

**Presentation to the  
Special Advisory Panel on Rapid  
Transit for Sheppard Avenue East**

by the

**Sustainable Urban Development  
Association (SUDA)**

**February 2012**

[www.suda.ca](http://www.suda.ca) – Email: [mail@suda.ca](mailto:mail@suda.ca) -- 416-400-0553

# Purpose

- **To present information on the effectiveness of a variant of a Bus Rapid Transit alternative to LRT**
- **To request that the Committee consider whether this type of service is an appropriate modal option for Sheppard Avenue East**

# **This presentation will summarize.....**

- **Features and drawbacks**
- **Service benefits of an upgraded bus service**
- **Ridership volumes for Sheppard Ave. East**
- **Comparison of operating impacts**
- **Capital and Operating cost comparisons**

# **Drawbacks of Current Local Bus Services**

- **Seen by many as too slow, uncomfortable, rickety and unattractive**
- **Limited capacities per vehicle**
- **Per-passenger operating cost issues**
- **Operates in mixed traffic**

## **Drawbacks of LRT services**

- **Inflexibility of service – semi-local only**
- **Loss of local transit stops**
- **Less frequent service vs. buses when handling same volumes**
- **High per-vehicle & ROW capital cost**
- **Problematic left turns for cars/trucks**

# **A Transit Modal Option for Sheppard Ave. East:**

## **A Bus-Lane Transit (BLT) Service**

**A hybrid between LRT and  
common local bus services**

- Dedicated ROW**
- Superior-quality buses**

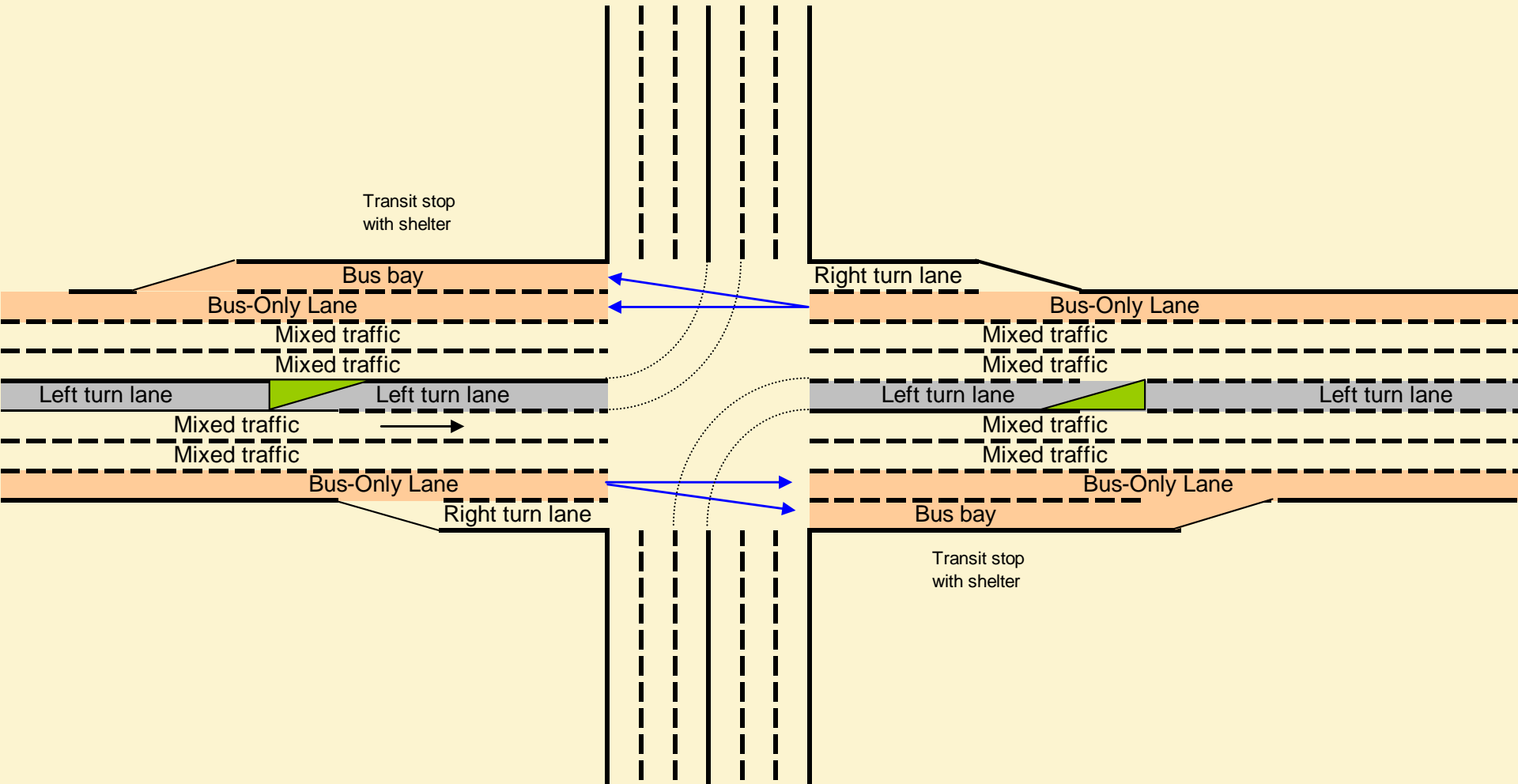
# **Features of a Bus-Lane Transit Option for Sheppard East**

