

**Presentation to the
TTC Audit and Risk Management Committee
May 29, 2017**

**Review of Toronto Transit Commission
Procurement Policies and Practices:**

**Improving Materials Management and
Purchasing Policies Can Potentially Result
in Significant Savings**

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**Auditor General's Office
Integrity, Excellence and Innovation**

Background – Staffing and Budget



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Purchasing & Sales
(P&S)

29

\$2.7 M

Materials
Management(MM)

184

\$16.8 M

- ▶ P&S procures just over \$300M per year for TTC's day-to-day operations, excluding bulk fuel purchases

Audit Objectives and Scope

- ▶ Objective: To assess whether TTC's procurement policies, procedures and practices are fair, transparent, and cost-effective achieving the best overall value
- ▶ Audit included an in-depth review of P&S and extended into areas of Materials Management
- ▶ Periods of data analyzed:
 - ▶ Reviewed purchase data and files between January 2015 and June 2016
 - ▶ Reviewed other operational data between January 2016 and March 2017, including Inventory Requests workflow, vehicles out of service, inventory transfer requests, and emergency buys

Audit Findings

A – Improving Vehicle Parts Management Can Potentially Result In Significant Cost Savings

B – Addressing Chronic Parts Shortage Issue To Improve Service Level and Reduce Future Costs

C – Current Procurement Policies and Processes Need A Full Review

A – Improving Vehicle Parts Management Can Potentially Result In Significant Cost Savings

Four savings opportunities

	#1	#2	#3	#4
	New Bus Warranty	Alternate Sourcing	Aftermarket Warranty	Core Retrieval and Utilization
How ==>	Maximize claim rate	Seek alternate source	Maximize claim rate by improving maintenance diagnostics and practices	Improve core recovery and tracking
Status ==>	Significant progress; not yet completed	Started but as an add-on task only	Sporadically on a handful of parts only	Core recovery needs to be expanded; tracking is inadequate
Annual Savings ==>	Approximately \$5.8 million (Actual incremental savings in 2016)*	Estimated \$2.5 to 6.5 million	Estimated \$4.0 to \$6.0 million	Estimated \$1 to \$1.5 million (8 parts alone)
AG's Audit ==>	2014 Bus Maintenance Audit	Current Audit	Current Audit	1. 2014 Bus Maintenance Audit 2. 2016 Inventory Audit 3. Current Audit

*Note: We verified new bus warranty savings for 2016. We expect that the savings will continue as long as TTC continues to follow its steady state procurement strategy.

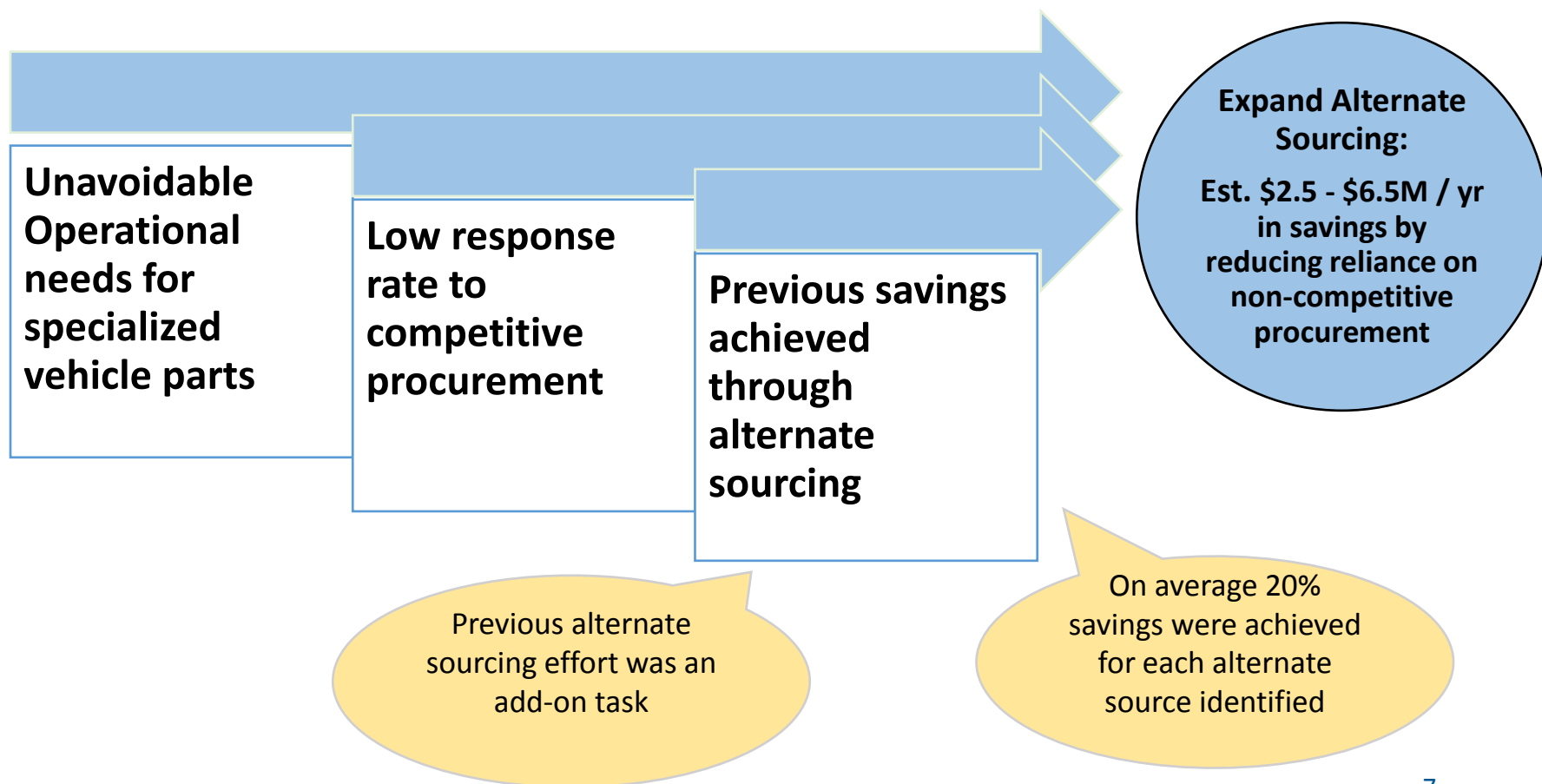
A – Improving Vehicle Parts Management Can Potentially Result In Significant Cost Savings

