



Calgary

City Auditor's Office

Calgary Transit Rail System Lifecycle Asset Management Annual Investment Program Audit

October 30, 2023

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The City Auditor's Office conducted this audit in conformance with the *International Standards for the Professional Practice of Internal Auditing*.

Executive Summary

The City of Calgary (The City) utilizes Annual Investment Programs (AIP) to maintain and renew existing, in-service assets. In 2022, AIP represented 41% of The City's total capital budget. As part of its mission to provide safe and reliable LRT service, Calgary Transit invests in the Rail System Lifecycle Asset Management (Rail System) AIP to enable proper maintenance and regular lifecycle management of aging and outdated Rail System Communications and Signals components.¹ In 2022, Calgary Transit spent \$3.4M (51% spend rate) of its \$6.6M Rail System AIP budget and carried forward \$3.2M unspent budget to 2023. Effectively managing the Rail System AIP reduces the inherent risk of asset failure and supports uninterrupted railway service and the safety of City staff and the public. Inherent risk is the risk before the implementation of processes and controls.

The objective of this audit was to assess the effectiveness of the management of Calgary Transit's Rail System AIP. This assessment was completed by reviewing the design and operation of Calgary Transit's Rail System AIP management processes and controls.

We concluded that the management of Calgary Transit's Rail System AIP was partially effective. We reviewed processes in place supporting three levels of AIP activity: AIP, Systems, and projects. Across all three levels, Transit Service Systems has implemented processes and controls that form the basis of effective management of the AIP. However, further enhancements to processes are required to support fully effective management of the Rail System AIP. We raised six recommendations to enhance AIP budget allocation, AIP planned spend and monitoring, and Systems planning and monitoring processes.

In 2020, of \$1.05B approved for City AIP capital budget, \$609M (58%) was spent. In preparation for the 2023-2026 Service Plans and Budgets, The City's Executive Leadership Team directed the implementation of a non-voluntary relinquishment process to return unspent and uncommitted AIP capital budget to the corporate pool for reallocation to high priority unfunded capital needs. To support this new process, and as part of their continuous improvement initiatives, we noted that Transit Service Systems pro-actively identified process gaps in the management of the Rail System AIP during 2022 and 2023, and planned implementation of improvements, many of which are aligned to our recommendations.

Transit Service Systems has agreed to the recommendations and has committed to set action plan implementation dates no later than December 30, 2024. The City Auditor's Office will follow up on all commitments as part of our ongoing recommendation follow-up process.

¹ 2023-2026 Service Plans and Budgets, page 264.

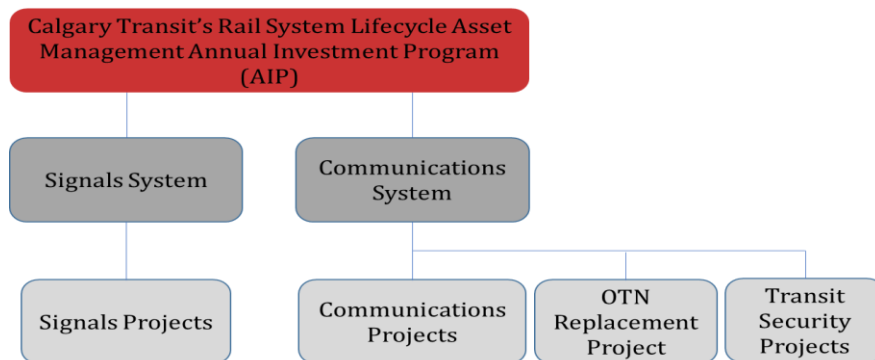
1.0 Background

Annual Investment Programs (AIP) are the City of Calgary’s (The City’s) capital investment classification for recurring work that focuses on maintenance and renewal of existing, in-service assets to support current service level commitments. In 2022, The City invested \$1.05B in AIP, representing 41% of the total capital budget, and of this, an estimated \$609M (58%) was spent by the end of the year, leaving \$444M unspent. During the preparation of the 2023-2026 Service Plans and Budgets, The City’s Executive Leadership Team (ELT) directed the implementation of a non-voluntary relinquishment process of unspent AIP capital budgets. A review of the 2022 carryforwards into 2023 for all AIP was conducted and budget that was not spent or committed was included in the relinquishment process. The intent of this process was to support reallocation to high priority unfunded capital needs.

