Central Avenue Bus Rapid Transit Project

Naomi Klein
Principal Planner
Westchester County Department of Transportation
Mount Vernon, New York

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Westchester gov.com

The Bee-Line System

- Second largest bus system in New York State
- 350 buses
- 64 routes
- 32 million annual riders/115,000 weekday

The Central Avenue Corridor

- White Plains to Yonkers and the Bronx
- 14.4 mile long corridor
- Major destinations include:
  - ✓ Downtown White Plains
  - ✓ Westchester County Center
  - ✓ Cross County Shopping Center
  - ✓ Yonkers Raceway
  - ✓ New York City Subway
  - ✓ Other Bee-Line routes

Central Avenue Corridor: Bee-Line Bus Routes

- Route 20 (local) and 21 (limited) connect Westchester with the New York City subway and bus – approximately 30% of Bee-Line customers transfer.
- 4.2 million annual riders (2009)
- Average Route 20 daily weekday ridership approximately 14,000 riders – 13% of Bee-Line system ridership.
- BxM4C – limited express to Manhattan

High Concentration of Residential, Retail and Commercial Development

- High density residential and retail uses provide opportunities to attract more riders.
- Underutilized or vacant properties have potential to be redeveloped.

Incomplete or narrow sidewalks and wide crossings are challenging for pedestrians

Traffic Signals and Bus Stops

- 71 bus stops in corridor, approximately every 2/10 of a mile.
- 44 traffic signals along corridor, approximately every 3/10 of a mile.

Why Bus Rapid Transit on Central Avenue

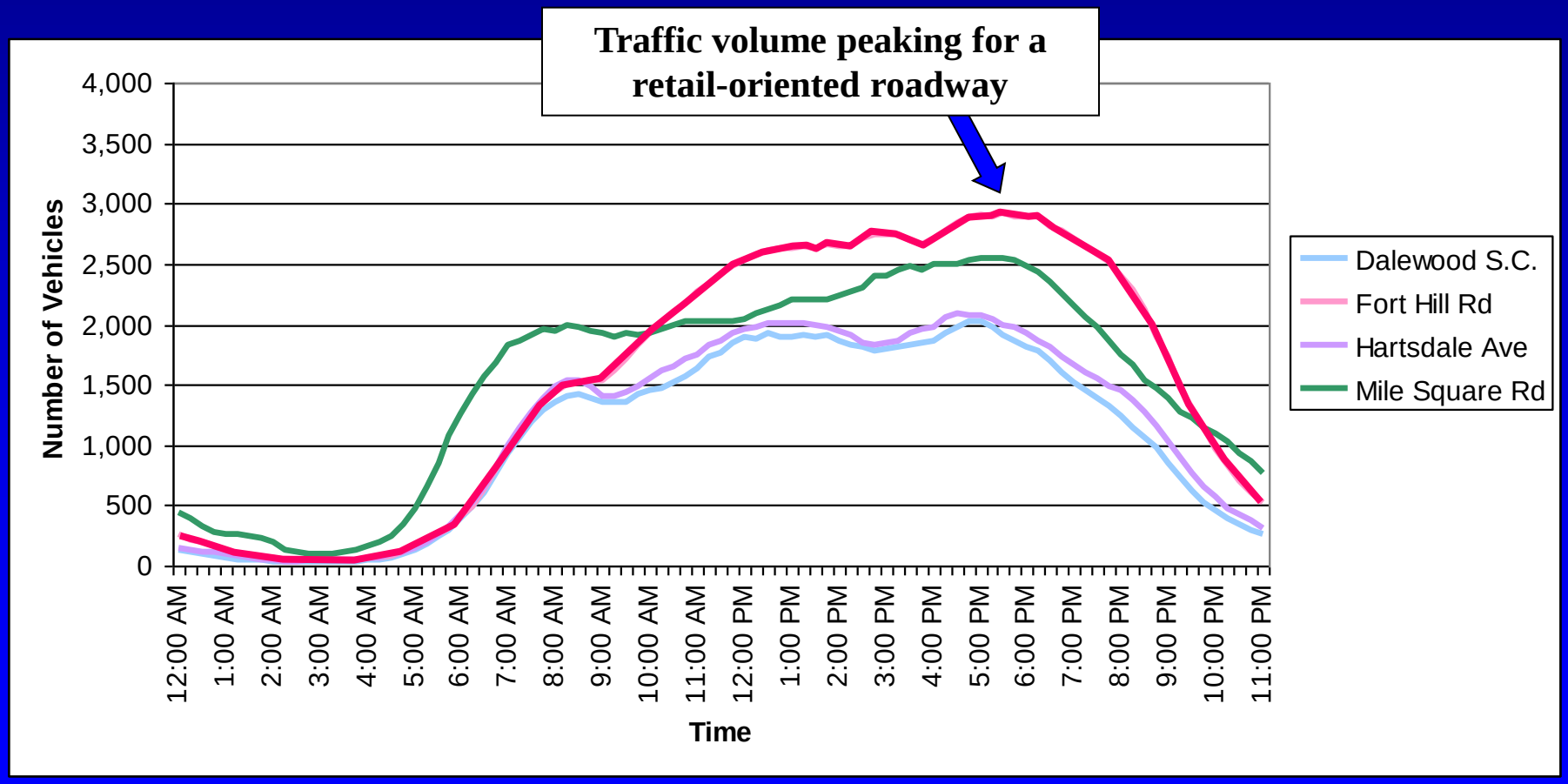
- Reduce travel times
- Attract new riders
- Improve mobility in corridor
- Create an integrated and customer friendly transit service
- Improve operating efficiency

