Lakefront Utilities Inc.

EB-2026-0054

Distribution System Plan

Supplemental

Appendix N

2028-2031 Forecasted Material Investment Narratives

Delta–Wye Conversion Program – Material Investment Narrative (2027–2031)

A. General Information on the Project/Program

Project Code: SR-006	**2022-2026 Cost ($M):** $0.09M	**2027-2031 Cost ($M):** $0.36M
Segments: Distribution System Asset Renewal		
Investment Category: System Renewal		
Trigger Driver: Legacy protection limitations, ESA compliance requirements		
Outcomes: Improved fault detection, Reduced over-voltage risk, Safer and more consistent operation		

Need for the Investment

Legacy delta-connected distribution arrangements present challenges for ground-fault detection and can elevate over-voltage risk, particularly on lightly loaded or frequently switched feeders. These conditions increase safety risk, complicate protection coordination, and can adversely affect customer equipment. The Delta–Wye Conversion Program addresses these risks by converting affected segments to wye-grounded topology, supporting safer operation, faster fault isolation, and alignment with current utility and ESA requirements.

Scope and Volume of Work

The scope of the program includes conversion of legacy delta-connected locations across the distribution system to wye-grounded configurations. Work includes installation of continuous multi-point neutral, surge arresters, updated protection schemes, and associated equipment modifications required to achieve compliant wye-grounded operation.

Key Timings

The Delta–Wye Conversion Program will be executed over the 2027–2031 forecast period, with individual locations scheduled based on risk prioritization, protection performance, and system planning considerations. This approach allows the highest-risk legacy configurations to be addressed first while maintaining flexibility to coordinate with other planned system work.

Total Capital Expenditures (Including Contributions)

The total capital cost for the Delta–Wye Conversion Program is forecast at approximately $0.36 million over the 2027–2031 planning period. No capital contributions are anticipated for this safety- and protection-driven program.

Economic Evaluation (DSC 3.2)

As a safety- and protection-driven system configuration initiative, the economic evaluation for the program is based on risk mitigation, avoidance of equipment damage, and improved fault response rather than incremental capacity benefits.

Comparative Historical Expenditures

Historical expenditures for similar delta–wye conversion projects have been reviewed as part of LUI's capital planning and asset management processes. Unit cost assumptions for this program are consistent with recent experience converting legacy delta-connected segments to wye-grounded configurations and reflect comparable scope, protection requirements, and forecast cost escalation. Detailed historical cost comparisons are addressed at the portfolio level.

Investment Priority

The Delta–Wye Conversion Program is prioritized within the 2027–2031 capital portfolio due to the elevated safety, protection, and equipment risks associated with legacy delta-connected configurations. Priority is informed by protection performance, over-voltage risk, and the need to align system configuration with current utility standards and ESA requirements.

Alternatives Considered

Alternatives considered include continued operation of delta-connected segments with enhanced monitoring or partial mitigation measures. These alternatives were deemed less effective due to ongoing over-voltage risk, protection limitations, and non-alignment with current standards and ESA requirements.

Benefit-Cost Analysis (Recommended Alternative)

The recommended alternative is full conversion of affected segments to wye-grounded topology. Benefits include improved safety, faster fault isolation, reduced over-voltage exposure, and consistency with modern utility standards and customer interconnection requirements. Quantitative benefit-cost analysis will be addressed at the portfolio level.

Innovative Nature (If Applicable)

Not applicable. The program applies established grounding and protection practices to address legacy system configurations.

Leave-to-Construct Requirements (If Applicable)

Not applicable. Individual conversion activities do not meet Leave-to-Construct thresholds.

B. Evaluation Criteria and Justification

Efficiency

Converting legacy configurations using a standardized approach allows efficient execution and reduces the need for ongoing special operating procedures.

Customer Value

Customers benefit from improved power quality, reduced equipment risk, and faster service restoration following faults.

Reliability

Wye-grounded configurations improve fault detection and isolation, reducing outage duration and system disturbance.

Safety

The program significantly reduces public and worker safety risks associated with ground faults and over-voltage conditions.

Operations & Maintenance (O&M) Impacts / Trade-offs

Standardizing system configuration through delta–wye conversion reduces operational complexity, troubleshooting effort, and special operating procedures. No material increase in routine operations and maintenance costs is expected following conversion.

Evidence-Based Justification

The program is supported by engineering assessments, protection studies, and operational experience with legacy delta-connected segments.

Asset Management Linkage

This program aligns with LUI's asset management framework by mitigating configuration-related risk and improving lifecycle performance of distribution assets.

Need Beyond AM

The program supports compliance with ESA requirements, protection standards, and customer interconnection expectations beyond basic asset renewal.

Past Costs for Similar Projects

Past costs for similar delta–wye conversion projects undertaken by LUI have been considered in developing the capital cost estimate for this investment. The forecasted cost reflects recent experience implementing grounding and protection upgrades for legacy system configurations, adjusted for current design standards and forecast cost escalation.

NWS Screening

Non-wires alternatives are not applicable, as the program addresses system grounding and protection configuration rather than capacity constraints.

