

Review of Toronto Transit Commission's Revenue Operations: Phase Two – PRESTO/TTC Fare Equipment and PRESTO Revenue

Date: October 21, 2019
To: Toronto Transit Commission Board
From: Auditor General
Wards: All

SUMMARY

The Auditor General's 2018 Audit Work Plan, received by City Council on December 5, 2017, included a review of the efficiency and effectiveness of Toronto Transit Commission's (TTC's) Revenue Operations.

We took a phased approach to the TTC Revenue Operations audit, given there are multiple areas and risks within revenue operations. Phase 1 of the audit focused on fare evasion and fare inspection, and the Phase 1 audit report was received by City Council on May 14, 2019.

This **second phase** focused on **whether TTC is receiving all the PRESTO revenue it should**, including a review of the following:

- Functionality of fare equipment (PRESTO card readers, TTC subway fare gates, and PRESTO vending machines on new streetcars)
- TTC's contract with Metrolinx
- Capturing all PRESTO revenue transactions on TTC through PRESTO's back-end systems.

Summary of findings

The **one page Audit at a Glance summarizes** our audit findings.

To move forward together in a more effective way, important actions in three broad categories (pillars) need addressing:

1. Foresight

The information in this report provides an opportunity for the executives to try other options to bring the arrangement to the next level, including how and when it will complete strategic deliverables, such as open payment.

For Metrolinx, as it renews contracts with its vendors it should use this report and further analyses to envision and inform the deliverables it needs from its own vendors to meet key expectations of its clients – TTC being the biggest client. One example could be leveraging artificial intelligence techniques to identify trends and patterns that need addressing.

For TTC, this arrangement is almost 60 per cent fulfilled - it needs to consider what it visualises for the citizens of Toronto, define what is important, and then determine the information and the service levels it needs to achieve these goals for Torontonians.

Overall, and in our view, there must be a strategic refocussing at the top by both TTC and Metrolinx to tackle what matters most - the shared outcomes of customer experience and maximizing revenue.

For this to work, both parties also need to:

- Define clear, agreed upon, and formalized outcomes and Service Level Agreement (SLA) targets
- **Seek a win/win for both parties, but acknowledge individual and shared accountabilities and responsibilities in this arrangement** – several examples of which are outlined in this report.

2. Insight

To solve problems you need insight into the root cause. **To gain such insight, the right level of information must be analyzed using the right data.** Without that, you are solving what you think might be wrong without the evidentiary support to confirm you are addressing the true cause(s) and actual issue(s). Once the issues are diagnosed and root causes identified, the systemic issues can be resolved to everyone's benefit. Some of the information gaps we noticed were fundamental:

a. SLAs are not in place – Normally deals of this size have SLAs defined, benchmarked, and set, so that each party can rely on the other to uphold their end of the bargain. The SLAs for the deal have not been set – seven years after signing the deal.

b. Data sets are missing – Key information that TTC needs to rely on is either encrypted and/or purged in a short time-frame and contrary to the terms of the Master Agreement (e.g. device level data purged after 7 days, PRESTO card reader monitoring software tool information purged after 60 days).

c. Issues / limitations with the current analysis, including:

- PRESTO card readers: e.g. continuing to address and resolve root causes for frozen PRESTO card readers, issues with the device monitoring software tool, weekly back-up for the availability rate, and improving the availability calculation, etc.
- PRESTO vending machines on the new streetcars: e.g. out-of-service machines that should be included in the availability calculation and are not, and how to ensure coin collection occurs regularly and as needed

- TTC fare gates: e.g. addressing the current manual process of identifying out-of-service fare gates

3. Oversight

The governance gap needs closing by implementing the governance called for in the Master Agreement - including **reconstituting the Joint Executive Committee and operationalizing the Expert Panel, already envisaged in the agreement**, to help set up SLAs when the Joint Executive Committee reaches an impasse. There will always be matters that arise and differences of opinion - leveraging the governance framework in a constructive and effective way should help resolve outstanding issues.

In addition to closing the governance gap, there needs to be the following to improve oversight of the system as a whole:

- **TTC, PRESTO and all vendors working together as one**, sharing information, and diagnosing and solving problems together (e.g. coin collection issue on new streetcar vending machines needs to be resolved together despite all vendors staying within defined responsibilities)
- Focusing, measuring and monitoring the desired outcomes
- Controls over PRESTO revenue and assurance provided by PRESTO needs strengthening, including retailer network controls

Each of the above three pillars are discussed in the report – in different ways. The report dives deeper into the issues identified to unpack them – but these are only some starting examples of the kind of information that needs to be gathered and analyzed by the parties and possibly the Expert Panel to define the problems, SLAs, and information gaps.

