costs.

b. The PEI Department of Transportation and Infrastructure ("PEIDTI") met with Maritime Electric on December 1, 2023 to share its planned projects for 2024. A forecast of priority projects was reviewed with the caveat that the projects discussed were subject to change.

While it is helpful to know what projects are planned, the impact on Company resources is not fully understood until the Province completes its design work for specific projects, which occurs within the same year as the construction.

IR-16 Section 5.2 – Distribution Transformers:

a. MECL states that transformer requirements in 2024 will be similar to 2023. Please explain in detail how MECL determined the transformer needs would be similar to 2023.

b. Considering the increased cost for distribution transformers over the last few years, what has MECL done to mitigate these price increases?

Response:

a. To estimate annual transformer requirements, Maritime Electric analyzes historical transformer use and then adds planned capital project requirements. Historical use analysis involves calculating the five-year average of transformer orders and then adjusting the result based on short-term load growth expectations. Capital project requirements consider line rebuilds, extensions, and other such projects, with the estimate added to the adjusted average to calculate the total transformer needs for the upcoming year.

b. Maritime Electric follows a competitive bidding process for procuring distribution transformers. For padmount transformers, this occurs annually as transformer requirements are often site specific and sized to serve larger loads. For polemount transformers, the bidding process is completed every five years, resulting in a long-term contract. The long-term contract helps to guarantee pricing and supply, and maintain the vendor relationship. This has been critical during recent years, as supply chain challenges have limited the ability of utilities to procure transformers.

Maritime Electric is also developing a joint transformer specification with another utility in Canada. In the future Maritime Electric will partner with this utility when seeking bids for polemount and padmount transformers. The partnership will give both utilities more bargaining power during the competitive bidding process.

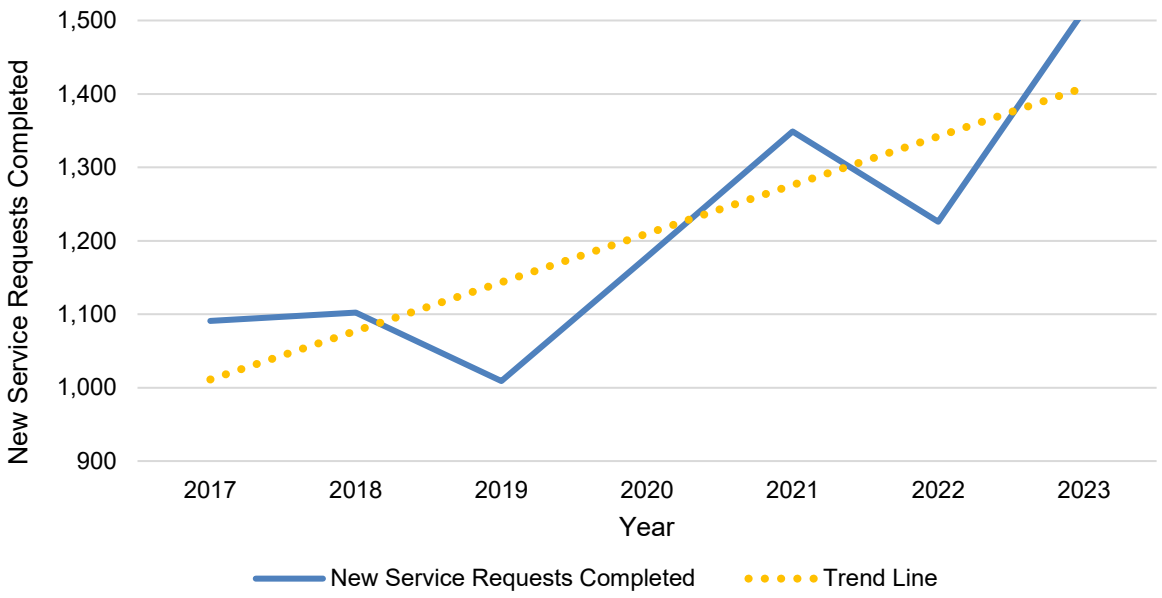
Maritime Electric refurbishes existing transformers, where practical. The cost to refurbish a transformer is less than a new transformer. This helps to reduce the purchase of new transformers and is reflected in Table 2 of Confidential Appendix Q-5 of the 2024 Capital Budget Application.

IR-17 Section 5.3 – Services and Street Lighting - MECL states there are six (6) new powerline technician positions that have been added to meet increased customer demand for service work and street lighting. Provide details of the increased customer demand to justify the increase in the internal labour and transportation section of Table 27.

Response:

Figure 1 shows that since 2017, the number of new service requests completed per year is trending upwards with an approximately 39 per cent increase during the period,[16] while the number of powerline technicians ("PLT") only increased by approximately 8 per cent.[17]

FIGURE 1
New Service Requests
2017 to 2023



In addition to customer and service order growth, the Company's electrical system assets are also increasing as a result of electrification. This requires workers for upgrading system components in substations and along power lines, which adds to the workloads of line crews and other internal labour resources.

The addition of the six new PLT positions will help to address the increasing customer driven workload and enable the ongoing expansion of the electrical system in a timely and responsive manner. Part of this expansion plan includes transitioning the Company's after-hours operations coverage from a one-person line crew to a two-person crew. This will address working-alone safety concerns and expand the scope of work that an after-hours crew can perform. The expanded scope of work will also reduce the number of after-hours outage events requiring on-call crews having to be dispatched at overtime rates.

[16] In 2017, 1,091 new services were completed and in 2023, 1,513 new services were completed.
[17] In 2017 Maritime Electric employed 38 PLTs and in 2022 it employed 41 (including 4 that were apprentice positions with scope-of-work limitations).

The 2024 budget also includes the installation of approximately 500 customer requested street lights. This has increased the budgeted number of new street lights by 350 over the previous year.[18] Based on 2023 information, the number of new street lights budgeted is still potentially too low, as there were 678 new street light installations completed in 2023.

[18] The 2023 Capital Budget for street and yard lighting was based on 150 new street light installations.

IR-18 Section 5.3(a) – Overhead and Underground Services:

a. Please provide a forecast of actual 2023 expenditures as of December 31, 2023. Provide an explanation if the forecast is over/under budget.

b. Provide detailed assumptions and calculations used to determine the increased budget for overhead and underground services.

Response:

a. The 2023 capital expenditures for 5.3a – Overhead and Underground Services, a provisional budget category, was $7,139,761, which represents an over-budget variance of $2,344,761. The over-budget variance was due primarily to high levels of customer service work on new construction and service entrance upgrades resulting from Provincial Government incentive programs driving heat pump, solar panel and electric vehicle charger installations. New construction service work included several large subdivisions and apartment buildings, which factored into the over-budget variance.

b. The proposed 2024 provisional budget for 5.3a – Overhead and Underground Services is based on a five-year average of actual and budgeted expenditures from 2019 to 2023 that were normalized to 2024 dollars using an escalation rate of 3 per cent. The internal labour component also includes an additional amount associated with six new PLT positions that are required to meet increased customer demand for service and street lighting work, along with other capital and operating requirements. The historical expenditure information and the calculations to determine the budget is in an Excel spreadsheet provided as IR-18b – Attachment 1.

IR-19 Section 5.3(b) – Street and Area Lighting. This is the final year of the ten year planned program. Please provide a detailed summary analyzing whether the program achieved expected results.

Response:

At the end of 2023, there were 950 street lights remaining in operation that need to be converted to LED. As such, the planned conversion of 900 street lights to LED in 2024 will be increased to 950, so that the street light conversion program is completed on schedule.

Maritime Electric currently rents 11,939 street lights to customers. This number has increased from 7,573 at the start of the street light conversion program in 2015. On this basis, it is estimated that over 2,600 megawatt hours ("MWh") of electricity annually is now being saved as a result of street lights being converted to LED through the conversion program since 2015, and approximately 5,000 MWh is being saved with all new street lights installed since 2015 included. These results are consistent with the objectives set for the street light conversion program in 2015.

IR-20 Section 5.4(a) – Customer Driven Line Extensions:

a. Please provide a forecast of actual 2023 expenditures as of December 31, 2023.

b. Please provide an explanation how MECL calculated the increased budget amount for the 2024 year over the 2022 actuals and 2023 budget amount.

Response:

a. The 2023 capital expenditures for 5.4a – Customer Driven Line Extensions, a provisional budget category, was $2,112,986, which represents an over-budget variance of $655,986. The over-budget variance was due primarily to three large projects that were not known at the time the 2023 Capital Budget Application was filed with the Commission. The three projects, which had a combined customer contribution of $505,452, are:

- A 1.9 kilometre ("km") three phase conversion on the Newton Road in Kinkora with a cost of $263,662 and customer contribution of $248,580;
- A 0.8 km three phase conversion on the Kelly Road in Kinkora with a cost of $107,000 and customer contribution of $93,681; and
- A 0.9 km three phase conversion project on the Buntain Road in Anglo Rustico with a cost of $167,875 and customer contribution of $163,191.

Work associated with numerous small customer driven line extension was also greater than expected, resulting in the balance of the over-budget variance.

b. The proposed 2024 provisional budget for 5.4a – Customer Driven Line Extensions is based on a five-year average of actual and budgeted expenditures from 2019 to 2023 that were normalized to 2024 dollars using an escalation rate of 3 per cent. The historical expenditure information and the calculations to determine the budget is in an Excel spreadsheet provided as IR-20b – Attachment 1.

IR-21 Section 5.4(b) – Reliability Driven Line Extensions:

a. Explain how the line extensions will result in reliability improvements? Will these line extensions improve poor performing feeds noted in section 3? Please explain.

b. In Table 32 the Contract Labour line item has increased over the prior year and is trending above the 5 year average. Please provide justification for this increase.

Response:

a. The proposed reliability-driven line extensions on Lady Slipper Drive and Pleasant Grove Road are required to reduce load on existing single phase lines. Neither of these lines are associated with the poor performing feeders noted in Section 3 of the Application; however, they have both experienced a peak load above their 100 amp maximum design load. The best method for reducing load on a single phase line is to convert all or part of the line to three phase. This also serves to balance load and provide balanced voltage.

The Tignish substation distribution feeders project will improve reliability for customers fed from the existing Tignish West feeder, which is identified in Section 3 of the Application as a poor performing feeder. Through the new distribution feeders, the Tignish area will be fed with shorter lines from the Tignish substation. This will off load the Tignish West feeder and, as a result, the peak load on the Tignish West feeder will be reduced and the power quality on the feeder will be improved. Relative to the existing Tignish West feeder, the new feeders will have less customers per line affected if outages do occur and there will be more opportunities to supply customers using an alternative route for maintenance and during unplanned outages. Thereby improving reliability.

b. The proposed budget for contractor labour in 5.4b – Reliability Driven Line Extensions is based on project-specific estimates and not averaged based on past expenditures.

IR-22 Section 5.5 – Line Rebuilds - MECL states:

"*The communications make-ready requests are customer driven and are often received without advance notice; however, the Company is still obligated to complete such work in a timely manner. As such, communications make-ready work is not budgeted and instead reported to the Commission quarterly through capital expenditure forecasts and, when large projects warrant, through the supplemental capital budget request ("SCBR") process*."

a. Please explain in more detail what is meant when MECL states the work is not budgeted. Is there a provisional budget for make-ready work?

b. Please provide a summary of historical and 2023 forecast make-ready work.

Response:

a. The scope of work required to complete a telecommunication make-ready project can be highly variable, ranging from a single pole replacement costing under $5,000 to a multi-kilometre line rebuild costing several hundred thousand dollars. The referenced statement was intended for the more substantial line-rebuild type of make-ready projects, as smaller ones are processed through service requests that are budgeted and tracked through Section 5.3a – Overhead and Underground Services.

