

Bus Rapid Transit in New Jersey



Tom Marchwinski, Senior Director of Research &
Forecasting

BRT Panel at NYU Rudin Center for Transportation Policy & Management
April 9, 2013

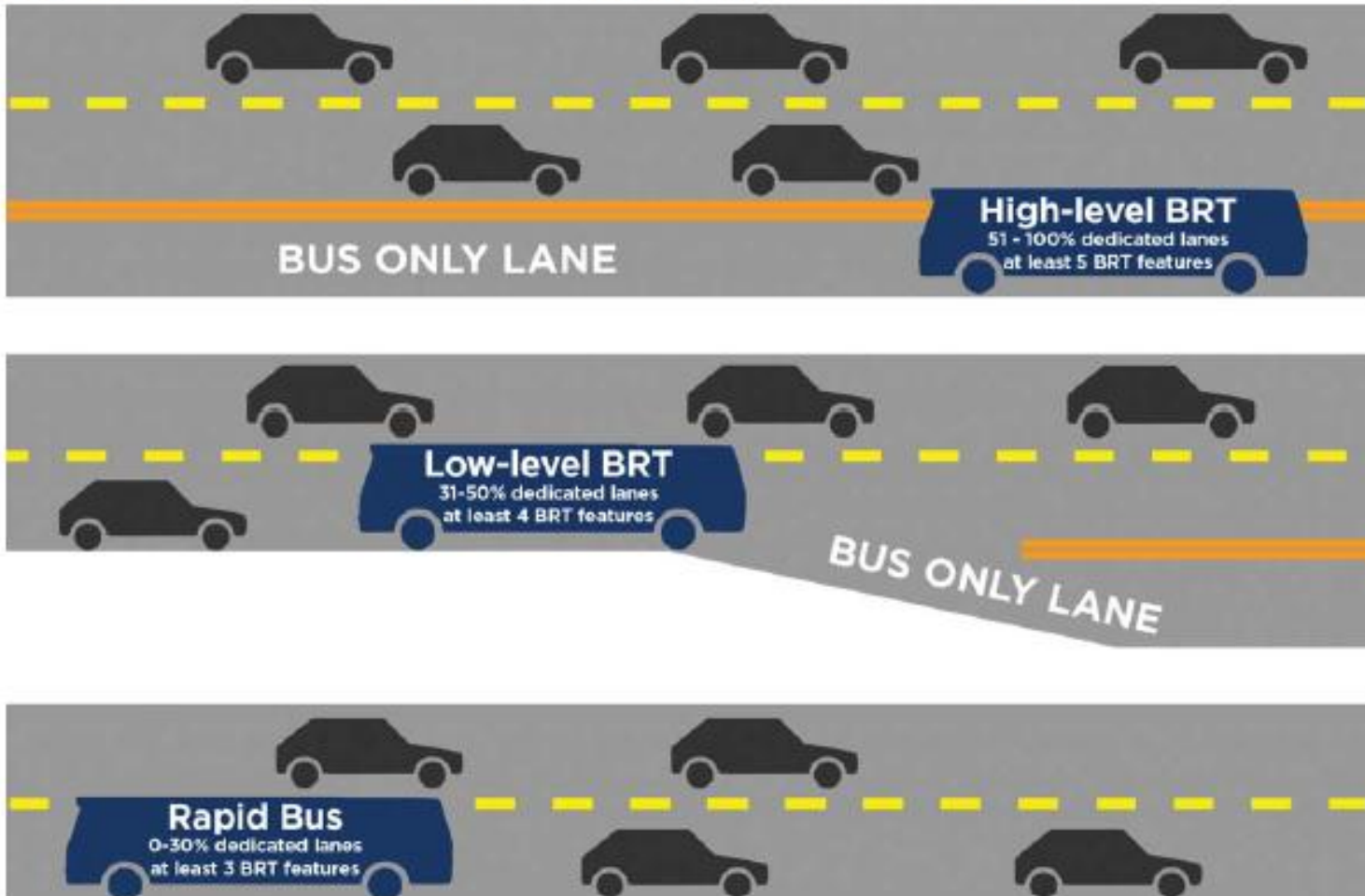
Overview of NJ TRANSIT

- NJ TRANSIT is the largest statewide transit agency in the country
- Ranks second in terms of passenger miles
- Provides nearly 223 million passenger trips each year
- Operates a fleet of 2,027 buses, 711 trains and 45 light rail vehicles
 - Serves 236 bus routes, 11 rail lines and 3 light rail lines statewide



Levels of BRT

Figure 1: Definitions of Rapid Bus, Low-Level BRT and High-Level BRT



Source: "Midsize Cities on the Move." Reconnecting America. December 2012.