By refocusing efforts and building on the three pillars and building on the three pillars above of foresight, insight, and oversight, it sets the foundation for TTC, PRESTO, and customers to win. It all starts with aligning the vision, having mutual respect, obtaining the right information to diagnose issues, seeking the root cause, and having the governance in place to help set fair expectations and resolve impasses. **Overall, there is a huge opportunity for both parties to bring transit to the next level for citizens.**

Thank You

The Executive Leadership Teams of both TTC and Metrolinx conveyed their support for this audit and found that it brought new insight and perspectives. **They have shared a renewed commitment to achieving the vision contemplated in the business arrangement for the benefit of citizens and to putting the pillars in place to make this happen.** We wish to thank them and their teams for their support for this audit. We would also like to thank the bus drivers who took the time to participate in the audit.

Conclusion

We have concluded that TTC's PRESTO revenue may not be complete. We will not be providing an estimate of lost revenue because of information gaps and control weaknesses. It is our view that TTC and PRESTO need to focus on tracking the right things in a complete and accurate manner – while retaining supporting evidence for further analysis. Undertaking this exercise will assist the parties in resolving issues through its governance framework (once fully operationalized) to improve the completeness of revenue.

Our audit provides 34 recommendations. The implementation of these recommendations will help both TTC and Metrolinx address issues with the functionality of the PRESTO fare equipment and the incident management process, and improve the accuracy and completeness of the availability calculation of PRESTO card readers, as well as provide TTC with required information and data to monitor and address its risks related to completeness of PRESTO revenue.

We hope that this report will help both parties to move forward together to ensure the contractual needs and business requirements of TTC are met to benefit all Torontonians, and that this will be done in an efficient and effective manner through the contractual arrangement.

It will also help TTC to continue to improve on areas it is accountable for that also affect revenue calculations, including the functionality of its fare gates and contract management practices with its vendor.

It will help both TTC and Metrolinx to ensure that sufficient assurance is being provided on controls related to completeness of PRESTO revenue.

Finally, the governance structure contemplated in the contract needs to be put in place to support the resolution of the issues highlighted in this report, the outstanding contractual deliverables, and any new issues that arise over the remainder of the contract term.

RECOMMENDATIONS

The Auditor General recommends that:

1. The Board request the Chief Executive Officer, Toronto Transit Commission, to work together with Metrolinx and its vendors to:
 - a. identify the root cause for frozen and intermittent PRESTO card readers;
 - b. develop a method to detect above issues in the device monitoring software tool; and
 - c. ensure frozen and intermittent readers are included in the PRESTO card reader availability calculation.

2. The Board request the Chief Executive Officer, Toronto Transit Commission, to work together with Metrolinx to determine the best method to capture complete and accurate information on in-service vehicles for the PRESTO card reader availability calculation, including assessing TTC's Vision system for this purpose.

3. The Board request the Chief Executive Officer, Toronto Transit Commission, to work together with Metrolinx to:

- a. explore ability to have more frequent pinging while ensuring impact on device performance and customer experience is minimized; and
- b. discuss using the most frequent device status during an interval instead of the latest event for the availability rate calculation.

4. The Board request the Chief Executive Officer, Toronto Transit Commission, to work together with Metrolinx to:

- a. ensure missed devices in the device monitoring software tool are identified by PRESTO and communicated to TTC;
- b. determine and address the underlying issue for missed devices in the device monitoring software tool; and
- c. obtain back-up for the weekly card reader availability rate calculations.

5. The Board request the Chief Executive Officer, Toronto Transit Commission, to continue discussions with Metrolinx to:

- a. obtain the daily PRESTO card reader availability spreadsheet for all seven days of the week, including weekends and holidays in Canada; and
- b. ensure that TTC's availability calculation includes holidays in the country of PRESTO's vendor.

6. The Board request the Chief Executive Officer, Toronto Transit Commission, to:

- a. ensure the availability calculation of PRESTO vending machines includes all out-of-service incidents, including the status when the coin box is full and the machine is not available for the customer to pay by coins; and
- b. provide TTC with the detailed back-up data/information that supports the weekly availability rate.

