

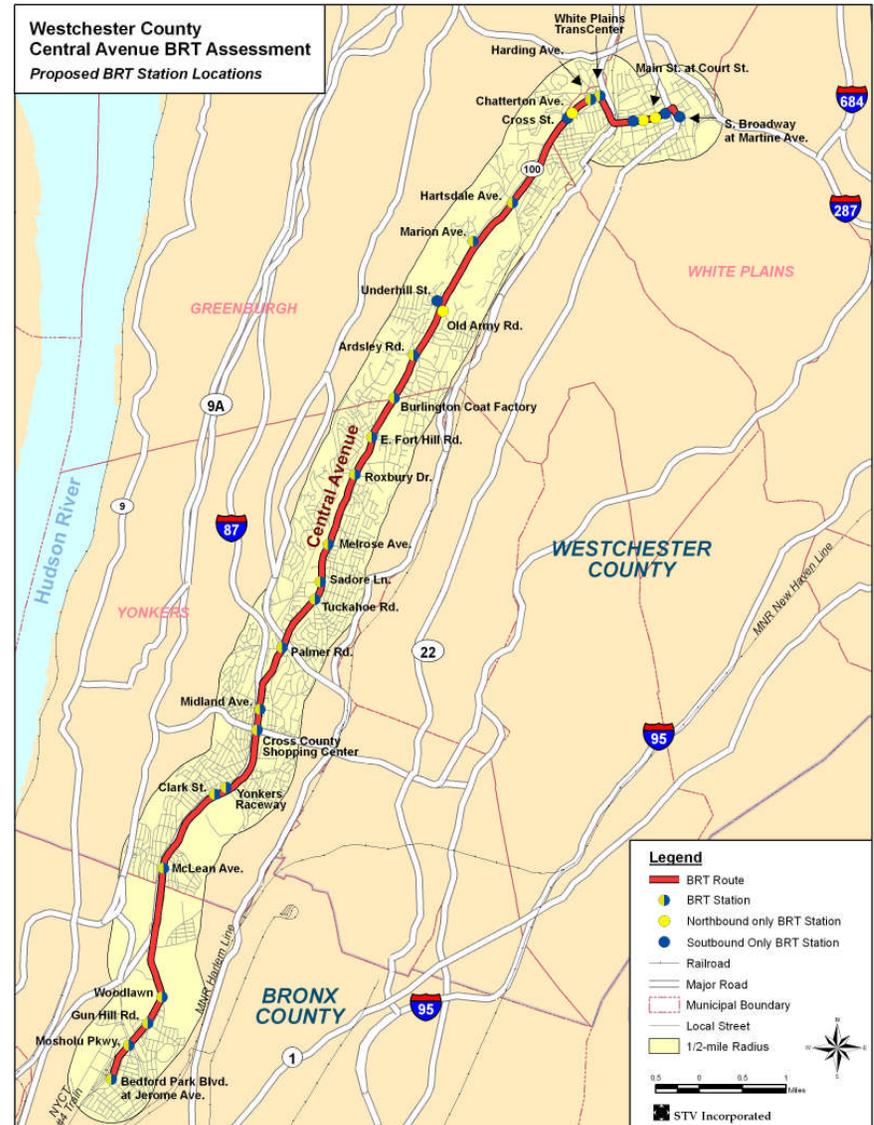
Westchester County - Department of Transportation Central Avenue Bus Rapid Transit Study Transit Oriented Development Opportunities



*NYMTC Brown Bag Lunch
December 17, 2008*

The Central Avenue Corridor

- Serves Westchester County between White Plains and Yonkers, and links Westchester to New York City.
- 14.4 mile long corridor.
- Major destinations include:
 - ✓ Downtown White Plains
 - ✓ Westchester County Center
 - ✓ Shopping areas along Central Avenue
 - ✓ Cross County Shopping Center
 - ✓ Yonkers Raceway
 - ✓ New York City Subway
 - ✓ Other Bee-Line routes



Central Avenue Corridor: 3 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.
- Route BxM4C (Westchester – Manhattan Express) links Westchester to Midtown and Lower Manhattan.
- 3.6 million annual riders.
- Average Route 20 daily weekday ridership approximately 12,000 riders – 10% of Bee-Line system ridership.



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, spaced approximately every 2/10 of a mile.
- 44 traffic signals along corridor, approximately every 3/10 of a mile.



