



# METRO

## POSITIVE TRAIN CONTROL (PTC) EXPENDITURES AUDIT (21-01)

Terry Follmer, VP of Internal Audit

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## **EXECUTIVE SUMMARY**

As part of our Fiscal Year 2021 Internal Audit Plan approved by the Finance, Audit, and Administration (FAA) Committee, we performed an audit on Positive Train Control (PTC) expenditures to determine whether Capitol Metro has sufficient internal controls to prevent and detect errors and/or irregularities in PTC expenditures and ensure compliance with applicable contract terms. The audit results including the objective, scope, and conclusion are as follows.

### **Background**

In response to several fatal railroad accidents in the U.S., Congress passed the Rail Safety Improvement Act of 2008, as amended by the Surface Transportation Extension Act of 2015, which requires passenger and major freight railroads to implement Positive Train Control (PTC) by December 31, 2020. PTC is an automated, built-in, train protection system used to prevent train-to-train collisions, derailments, unauthorized train movements in work zones, and trains running through misaligned switches, and as a result, help save lives. To accomplish this, PTC creates information sharing between trains, rail wayside devices, and back office applications regarding speed restrictions, train position and speed, and signal and switch devices.

Capital Metro owns a commuter rail line that runs from Leander to downtown Austin (MetroRail) and a freight rail line that runs from Giddings to Llano, which are both operated by third-party companies. The commuter and freight lines both run on a 32-mile commuter track in central Austin and PTC is only required to be implemented on this part of the track and not the section used exclusively as freight track. From 2015 through 2020 (6 years), Capital Metro paid 15 vendors \$73 million to help implement PTC. Modern Railway Systems is the primary contractor on the project receiving \$68.5 million or approximately 94% of the total amount spent on PTC. The project was funded by a combination of local funds and \$31 million worth of various grants (e.g. FRA, FTA, and 5337). See Appendix A for a summary of payments to vendors for PTC from 2015 through 2020.

In 2017 Capital Metro entered a four-year, design-build contract with Modern Railway System, Inc. (MRS) from September 2017 through December 2020 to implement PTC. MRS was the largest vendor used by Cap Metro out of the 15 PTC vendors utilized on the PTC implementation (see Appendix A.) Capital Metro's PTC system is based on Enhanced Automatic Train Control (E-ATC) methodology and employs a cab signal overlay on the existing signal system. The scope of PTC work included construction, engineering, support services, training, testing, and other services to meet the federally mandated PTC goals of automated train separation, speed enforcement, and work zone protection. The Rail Department is the Project Manager of the PTC project, which includes four phases. We are currently in the third phase and PTC was successfully approved by the FRA in 2020. A high-level project plan by phase can be seen in Appendix B.

To validate invoices and work performed, Rail staff conduct monthly and/or daily Quality Control/Quality Assurance (QC/QA) walkthroughs to ensure vendor work is completed. Capital Metro uses the Microsoft Dynamics AX enterprise resource planning system for accounting and vendor payments. Rail staff must approve PTC-related vendor payments through AX Workflow which has an approval configuration set up by the AX System Administrator on the back end (see Appendix C for a flowchart). Not all levels are required for all approvals, instead, the AX Workflow defines the role that needs approval based on the dollar amount. According to Capital Metro's Accounts Payable Policy (#FIN-106), up to 4 levels of approval within AX are needed for an invoice to be processed and paid by A/P staff. The dollar limits and 4 levels of approval are as follows:

1. Utilities Requisitioner/Project Manager Level: \$0.00
2. Manager Level: Up to \$99,999.99
3. Director Level: \$100,000 - \$249,999.99
4. Chief Level: \$250,000+

Besides AX, Rail staff use the following other systems: EPPM & Microsoft Project (project management and monitoring), in-house developed Configuration Management Application Tool, Sharepoint (web-based data and repository), and Auto-CAD/Macro-Station/Visio.

