Form Revised: February 2005

TORONTO TRANSIT COMMISSION
REPORT NO.

MEETING DATE: July 14, 2010

SUBJECT: PLATFORM EDGE DOORS BUSINESS CASE

ACTION ITEM

RECOMMENDATION

It is recommended that the Commission approve the recommendations made in the Platform Edge Doors (PEDs) Business Case presentation.

FUNDING

The project for installing the PEDs on the existing system is included as a below the line item as outlined on pages 1589 to 1592 in the 2010-2014 Capital Program. While the capital program was approved by City Council on December 8, 2009, no approval was received to proceed with this project. The project will be considered in the 2011-2015 Capital Program budget cycle for inclusion above the line pending identification of a funding source to address this project.

BACKGROUND

In September 2009, a feasibility study for the installation of PEDs was conducted.

The study recommended the use of partially segregated full height platform edge doors. Currently, a constructability analysis is on-going to further investigate site conditions, refine cost estimates, and develop the construction strategy.

At its meeting of March 24, 2010, the Commission received a report on subway suicide prevention, identifying that the TTC will continue to work with the Centre for Addiction and Mental Health on developing best practices for suicide prevention and the treatment of employees who have experienced emotional trauma caused by a suicide, continue to investigate the installation of PEDs, and include appropriate funding for PEDs in the 2011-2015 Capital Budget submission.

DISCUSSION

In May 2010, SYSTRA Group (an affiliated company of Paris Metro) was retained to conduct a business case study for the installation of PEDS at TTC subway stations.

A summary and the recommendations of the business case study will be provided in the presentation to the Commission.

JUSTIFICATION

Approval of the recommendations in the business case will support the installation of PEDs at TTC subway stations once funding is available.

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June 22, 2010
50-89-17
1159357


YUS LINE SERVICE IMPROVEMENT STRATEGY

Platform Edge Doors Business Case

September 30, 2010

Presentation Outline

- Introduction
- Service Improvement Strategy
- Platform Edge Doors (PEDs)
- Business Case
- Reliability/Capacity Improvement
- Summary/Recommendations

Introduction

The YUS line is the most critical asset of the TTC:

- **Provides 78% trips to the Central Business District**
- **Of TTC's 1.5M riders each day, 700k use YUS**
- **Equivalent capacity of 5 DVPs**
- **Currently operating at a 10% shortfall in capacity**

Introduction

AVERAGE DAILY COMMUTES

IN MINUTES

	Commute time	Grade
Barcelona	48.4	A
Dallas	53.0	A
Milan	53.4	A
Seattle	55.5	A
Boston	55.8	A
Los Angeles	56.1	A
San Francisco	57.4	B
Chicago	61.4	B
Berlin	63.2	B
Halifax	65.0	C
Sydney	66.0	C
Madrid	66.1	C
Calgary	67.0	C
Vancouver	67.0	C
New York	68.1	C
Stockholm	70.0	C
London	74.0	D
Montreal	76.0	D
Toronto	80.0	D

SOURCE: TORONTO BOARD OF TRADE
JONATHON RIVAIT / NATIONAL POST

Toronto's commute times are a "glaring downfall" in the city's economic picture -- even worse than the notorious traffic snarls in Los Angeles, according to a new Board of Trade report.

National Post, March 30, 2010

There is no capacity left in the GTA's road and highway systems to address this challenge.

Service Improvement Strategy

Current capacity is 26 trains/hour in peak

Need to move to 35 trains/hour to meet required forecast capacity in 2030

How do we increase capacity and reliability?

- **Move more trains per hour; currently constrained by signal system headway**
- **Train capacity**
  - **More efficient use of trains interior space**
  - **Longer trains**
- **Reliability, ensuring that the line is operated at peak capacity**

NOVA's International Benchmarking *

Industry Best Practices

- **Toronto will not achieve the target level of reliability through automation alone**
- **Even with TR and ATC, Toronto needs to reduce total incidents by 75% to achieve the target reliability level of 1 peak failure per week**
- **Toronto needs to target key areas first and then evaluate every aspect of the subway in terms of reliability**

* Presented by NOVA at the June 2, 2010 Commission Meeting

Reliability is Key Improvement Area

Million Car Kilometres Between Incidents Causing a Delay > 5 Minutes to Service (2008)

0.6
0.5
0.4
0.3
0.2
0.1
0.0

TTC

Key Areas for Improvement:

- New Rolling Stock
- Modern Signalling and Train Control
- Management of trains in stations
- Platform Edge Doors

Top 7 metros: Asia, South America

Toronto #5 for Europe + North America

PLATFORM EDGE DOORS (PEDs)