Calgary Transit’s mission is to provide safe, accessible, reliable, and courteous public transportation service.² As part of achieving this mission, Calgary Transit invests in the Rail System Lifecycle Asset Management (Rail System) AIP. Calgary Transit uses this AIP to enable proper maintenance and regular lifecycle management of aging and outdated Rail System Communications and Signals components to deliver safe and reliable LRT service. Effectively managing Rail System AIP reduces the inherent risk of asset failure and supports uninterrupted railway service and the safety of City staff and the public. Inherent risk is the risk before the implementation of processes and controls. Communications System assets include Supervisory Control & Data Acquisition, phone, public address, radio and security systems. Signals System assets include interlockings, crossings, signals rooms, and right of way that are critical to safe LRT movement.

In 2022, Calgary Transit had a budget of \$6.6M for the Rail System AIP and spent \$3.4M (51% spend rate) by year end, leaving \$3.2M unspent. This AIP was selected as the focus of our audit given the importance of the maintenance of these assets to the delivery of safe and reliable LRT service.

The Transit Service Systems group within Calgary Transit manage the Rail System AIP. There are three levels of activity within the AIP:



There are no specific City policies, guidelines, or frameworks guiding the management of AIP. The Capital Project Management Framework (CPMF) provides guidance for The City’s capital projects, which are defined in the Project Management for Capital Projects Administration Policy as projects

² Calgary Transit Priorities.

resulting in new or substantially improved assets. The City's Project Management Practices indicate AIP projects should utilize CPMF as good practice.

2.0 Audit Objective, Scope, and Approach

2.1 Audit Objective

The objective of this audit was to assess the effectiveness of the management of Calgary Transit's Rail System AIP.

The objective was achieved by reviewing the design and operation of the AIP management processes and controls.

2.2 Audit Scope

This audit assessed the management of the Rail System AIP during 2022. The audit did not provide assurance on engineering opinions or project quality processes.

2.3 Audit Approach

To assess the effectiveness of the design and operation of Rail System AIP processes and controls, we:

- Interviewed key personnel;
- Reviewed the allocation of the approved 2022 AIP Communications and Signals Systems budgets;
- Reviewed the 2022 AIP carry forward request and supporting documentation included in the 2023 relinquishment process;
- Reviewed the AIP Communications and Signals Systems workplans;
- Reviewed a sample of Communications and Signals Systems tracking and reporting and support for changes to projects and/or re-allocation of budget; and
- Reviewed a sample of one large project and two typical projects for each of Communications and Signals Systems, utilizing The City's CPMF as guidance on effective project management practices.

3.0 Results

We assessed the effectiveness of the management of Calgary Transit's Rail System AIP by reviewing processes and controls at the three levels of AIP activity:

- Rail System AIP management of budget allocation, planned spend, monitoring and budget analysis (Section 3.1);
- Signals and Communications Systems workplan development and monitoring (Section 3.2); and
- AIP project management, including project assignment, planning, execution, and monitoring.

Transit Service Systems has implemented processes and controls for allocating and monitoring the AIP budget and identifying the 2022 carry forward request. However, enhancements to processes are required to support the effective management of the AIP. There are many factors that can impact actual spend rates that are out of Transit Service Systems' control, such as staff turnover, supply chain challenges, and internal procurement processes. In addition, cost estimates for large projects in early stages are expected to vary (-50 to +100%). Since achieving a 100% spend rate

may be challenging, we recommended improvements that will support a higher AIP budget spend rate, such as allocating 100% of budget to projects and performing root cause and resource capacity analysis. In addition, prioritization can be enhanced (Section 3.1).