## Audit Objective & Scope

The primary objective of this audit was to determine whether Capitol Metro has sufficient internal controls to prevent and detect errors and/or irregularities in PTC expenditures and ensure compliance with applicable contract terms. The audit scope included a review of the payment approval process, controls testing, analysis of AX Workflow data from 2015 through 2020, and contract compliance for a selection of MRS invoices.

## Opinion

In our opinion, internal controls are generally in place and properly functioning in the approval of PTC related expenses. We identified several areas where policy and the AX system controls could be enhanced as follows:

- **Update Policy & Procedures for Workflow Approval Exceptions** – A/P Policy (FIN-106) should be further refined to address documentation and support for exceptions to standard workflow approval levels.
- **Update AX Approvals & Workflow** – Review and update AX approval levels and workflow.

The detailed audit report that follows provides more context and understanding on the audit opinion and recommendations above.

This audit was conducted in accordance with US Government Accountability Office's Generally Accepted Government Auditing Standards (GAGAS) and the Institute of Internal Auditor's International Standards for the Professional Practice of Internal Auditing. These standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our

audit objective. We believe the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives. The audit was conducted by the following staff members in the Capital Metro Internal Audit Department:

- Sarah Daigle, Internal Auditor II (Project Lead)
- Terry Follmer, VP of Internal Audit

Recommendations to strengthen controls and improve accountability were provided to management. Management agrees with the Internal Audit recommendations and has provided target completion dates which are included in the detailed audit report below. A follow-up audit is performed semi-annually (i.e. May and November) to ensure management action plans for all issued audit reports are completed timely.

We appreciate the cooperation and assistance provided to us throughout this audit.

<i>Issues &amp; Risk</i>	<i>Recommendation</i>	<i>Management Action Plan</i>
<p><b>1. UPDATE POLICY &amp; PROCEDURES FOR WORKFLOW APPROVAL EXCEPTIONS</b></p> <p>According to CapMetro’s AP policy (#FIN-106), up to 4 levels of approval within AX are needed for an invoice to be paid by AP staff depending on the dollar amount of the payment (Project Manager, Manager, Director, and Chief.)<sup>1</sup> After analyzing AX Workflow data for the AP module for Rail from 2015-2020 (195 total PTC invoices), we determined that all payments were properly reviewed and approved by staff, however, we identified the following AX system configuration weakness:</p> <ul style="list-style-type: none"> <li>• <b>Segregation of Duties</b> - 33 out of 195 (17%) of total PTC invoices were approved 2 or 3 times by the same person in AX using an altered AX Workflow (e.g. missing a unique Project Manager, Manager, or Director) and in some cases a separate email or memo approval was manually saved to AX. This altered AX Workflow process appears to occur when the payment was either delegated to the same person or not delegated after the same person already approved it and required an extra manual step to save approval support in AX. While all these payments were approved, it would strengthen the payment approval process by having proper segregation of duties to ensure that each layer of AX Workflow approval was completed by a different person to validate the invoices being paid.</li> </ul> <p><b>Note</b> – Management is currently evaluating ERP systems to replace AX which will improve functionality and internal controls.</p>	<p>The Controller together with the AX Administrator in the IT Department should consider:</p> <ol style="list-style-type: none"> <li>Identify opportunities to improve segregation of duty controls in AX so invoices must be approved by separate personnel in accordance with AP Policy (FIN-106) at various levels (e.g. PM, Manager; Director, Chief/EVP). Alternatively, if AX cannot be configured to remediate this delegation weakness, then a compensating control should be put in place. For example, a monthly or quarterly list of invoices approved with limited segregation of duties should be reviewed by the Controller/departments to ensure oversight and transparency on these workflow exceptions.</li> <li>When segregation of duties is not possible in the system (e.g. vacation, sick, etc.) but appropriate approval is granted through a separate means (e.g. email approval), this documentation should be saved to AX. If a separate and duly authorized means of approval cannot be obtained within that department hierarchy, the Controller should be consulted for either the Controllers approval or one of their designees.</li> <li>Update AP policy (#FIN-106) to define acceptable ways to document appropriate approval to strengthen segregation of duties (e.g. email approval attached to transaction in AX.)</li> </ol>	<p>Management agrees with the recommendation.</p> <p><b>Target Completion Date:</b> December 31, 2021</p>

<sup>1</sup> In the Rail Department, a fourth Chief-level approval is *only* needed when the invoice is \$250,000 or higher.

