What is BRT?

Miami-Dade County
Transportation Committee Meeting
July 22, 2004

Sam Zimmerman
Principal, Transportation Planning

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BRT: Bus Rapid Transit

- Flexible, permanently integrated high performance system with a quality image and a strong ID
- Package of components appropriate to current and future:
  - Markets served
  - Physical environment

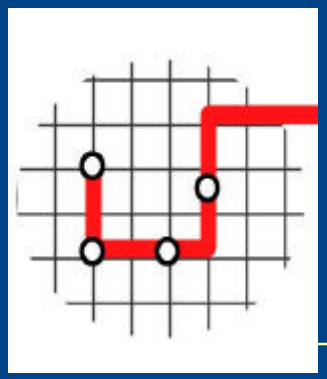
BRT System Components

Vehicles

Running Ways

Stations & Terminals

Systems



Service Plan

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BRT: Infinite Possibilities

Essential Attributes

- Speed
- Reliability
- Identity and image

Stops, Stations and Terminals

- .25 – 1 mile station spacing
- Permanent, substantial, weather protected
- Amenities, passenger information
- Good pedestrian, local bus, auto access
- Safe, secure
- Convey identity and image
- Design integrated with surroundings

Stations Options

Pittsburgh; MLK Busway Ext.

Brisbane: SE Busway

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Running Ways

- **BRT can operate in broad variety of physical and operating environments, but segregated, dedicated preferred**
- **Critical planning and design parameters:**
  - *Ability to safely support rapid, reliable services*
  - *Safe rapid transit vehicle access*
  - *Identity, aesthetics*

Arterial Bus Lanes, Median Transitway

Boston: Silver Line

Vancouver: 98B

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Bus/Transitway on Freeway ROW

Shoulder
Brisbane: SE Busway

Median
Houston: Transitways

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Busway on Railroad ROW

Pittsburgh: East (MLK) Busway

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Elevated Sections

Runcorn, UK

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Tunnels

Brisbane: SE Busway

Seattle: CBD Bus Tunnel

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Running Way Guidance

Optical
Rouen, France

Mechanical
Leeds, UK

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Vehicles

- Rubber-tired, steered and/or guided
- Variety of sizes through 80+ feet
- Conventional buses or special BRT vehicles
- Environmentally friendly
  - *Low emissions*
  - *Quiet*

BRT Vehicle Options

Conventional

Van Hool 300AG
Zuidtangent
Amsterdam

Specialized

Irisbus Civis
Clean-Diesel/Electric
Las Vegas MAX

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BRT Vehicles
Well- Lit, Open, Quiet Interior

Van Hool 300AG

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Fare Collection

? Needs to facilitate multiple stream boarding

- Off-board (preferred)
- On-board multi-point payment
- Significant pass utilization

? Integrated with but may not be the same as for local bus system

Off–Board Fare Collection Options

Proof-of Payment: TVM
Paris: Val de Marne

Access Control: Magnetic Card
Bogota: Transmilenio

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ITS

- Automatic vehicle location
- Passenger information
- Safety, security
- Signal priority
- Communications
- Fare collection
- Vehicle guidance and control