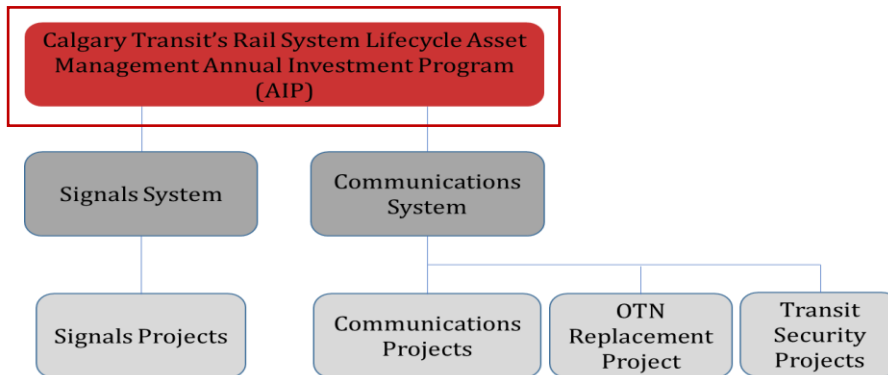
We reviewed the development and assignment of Systems annual work plans. Overall, we concluded improvements are required with focus on Systems workplan development and monitoring to enhance effective delivery of Rail System AIP and support the ability to adjust AIP workplans and utilize available resources in response to challenges. (Section 3.2).

Based on our review of a sample of AIP projects, we determined they were effectively assigned, planned, and executed. We noted project monitoring can be enhanced by documenting progress, approvals and key discussions and decisions. In addition, implementing a process to ensure project procurement is planned in advance will support timely project completion (Section 3.3).

As a result of ELT's direction to implement the new relinquishment process and staff changes, Transit Service Systems has been reviewing Rail System AIP management processes and identifying and implementing process improvements, many of which were aligned to our recommendations.

3.1 Rail System AIP Management

We assessed the effectiveness of the controls and processes supporting the Rail System AIP management of budget allocation, planned spend, monitoring, and budget analysis.



3.1.1 Prioritized Allocation

The Rail Systems Coordinator allocated the 2022 Rail System AIP budget to the Signals and Communications Systems based on professional judgment. This allocation process may not necessarily address maintenance of priority assets within the Rail System AIP. We recommended developing a process to allocate the approved AIP budget to asset maintenance based on prioritization by Rail System asset/asset class and maintaining support for decisions. (Recommendation #1)

Transit Service Systems was aware of the need to implement changes and, for 2023, allocated the AIP budget based on an assessment of condition, criticality, and parts availability within each System. The Transit Service Systems manager noted they are establishing solid criteria for investing and prioritizing asset maintenance to ensure asset management planning is based on asset class rather than System.

3.1.2 Planned Spend

Transit Service Systems did not plan to fully spend the 2022 Rail System AIP budget. As noted in the table below, the 2022 AIP planned spend was 92% of the 2022 AIP budget.

Rail System AIP Project ID Description	2022 Rail System AIP Budget	2022 Planned Spend	Planned Spend Rate
CT-Transit Security	\$0.31M	\$0.3M	96%
OTN Replacement	\$1.55M	\$1.59M	103%
CT- Communications	\$2.76M	\$2.22M	80%
CT-LRT Signals	\$1.93M	\$1.94M	100%
Total	\$6.55M	\$6.0M	92%

Although the planned spend was greater than 95% for the Transit Security, Open Transport Network (OTN) Replacement and Signals Project IDs, the Communications Project ID planned spend was set at 80% and included budget that was not allocated to specific asset maintenance projects. Transit Service Systems advised the unallocated budget was intended to respond to emergent asset repair/replacement needs. Transit Service Systems did not have an established planned spend target. We recommended implementing a process to plan to fully spend the approved AIP budget, including setting a target spend rate of 100% and allocating budget to specific asset maintenance projects to support effective use of the AIP budget (Recommendation #2).

3.1.3 Budget Monitoring

We identified effective monitoring processes. The 2022 Rail System AIP budget, planned spend, and actual costs were:

- Reported monthly in Finance’s Transit Capital & Operating Budget spreadsheet; and
- Discussed at monthly Transit Service Systems management meetings.