<i>Issues &amp; Risk</i>	<i>Recommendation</i>	<i>Management Action Plan</i>
<p><b>2. UPDATE AX APPROVALS &amp; WORKFLOW</b></p> <p>The AP module within AX Workflow is configured to ensure payments are properly reviewed and approved by using an AX financial dimension<sup>2</sup> to identify and send payments to the correct person for approval (see Appendices C &amp; D.) For example, within the Rail department any payments with a financial dimension containing project ID RRC, department number 544, and an invoice amount greater than or equal to \$250,000 must be approved by the PTC Project Manager (1<sup>st</sup> PM level), the Rail Business Manager (2<sup>nd</sup> Manager level), VP of Rail (3<sup>rd</sup> Director level), and the Chief Operating Officer (4<sup>th</sup> Chief level) and are automatically routed to each person’s workflow queue for approval. While this approval process is automated and has strong controls in place, we noticed some inconsistencies in how departments are configured on the back end, and in general, some needed clean up. For example, departments use a mix of \$100,000 and \$250,000 invoice thresholds to trigger the fourth Chief level approval and others do not require a fourth approval level. Additionally, we identified some old department numbers still configured in AX which could be accidentally used by staff. See Appendix D for a summary of the AP configuration in AX Workflow for all departments.</p>	<p>The Controller together with the AX Administrator in the IT Department should complete the following:</p> <ul style="list-style-type: none"> <li>a) In AX workflow, review by department (see Appendix D) and ensure it aligns with Cap Metro’s AP policy (#FIN-106).</li> <li>b) In AX workflow, ensure a first level Project Manager level approval is required for all active projects at CapMetro as identified by the EPPM system (project management software).</li> <li>c) Remove any old departments or employee numbers listed in the AX system.</li> <li>d) In AX workflow, ensure every department has identified a Chief level approval and review the Manager and Director level approvals to ensure this appropriately reduces the risk of unauthorized payments.</li> <li>e) In AX workflow, review dollar thresholds in the configuration and make any necessary adjustments.</li> </ul>	<p>Management agrees with the recommendation.</p> <p><b><u>Target Completion Date:</u></b> December 31, 2021</p>