Objective of the Central Avenue Bus Rapid Transit Assessment

To identify components of Bus Rapid Transit for the Central Avenue Corridor that will:

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

Existing Conditions Analyses

In order to understand conditions along the Central Avenue corridor, the following analyses were conducted:

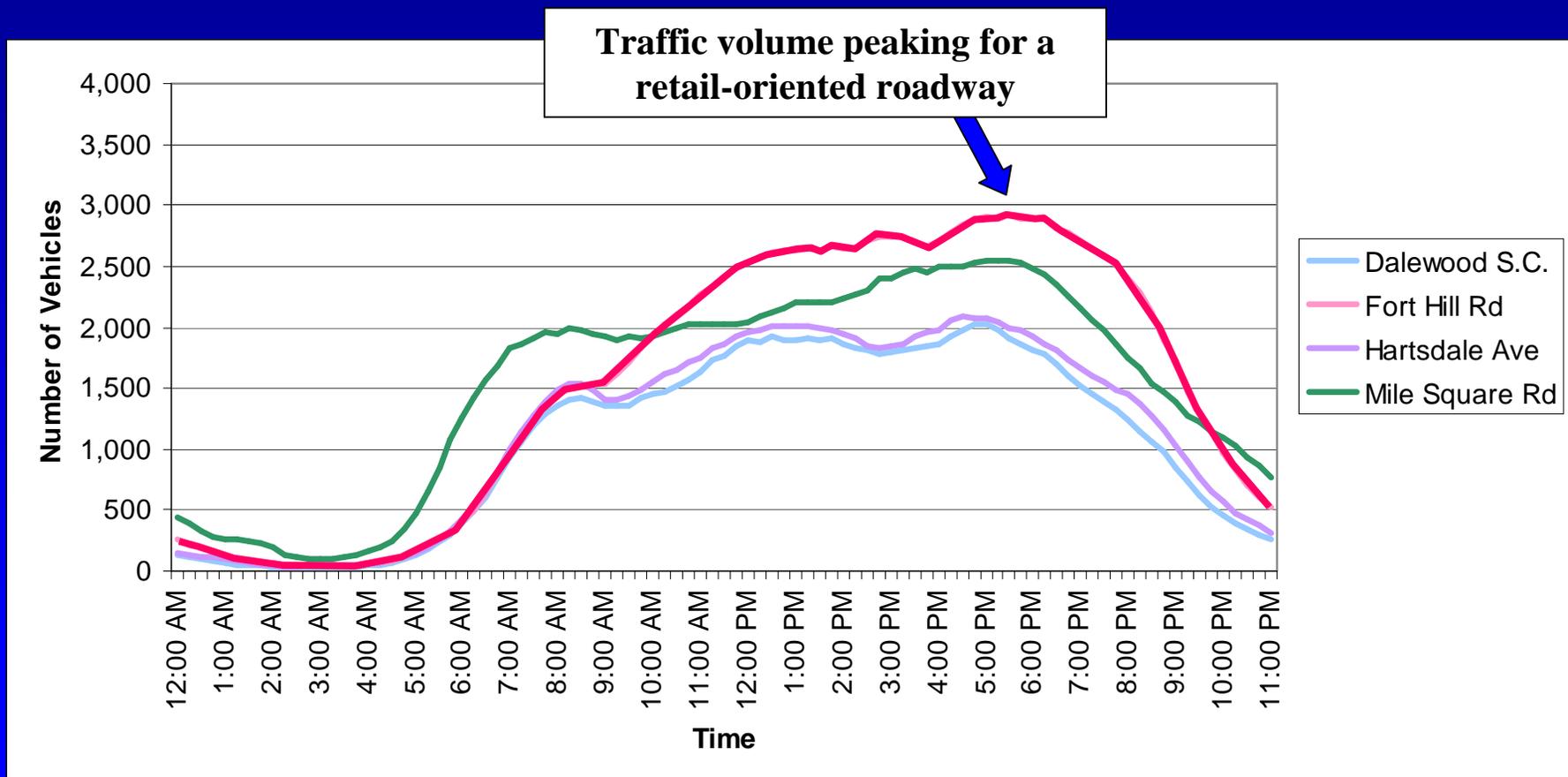
- Public involvement – 2 open houses, 2 newsletters, on board survey, website
- Bus ridership
- Traffic
- Travel time analysis
- Land use

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 2008:
 - Route 20 boardings increased by 28%.
 - Route 21 boarding increased by 22%.
- Ridership increases due to:
 - MetroCard (April 2007)
 - Empire City at Yonkers Raceway (October 2006)
 - Growth in Downtown White Plains