Boundary ROW / Rogers Road – Elgin to Kerr Overhead Rebuild – Material Investment Narrative (2027–2031)

A. General Information on the Project/Program

Project Code: SR-007	**2022-2026 Cost ($M):** $0.00M	**2027-2031 Cost ($M):** $0.26M
Segments: Overhead distribution		
Investment Category: System Renewal		
Trigger Driver: End-of-life wood pole line, Reliability performance		
Outcomes: Improved feeder reliability, Reduced outage risk, Modernized switching capability		

Need for the Investment

This project addresses replacement of an aging overhead distribution pole line along the Boundary ROW and Rogers Road between Kerr Street and Elgin Street West on the F1 feeder. Asset condition, safety, and reliability considerations associated with deteriorated wood poles drive the need for renewal. Planned replacement supports the 2027–2031 capital program objective of targeted renewal of end-of-life assets and improves feeder reliability and operational performance.

Scope and Volume of Work

The scope of work includes replacement of approximately 20 overhead distribution poles along the Boundary ROW and Rogers Road. Work activities include installation of new switches, pole framing, guying, primary and secondary conductor transfers, transformer transfers, and associated hardware upgrades on the F1 feeder. The rebuild will bring this segment into compliance with current LUI design and construction standards.

Key Timings

The project is planned within the 2027–2031 forecast period and will be scheduled to align with system renewal priorities and available construction resources.

Total Capital Expenditures (Including Contributions)

The total capital cost for the Boundary ROW / Rogers Road overhead rebuild between Elgin Street West and Kerr Street is forecast at approximately $0.26 million within the 2027–2031 planning period. No capital contributions are anticipated based on the scope of work.

Economic Evaluation (DSC 3.2)

As a system renewal project addressing aging infrastructure, the economic evaluation is based on risk mitigation, safety improvement, and lifecycle cost optimization. Benefits are realized through reduced outage risk, improved feeder performance, and avoidance of higher emergency response and corrective maintenance costs.

Comparative Historical Expenditures

Historical expenditures for similar overhead rebuild projects on the F1 feeder have been reviewed as part of LUI's capital planning and portfolio development processes. Unit cost assumptions for this project are consistent with recent overhead renewal work of comparable scope and complexity and reflect current construction standards and forecast cost escalation. Detailed historical cost comparisons are addressed at the portfolio level rather than at the individual project level.

Investment Priority

This project is prioritized within the 2027–2031 capital program as part of LUI's system renewal portfolio. Priority was determined based on the end-of-life condition of the existing pole line and the associated safety and reliability risks on the F1 feeder. The investment has been scheduled to align with system renewal priorities and available capital while balancing competing asset renewal needs across the distribution system.

Alternatives Considered

Alternatives considered included spot pole replacement, reactive replacement following failure, or deferral of renewal activities. These alternatives were determined to present higher safety risks, increased outage impacts, and higher long-term lifecycle costs compared to a planned overhead rebuild.

Benefit-Cost Analysis (Recommended Alternative)

The recommended alternative is a planned overhead rebuild of the Boundary ROW and Rogers Road segment. Qualitative benefits include improved reliability, reduced outage risk, enhanced safety, and lower long-term corrective maintenance requirements. Quantitative benefit-cost analysis will be addressed at the portfolio level.

Innovative Nature (If Applicable)

Not applicable. The project employs standard overhead renewal and switching practices.

Leave-to-Construct Requirements (If Applicable)

Not applicable. The project does not meet Leave-to-Construct thresholds.

B. Evaluation Criteria and Justification

Efficiency

Planned replacement allows work to be executed efficiently in a single construction window, avoiding repeated reactive interventions.

Customer Value

Customers benefit from improved service reliability and reduced likelihood of outages caused by pole or equipment failures.

Reliability

Replacing aging poles and installing new switching equipment improves feeder reliability and reduces outage duration.

Safety

The project mitigates public and worker safety risks by replacing structurally deteriorated poles and upgrading associated hardware.

Operations & Maintenance (O&M) Impacts / Trade-offs

Renewal of poles, switches, and associated hardware is expected to reduce emergency truck rolls and corrective maintenance activities on this segment of the F1 feeder. No material increase in routine operations and maintenance costs is anticipated following completion.

Evidence-Based Justification

The project is supported by asset condition information, field inspections, and operational experience indicating elevated risk on this segment of the F1 feeder.

Asset Management Linkage

This project aligns with LUI's asset management framework by addressing end-of-life overhead assets through planned renewal to manage safety and reliability risk and optimize lifecycle costs.

Need Beyond AM

The project supports ongoing reliability performance and safety obligations beyond basic asset replacement.

Past Costs for Similar Projects

Past costs for similar overhead rebuild projects undertaken by LUI have been considered in developing the capital cost estimate for this investment. The forecasted cost reflects recent experience with overhead pole replacement and feeder renewal work of comparable scope and complexity, adjusted for current design standards and forecast cost escalation.

NWS Screening

Non-wires alternatives are not applicable, as the project addresses physical asset condition and safety risks.

1-Phase Pad-Mounted Transformer Replacement Program – Material Investment Narrative (2027–2031)

A. General Information on the Project/Program

Project Code: SR-008	**2022-2026 Cost ($M):** $0.00M	**2027-2031 Cost ($M):** $0.33M
Segments: Underground distribution asset renewal		
Investment Category: System Renewal		
Trigger Driver: End-of-life equipment, ACA recommendations		
Outcomes: Reduced failure risk, Improved reliability and safety, Lower emergency response		

Need for the Investment

The 1-PH Pad-Mounted Transformer Replacement Program focuses on the proactive replacement of single-phase pad-mounted transformers that have reached or exceeded their useful life across the Lakefront Utilities distribution system. The need for this investment is driven by asset condition, safety, and reliability considerations, as aging pad-mounted transformers present increased risk of failure, unplanned outages, and safety hazards. Targeted replacement supports the 2027–2031 capital program objective of renewing end-of-life assets using a data-driven, risk-based approach.