#1 Realized savings from improving new bus warranty

- ▶ **Realized** additional savings as a result of improving the new bus warranty process
 - ▶ 2016 Incremental Savings: \$5.8M
- ▶ These savings are expected to recur as long as TTC continues its steady state new bus procurement strategy
- ▶ As a result of the improved warranty process, bus manufacturers provided proactive repairs to many buses; the value of this work totaled approximately \$8M in 2016

A – Improving Vehicle Parts Management Can Potentially Result In Significant Cost Savings

#2 Expand alternate sourcing



A – Improving Vehicle Parts Management Can Potentially Result In Significant Cost Savings

#3 Aftermarket parts warranty

TTC has a standard one year warranty clause for aftermarket parts; warranties for certain parts are longer than one year



TTC does not systematically pursue aftermarket parts warranty (except for a handful of parts)

No one department has assumed the responsibility of claiming aftermarket parts warranty



By foregoing warranty claims, TTC misses an opportunity to realize significant annual cost savings (potentially \$4M to \$6M per year)

A – Improving Vehicle Parts Management Can Potentially Result In Significant Cost Savings

#3 Aftermarket parts warranty

Vehicle Aftermarket Parts	Warranty Period
Engines (Most)	2-yr warranty
Circulating Pumps	4-yr Warranty
Air Dryers (both New and Remanufactured)	3-yr Warranty
Led Lights	Life-time Warranty

We observed different warranty periods for different vehicle parts during our audit

TTC pursued aftermarket warranties for a handful of parts and resulted in sizable savings

Circulating pump - \$289k for 2016/2016
Bus Engine - \$633k in 2016
Bus Led lights - \$37k for 2016

Luminator destination sign
Bus start and accessories battery
Air Dryer
Shocks
Multiplex Bus Power Control
Turbocharger
Steering Gear
Alternator
Radiator

TTC does not take advantage of a list of high usage parts with aftermarket warranty from the manufacturers

Approximately 1,600 work orders from April 2015 to 2017 were related to parts failure within warranty periods; each part costs \$50 or more

Parts do fail within warranty periods due to intensity of duty cycles and maintenance practices

A – Improving Vehicle Parts Management Can Potentially Result In Significant Cost Savings

#4 Core retrieval and utilization

A Core is a defective part that can be rebuilt to new standards



A core accounts for 25% to 74 % of the cost of a part

At TTC, it can be used for

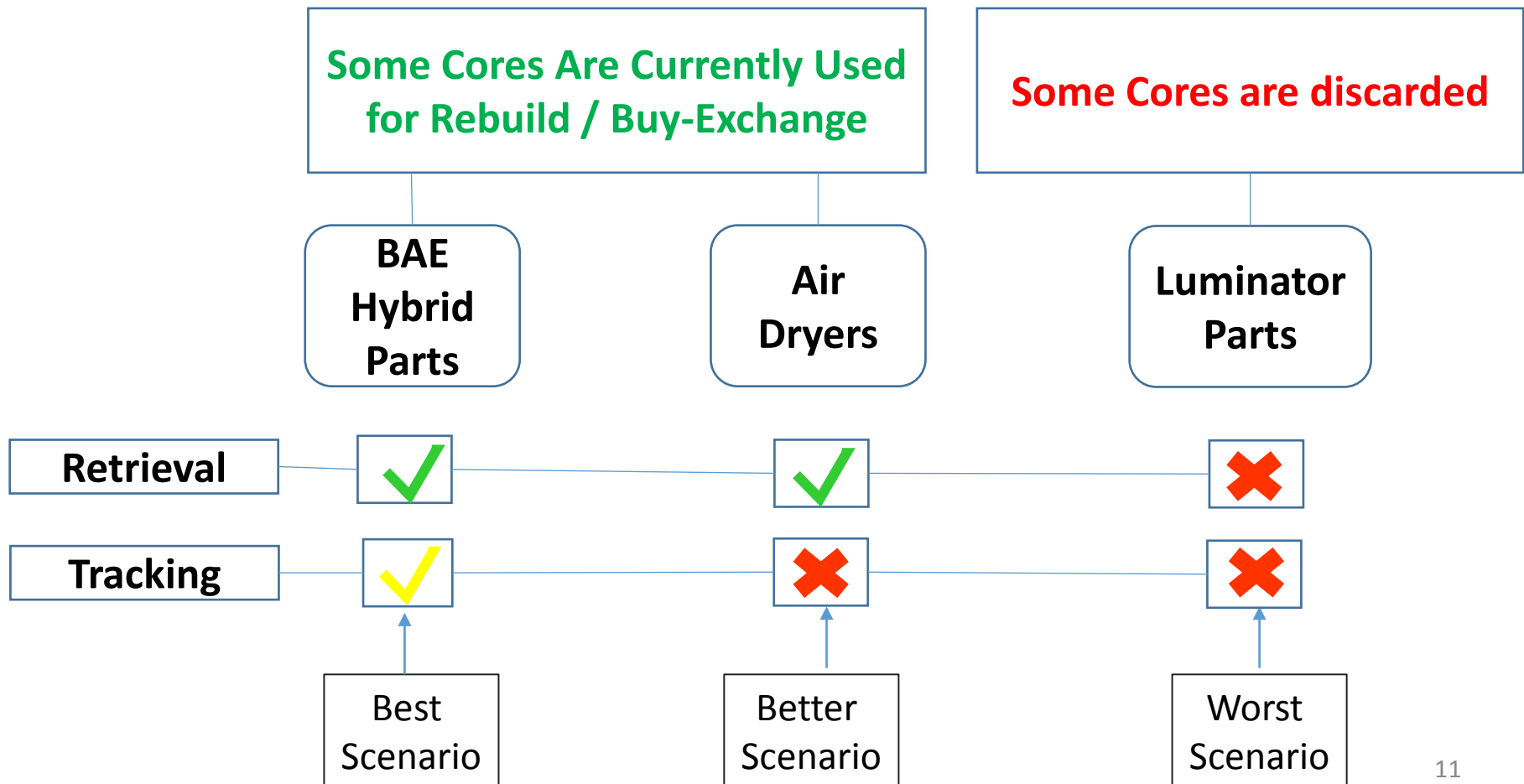
**Internal or External
Rebuild Program**

**Buy-Exchange to waive
the core charge**

A – Improving Vehicle Parts Management Can Potentially Result In Significant Cost Savings

#4 Core retrieval and utilization

Existing Core Management Process at TTC for Different Vehicle Parts



A – Improving Vehicle Parts Management Can Potentially Result In Significant Cost Savings