Maritime Electric does not allocate a provisional amount for substantial communication make-ready projects in Section 5.5a – Line Rebuilds because, while the dollar amounts involved can result in a significant over-budget variance, there is too much uncertainty around if a request will be received in any budget year. It should also be noted that some communication make-ready projects involve a customer contribution that covers most or all of the costs involved, with the funds received accounted for as a separate line item in capital budget variance reports provided to the Commission.

b. Since May 2020, Maritime Electric has received all make-ready work requests from Bell Canada and Xplornet Communications within the scope of the PEI Broadband Project. Over this same time period, there have been no substantial make-ready work requests submitted by other telecommunication companies.

IR-23 Section 5.5(a) – Single Phase and Three Phase Line Rebuilds:

a. Please provide a forecast of actual 2023 expenditures as of December 31, 2023.

b. In Table 34 the Contract Labour line item has increased over the prior year and is trending above the 5 year average. Please provide justification for this increase.

c. What is the average outage hours for customers on each of the line rebuilds as compared to the average MECL customer?

Response:

a. The 2023 capital expenditures for 5.5a – Single Phase and Three Phase Line Rebuilds were $2,414,580, which was in line with budget.

b. The proposed budget for contractor labour in 5.5a – Line Rebuilds is based on project-specific estimates and not averaged based on past expenditures.

c. The outage hours data provided below is specific to each line to be rebuilt and does not include outage hours associated with loss of upstream supply lines. For this and other reasons, it is difficult to compile meaningful comparison data for a typical Maritime Electric customer without significant effort, and even if that were to be done, the result would only be one factor to consider when determining if a line needs to be rebuilt. The decision to rebuild a line is based on reliability statistics, distribution inspection results, asset age, load growth and other operational considerations. As such, reliability is only one component of the analysis.

Outage hours data for each of the line rebuilds, in total hours over the last five years and as an annual average in hours per customer, follows.

The Greenmount Road customers have experienced 881 outage hours in the last five years, for an annual average of 1 outage hour per customer.

The Village Green Road customers have experienced 853 outage hours in the last five years, for an annual average of 3.6 outage hours per customer.

The Egmont Bay customers have experienced 964 outage hours in the last five years, for an annual average of 2.1 outage hours per customer.

The Kingston Road customers have experienced 784 outage hours in the last five years, for an annual average of 1.5 outage hours per customer.

IR-24 Section 5.5(b) – Distribution Line Refurbishment:

a. Does this project cover costs for inspection and refurbishment if an issue is detected, or does this project only cover inspection costs?

b. MECL states "*The program was designed to ensure that all overhead primary distribution lines are subject to a detailed ground inspection every six years*." Has this program been able to achieve this objective of inspecting overhead primary distribution lines within a 6 year period?

c. What savings have resulted from this program?

Response:

a. The budget in Section 5.5b – Distribution Line Refurbishment Program includes the cost to complete inspections and priority capital repairs or replacements that may be necessary based on the deficiencies identified.

b. The distribution line ground inspection is being completed within a six-year cycle, as planned. The inspections are completed on a feeder-by-feeder basis, with the feeders to be inspected in 2024 shown in Table 36 and Figure 8 of the Application. The entire feeder is inspected in the year it is scheduled to be completed. As new feeders are created, they are added to the schedule.

c. It is not possible to quantify the distribution system cost savings that have resulted from this program. The distribution inspection program allows qualified Company staff to evaluate asset health rather than simply relying upon age to determine when replacements should occur. When required, capital repairs are made to specific components to extend the life of the entire distribution line, helping to ensure it reaches the end of its estimated useful life. Distribution system assets that are used and useful for the duration of or longer than their design life are most cost-effective for customers. This program has also improved reliability by identifying high priority deficiencies requiring immediate capital repairs or replacements.

IR-25 Section 5.5(c)(ii.) – Deteriorated Conductor Replacement Program:

a. Please provide a forecast of actual 2023 expenditures as of December 31, 2023.

Response:

a. The 2023 capital expenditures for Section 5.5c(ii) – Deteriorated Conductor Replacement Program was $438,094, which is in line with budget.

IR-26 Section 5.5(c)(iii.) – Backlot Feed Relocation Program:

a. Are the lines MECL anticipates relocating at the end of life?

b. Please describe the condition of the lines.

c. Justify the benefits, including a cost benefit analysis, of relocating the lines in the 2024 budget year versus waiting until end of life for each planned line.

Response:

a. The distribution assets associated with projects identified in the backlot feed relocation program are approaching end of life. Most poles in the targeted areas range from 31 to 46 years old and some have already had to be replaced due to failure or deteriorated condition.[19]

b. The majority of backlot feed lines were installed over 30 years ago, in advance of the residential development that they were constructed to serve. As such, Maritime Electric's access to these lines has become increasingly impeded over the years as houses were constructed, trees were planted, fences were built and other obstructions have accumulated. With considerable residential development now established, along with mature trees under and alongside the lines, backyard activities can present safety hazards that could be avoided by relocating the line to the street.

As backlot feed lines tend to be older installations, poles, conductor and insulators are now showing signs of deterioration. Also, some backlot feed lines have conductor that is #6 copper, which cannot be safely worked on under live-line conditions.

Photos showing deteriorating backlot line poles in heavily trees back yards are provided in IR-26 – Attachment 1.

c. The primary justification for the backlot feed relocation program is to improve public safety and efficient utility access; however, as indicated in the responses to IR-26a and IR-26b herein, the targeted sections of line are at or near end of life. Proactive replacement and relocation of backlot feed lines and equipment is a lower cost approach than rebuilding in place or replacing individual assets on these lines, as they fail, due to the limited accessibility for line trucks and associated equipment. In addition, backlot feed are often problematic during severe weather events as they are often in close proximity to heavy vegetation, which is difficult to manage due to the aforementioned accessibility limitations.

[19] Distribution poles have an expected service life of 50 years when used under typical conditions.

IR-27 Section 5.5(d) – Distribution Corridor Widening & Section 6.2(d) – Transmission Corridor Widening:

a. MECL has not included vegetation management in previous capital budgets. Why has MECL included distribution corridor widening in its 2024 capital budget?

b. Provide justification to support including vegetation management as a capital expenditure versus an operating expenditure.

c. Is the classification of this expense as capital (rather than operating) consistent with MECL's accounting policy? Please explain.

d. Which (if any) other Atlantic Canadian electric utilities capitalize vegetation management?

e. In the General Rate Application, MECL filed a vegetation management plan for the rate setting period. This proposed capital program was not included in MECL's vegetation management plan as filed. Why?

f. In accordance with Order UE23-04, MECL is not permitted to decrease vegetation management costs to achieve the maximum allowed ROE. Is MECL proposing to capitalize vegetation management costs to decrease operating costs in 2024?

g. What is the total vegetation management costs (operating and capital) that MECL is proposing to spend in 2024?

h. MECL states that this is a recurring capital requirement. However, the majority of the recurring work will be performed by contractor (rather than internal) labour. Is this the least cost option? Please provide all supporting calculations/assumptions.

i. How many kilometers of distribution corridor is MECL forecasting to widen in 2024? Please provide all supporting calculations/assumptions.

Response:

a. Vegetation management has been added to the capital budget to enable the widening of transmission and distribution corridors beyond the edge of the transportation right-of-way (i.e., onto private property). Before and after examples of distribution and transmission corridor widening are provided in IR-27 – Attachment 1.

Corridor widening and tree removal beyond the edge of the right-of-way is an appropriate capital expenditure when the vegetation clearing is done in areas that have not previously been managed. This addition is being proposed as a proactive measure to reduce system damage during severe storms, such as recently experienced with Hurricanes Dorian and Fiona.

b. Good utility practice and generally accepted accounting principles allow the capitalization of vegetation management activities the first time they are performed for a specific area. Any subsequent vegetation management activities must be recognized as an operating expense. This new program targets vegetation that is to be cleared for the first time. As

such, it is consistent with when vegetation clearing is required to establish new line corridors, which is appropriately recorded as a capital expenditure. As indicated in the Application, once a corridor is widened under this program, it will then be maintained (as an operational expense) under the vegetation management program.

c. The classification of the corridor widening programs as a capital expense is consistent with the Company's accounting policy. As such, costs for initial vegetation clearing to establish new lines and facilities is appropriately recorded as a capital expenditure.

d. Nova Scotia Power capitalizes vegetation management for transmission and distribution lines when widening existing corridors or when constructing new infrastructure.

NB Power capitalizes vegetation management for transmission and distribution lines when establishing new rights-of-way, accommodating line upgrade and replacement projects, for right-of-way widening and for hazard tree removal.

Newfoundland Power capitalizes vegetation management for transmission and distribution lines when establishing new rights-of-way and accommodating line upgrade and replacement projects.

e. The vegetation management plan filed with the GRA included only operating expenditures as plans for the corridor widening programs had not yet been finalized.

f. No. To the contrary, Maritime Electric plans to increase vegetation management operating expenditures annually until it reaches approximately $4 million in 2025.

g. In 2024, Maritime Electric is proposing to spend approximately $3.2 million on vegetation management operations and $1.2 million on vegetation management capital work, for a total vegetation management expenditure of $4.4 million.

h. Continuing to utilize contractors for vegetation management work is the least cost option. The vegetation management work required for these new capital programs is similar to the vegetation management currently being performed by contractors. Maritime Electric does not currently have the specialized resources or equipment required to perform extensive vegetation management and would, therefore, require a significant investment in resources, equipment and facilities to perform this work using internal labour. Most neighbouring utilities in the region use this same contractor-based model for vegetation management.

i. The kilometres of distribution corridor that Maritime Electric is forecasting to widen in 2024 is dependent on the type and density of vegetation to be cleared and the width allowable under the permissions acquired. Based on historical averages, clearing a span of distribution can range from approximately $1,900 to $3,650. Given the planned contractor labour expenditure of $774,000 in 2024, Maritime Electric is forecasting to widen between 212 and 407 distribution spans. At an average span length of 65 metres, this equates to between 13.8 and 26.5 kilometres.

IR-28 Section 5.6 – System Meters - Considering MECL has an application before the Commission that includes replacing the current meters with smart meters, please provide additional justification to continue purchasing approximately 1,500 radio frequency meters.

Response:

The referenced application is still under review by the Commission and, as such, Maritime Electric's annual requirement for new radio frequency meters in 2024 has not yet changed.

In the event that the project is approved mid-2024, there may be an opportunity to reduce the 2024 budget for radio frequency meters once the installation of smart meters begins. Following project approval, the Company will begin drawing down its inventory of radio frequency meters, limiting the need to order new meters. Also, with the installation of smart meters, the Company's inventory of spare radio frequency meters will grow and that inventory will be used for radio frequency meter replacements, when required, until smart meters have been fully deployed.

IR-29 Section 5.7 – Distribution Equipment - Table 47 - The Relay replacement equipment line does not add to $168,000 and the Switch replacement equipment line does not add to $61,000. Subsequently the total budget line does not add to $1,666,000. Please explain the discrepancy.

a. Similarly, Table 49 is different than the sum calculated in Table 47. Please explain.

b. Table 50 is different than the sum calculated in Table 47. Please explain.

Response:

A corrected Table 47 follows.

TABLE 47
Breakdown of Proposed Budget Allocation
Distribution Equipment Budget

Description	Materials	Internal Labour and Transportation	Budget
a. Substation, Line and Communication Equipment	$ 794,000	$ 221,000	$ 1,015,000
b. Relay Replacement Equipment	136,000	32,000	168,000
c. Switch Replacement Equipment	48,000	13,000	61,000
d. Line Tools and Equipment	389,000	-	389,000
e. Meter Shop Equipment	33,000	-	33,000
TOTAL	**$ 1,400,000**	**$ 266,000**	**$ 1,666,000**

a. With Table 47 corrected herein, Table 49 and Confidential Appendix Q-7 are now all in agreement.

b. With Table 47 corrected herein, Table 50 and Confidential Appendix Q-7 are now all in agreement.