Central Control Room
Vehicle Location, Service Supervision

Brisbane SE Busway

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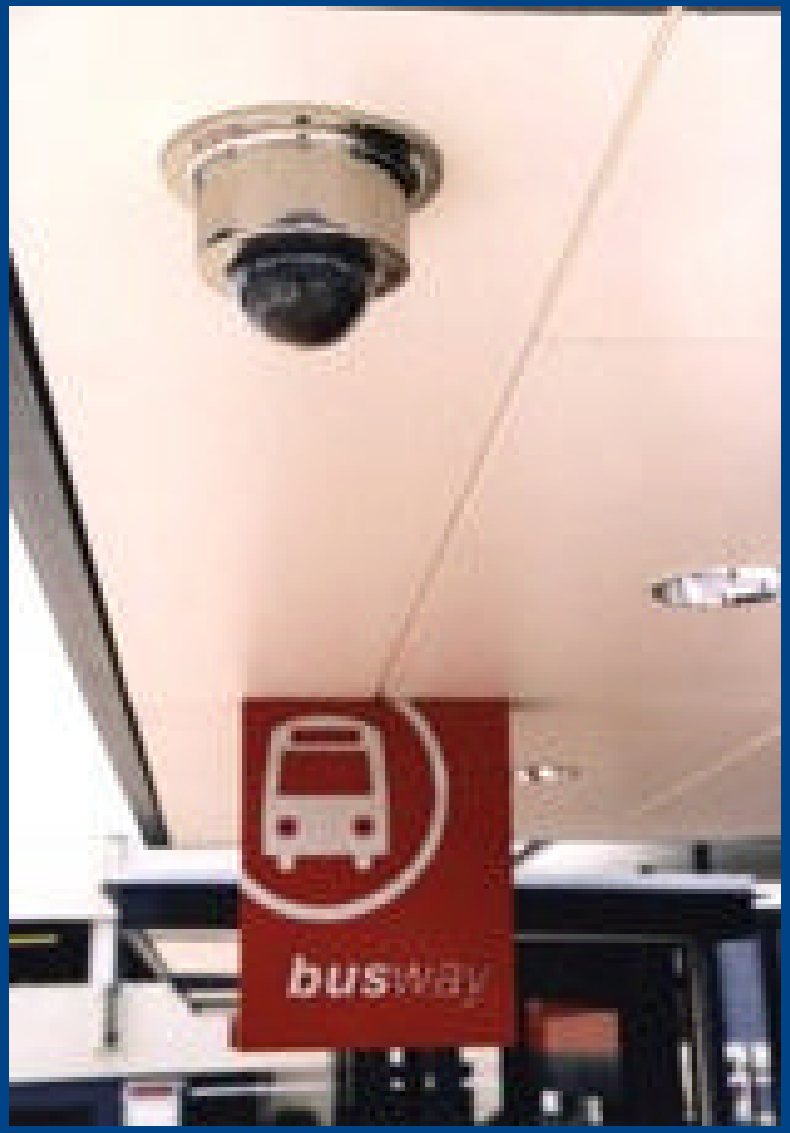
Station Security



Brisbane SE Busway

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Passenger Information

At Stations
LA: Metro Rapid Bus

On Board
Paris: Val de Marne Busway

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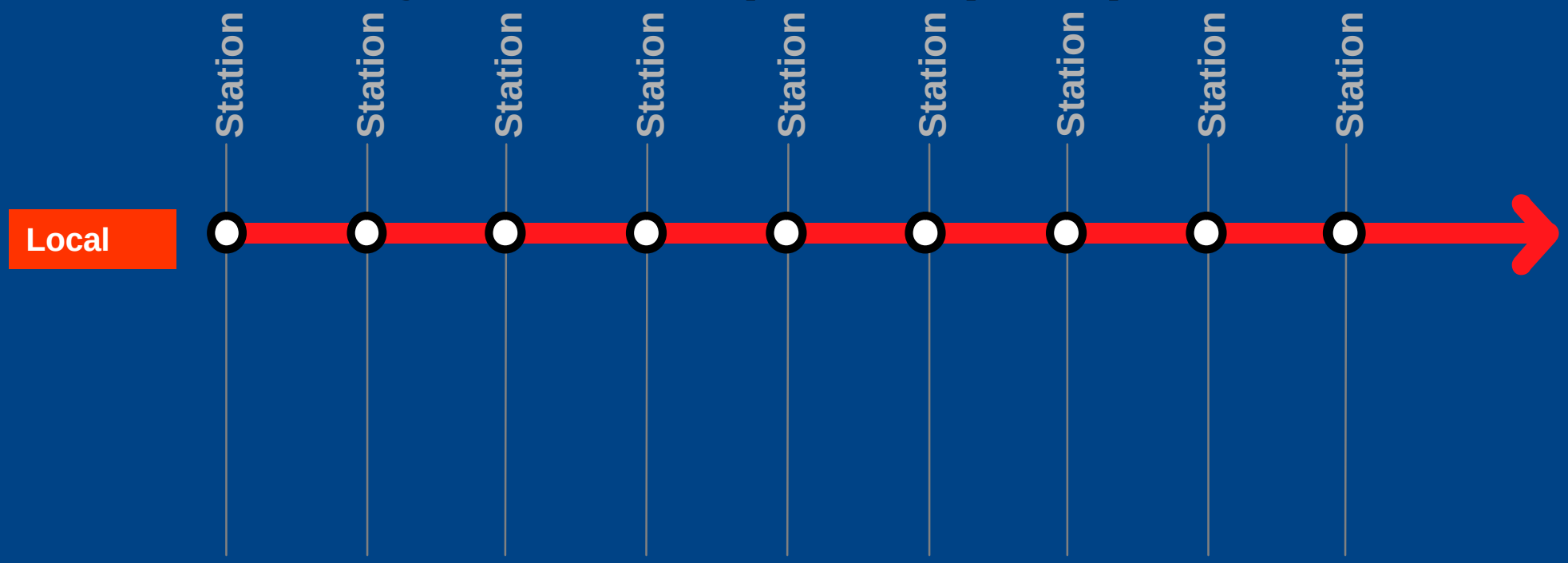
Service Plan