#4 Core retrieval and utilization

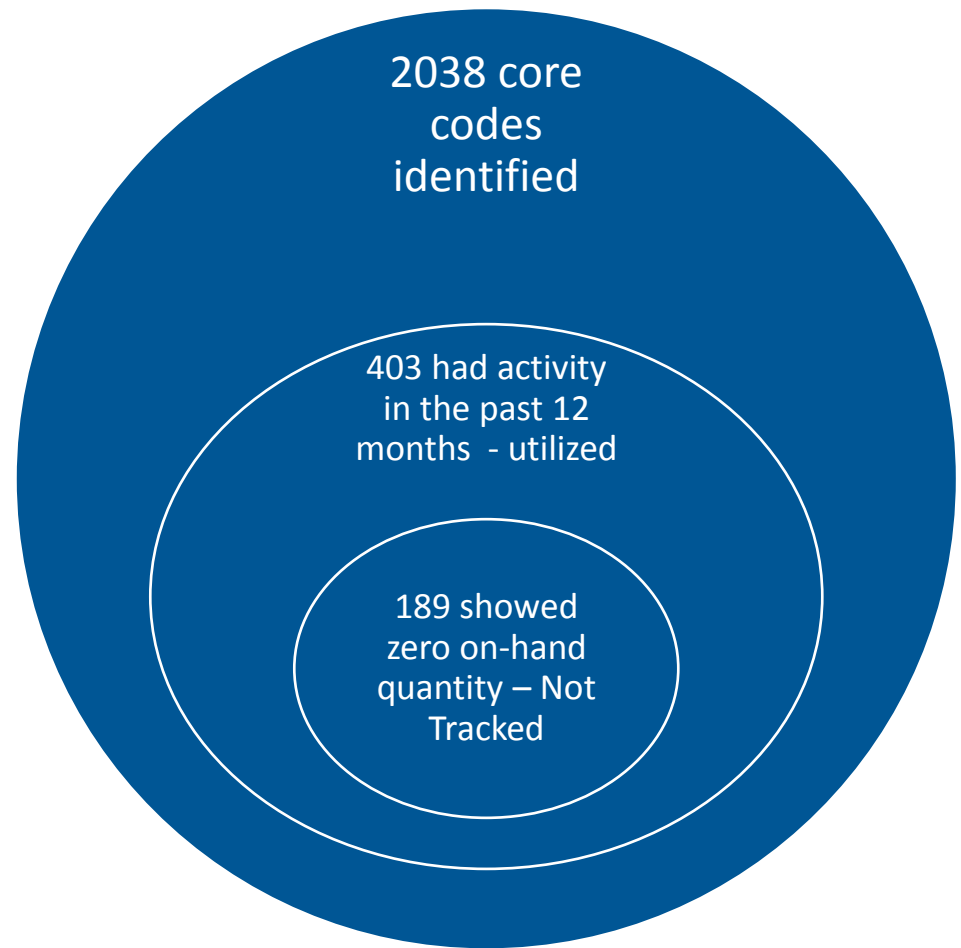
When there is no adequate controls on retrieval or tracking of cores, TTC risks losing cores. For instance, some of the Air Dryer cores were sitting outside exposed to harsh weather conditions for a year



A – Improving Vehicle Parts Management Can Potentially Result In Significant Cost Savings

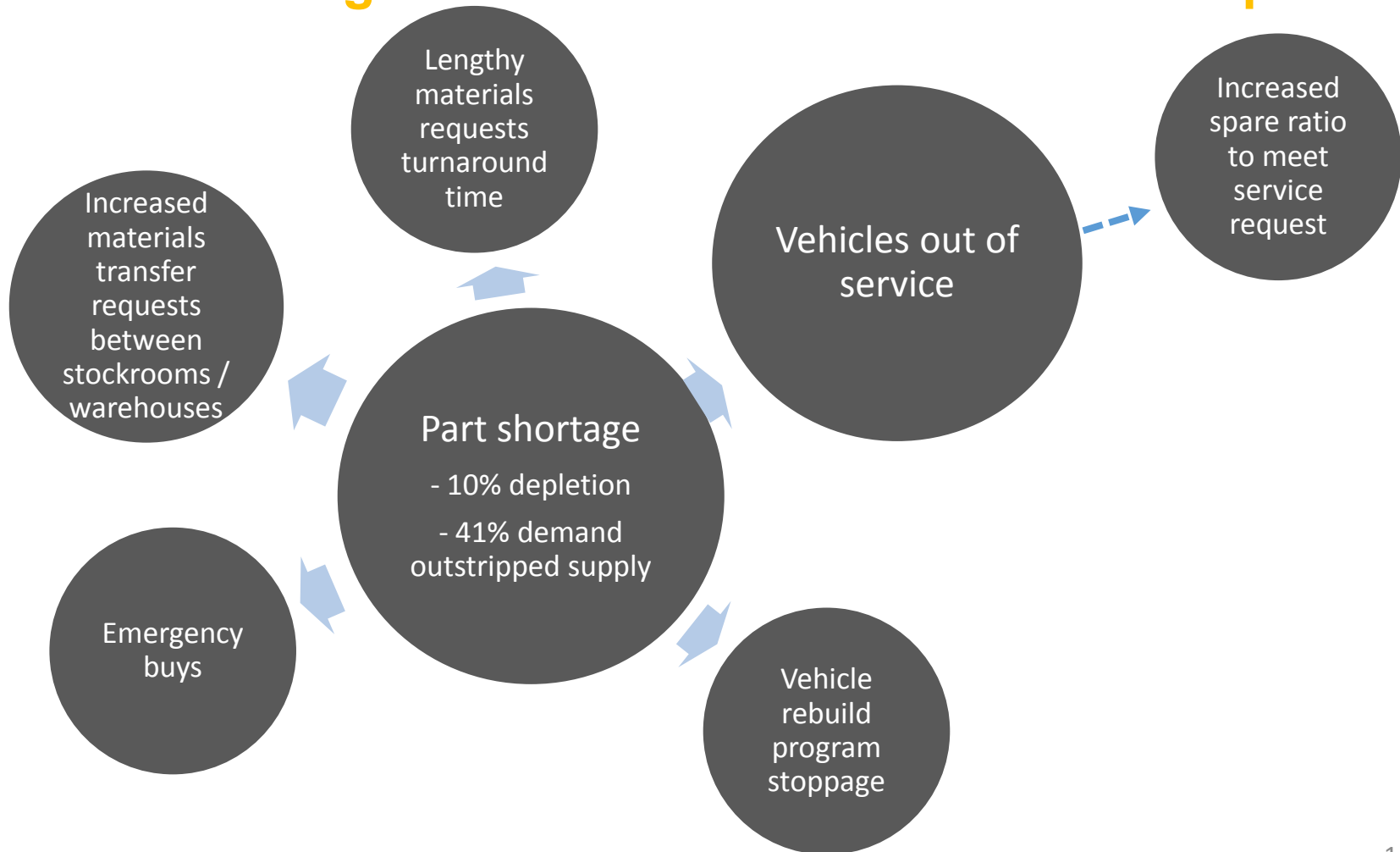
#4 Core retrieval and utilization

- ▶ Potential annual savings from analyzing 8 parts: \$1M to \$1.5M
- ▶ The potential annual savings by Improving the controls over the recovery and tracking of cores could be significant
- ▶ As TTC begins to measure savings from utilizing cores, it may identify more cores worth retrieving and tracking