Existing Conditions – Bus Ridership

- From 2003 to 2007:
  - Route 20 weekday boardings increased by 23%.
  - Route 21 weekday boardings increased by 11%.
- From 2007 to 2009:
  - Route 20 and 21 combined boardings increased by 9%
- Ridership increases due to:
  - MetroCard (April 2007)
  - Empire City at Yonkers Raceway (October 2006)
  - Growth in downtown White Plains

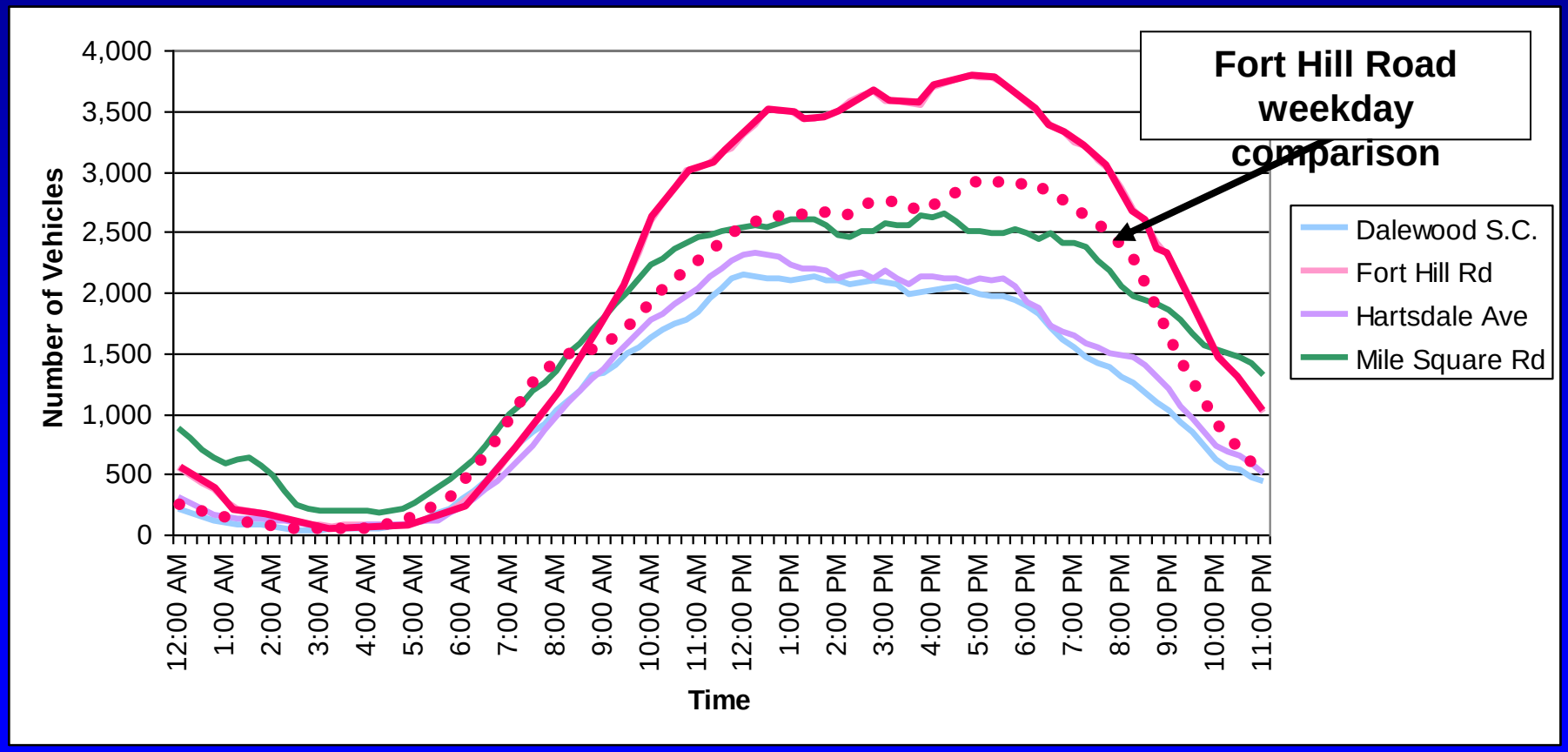