- All-day, Frequent Service
  - 8-10 Minutes Or Better In Peaks
- No Schedule Needed
- Simple Route Structure
  - Direct, Easy To Understand
- Use BRT Flexibility
  - Maximize Directness, Minimize Transfers

BRT Service Plan Options: Simple End

All-day, local all-(limited) stop trunk line



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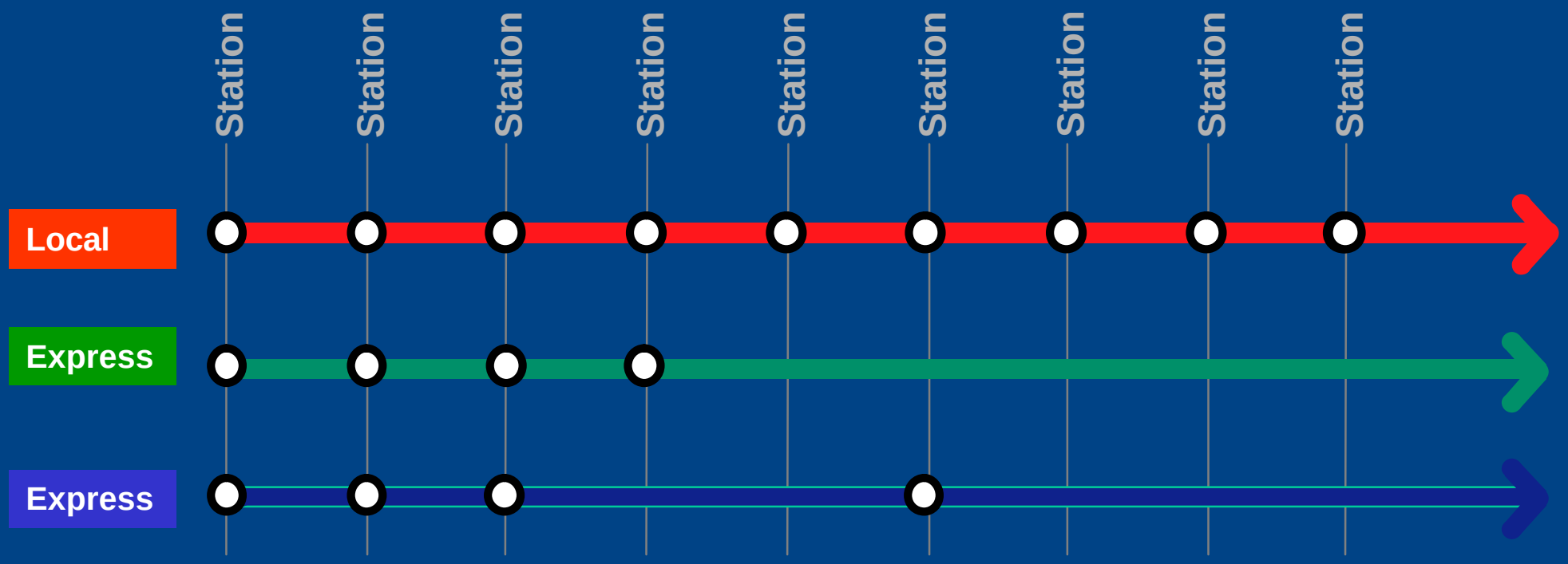
BRT Service Plan Options

- ? *Base: All-day, local all-stop trunk line*
- ? *Overlay: Peak only or all-day express services*