- **Dedicated lanes, using curb lanes**
- **Bus bays at almost all bus stops**
- **Express and local buses use same lane**
- **Additional right-turn lanes**
- **Smooth pavement**
- **Low emission buses**
- **Superior interior comfort on buses**
- **Signal priority**
- **Articulated vehicles**
- **Shelter at every transit stop**

**Express bus corridor in Seoul. Note bus stopping bay is cordoned off from mixed traffic. Centre-of-the-road alignment also creates delays for pedestrians to cross the street.**



# Sample Configuration for BLT



## Key Advantages of a BLT Service

- Express and local bus service possible using same lane (buses can pass each other)
- Express service is faster than LRT service
- Elderly, frail and burdened people do not lose close-by access
- More frequent service for people **Important!**
- No service back-ups due to incidents
- Per-vehicle cost is less than for LRV

# **Sheppard East Ridership Volumes to 2031**

**Do they justify an LRT  
level of service?**

# 2031 Ridership Volume Estimate

	2011	2021	2031
Weekday Total	27,000	40,450	54,000
D.M. to Meadowvale	27,000	40,450	54,000
Per 3-hr peak	6,750	10,113	13,500
Per peak hour	3,375	5,056	6,750

**2011 weekday total per TTC for Route 86**

**Ridership growth to 2031 assumed to be 100%**

**Per TTS, peak period is 25% of daily total ridership**

# A BLT Scenario for 2031 by Express and Local

## Sheppard East Bus Peak One Hour Projection Don Mills to Meadowvale - Both Directions

Express Service	4,500	66.7%
Local Service	2,250	33.3%
Total	6,750	

# Service Implications – BLT vs. LRT

Sheppard East Bus Peak Service - Don Mills to Meadowvale	Bus Lane Transit - at 2031			LRT
	Express Service	Local Service	Totals	
Travel demand both directions	4,500	2,250	6,750	6,750
Est. volume in peak direction	3,375	1,688	5,063	5,063
Est. practical capacity per vehicle**	70	70	70	226
Est. pssngr turnover trip end to end	2.0	3.0	1.7	2.3
No. of vehicles calculated	32	11	43	13
Adjusted no. of vehicles re frequency*	32	21	54	19
Round trip distance	28	28	28	28
Vehicles per km both directions	1.1	0.8	1.9	0.7
Average speed km/hr	25	15		22
Average headway (minutes)	2.1	5.2		4.0

\* Adjusted to arrive at a bottom-line service frequency, as shown. One effect is that loads per vehicle will be reduced.

\*\* Assumes here that there will be a mix of 40-ft, single articulated and dble-articulated buses with varying loads, and LRVs with 'crush' capacity of 280.