Scope and Volume of Work

The scope of the program includes replacement of approximately four single-phase pad-mounted transformers annually over the 2027-2031 forecast period. Replacement locations will be selected based on the recommendations of the Asset Condition Assessment (ACA) Study to ensure that the highest-risk assets are addressed first. Work includes removal of existing units, installation of new transformers, and associated equipment and connection upgrades as required.

Key Timings

The Pad-Mounted Transformer Replacement Program will be executed on an ongoing basis throughout the 2027–2031 forecast period. Annual replacement volumes and scheduling will be informed by Asset Condition Assessment results and system performance priorities to ensure that the highest-risk assets are addressed each year.

Total Capital Expenditures (Including Contributions)

The total forecast capital expenditure for the 1-Phase Pad-Mounted Transformer Replacement Program over the 2027–2031 period is $0.33 million. No customer or third-party capital contributions are anticipated for this program.

Economic Evaluation (DSC 3.2)

As a system renewal initiative addressing end-of-life equipment, the economic evaluation for this program is based on risk mitigation, improved reliability, and lifecycle cost optimization rather than incremental capacity expansion.

Comparative Historical Expenditures

Historical expenditures for pad-mounted transformer replacement activities have been reviewed as part of LUI's capital planning and asset management processes. Unit cost assumptions for this program are consistent with recent experience replacing single-phase pad-mounted transformers of comparable scope and complexity and reflect current construction practices and forecast cost escalation. Detailed historical cost comparisons are addressed at the portfolio level.

Investment Priority

This program is prioritized within the 2027–2031 capital portfolio due to the safety and reliability risks associated with aging pad-mounted transformer assets. Priority is informed by Asset Condition Assessment results and the program's role in reducing failure risk, unplanned outages, and potential safety and environmental impacts.

Alternatives Considered

Alternatives considered include continued operation until failure or reactive replacement following outages. These alternatives were deemed less effective due to increased outage risk, higher corrective maintenance costs, and potential safety impacts.

Benefit-Cost Analysis (Recommended Alternative)

The recommended alternative is proactive, condition-based replacement of pad-mounted transformers identified through the ACA process. Benefits include reduced failure risk, improved service reliability, enhanced public safety, and lower long-term corrective maintenance costs.

Innovative Nature (If Applicable)

Not applicable. The program employs standard utility practices for pad-mounted transformer replacement.

Leave-to-Construct Requirements (If Applicable)

Not applicable. Individual transformer replacements do not meet Leave-to-Construct thresholds.

B. Evaluation Criteria and Justification

Efficiency

Planned replacement allows work to be scheduled efficiently and coordinated with other system renewal activities.

Customer Value

Customers benefit from improved reliability and reduced likelihood of transformer-related outages.

Reliability

Replacing end-of-life pad-mounted transformers reduces failure risk and improves feeder and local service reliability.

Safety

The program mitigates safety risks to the public and field staff associated with aging oil-filled electrical equipment.

Operations & Maintenance (O&M) Impacts / Trade-offs

Proactive replacement reduces emergency response, spill risk, and corrective maintenance associated with failing transformers. Routine inspection and maintenance requirements are not expected to materially increase.

Evidence-Based Justification

The program is supported by ACA results, transformer condition assessments, and operational experience.

Asset Management Linkage

This program aligns with LUI's asset management framework by applying lifecycle-based renewal to manage risk and maintain system performance.

Need Beyond AM

The program supports compliance with safety and environmental expectations in addition to asset renewal objectives.

Past Costs for Similar Projects

Past costs for similar pad-mounted transformer replacement programs undertaken by LUI have been considered in developing the capital cost estimate for this investment. The forecasted cost reflects recent experience replacing end-of-life pad-mounted transformers, adjusted for current design standards and forecast cost escalation.

NWS Screening

Non-wires alternatives are not applicable, as the program addresses physical asset condition and safety risks rather than capacity constraints.

Elgin Street W – William to Strathy Overhead Rebuild – Material Investment Narrative (2027–2031)

A. General Information on the Project/Program

Project Code: SR-009	**2022-2026 Cost ($M):** $0.00M	**2027-2031 Cost ($M):** $0.23M
Segments: Overhead distribution – single-phase		
Investment Category: System Renewal		
Trigger Driver: Feeder extension and asset condition		
Outcomes: Continued F5 feeder development, Improved reliability and safety, Reduced corrective maintenance		

Need for the Investment

This project supports continuation of the F5 feeder development through rebuilding of the existing overhead distribution infrastructure along Elgin Street West between William Street and Strathy Road. The existing pole line requires replacement with taller and higher-class poles to address asset condition issues and to accommodate feeder extension requirements. The investment is driven by system configuration needs and renewal of aging infrastructure to improve reliability, safety, and operational flexibility.

Scope and Volume of Work

The scope of work includes replacement of approximately 10 to 12 overhead distribution poles along Elgin Street West, including pole framing, guying, primary and secondary conductor transfers, transformer transfers, and installation of new F5 feeder conductor. The rebuild will bring this section of the distribution system into compliance with current LUI design and construction standards.