7. The Board request the Chief Executive Officer, Toronto Transit Commission, to work together with Metrolinx to restore the contracted deliverable of the credit and debit card fare payment method on the new streetcars, with estimated timing provided by Metrolinx.

8. The Board request the Chief Executive Officer, Toronto Transit Commission, to work together with Metrolinx to:

a. ensure that PRESTO's vendor's monitoring team is consistently logging tickets for all out-of-service card readers, even if able to successfully recover remotely; and

b. regularly receive a log of devices that successfully re-boot.

9. The Board request the Chief Executive Officer, Toronto Transit Commission, to:

a. provide training and communication to TTC forepersons for them to log all tickets in PRESTO's incident management system (ServiceNow) for PRESTO issues identified by TTC staff, including TTC operator sign-in sheets; and

b. require TTC technicians to maintain a log of PRESTO devices reset, including whether the reset was successful or not in resolving the PRESTO issue, and provide this to TTC forepersons and PRESTO repair staff.

10. The Board request the Chief Executive Officer, Toronto Transit Commission, to discuss with Metrolinx:

a. enabling data extraction from the device monitoring software tool in a usable format;

b. consideration of updating to a new version of device monitoring software tool that includes reporting capability; and

c. the ability to maintain and obtain data logs for greater than 60 days from the device monitoring software tool.

11. The Board request the Chief Executive Officer, Toronto Transit Commission, to request Metrolinx to regularly provide a running list for all swapped devices, including the device IDs for both the original and swapped devices and mapping to the vehicle.

12. The Board request the Chief Executive Officer, Toronto Transit Commission, to request Metrolinx to ensure that for all PRESTO card readers, an inventory log is regularly provided to TTC, including mapping by device IDs to the vehicle numbers.

13. The Board request the Chief Executive Officer, Toronto Transit Commission, to ensure the TTC Bus Transportation department:

a. reiterates the importance to TTC Operators to sign in all PRESTO issues, even if they are a daily or intermittent occurrence;

b. evaluates the need for additional communication and/or training for TTC Operators on the sign-in process; and

c. implements a process that reconciles all vehicles to the sign-in sheets to ensure all are signed in, and for any not signed in, a separate list is maintained which includes the reason for not being signed in and whether there were any issues.

14. The Board request the Chief Executive Officer, Toronto Transit Commission, to ensure the TTC Bus Maintenance department provides an accurate listing of "bus out-of-service greater than seven days" to PRESTO.

15. The Board request the Chief Executive Officer, Toronto Transit Commission, to run daily reporting on warnings for the coin box being full or 75 per cent full, and ensure those streetcars, at a minimum, are made available for the nightly coin collection.

16. The Board request the Chief Executive Officer, Toronto Transit Commission, to work together with Metrolinx to evaluate whether the coin collection needs to occur more frequently for new streetcar vending machines.

17. The Board request the Chief Executive Officer, Toronto Transit Commission, to work together with Metrolinx to:

a. establish a governance framework that addresses the governance gap, by re-starting and continuing the Joint Executive Committee as envisioned in the Operational Services Agreement; and

b. formalize that TTC's contractual and operational issues are appropriate to address directly with Metrolinx at the Joint Executive Committee table, and includes regular status, service and planning review meetings.

18. The Board request the Chief Executive Officer, Toronto Transit Commission, to request a schedule and plan from Metrolinx for the remaining contracted deliverables of TTC.

19. The Board request the Chief Executive Officer, Toronto Transit Commission, to work together with Metrolinx to identify and agree upon outcome areas and targets, and to measure and monitor those areas.

20. The Board request the Chief Executive Officer, Toronto Transit Commission, to work together with Metrolinx to agree upon and finalize the Service Level Agreement, and to utilize an Expert Panel as outlined in the Operational Services Agreement if needed.

21. The Board request the Chief Executive Officer, Toronto Transit Commission, to work together with Metrolinx to obtain the required information to refine their estimate of revenue loss due to malfunctioning PRESTO fare equipment.

22. The Board request the Chief Executive Officer, Toronto Transit Commission, to work together with Metrolinx to come to an agreement on a methodology for the revenue loss claim acceptable to both parties, and leverage its contractual governance framework of the Expert Panel if needed.