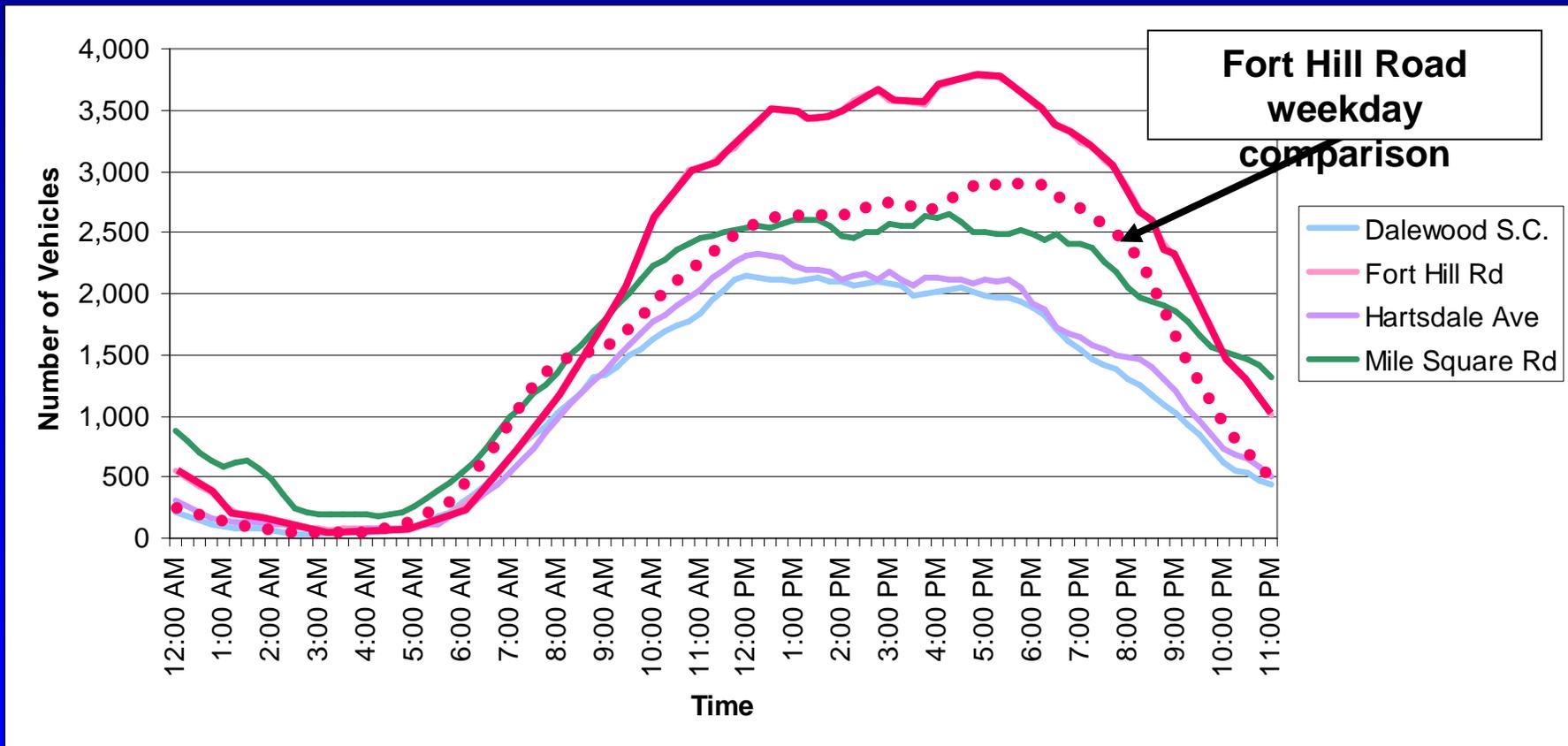
Existing Conditions - Traffic

Average Weekday Volumes

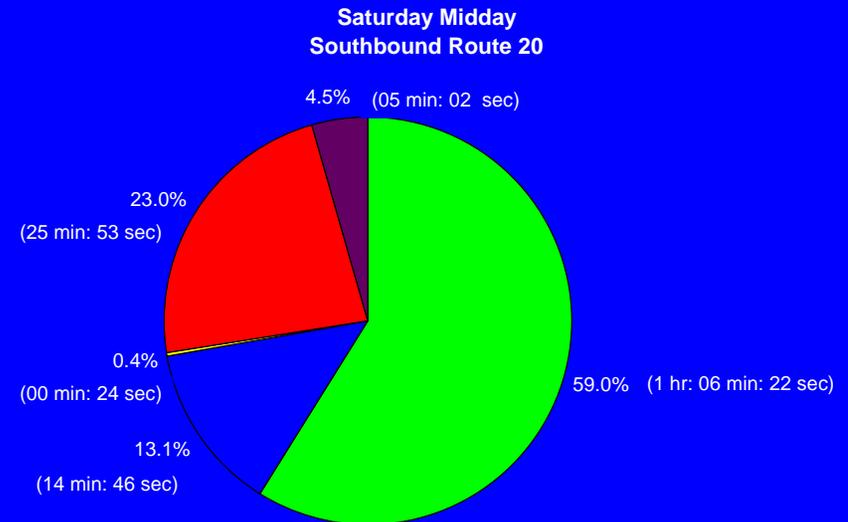
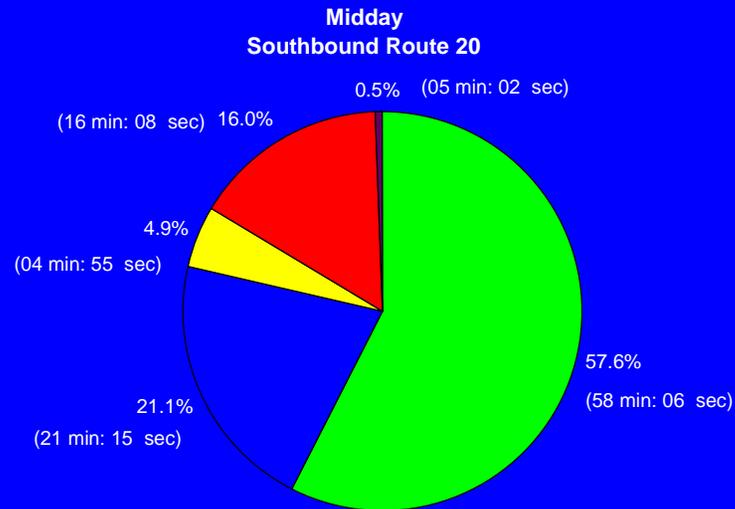


Existing Conditions - Traffic

Average Saturday Volumes