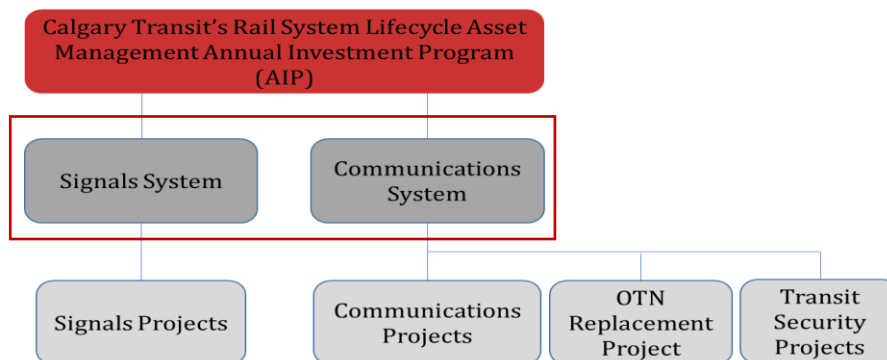
For further enhancement, we recommended updating annual AIP planning and monitoring processes to include formally documenting key decisions. (Recommendation #3)

3.1.4 Budget Analysis

In Q1 2023, as part of the AIP relinquishment process, Transit Service Systems requested carry-forward for the full amount of unspent 2022 budget (\$3.2M) based on an exceptional circumstance exemption. We noted Transit Service Systems did not have a formal process to identify and address root causes for unspent budget or conduct a resource capacity analysis to better inform its request for budget carry-forward.

To respond to the new relinquishment process, we recommended establishing a process to identify and address the root causes for unspent budget and conducting a resource capacity analysis to support management of the AIP budget and inform relinquishments and budget carry-forward requests. (Recommendation #6).

3.2 Signals and Communications Systems Management



We reviewed the Signals and Communications Systems workplan development and monitoring. We identified effective processes and noted enhancements to AIP workplan development and monitoring processes that would support Transit Service Systems' ability to effectively deliver the AIP Program. We recommended formally documenting project selection, including key decisions and actions taken when workplans are off track. (Recommendation #3)

Once the Rail Systems Coordinator allocated Rail System AIP budget to each System, the Communications and Signals System Leads developed workplans consisting of planned asset maintenance projects to be completed in 2022 based on an assessment of condition, criticality, and priority, which included maintenance inspections and incident reports. However, the analysis to determine the projects selected on the 2022 workplans was not documented. Transit Service Systems is developing a process to include detailed asset conditions in a spreadsheet, which will be loaded to the Enterprise Asset Management software and enhance prioritization.

The Communications Lead used the workplan to track project progress and costs at a high level with purchase details on a separate spreadsheet. However, we identified opportunities to more effectively monitor progress and costs through the Communications workplan. (Recommendation #3)

The Signals project workplan consisted of two parts:

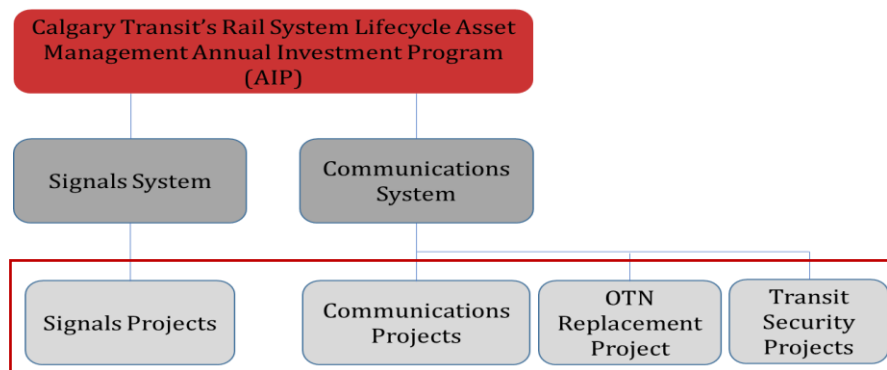
1. Asset maintenance projects requiring traffic closures coordinated with other City business units and presented to the Construction Coordination Committee, which was not used to track project forecast/costs or project progress.
2. Remaining projects included on Finance's monthly Transit Capital & Operating Budget spreadsheet.

The Signals Systems Lead tracked all project costs by project work orders and the remaining Signals project costs were verified against the Transit Capital & Operating Budget. We noted Signals workplan monitoring could be enhanced by providing visibility on workplan progress and costs and projects added/removed. The Lead advised all projects on the Signals System workplan were completed in 2022. We noted asset conditions were continuously monitored and the workplan was adjusted to include higher risk maintenance and three emergency maintenance projects were added to the workplan and completed based on priority.