Existing Conditions - Traffic

Average Weekday Volumes

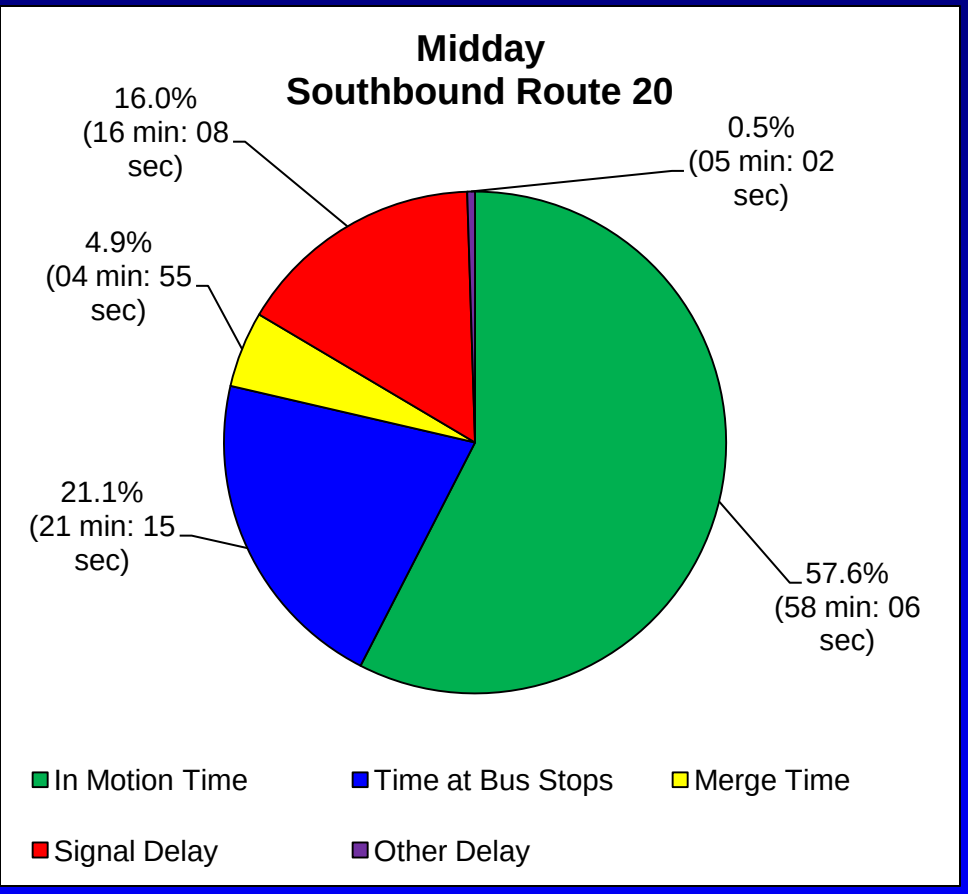


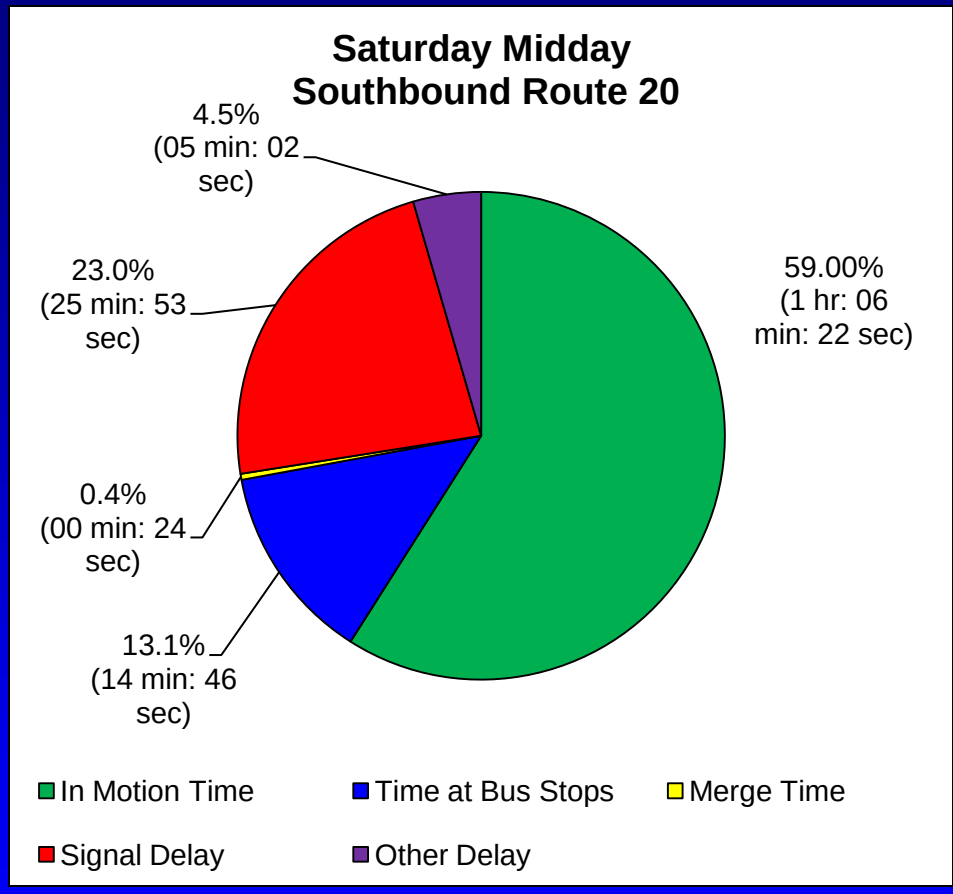
Existing Conditions - Traffic

Average Saturday Volumes



Existing Conditions – Travel Time Analysis



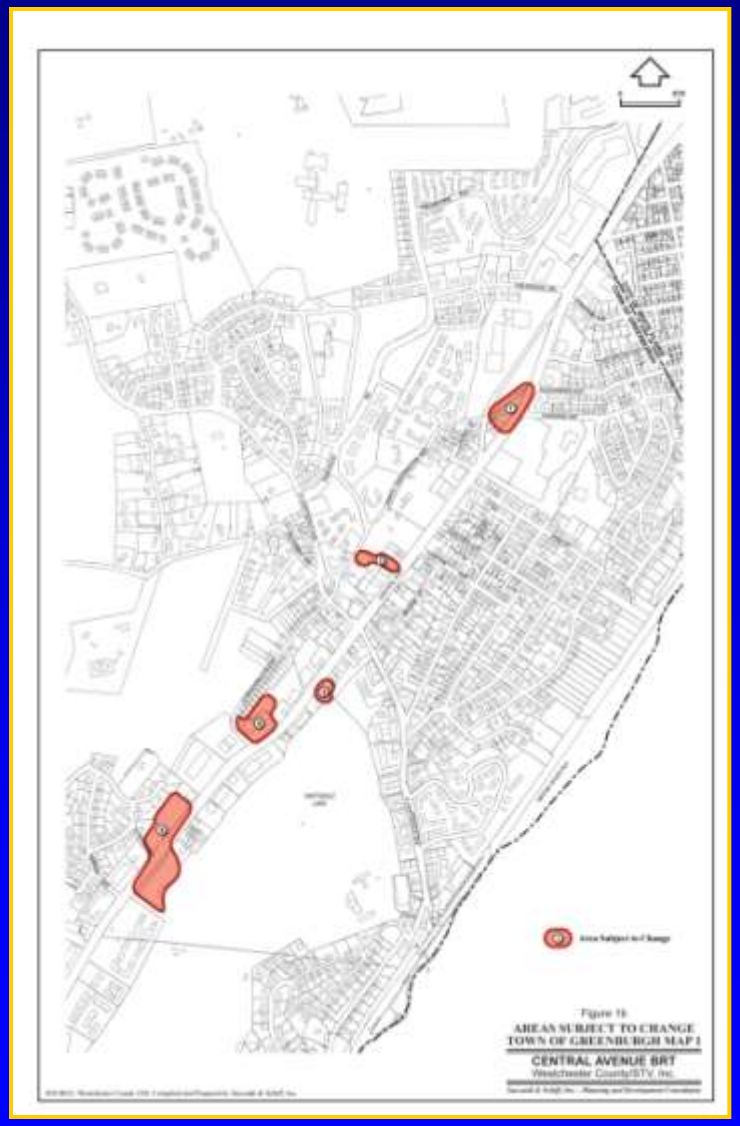


- **How a bus spends its time from route origin to terminal**
- **Most congestion occurs during mid-day and pm peak periods, consistent with retail orientation**

Existing Conditions – Land Use

BRT system design, especially station locations, is influenced by land use and zoning.

- Evaluated areas subject to change:
  - ✓ Vacant parcels
  - ✓ Underutilized properties
  - ✓ Proposed station areas
- Under existing zoning, land uses are generally segregated.
- Land use decisions are made at a local level.



