

Re: AU6.2

**Presentation to the Audit Committee
on October 23, 2020 Agenda Item AU6.2**

**AUDITOR
GENERAL**

TORONTO

Audit of Winter Road Maintenance Program - Phase One: Leveraging Technology and Improving Design and Management of Contracts to Achieve Service Level Outcomes

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Presentation Overview

❖ Background

❖ Issues We Found

A. Using Technology to its Fullest Potential

B. Contract Management Needs Improving

i. Issues with Contractor Performance

ii. Contract Requirements Need to be Clearer

iii. Verification of Work and Monitoring of Contracts

C. Key Performance Indicators not Tracked

❖ Opportunities Going Forward

Background

Phase 1 Audit Objectives:

To determine whether Transportation Services Division:

- meets the council-approved service levels for winter road maintenance, and
- manages contractor performance and holds contractors accountable as per the contract terms.

Scope & Methodology:

- November 2018 to January 2020
- Sampled 850 vehicles (Fleet size 1,100), all 47 contracts
- Verified GPS vehicle histories and 261,000 payment records

Background (continued)

Audit Sample Coverage

Coverage	Plowing	Salting	Standby	Total
Contracts reviewed	34	12	14	47*

**Total 47 unique contracts reviewed (some contracts have both plowing and salting operations)*

Samples	Plowing trips	Salting trips	Standby vehicles	Total
Total trips (or vehicles) reviewed	502	131	217	850
Trips with GPS information available	395	117	111	623
Trip hours reviewed	4427	-	-	4427

Phase 2 Audit:

- to include a cost-benefit analysis of contracting out versus in-house delivery of the winter services

Background (continued)

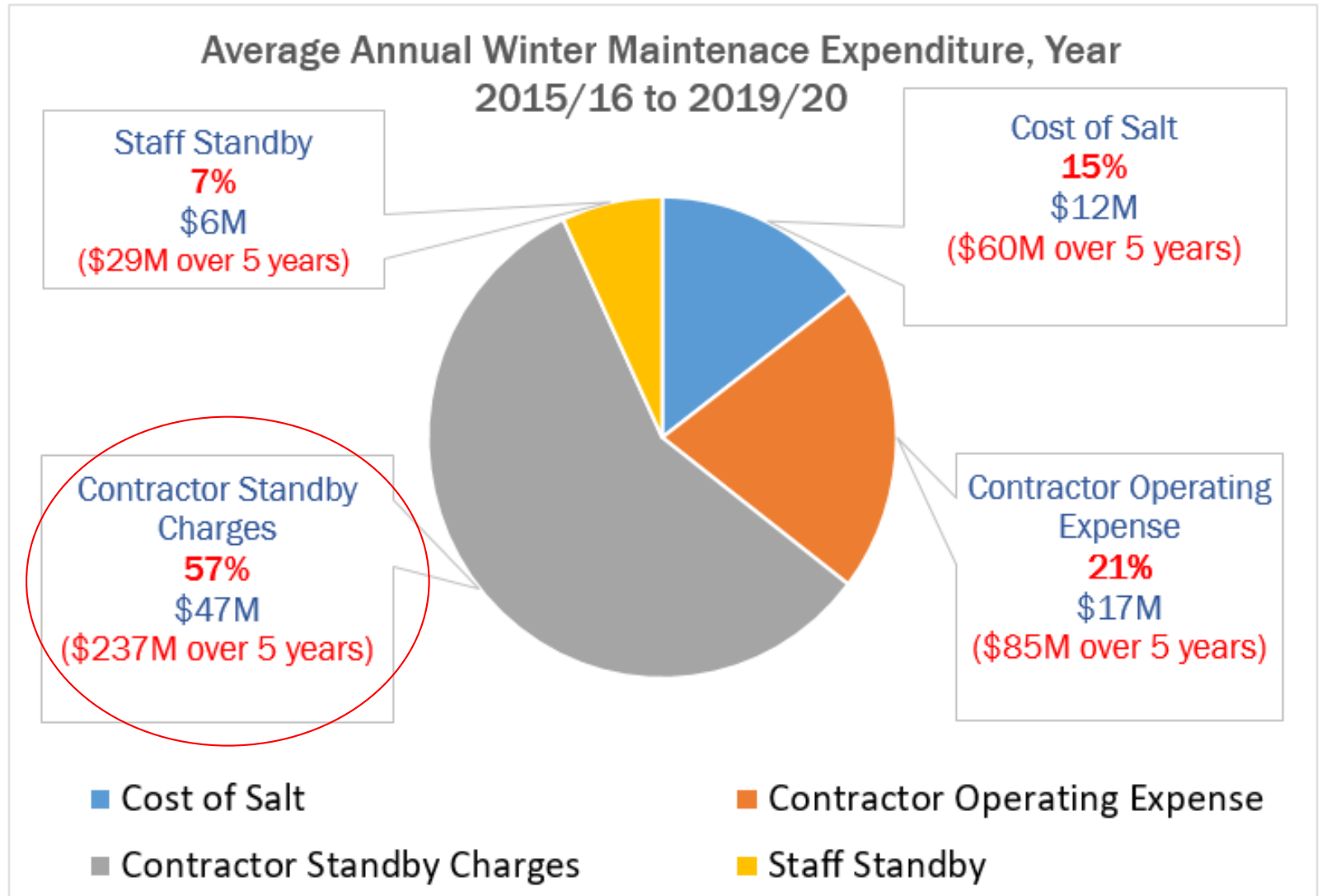
1. Majority of winter maintenance services delivered by contractors, **2 years** left in current **7 year** contract cycle
2. **\$90M** budgeted annually and **\$411M** spent in last 5 years on winter maintenance
3. **7 days**: average days with snowfall > 5 cm in Toronto