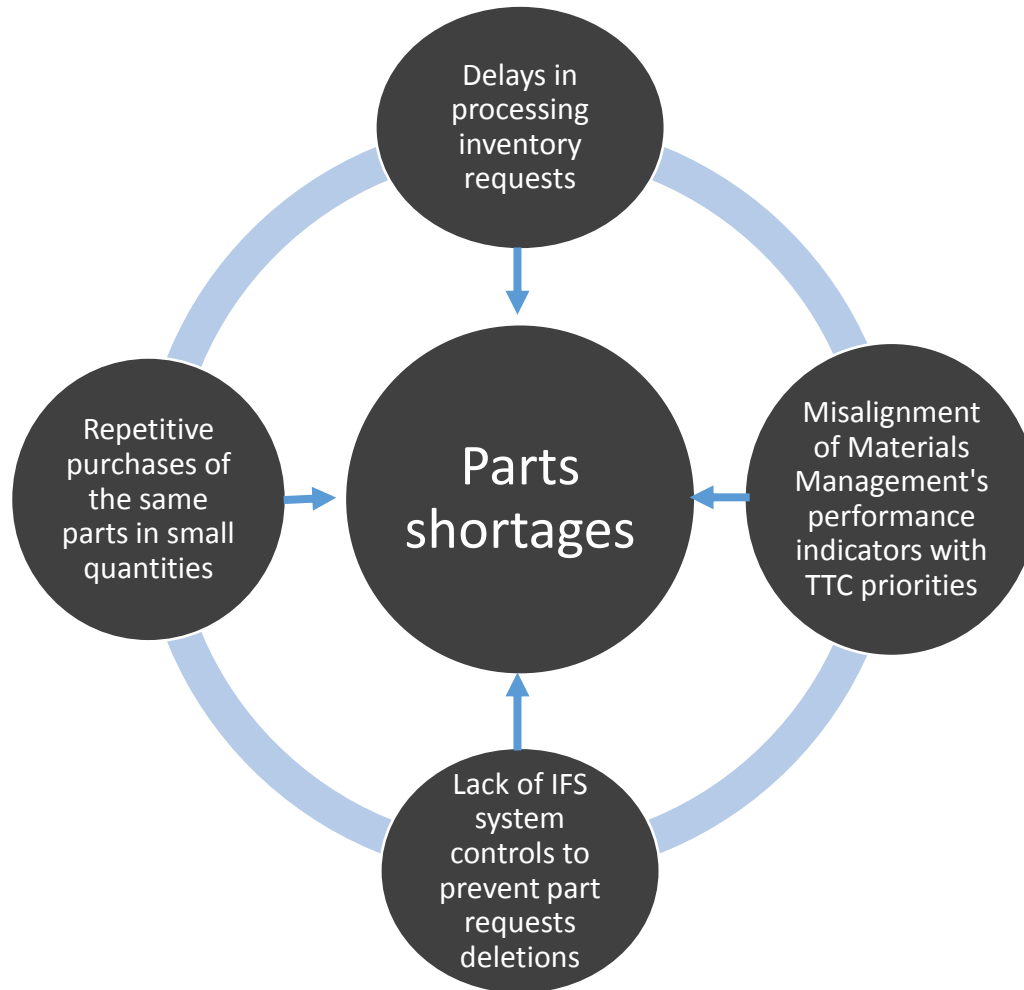
B – Addressing Chronic Parts Shortage Issue Can Improve Service Level and Reduce Future Costs

Parts shortages and their direct and indirect impacts



B – Addressing Chronic Parts Shortage Issue Can Improve Service Level and Reduce Future Costs

Practices and factors that might have contributed to parts shortages



B – Addressing Chronic Parts Shortage Issue Can Improve Service Level and Reduce Future Costs