BRT Concepts for Central Avenue

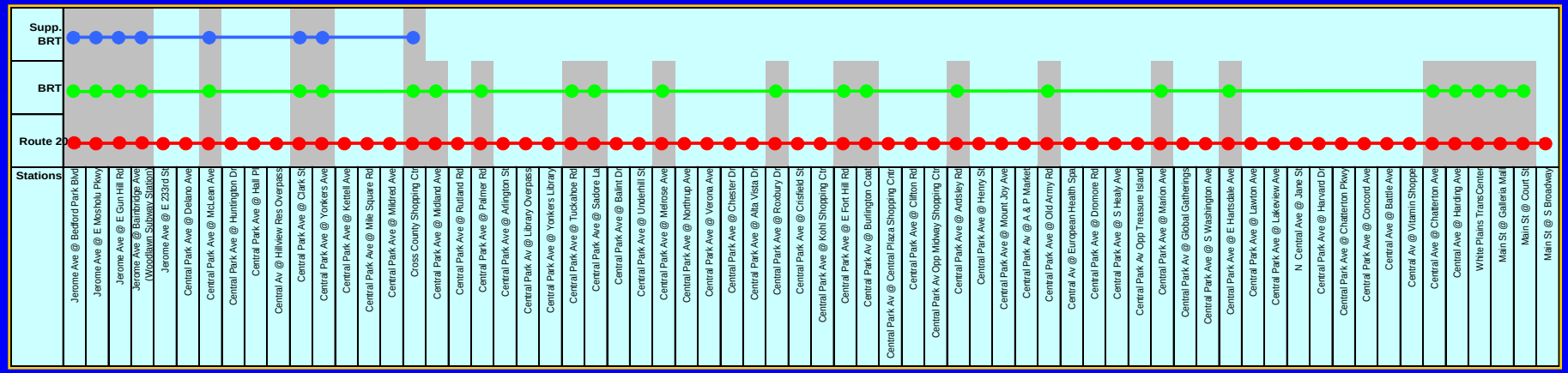
- Fewer stops
- Intelligent Transportation Systems (ITS)
- Preferential lane treatments
- Attractive stations with customer amenities
- Stylized vehicles with low floor boarding
- Access to stations
- Faster fare collection
- Strong brand identity
- Transit-Oriented Development (TOD)

BRT Concepts for Central Avenue

Operating Solutions

- Daily service
- 10-15 minute headways
- Only 25 BRT stations on BRT route (71 local stops).
- Free transfers between BRT and local buses. Existing free transfers to NYCT subways and buses remain.

Potential BRT and Local Route 20 Service



BRT Concepts for Central Avenue

ITS Treatments

- **Traffic Signal Priority** at most intersections
- **Queue Jumpers** at selected intersections that are wide enough for a queue jump lane

BRT Concepts for Central Avenue

Preferential Roadway Treatments

- Exclusive lanes for BRT and other Bee-Line buses on Central Avenue

Rendering of proposed exclusive lane at Ft. Hill Road in Yonkers

BRT Concepts for Central Avenue

Stations

- Attractive stations with customer amenities
- Provide both shelter and information to customers
- Low floor boarding
- Off board fare collection
- Real time arrival signs
- Branding at stations and on vehicles

Rendering of proposed BRT station at Fort Hill Road

BRT Travel Time Savings

- Limited stops
- Headway based dispatching
- Transit priority (transit signal priority, queue jumpers, BRT lanes)
- Prepaid boarding (POP, all-door)
- In-line station at Cross County Shopping Center

Potential Time Savings Weekdays - Southbound direction

Time savings category	Low	Midpoint	High
Limited stop operation (fewer bus stops compared to Route 20)	3.00	6.00	9.00
Headway based dispatching (no intermediate timepoints)	1.00	2.00	3.00
Pre-paid, POP fare collection, all door boarding, level boarding	5.00	6.50	8.00
Transit priority: BRT lanes, queue jumpers, traffic signal priority	2.00	4.25	6.50
In-line Cross County Station - more direct Cross County shopping center routing – Southbound direction time savings	7.00	8.25	10.50
Time savings with In-line Cross County Station	18.00	27.00	37.00
Current Route 20 travel time:	63.00	75.50	88.00
BRT travel time:	45.00	48.50	51.00
% time savings	28.57%	35.76%	42.05%

Transit Oriented Development

- A land use strategy to create compact, walkable communities centered around transit systems that reduce dependence on auto travel, create more human scale environments and more livable communities.