Features of BRT

- Rapid bus and BRT systems typically include some or all of the following features:
 - Dedicated running ways
 - Priority for buses
 - Frequent service
 - Vehicles with level boarding and other amenities
 - Off-board fare collection
 - Greater distance between stops
 - More substantial stations
 - Unique branding

Features of BRT-Funding

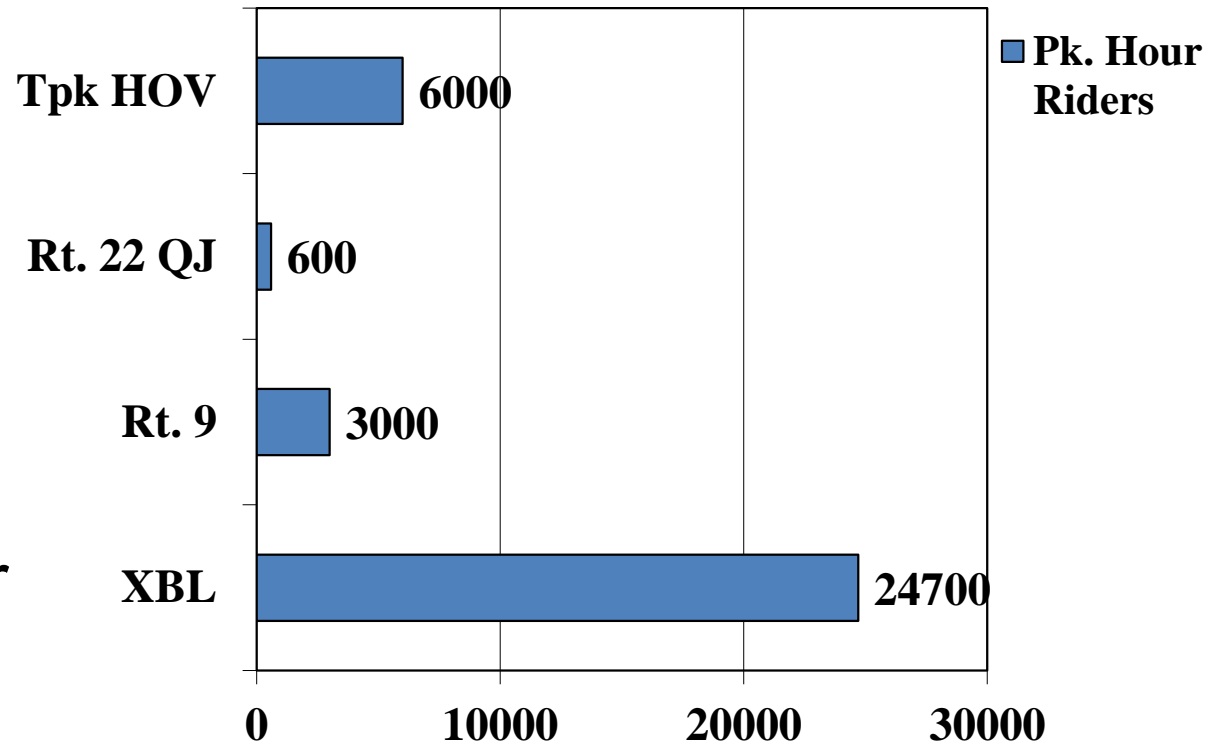
- High level BRT meets FTA definition for New Starts Funding:
 - Majority of route is on Dedicated running ways
 - Frequent service all day and during peak periods
 - Meets other criteria for “premium” transit
 - More like a fixed guideway such as LRT
- Low Level BRT meets FTA definition for Small Starts Funding
 - Portion of route, but less than 50% has dedicated running way
 - A few features of BRT, less than a new start
- Rapid Bus can use Small Start Funding
 - Can have some or no dedicated running ways, uses signal and other priority treatments, longer distance between stops, branding

Existing Bus Priority Treatments in NJ

- Express Bus Lane (XBL) between NJ Turnpike to Lincoln Tunnel on I-495
- Route 9 Shoulder Lanes in Middlesex County
- Dedicated Transit Lanes on Urban Arterials- Broad Street and near Penn Station in Downtown Newark
- Queue Jump on Rt. 22 Mountainside
- HOV Lane NJ Turnpike Exits 11-14
- GO Bus 28 with Signal Priority

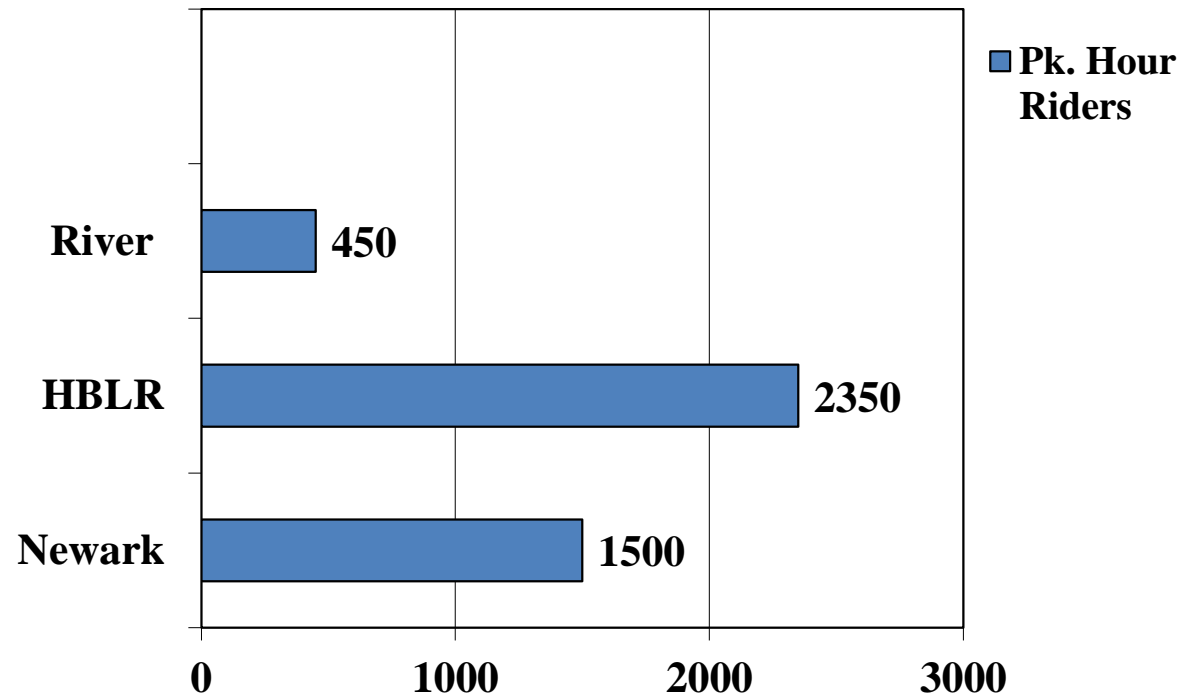
Ridership on Existing Bus Priority Facilities in New Jersey