As noted above under Section 3.1.3, there are monthly meetings with Finance and Transit Service Systems management to discuss the Transit Capital & Operating Budget Summary. Management also discussed project progress and spend rate at these meetings and actions to be

taken to get projects back on track. Although decisions were communicated to the Rail Systems Coordinator³ at monthly budget meetings or by email, support for monthly discussions and decisions was not maintained.

3.3 AIP Project Management



We examined six Rail System asset maintenance projects, four small and two large, and assessed project assignment, planning, execution, and monitoring. We concluded the projects in our sample were effectively assigned, planned, and executed. We identified project planning and monitoring improvements to support timely and effective project completion and recommended updating processes to include formally documenting approvals, progress, and key decisions (Recommendation #4) and implementing a process to ensure project procurement is planned in advance (Recommendation #5).

Signals Small Projects

We reviewed the Right of Way Upgrades- TTB/Bondstrands and the Drafting/Drawing Signals projects. Both projects were managed by the Signals Lead and selected for execution in 2022 based on priority.

The Right of Way project involved replacing cables and was selected based on consultation with Mobility, maintenance feedback, and troubleshooting logs to identify critical locations. The project scope was straight forward and involved in-house materials and installation. The Signals Lead estimated costs and co-ordinated the timing of the work during weekends (shut down periods), which included other City business units.

The drawing project was a priority since drawings must be kept up to date to support troubleshooting calls and prevent delays (i.e., field personnel need current drawings that reflect previous corrective actions). A member of the Signals Systems team coordinated the drawings with the Mobility drafting team and conveyed timelines and design clarifications.

The Signals Lead monitored project progress and provided updates at Signals Monthly Coordination Meetings, which were documented. The Signals Lead monitored costs by tracking work orders and verified costs against the Transit Capital & Operating Budget Summary. Both projects were completed in 2022 and were underbudget. We noted discussions on options to utilize available budget were not documented.

³ The Rail System Coordinator position was vacant for the latter half of 2022 and was not filled. System Leads reported directly to the Manager, Transit Systems Service.

Communications Small Projects

We reviewed the Tunnel Phone and Display Management System Encoders Replacement projects. The Communications Systems Lead assigned a technologist to lead these two projects since they were assigned to the related sub-systems based on skillset.

The Tunnel Phone project involved the replacement of phones in six main tunnels, four of which were completed between 2019 and 2021. The Communications Systems Lead scheduled one of the remaining two tunnels in 2022 and one in 2023. The Encoder project involved the lifecycle replacement of equipment installed in 2016 with a seven-year life cycle. The first year of replacement was 2022. The project lead estimated the costs based on previous installations and similar jobs.

Both projects were delayed due to procurement challenges. Although the project lead met monthly with the Communications Systems Lead to provide updates and review project progress minimal information was maintained on progress, procurement challenges, and associated actions/decisions. The project lead tracked project costs in a spreadsheet.

Large Projects

We reviewed two large projects, the OTN Replacement project and the Lions Park Gate Arms Installation project (Signals System), and determined they were effectively assigned, planned, and executed.

The OTN Replacement project is a 2019-2025 multi-year project estimated to cost \$10.4M. OTN is a proprietary optical transport network that provides communication connectivity between LRT Stations and the Operations Control Centre. Since OTN has reached the end of its life and will not be supported in the event of failure, the network is being replaced.

The Lions Park Gate Arms Installation project (2020-2022) was a \$.9M crossing enhancement project to install automatic crossing gate arms at the Lions Park pedestrian crossing to enhance safety. The project was selected based on data collected on near misses.

Consistent with good practice for AIP projects, Transit Service Systems classified both large projects as Level 2 utilizing CPMF project classification guidance and managed them in close alignment to the CPMF with some exceptions. For example, the projects included a Project Charter outlining project success criteria, deliverables, stakeholders, roles, and responsibilities, scheduling that incorporated dependencies, and project monitoring. We noted an opportunity for Transit Service Systems to establish criteria to guide project managers as to when CPMF guidance should be followed to manage asset maintenance projects.

We would like to thank the staff from Transit Service Systems for their assistance and support throughout this audit.

