

# Rapid Transit on Sheppard Avenue East

Expert Panel Meeting February 17, 2012











**TTC Ridership Profile** 

- 58% are female
- 41% have no driver's licence
- 34% have no vehicle in the household
- 66% are employed
- 32% are students
- 43% live in an apartment/condominium

# Frequency of TTC Use Toronto Residents





**Toronto Residents Daily Transit Trip Rates** 

2006 TRANSPORTATION TOMORROW SURVEY TTC SP 16-02-2012 DRG, No. 12182 JOINT PROGRAM IN TRANSPORTATION



# **Importance of Transit to Cities**

- increase City's competitive (World Bank, OECD, FCM, UN) stimulate economic growth, attract business
- generate, support employment
- provide accessibility for mobility impaired
- reduce automobile congestion, costs
- reduce pollution, improve air quality
- influence land uses, create more-efficient city



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# **Planning Fundamentals - I**

Transportation  $\leftrightarrow$  Land Use

land use, density  $\rightarrow$ creates travel demand  $\rightarrow$ determines required transportation service

transportation service / investment  $\rightarrow$ improves access to land  $\rightarrow$ increases land value  $\rightarrow$ shapes land use, density, development



### Planning Fundamentals - II

Demand  $\leftrightarrow$  Capacity

travel demand  $\rightarrow$ 

determines required capacity  $\rightarrow$ 

plus room for growth  $\rightarrow$ 

choice of appropriate transit type

#### Metropolitan Toronto Transportation Plan Review (1975) sample alternative



#### Accelerated Rapid Transit Study (1982)



#### EXHIBIT 5: RAPID TRANSIT OPTIONS

#### GO Advanced Light Rail Transit (1983)



# Network 2011 (1986)



PROPOSED 2011 METRO RAPID TRANSIT NETWORK

EXHIBIT I

# Let's Move (1990)



with Acres International L<sup>1</sup> 'ed

# Network 2011 / Let's Move

- •1994 groundbreaking for Eglinton, Sheppard Subways
- •1995 Eglinton Subway stopped, filled-in
- •1996 Sheppard Subway shortened to Don Mills
- •1996 Spadina Subway extended one stop to Downsview



# Network 2011 / Let's Move

#### What Was Announced:

#### **What Actually Happened:**

- 6 rapid transit lines
- 58 kilometres
- \$10.8 billion funding

- sections of 2 rapid transit lines
- 6.7 kilometres
- \$1.3 billion

2016: extension of Spadina Subway to Vaughan







#### 14 Kms of Subway in 30 years



#### 14 Kms of Subway in 30 years





# Why Don't Subways Get Built?

Unaffordable:

- \$360 million per kilometre
- even small projects cost \$ billions
  - Spadina Subway extension:
    - -8.6 kilometres
    - -6 stations
    - -\$2.6 billion

#### Transit Market Share and Density of Development





(1996 Population + Employment)/area of GTA Zone in ha



2001: TTC Staff report, endorsed by Commission:

- highest priority: state-of-good-repair
- subways: unaffordable, not warranted
- change focus to simpler, less-expensive rapid transit:
  - bus rapid transit
  - light rail transit



#### **1983 Metro Official Plan**



TTC SP 16-02-2012 DRG. No. 12183

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TTC SP 16-02-2012 DRG. No. 12183



# **Other Important Changes**

	Then	Now
North York Centre Employment	93,400 (projected)	30,200
Scarborough Centre Employment	65,000 (projected)	13,700
Subway-Oriented Development	Strong demand (projected)	<ul> <li>many undeveloped sites <ul> <li>Eglinton/Yonge</li> <li>York Mills/Yonge</li> <li>Sheppard/Yonge</li> </ul> </li> <li>community opposition to large-scale developments</li> </ul>
Light Rail Transit	Unproven technology	<ul><li>extensive use worldwide</li><li>115 cities opening new LRT</li></ul>



- change focus to simpler, less-expensive rapid transit:
  - bus rapid transit
  - light rail transit







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# **Planning Fundamentals - I**

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Transportation service / investment  $\rightarrow$ improves access to land  $\rightarrow$ increases land value  $\rightarrow$ shapes land use, density, development



### Planning Fundamentals - II

Demand  $\leftrightarrow$  Capacity

travel demand  $\rightarrow$ 

determines required capacity  $\rightarrow$ 

plus room for growth  $\rightarrow$ 

choice of appropriate transit type

#### **Highest Ridership TTC Bus, Streetcar Routes**

	Route(s)	Daily Ridership
1)	32 Eglinton West and 34 Eglinton East	68,500*
2)	504 King	56,700
3)	510 Spadina	43,800
4)	501 Queen	43,500
5)	25 Don Mills	41,800*
6)	39 Finch East	41,800
7)	506 Carlton	40,900
8)	35 Jane	40,700*
9)	29 Dufferin	39,700
10)	36 Finch West	38,070*
11)	85 Sheppard East and 190 Scarborough Rocket	37,200*

#### **Sheppard Avenue East Corridor Services**







- city-wide coverage: rapid transit for everyone
- priority neighbourhoods: improve access to employment, education, recreation
- accessible: useable by people of differing mobility/disability
- network connectivity: maximize travel options
- physical feasibility: accommodate all road users
- city building: liveability, strengthen local economy









# **Regional Land Use Forecasts**

Region	Source	2001 Population	2001 Employment	2031 Population	2031 Employment
Toronto	Official Plan	2,450,700	1,453,600	2,917,100	1,903,276
Durham	Development Charges study	527,000	166,300	849,600	310,999
York	York Region Official Plan (September 2004 update)	772,000	386,000	1,493,400	800,726
Peel	Peel Region Official Plan (August 2003 update)	981,600	517,800	1,513,372	819,616
Halton	Halton Region Official Plan (June 2003 update)	389,300	169,000	592,300	307,990
Hamilton	1999-2001 TMP	498,100	192,400	597,266	248,148



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# **Understanding Travel Patterns**



We are conducting an important travel survey on behalf of you southern Ontario, and the Province of Ontario. Every five years this survey so that we may keep up with your ever-changing tra this survey is to collect information on the travel choices and p your help to provide this information so we may continue to pla future needs.