Key Timings

The project is planned for execution within the 2027–2031 forecast period and will be scheduled to align with feeder extension sequencing, system planning priorities, and resource availability.

Total Capital Expenditures (Including Contributions)

The total capital cost for the Elgin Street West overhead rebuild between William Street and Strathy Road is forecast at approximately $0.23 million within the 2027–2031 planning period. No capital contributions are anticipated based on the scope of work.

Economic Evaluation (DSC 3.2)

As a system renewal and feeder extension project, the economic evaluation is based on reliability improvement, risk mitigation, and lifecycle cost optimization achieved through replacement of aging overhead infrastructure and improved feeder configuration. Benefits include reduced outage risk, improved operational flexibility, and avoidance of higher corrective maintenance costs.

Comparative Historical Expenditures

Historical expenditures for similar overhead rebuild and feeder extension projects have been reviewed as part of LUI's broader capital planning and portfolio development processes. Unit cost assumptions for this project are consistent with recent overhead renewal and feeder extension work completed by the utility and reflect current design standards, construction practices, and cost escalation assumptions. Detailed historical cost comparisons are addressed at the portfolio level rather than at the individual project level.

Investment Priority

This project is prioritized within the 2027–2031 capital program as part of LUI's system renewal and system access portfolio. Priority was determined based on asset condition, system configuration requirements, and the project's role in continuing development of the F5 feeder while improving reliability and safety. The investment has been scheduled to align with system planning needs and available capital while balancing competing renewal and growth priorities across the distribution system.

Alternatives Considered

Alternatives considered included partial rebuild, spot pole replacement, or deferral of the feeder extension. These alternatives were determined to be less effective due to limitations on feeder capacity, reduced operational flexibility, and higher long-term maintenance and outage risks compared to a coordinated full rebuild.

Benefit-Cost Analysis (Recommended Alternative)

The recommended alternative is a full overhead rebuild combined with continuation of the F5 feeder extension. Qualitative benefits include improved system reliability, enhanced feeder capacity, reduced outage duration, and improved operational flexibility. Quantitative benefit-cost analysis will be addressed at the portfolio level.

Innovative Nature (If Applicable)

Not applicable. The project employs standard overhead construction and feeder extension practices.

Leave-to-Construct Requirements (If Applicable)

Not applicable. The project does not meet Leave-to-Construct thresholds.

B. Evaluation Criteria and Justification

Efficiency

Completing the rebuild and feeder extension as a single coordinated project allows efficient use of construction resources and avoids future rework.

Customer Value

Customers benefit from improved service reliability and reduced outage duration resulting from enhanced feeder configuration.

Reliability

Upgrading poles and extending the F5 feeder improves system resilience and reduces failure risk associated with aging infrastructure.

Safety

The project enhances public and worker safety through replacement of aging poles and compliance with current construction standards.

Operations & Maintenance (O&M) Impacts / Trade-offs

Renewal of poles and conductors is expected to reduce corrective maintenance requirements and emergency response activities associated with aging infrastructure. No material increase in routine operations and maintenance costs is anticipated following completion of the rebuild.

Evidence-Based Justification

The project is supported by system planning requirements, asset condition considerations, and the need to extend the F5 feeder.

Asset Management Linkage

This project aligns with LUI's asset management framework by addressing end-of-life overhead assets and supporting system configuration improvements through planned renewal. The investment reflects a lifecycle-based, risk-informed approach to maintaining long-term system reliability and resilience.

Need Beyond AM

The feeder extension supports system operational flexibility and long-term reliability beyond basic asset renewal.

Past Costs for Similar Projects

Past costs for similar overhead rebuild projects undertaken by LUI have been considered in developing the capital cost estimate for this investment. The forecasted cost reflects recent experience with overhead pole replacements and feeder-related rebuilds of comparable scope and complexity, adjusted for current design standards and forecast cost escalation. Detailed comparisons of historical project costs are addressed at the portfolio level.

NWS Screening

Non-wires alternatives are not applicable, as the project addresses physical infrastructure renewal and feeder configuration.

Elgin Street W – Strathy to New Amherst Overhead Rebuild – Material Investment Narrative (2027–2031)

A. General Information on the Project/Program

Project Code: SR-010	**2022-2026 Cost ($M):** $0.00M	**2027-2031 Cost ($M):** $0.44M
Segments: Overhead distribution		
Investment Category: System Renewal		
Trigger Driver: Feeder extension requirements, Aging pole infrastructure		
Outcomes: Enables F5 feeder extension, Improved reliability and structure resilience, Supports long-term system configuration		

Need for the Investment

This project supports rebuilding of the existing overhead distribution infrastructure along Elgin Street West between Strathy Road and New Amherst Boulevard to address aging pole assets and enable extension of the F5 feeder. The existing pole line requires replacement with taller and higher-class poles to accommodate additional circuits and improve structural resilience. The investment is driven by system configuration requirements, asset condition, and the need to improve feeder flexibility and reliability rather than incremental customer growth alone.

Scope and Volume of Work

The scope of work includes replacement of approximately 22 overhead distribution poles along Elgin Street West, including pole framing, guying, primary and secondary conductor transfers, transformer transfers, and installation of new F5 feeder conductor. The rebuild will bring this section of the distribution system into compliance with current LUI design and construction standards and support long-term feeder configuration objectives.

Key Timings

The project is planned for execution within the 2027–2031 forecast period and will be scheduled to align with system planning priorities, feeder extension sequencing, and resource availability.