- Peak Hour Ridership on existing facilities has wide range
- Most connected with Express Bus system to NYC or NJ Urban Core



Ridership on Existing LRT Facilities in New Jersey

- Peak Hour Max Load Ridership on existing facilities has modest range
- Most connected with Rapid Transit or Rail system to NYC or Philadelphia



AM Peak XBL into Port Authority



- Contra- Flow Bus lane only available in AM Peak Period
- Established 1970, 2.5 miles long, plus lane in Lincoln Tunnel.
- Highest volume BRT facility in North America

XBL

- eXpress **B**us **L**ane (**XBL**) carries 650 buses in peak one hour, about 1400 buses in 3 hour peak period. 25,000 riders in one direction AM peak hour to Midtown Manhattan.
- No PM direction outbound. Traffic Volumes too high to convert inbound or outbound lane for Buses Only
- Lack of PM lane is resulting in overcapacity conditions at PABT in evening. Buses block gates, levels. Results in poor on-time performance, long lines for some passengers
- Options for moving passengers to alternative modes, locations in PM are starting to be examined. Other operational options also being examined

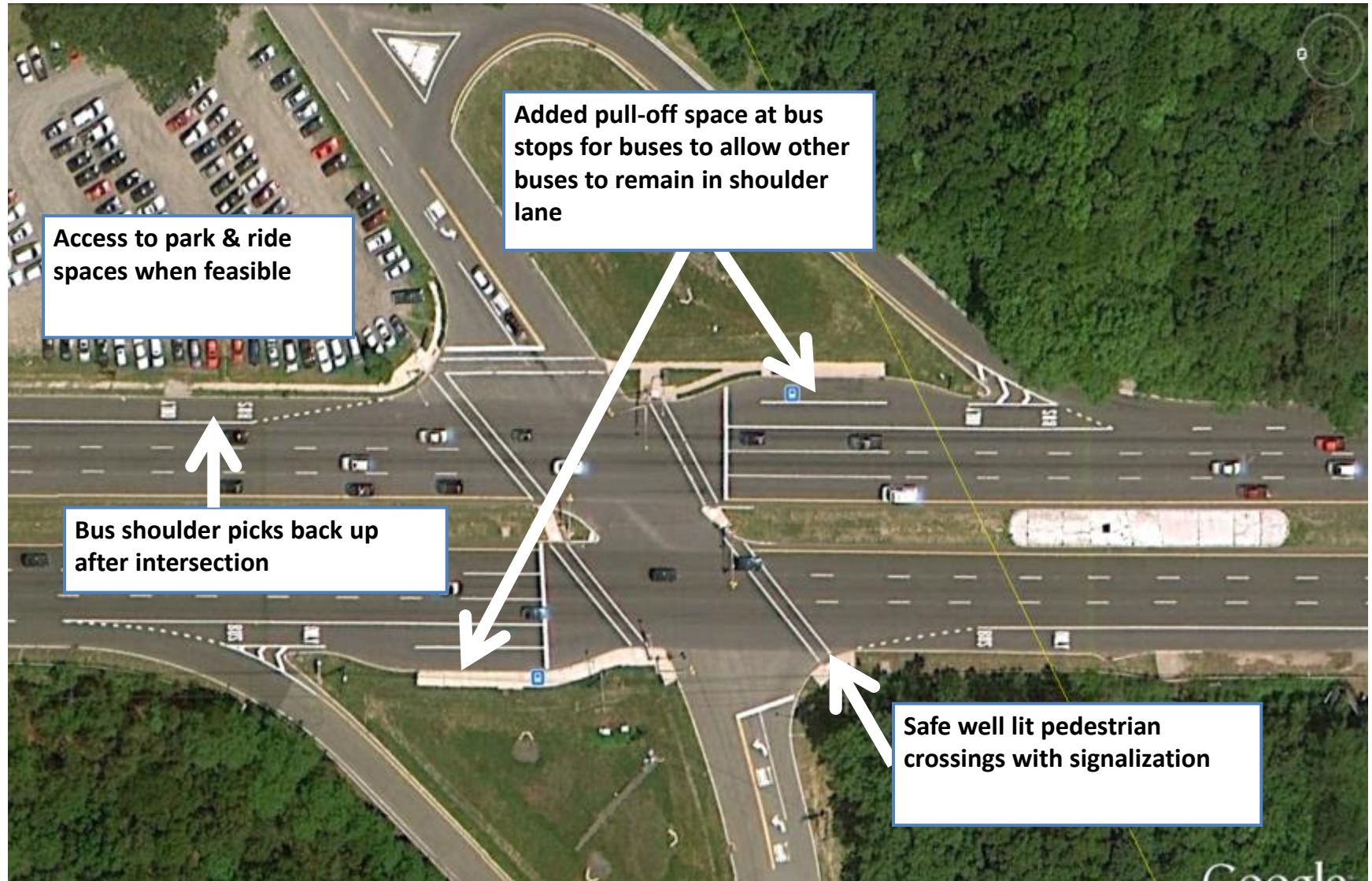
Route 9 Shoulder Implementation- Phase I