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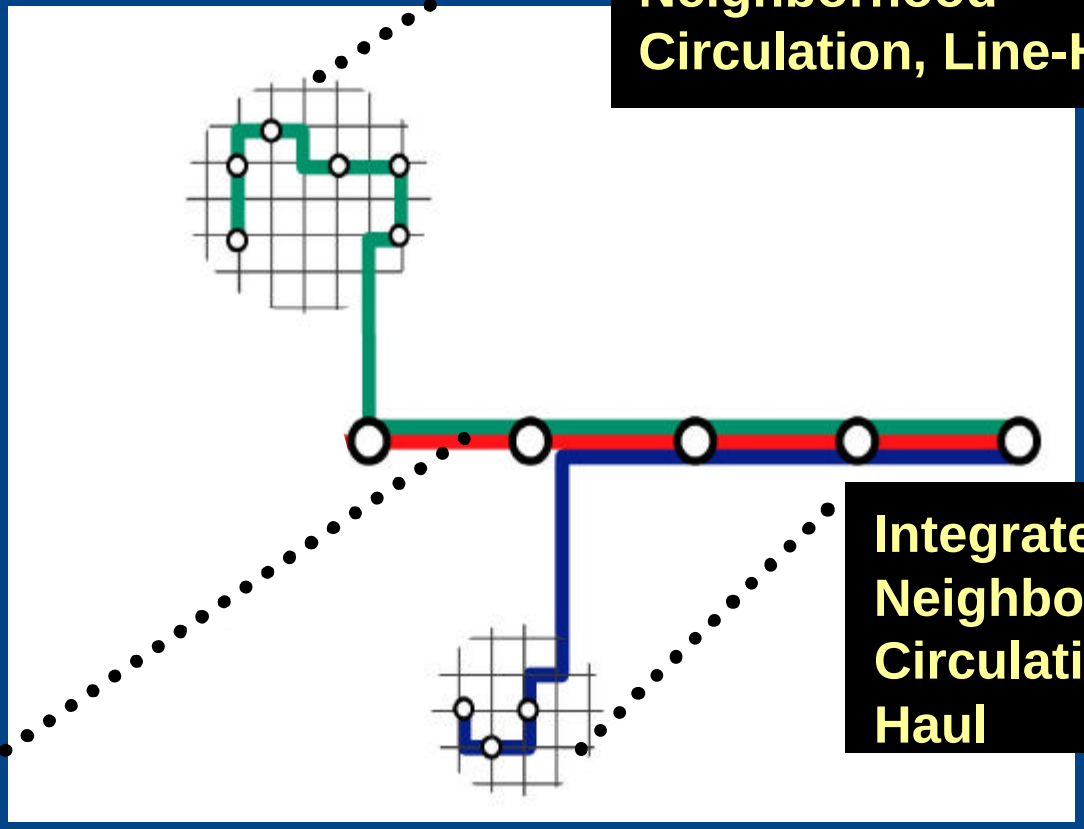
BRT Service Plan Options: Most Complex

- ? ***Base: all-day, local all-stop trunk line***