IR-30 Section 5.8 – Transportation Equipment:

a. What are the implications of not purchasing an additional Aerial Bucket (one does not replace an existing vehicle)?

b. MECL indicated in 2023 they were approved to purchase a vegetation management truck; however, due to operational requirements the Company changed this to an aerial bucket. This resulted in the total budget requirement to increase $550,000. Did MECL obtain Commission approval for this change?

c. As MECL did not order a vegetation management truck in 2023, will this affect MECL's vegetation management plan? Please explain.

d. There is no vegetation management truck included in the 2024/2025 budget for line operation vehicles. Has this vehicle been deemed unnecessary? Explain.

e. With respect to small vehicles and equipment, what are the operational requirements in relation to the proposed new pole trailer?

f. MECL indicated they are in the process of transitioning its passenger vehicle fleet to plug-in hybrid electric vehicles and all-electric vehicles. Is this the most cost-effective plan? Please provide a cost benefit analysis to support the proposed additions.

Response:

a. An additional aerial bucket truck is required to meet operational requirements in the western district as it will enable the addition of a daily work crew and also be used for after-hours outage response. Without this vehicle, the Company will have to operate more frequently with three-person crews when two-person crews would suffice,[20] or rent a line truck at a higher overall cost.

b. The combined total budget for the vegetation management truck and chipper was $424,000, whereas the purchase order issued for the aerial bucket truck totaled $536,554. This resulted in an increased budget requirement of $116,000 ($112,554 escalated at 3 per cent and rounded) for this item. As such, with the issuance of a purchase order being time sensitive to obtain delivery of the truck in 2024 and the Company planning for a new aerial bucket truck in the 2024 Capital Budget, it was believed to be more efficient to report the change in the Application. As such, if the Commission does not approve the change, the first-year payment in 2023 can be applied to the replacement aerial bucket truck in the 2024 budget; however, a rental truck would be required until an additional aerial bucket truck is purchased.

[20] Three-person crews require fewer trucks but most service calls can be completed with two-person crews, which enables more work to get done if there are enough vehicles available.

c. As indicated in IR-27h, herein, Maritime Electric has determined that continuing to utilize contractors to perform vegetation management activities for both the existing operational work and proposed capital work is the least-cost option. The Company's Vegetation Management Plan is not affected by the decision.

d. Yes. Maritime Electric has determined that the ongoing volume of work required in vegetation management is best performed by local contractors that are already established with qualified resources and specialized equipment. As such, the inclusion of a vegetation management truck and chipper in the 2024 and 2025 budgets are no longer necessary.

e. The new pole trailer will accompany the new digger derrick truck being purchased for the western district. Pole trailers are typically hauled by digger trucks to carry poles to worksites.

f. The electrification of Maritime Electric's vehicle fleet, as summarized in Table 5, is planned to be gradual. The planned targets assume the continued growth of the electric vehicle ("EV") market, with improvement anticipated in the areas of vehicle availability, purchase price and operational specifications for both passenger and heavy-duty line truck vehicles. Maritime Electric has developed a cost-benefit analysis spreadsheet to evaluate EV conversion economics and carbon emission reduction benefits on a vehicle-by-vehicle basis. This spreadsheet was used to produce an example comparison/evaluation of a gasoline and electric pickup truck, which is provided as IR-30 – Attachment 1.

TABLE 5
Vehicle Fleet Electrification Targets

Vehicle Class	First EV	100% Electrification Target[21]
Light-duty Vehicles	2020	2027
Light-duty Trucks	2023	2032
Medium-duty Trucks	2030	2038
Heavy-duty Trucks	2031	2048

The Company's vehicle electrification targets will be evaluated annually to review the status of each of these factors.

As manufacturers increase the number of hybrid-electric and all-electric EVs produced, the fixed costs of research, development and production will be spread over an increasingly larger number of units, thereby pushing the per-unit cost (and thus sales price) of each vehicle downwards. Therefore, it is expected that over time, the initial purchase cost differential between EVs and traditional gasoline/diesel vehicles will narrow.

Light-duty or passenger EVs and trucks have a higher initial purchase price; however, the overall cost of ownership is comparable to that of a gasoline or diesel burning equivalent. Where the overall cost of ownership is comparable, the lower carbon footprint of the EV should be considered when vehicles purchases are being planned.

[21] Electrification includes hybrid-electric and all-electric vehicles.

Heavy-duty all-electric EVs are not cost effective at this time. As such, Maritime Electric intends to wait until the life-cycle cost for a heavy-duty EV is comparable to that of an equivalent diesel burning vehicle. The purchase of the first heavy-duty EV is not expected until at least 2030; however, heavy-duty hybrid EVs (i.e., with electric power take-off capabilities) may be an effective interim option for reducing heavy-duty vehicle emissions. Prior to its inclusion in a capital budget application, the financial and operational specifications of any proposed heavy-duty EV will be fully evaluated.

IR-31 Section 6 – Transmission:

a. Which of these capital expenses does MECL intend to recover from transmission customers as part of the next OATT schedule update?

b. What is the resulting impact for transmission customers? Assume all proposed capital expenditures are approved and recovered under the OATT as proposed by MECL.

Response:

a. Table 6 lists transmission projects included in Section 6.1 – Substation Projects and Section 6.2 – Transmission Projects of the 2024 Capital Budget Application, along with the respective budget and Open Access Transmission Tariff ("OATT") costs for each project.

TABLE 6
Breakdown of Proposed Budget
Transmission Projects

Item	Description	Budget	Incremental Costs to OATT
6.1a	Woodstock Switching Station	$ 7,669,000	$ 7,669,000
6.1b	Tignish Substation	3,000,000	-
6.1c	Lorne Valley Switching Station Expansion	98,000	98,000
6.1d	Sherbrooke X1 Autotransformer Replacement	126,000	126,000
6.1e	Power Transformers	2,192,000	-
6.1f	Substation Oil Containment Program	172,000	-
6.1g	Substation Modernization Program	547,000	-
6.1h	138 kV Breaker Program	142,000	142,000
6.1i	Communication Fibre - Woodstock to Alberton	973,000	973,000
6.1j	Fibre Modifications Due to Road Alterations	45,000	-
6.2a	69 kV and 138 kV Switch Program	631,000	631,000
6.2b	Transmission Line Refurbishment	1,027,000	1,027,000
6.2c	Transmission Lines	521,000	521,000
6.2d	Transmission Corridor Widening	370,000	370,000
TOTAL		**$ 17,513,000**	**$ 11,557,000**

The OATT defines the terms, conditions and price for third-party access to Maritime Electric's transmission system on the same basis as the Company uses the transmission system for serving its own load. As such, any costs associated with operating or maintaining the transmission system are to be included in OATT rates. Referring to Table 6, for of each of the transmission projects listed, a brief justification for its inclusion in, or exclusion from, OATT charges, follows.

6.1a The Woodstock switching station is a new transmission substation justified on the need to improve voltage support and reliability of the transmission system in western PEI. All of the costs indicated in the Application for the Woodstock switching station will be recovered through OATT rates.[22]

6.1b The Tignish substation is a new distribution substation justified on the need to increase system capacity to better serve Maritime Electric customers in western PEI. The costs associated with the Tignish substation will not be included in OATT rates.

6.1c The Lorne Valley switching station is an existing transmission system facility in eastern PEI. Increased loads are driving the need to offload autotransformers in West Royalty and provide increased voltage support in central and eastern PEI. All of the costs indicated in the Application for the Lorne Valley switching station will be recovered through OATT rates.

6.1d The Sherbrooke X1 autotransformer is a transmission system asset in western PEI. Sherbrooke X1 needs to be replaced as it is approaching end of life and cannot be operated to failure. All of the costs indicated in the Application for the Sherbrooke X1 autotransformer replacement will be recovered through OATT rates.

6.1e All three power transformers required are distribution transformers for stepping the voltage down from 69 kV to 12.5 kV to serve local load. As such, these power transformers are not considered a part of the transmission system and will not be included in OATT rates.

6.1f The substation oil containment program is focused on reducing transformer oil spills. The program is focused primarily on distribution transformers, as there is a larger quantity of distribution transformers and many of the Company's autotransformers will be replaced in the coming years with oil containment included as a part of these upgrades. Therefore, although the specific transformer location to be upgraded in 2024 has not been finalized, it is expected that this work will be associated with a distribution transformer and, as such, the costs will not be included in OATT rates.

6.1g The Substation Modernization Program is an annual program focused on upgrading deteriorated and substandard substation infrastructure. The program is focused primarily on distribution substations. Therefore, although the exact substation to be modernized in 2024 has not been finalized, it is expected that this work will be associated with a distribution substation and the costs will not be included in OATT rates.

[22] This project is a multi-year project. Costs associated with any projects are not included in rate base or OATT until the project is completed and the assets are considered used and useful. It is not known at this time whether costs associated with the project will be included in the next OATT schedule update, or the subsequent schedule update, but it is clear that the 2024 costs will be recovered through OATT rates.

6.1h The 138 kV breaker program is focused on replacing 138 kV high voltage circuit breakers. Due to the criticality of 138 kV breakers coupled with long delivery times necessary to secure new breakers, a spare breaker is required. The Company has twenty-nine circuit breakers in service across the PEI with 27 of the 29 breakers considered transmission assets and the two remaining breakers serving both the transmission and distribution systems. Therefore, the spare breaker is considered a transmission asset and the costs will be recovered through OATT rates.

6.1i The Woodstock to Alberton communication fibre project is required to serve the new Woodstock switching station and will, therefore, become a transmission asset. All of the costs indicated in the Application for the Woodstock to Alberton communication fibre project are intended to be recovered through OATT rates.

6.1j Fibre modifications due to road alterations is a provisional budget that can be used when fibre changes associated with both transmission and distribution assets occur. Generally, distribution fibre modification is more common; therefore, it is expected that these costs will not be included in OATT rates. However, as costs are incurred, they will be tracked and any costs associated with transmission assets will be recovered through future OATT rates.

6.2a The 69 kV and 138 kV switch program is focused on upgrading or replacing 69 and 138 kV line switches. The Company identified the requirement to purchase spare 69 and 138 kV transmission switches and accessories to have them available for emergency backup replacement. Therefore, the costs are considered transmission expenses and will be recovered through OATT rates.

6.2b The transmission line refurbishment program provides budget for inspection and capital repair/replacement of priority deficiencies found on transmission lines. The costs are considered transmission expenses and will be recovered through OATT rates.

6.2c The Transmission Line project includes two separate projects in 2024: Tignish Substation Transmission and Y-106 Scotchfort to Lorne Valley.

Tignish Substation Transmission

The Tignish substation is justified on the need to increase system capacity to better serve Maritime Electric customers in western PEI. The Tignish substation transmission project involves purchasing a portion of T-23 from PEI Energy Corporation and interconnecting it with the new substation. As the purchased portion of T-23 and the interconnection to the Tignish substation will become a part of the Maritime Electric transmission system, the costs are considered transmission expenses and will be recovered through OATT rates.

Y-106 Scotchfort to Lorne Valley

The Y-106 Scotchfort to Lorne Valley project involves rebuilding the existing 69 kV T-4 transmission line to 138 kV, and connecting the Y-104 transmission line to the Lorne Valley switching station. As this project involves improvements to the transmission system, all of the costs are intended to be recovered through OATT rates.

6.2d The Transmission corridor widening program is required to remove vegetation along existing transmission lines. As there is a separate program for distribution corridor widening, the costs of this program are considered transmission expenses and will be recovered through OATT rates.

b. As shown in Table 7, the total expected capital expenditures for transmission projects included in the Application and intended to be recovered through OATT rates is $11,557,000.[23]

The annual financial impact resulting from these capital expenditures is approximately $1,000,000 in year one.[24] This increase in costs would result in an approximate 7 per cent increase to OATT rates.

