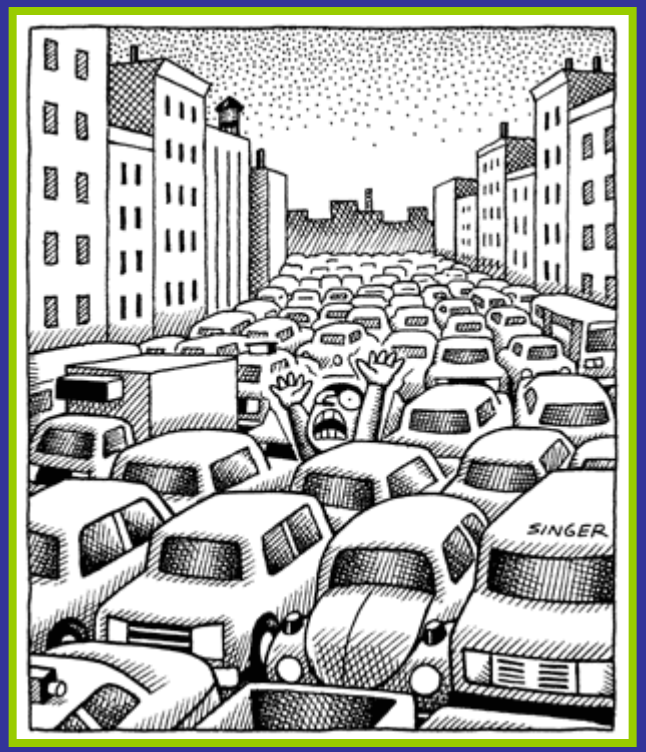
Finding Transit that Fits in the Tappan Zee Corridor

Tri-State Transportation Campaign

How Transit Can Compete with Driving

Must overcome problems car commuters may experience:

- tight parking in cities
- heavy highway congestion
- etc.



Why Individuals Choose Transit

Individuals choose transit on the bases of:

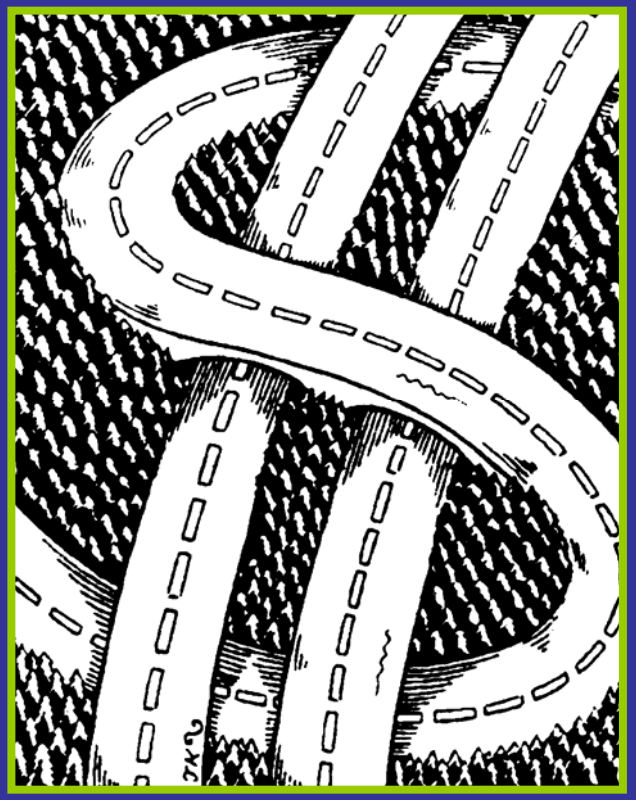
- travel time
- cost
- convenience

Why Governments Build Transit

Governments support public transit when it:

- promotes economic aims
- achieves transport objectives
- supports environmental and social goals
- attracts enough riders to keep subsidies within reason

How Mass Transit is Paid For



Construction: Like all transportation projects, a mix of federal, state and public authority funds.

Projects with **more potential riders** are more competitive in winning federal funds.

How Mass Transit is Paid For

Day to day Operation:

A mix of annual state and local subsidies, plus fare collection.