4.0 Observations and Recommendations

4.1 Asset Maintenance Prioritized Allocation

The approved 2022 Rail System AIP budget was not allocated to Signals and Communications Systems based on overall prioritization of assets/asset class within the AIP program.

Transit Service Systems does not have an established process or criteria for rating and prioritizing maintenance of Rail System AIP assets, including maintaining documentation of asset maintenance prioritization decisions. As a result, the highest priority projects in the Rail System AIP program may not be allocated budget.

The 2022 Rail System AIP budget was first allocated to each of the Signals and Communications Systems by the Rail Systems Coordinator based on professional judgement. The Systems Leads then allocated their budgets to asset maintenance projects using calculated engineering risk assessments based on inspections, risk analysis, and subject matter expertise. Reprioritization of unplanned projects or changes to the budget followed the same process. Asset maintenance prioritization decisions made at the start and throughout the year were not formally documented.

Recommendation 1

The Manager, Transit Service Systems, develop a process to allocate the approved AIP budget to asset maintenance based on prioritization by Rail System asset/asset class and maintain support for decisions.

Management Response

Agreed.

Action Plan	Responsibility
1. Identify major asset classes that require renewal, rehabilitation & maintenance under the Rail System Lifecycle AIP.	Lead Leader, Infrastructure and Systems Performance
2. Develop a prioritization process for projects based on asset condition, service risks and expert judgment.	Support Engineering Business Strategist and Transit Service Systems Leaders
3. Define a process to allocate budget based on the prioritization process.	Commitment Date December 30, 2024

4.2 Planned Spend

Transit Service Systems did not plan to fully spend the approved 2022 AIP budget (i.e., 100% spend rate). Although Transit Service Systems allocated the approved 2022 Rail System AIP budget to asset maintenance Systems, planned spend on these projects was 92% of the 2022 approved budget, with individual spend rates for Project IDs between 80% and 103%.

In addition, \$1.02M of the planned spend for Communications System was not allocated to any asset maintenance projects. Transit Service Systems advised that unallocated budget was intended to respond to emergent asset repair/replacement needs.

Prior to 2023, the Rail Systems Coordinator directed Systems Leads to plan a spend rate of 75% of budget allocated to asset maintenance projects. Based on City Administration’s mandatory AIP relinquishment process implemented in 2023, service lines are expected to plan to spend 100% of the budget approved by Council. Approved budget that is not planned to be fully spent is an ineffective use of City resources since available budget could have been reallocated to other high priority unfunded capital needs.

Recommendation 2

The Manager, Transit Service Systems, implement a process to fully spend the approved AIP budget, including setting a target spend rate of 100% and allocating budget to specific asset maintenance projects.

Management Response

Agreed.

Action Plan	Responsibility
<ol style="list-style-type: none"> 1. Allocate monies to the prioritized list of projects (see Action #2 of Recommendation #1) to meet the Rail System AIP spend target of 100%. 2. Conduct monthly spend rate review of Rail System AIP program, if required adjust the allocations to meet the spend target and address any triggered cost risks on the projects. 	<p>Lead Leader, Infrastructure & System Performance</p> <p>Support Transit Service Systems Leaders and Team Leads</p> <p>Commitment Date December 30, 2024</p>

4.3 Developing and Monitoring AIP Workplans and Budget

Transit Service Systems does not have a formal comprehensive AIP planning and monitoring process that supports the effective delivery of the Rail System AIP.

Rail System AIP delivery was planned and monitored using an informal process during 2022. Documenting support for AIP workplan development, including prioritization, status, and key discussions and decisions, was not a formal part of Transit Service Systems’ process for planning and monitoring the annual Rail System AIP plan. In addition, there was no formal process to document Rail System AIP budget discussions and decisions.

Examples of informal practices included:

- Limited and inconsistent documentation of prioritization of individual projects in the Communications and Signals Systems annual workplans (i.e., the analysis to support why particular projects were prioritized within the AIP).
- The Communications Systems workplan was not maintained regularly or consistently and had errors (e.g., spreadsheet formulas, unreconciled planned and committed spend, and missing information).
- Neither the Communications or Signals Systems’ workplans included clear indication of project progress (complete/incomplete), or projects added/removed. There were

Communications asset maintenance projects on the workplan that were understood, at the start of the year, would not be completed in 2022, yet allocated budget was not removed from the workplan.