TABLE 7
Estimation of the Increase to OATT Rates
Associated with the 2024 Capital Budget

Item	Cost	Formula
Total Cost of 2024 OATT Capital Projects	$ 11,557,000	
Financial Impact of 2024 OATT Capital Projects	1,000,000	A
2020 OATT Revenue Requirement[25]	14,302,000	B
Per Cent Increase of Revenue Requirement due to 2024 OATT Capital Projects	7.0%	= A / B * 100

[23] The total of $11,557,000 includes 2024 spending only. Several projects included in this total are multi-year projects but only the 2024 portion of spending has been included.

[24] This is an approximation only. Several projects included in this total capital cost are multi-year projects. Multi-year projects would not be included in OATT rates until the projects are completed and assets are considered used and useful. This cost also includes financing, corporate taxes, and amortization costs for the capital but does not include operation and maintenance costs.

[25] Refer to the revised 2021 OATT schedule update under docket number UE20945.

IR-32 Section 6.1(a) – Woodstock Switching Station:

a. Provide a forecast of actual 2023 expenditures as of December 31, 2023. Please provide an explanation if the forecast is over/under budget.

b. The 2024 and 2025 revised budgets have materially changed since the 2023 Capital budget application. Please provide additional support for the power transformer and substation equipment price increases and additional civil works costs.

Response:

a. The 2023 capital expenditures for 6.1a – Woodstock Switching Station was $1,733,618, which is in line with budget.

b. While the project's budgets for 2024 and 2025 changed materially, the resulting change to the project's total budget was an increase of $599,000. As such, the original total project budget of $13,972,000 submitted in the 2023 Capital Budget Application increased to $14,213,000 in the 2024 Capital Budget Application, as summarized in Table 8.

TABLE 8
Woodstock Switching Station

Description	2024 Budget Variance (A)	2025 Budget Variance (B)	Total Budget Variance (C = A + B)
Civil Works	$ 522,000	$ -	$ 522,000
Switching Station Equipment	17,000	34,000	51,000
Control Building and Station Service Equipment	18,000	65,000	83,000
Autotransformer Equipment	1,160,000	(293,000)	867,000
Structural Steel	-	-	-
High Voltage Bus Works	-	(25,000)	(25,000)
Internal Labour and Transportation	1,000	-	1,000
Contingency	(72,000)	(828,000)	(900,000)
TOTAL	**$ 1,646,000**	**$ (1,047,000)**	**$ 599,000**

The budget for Civil Works increased due primarily to the planned footprint of the switching station being approximately 15 per cent larger based on completion of the preliminary design layout for the site. This increase is reflected in the quantity of geotextile material increasing from 13,000 to 15,000 square metres, which also impacted the amount of earthwork and materials such as select borrow and gravel required for the project.[26]

The budget for Switching Station Equipment increased due primarily to updated supplier pricing for 138 kV breakers, 69 and 138 kV potential transformers, 69 and 138 kV station service transformers, and a change in the current exchange rate used for converting prices quoted in US dollars.

[26] Initial Civil Works quantity estimates are in the 2023 Capital Budget Application in Table 3 on page 3 of Confidential Appendix N-11 and the updated estimates are in the 2024 Capital Budget Application in Table 3 on page 2 of Confidential Appendix Q-9.

The budget for the Control Building and Station Service Equipment increased due primarily to estimated control panel costs increasing for materials and assembly labour. The budget for Autotransformer Equipment increased due to the availability of more accurate information. In the 2023 Capital Budget Application, this budget item was estimated based on the similar power transformer that was ordered for the West Royalty X5 Autotransformer Upgrade project in 2022.[27] In the 2024 Capital Budget Application, the power transformer cost is updated based on a quotation specific to the Woodstock project.[28]

The Contingency amounts for 2024 and 2025 decreased due to offset forecast cost increases for other Woodstock Switching Station budget items. A reduced contingency amount is reasonable with the increased cost certainty of the proposed budget updates.

[27] This evidence is in the 2023 Capital Budget Application on page 16 of Confidential Appendix N-11.
[28] This evidence is in the 2024 Capital Budget Application on page 21 of Confidential Appendix Q-9.

IR-33 Section 6.1(b) – Tignish Substation:

a. Provide a forecast of actual 2023 expenditures as of December 31, 2023. Please provide an explanation if the forecast is over/under budget.

b. The 2024 revised budgets have materially changed since the 2023 Capital budget application. Please explain and provide support the increase costs.

Response:

a. The 2023 capital expenditures for 6.1b – Tignish Substation was $1,171,775, requiring a carryover to 2024 of $1,400,000.

The 2023 expenditures were associated primarily with downpayments on orders for long-delivery equipment. The carryover is necessary due to a delay in purchasing the land for the project. While Maritime Electric has negotiated a land purchase agreement with the property owner, the Town of Tignish has not yet approved the Company's rezoning permit application.

b. The primary reason for the $653,000 budget increase is a forecast cost increase for the substation's power transformer. The power transformer cost in the 2023 Capital Budget Application was estimated based on the cost of a power transformer that was purchased for a similar project in 2021. For the 2024 Capital Budget Application, the power transformer cost was based on a quotation specific to the Tignish substation project. As a result, the budget increase for the power transformer is $647,000.

IR-34 Section 6.1(g)(i) – Backup Generator System:

a. In 2020, MECL began upgrading critical substations by replacing aged, or adding new, backup generators. Which substations have new or replaced backup generators?

b. How many substations require new backup generators?

c. In which substation does MECL propose to install a backup generator in 2024? Provide justification.

Response:

a. Table 8 shows the status of backup generation capabilities by substation.

TABLE 8
Status of Backup Generation Capabilities by Substation

Substation Name	Backup Generation Capabilities
Bagnall Road	Future
Charlottetown Plant	Future
Clyde River	Complete
Marshfield	Complete
Crossroads	Complete
Hunter River	Complete
Mount Albion	Future
Rattenbury	Future
Scotchfort	Future
UPEI	Planned 2024
West Royalty	Complete
Albany	Future
Alberton	Future
Bedeque	Future (existing but due for replacement)
Borden	Future
Kensington	Complete
O'Leary	Complete
Richmond Cove	Complete
Sherbrooke	Future (existing but due for replacement)
St. Eleanors	Complete
Wellington	Future
Church Road	Complete
Dingwells Mills	Future
Dover	Future
Georgetown	Future
Lorne Valley	Complete
Souris	Complete
Victoria Cross	Future
West St. Peters	Future

b. A total of 17 substations still require backup generators.

c. A backup generator is planned for the UPEI substation in 2024. As indicated in Section 6.1g(i), backup generators are important to a substations reliability as they supply the required power to charge the substation batteries and keep system online in the event of a power outage. Also, a substation without power cannot be seen or operated remotely by Energy Control Centre operators.

IR-35 Section 6.1(g)(iii) – Mobile Transformer Accommodation:

a. MECL states that the mobile bays in older substations require expansion to accommodate larger dual voltage mobile transformers. Which substation is MECL proposing to upgrade in 2024? Provide justification.

Response:

a. Mobile transformer accommodation at Georgetown substation is currently planned for 2024.

Maritime Electric has two 10 megavolt-ampere ("MVA") mobile transformers, one with a high voltage rating of 69 kilovolts ("kV") and the other with a dual 138/69 kV high voltage rating. The mobile bays in older substations, such as Georgetown, are only able to accommodate the 69 kV mobile transformer and require expansion to be able to fit the larger dual voltage mobile transformer. Having these substations able to accommodate either transformer provides maximum flexibility in the event that an emergency transformer replacement due to equipment failure is required, or a temporary transformer addition due to load is needed.

Table 9 shows the status of mobile transformer bay dual accommodation by substation.

Table 9
Status of Mobile Transformer Bay Dual Accommodation by Substation

Substation Name	Mobile Transformer Bay Dual Accommodation
Bagnall Road	Complete
Clyde River	Complete
Marshfield	Complete
Crossroads	Complete
Hunter River	Future
Mount Albion	Complete
Rattenbury	Future
Scotchfort	Future
UPEI	Future
Albany	Complete
Alberton	Future
Kensington	Complete
O'Leary	Complete
St. Eleanors	Complete
Wellington	Complete
Dingwells Mills	Future
Dover	Future
Georgetown	Planned 2024
Souris	Complete
Victoria Cross	Future
West St. Peters	Complete

IR-36 Section 6.1(g)(iv) – Equipment Upgrades:

a. MECL states that the proposed budget allocation "*will enable the Company to complete line recloser upgrades at a substation with manual reclosers*". How many substations have manual reclosers?

b. Which substation is MECL proposing to upgrade in 2024? Provide justification.

Response:

a. All Maritime Electric substations have automated reclosers that can be controlled by operators at the Company's Energy Control Centre ("ECC"). This Section 6.1g – Substation Modernization Program budget item involves installing automated "line" reclosers, capable of sectionalizing feeders, to enable automated switching during power outages, as explained in part (b). As such, the proposed line reclosers are not actually in the substation yard but on the distribution circuits/feeders connected to each substation. There are currently 30 line reclosers installed across the distribution system, with 24 being manual and 6 automated. The reclosers project involves the addition of 4 automated line reclosers.

b. The substation line reclosers planned for 2024 will be installed on distribution feeders connected to both the Crossroads and Mount Albion substations. These automated line reclosers, complete with communications, will be able to automatically sectionalize distribution feeders when outages occur, which will minimize customer outage hours and improve overall reliability. The new automated line reclosers will also be able to be operated remotely by ECC operators to transfer loads between substations in a safe and timely manner. The area served by the Crossroads and Mount Albion substations is densely populated and experiencing significant residential and commercial customer growth. This makes it a priority area for distribution automation, as the reliability benefits will be maximized.

IR-37 Section 6.1(g)(v) – Fence Upgrades:

a. MECL states that the fencing at certain substations and switching stations is deteriorating and needs to be replaced. Provide particulars of the fence to be replaced in 2024.

Response:

Fencing around substations is critical infrastructure for public safety and protection of critical electrical system assets. Fence upgrades are completed at several sites each year as fence sections and components can be subject to deterioration from age, or damage from weather, vandalism and operations activities at the site.

Substation fence inspections are completed each year over the winter and into the spring. The provisional budget amount for fence upgrades is then used to replace sections of fence that are found to be inadequate during these inspections; therefore, the particulars of the fence upgrades that will occur in 2024 are not yet known.

IR-38 Section 6.2(c) – Transmission Lines:

a. The Tignish substation transmission is a two-year project that involves the purchase of transmission line T-23 between Alberton and Tignish in 2023. In the 2023 Capital Budget, MECL allocated $307,000 for the purchase of approximately 16 km of line T-23 from PEIEC.

i. Has MECL purchased a portion of line T-23 from PEIEC?

ii. If so, what was the purchase price?

Response:

a. i. The purchase of T-23 between Alberton and Tignish has not yet been completed as the Tignish substation site has not yet been confirmed and Commission approval is still pending. Once the substation site is confirmed with a development permit and Commission approval is received, the purchase of T-23 will be completed.

ii. There is a possibility that the purchase price could change if the land issues concerning the planned Tignish substation site requires a new location and more, or less, of T-23 is required. A change in the location of the substation may also result in additional transmission line construction requirements.

IR-39 Section 7.2(a) – Hardware Acquisitions - Provide more details on the planned purchases for the Servers and Communication Equipment of $433,000 included in Table 84.

Response:

The following hardware items are included in the budget for Servers and Communication Equipment. The differences relative to prior years is associated primarily with the planned replacement of wireless access points and switches that will no longer be supported by the vendor in 2024.[29] The other items shown in Table 10 are recurring and generally similar to prior years.

TABLE 10
Hardware Acquisition – Breakdown of Serves and Communication Equipment

Description	Qty	Price	Extended
WebCam	15	$ 256	$ 3,840
GPS Devices	5	3,997	19,985
Regular Monitor	20	205	4,100
Backup Tapes	90	102	9,180
Projector	2	1,513	3,026
Servers	2	12,482	24,964
In Vehicle Sierra Modems - Installed	15	1,812	27,180
Video Cameras	4	2,438	9,752
Firewall/Router	1	12,644	12,644
Meeting Room Equipment	1	5,778	5,778
Small Office Equipment (3-4 staff)	1	18,107	18,107
Miscellaneous Hardware	1	20,000	20,000
Internal Labour and Transportation	1	79,000	79,000
2024 Switch/Access Point Refresh	1	195,021	195,021
TOTAL			**$ 432,577**
TOTAL (rounded)			**$ 433,000**

[29] Identified as 2024 Switch/Access Point Refresh in Table 10.