How Transit Works: Transfers

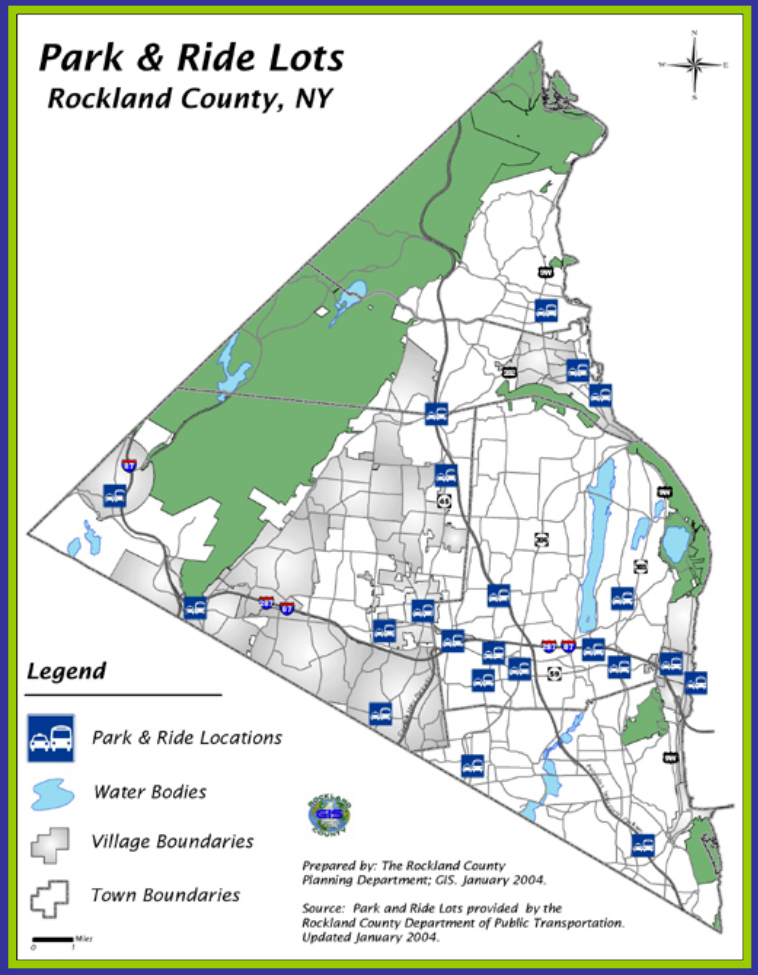
- Must make transfers between lines or modes (bus and rail) few and fast.
- Travelers perceive transfers as taking much longer than they actually do.

How Transit Works: Walking and Clustering

- Most transit involves walking.
- Clustering reduces distances walked to and from stations.
- High numbers of riders allow bus or train service to be more frequent.

Transit in the Suburbs

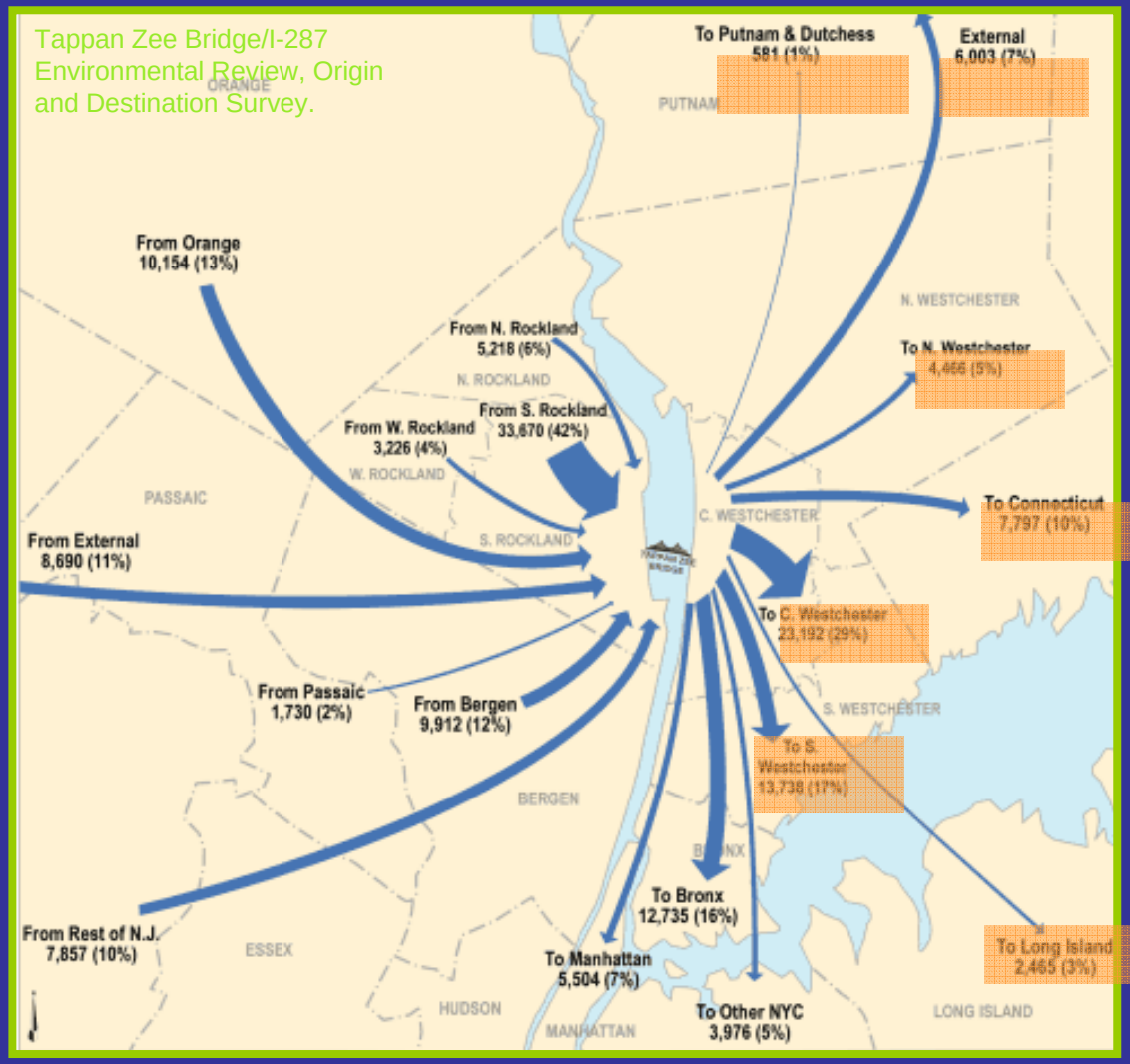
- Park and ride lots can serve dispersed homes.
- But transit commuters must still walk to from stations to destinations.