Total Capital Expenditures (Including Contributions)

The total capital cost for the Elgin Street West overhead rebuild between Strathy Road and New Amherst Boulevard is forecast at approximately $0.44 million within the 2027–2031 planning period. No capital contributions are anticipated based on the scope of work.

Economic Evaluation (DSC 3.2)

As a combined system renewal and feeder extension project, the economic evaluation is based on reliability improvement, risk mitigation, and lifecycle cost optimization achieved through replacement of aging infrastructure and improved feeder configuration. Benefits are realized through reduced outage risk, improved operational flexibility, and avoidance of higher corrective maintenance costs

Comparative Historical Expenditures

Historical expenditures for similar overhead rebuild and feeder extension projects have been reviewed as part of LUI's capital planning and portfolio development processes. Unit cost assumptions for this project are consistent with recent overhead renewal and feeder extension work completed by the utility and reflect comparable scope, construction practices, and forecast cost escalation. Detailed historical cost comparisons are addressed at the portfolio level rather than at the individual project level.

Investment Priority

This project is prioritized within the 2027–2031 capital program as part of LUI's system renewal and system access portfolio. Priority was determined based on asset condition, system configuration requirements, and the project's role in enabling feeder extension and improving reliability. The investment has been scheduled to align with system planning needs and available capital while balancing competing renewal and growth priorities across the distribution system.

Alternatives Considered

Alternatives considered included partial rebuild, spot pole replacement, or deferral of the feeder extension. These alternatives were determined to be less effective due to limitations on feeder capacity, reduced operational flexibility, and higher long-term maintenance and outage risks compared to a coordinated full rebuild and feeder extension.

Benefit-Cost Analysis (Recommended Alternative)

The recommended alternative is a full overhead rebuild combined with extension of the F5 feeder. Qualitative benefits include improved system reliability, enhanced feeder capacity, reduced outage duration, and improved operational flexibility. Quantitative benefit-cost analysis will be addressed at the portfolio level.

Innovative Nature (If Applicable)

Not applicable. The project employs standard overhead construction and feeder extension practices.

Leave-to-Construct Requirements (If Applicable)

Not applicable. The project does not meet Leave-to-Construct thresholds.

B. Evaluation Criteria and Justification

Efficiency

Completing the rebuild and feeder extension as a single coordinated project allows efficient use of construction resources and avoids future rework.

Customer Value

Customers benefit from improved service reliability and reduced outage duration resulting from enhanced feeder configuration.

Reliability

Upgrading poles and extending the F5 feeder improves system resilience and reduces failure risk associated with aging infrastructure.

Safety

The project enhances public and worker safety through replacement of aging poles and compliance with current construction standards.

Operations & Maintenance (O&M) Impacts / Trade-offs

Renewal of poles and conductors is expected to reduce corrective maintenance requirements and emergency response activities associated with aging infrastructure. No material increase in routine operations and maintenance costs is anticipated following completion of the rebuild.

Evidence-Based Justification

The project is supported by system planning requirements, asset condition considerations, and the need to extend the F5 feeder.

Asset Management Linkage

This project aligns with LUI's asset management framework by addressing end-of-life overhead assets and supporting system configuration improvements through planned renewal. The investment reflects a lifecycle-based, risk-informed approach to maintaining long-term system reliability and resilience.

Need Beyond AM

The feeder extension supports system operational flexibility and long-term reliability beyond basic asset renewal.

Past Costs for Similar Projects

Past costs for similar overhead rebuild projects undertaken by LUI have been considered in developing the capital cost estimate for this investment. The forecasted cost reflects recent experience with overhead pole replacements and feeder-related rebuilds of comparable scope and complexity, adjusted for current design standards and forecast cost escalation.

NWS Screening

Non-wires alternatives are not applicable, as the project addresses physical infrastructure renewal and feeder configuration.

Industrial Road Overhead Rebuild – Material Investment Narrative (2027–2031)

A. General Information on the Project/Program

Project Code: SR-011	**2022-2026 Cost ($M):** $0.00M	**2027-2031 Cost ($M):** $0.23M
Segments: Overhead distribution, Sub-transmission interface (44 kV crossings)		
Investment Category: System Renewal		
Trigger Driver: Aging infrastructure, Mixed-voltage coordination requirements		
Outcomes: Improved safety and reliability, Reduced operational complexity, Supports industrial load		

Need for the Investment

This project involves replacement of an existing aging overhead distribution pole line along West Street from Ewart Street to Elgin Street serving the Industrial Road area. The need for this investment is driven by asset condition, safety, and reliability considerations associated with aging overhead infrastructure on both the 28 kV F4 feeder and the 44 kV M4 feeder. The project supports the 2027–2031 capital program objective of targeted renewal of end-of-life assets while improving system reliability and operational performance in an industrial service area.

Scope and Volume of Work

The scope of work includes the installation and removal of approximately 20 distribution poles along West Street between Ewart Street and Elgin Street. Work includes installation of new switches, pole framing, guying, primary and secondary conductor transfers, and associated hardware upgrades on the F4 and M4 feeders. The rebuild will bring this segment of the distribution system into compliance with current LUI design and construction standards.

Key Timings

The project is planned for execution within the 2027–2031 forecast period and will be scheduled to align with system renewal priorities, industrial customer coordination, and available construction resources.