Existing Conditions – Travel Time Analysis



■ In Motion Time ■ Time at Bus Stops ■ Merge Time ■ Signal Delay ■ Other Delay

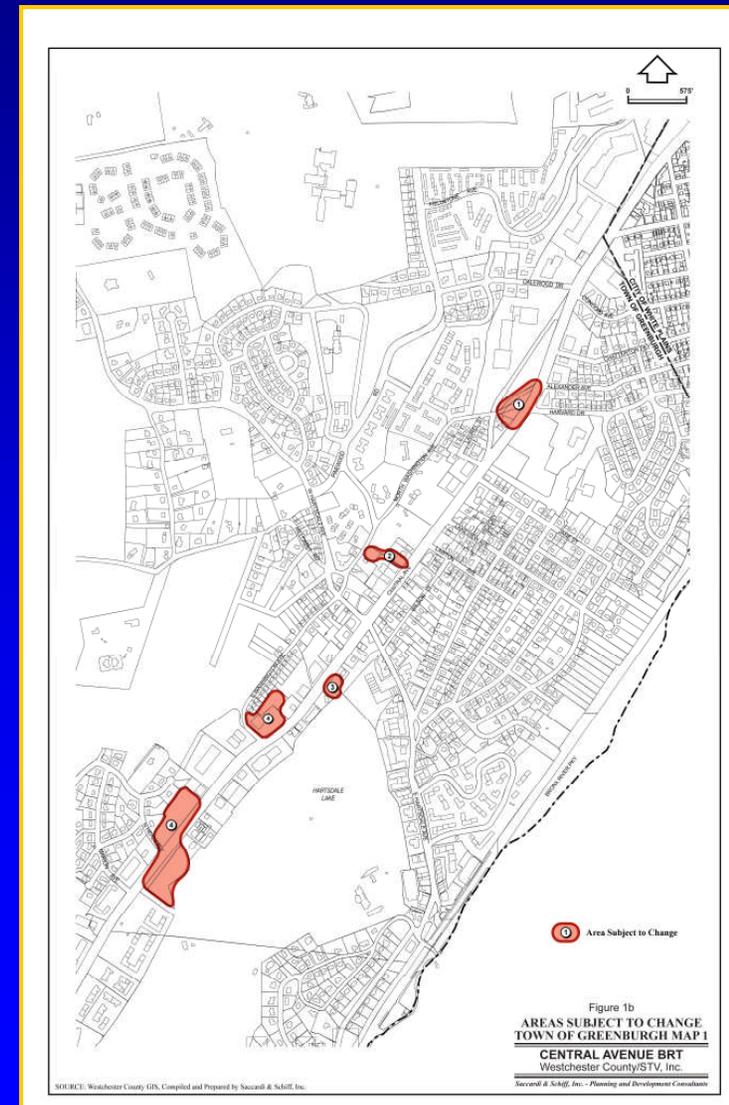
■ In Motion Time ■ Time at Bus Stops ■ Merge Time ■ Signal Delay ■ Other Delay