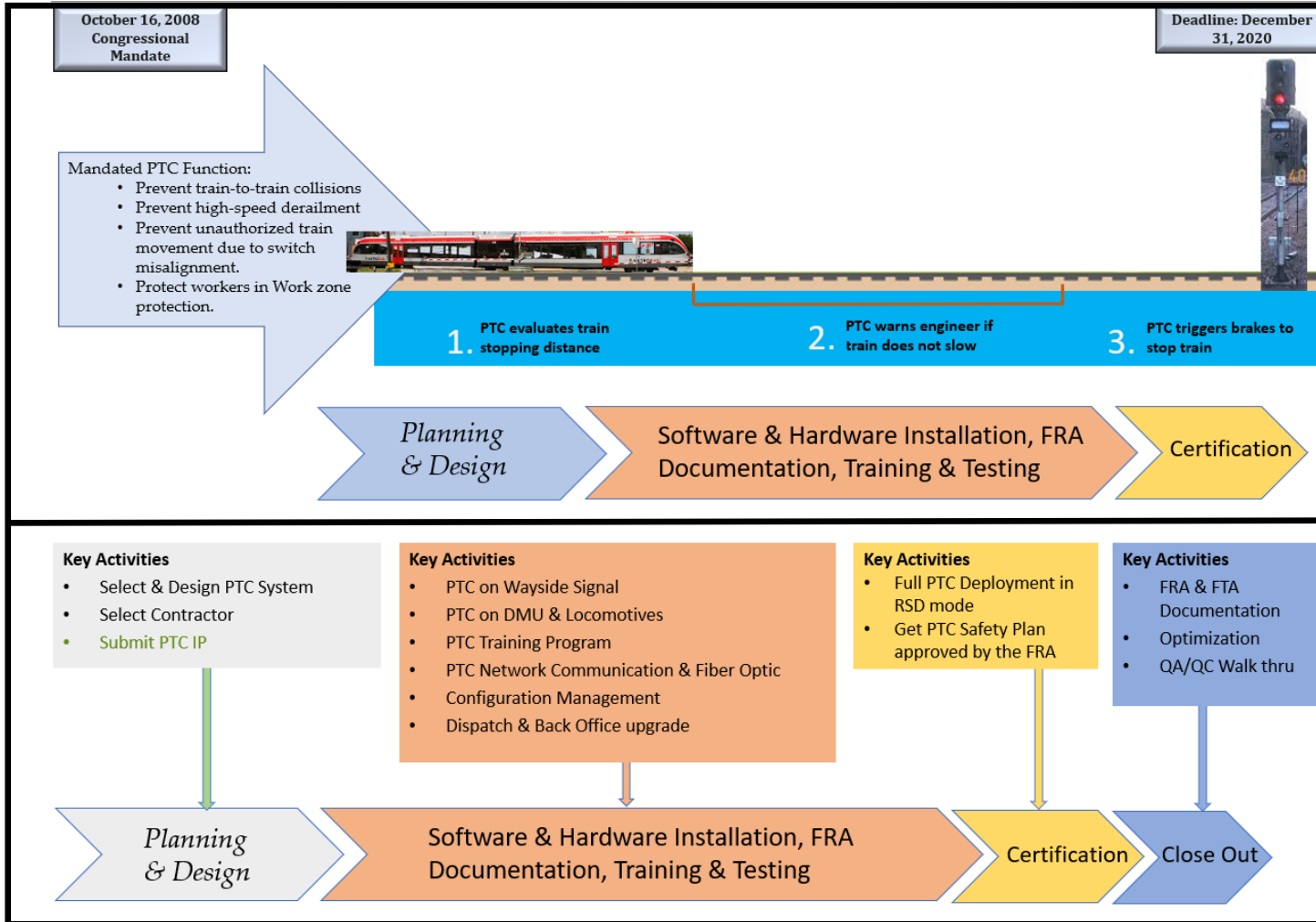
<sup>2</sup> A financial or accounting dimension is a number assigned to each payment that identifies the payment’s unique fund, main account, department, function, service code, and project code within the AX accounting system.