Total Capital Expenditures (Including Contributions)

The total capital cost for the Industrial Road / West Street overhead rebuild between Ewart Street and Elgin Street is forecast at approximately $0.23 million within the 2027–2031 planning period. No capital contributions are anticipated based on the scope of work.

Economic Evaluation (DSC 3.2)

As a system renewal project involving mixed-voltage infrastructure, the economic evaluation is based on risk mitigation, safety improvement, and lifecycle cost optimization. Benefits are realized through improved reliability, reduced outage risk, and avoidance of higher corrective maintenance and emergency response costs in an industrial service area.

Comparative Historical Expenditures

Historical expenditures for similar overhead rebuild projects involving mixed-voltage infrastructure on the F4 and M4 feeders have been reviewed as part of LUI's capital planning and portfolio development processes. Unit cost assumptions for this project are consistent with recent overhead renewal work of comparable scope and complexity and reflect the additional coordination requirements associated with distribution and sub-transmission interfaces. Detailed historical cost comparisons are addressed at the portfolio level rather than at the individual project level.

Investment Priority

This project is prioritized within the 2027–2031 capital program as part of LUI's system renewal portfolio due to the condition of the existing assets and the importance of maintaining safe and reliable service in an industrial service area. Priority was further informed by the operational risks associated with mixed-voltage infrastructure and the need to reduce complexity at the distribution and sub-transmission interface.

Alternatives Considered

Alternatives considered included spot pole replacement, reactive replacement following failure, or deferral of renewal activities. These alternatives were determined to present higher safety risks, increased outage impacts, and higher long-term lifecycle costs compared to a planned overhead rebuild.

Benefit-Cost Analysis (Recommended Alternative)

The recommended alternative is a planned overhead rebuild of the West Street segment serving the Industrial Road area. Qualitative benefits include improved reliability, enhanced safety, reduced operational complexity, and lower long-term corrective maintenance requirements. Quantitative benefit-cost analysis will be addressed at the portfolio level.

Innovative Nature (If Applicable)

Not applicable. The project employs standard overhead renewal and switching practices.

Leave-to-Construct Requirements (If Applicable)

Not applicable. The project does not meet Leave-to-Construct thresholds.

B. Evaluation Criteria and Justification

Efficiency

Planned replacement allows work to be executed efficiently in a single construction window, avoiding repeated reactive interventions.

Customer Value

Customers benefit from improved service reliability, particularly in an industrial service area where outages can have higher economic impact.

Reliability

Replacing aging poles and installing new switching equipment improves feeder reliability and reduces outage duration on the F4 and M4 feeders.

Safety

The project mitigates public and worker safety risks by replacing structurally deteriorated poles and upgrading associated hardware.

Operations & Maintenance (O&M) Impacts / Trade-offs

The renewal of poles, switches, and hardware is expected to reduce emergency truck rolls and corrective maintenance activities. No material increase in routine O&M costs is anticipated following completion.

Evidence-Based Justification

The project is supported by asset condition information, field inspections, and operational experience indicating elevated risk along this corridor.

Asset Management Linkage

This project aligns with LUI's asset management framework by addressing end-of-life overhead assets through planned renewal to manage safety and reliability risks and optimize lifecycle costs, particularly in an industrial service corridor.

Need Beyond AM

The project supports reliable service to industrial customers beyond basic asset replacement considerations.

Past Costs for Similar Projects

Past costs for similar overhead rebuild projects undertaken by LUI, including work involving mixed-voltage corridors, have been considered in developing the capital cost estimate for this investment. The forecasted cost reflects recent experience with pole replacement, switching upgrades, and coordination at distribution and sub-transmission interfaces, adjusted for current design standards and forecast cost escalation.

NWS Screening

Non-wires alternatives are not applicable, as the project addresses physical asset condition and safety risks.

System Automation Program – Material Investment Narrative (2027–2031)

A. General Information on the Project/Program

Project Code: SS-003	**2022-2026 Cost ($M):** $0.00M	**2027-2031 Cost ($M):** $1.28M
Segments: Overhead distribution, protection and control infrastructure		
Investment Category: System Service		
Trigger Driver: Reliability improvement, Restoration time reduction, Operational resilience		
Outcomes: Reduced customer minutes of interruption, Faster fault isolation and service restoration, Improved operational flexibility and visibility, Foundational enablement of advanced feeder automation		

Need for the Investment

Lakefront Utilities Inc. proposes targeted distribution system automation investments to improve feeder reliability and reduce outage duration across its 27.6 kV and 44 kV distribution systems. These investments address the operational limitations of manual switching and field-based restoration practices, which extend restoration time during permanent and transient feeder events, particularly those driven by vegetation contact and weather-related disturbances.

Automation-enabled switching reduces restoration time, limits the number of customers affected by sustained outages, and improves the utility's ability to respond efficiently during both planned and unplanned system events. This program is consistent with LUI's Distribution Automation Strategy, which describes automation as coordinated use of switching devices, sensing, communications, and provide alarms/status back to operators.

Scope and Volume of Work

The program consists of implementing a practical first phase of feeder automation on selected 27.6 kV and 44 kV feeders by installing approximately 15 automated switching devices over 2027–2031. The device mix includes three-phase automated loadbreak switches installed at strategic feeder sectionalizing and tie locations, and three-phase automated reclosers where fault interruption capability and enhanced protection functionality are required.

The selected deployment approach aligns with the Strategy's "basic approach" to divide each feeder into two sections using a mid-feeder switching device and a normally open tie to an alternate feeder. This requires about 1.5 switching points per feeder and can reduce the number of customers affected by a permanent outage by roughly 50% as an initial phase of distribution automation.