Here is how it works. You will be telephoned at home by a prof about 10 minutes answering questions. A sample list of the que of this letter. The interviewer will call sometime in the next two v made between 5:30 p.m. and 9:30 p.m. If the interviewer calls a.m. and 5:00 p.m.

Please inform other members of your household that you h our telephone call.



**CITY OF TORONTO** 







## Land Use in Catchment Area





#### Metrolinx "5 in 10 Plan" - October 2010





#### Metrolinx/Mayor MOU Transit Plan – March 2011





### **Sheppard East Rapid Transit Forecasts**

- Sheppard LRT: Don Mills to Morningside (Light Rail Plan)
- Sheppard Subway: extension to Scarborough City Centre

# **Ridership Modeling and Forecasting**

- 2021 and 2031 land use from Toronto Official Plan
- transit and road network assumptions
- consistent base with Metrolinx modelling
- City of Toronto's GTA model: origin-destination patterns, transit network alternatives, choice of mode
- GTA model: assign travel patterns to TTC network
- TTC's MADITUC model: produce route-level forecasts



### Sheppard East Ridership Forecast (2031)

	LRT Don Mills to Morningside	Subway to Scarborough Centre
Annual Ridership	17 million	27 million
Maximum Passenger Demand: - east of Don Mills - at Yonge Street	3000 per hour 6000 per hour	4200 per hour 7800 per hour
<ul> <li>Daily Boardings by Route Section:</li> <li>Don Mills to Victoria Park</li> <li>Victoria Park to McCowan</li> <li>McCowan to Morningside</li> <li>Total</li> </ul>	9000 22,000 25,000 56,000	23,000 65,000 0 88,000

### **Transit ROWs and Technologies**



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# Light Rail Transit Don Mills to Morningside



- 13 kilometres
- 25 stations
- \$1.0 billion:
  - includes LRV's, yard
- \* 2010 \$'s

#### Sheppard Subway Extension to Victoria Park Light Rail Transit: Victoria Park to Morningside



- 13 kilometres
- 24 stations
- \$2.22 billion:
  - includes subway cars, LRV's, yard
- \* 2010 \$'s

# Sheppard Subway Extension Don Mills to Scarborough Centre



- 7 stations
- \$3.25 billion:
  - includes subway cars, yard
- \$4.73 billion:
  - if also extended west to Downsview
- \* 2010 \$'s



# **Sheppard East Rapid Transit**

	Sheppard LRT (Don Mills – Morningside)	Sheppard Subway Extension to Scarborough Centre	Sheppard LRT Plus Finch LRT
Route Length	13.6 km	8.0 km	26.1 km
New Population Served	58,000	34,000	112,000
Priority Neighbourhoods Served	2	2	5
Annual Ridership	17 million	27million	34million
Annual New Ridership	7.7million	12.2million	14million
Typical Time Saved (per person)	4 min	10 min	5 min
Total Weekday Time Saved	3,800 hours	15,000 hours	9,300 hours
Cost (\$ billions) (2010 \$'s)	\$1.0 billion	\$3.25 billion \$4.73 billion	\$1.9 billion



## **Conclusions – Sheppard East Corridor**

Light Rail – best option:

- accommodate projected future demand:
  - Official Plan population, employment 2031
- provides room for additional future ridership
- brings rapid transit to more residents
- attracts private development, investment
- costs  $\frac{1}{3} \frac{1}{4}$  of subway costs:
  - unused funding available for other rapid transit eg Finch West

### **Comparison of Performance Characteristics**

Stop Spacing (metres)	
Signal Spacing (metres)	
Boarding	
Fare Transaction	
Capacity Per Vehicle(s)	
Maximum Capacity (Line)	
Signal Priority	
Average Speed (km/h)	
Service Reliability	

### **Comparison of Performance Characteristics**

	510 Spadina
Stop Spacing (metres)	250
Signal Spacing (metres)	180
Boarding	Front Door
Fare Transaction	On-board, with Operator
Capacity Per Vehicle(s)	75 / 110
Maximum Capacity (Line)	2′ 30″ 1,800 – 2,640
Signal Priority	Yes
Average Speed (km/h)	12.6
Service Reliability	Good

### **Comparison of Performance Characteristics**

	510 Spadina	Best-Practice LRT (Sheppard)
Stop Spacing (metres)	250	400
Signal Spacing (metres)	180	370
Boarding	Front Door	All-Doors
Fare Transaction	On-board, with Operator	P.O.P. – Off / On-board, Automated
Capacity Per Vehicle(s)	75 / 110	130 / 260
Maximum Capacity (Line)	2′ 30″ 1,800 – 2,640	3′ 00″ 5,200
Signal Priority	Yes	Yes
Average Speed (km/h)	12.6	23.5
Service Reliability	Good	Very Good



- high capacity, expandable
- reliable, fast service
- affordable: 60% 70% cheaper than subways
- high quality: quiet, comfortable
- attracts high ridership
- environmentally-friendly: zero local emissions
- increases land values, attracts development
- convenient community access





#### Light Rail

#### <u>Subway</u>

\$75 - \$100 million/km \$300 - \$400 million/km

- all-inclusive:
  - right-of-way
  - maintenance facilities
  - vehicles
  - $\rightarrow$  LRT allows 3-5 times coverage



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