Route 9- Shoulder Lane BRT

- Implemented December, 2006
- Approximately 3 miles long. Shoulder widened to support buses. Right Turning vehicles allowed.
- Shoulders allow buses AM Peak Period northbound, PM Peak Period Southbound for about 2-3 hours.
- Ridership of about 6,000 in AM Peak Period on 130 buses, with 70 buses in peak hour. Express routes serve PABT, Lower Manhattan, Jersey City/Newark
- Buses now save 5-8 minutes, initial time savings of 4 minutes.
- Pedestrian improvements, bus pullouts, new shelters.

Elements of Phase I Route 9 Bus Shoulder / Other BRT attributes

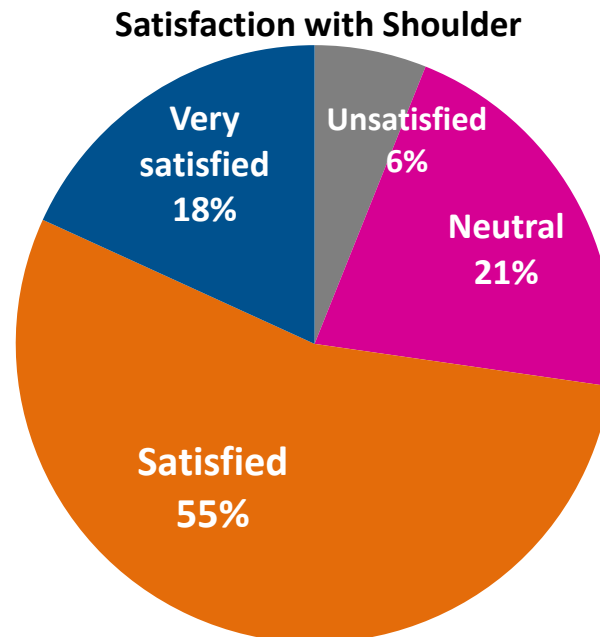


Route 9- Other Issues

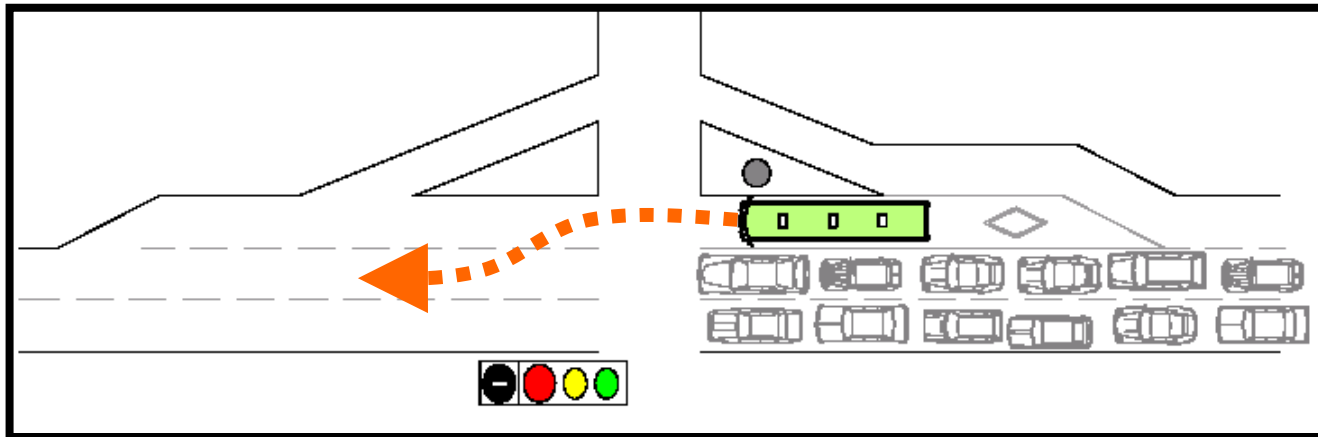
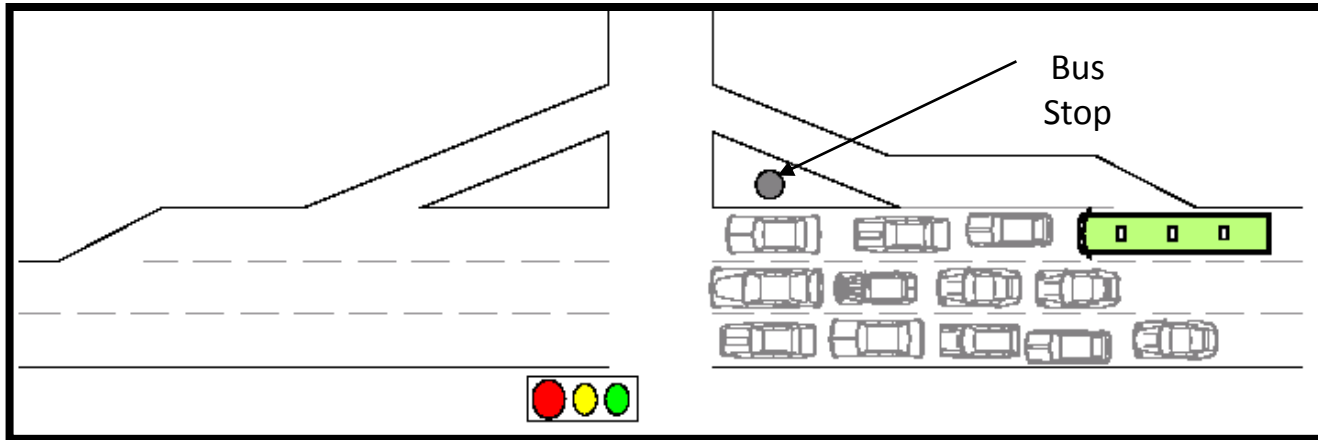
- Bus Lane shut down for several weeks by Local Prosecutor because of accident between empty school bus and Academy commuter bus. (Video received wide airplay on NY Local News)
- NJDOT never put in legal ordinance restricting shoulder to buses/right turn vehicles. This has now been rectified. Bus lane now “legal” allows buses to use shoulder, sets conditions, speed etc. Lanes re-opened in March.
- Need for expanded parking spaces, better parking management. Capacity of PABT limits expansion to Midtown Manhattan.
- NJT investigating extension of Shoulder Bus Lanes, other Priority treatments further south into Monmouth County and other BRT elements in stages

Route 9 - Satisfaction with Shoulder and Time Saved

- Focus group Respondents indicated that using shoulder lanes going towards NYC, Newark, Jersey City saved them 8.9 minutes.
- Time saved using shoulder going away from NYC, Newark, Jersey City was 11.3 minutes.
- Close to three quarters of people were satisfied with the increased performance of the routes that operates on the Route 9 shoulder.



BRT Characteristics – Ability to Bypass Congestion



Queue Jumping

GO 25 and GO 28

- GO 25 and GO 28 are NJ TRANSIT's first enhanced bus routes, featuring some BRT elements
 - **Unique Branding of Buses and Shelters**
 - **Traffic Signal Priority**
 - **Fewer Stops**
 - **Enhanced Interiors (deluxe seats, baggage racks, individual lights above seats, etc)**