The program also includes SCADA-related upgrades required to support automation at scale. Final device placement and sequencing will be confirmed through detailed engineering and implementation planning, including feeder section definition (customers/load balance), tie location selection, critical load considerations, communications readiness, protection settings, and commissioning requirements

Key Timings

Deployment will occur progressively throughout the 2027–2031 forecast period and will be coordinated with feeder renewal work, planned outages, and broader system configuration initiatives to optimize construction efficiency and minimize customer impact.

Total Capital Expenditures (Including Contributions)

The total gross capital cost for the program over 2027–2031 is $1.89 million, representing automated switching devices and supporting installation costs. The program is expected to receive $0.606 million in external funding through the Smart Renewables and Electrification Pathway (SREP), resulting in a net capital requirement of $1.28 million over the planning period.

These amounts reflect the unit costs and quantities shown in LUI's Distribution Automation capital breakdown and the approved scope of approximately 15 automated switching installations.

Economic Evaluation (DSC 3.2)

The economic evaluation is based on reduced outage duration through faster fault isolation and restoration, improved operational efficiency and reduced manual switching requirements, and enhanced situational awareness during outage response. Benefits are realized through faster fault isolation, reduced customer minutes of interruption, and improved situational awareness for system operators.

The Strategy further supports the rationale that sectionalizing and tie automation reduces the number of customers impacted by permanent outages in the initial phase.

Comparative Historical Expenditures

Historical expenditures for automation and SCADA-related investments have been reviewed as part of LUI's capital planning and reliability improvement processes. Unit cost assumptions are consistent with recent experience of neighboring utilities deploying automation devices and associated SCADA integration, reflect comparable scope and technology, and include forecast cost escalation.

Investment Priority

The program is prioritized within the 2027–2031 capital portfolio due to its ability to deliver measurable reliability improvements across multiple feeders, its alignment with LUI's automation strategy, and its role in supporting efficient system operations during outage conditions

Alternatives Considered

Alternatives considered include continued reliance on manual switching and reactive restoration practices, or limiting investment to conventional device replacement without SCADA-integrated automation functionality. These alternatives are less effective due to longer outage durations, increased operational burden, and reduced situational awareness during system events.

Benefit-Cost Analysis (Recommended Alternative)

The recommended alternative is a phased implementation consistent with the Strategy's initial "basic approach" (approximately 1.5 switching points per feeder) using a practical mix of automated loadbreak switches and reclosers at selected sectionalizing and tie points. This approach balances capital efficiency with meaningful reliability improvement by focusing investments where outage mitigation potential is highest and by enabling faster fault isolation and restoration.

Innovative Nature (If Applicable)

The program implements proven distribution automation practices by coordinating intelligent field devices, communications, and SCADA decision support to enable automated or semi-automated switching actions, improve outage response, and enhance operational visibility using established industry technologies.

Leave-to-Construct Requirements (If Applicable)

Not applicable.

B. Evaluation Criteria and Justification

Efficiency

Remote operation and automation reduce the need for manual switching and field dispatch, improving operational efficiency during both normal and outage conditions.

Customer Value

Customers benefit from reduced outage duration, faster restoration, and improved service reliability as feeder sections can be isolated and restored more quickly, reducing the number of customers affected by sustained interruptions during feeder events.

Reliability

Automated fault interruption and sectionalizing improve feeder performance by narrowing the faulted area and enabling restoration to non-faulted sections through switching and tie capabilities. The use of reclosers and switches also supports improved protection coordination and operational flexibility across normal and alternate configurations.

Safety

Automation reduces the need for field crews to perform manual switching under hazardous conditions, improving worker and public safety during restoration activities.

Operations & Maintenance (O&M) Impacts / Trade-offs

Automated devices require periodic inspection and maintenance, as well as communications and firmware management. Overall O&M impacts are expected to be neutral to favorable, as reduced emergency response, fewer manual switching operations, and improved outage coordination are expected to offset incremental maintenance requirements.

Evidence-Based Justification

The program is supported by LUI's Distribution Automation Strategy and industry-standard deployment approaches that emphasize the enabling building blocks for automation and a practical first phase based on feeder sectionalizing and tie points to reduce outage impact.

Asset Management Linkage

The program supports asset management and system planning objectives by improving controllability, protection coordination, and operational performance of the distribution system. These automation investments enhance LUI's ability to manage system risk proactively and support long-term reliability and resilience objectives beyond traditional asset renewal.

Need Beyond AM

Beyond asset renewal, the program supports resiliency, severe weather response, and modernization objectives through improved restoration capability and operational decision support.

Past Costs for Similar Projects

Past costs for similar automation and switching projects undertaken by neighboring utilities have been considered in developing the capital cost estimate. The forecast reflects recent experience with automated switching device deployment and supporting infrastructure, adjusted for current design standards and forecast cost escalation.

NWS Screening

Non-wires alternatives are not applicable, as the program addresses reliability and operational performance rather than deferral of capacity investments.