- 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

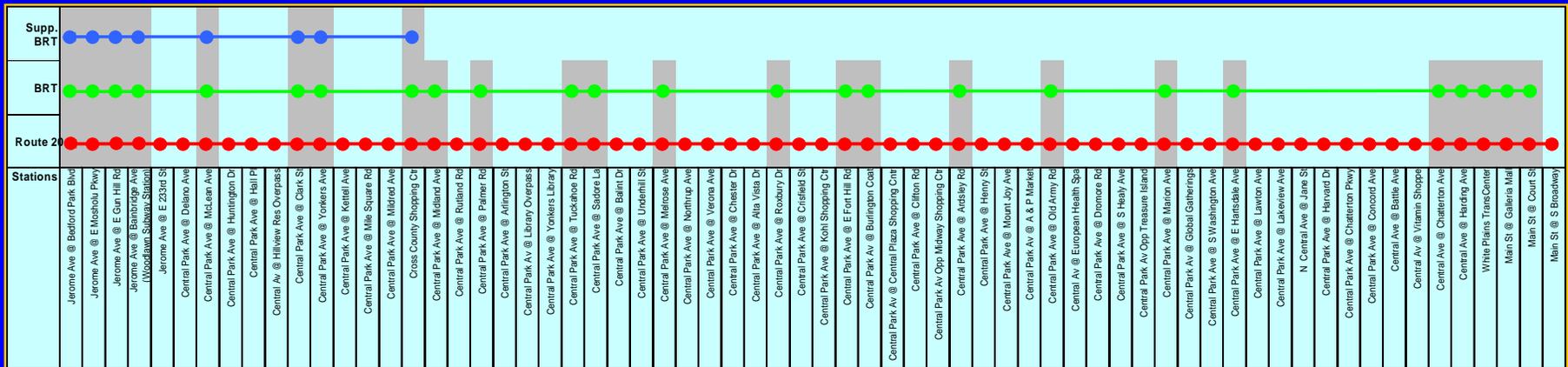
- Faster operations.
- Intelligent Transportation Systems (ITS).
- Preferential lane treatments.
- Attractive stations with customer amenities.
- Stylized vehicles with low floor boarding.
- Access to stations.
- Faster fare collection.
- Strong brand identity.
- Transit-Oriented Development (TOD).

BRT Concepts for Central Avenue

Operations Solutions

- BRT service will run daily.
- BRT will operate every 10-15 minutes.
- 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.

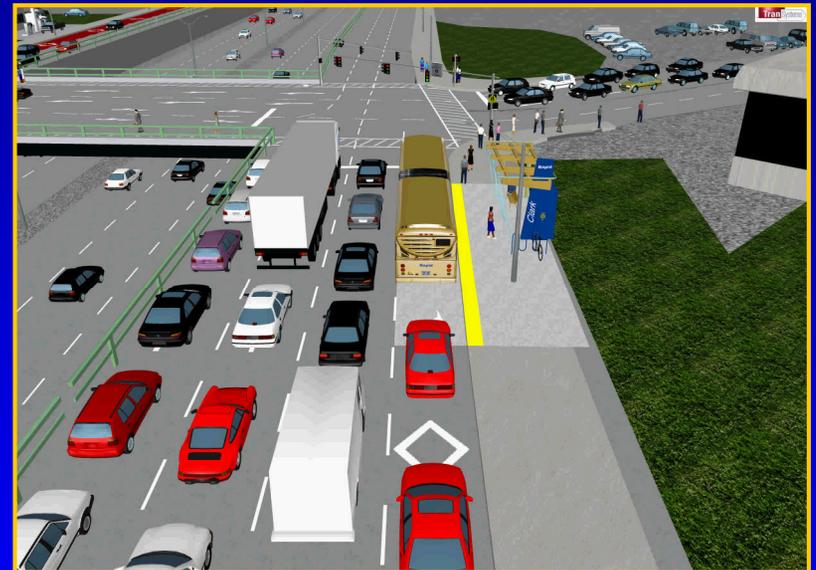
Potential BRT and Local Route 20 Service