 - **Board in Front, Exit in Back**
 - **Extended Hours (GO 28)**
- GO 25 operates between Irvington Terminal and Newark Penn Station during peak hours
- GO 28 operates between Bloomfield Train Station and Newark Airport all day

GO 25 and GO 28



Color-Coded Buses and Stations



BRT buses and stations have their own distinctive color scheme to clearly identify the service.



GO 25 and GO 28

- GO 25 and GO 28 are not considered BRT, but have BRT elements, more like Rapid Bus
 - Designed to speed up bus service to Downtown Newark, serve Newark Airport employment center with direct service.
 - Low Cost implementation started in 2009
 - First Local Bus Urban Application of BRT like service
- Study under way with NJDOT research funding to document benefits, impacts
- Surveys of GO Bus riders suggest about 12% of riders are new diverted from auto.
- GO Bus riders perceive travel time savings much greater than actual 3-7 minutes time savings

NEW BRT Project Proposals in NJ

- Route 9 Middlesex/Monmouth Counties possible extension of existing Bus Shoulder Lane, queue jumps, enhanced stations
- Routes 42/55 in South Jersey
- Bergen and Union County BRT Studies
- Route 1 Princeton Area- Suburban BRT, study and new bus route

South Jersey BRT

- In 2010, NJ TRANSIT initiated an Alternatives Analysis for transit improvements in southern New Jersey in the vicinity of Routes 55/42/676
 - One of the most congested areas in South Jersey
- Determined that the costs, physical impacts, and potential ridership would not support an investment in commuter or light rail along this corridor
- Bus Rapid Transit was identified as the most likely solution for the corridor
- Alternatives Analysis completed; Starting Environmental Impact work in mid- 2013

Bergen County BRT

- The Bergen County Department of Planning & Economic Development and NJ TRANSIT have jointly initiated a study to look at how BRT can be used to improve the quality and attractiveness of public transit within Bergen County
- Nearly 60% of county residents work within Bergen County while most transit services remain NYC-oriented
- Currently in the process of identifying possible destination and routes