IR-40 Section 7.2(b) Software Acquisitions – Cybersecurity Software attribute to the majority of the increase in this project as compared to prior year expenditures. Provide additional comments to support the increase in Cybersecurity software costs.

Response:

The Information Technology ("IT") department is responsible for cybersecurity on both the IT and Operational Technology ("OT") computer networks. In order to distribute its cybersecurity resources in the most effective manner, the IT department uses a risk-based approach. Similar to other Fortis Inc. subsidiaries, Maritime Electric manages cybersecurity risk through a cyber-risk management program ("CRMP"), which evaluates core cybersecurity risks against existing controls and makes recommendations for improvement.

In order to implement the recommendations of the CRMP, IT has made a significant investment in cybersecurity in recent years.[30] The CRMP strategy does not recommend any one line of defense against malicious attacks but rather follows a "cyber-in-depth" strategy that leverages multiple security solutions to protect its assets. These solutions are layered to provide many levels of defense. Each of these tools require vendor maintenance and support agreements. This is the reason for the increase in this category.

In recent years Maritime Electric has moved many of its applications to the Software as a Service ("SaaS") model. Instead of purchasing software and installing it on its own hardware, the Company often purchases the service as a subscription. The vendor then hosts the application from their data center or that of a third party. The SaaS model eliminates the expensive upgrade and patching process as well as reduces internal IT labour and hardware required. This trend has been common in many industries for several years and now many vendors are only offering SaaS products.

With these changes in industry trends towards the SaaS model, new accounting guidance for "customer's accounting for cloud computing arrangements" was issued. Maritime Electric follows Canadian accounting standards for private enterprises ("ASPE"), Accounting Guideline 20 ("AcG-20"). Under the guideline, essentially all intangible elements associated with a software service are expensed as incurred. As such, for Maritime Electric costs formerly having a tangible component that was capitalized, these costs will now be expensed. AcG20 is effective for fiscal periods beginning on or after January 1, 2024; therefore, 2024 capital expenditures will be adjusted accordingly.

[30] Table 84 in the 2024 Capital Budget Application shows actual and budgeted cybersecurity investment for the past five years.

IR-41 Section 7.2(c) – Cybersecurity Enhancements - In 2021, 2022, 2023 and 2024, there are increased expenditures on Cybersecurity Enhancements. Please distinguish between the Cybersecurity Enhancements undertaken in prior years versus those proposed for 2024.

Response:

Maritime Electric has two computer networks. They are:

1. An IT network, which supports email, file access and business systems for billing, outage management, customer service, website hosting, etc.; and
2. An OT network, which supports the management and operation of the electrical grid, communication to substations, system monitoring and control, and system safety.

Maritime Electric's IT department is responsible for cybersecurity on both networks. This responsibility involves ensuring that the Company is always current in its awareness of the cyber risks that could damage its networks, and that it has the cyber controls in place to protect against those risks.

In the 2021 Capital Budget, three projects in Section 7.2 – Information Technology addressed cybersecurity as follows:

- 7.2d – Business Network Security Review
- 7.2e – Cybersecurity Enhancements
- 7.2f – Operations Network Data Centre Infrastructure.

The three projects had a total combined budget of $662,000.

In the 2022, 2023 and 2024 capital budget applications, Maritime Electric consolidated all proposed cybersecurity enhancement activities into Section 7.2c – Cybersecurity Enhancements, with a proposed budget of $547,000, $572,000 and $787,000, respectively. For clarity, Section 7.2c – Cybersecurity Enhancements in the 2022, 2023 and 2024 capital budget applications includes similar activities to what had previously been undertaken through three separate projects in 2021.

While there are many similarities in the investments required to ensure the security of Maritime Electric's computer networks in 2021, 2022, 2023 and 2024, there are also some activities that are unique to just one year. A breakdown of the cybersecurity enhancements undertaken in 2021, 2022, 2023 and 2024 is as follows.

Cybersecurity enhancements common to 2021, 2022, 2023 and 2024:

- A review of the IT network by an external security specialist, [31] with recommendations from the review for replacing or updating hardware, software, tools and configurations acted upon in each year.
- Purchase and deployment of software applications to enhance personal computer ("PC") end-point protection and manage privileged network access within the IT team.

[31] In the 2021 Capital Budget Application, this activity was included as 7.2d - Business Network Security Review.

Cybersecurity enhancements common to 2023 and 2024:

- Implementation of a security information and event management ("SIEM") solution in the IT environment to augment the recent investment in existing independent alerting and event end-point software. The SIEM will aid in the speed and accuracy of incident response by providing a centralized solution to collect, analyze and action all cyber and operational alerts from IT systems and applications.

Cybersecurity enhancements unique to 2021:

- Purchase and installation of equipment required to secure the OT network in accordance with the Company's CRMP.
- Purchase and implementation of software to replace the majority of IT network legacy servers and services that relied upon platforms no longer supported by the vendor.
- Purchase and deployment of enhanced encryption software for all of the Company's PC end-point assets.

Cybersecurity enhancements unique to 2022:

- Purchase and implementation of IT network software to provide enhanced security information and cyber-event management.
- Establishment of foundational cybersecurity controls for the OT network, including purchasing and deploying software for:
  - Centralized cyber-event retention and alerting;
  - Controls PC end-point protection and segmentation;
  - Management of network access restrictions; and
  - Network traffic inspection and control within and between OT substations.

Cybersecurity enhancements unique to 2023:

- Upgrades to the OT network in 2021 and 2022 have brought it to a level where an annual security review will add value. An annual security review was performed on the OT network, as well as the remediation work from the findings of the review.
- Improvements to the IT network's domain name system ("DNS") inspection and filtering capabilities. DNS is the process that translates internet website requests (e.g., www.maritimeelectric.com) to internet protocol addresses (e.g., 104.104.103.240). DNS traffic is commonly attacked and abused by cyber criminals.
- The implementation of a vulnerability management software ("VMS") on the OT network. VMS proactively identifies weaknesses by scanning a network and then providing remediation suggestions to mitigate potential risks.
- The implementation of extensive inspection and filtering for OT network traffic. This project will provide further inspection and filtering of network traffic occurring within an OT site (e.g., a substation) and between sites beyond the existing controls which are in place for traffic traversing the perimeters of the IT and OT networks.

Cybersecurity enhancements unique to 2024:

- A refresh of the IT firewall infrastructure to provide continued support along with increased telemetry and health data for connected endpoints;

- The OT Cyber Team will install new communication equipment in two substations; and
- The implementation of FortiGuard Industrial Security Service (“ISS”). The FortiGuard ISS provides specialized intrusion prevention system signatures to detect and block malicious traffic.

IR-42 Section 7.2(d) – Customer Services and Communications Enhancements:

a. MECL states that proposed website upgrades are outside the scope of the CIS component of the Advanced Metering for Sustainable Electrification Project.

i. Provide justification for completing website upgrades prior to implementation of the CIS and AMI.

ii. Will the website upgrades be compatible with the proposed CIS and AMI?

iii. Will further website upgrades be required upon implementation of the CIS and AMI?

b. Table 86 includes $43,000 for material for the proposed website upgrades. Provide information on the materials required for the proposed website upgrades, with supporting documentation.

c. Table 86 includes $46,000 for internal labour and transportation. This is in addition to the external labour for which an estimate was provided in Confidential Appendix Q-14. Provide details on the internal labour and transportation associated with proposed website upgrades, with supporting documentation.

Response:

a. The Maritime Electric website has not been materially upgraded for approximately ten years and is now in need of increased functionality to provide an improved end-user experience.

Proposed enhancements include updating the website's home page with improved website navigation options.[32] New, large format icon buttons are also proposed for the most viewed pages, including links to the Outage Map and to Report an Outage. The proposed enhancements also include the ability to quickly share important messages to customers through an alert message, which will display at the top of each page of the website. These could be used to alert customers of an unplanned outage or in advance of a planned outage. Additionally, updated section landing pages will allow for ease of access to information across the website, and the ability to showcase relevant content more readily.

A number of technical functionalities will also be improved to enhance the overall customer experience on the website. This includes adding in plain text editing options for increased customization, the ability to create vanity URLs, custom call-to-action buttons, adding in the proper external navigation symbols, return to top of page buttons and more.

i. The new CIS will include a web portal for engaging with authenticated customers (viewing bills, requesting services, etc.) but will not replace the Maritime Electric website.

[32] For example, more content banners will be displayed to allow customers increased ease in finding relevant and up-to-date content.

ii. Yes.

iii. Website changes required upon the implementation of the CIS/AMI project will be minimal.

b. The budget amount listed as “material” in Table 86 is more specifically described as “website upgrade and service enhancements” in Table 4 of Confidential Appendix Q-14, which also includes a statement of work and cost estimate from a potential vendor. This project also has a budget amount of $50,000 for “external labour,” which will be used to engage a cybersecurity consultant to perform an assessment on the website prior to it becoming publicly accessible. This consultant will also ensure appropriate development and testing environments are established for future maintenance.

c. The budget amount for internal IT labour is based on 725 hours at $63.50 per hour. This is necessary to provide project management and support for both the website development vendor and the cybersecurity consultant, as well as the Company’s corporate communications staff during development and testing of the website.

IR-43 Section 7.2(e) – Load Modelling Software - Provide support for the load modelling software and internal labour and transportation included in Confidential Appendix Q-14, Table 5.

Response:

The budget estimate for the purchase of load modelling software has increased from $192,000 to $288,000 based on a recent quotation from the product supplier. This quotation is provided as IR-43 – Confidential Attachment 1.

The budget amount for internal labour and transportation is necessary to provide project management and support for both the vendor and the Company's transmission planning engineers during the conversion and testing of the system. This amount is an estimate based on previous projects of a similar size completed by the Company in the past.

IR-44 Section 7.2(f) – GIS Upgrade to Utility Network Model:

a. MECL is proposing to upgrade the ESRI GIS to UNM in 2024. However, according to Confidential Appendix Q-14, MECL signed a 3 year agreement for ESRI GIS in 2022. MECL has included $70,410 for ESRI GIS in 2024, in addition to the cost of the UNM (see Table 2, Confidential Appendix Q-14). Is MECL seeking approval for capital expenditures for both ESRI GIS and UNM in 2024? If so, please explain and provide justification.

b. Confidential Appendix Q-14, Table 6, includes $80,000 for internal labour and transportation. According to the proposal from ESRI, the upgrade to UNM will be done remotely.

i. Please provide details and justification for the $80,000 internal labour and transportation claimed by MECL.

Response:

a. The annual ESRI agreement payment of $70,410 includes the software licensing, hosting, patching and support for the use of the ESRI suite of applications; however, the annual ESRI agreement does not include costs for major upgrade support or assistance.

The Utility Network Model ("UNM") is a new evolution of the ESRI software and there is no direct upgrade path. The migration will require both ESRI and Maritime Electric staff working together to complete the project.[33]

b. ESRI staff will work remotely and travel costs are not anticipated. The proposed budget for internal labour and transportation is for Maritime Electric IT staff to provide project management and support to both ESRI and the Company's engineering staff during the implementation of the UNM. This amount is an estimate based on previous projects of a similar size completed by the Company in the past.

[33] Maritime Electric staff from its IT department and its Engineering department are both required to complete this project.

IR-45 Section 7.2(g) – HSE Information Management Software – The HSE Information application presented to the Commission in 2022 was a one year project of $58,000. The 2022 application indicated it was for the purchase and implementation of a new HSE management software. The project presented to the Commission in the 2024 capital budget application is considerably higher with a total budget of $219,000.

a. Please explain how the project increased to $219,000.

b. Document any changes in scope in this project that led to the increased project cost.