- Relationship of TODs to bus systems not as widely documented as rail but domestic and international examples exist:
  - Pittsburgh, Boston, Los Angeles
  - Ottawa, Curitiba , Bogata, Brisbane

- Community incentives to promote TOD:
  - Land use plans, policies, zoning
  - Capital improvements
  - Density bonuses
  - Tax incentives
  - Streamlined development process

- Community support critical – traffic engineers and land use planners on study Steering Committee.

- Full BRT treatment will have the greatest presence and the most potential to create land use changes

TOD Solution – Former Barnes & Noble Site

Original Carvel Store

TOD Solution – Former Barnes & Noble Site

- Physical and visual tie into BRT station at Hartsdale Ave
- Mixed use residential, office and retail
- Streetscape improvements
- Shared parking and possible park & ride

TOD Solution – Former Yonkers Avenue Parking Garage

- 7 acre vacant site
- Currently used for parking

TOD Solution – Former Yonkers Avenue Parking Garage

- Mixed use hotel and retail
- Destination in its own right
- Animated plaza
- Improved streetscapes - sidewalks, street trees, seating areas
- Shared parking and possible park & ride

Park and Ride Locations

Sample TOD Overlay Zone – Major Components

- Apartments/townhouses – minimum 7 dwelling units per acre
- Mixed uses w/ground floor retail
- Maximum parking requirements, shared parking, parking at rear of buildings
- Form based codes emphasizing visual aspect of development
- Limited setbacks
- Building heights to encourage density but sensitive to the context of the surrounding area
- Sidewalks, bike racks, streetscapes
- Design guidelines for building facades
- Minimize curb cuts

Preliminary Capital Cost Estimates (2008 Dollars)

ITEM	Phase 1 - < 1 Year	Phase 2 - < 3 Years	Phase 3 - 3-6 Years	Phase 4 - 6+ Years
Additional service to Yonkers Raceway and CCSC	$0			
Additional Free Transfer between Routes 20 & 21	$0			
Implement transit signal priority		$1.50 M		
Implement queue jumpers		$0		
Install bus lanes at specified locations		$2.00 M		
Open mini Park & Ride lots along corridor		$0		
Initial BRT branding		$0.15M		
New planning principles (guidelines) along corridor		$0.25M		
Implement headway-based dispatching		$0		
Install BRT stations with level boarding			$1.70M	
Activate real-time message signs			$0.64M	
Install interim Proof-of-Payment fare collection			$9.50M	
BRT vehicles to replace 2002 vintage buses				$6.80M
Construct CCSC In-Line station				$10.00M
Full BRT branding roll out				$0.25M
Complementary TOD along corridor				$0
Implement smart card Proof-of-Payment fare collection				TBD
Total Capital	**$0**	**$3.90M**	**$11.84M**	**$17.05M**

Phasing

	< 1 year	< 3 years	3-6 years	6+ years	Depend. on other entities
Additional service to Raceway and CCSC	•				
Additional free transfer between Route 20 & 21	•				
Implement transit signal priority		•			•
Implement queue jumpers		•			•
Install bus lanes at specified locations		•			•
Open mini Park & Ride lots along corridor		•			•
Initial BRT branding		•			
New planning principles (guidelines) along corridor		•			•
Implement headway based dispatching		•			
Install BRT stations with level boarding			•		
Activate real time message signs			•		
Install interim Proof of Payment fare collection			•		
BRT vehicles to replace 2002 vintage buses				•	
Construct CCSC In Line station				•	•
Full BRT branding roll out				•	
Complementary TOD along corridor				•	•
Implement smart card Proof of Payment					•

BRT - Conclusion

- BRT is an effective strategy to improve transit on Central Avenue

- BRT could offer travel time savings of 16 to 37 minutes one way (25-35%)
- With BRT, ridership in corridor could increase 35%
- BRT can help change Westchester County's perception of bus travel

Current Status/Next Steps

- Final report completed June 2009 (www.westchestergov.com/transportation)
- Implementation in progress - Transit Signal Priority
- Work with communities on promoting land use changes – Greenburgh in progress