Bergen County BRT: Potential Service Areas

Potential BRT Routes

North-South Routes

- Route 17
- Garden State Parkway
- Kinderkamack Rd
- Maywood Ave/Forest Ave
- Fairview Ave/Rochelle Ave
- Paramus Rd
- Saddle River Rd
- Terrace Ave/Hackensack St
- Summit/Prospect Aves
- Boulevard/Valley Rd/Monroe St
- Queen Anne Road/Teaneck Rd
- River Road (Edgewater)

East-West Routes

- Broad Ave
- Route 4
- Route 208
- Route 46
- Route 3
- Route 120

Key Trip Generators

- Meadowlands Sports Complex
- Downtown Hackensack

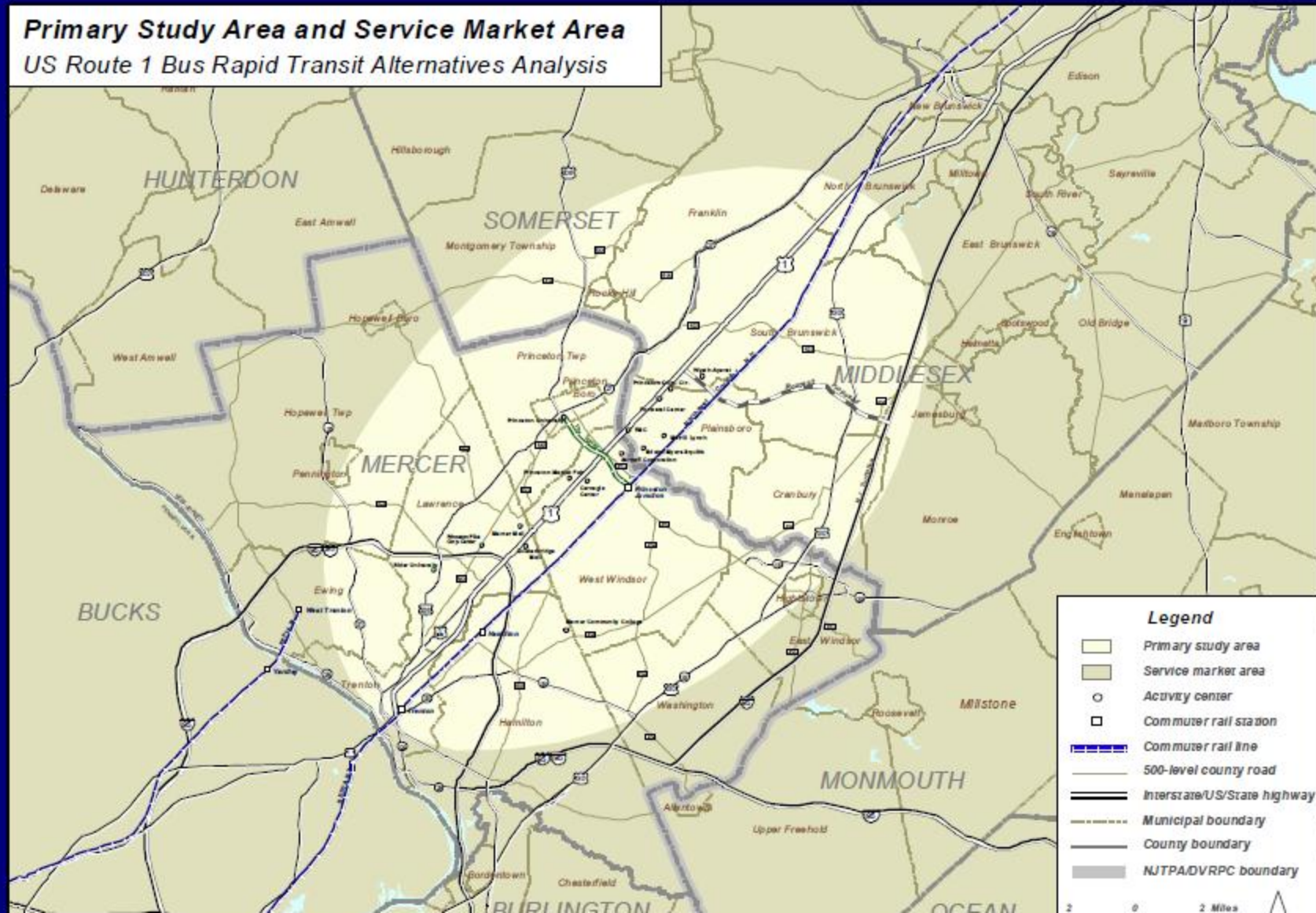
Discussion Points

- Routes
- Origins/Destinations
- Connectivity
- Importance
- Intra- vs. Inter-county



Route One BRT

Primary Study Area and Service Market Area
US Route 1 Bus Rapid Transit Alternatives Analysis



Route 1 BRT

- Feasibility Study completed in 2007. Identified Core BRT system over 20 miles to serve suburban employment center with “Many to Few” Travel Pattern
 - Unique Branding of Buses and Shelters
 - Separate BRT Right Of Way, with some mixed segments
 - Up to 12 new bus routes, many express
 - BRT “Stations”, regional park rides outside the region
 - Connections to Commuter Rail, other transit
- Plan modified to focus on shorter term implementation of key segments, features, to lower costs and time to actually have some improvements
- Designed to support growth, relieve congestion in a suburban environment

Near Term Concept Plan

- Draft Service Plan:
 - *Upgrade of service on existing routes*
 - *Six new routes, which can be implemented incrementally as funding can be made available*
- Upgrade of Existing Routes:
 - *Frequency increased on 600, 603/613 and 605*
 - *603/613 extended to connect Trenton and Lawrence to Carnegie Center and Princeton Junction Station*

Route One BRT

Short Term Infrastructure and equipment investments:

Additional buses.