- ? ***Peak-only or all-day integrated services***



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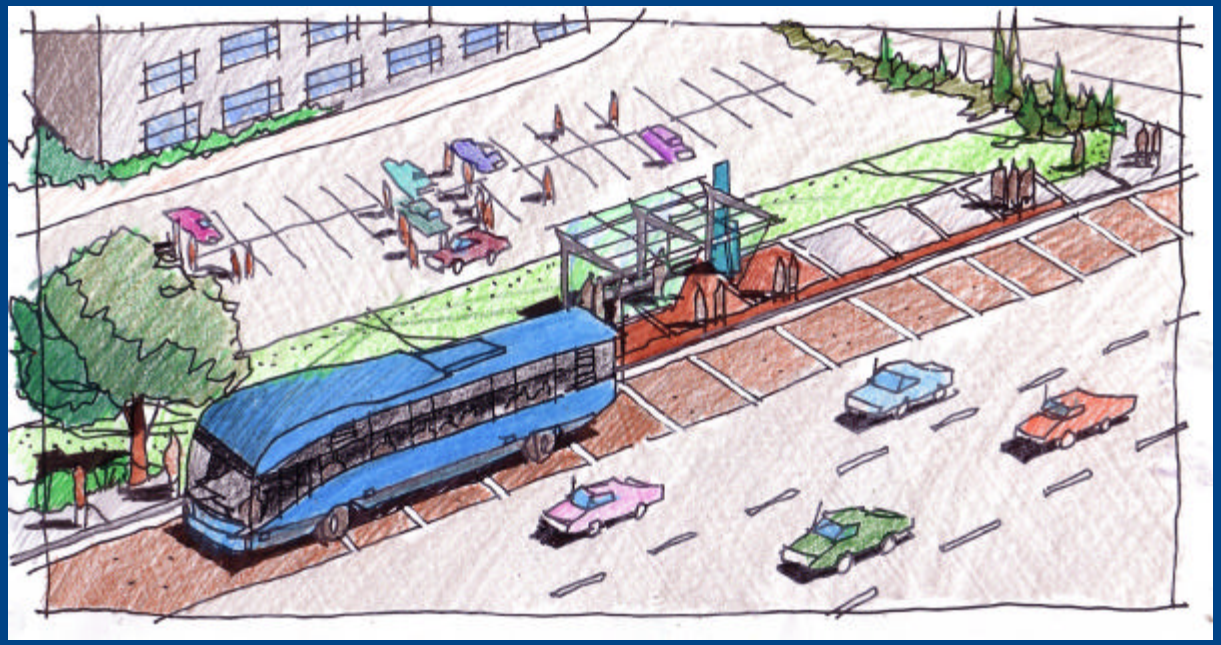
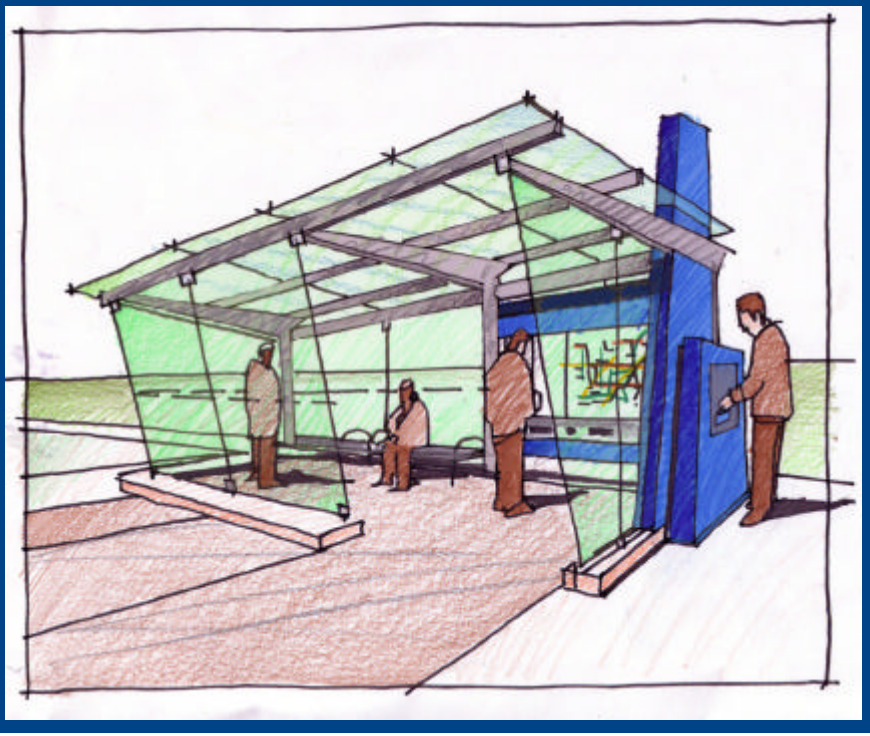
Conveying System Identity & Image