F7 Feeder Expansion and 4.16 kV Decommissioning – Material Investment Narrative (2027–2031)

A. General Information on the Project/Program

Project Code: SS-006	**2022-2026 Cost ($M):** $0.00M	**2027-2031 Cost ($M):** $0.75M
Segments: Distribution feeders, System configuration		
Investment Category: System Service		
Trigger Driver: System configuration, reliability, legacy voltage retirement		
Outcomes: Improved system configuration and feeder resilience, Retirement of aging 4.16kV infrastructure, Improved reliability and operational flexibility, Reduced long-term O&M risk		

Need for the Investment

This investment supports the expansion of the F7 feeder from Boundary Road to the New Amherst area along Kerr Street, enabling the retirement of legacy 4.16 kV infrastructure and transition of customers to the modern 27.6 kV distribution system.

The existing 4.16 kV assets are increasingly difficult to maintain, present reliability and operational risks, and limit operational flexibility. Decommissioning this infrastructure aligns with Lakefront Utilities' long-term system modernization strategy and reduces exposure to unplanned outages associated with aging equipment.

Scope and Volume of Work

The scope includes extension of the F7 27.6 kV feeder from Boundary Road to New Amherst along Kerr Street and transferring customers from the existing 4.16 kV system to the 27.6 kV network. It also includes decommissioning/removal of associated 4.16 kV infrastructure and any required protection, switching, and system configuration upgrades to support the expanded feeder. Final routing, phasing, and detailed scope will be confirmed through detailed engineering and coordination with other capital and municipal works.

Key Timings

The project is planned within the 2027–2031 forecast period, with construction sequencing aligned to minimize customer disruption and support coordinated retirement of 4.16 kV assets.

Total Capital Expenditures (Including Contributions)

The total forecast capital expenditure for the F7 feeder expansion over the 2027–2031 period is $0.75 million. This investment reflects the cost of extending and reinforcing the 27.6 kV distribution system to support the transition away from legacy 4.16 kV infrastructure. No customer or third-party capital contributions are anticipated for this project.

Economic Evaluation (DSC 3.2)

The economic evaluation for this project is based on avoided future replacement and maintenance costs, reduced asset condition and obsolescence risk, reduced outage risk, and lifecycle cost optimization associated with retiring legacy 4.16 kV infrastructure and consolidating service onto the 27.6 kV system. Benefits are primarily driven by improved reliability, reduced maintenance burden, and enhanced operational flexibility rather than incremental load growth.

Comparative Historical Expenditures

Historical expenditures for similar feeder extension, system reconfiguration, and legacy voltage retirement work have informed this investment through LUI's capital planning and asset management processes. Cost assumptions reflect recent experience with distribution feeder extensions and protection/switching work of comparable scope, as well as current unit pricing and construction market conditions. Detailed benchmarking and historical comparisons are addressed at the portfolio level.

Investment Priority

This project is prioritized within the 2027–2031 capital portfolio due to its role in enabling the retirement of legacy 4.16 kV infrastructure and improving overall system configuration and reliability. Priority is informed by operational risk associated with continued operation of aging 4.16 kV assets and the benefits of transitioning customers to the modern 27.6 kV system.

Alternatives Considered

Alternatives considered included continued operation of the 4.16 kV system with incremental repairs, or partial reinforcement of the existing configuration. These alternatives were determined to be less effective due to escalating maintenance requirements, increasing outage risk, and continued reliance on a legacy voltage platform that is increasingly difficult to support. Consolidation of customers onto the 27.6 kV system is preferred as a long-term modernization approach with lower lifecycle risk and improved operational flexibility.

Benefit-Cost Analysis (Recommended Alternative)

The recommended alternative of expanding the F7 feeder and decommissioning the 4.16 kV system provides a cost-effective, long-term solution that improves reliability, reduces operational risk, and aligns with modern distribution standards.

Innovative Nature (If Applicable)

The project involves feeder expansion, system reconfiguration, and voltage conversion using established distribution planning and engineering practices.

Leave-to-Construct Requirements (If Applicable)

Not expected. Requirements will be confirmed once the final scope and configuration are defined, in accordance with applicable OEB thresholds and regulatory requirements.

B. Evaluation Criteria and Justification

Efficiency

Coordinated feeder expansion and voltage conversion enables efficient retirement of legacy infrastructure and avoids repeated corrective maintenance.

Customer Value

Customers benefit from improved reliability, fewer interruptions, and connection to a modern distribution system.

Reliability

The project reduces dependence on aging 4.16 kV assets and improves feeder resilience through system reconfiguration.

Safety

Decommissioning legacy infrastructure reduces safety risks associated with aging equipment and constrained operating conditions.

Operations & Maintenance (O&M) Impacts / Trade-offs

While the expanded 27.6 kV feeder introduces new assets, overall O&M requirements are expected to decrease due to the removal of high-maintenance 4.16 kV infrastructure.

Evidence-Based Justification

The project is supported by asset age, historical outage performance, maintenance experience, and operational risk assessments associated with continued operation of legacy 4.16 kV infrastructure.

Asset Management Linkage

This project directly supports LUI asset management strategy by enabling systematic retirement of obsolete voltage infrastructure and strengthening feeder configuration.

Need Beyond AM

Beyond asset replacement, the project improves system topology, operational flexibility, and long-term reliability.

Past Costs for Similar Projects

Past costs for similar feeder expansion and voltage conversion projects undertaken by LUI have been considered in developing the planning context for this investment. Final cost estimates will reflect confirmed routing, system configuration requirements, and construction scope, informed by recent experience and forecast cost escalation.

NWS Screening

Non-wires alternatives are not applicable, as the investment is driven by legacy voltage retirement and distribution system configuration modernization rather than deferring capacity-related expansion