- Costs tracked by the Systems Leads for both the OTN Replacement project and the Lions Park Gate Arms Installation project did not reconcile with actual costs in the Transit Capital & Operating Budget Summary.
- Transit Service Systems’ decisions regarding Rail System AIP budget movement, such as the re-alignment of budget allocations at the beginning of the 2022 year (see table in Section 4.5) and \$1M moved from the OTN Replacement project and \$.6M moved from the Station and Garage Communications sub-system to 2023 in July 2022, as reported on the Transit Capital & Operating Budget Summary, were not formally documented.
- Where events significantly affected the Rail System AIP plan, such as procurement challenges and the delayed OTN Replacement project, there was no formal process to evaluate the challenges or record the decisions made regarding actions to be taken.

Effective comprehensive formal planning and monitoring of the annual AIP Systems workplan budget and progress supports Transit Service Systems’ ability to adjust AIP workplans, fully utilize available resources, and respond quickly to challenges.

Recommendation 3

The Manager, Transit Service Systems, update annual Rail System AIP planning and monitoring processes to include formally documenting project selection, up-to-date, accurate and complete workplans, cost tracking and key decisions including actions taken when projects are off track.

Management Response

Agreed.

Action Plan	Responsibility
<ol style="list-style-type: none"> 1. Create and update the annual workplan for each AIP section based on the prioritized projects list (Action #2 of Recommendation #1). 2. Conduct monthly project review meeting based on project status (rotate through all the Division projects) to monitor and ensure all projects are progressing as planned. 3. Discuss changes to project direction, strategy and document decisions in the review minutes and the AIP section’s workplan. 4. Conduct monthly financial review meetings with section leaders to track costs, address the risks to forecast spend, and document decisions & actions for follow up to address the risks. 	<p>Lead Leader, Infrastructure and Systems Performance</p> <p>Support Transit Service Systems Manager, Leaders and Team Leads</p> <p>Commitment Date December 30, 2024</p>

4.4 Monitoring Asset Maintenance Projects

Documenting individual project approvals, progress and key discussions and decisions is not a formal part of the Rail System AIP project monitoring processes.

We noted the two small Communications asset maintenance projects reviewed were delayed to 2023 due to procurement challenges and therefore underspent by \$89K (\$34K and \$55K) compared to plan. Although the Systems Lead and Project Lead discussed project progress

monthly, there was no formal documentation, including discussions on procurement challenges and the decision to carry forward the unspent budget to 2023 when the projects were expected to be completed. We also noted project planning did not include determining procurement needs and timelines.

We noted the two small Signals asset maintenance projects reviewed were underbudget by \$53K (\$44K and \$9K) due to lower actual costs than estimated (i.e., in-house engineering and procurement optimization). Although project progress was documented, the cost savings and discussion on options to utilize the excess budget was not documented.

We reviewed two large projects, the Lions Park Gate Arms Installation project and the OTN Replacement project. Although there was a process to present the 2021 Crossing Enhancements Work Plan to the Transit Leadership Team, approval for the project was not formally documented. Challenges on the OTN Replacement project due to the project manager vacancy and decisions to pause the project until the position was filled were not documented.

Effective asset maintenance project planning and monitoring supports timely and effective project completion, which in turn supports overall effective AIP delivery.

Recommendation 4

The Manager, Transit Service Systems, update Rail System AIP project monitoring processes to include documenting approvals, progress, and key decisions.

Management Response

Agreed.

Action Plan	Responsibility
<p>Create a Project Management Framework that integrates the Corporate Project Management Framework including stage gating processes for managing capital and operating projects/programs that include AIPs.</p>	<p>Lead Leader, Infrastructure & Systems Performance</p> <p>Support Calgary Transit Senior Management Team</p> <p>Commitment Date April 2, 2024</p>

Recommendation 5

The Manager, Transit Service Systems, implement a process to ensure project procurement is planned in advance to reduce asset maintenance project delays.

Management Response

Agreed.