Platform Screen Doors

Rosedale Station View 4 (Full Height- Partially Segregated with Grille)

sai
Strasman | Architects Inc

PEDs

PEDs are commonly being installed around the world and are primarily used to:

- **Maintain physical segregation between passengers waiting on the platform and the track.**
- **Prevent passengers from moving between the platform and the train unless the train is fully stationary in its correct position.**

General PED Benefits/ Impacts

Stakeholders	Impacts	
Public	Safety	↑
	Improved Reliability	↑
	Reduction in Noise	↑
	Air quality	↑
TTC	Operation & Maintenance	↔
	Staff stress and trauma	↑
	Perception of the TTC network	↑
	Capital costs / Residual value	↓

SYSTRA Deliverables

- Review of TTC's Constructability Study of PEDs in our current stations
- Review of TTC's cost estimates for PEDs in existing and new stations
- Business Case for the installation of PEDs

PED Business Case

The Business Case is based on an analysis of the impacts for the community considering positive and negative impacts of an investment over the economic life of the project

Two criterion were evaluated:

- Economic Net Present Value (ENPV)
- Economic Internal Rate of Return (EIRR)

PED Business Case

Major Assumptions:

- 30 year benefit
- Ridership increase 1.5% per year
- Installation for the complete TTC network over 6 years
- Capital installation cost of $9.8M per station

Summary of Net Present Value

Values in 2010 CAD **Discount rate at 8%**		• YUS + TYSSE • BD • SHEPPARD
Economic Benefits	M$	567.1
Investments	M$	-511.6
Economic Net Present Value	M$	55.5

Notes:

1. Additionally, options of installing PEDs on individual lines was examined. As expected, due to the high passenger volume on the YUS, it provided the greatest return.

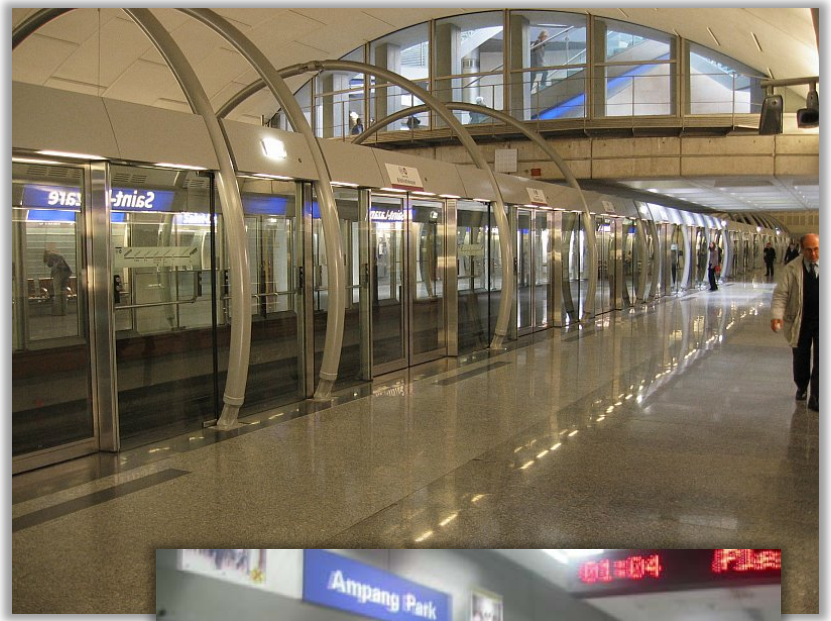
2. While not displayed, the Economic Internal Rate of Return exceeded the 8% set by the Treasury Board.

Sensitivity Analysis

A sensitivity analysis was conducted with the following parameters:

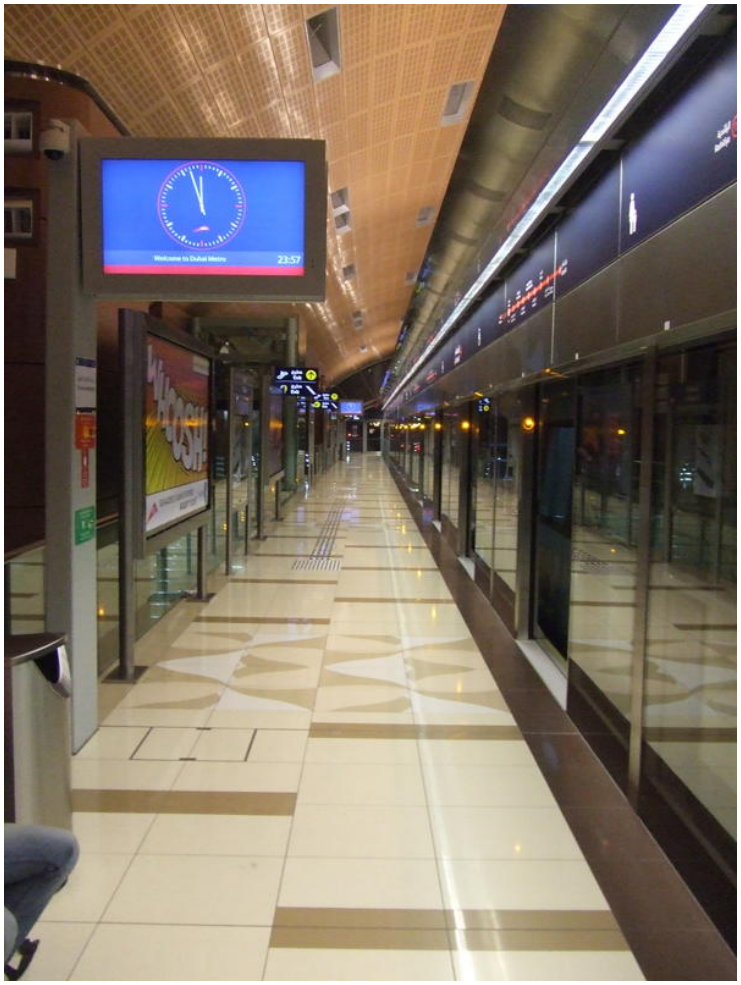
- Capital cost
- PED O&M costs
- Rate of growth of GDP/capita
- Ridership forecast
- Value of severe/fatal injuries
- Value of time

Analysis determined that NPV and EIRR remained favorable



Conclusion

- PED are necessary to achieve TTC performance objectives
- CBA gives a positive NPV and an EIRR > 8%
- PED installation a complex task, must be operation focused



SYSTRA Recommendations

- Install the PEDs which is a viable, economic and operational solution which would enhance the overall TTC operations
- Co-ordinate all new improvement as a whole to implement a global engineering approach
- Carry out detailed reconnaissance of sites
- Ensure installation plan is:
  - Performance based schedule
  - Efficient to minimize disruption to service
- Take advantage of the market situation

SYSTRA Recommendations (2)

- Mitigate risk through:
  - Managing scope creep
  - Identifying and managing interfaces
  - Tight controls on PED Supplier
  - Involving Operations Departments early in design and implementation process
  - Developing a prototype installation

Safety, Reliability and Environmental Benefits

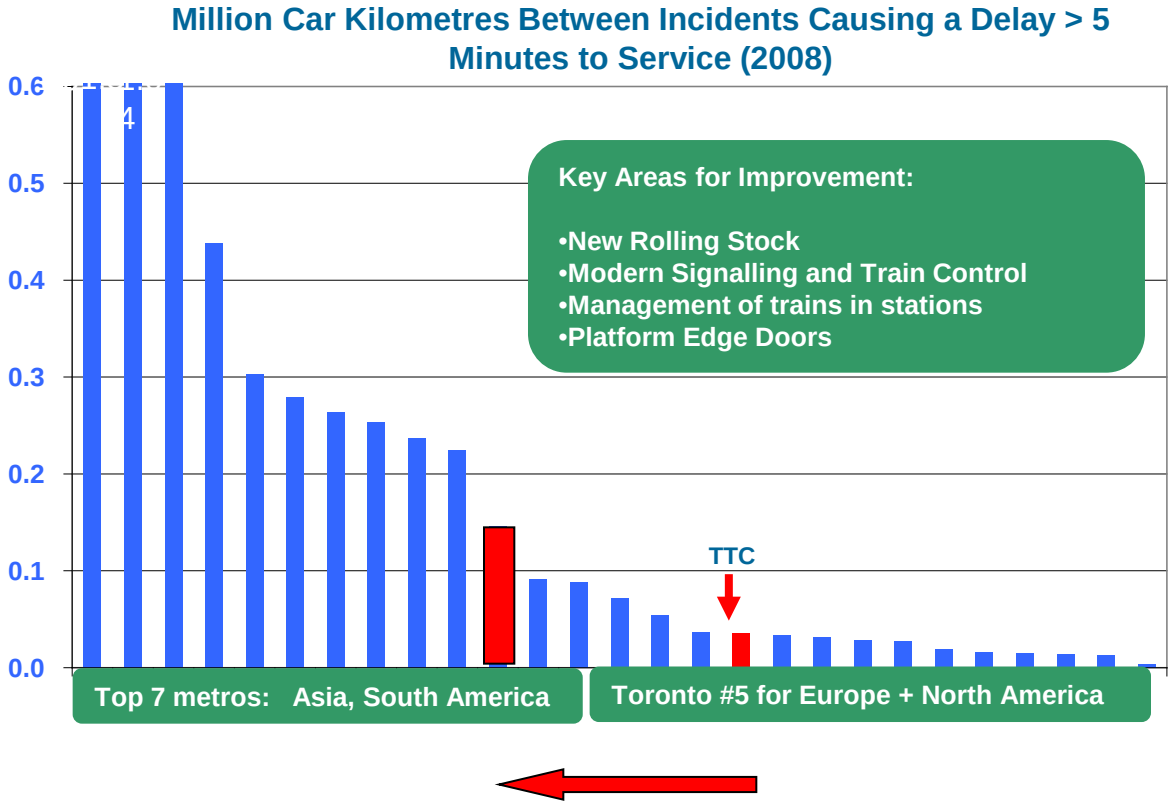
Benefit	Safety	Reliability
Intentional and unintentional train contact	✓	✓
Unauthorized at track level	✓	✓
Debris and Fires	✓	✓
Train Doors		✓