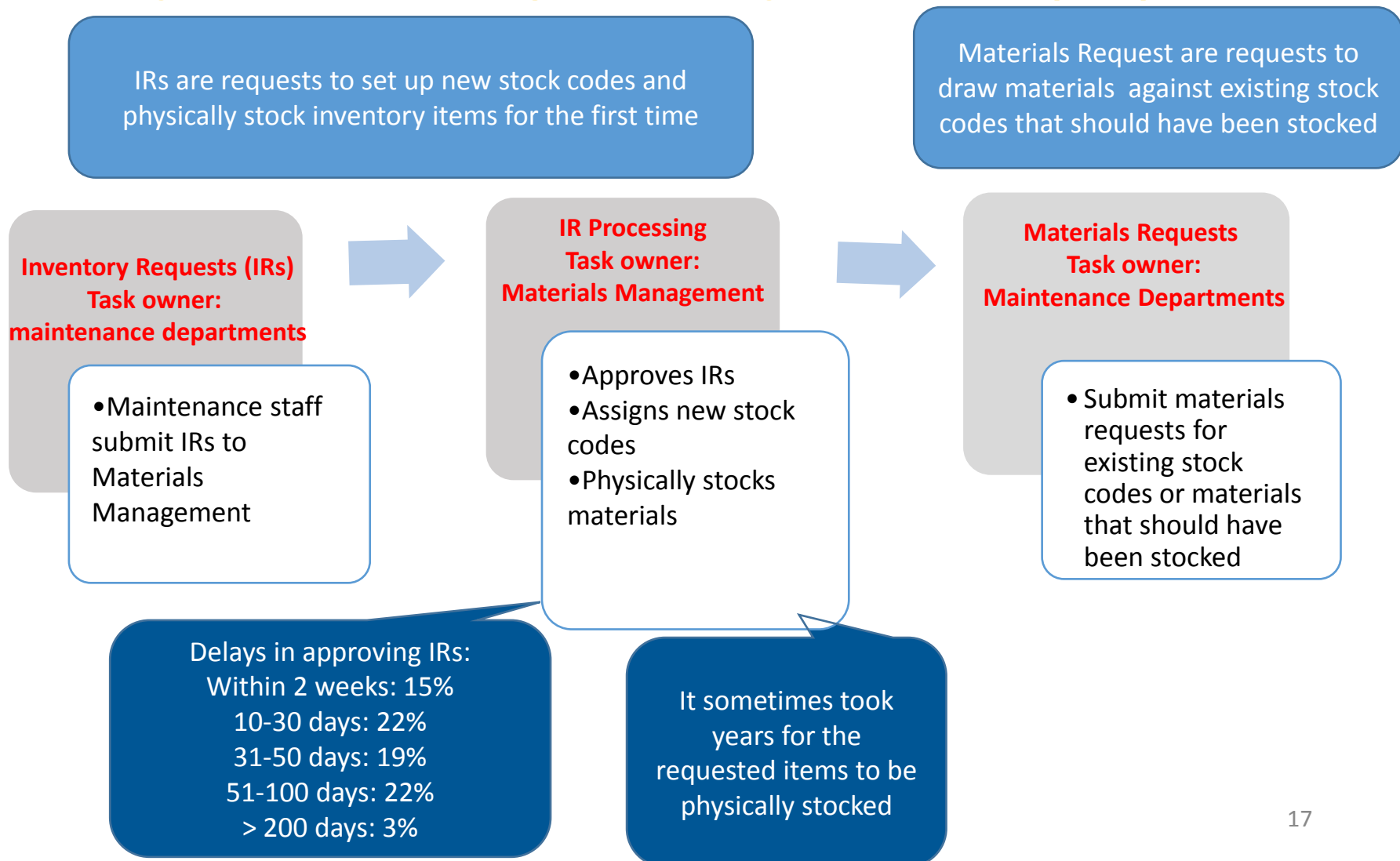
Idle vehicles waiting for parts

From July to December 2016, on average 34 vehicles or \$68 million worth of assets were out of service daily due to parts shortages

	Number of Vehicles
Streetcars	7.7
Subway	0.7 train (4 subway cars)
Buses	25.7
Total	34.1

B – Addressing Chronic Parts Shortage Issue Can Improve Service Level and Reduce Future Costs

Delays in processing Inventory Requests (IRs)



B – Addressing Chronic Parts Shortage Issue Can Improve Service Level and Reduce Future Costs

Lengthy materials requests turnaround time

What customers care:
materials requests
turnaround time

Turnaround Time	Duncan Shop	Greenwood Shop
Same day or next day	54%	68%
3-5 days	22%	10%
6-10 days	4%	2%
Over 10 days or outstanding	19%	20%

Average materials requests
Turnaround Time: 11 days

**What Materials
Management
measures and
reports:** Materials Fill
Rate

Fill Rate – the time
between a materials
request is “picklisted” to
the time of the delivery

Materials sometimes did not
get “picklisted” until days after
the requests have been
submitted by maintenance
staff

Reported fill rate: 80-90 %
(Sept to Nov 2016)

B – Addressing Chronic Parts Shortage Issue Can Improve Service Level and Reduce Future Costs

Reassess vehicle spare ratios after addressing parts shortages

- ▶ A Spare Ratio is the percentage of unused vehicles operated by a public transit operator during peak service periods

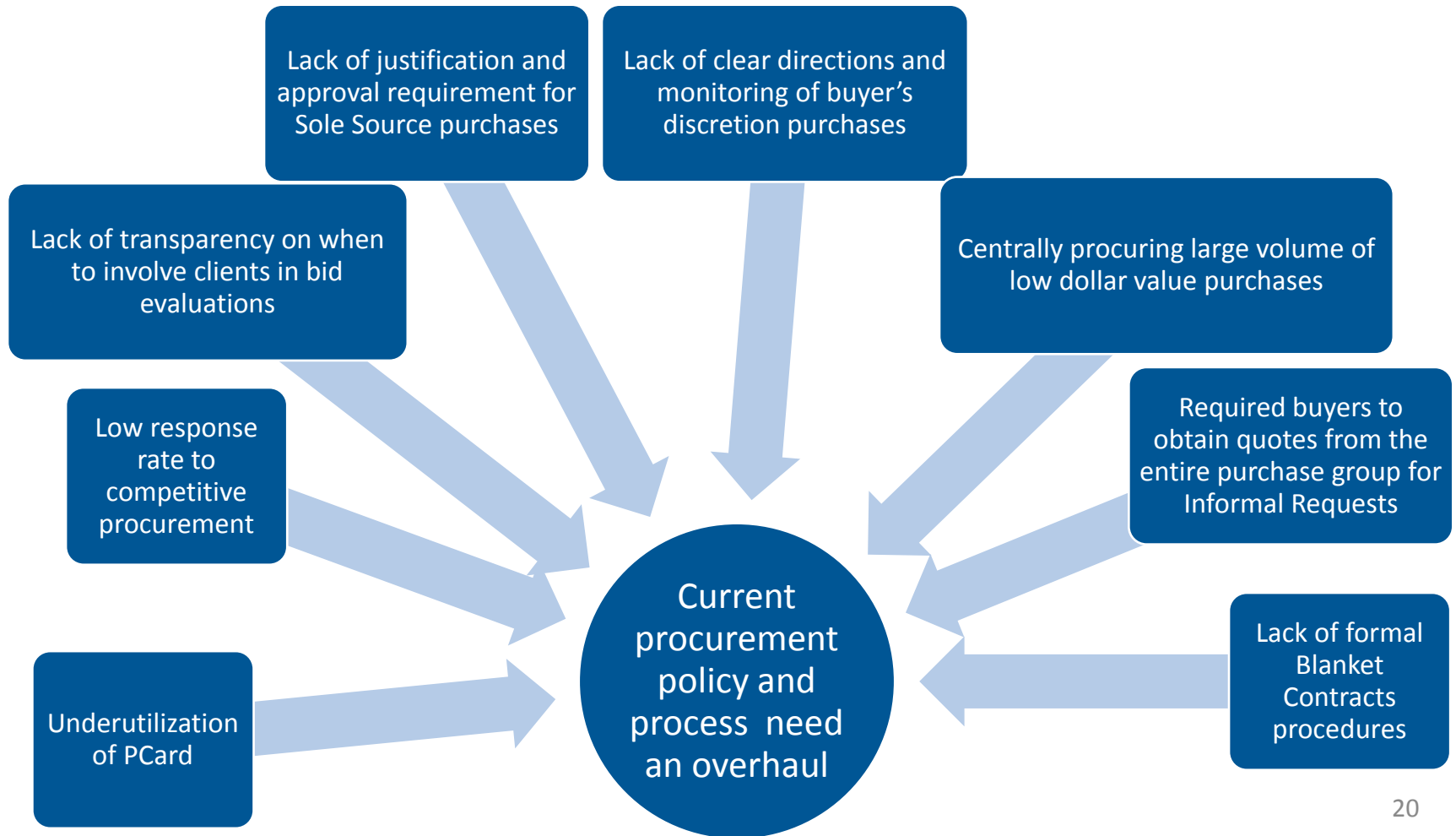
TTC's Reported Spare Ratio:

Revenue Fleets	Spare Ratios
Bus	23%
Subway	23%, incl. purchase of additional trains in preparation for TYSSE
Streetcar	about 25 % due to the age of the fleet

- ▶ Improving TTC's parts management may also help reduce the spare ratio, and thus reducing the future vehicle procurement costs

C – Current Procurement Policies and Processes Need a Full Review

Issues of TTC's procurement practices



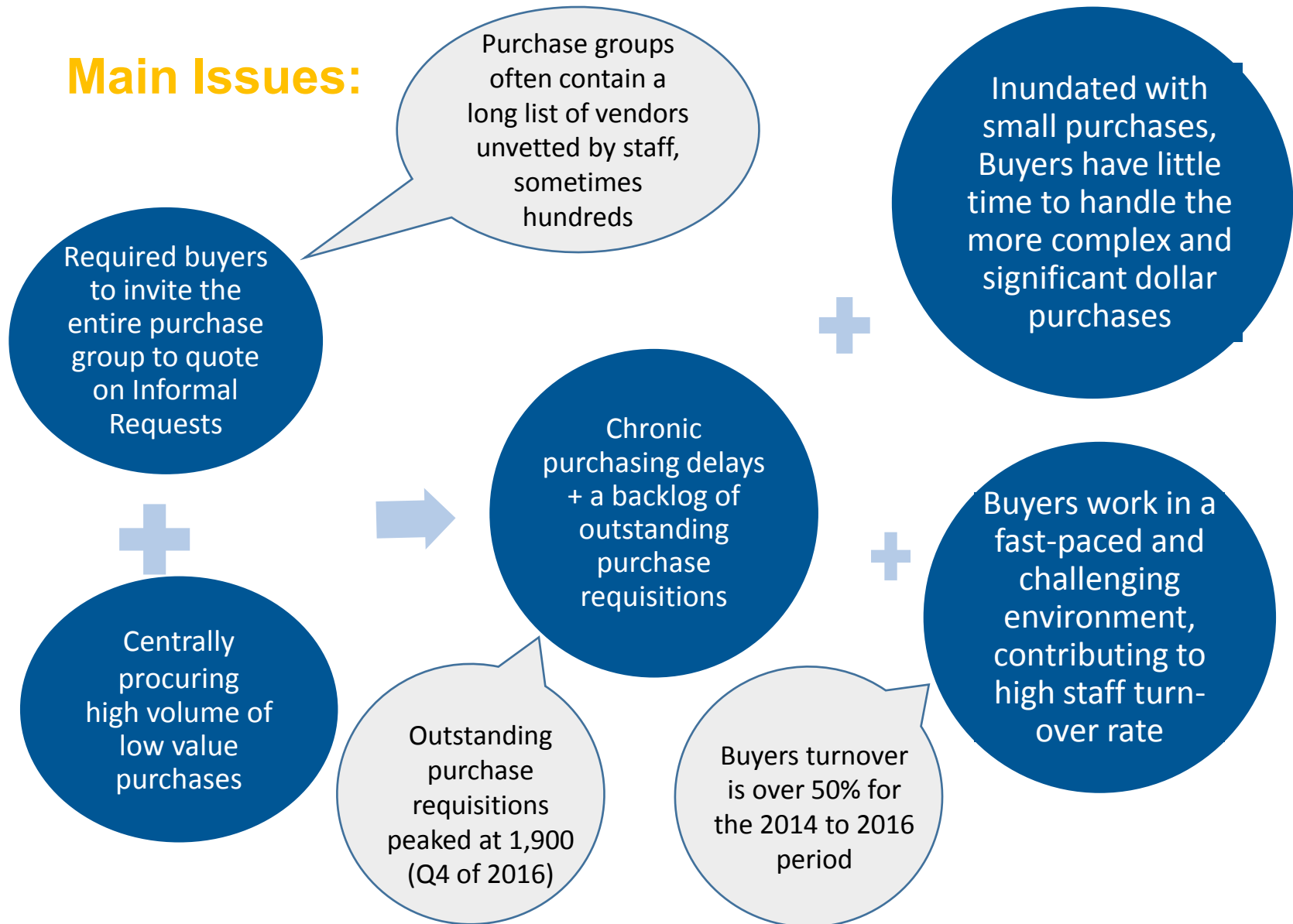
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Purchase methods and their thresholds

Dollar Value Thresholds	Procurement Method	Competitive Process (Yes or No)
\$5,000 or less	Purchase Card (PCard)	No
Currently \$10,000 or less (lowered to \$4,000 in Jan 2016; raised back to \$10,000 in November 2016)	Buyer's Discretion	No
Greater than \$10,000 and up to \$100,000	Informal Requests	Yes
\$100,000 or greater	Formal Requests	Yes
No Threshold	Sole Source Requests	No
Pre-approval based on thresholds	Single Source Requests	No

C – Current Procurement Policies and Processes Need a Full Review

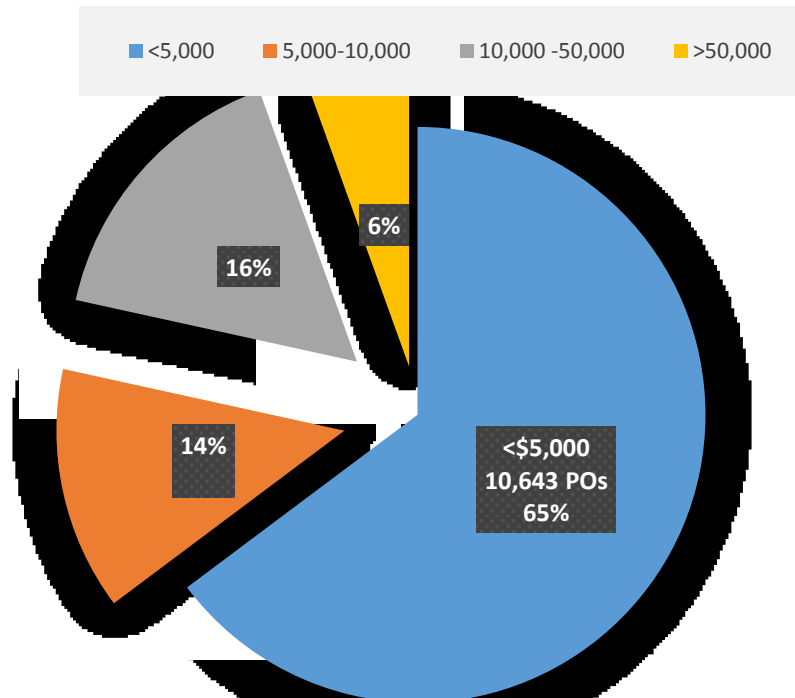
Main Issues:



C – Current Procurement Policies and Processes Need a Full Review

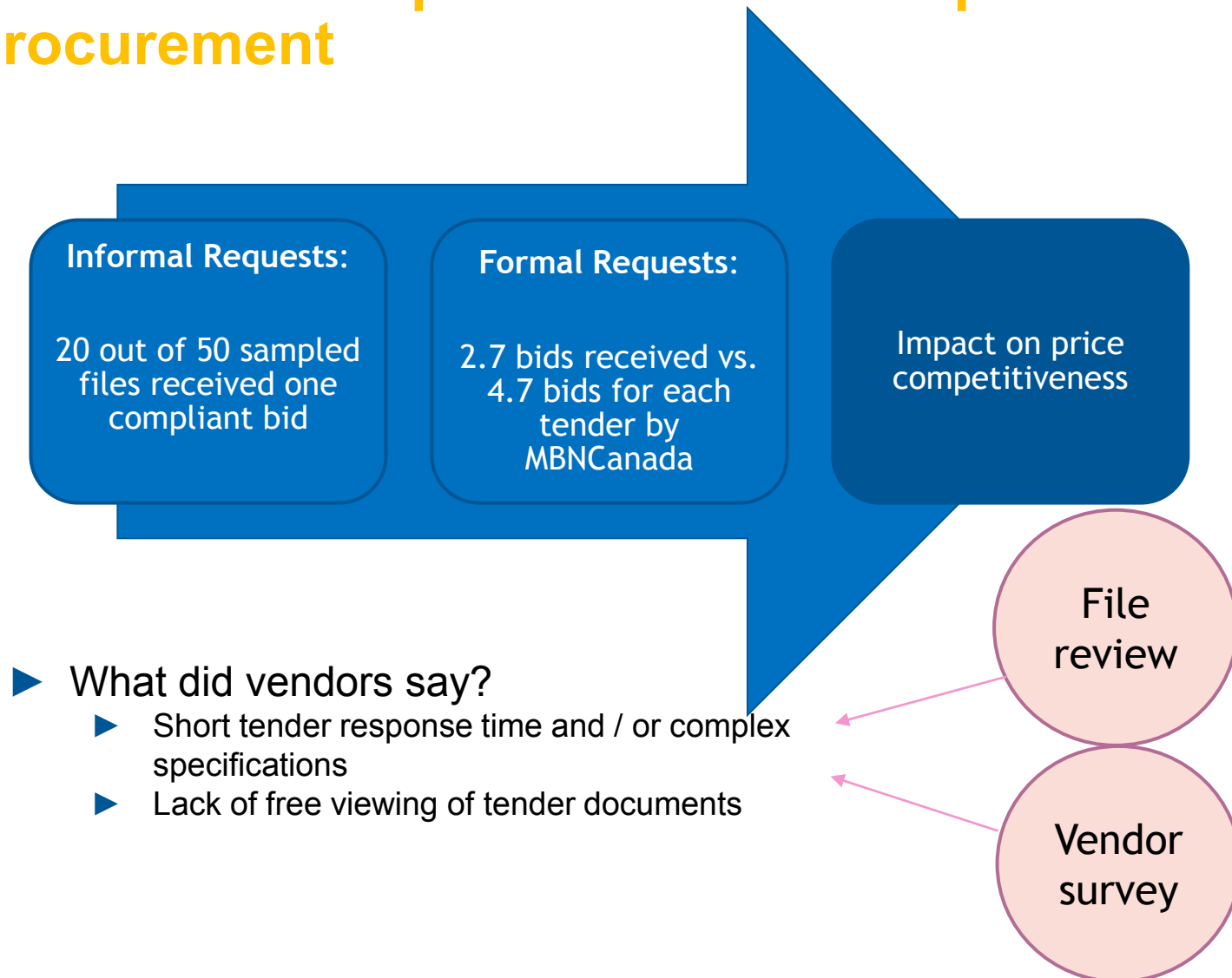
Centrally procuring high volume of low value purchases

**Manual Orders Break-down by Purchase Value
January 2015 to June 2016**



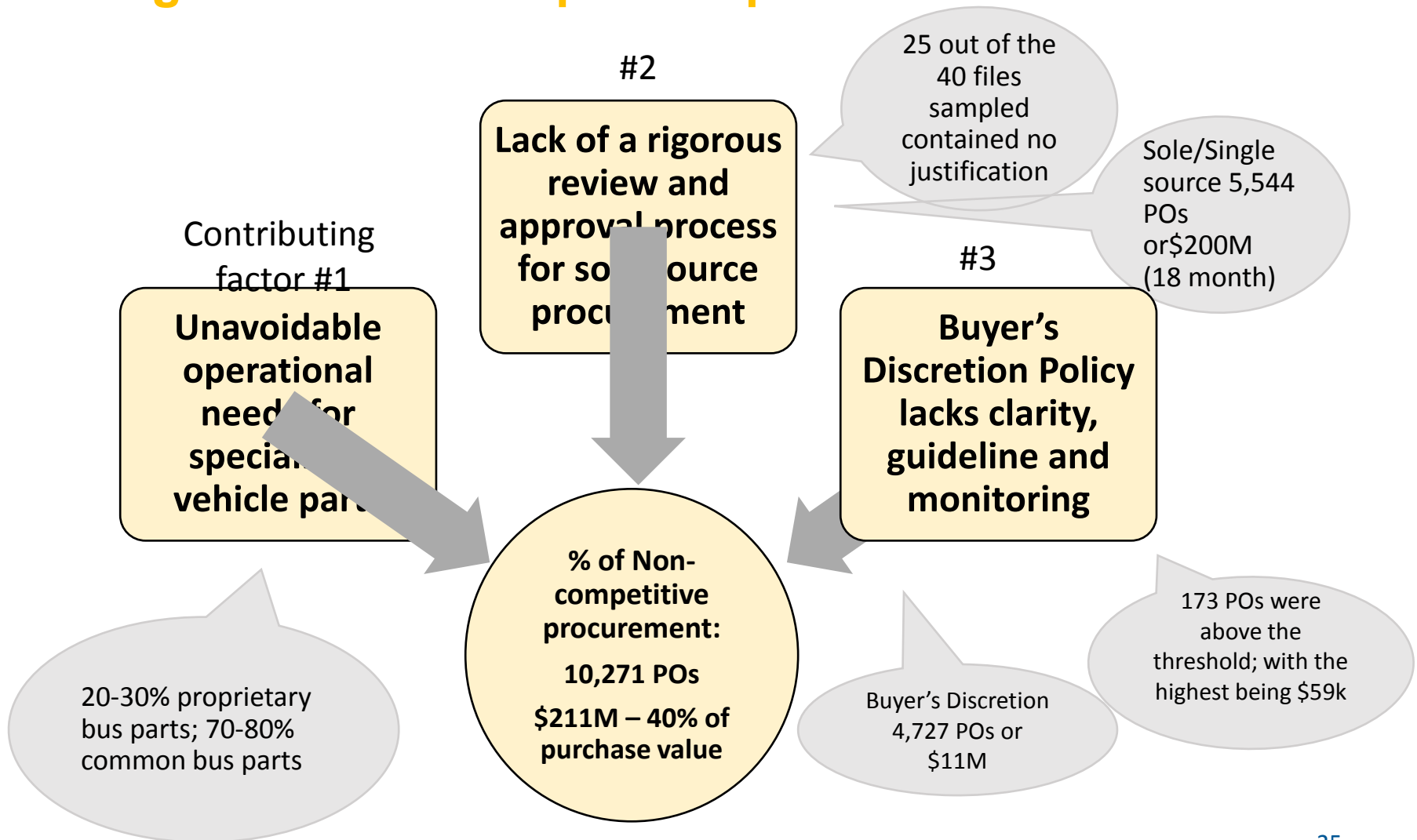
C – Current Procurement Policies and Processes Need a Full Review