**Appendix A: Payments by Vendor for PTC (2015-2020)**

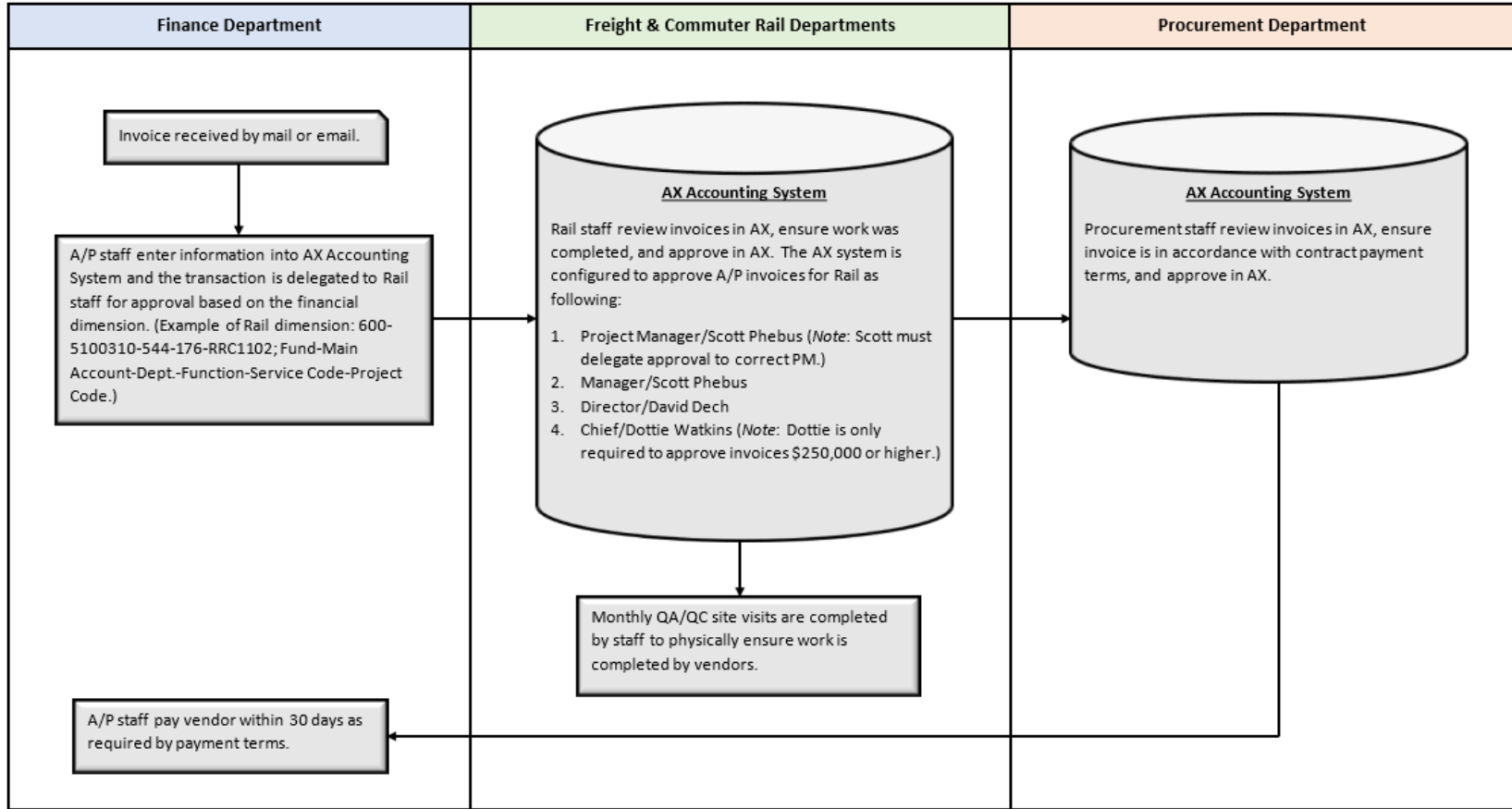
<b>Summary of Payments by Vendor for PTC 2015 - 2020</b>			
<b>Vendor Name</b>	<b>Description of Work</b>	<b>Amount Paid</b>	<b>Percentage</b>
Modern Railway Systems, Inc.	Implemented PTC.	\$ 68,494,249	93.63%
Mott MacDonald LLC	Consulting and engineering work.	\$ 1,857,895	2.54%
Herzog Contracting Corp.	Roadway worker-in-charge. Safety operators while other service providers worked on the railroad.	\$ 1,579,437	2.16%
Soal Technologies LLC	Consulting and IT development work.	\$ 751,951	1.03%
LTK Engineering Services	Consulting and engineering work.	\$ 168,323	0.23%
Infojini, Inc.	Consulting and IT development work.	\$ 63,802	0.09%
Downtown Gateway Partners	Consulting work - integrated PTC with downtown rail station.	\$ 57,580	0.08%
Waterfall Security Solutions Ltd.	Completed communications work for PTC.	\$ 56,312	0.08%
Freese & Nichols, Inc.	Consulting and engineering work.	\$ 39,034	0.05%
Texas Transportation Institute	Procurement work - created an Independent Cost Estimate (ICE) and verified proposals.	\$ 32,300	0.04%
Orion Geomatics	Consulting work - completed survey work.	\$ 32,000	0.04%
Modis GS	Temp agency - provided temporary employees.	\$ 11,776	0.02%
Herzog Transit Services, Inc.	Commuter rail services.	\$ 6,879	0.01%
Spawglass Contractors, Inc.	Constructed training room and installation of stimulator.	\$ 5,950	0.01%
Huitt-Zollars, Inc.	Consulting work - completed analysis and other work for downtown rail station.	\$ 458	0.00%
<b>Grand Total:</b>		<b>\$ 73,157,946</b>	<b>100.00%</b>
<i>*Source: AX Accounting System</i>			