Levels of Snow Clearing Service, Toronto

Road Type	When does the City start salting?	When does the City start plowing?*	How many hours after the snow stops falling does it take to clear an average storm?
Expressways (Don Valley Parkway & Gardiner Expressway)	When snow first accumulates	2.5 cm	2-3 hours
Major roads, streetcar routes, bus routes, streets with hills and bike lanes		5 cm	6-8 hours
Neighbourhood roads		8 cm	14-16 hours

**Council-approved service levels, 2015-2022*

Winter Road Maintenance Expenditures



A. Using Technology to its Full Potential

1. Manual processes used by the Division are inefficient and result in poor documentation, errors, and challenges in resolving contractor performance issues in a timely manner.
2. 27% (227 of 850) of the vehicles did not have a functioning GPS device on the days of our audit sample.
3. 153 GPS devices have been inactive since at least 2019 and some as far back as 2015/16, and are still being paid for (\$50,000 over 5 years).

Last reported in	Number of GPS units not working
2015	1
2016	9
2017	3
2018	76
2019	64
Total	153

A. Using Technology to its Fulllest Potential

Why is Using GPS Technology Important?

GPS provides the ability for staff to, for example:

1. Monitor in real-time and verify contractors' work efficiently and effectively
 - a. When contractors are on standby – vehicles are on site and available
 - b. When contractors are operating – vehicles going out when called, starting on time, paying only for hours worked, completing assigned routes
2. Verify salt application rates and the quantities used to ensure compliance with environmental regulations, and
3. Measure route completion and service levels.