Defined station stops, including:

BRT station and bus lanes at Princeton Junction Station
(coordinate with West Windsor Princeton Junction
Redevelopment Plan)

BRT station at Quaker Bridge Mall (coordinate with Mall
expansion project)

Enhanced Bus Park & Ride (South Brunswick Township)

Improving Access to Princeton Hospital-Proposed
Princeton - Plainsboro Route 655

Bus maintenance facilities.

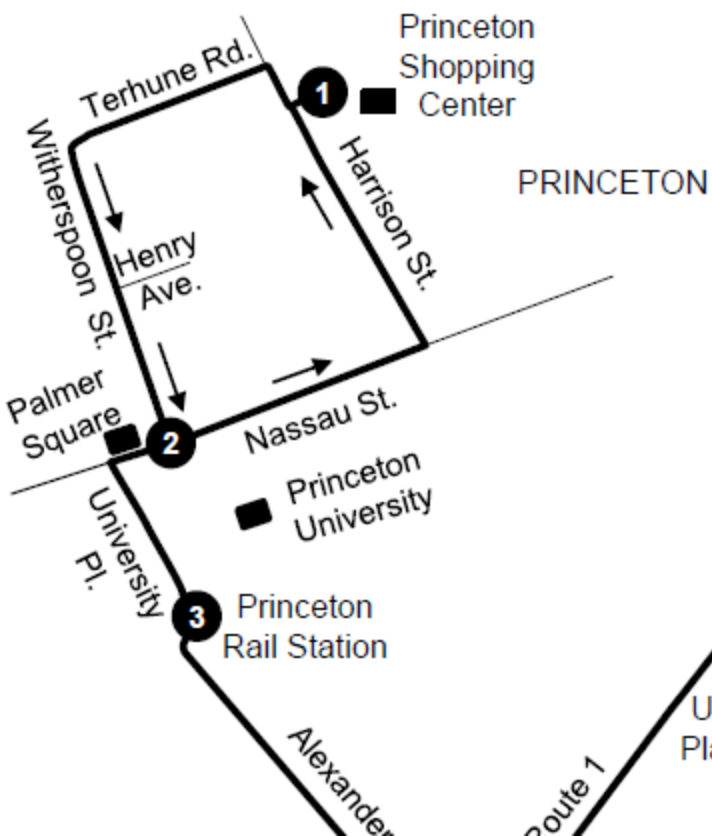
Route 1 BRT- New 655 Route

- First totally new NJT route in over 6 years
- Used existing NJT bus capacity for equipment. NJT is CMAQ grantee, with funding from NJTPA and DVRPC, covering 58% of costs.
- Private Sector (Princeton U., Princeton Health Care contributed 18% of operating costs for three years. Balance (2%) from TMA, county
- NJT committed to fund 50% of operating costs for long term after evaluation of ridership, revenue during 3 year period. Serves relocated Princeton Hospital in suburban Plainsboro.