Response:

a. The original budget of $58,000, presented in 2022 Capital Budget Application was based on a quotation for a software product that Maritime Electric subsequently decided would not meet its needs, as an internal Company audit identified that several features necessary to meet Company safety management standards were not available through that product.[34] As a result, the Company had to identify and evaluate other available commercial off-the-shelf products, which required the project to be carried over into 2023. The software product that was ultimately identified as the best available solution, Devonway, required a budget of $112,000 to meet the Company's safety management needs. This resulted in an over budget variance of $54,000.

Through the process of evaluating Devonway capabilities, the Company identified other available modules that will provide beneficial functionality beyond the original safety management requirements. The safety management functions available through these modules, including training/documentation management, inspection management and contractor management, are currently being tracked using a combination of in-house developed systems and spreadsheets. The 2024 budget amount is to purchase and implement these additional modules at a cost of $107,000.

With the safety management requirements being met at a cost of $112,000 and the additional modules budgeted at $107,000, the total project budget is $219,000.

b. As indicated in the response to IR-45a, herein, the safety management functions to be addressed through the original project plan were incident management, corrective and preventative actions, and job and safety hazard analysis. Also, the internal Company audit referenced in the response to IR-45a identified the need to improve processes for training/documentation management, inspection management and contractor management. Therefore, a new software provider was selected that could offer all six modules.

[34] The safety management functions to be addressed through the original project plan were incident management, corrective and preventative actions, and job safety and hazard analysis.

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I N T E R R O G A T O R I E S

IR-2 – Attachment 1

Maritime Electric
Forecast of 2023 Capital Budget Carryovers
Based on Actual Expenditures for the Period of January 1, 2023 to December 31, 2023

Project Description	2023 Annual Capital Budget Section	Actual (A)	2023 Budget (B)	2023 Variance (C = A - B)	Carryover to 2024 (D)	Total Expected Expenditures (E = A + D)	Expected Variance from Budget (F = E - B)	Notes
System Meters	5.6	638,187	656,000	(17,813)	18,000	656,187	187	Carryovers of $18,000 is required due to delayed delivery of a metering tank.
Distribution Equipment	5.7	1,179,508	1,477,000	(297,492)	342,000	1,521,508	44,508	Carryovers of $342,000 is required due to longer than expected delivery time for voltage regulators.
Transportation Equipment	5.8	427,306	1,258,000	(830,694)	988,000	1,415,306	157,306	Carryover of $988,000 is required for four line operation vehicles that have been ordered, with delivery and year-two payments scheduled for 2024.
Substation Projects	6.1	10,441,884	13,654,000	(3,212,116)	3,275,000	13,716,884	62,884	The West Royalty X5 autotransformer upgrade project will require a carryover of approximately $1.1 million to accommodate late delivery and installation of items with longer-than-expected manufacturing lead times. The Tignish substation project and the Alberton to Tignish communication fibre project will require carryovers of $1.4 million and $404,000, respectively, due to purchase of the preferred site being delayed by municipal rezoning processes. The Substation Oil Containment Program will require a $56,000 carryover for work to be completed in early 2024, and the Substation Modernization Program will require a $293,000 carryover to complete work that was delated due to the timing of capital budget approval and to allow for delayed delivery of reclosers.
Transmission Projects	6.2	1,826,627	2,018,000	(191,373)	307,000	2,133,627	115,627	Carryover of $307,000 for the Tignish substation transmission modifications is required due to the substation land rezoning delays.
Corporate Services	7.1	1,128,957	928,000	200,957	30,000	1,158,957	230,957	Carryover of $30,000 is required to complete the labour component of the security system replacement project.
Information Technology	7.2	1,636,769	1,909,000	(272,231)	255,000	1,891,769	(17,231)	Carryover of $57,000 is required to complete cybersecurity enhancements at the Borden substation, which was delayed due to unavailability of external labour resources. Carryover of $198,000 is also required for the engineering fixed assets management system project, which was delayed due to the timing of capital budget approval and subsequent unavailability Engineering department staff.
Subtotal					**5,215,000**			
Capital Projects Carried Over from Prior Years	Appendix I 2022 Capital Variance Report	9,605,936	11,127,000	(1,521,064)	3,976,000	2,454,936	(8,672,064)	Carryover of approximately $1.7 million is required for delayed truck chassis deliveries, with an additional $2.3 million carryover required for the PEI Broadband Project.
Less: Customer Contributions Carried Over from Prior Years	Appendix I 2022 Capital Variance Report	(1,337,355)	(4,027,000)	2,689,645	(1,400,000)	1,289,645	5,316,645	Carryover of $1.4 million is associated with the PEI Broadband Project.
Subtotal					**2,576,000**			
Total					**$ 7,791,000**			

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I N T E R R O G A T O R I E S

IR-9 – Attachment 1

Table 1
2022 Capital Budget Internal Labour and Transportation Cost Variances

	Description	Budget (A)	Actual (B)	Variance (C = B - A)	Variance % (D = C/A)	Notes
4.1	Charlottetown Generating Station – Buildings and Site Services	$ 4,000	$ 6,796	$ 2,796	70%	Under the material budget variance threshold of greater than a $30,000 and 15%.
4.2	Charlottetown Generating Station – Turbine Generator	26,000	95,614	69,614	268%	Increased labour requirement for on-Island capacity study and carryover work completed in 2023.
4.3	Borden-Carleton Generating Station – Buildings and Site Services	118,000	67,886	(50,114)	-42%	Reduced labour requirement for BGS miscellaneous building and site upgrades.
4.4	Borden-Carleton Generating Station – Turbine Generators	120,000	101,957	(18,043)	-15%	Under the material budget variance threshold of greater than a $30,000 and 15%.
5.1	Replacements Due to Storms, Collisions, Fire and Road Alterations	948,000	1,344,865	396,865	42%	Higher than expected after-hours labour requirement due to early winter storm response and in the aftermath of Fiona.
5.2	Distribution Transformers	925,000	770,405	(154,595)	-17%	Reduced labour availability for regular work during Fiona response.
5.3	Services and Street Lighting	4,073,000	3,753,261	(319,739)	-8%	Under the material budget variance threshold of greater than a $30,000 and 15%.
5.4	Line Extensions	1,194,000	1,255,818	61,818	5%	Under the material budget variance threshold of greater than a $30,000 and 15%.
5.5	Line Rebuilds	1,278,000	1,298,794	20,794	2%	Under the material budget variance threshold of greater than a $30,000 and 15%.
5.6	System Meters	360,000	330,686	(29,314)	-8%	Under the material budget variance threshold of greater than a $30,000 and 15%.
5.7	Distribution Equipment	223,000	297,662	74,662	33%	Increased labour requirement for carryover work completed in 2023.
5.8	Transportation Equipment	82,000	79,205	(2,795)	-3%	Under the material budget variance threshold of greater than a $30,000 and 15%.
6.1	Substation Projects	414,000	321,700	(92,300)	-22%	Reduced labour availability for regular work during Fiona response.
6.2	Transmission Projects	1,332,000	1,283,751	(48,249)	-4%	Under the material budget variance threshold of greater than a $30,000 and 15%.
7.1	Corporate Services	15,000	13,947	(1,053)	-7%	Under the material budget variance threshold of greater than a $30,000 and 15%.
7.2	Information Technology	459,000	574,720	115,720	25%	Higher than expected labour requirement associated with hardware and software supply, and cybersecurity.
Grand Total		**$ 11,571,000**	**$ 11,597,067**	**$26,067**		

Table 2
2023 Capital Budget Internal Labour and Transportation Cost Variances

	Description	Budget (A)	Actual (B)	Variance (C = B - A)	Variance % (D = C/A)	Notes
4.1a	Charlottetown Generating Station – Buildings and Site Services	$ 18,000	$ 17,000	$ (1,000)	-6%	Under the material budget variance threshold of greater than a $30,000 and 15%.
4.1b	Charlottetown Generating Station – Turbine Generator	29,000	54,000	25,000	86%	Under the material budget variance threshold of greater than a $30,000 and 15%.
4.2a	Borden-Carleton Generating Station – Buildings and Site Services	22,000	14,000	(8,000)	-36%	Under the material budget variance threshold of greater than a $30,000 and 15%.
4.2b	Borden-Carleton Generating Station – Turbine Generators	32,000	119,000	87,000	272%	Higher than expected labour requirement associated with CT1 and CT2 parts and improvements.
5.1	Replacements Due to Storms, Collisions, Fire and Road Alterations	967,000	1,261,000	294,000	30%	Higher than expected labour requirement due to Government-driven road alteration work and after-hours storm response activity.
5.2	Distribution Transformers	1,034,000	1,140,000	106,000	10%	Under the material budget variance threshold of greater than a $30,000 and 15%.
5.3	Services and Street Lighting	4,090,000	4,115,000	25,000	1%	Under the material budget variance threshold of greater than a $30,000 and 15%.
5.4	Line Extensions	1,257,000	1,280,000	23,000	2%	Under the material budget variance threshold of greater than a $30,000 and 15%.
5.5	Line Rebuilds	1,446,000	1,465,000	19,000	1%	Under the material budget variance threshold of greater than a $30,000 and 15%.
5.6	System Meters	350,000	312,000	(38,000)	-11%	Under the material budget variance threshold of greater than a $30,000 and 15%.
5.7	Distribution Equipment	249,000	266,000	17,000	7%	Under the material budget variance threshold of greater than a $30,000 and 15%.
5.8	Transportation Equipment	50,000	91,000	41,000	82%	The budget was incorrectly reduced with change to multi-year purchases. This has been corrected for 2024.
6.1	Substation Projects	462,000	367,000	(95,000)	-21%	Under the material budget variance threshold of greater than a $30,000 and 15%.
6.2	Transmission Projects	1,189,000	1,203,000	14,000	1%	Under the material budget variance threshold of greater than a $30,000 and 15%.
7.1	Corporate Services	45,000	44,000	(1,000)	-2%	Under the material budget variance threshold of greater than a $30,000 and 15%.
7.2	Information Technology	469,000	491,000	22,000	5%	Under the material budget variance threshold of greater than a $30,000 and 15%.
Grand Total		**$ 11,709,000**	**$ 12,239,000**	**$530,000**		

I N T E R R O G A T O R I E S

IR-18b – Attachment 1

Table 1
Budget Increase Calculations for 5.3(a) Overhead and Underground Services

Overhead and Underground Services		Actual	Actual	Actual	Actual	Budget	5-Year Average	Budget
		2019	2020	2021	2022	2023	2019-2023	2024
Unescalated	Material	$ 722,368	$ 906,081	$ 1,035,009	$ 1,612,326	$ 958,000	$ 1,046,757	$ -
Unescalated	Contractor Labour	787,209	422,633	1,010,142	708,714	226,000	630,940	-
Unescalated	Internal Labour	2,579,271	3,034,889	3,511,007	3,316,063	3,611,000	3,210,446	-
Unescalated	Other	47,979	75,671	55,937	112,773	-	58,472	-
		4,136,827	4,439,274	5,612,095	5,749,876	4,795,000	4,946,614	-
	Unescalated (rounded)	**$ 4,137,000**	**$ 4,439,000**	**$ 5,612,000**	**$ 5,750,000**	**$ 4,795,000**	**$ 4,947,000**	**$ -**
Escalated	Material	837,422	1,019,802	1,130,982	1,710,517	986,740	1,137,093	1,201,000
Escalated	Contractor Labour	912,591	475,677	1,103,809	751,875	232,780	695,346	695,000
Escalated	Internal Labour	2,990,082	3,415,794	3,836,572	3,518,011	3,719,330	3,495,958	4,198,000
Escalated	Other	55,621	85,168	61,124	119,641	-	64,311	-
		4,795,716	4,996,442	6,132,488	6,100,043	4,938,850	5,392,708	6,094,000
	Escalated (rounded)	**$ 4,796,000**	**$ 4,996,000**	**$ 6,132,000**	**$ 6,100,000**	**$ 4,938,000**	**$ 5,393,000**	**$ 6,094,000**