A.1 Using Technology to its Fullest Potential

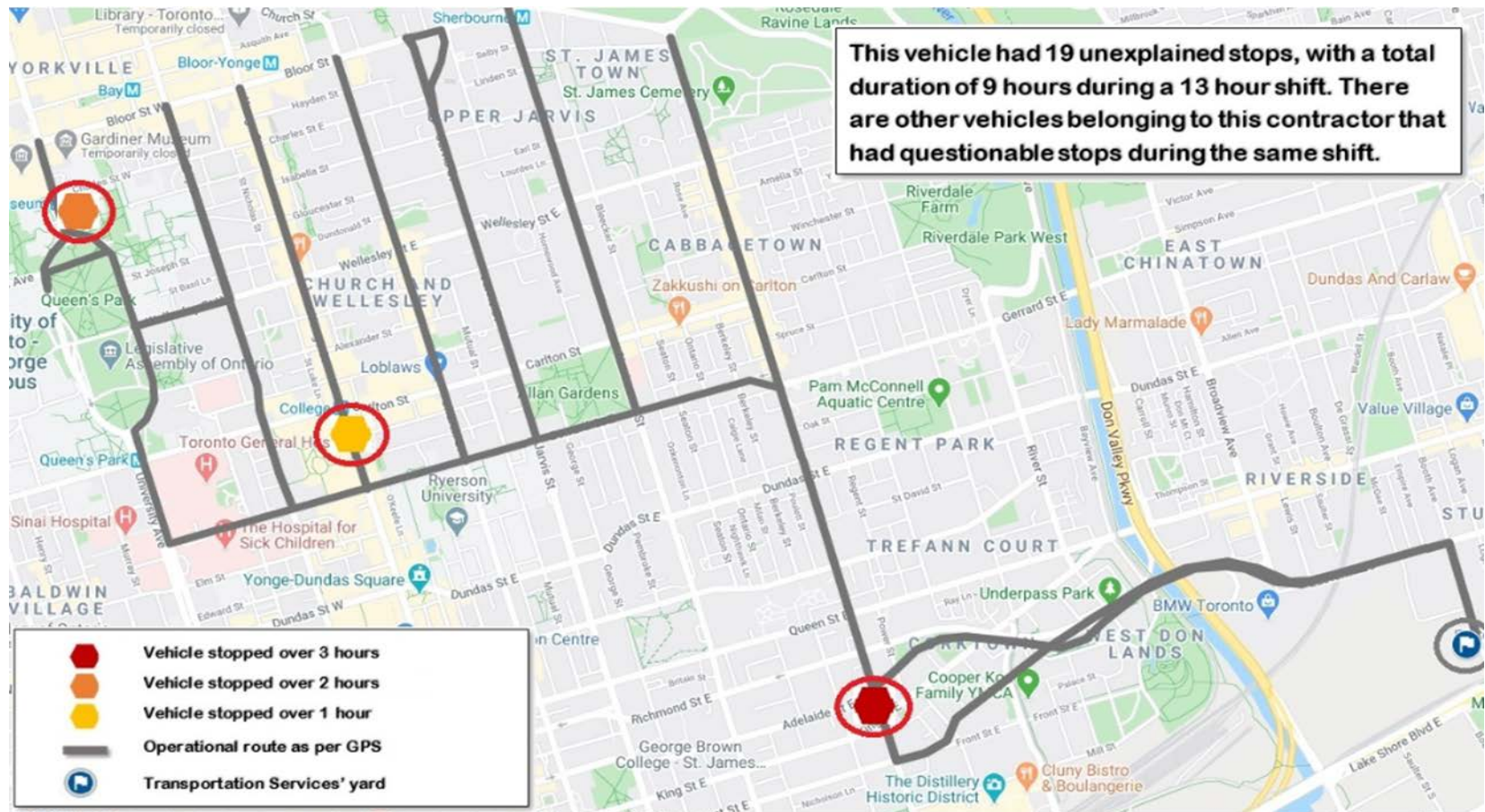
Example of Using GPS Technology - **tracking in and out times of vehicles**

An Excerpt from an Operating Log Illustrating Rounding (or Inaccurate Recording) of Departure and Return times

	Operating log		GPS records	
	Departure time	Return time	Departure time	Return time
Vehicle 1	4:00 PM	5:00 AM	3:29 PM	2:11 AM
Vehicle 2	4:00 PM	4:30 AM	3:42 PM	2:09 AM
Vehicle 3	4:00 PM	4:30 AM	3:34 PM	1:27 AM
Vehicle 4	4:00 PM	5:00 AM	3:36 PM	1:52 AM
Vehicle 5	4:00 PM	5:00 AM	3:37 PM	2:29 AM

A.2 Using Technology to its Fullest Potential

Example of Using GPS Technology – **tracking stop times, route completed**



A.3 Using Technology to its Fullest Potential

Example of Using GPS Technology - **tracking for salt application**



B. Contract Management Needs Improving

Total Estimated Financial Impact of Contractor Non-Compliance and Standby Issue

	Issue	Estimated financial impact per operating day from samples	Estimated financial impact projected over five years ²
1.	Late starts	\$62,800	\$3,807,500
2.	Contractors claiming more hours than worked	\$19,500	\$1,181,000
3.	Excessive stop times	\$20,900	\$1,274,700
	Vehicle not available for operations	\$13,000	\$792,200
	GPS not working ¹	Unknown	Unknown
	GPS vendor billing errors	-	\$50,000
	Potential salt wastage due to salt spreader errors ³	Unknown	Unknown
	Estimated loss from contractor non-compliance	\$116,200	\$7,105,400
4.	Estimated financial impact of not following express contract terms for standby payment ⁴	-	\$23,949,600
	Total estimated financial impact	\$116,200	\$31,055,000

¹ According to the contract, Transportation Services can withhold daily standby payments to contractors if they are responsible for GPS units malfunctioning. We found 227 of 850 sampled vehicles did not have a working GPS device. Many of these units had not reported since at least 2019, and some as far back as 2015/16. On average, the daily standby rate amounts to \$323 per vehicle, although it varies by contract and type of vehicle. It is difficult to estimate the amount of standby payment that should have been withheld due to many variables and lack of information.