Route 1: Bus Route 655

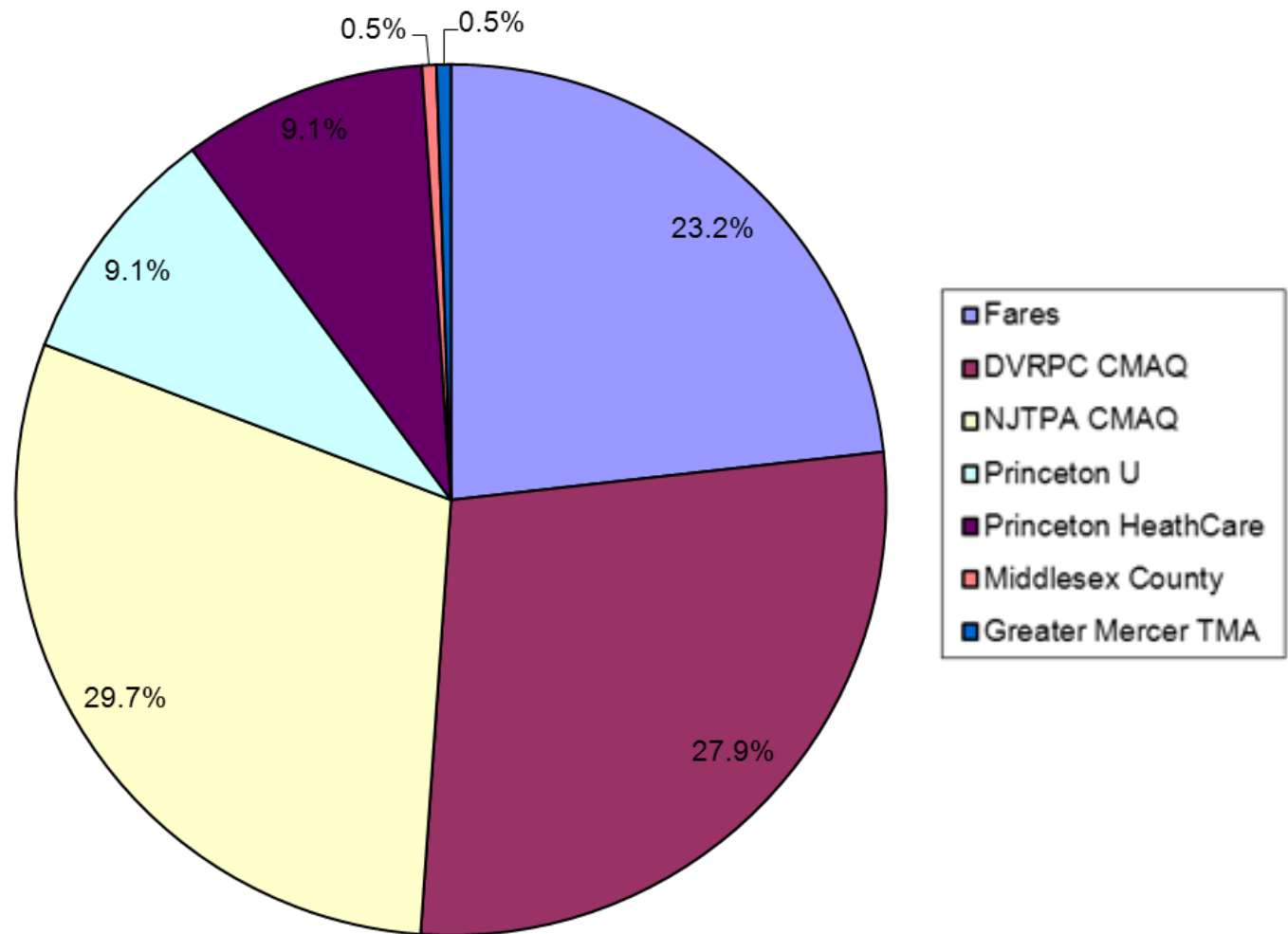


655 Princeton - Plainsboro



TO PLAINSBORO					TO PRINCETON				
PRINCETON TOWNSHIP Princeton Shopping Center	PRINCETON BORO Nassau St. at Palmer Square	PRINCETON BORO Princeton Railroad Station	PLAINSBORO UMCP at Plainsboro	PLAINSBORO Scotts Corner Rd. at Ravens Crest Dr.	PLAINSBORO Scotts Corner Rd. at Ravens Crest Dr.	PLAINSBORO UMCP at Plainsboro	PRINCETON BORO Princeton Railroad Station	PRINCETON BORO Nassau St. at Witherspoon St.	PRINCETON TOWNSHIP Princeton Shopping Center
MAP REFERENCE					MAP REFERENCE				
1	2	3	4	5	5	4	3	2	1
605	615	618	628	639	639	649	659	702	710
645	655	658	708	719	719	729	739	742	750
725	735	738	748	759	759	809	819	822	830
805	815	818	828	839	839	849	859	903	913
845	855	858	910	921	921	931	943	947	957
925	937	941	953	1004	1004	1014	1026	1030	1040
1005	1017	1021	1033	1044	1044	1054	1106	1110	1120
1045	1057	1101	1113	1124	1124	1134	1146	1150	1200
1125	1137	1141	1153	1204	1204	1214	1226	1230	1240
1205	1217	1221	1233	1244	1244	1254	106	110	120
1245	1257	101	113	124	124	134	146	150	200
125	137	141	153	204	204	214	226	230	240
205	217	221	233	244	244	254	306	310	320
245	257	301	313	324	324	334	346	350	400
325	337	341	353	404	404	414	426	430	440
405	417	421	433	444	444	454	506	510	520
445	457	501	513	524	524	534	546	550	600
525	537	541	553	604	604	614	624	627	635
605	615	618	628	639	639	649	659	702	710
720	730	733	743	754	754	804	814	817	825
835	845	848	858	909	909	919	929	932	940
955	1005	1008	1018	1029	1029	1039	1049	1052	1100
1105	1115	1118	1128	1139	1139	1149	1159	1202	1210

Route 655: Percentage of 3-Year Operating Cost Funding



Conclusions About BRT in NJ

- **BRT or BRT like services have been implemented to serve a variety of land use patterns and transit markets:**
 - High Volume Suburban to Urban Commuter Bus Corridors (Route 9, XBL)
 - Mid-Size Urban Centers with traditional Local Bus (GO 25, GO 28)
 - Suburban Job Centers (Route 1) for Many to Few Travel Patterns
- **New Services Continue Pattern of Implementation on an Incremental basis in different type of areas**
 - Multiple projects such as Bergen BRT, South Jersey, Route 1, Extension of Route 9, Extensions of GO Bus show flexibility of BRT or BRT type elements to improve transit given limited funding.
- **BRT can carry peak hour volumes similar to LRT**