Action Plan	Responsibility
<ol style="list-style-type: none"> 1. Define process for improving project planning through review of - procurement process - to better meet AIP spend targets. 2. Conduct periodic meetings for procurement status and escalate delayed procurements to Manager, Procurement. 	<p>Lead Leader, Infrastructure and Systems Performance</p> <p>Support Manager, Procurement (Supply Management) and Manager, Transit Service Systems</p> <p>Commitment Date September 30, 2024</p>

4.5 Root Causes for Unspent Budget

Transit Service Systems does not have a formal process to identify and address the root causes for unspent Rail System AIP budget. In addition, Transit Service Systems did not complete a resource capacity analysis⁴ to determine the volume of work that could be accomplished in 2023 based on the 2022 carry-forward request and the 2023 approved budget. Identifying and addressing the root causes for unspent budget will support Transit Service Systems in fully spending its annual Rail System AIP budget and, along with resource analysis, inform relinquishments and budget carry-forward requests.

The following table illustrates unspent 2021 and 2022 Rail System AIP budget carried forward and added to 2022 and 2023 approved budgets.

Rail System AIP Project ID Description	2021 Carry-forward	2022 Approved Budget	2022 Budget Re-alignment	2022 Final Budget	2022 Actual	2022 Carry-forward	2023 Approved Budget	2023 Budget Re-alignment	2023 Final Budget
CT-Transit Security	-\$0.09M	\$0.40M	\$0M	\$0.31M	\$0.21M	\$0.11M	\$0.19M	\$0.63M	\$0.92M
OTN Replacement	-\$2.12M	\$1.55M	\$2.12M	\$1.55M	\$0.69M	\$0.86M	\$1.11M	\$0.36M	\$2.33M
CT-Communications	\$4.61M	\$0.75M	-\$2.60M	\$2.76M	\$0.66M	\$2.10M	\$1.10M	-\$0.99M	\$2.21M
CT-LRT Signals	-\$0.07M	\$1.52M	\$0.48M	\$1.93M	\$1.80M	\$0.13M	\$1.81M	\$0M	\$1.94M
	\$2.33M	\$4.22M	\$0M	\$6.55M	\$3.36M	\$3.19M⁵	\$4.21M	\$0M	\$7.39M

Calgary Transit requested carry-forward of the \$3.19M unspent 2022 Rail System AIP budget as an exceptional circumstance. As requested, Calgary Transit provided a presentation with:

- The 5-year average spend rate of 68%;
- The 2022 spend rate of 51% of the 2022 approved AIP budget; and

⁴ Resource capacity analysis would include an assessment of the availability of internal staff in Calgary Transit and other City business units and external resources required to complete projects (e.g., goods and consultant services), including procurement timelines.

⁵ Addition difference due to rounding.

- An explanation that the carry-forward was primarily due to attrition that pushed back project timelines into 2023.

As noted above under Section 4.4, delays on sampled projects due to Project Lead turnover and procurement challenges, and underspent budget due to cost efficiencies were not formally documented, including discussions and decisions to take action to address spending variances and/or carry forward budget to 2023.

Prior to the implementation of the new relinquishment process, identifying the root causes of unspent Rail System AIP budget and resource capacity analysis was not part of Transit Service Systems’ formal process. Although the spend rate at the Rail System AIP program level was tracked, addressing spend rate variances to keep spending on track was also not part of Transit Service Systems’ formal process.

Recommendation 6

The Manager, Transit Service Systems, establish a process to identify and address the root causes for unspent budget and conduct resource capacity analysis to support management of the Rail System AIP budget and inform relinquishments and budget carryforward requests.

Management Response

Agreed.

Action Plan	Responsibility
<ol style="list-style-type: none"> 1. Conduct resource capacity analysis for the communications and signaling systems teams ensuring that there is sufficient capacity to meet project objectives and expected spend. 2. Define a process to identify and address root causes/lessons learned when AIP target spend is not achieved (either when a cost risk event is triggered or annually). 3. Conduct monthly and other periodic financial conversations for clear understanding of financial performance and to discuss options for carryforward / relinquishments. Document minutes for action follow through. 	<p>Lead Leader, Infrastructure and Systems Performance</p> <p>Support Team Lead, Communication, Security & Safety and Team Lead, Signaling Systems</p> <p>Commitment Date December 30, 2024</p>