² Projection based on average of seven snow days of five centimeters or more, per year (source: Environment Canada).

³ Errors in salt spreader equipment may potentially result in excessive salt being applied. The amount of excessive salt usage is not quantifiable.

⁴ Standby overpayment calculated based on the consideration that: (1) vehicles are not eligible for standby payment when working, and (2) standby rate can be pro-rated based on working and non-working time.

B. Contract Management Needs Improving

i. Issues with Contractor Performance – **Late Starts** (\$3.8M over 5 years)

Examples:

	Contractor	Time Directed to Start Plowing	Time Contractor Started	Minutes Late	Liquidated Damages Assessed
	A	11:00 am	1:02 pm	122 minutes	none
	F	4:00 pm	5:44 pm	104 minutes	none

B. Contract Management Needs Improving

i. Issues with Contractor Performance – **Appear to be Claiming More time than Worked** (\$1.2M over 5 years)



Example 1 – Contractor G:

- Left on time as directed at 5:30 pm, but returned at 11:37 pm and not 6 am as claimed
- Contractor claimed extra 6 hours that was not worked

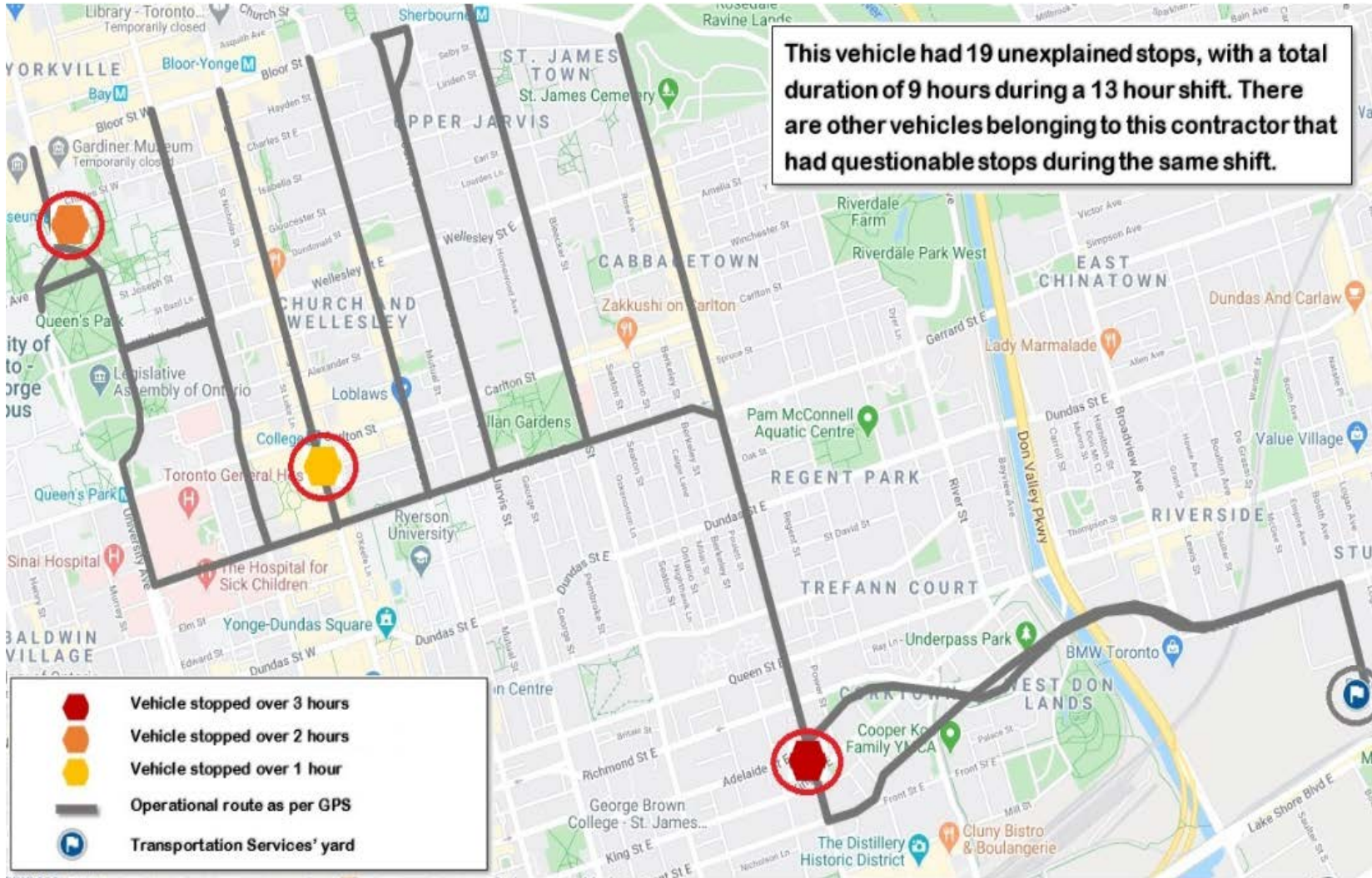


Example 2 – Contractor C:

- Contractor claimed extra 1-3 hours for each of its vehicles
- In total, this contractor claimed an extra 43 hours and 12 minutes for its fleet of 25 vehicles for one single shift

B. Contract Management Needs Improving

i. Issues with Contractor Performance – **Excessive Stop Times** (\$1.3M over 5 years)



B. Contract Management Needs Improving

i. Issues with Contractor Performance:

Summary of Issues (out of 850 samples) by Contractor

Type of issue	Contractor*						Total instances
	B	A	C	M	S	Others	
	Number of instances						
Late start	28	11	1	3	11	29	83
Claimed more hours than worked	44	25	32	6	1	63	171
Excessive stop time (> 20% of trip time)	20	32	13	6	13	94	178
Vehicle not available for operations	6	6			2	3	17
GPS not working	33	17	3	29	22	123	227
Call-out time not documented	97	43	37	46	14	210	447
Inaccurate departure and return time	56	27	31	7	20	72	213
Route KM or route # not documented	34	2	37			90	163
Route not completed		6			2	11	19
Salt spreader not working				16		49	65
Salting records not matching GPS records				9		39	48
Total instances	318	169	154	122	85	783	1631

**Each contractor is assigned a letter of the alphabet to keep their name confidential. The letter does not represent the initials of a contractor's name.*

Does not include contractors where GPS was not working

B. Contract Management Needs Improving

ii. Contracts Need to be Clearer

The contracts need to be clearer regarding:

1. responsibilities and timelines for reporting and resolving GPS issues
2. reasonable stop and break times, and
3. liquidated damages.

B. Contract Management Needs Improving

iii. Verification of Work and Monitoring of Contracts

Monitoring and management of contracts needs to be improved:

1. Use GPS information and verify contractor's work before payment
2. Use standardized processes to monitor contracts and apply liquidated damages, and
3. Manage and apply the express terms of the contract, including the standby payment provisions.

B. Contract Management Needs Improving

iii. Verification of Work and Monitoring of Contracts

Standby Charges (\$24M estimated financial impact over 5 years)

Express Terms of the Contract	Business Practice Implemented by Division
Standby charges and working time are not to be paid for the <u>same hours</u>	Standby charges not adjusted when working

Legal Opinion: *"The express terms of the Contract Documents reviewed suggest that the definitions of Standby Time and Working Time are mutually exclusive. Standby Time is not to be paid during such time as equipment or personnel are engaged in Working Time, and Standby Time, including any Working Time, is not to exceed 10 hours for any Working Day. Therefore, a vendor is not entitled to payment for Standby Time, during such time as their equipment or personnel are being paid for Working Time."*

C. Key Performance Indicators (KPIs) not Tracked

Service levels (outcomes) are not being measured to know whether they are met or not

1. Current KPIs measure activities but not service level outcomes
2. Legal claims and 311 service requests are not analyzed for contractor performance issues
3. Not leveraging GPS reporting functionality to measure route completion and service levels

Why is this important?

It is important to measure contractor performance and service level outcomes using KPIs, to ensure that any issues are addressed in a timely manner, and **to achieve service levels which result in a safe and reliable transportation network.**

Opportunities Going Forward

1. Fully use GPS technology and modernize processes to improve efficiency and contractor performance and accountability.
 - Use GPS technology to monitor and verify contractor work, verify calibration for salt spreaders, and measure route completion and service levels.
2. Improve contract management practices, including training and standardizing policies and procedures for staff.
 - Improve the contract design and set-up for the next contract cycle.
3. Develop and measure Key Performance Indicators for service level outcomes.