Low vendor response rate for competitive procurement



C – Current Procurement Policies and Processes Need a Full Review

Large % of non-competitive procurement



C – Current Procurement Policies and Processes Need a Full Review

Issues of Blanket Contracts

Lacks a
comprehensive
Blanket Contract
policy

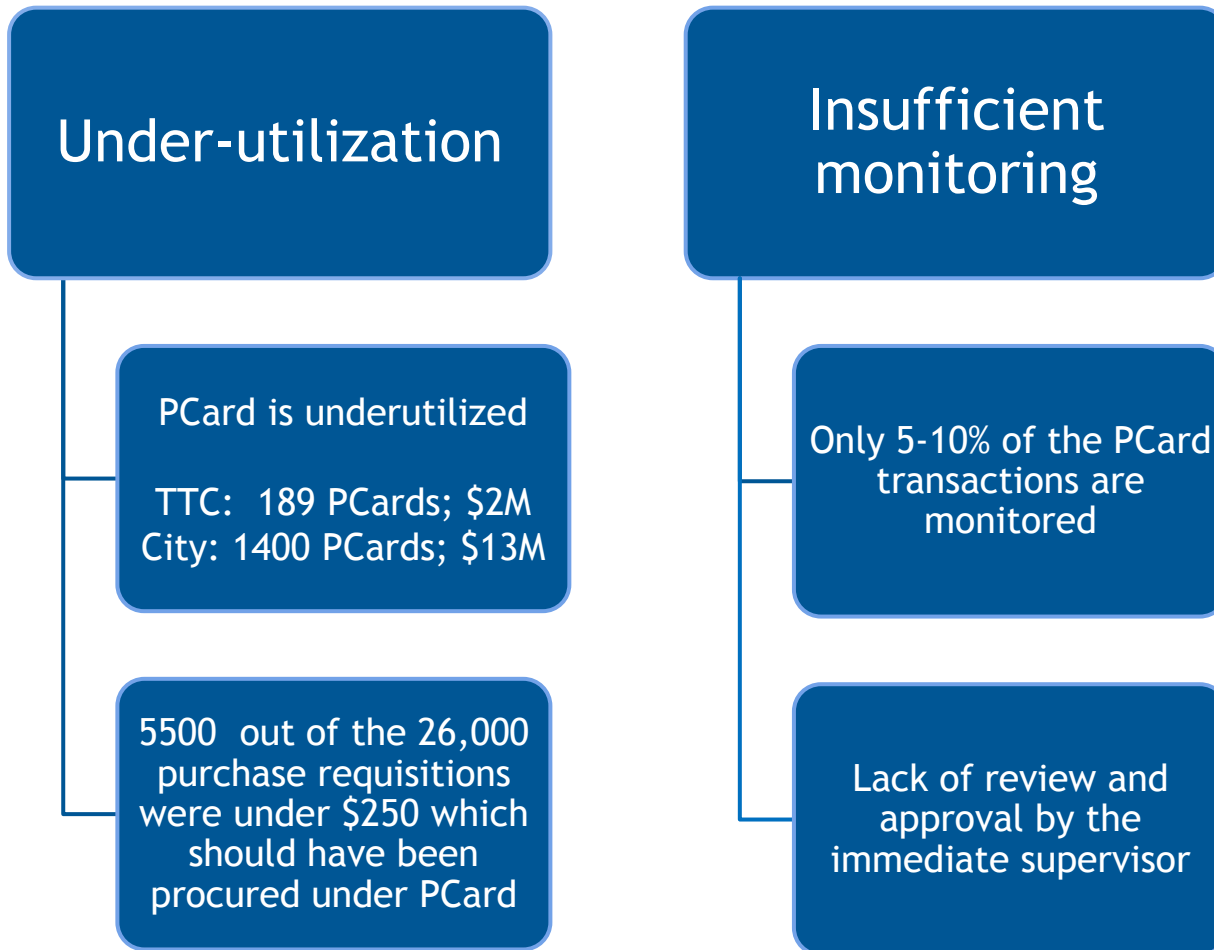
- A considerable number of existing blanket contracts have extremely low dollar value or low spending
- Some purchases under Blanket Contracts are more expensive than purchasing the same product through individual POs

Needs to expand
existing Blanket
Contracts

- Issued individual POs to 229 vendors totalling \$174 million from Jan 2015 to Jun 2016 – all outside of any price agreement. Each vendor supplied TTC over \$50,000 in goods/services
- TTC could potentially save \$0.5 to \$2.5 million per year from volume discount

C – Current Procurement Policies and Processes Need a Full Review

Issues of Purchase Card (PCard)



A Summary of Potential Cost Savings

Initiatives	Potential Annual Savings (in millions)	
	Low	High
Expanding Alternate Sourcing for Parts	\$2.5	\$6.5
Pursuing Aftermarket Parts Warranty	\$4.0	\$6.0
Expanding Blanket Contracts	\$0.5	\$2.5
Subtotal	\$7.0	\$15.0
Improving Retrieval and Tracking of Cores (Cores are defective vehicle parts that can be rebuilt or returned to suppliers to waive core charges)	\$1 to \$1.5 based on an assessment of 8 types of cores; total savings from over 2,000 existing core codes could potentially be in the millions	

Thank you.