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I N T E R R O G A T O R I E S

IR-20b – Attachment 1

Table 1
Budget Increase Calculations for 5.4(a) Customer Driven Line Extensions

		2019	2020	2021	2022	2023 Budget	2019-2023	2024
Unescalated	Material	$ 604,506	$ 638,240	$ 890,020	$ 536,116	$ 283,000	$ 590,376	$ -
Unescalated	Contractor Labour	329,851	114,369	617,310	1,337,733	265,000	532,853	-
Unescalated	Internal Labour	1,388,688	1,012,452	720,157	849,376	909,000	975,935	-
Unescalated	Other	9,915	1,691	7,273	64,138	-	16,603	-
Unescalated	Less Joint Use	-	-	(208,406)	-	-	(41,681)	-
		2,332,960	1,766,752	2,026,354	2,787,363	1,457,000	2,074,086	-
	Unescalated (rounded)	**$ 2,333,000**	**$ 1,767,000**	**$ 2,026,000**	**$ 2,787,000**	**$ 1,457,000**	**$ 2,074,000**	**$ -**
Escalated	Material	700,788	718,345	972,549	568,765	291,490	650,387	623,000
Escalated	Contractor Labour	382,388	128,723	674,551	1,419,201	272,950	575,563	576,000
Escalated	Internal Labour	1,609,870	1,139,524	786,935	901,103	936,270	1,074,740	1,075,000
Escalated	Other	11,494	1,903	7,947	68,044	-	17,878	-
Escalated	Less Joint Use	-	-	(227,731)	-	-	(45,546)	-
		2,704,540	1,988,495	2,214,252	2,957,113	1,500,710	2,273,022	2,274,000
	Escalated (rounded)	**$ 2,705,000**	**$ 1,988,000**	**$ 2,214,000**	**$ 2,957,000**	**$ 1,501,000**	**$ 2,273,000**	**$ 2,274,000**

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I N T E R R O G A T O R I E S

IR-26 – Attachment 1

Photo 1
Deteriorated pole and #6 copper conductor

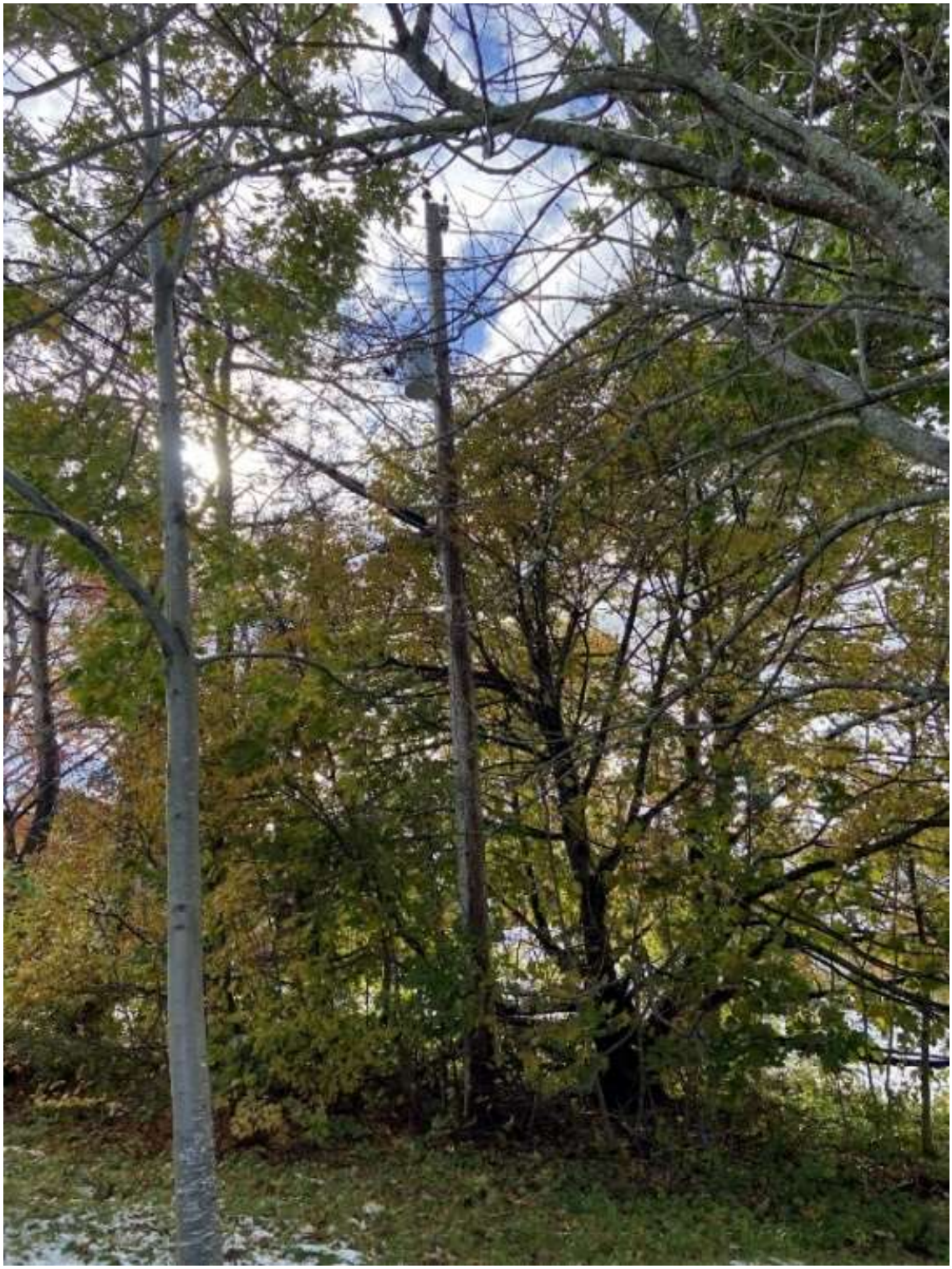
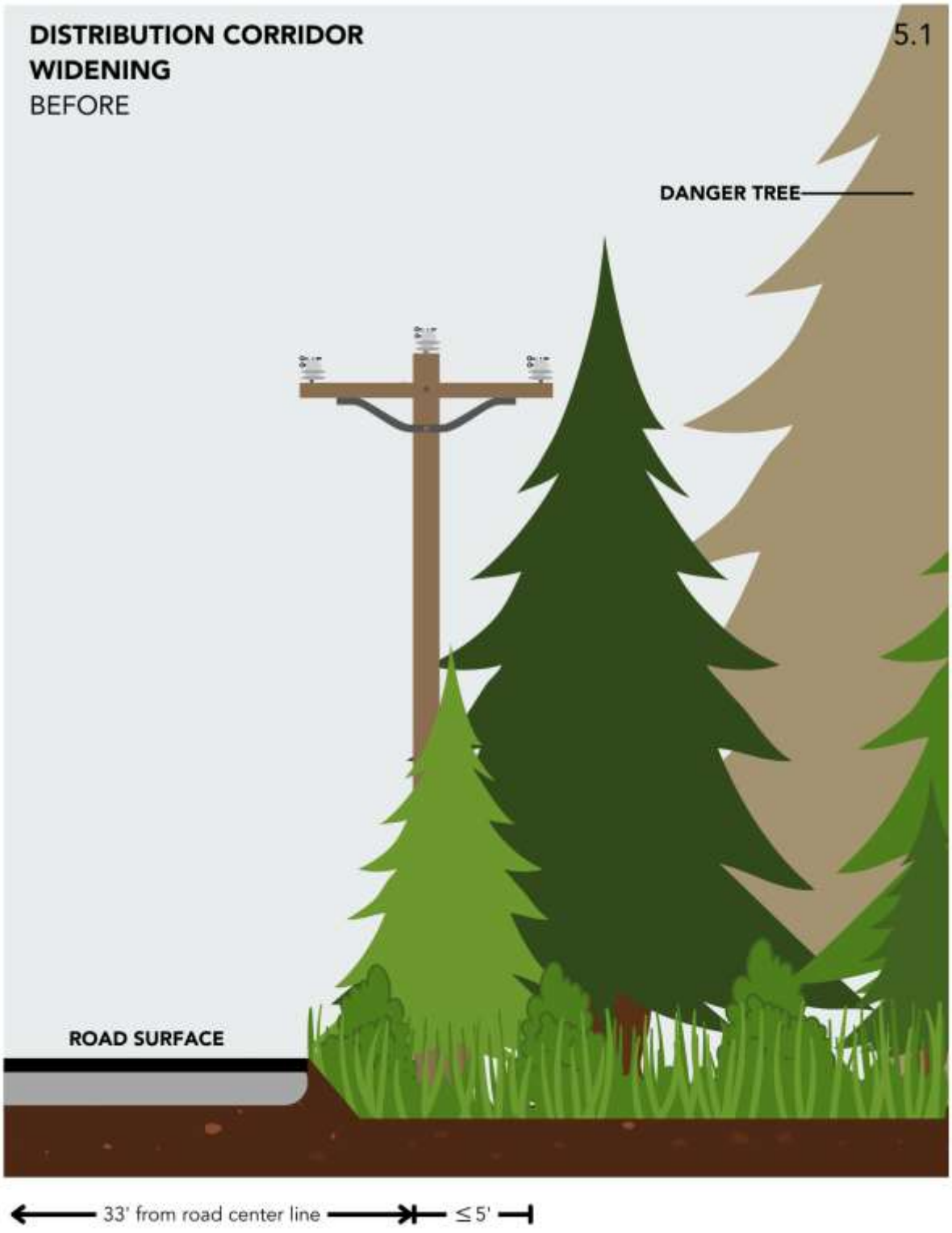
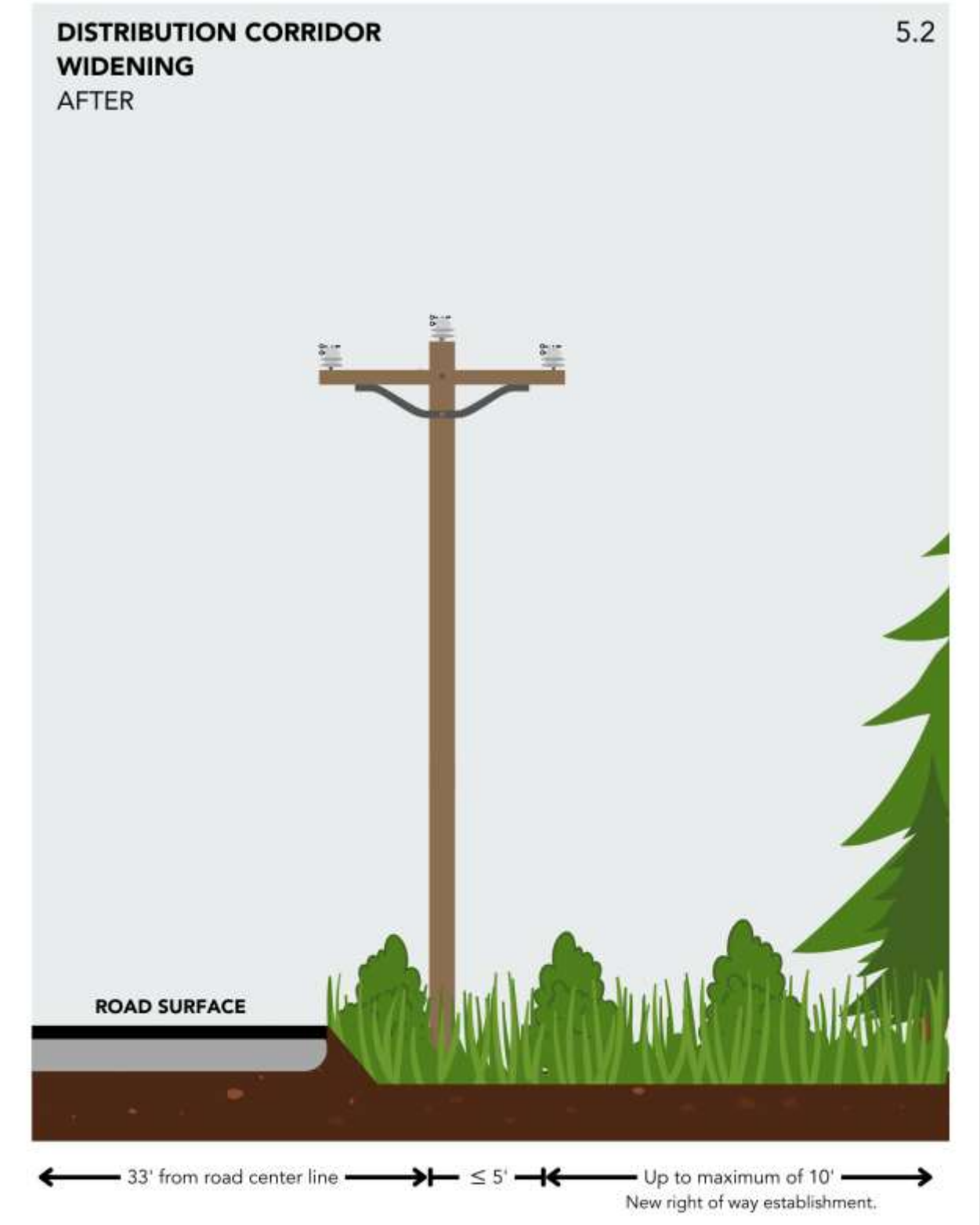