Next Contract Cycle – Strong Contract Management is Key

For the next contract cycle, it is important for the Division to:

1. Work together with Legal services to perform a **detailed review of the RFQ and contract documents** for internal consistency, consistent use of terminology and defined terms, and simplification for implementation;
2. Ensure that the **set-up of the payment system** for the next contract cycle is **consistent with the terms of the contract**, and is made simpler for staff to administer; and
3. **Manage to the express terms of the contract.**

This **audit report and 22 recommendations** provides a road map for management in making the necessary changes for the upcoming winter season, as well as the next contract cycle.

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Audit of Winter Road Maintenance Program – Presentation by Transportation Services Division

Barbara Gray, General Manager,
Transportation Services Division

Vincent Sferazza, Director,
Transportation Operations & Maintenance

Transportation Services Division - Comments and Reaction

1. Support and alignment on recommendations
2. Collaborative process with a commitment to continuous improvement and integration of the 22 recommendations into our business practices going forward
3. Transportation Services historically applied the same standard business practice during the contract, but this practice differed from the contract wording. Practices will be revised to ensure delivery of winter services are consistent with the contract terms and deliver best value
4. Although winter maintenance program and funds were spent as budgeted and planned, future practices must be administered differently. The City is exploring options and best practices for a rate structure that serves our operational needs and delivers best value

Action Already Taken in Transportation Services

Recent re-organization was grounded on a vision of continuous improvement to service delivery, including winter services.

Transformations include:

- **Single Operations and Maintenance Section** to lead and manage winter maintenance, quickly establishing harmonized business processes and standardized operating procedures across the city to improve consistency and better align resources
- **Contract Development Delivery & Inspections** – two managers (area 1 and 2) specifically focused on contract development, delivery and oversight. Assigned to oversee the winter maintenance depots that provide service on Expressways and Arterial Roads
- **Road Operations** - two managers (area 1 and 2) assigned to oversee the winter maintenance depots that provide service on Local Roads and Sidewalks
- **Centralized Business Performance Unit** to provide oversight, monitor and measure how the Division conducts its business, including internal and contracted staff responsibilities

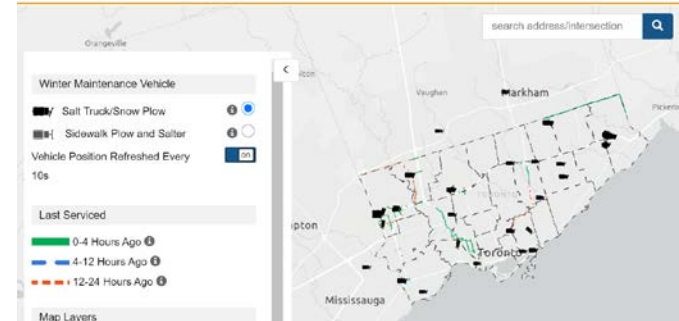
Key Recommendations – Transportation Services Response

GPS Technology

- In the current contracts (2015), GPS offered limited functionality and was intended to:
 - Assist the City in defense of claims related to winter maintenance
 - Provide data to support the PlowTO website
- GPS provider is an enterprise corporate vendor
 - Since 2015, the initial vendor has merged with larger industry suppliers resulting in improved platforms and enhanced capabilities for GPS use in contract/payment management
- Transportation Services, with Technology Services, Fleet Services and the vendor will leverage the enhanced GPS capabilities to improve both current practices and future winter contracts consistent with AG recommendations

PlowTO Map

Track real-time locations of plows, sidewalk plows and salt trucks and identify which roads have been service crews.



Key Recommendations – Transportation Services Response

Contract Management, Accountability and Measurement

- Current Winter Maintenance contract too reliant on manual reports and checks
- Leverage GPS technology solutions to provide real-time objective data to replace contractor run sheets and current invoice payments procedures
- Existing 47 winter maintenance contracts, previously issued and administered under former Divisional four district organizational model, dissuade harmonized policies and business practices
- Single Operations Section working with the Business Performance Unit to promote and implement a balanced approach between operations and contract management:
 - ✓ Standardized Operating Procedures manuals and contract management training for staff to oversee winter maintenance contracts
 - ✓ KPIs established for contract management
 - ✓ Compliance review to ensure strong management practices

Key Recommendations – Transportation Services Response

Procurement of New Winter Maintenance Contracts

- Current 47 Winter Maintenance contracts set to expire April 2022.

Objectives for New Procurement:

- Review of existing format & terms
- Review service delivery
- Incorporate Auditor General's recommendations

Procurement team established comprised of key people from:

- Transportation Services
- Purchasing – Category Management
- Legal
- External consultant