- **Vehicles:**
  - Design, colors, graphics, signage
- **Stops, Stations, Terminals:**
  - Design, colors, graphics, signage, materials
- **Running Ways:**
  - Barriers, pavement markings/materials/ colors, graphics, signage, landscaping

Consistent, Unique Station Design

York Rapid Transit
York (Toronto) Ontario





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Unique Vehicle Livery

"98 B-Line" BRT

"99 B-Line" BRT

Regular Vancouver TransLink Bus

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Consistent, Unique Graphics

Brisbane: S.E. Busway

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Running Way Color, Markings

Paris

Sao Paulo

Auckland

How is BRT Working?

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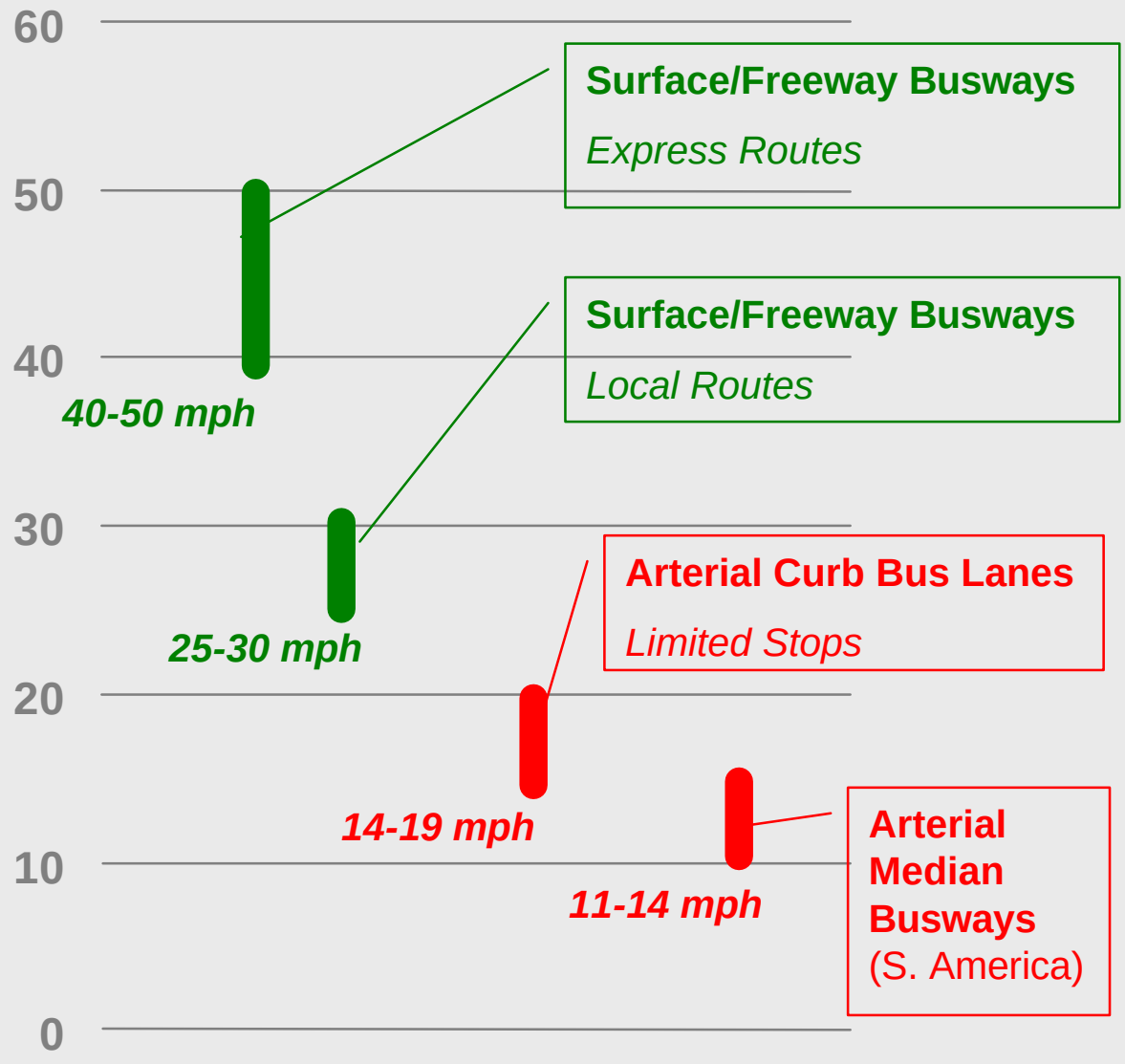
RT Operating Speeds

- Operating Speeds by ROW Type
  - MPH



Significant Time Savings

Compared to Local Bus

Busways and Freeway Bus Lanes	*32 – 47%*
Bus Tunnel (Seattle)	*33%*
Arterial Street Busways / Bus Lanes	*29 – 32 %*

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Modest Operating & Maintenance Costs (Port Authority of Alleghany County, Pittsburgh)*

	PAT West Busway	PAT LRT
$/Rev.Veh.Mi.	$ 6.40	$ 15.25
$/Rev.Veh.Hr.	$81.90	$222.37
$/Pass.-Mi.	$ 0.65	$ 0.84
$/Brdng	$ 2.73	$ 3.78

* FTA Evaluation of Port Authority of Alleghany County West Busway Bus Rapid Transit Project, 4-2003

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Attractive to Customers

	% Ridership Gain in Corridor	% of Ridership New Transit Trips
Los Angeles	+40% (3 Yrs.)	>30%
Miami	+70% (5 Yrs.)	>50%
Brisbane	+60% (2 Yrs.)	47%
Vancvr., BC	+30% (2 Yrs.)	>25%
Boston	+100% (18 months	>30%
Oakland	(10 months)	>25%

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Boston Silver Line: Prior Means of Transportation

Prior Transportation Means	Percentage of Riders
MBTA Bus	67%
MBTA Subway	32%
Drove Alone	4%
Carpool	--
Walked	18%
Didn't Make Trip	7%
Other	2%

***Adds up to greater than 100% because respondents that formerly used more than one mode gave multiple answers**

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Attractive to Customers with a Choice*

Houston Metro Services, Customers	% Riders with Household Incomes > $50,000/Yr	% Riders with Household Incomes > $75,000/Yr	%Riders from Households with > 2 Vehicles
Park/Ride Services (Rubber-tired Commuter Rail)	70%	50%	61%
Local Bus	11%	-	16%

** 2002 On Board Survey*

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High Capacities Achieved

- **Maximum Volumes***
  - **Peak Hour, Peak Direction**

25,000 / hour	Sao Paolo (Nova de Julio) Bogotá Transmilenio NYC Lincoln Tunnel XBL
15 – 20,000 / hour	Porto Alegre Quito
10 – 15,000 / hour	Curitiba Ottawa Brisbane