## **A Bottom Line:**

**A Bus Lane Transit Service with superior features can handle projected ridership growth on Sheppard Avenue between Don Mills and Meadowvale Roads, through 2031**

# Comparing Capital Costs

## Sheppard East - D Mills to Meadowvale

	BLT	LRT
Capital cost per vehicle - \$millions\$	1.13	4.2
Number of Vehicles (+10%) *	59	22
Total capital cost of vehicles	66.9	93.1
Cost of other infrastructure - per km. (\$m)	8.0	60.0
Number of Km.	14	14
Total ROW infra cost - \$millions\$	112	840
Total Capital Cost - \$millions\$	179	933
Cost ratio	1.00	5.22

# Comparing Operating Costs

## Sheppard East - D Mills to Meadowvale

	BLT	LRT
<b>Operating Impacts (\$millions\$):</b>		
<b>Average ann. cost per vehicle - overall</b>	<b>0.312</b>	<b>0.326</b>
<b>No. of Vehicles</b>	<b>59</b>	<b>22</b>
<b>Total operating cost per year - Millions\$\$</b>	<b>18.4</b>	<b>7.2</b>
<b>Number of years - 2015 to 2031</b>	<b>17</b>	<b>17</b>
<b>Total operating - 2015 to 2031 - \$m</b>	<b>313</b>	<b>143</b>

# Overall – 2015 to 2031

<b>Total Capital + Operating to 2031 Don Mills to Meadowvale</b>	
<b>BLT</b>	<b>492</b>
<b>LRT</b>	<b>1,077</b>

# Service Quality

*Highly Important.*

**With dedicated lanes smoothly maintained, and superior-quality buses, a Bus Lane Transit service offers**

- **Better frequencies than LRT service**
- **Comfort comparable to LRVs**
- **Both local and express service options**
- **Faster travel for express services**
- **No loss of transit stops (access issue)**

# Eglinton East and Finch -- Similar outcomes

	BLT	LRT
<b>Finch West - Hmber coll. To Keele</b>		
No. of vehicles	86	14
Headways - Express	1.0	5.0
Local	3.4	
Overall Cost (\$m) to 2031	643	811
<b>Eglinton - Laird to Kennedy</b>		
No. of vehicles	42	9
Headways - Express	1.8	5.5
Local	3.9	
Overall Cost (\$m) to 2031	333	577
<b>Finch Keele to Morningside</b>		
No. of vehicles	138	25
Headways - Express	1.2	4.0
Local	4.0	
Overall Cost (\$m) to 2031	1,159	1,681

# Redirecting \$\$ Saved

**Critically important to improve transit rapidly.**

**Operating impacts aside, if...**

Sheppard East LRT	\$933m
Sheppard East BLT	<u>179</u>
\$\$ “freed up”	\$754m

**Savings could be applied to other routes.....**

**Don Mills? Vic Park? Lawrence? Steeles?**

**Finch East? Convert SRT to subway?**

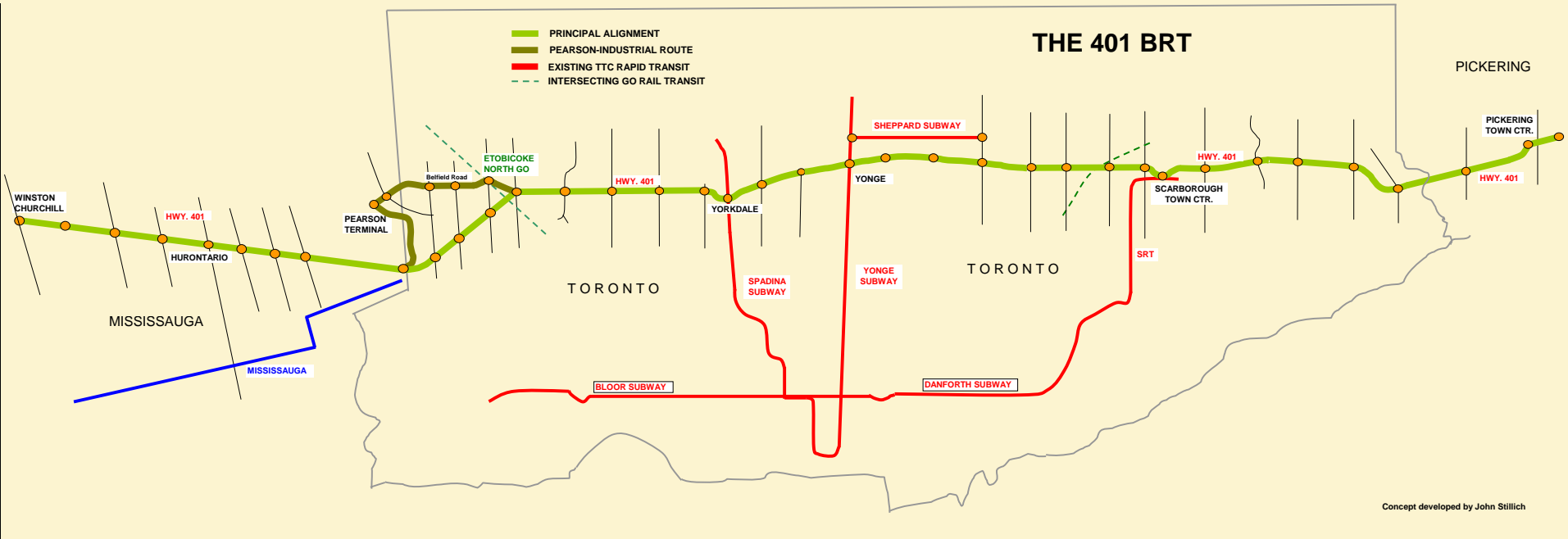
## **Off-Topic, but: Look at the Bigger GTA Picture**