23. The Board request the Chief Executive Officer, Toronto Transit Commission, to make necessary changes to require proper approval sign-off by TTC for Metrolinx to be able to withdraw amounts from TTC's revenue bank account.
24. The Board request the Chief Executive Officer, Toronto Transit Commission, to work together with its vendor, to continue to make improvements to the functionality of fare gates, and to hold its vendor accountable to meet the target availability rate for TTC fare gates.
25. The Board request the Chief Executive Officer, Toronto Transit Commission, to consider refining its fare gate availability calculation methodology to better account for partially available fare gates.
26. The Board request the Chief Executive Officer, Toronto Transit Commission, to continue efforts in expediting the implementation of FareGo 3.9 in order to streamline the fare gate incident management process.
27. The Board request the Chief Executive Officer, Toronto Transit Commission, to identify fare gate incident priorities in TTC's work order management system and track targets for second line maintenance by its vendor based on those incident priorities.
28. The Board request the Chief Executive Officer, Toronto Transit Commission, to negotiate with its vendor to receive all relevant data and information regarding calculation of the fare gate service credit.
29. The Board request the Chief Executive Officer, Toronto Transit Commission, to work together with Metrolinx to:
 - a. ensure the required controls are both sufficiently and clearly covered in the CSAE 3416 report or through another mechanism(s); and
 - b. ensure the assurance specifically includes that the interface controls between the device level and subsystems are adequately designed and operating effectively.
30. The Board request the Chief Executive Officer, Toronto Transit Commission, to continue to pursue the receipt of device level data (revenue related transaction and error event logs) from PRESTO in accordance with its Master Agreement with Metrolinx.
31. The Board request the Chief Executive Officer, Toronto Transit Commission, to ensure that there are transactions reported from all in-service vehicles and fare gates by doing a reconciliation against transactions received from PRESTO's central system.
32. The Board request the Chief Executive Officer, Toronto Transit Commission, to improve controls that verify whether there were transactions reported from offline devices when they reconnect back to the network.
33. The Board request the Chief Executive Officer, Toronto Transit Commission, to regularly follow-up with PRESTO on the results of their internal investigation regarding

monthly discrepancies between the subsystem and central system, and perform validation to confirm the receivables of the missing transactions in the central system.

34. The Board request the Chief Executive Officer, Toronto Transit Commission, to request Metrolinx to:

- a. include controls related to the retailer network in next year's CSAE 3416 report or obtain a separate CSAE 3416 report from its vendor for the retailer network; and
- b. receive a reconciliation from Metrolinx of retailer sales transaction receipts listing with the sales extract report from PRESTO's central system, to monitor potential missing revenues.

35. The Board forward this report to City Council for information through the City's Audit Committee.

FINANCIAL IMPACT

We prepared calculations to estimate a range for the overstatement of the PRESTO card reader availability rate and annual revenue loss. Based on the work performed with the information we could obtain, it is our view that TTC's estimate of \$3.4 million in revenue loss for 2018 due to malfunctioning PRESTO fare equipment does not appear to be overstated. TTC's availability estimates may even be understated given the issues we identified in this report with availability of PRESTO card readers. We are not including revenue loss calculations in this report. It is our view that the information and data gaps identified at this time make it difficult to provide these important numbers with the required level of audit assurance.

The implementation of the recommendations in this report may result in an increase in passenger revenue. The amount of passenger revenue increase resulting from implementing the recommendations in this report is not determinable at this time.

DECISION HISTORY

The Auditor General's 2018 Audit Work Plan, received by City Council on December 5, 2017, included a review of the efficiency and effectiveness of Toronto Transit Commission's (TTC's) Revenue Operations:

<https://www.toronto.ca/legdocs/mmis/2017/au/bgrd/backgroundfile-107813.pdf>

COMMENTS

A high level summary of the key audit findings are provided in the one-page Audit at a Glance:

- PRESTO fare equipment is less available than reported

- Improvement needed in identifying and resolving issues with PRESTO fare equipment
- TTC's fare gates need further improvement
- TTC needs more assurance from PRESTO on their controls - that it is receiving all the PRESTO revenue it should
- TTC and Metrolinx need to work together better

The attached audit report provides TTC's Board with the detailed audit results and recommendations together with management's response. Management has agreed to all 34 recommendations.

CONTACT

Tara Anderson, Director, Auditor General's Office
Tel: 416 392-0887, Fax 416 392-3754, E-mail Tara.Anderson@toronto.ca

SIGNATURE

Beverly Romeo-Beehler
Auditor General

ATTACHMENT

Attachment 1: Review of Toronto Transit Commission's Revenue Operations: Phase Two – PRESTO/TTC Fare Equipment and PRESTO Revenue