BRT Concepts for Central Avenue

ITS Treatments

- **Traffic Signal Priority** at most intersections except:
 - ✓ At those with split north/southbound signal phasing (e.g., Yonkers Ave and Tuckahoe Rd).
 - ✓ Side streets operating at or overcapacity during peak periods (i.e., Hartsdale Ave and Ardsley Rd).
 - ✓ Intersections with a high volume of bus movements on intersecting approaches (i.e., near TransCenter).
- **Queue Jumpers** at selected intersections that are wide enough for a queue jump lane (e.g., Hartsdale Avenue).



Signal priority and queue jumpers give BRT vehicles a head start over traffic.

BRT Concepts for Central Avenue

Preferential Roadway Treatments

- Exclusive lanes for BRT and other Bee-Line buses on Central Avenue.
- Reduce travel times by allowing buses to run faster and avoid other traffic.
- Could be implemented from Yonkers/Greenburgh line to Sadore Lane with minor parking impacts.



Rendering of proposed exclusive lane at Ft. Hill Road.

BRT Concepts for Central Avenue

Stations

- Stations are the gateway to BRT.
- Designed to provide both shelter and information to customers.
- At BRT stations, free transfers to Route 20 local bus.



Rendering of proposed BRT station at Fort Hill Road

BRT Travel Time Savings

- Limited stops.
- Headway based dispatching.
- Transit priority (BRT lanes, queue jumpers, signal priority).
- Prepaid boarding (POP, all-door boarding, level or near level boarding).
- 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%

Potential Time Savings Saturdays - 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	1.50	4.00	6.50
In-line Cross County Station - more direct Cross County shopping center routing – Southbound direction time savings	6.00	8.25	10.50
Total Time Savings	16.50	26.75	37.00
Current Route 20 travel time:	60.00	76.50	93.00
BRT travel time:	43.50	49.75	56.00
% time savings	27.50%	34.97%	39.78%

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.

Transit Oriented Development

- Traditionally focused on train stations.
- Fixed nature of system gives more permanence and visibility that is necessary to attract development.
- Relationship of TODs to bus systems not as widely documented but domestic and international examples exist:
 - Pittsburgh, Boston, Los Angeles
 - Ottawa, Curitiba , Bogata, Brisbane

Transit Oriented Development

- Communities can be proactive in taking steps to promote TOD and reduce auto dependency through Transit Efficient Development (TED) as well.
- Incentives include:
 - Land use plans, policies, zoning
 - Capital improvements
 - Density bonuses
 - Tax incentives
 - Streamlined development process

TOD for Central Avenue

- Community support critical – traffic engineers and land use planners on study Steering Committee.
- 3 areas selected for conceptual TOD designs based on community input:
 - ✓ Harding Avenue in White Plains.
 - ✓ Former Barnes & Noble site in Greenburgh.
 - ✓ Former Yonkers Avenue Parking Garage in Yonkers.
- Identified opportunities/constraints and potential new uses at each site.