- **Transit City Plans very insular; minimal or no consideration of 905/416 impacts**
- **Suburban cross-GTA transit very inadequate (a few GO bus services only)**
- **Even with Transit City, Car/truck traffic will increase in Toronto?**
- **Test new options**

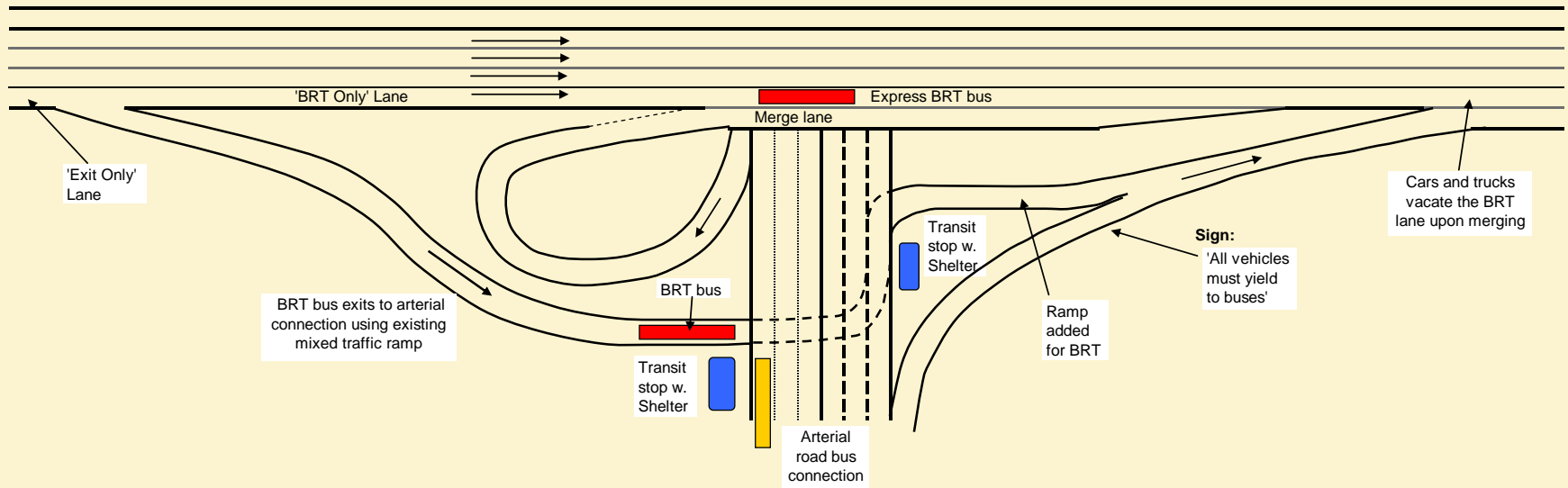
# Cross-GTA BRT/BLT

- **Two-year test using Highway 401**
- **Winston Churchill to Brock Road Pickering – 74 km.**
- **Bus-only lanes**
- **Capital cost - \$100m (or less)**
  - Assumes existing hwy lanes marked off; a few ramp adjustments only, 50 buses, shelters
- **Operating break-even at 20,000 riders/day**

# Cross-GTA BRT



# Example 401BRT – Arterial Intersect



# **Recommendations to the Expert Advisory Panel**

- **Add a Bus Lane Transit option for Sheppard Ave. East to your evaluations.**

**If possible,**

- **Consider inadequacy of suburban cross-GTA transit and recommend further action**

# Thank you.

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Other information

# Current Plan - Metrolinx