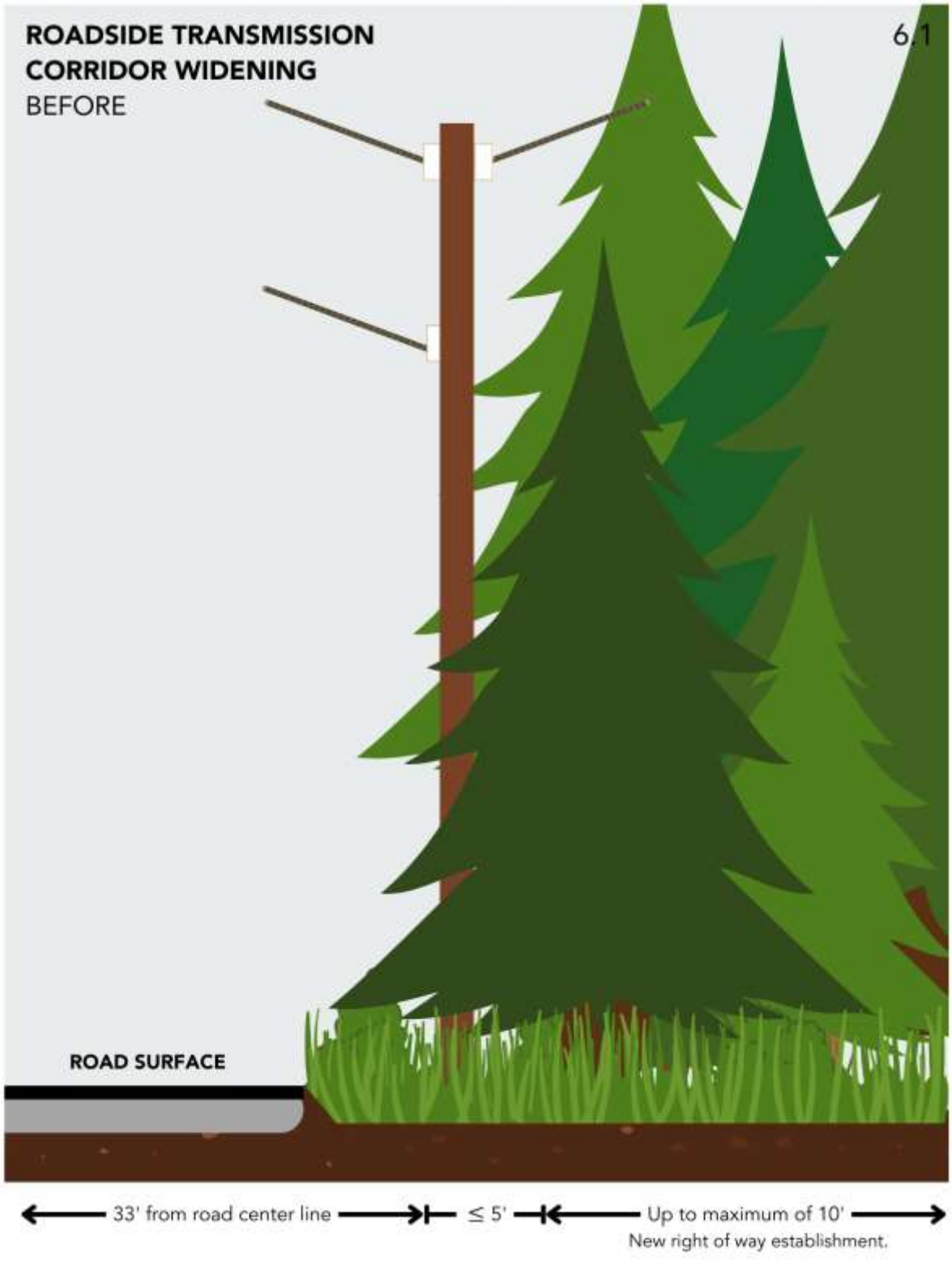
Photo 2
Deteriorated pole with limited accessibility and lines in contact with back yard trees

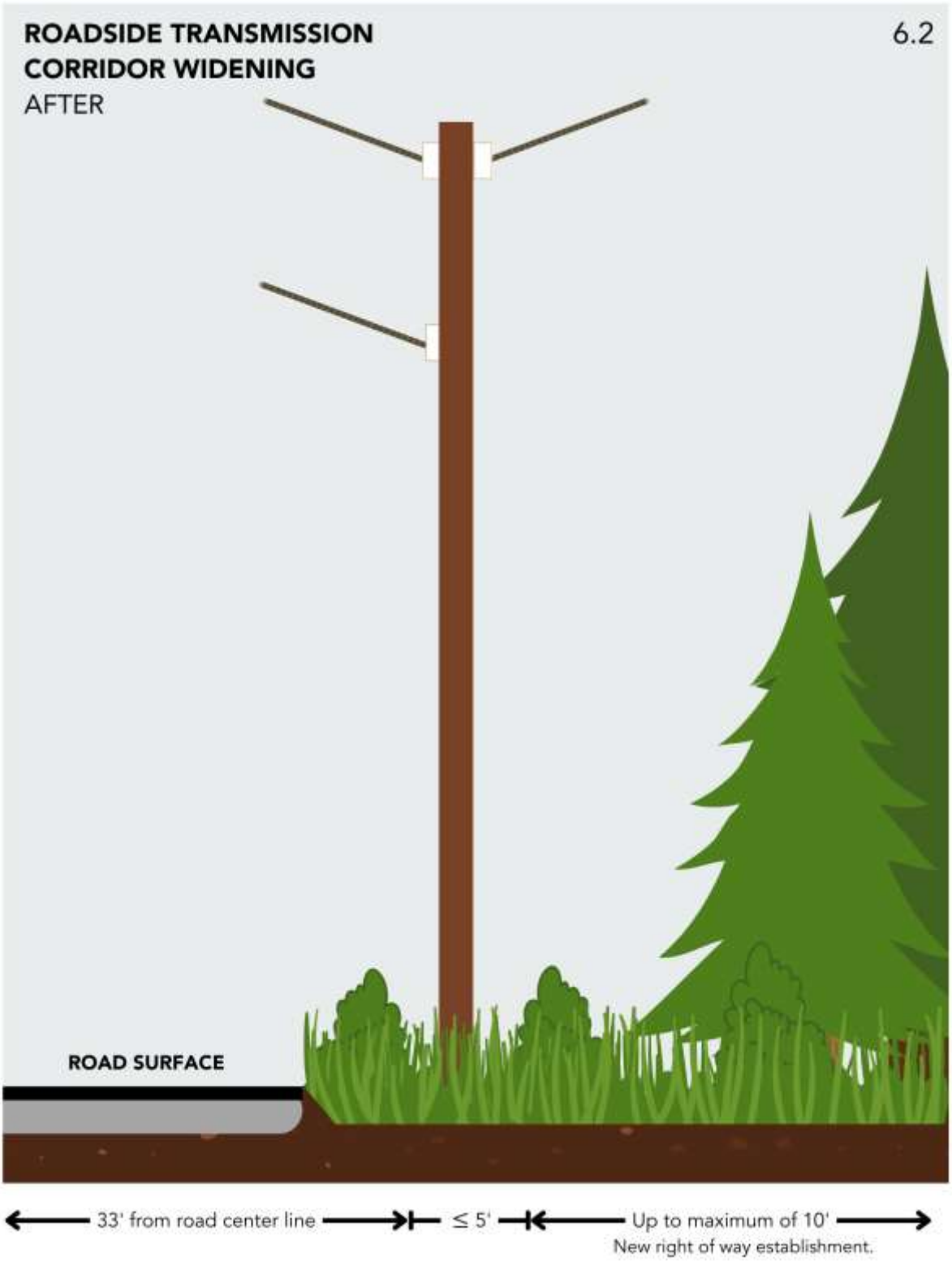
I N T E R R O G A T O R I E S

IR-27 – Attachment 1


DISTRIBUTION CORRIDOR
WIDENING
BEFORE
5.1
DANGER TREE
ROAD SURFACE
33' from road center line
≤ 5'


DISTRIBUTION CORRIDOR
WIDENING
AFTER
5.2
ROAD SURFACE
33' from road center line
≤ 5'
Up to maximum of 10'
New right of way establishment.


ROADSIDE TRANSMISSION
CORRIDOR WIDENING
BEFORE
6.1
ROAD SURFACE
33' from road center line
≤ 5'
Up to maximum of 10'
New right of way establishment.


ROADSIDE TRANSMISSION
CORRIDOR WIDENING
AFTER
6.2
ROAD SURFACE
33' from road center line
≤ 5'
Up to maximum of 10'
New right of way establishment.

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I N T E R R O G A T O R I E S

IR-30 – Attachment 1

Vehicle Replacement Evaluation

	Vehicle #1 2023 Ford Lightening Supercrew with Battery	Vehicle #2 2023 Ford F150 Supercrew
Purchase Price After Rebates	$97,395	$69,931
Life Cycle Cost of Ownership	$124,372	$125,197
Net Present Cost	$88,203	$83,663
Fuel Source	Electric Battery	Gasoline
Range (km)	515	949
Life Cycle Cost Fuel	$6,177	$32,166
Life Cycle Cost Maintenance	$17,950	$22,299
Life Cycle Emissions (tonnes CO2e)	6	43

Assumptions:

Electricity Emissions Factor (kg CO2e/kWh)	0.163	Maintenance $ from MECL historical data	
Gasoline Emissions Factor (kg CO2e/L)	2.45	EV Maintenance Ratio EV/ICE	80%
KM Driven Annually	23,000	Vehicle Life Cycle (years)	7
Federal Rebate on EV and PHEV	$5,000	Salvage Value	10%
Provincial Rebate on EV = $5,000	$5,000	Annual Inflation	2.50%
Provincial Rebate on PHEV = $2,500	$2,500	Charging Habits. Percent Residential	30%
*Purhcase Rebates do not apply for vehicles	>$70,000	Cost of insurance	By vehicle class
Cost of gasoline ($/litre) =	$1.70		
Cost of electricity ($/kWh) =	$0.1532		
CCA Rate	30%		
Tax Rate	31%		
EV Charger Cost	Level 2 Residential Charger Free via Government Program		