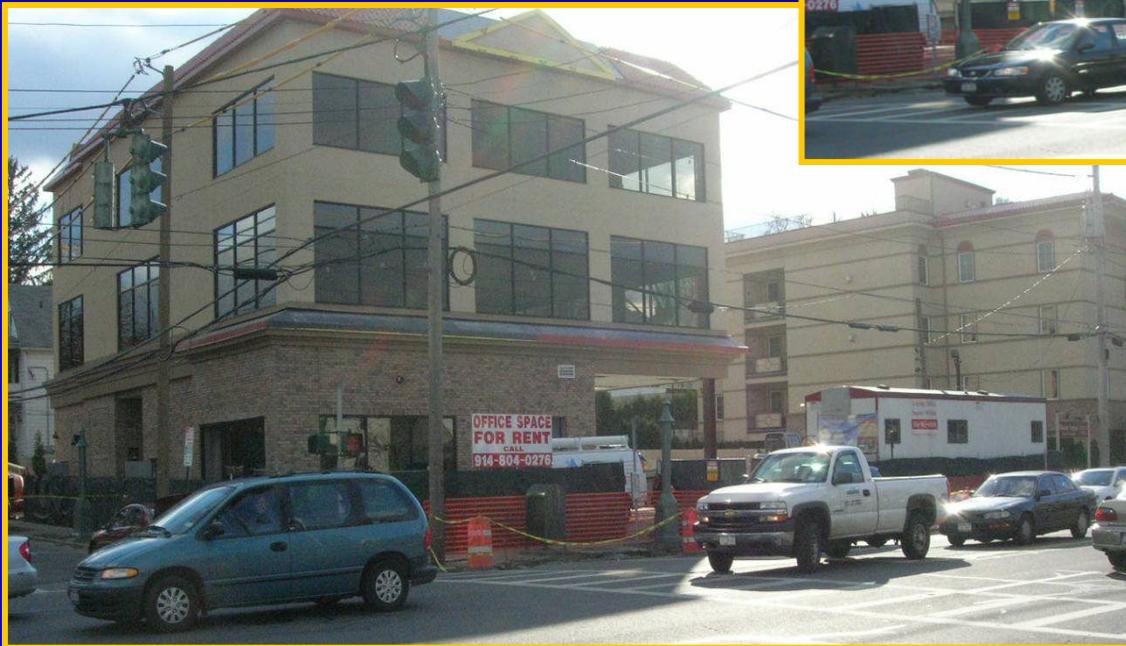
TOD Solution – Harding Avenue

- Gateway to White Plains



TOD Solution – Harding Avenue

- New residential and commercial construction to the sidewalk



TOD Solution – Harding Avenue

- Recommend relocating church and moving parking to rear of building



TOD Solution – Harding Avenue

- Reconfigure and redevelop parcels
- Mixed use residential, office and retail.
- Streetscape improvements to sidewalks and crosswalks.
- Shared parking and possible park & ride.



Proposed TOD uses at Harding Avenue.

TOD Solution – Harding Avenue



Figure 9
**CONCEPTUAL PERSPECTIVE -
HARDING AVENUE**
CENTRAL AVENUE BRT
Westchester County/STV, Inc.