*** Highest LRT Volumes in U.S., approx. 10,000/Hr., Boston Green Line and San Francisco Muni Metro**

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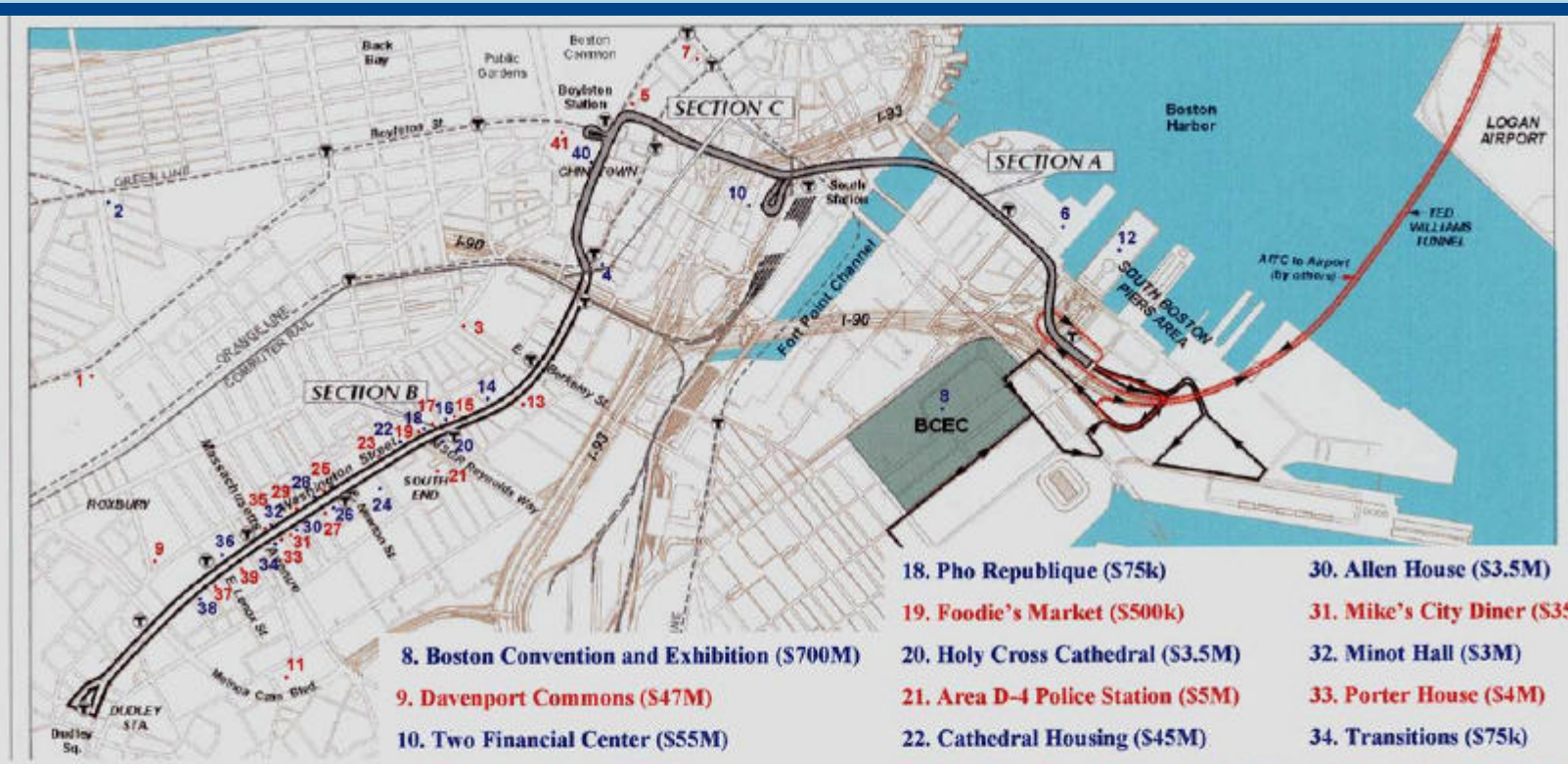
Attractive to Developers, Owners

- **Significant Urban Development Effects**
  - Curitiba Surface Metro
  - Ottawa Transitway System
  - Pittsburgh East Busway
  - Denver: 16th Street Mall
  - Brisbane SE Busway
  - Boston Silver Line

Boston: MBTA Silver Line
$700 M Worth of Projects Along Line Since Construction Began