## Appendix B: Flowchart of PTC Project Phases and Key Activities



### Appendix C: Flowchart of AX Payment Approval Process Rail Department



**Appendix D: Summary of AX Workflow Configuration for AP Module**

AX Workflow Configuration for AP Module							
#1: PM Approval - Project ID or Dept	Dept #	Department Name	#2: MGR Approval	#3: DIR Approval	#3: DIR If Equal To or Greater Than \$	#4: CHIEF Approval	#4: CHIEF If Equal To or Greater Than \$
*BPS - Bus/Paratransit *CPG - Capital Projects *FIN - Finance *ITS - Information Technology *PAM - Real Estate Property & Asset Mgmt *PLN - Strategic Planning *RRC - Commuter Rail *RRF - Freight Rail *SAF - Safety *Miscellaneous Codes (00000, XCP, 530, etc.)	110	Executive				Y	\$ -
	118	Government Affairs	Y			Y	\$ 100,000
	119	Diversity and Compliance	Y			Y	\$ 100,000
	120	Board of Directors	Y			Y	\$ 100,000
	125	Internal Audit		Y	\$ -	Y	\$ 250,000
	130	Strategic Operations Management and Administration		Y	\$ -	Y	\$ 250,000
	141	Security	Y	Y	\$ 100,000	Y	\$ 250,000
	150	Legal	Y	Y	\$ -		
	220	Finance		Y	\$ -	Y	\$ 250,000
	230	Information Technology	Y	Y	\$ -	Y	\$ 250,000
	250	Procurement	Y	Y	\$ 100,000		
	275	Rideshare		Y	\$ -	Y	\$ 250,000
	320	Strategic Planning	Y	Y	\$ -		
	330	Marketing and Communications	Y	Y	\$ 100,000	Y	\$ 100,000
	331	Community Engagement	Y			Y	\$ 100,000
	332	Customer Service	Y			Y	\$ 100,000
	340	Human Resources	Y	Y	\$ 100,000		
	420	Risk and Safety Management	Y	Y	\$ 100,000		
	457	Public Facilities	Y	Y	\$ 100,000	Y	\$ 250,000
	530	Capital Projects	Y	Y	\$ 100,000	Y	\$ 250,000

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	540	Real Estate & Asset Management	Y	Y	\$ 100,000	Y	\$ 250,000
	542	Freight Rail	Y	Y	\$ -	Y	\$ 250,000
	544	Commuter Rail	Y	Y	\$ -	Y	\$ 250,000
	550	Real Estate & Asset Management		Y	\$ 100,000	Y	\$ 250,000
	600	Operations and Maintenance Oversight		Y	\$ -	Y	\$ 250,000
	615	Innovative Mobility	Y	Y	\$ 100,000	Y	\$ 250,000
	620	Demand Response Oversight	Y	Y	\$ 100,000	Y	\$ 250,000
	640	Metro Access Operations	Y	Y	\$ 100,000	Y	\$ 250,000
	650	ParaTransit Eligibility	Y	Y	\$ 100,000	Y	\$ 250,000
	920	Project Connect	Y			Y	\$ 150,000