Saccardi & Schiff, Inc. - Planning and Development Consultants

TOD Solution – Former Barnes & Noble Site

Original Carvel Store



TOD Solution – Former Barnes & Noble Site

- Recommend physical and visual connection with Hartsdale Avenue intersection



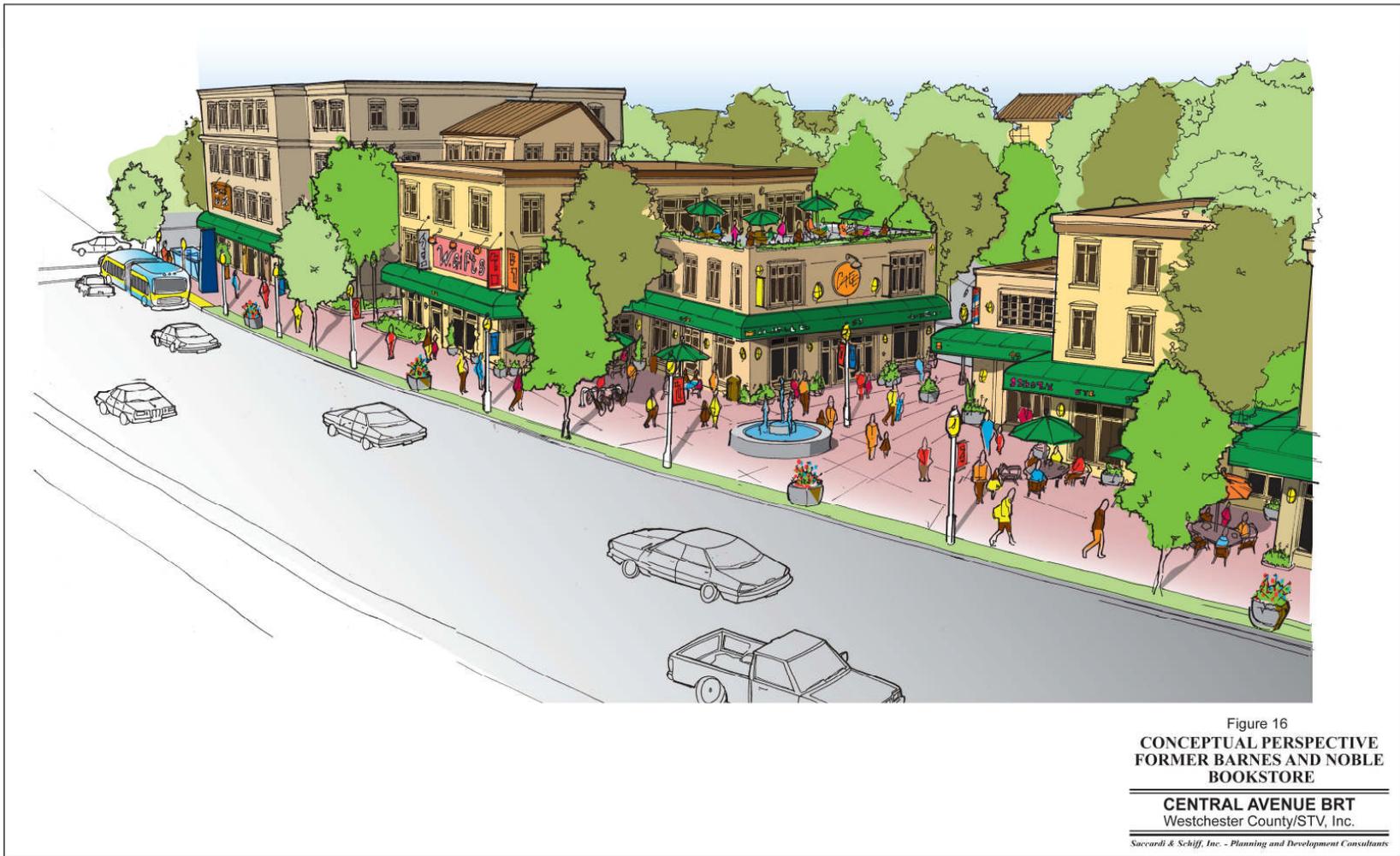
TOD Solution – Former Barnes & Noble Site

- Tie into BRT station at Hartsdale Ave.
- Mixed use residential, office and retail.
- Streetscape improvements to sidewalks and crosswalks.
- Shared parking and possible park & ride.



Proposed TOD uses at former Barnes & Noble site.

TOD Solution – Former Barnes & Noble Site



TOD Solution – Former Yonkers Avenue Parking Garage

7 acre vacant site



TOD Solution – Former Yonkers Avenue Parking Garage

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 such as sidewalks, street trees and seating area.
- Shared parking and possible park & ride.



Proposed TOD uses at former Yonkers Avenue parking garage site.

TOD Solution - Former Yonkers Avenue Parking Garage



Park and Ride Locations

Central Park Ave & Ardsley Rd (SB)

- Approx. 50 spaces



Sample TOD Overlay Zone

Allowed Uses (examples):

- Apartments/townhouses – minimum 7 dwelling units per acre
- Mixed uses w/ground floor retail
- Banks, government bldgs, hospitals, hotels, retail under 10,000 sq. ft., restaurants (not fast food), service oriented offices, cultural facilities, transit stations

Sample TOD Overlay Zone

Prohibited Uses (examples):

- Low density housing (less than 7 units per acre)
- Strip commercial development
- Drive through facilities
- Auto sales, service, repairs, rentals, car washes
- Manufactured home/RV sales, boat sales/storage
- Industrial uses, salvage yards, heavy equipment sales and services
- Storage facilities, warehouses, distribution
- Golf courses
- Freight terminals
- Cemeteries

Sample TOD Overlay Zone – Major Components

- 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

Phasing

	< 1 year	< 3 years	3-6 years	6+ years	Depend. on other entities
7-day, all day Route 21 service in both directions	•				
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				•	
Complimentary TOD along corridor				•	
Implement smart card Proof of Payment					•

BRT - Conclusion

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



BRT...it's about time!

BRT and Land Use - Conclusion

- BRT can influence land use
- Community support is critical
- Communities can be proactive in encouraging TOD and Transit Efficient Development (TED) through specific policies
- Full BRT treatment will have the greatest presence and the most potential to create land use changes

Next Steps

- Complete final report – early 2009.
- Begin Implementation – Transit Signal Priority and Exclusive busways – in progress
- Work with communities on promoting land use changes – Greenburgh in progress

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