1. Northeastern Initiative
2. Boylston Square/Millennium ($300M)
3. Parcel 8 at BCA ($69M)
4. Doubletree/YMCA ($30M)
5. Millennium Place ($350M)
6. Fan Pier/Pritzker ($1B)
7. Boston Opera House Renovation
8. Boston Convention and Exhibition ($700M)
9. Davenport Commons ($47M)
10. Two Financial Center ($55M)
11. Crosstown Center ($90M)
12. Institute of Contemporary Art (ICA) ($40M)
13. Laconia Lofts ($18M)
14. Hub Motors Site ($40M)
15. Space 12 Gallery
16. Russell Development ($7M)
17. South End Suds
18. Pho Republique ($75k)
19. Foodie's Market ($500k)
20. Holy Cross Cathedral ($3.5M)
21. Area D-4 Police Station ($5M)
22. Cathedral Housing ($45M)
23. Blackstone's on the Square ($850k)
24. St. George St. Residences ($6M)
25. Washington St. Residences
26. Old Boston Restorations
27. Elder Homelessness ($2M)
28. Health Center ($30M)
29. Andy's Cleaners ($1.1M)
30. Allen House ($3.5M)
31. Mike's City Diner ($350k)
32. Minot Hall ($3M)
33. Porter House ($4M)
34. Transitions ($75k)
35. Puritan Realty ($3M)
36. Mandela ($18M)
37. Suffolk Jewelers ($750k)
38. Hoon Companies ($125k)
39. Grant Manor ($19M)
40. Lowes Hotel
41. Parcel P-2 Project

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Boston MBTA:
Silver Line, Washington St.

New Mixed Use Development Adjacent to Stations

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Denver 16th St. Mall

New Entertainment Venues

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Ottawa Transitways

“Brisbane Courier Mail,” 7/2/02

- **Brisbane: Southern Suburbs, available** ... with owner, 5 minutes walk from Garden City, Busway etc. Looking for a mature reliable person with ... for 3 b/r townhouse Greenslopes. Walk to busway and Logan Road. $75 a week, airconditioning, LUG ...

"Brisbane Courier Mail," 1/26/02

Busway boosts house values

Joel Gulley

PROPERTY values along Brisbane's South-East Busway have jumped as much as 20 per cent as buyers take advantage of traffic-free travel to the city.

Prices in the southern suburbs of Holland Park West, Upper Mount Gravatt and Eight Mile Plains have increased since the $350 million busway opened in March 2001, providing an escape from South East Freeway traffic snarls.

Real Estate Institute of Queensland research shows suburbs with direct access to the busway's stations had solid growth over the recent quarter.

"Most other suburbs next door to those busway suburbs also performed well, however they did record percentage changes slightly below those near the busway," REIQ president Mark Brimble said.

The most outstanding jump was in Holland Park West, where values rose 20.86 per cent.

The neighbouring suburb of Holland Park, which does not have direct busway access, rose 6.23 per cent.

The comparisons showed busway suburbs were performing above city-wide increases which have seen nearly all areas within 10km of the CBD improve in value.

Other neighbouring suburbs that did not perform as well include Mount Gravatt East, which recorded 4.78 per cent compared with 0.29 per cent in the busway suburb of Mount Gravatt, and Kuraby, which increased by 1.56 per cent compared with a jump of 3.93 per cent in busway suburb Eight Mile Plains.

"This research supports the trend that more people are moving to areas within five to 10km of the CBD which are close to convenient public transport such as the busway," Mr Brimble said.

Queensland Transport recorded a "patronage boom" on the busway, with a 40 per cent growth in passenger figures in its first six months, or about 18,000 passenger trips a day.

The figures also showed approximately 375,000 private vehicle trips were converted to public transport along the busway, which straddles the South East Freeway.

Property values also would increase if proposed extensions of the busway along northern and eastern routes went ahead, analysts said.

National Property Research analyst Matthew Gross said areas near public transport nodes would nearly always rise in value.

"Historically, housing h always followed public tran port nodes. Those closer transport generally have high values," Mr Gross said.

"A lot of investor stock ar rental properties are considerv worth more if they are close public transport because th are easier to rent."

The $135 million Inner North ern Busway is nearing com pletion, and the planne dedicated bus lanes will gi passengers uninterrupte travel as far as Kedron.

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BRT Urban Design Integration

Brisbane SE Busway Station

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Lessons Learned

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Lessons Learned
(Apply to any Rapid Transit Mode)

- ? Use transportation planning process to sort out alternatives
- ? Serve demonstrated markets
- ? Match markets with service plans, running ways, vehicles, stations
- ? Begin integration with land use planning early

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Lessons Learned Unique to BRT

- Work hard to inform public and decision-makers that BRT is A high quality, high performance RT option
- Plan For BRT As For Any Rapid Transit Mode (i. e., Use Rail Criteria)
- Recognize that there is no single BRT system prescription

Lessons Learned Unique to BRT

- Focus on system integration and identity
- Be willing to spend money on BRT
  - Maintain system integrity
  - Resist de-construction

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END

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