Environmental ✓

Reliability Improvement

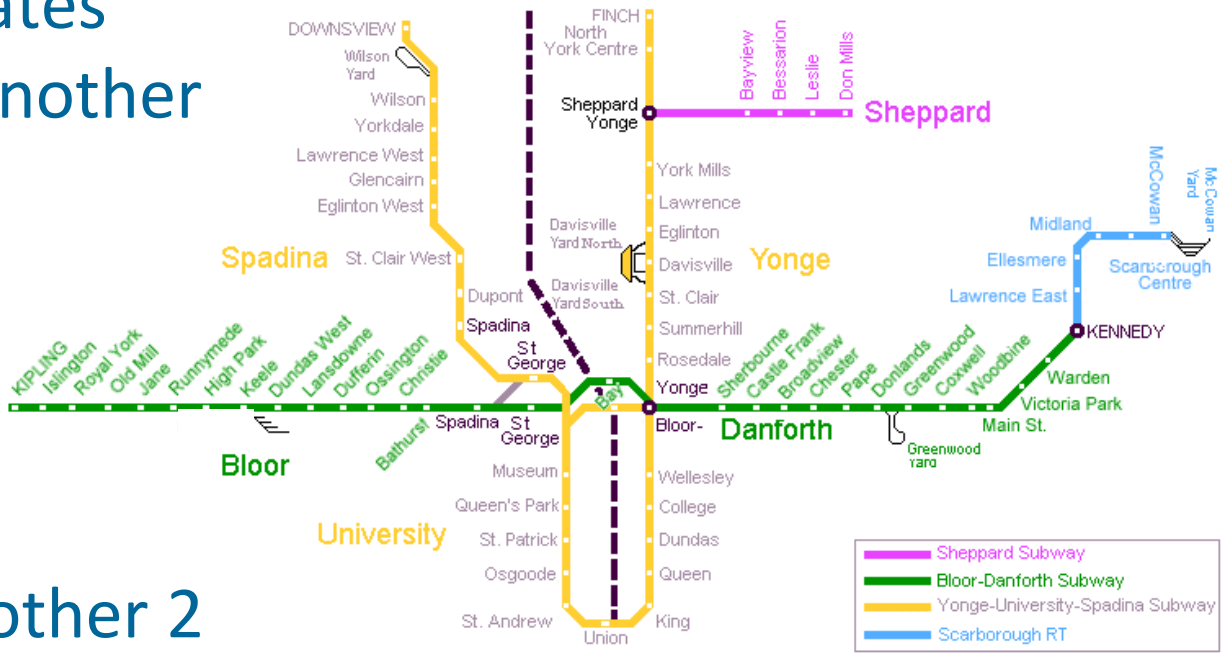
Reliability Improvement

- Reliability improved to top European or North American property and equivalent to Asian properties



Capacity Improvement

Adopting these improvements creates the equivalent of another YUS branch



This represents another 2 DVP equivalents

Summary

- Future transportation growth can only be achieved by Transit, not roads (2002 Official Plan)
- The YUS Line is the most critical Transit Asset
- The YUS Line requires TRs, ATC, PEDs and Station Managers to meet the capacity & reliability challenge
- These initiatives will provide Toronto with a World Class Subway

Recommendations

- **Direct staff to continue with planning for PED installation**
- **Staff to include PEDs in 2011 – 2015 Capital Budget**


FINCH

Questions


Hybrid Electric
YONGE
SUBWAY SHUTTLE
1637


SUBWAY SHUTTLE
Every day at least one TTC worker is assaulted. That's one too many.