Suburban Congestion

- Rapid suburban job growth.
- Suburb to suburb travel the fastest-growing commuter market since the 1980s.

Tappan-Zee Congestion



More than 70% of commuters traveling across the Tappan Zee are headed to the suburbs to work.

Tappan-Zee Corridor Characteristics

- Homes mostly in low density towns.
- Extreme congestion on east-west highway-bridge corridor.

Tappan-Zee Corridor Characteristics

Most jobs also in low density settings.

Choosing the Right Type of Transit

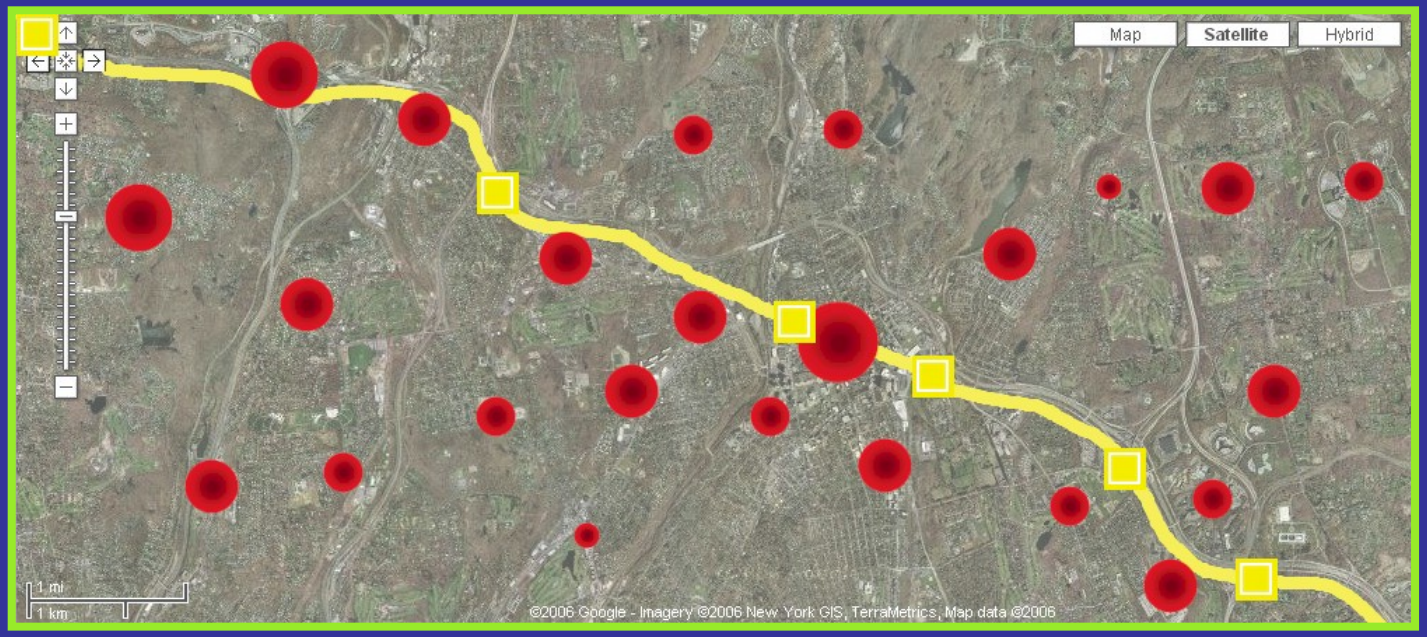
To attract riders, Tappan Zee transit will have to beat congestion and serve dispersed homes and work-sites while minimizing transfers.

Transit and Land Use

The right type of transit can help shape regional growth and curb sprawl development

Transit and Land Use: Weak Strategy

If transit doesn't connect existing places, most people will continue to drive…

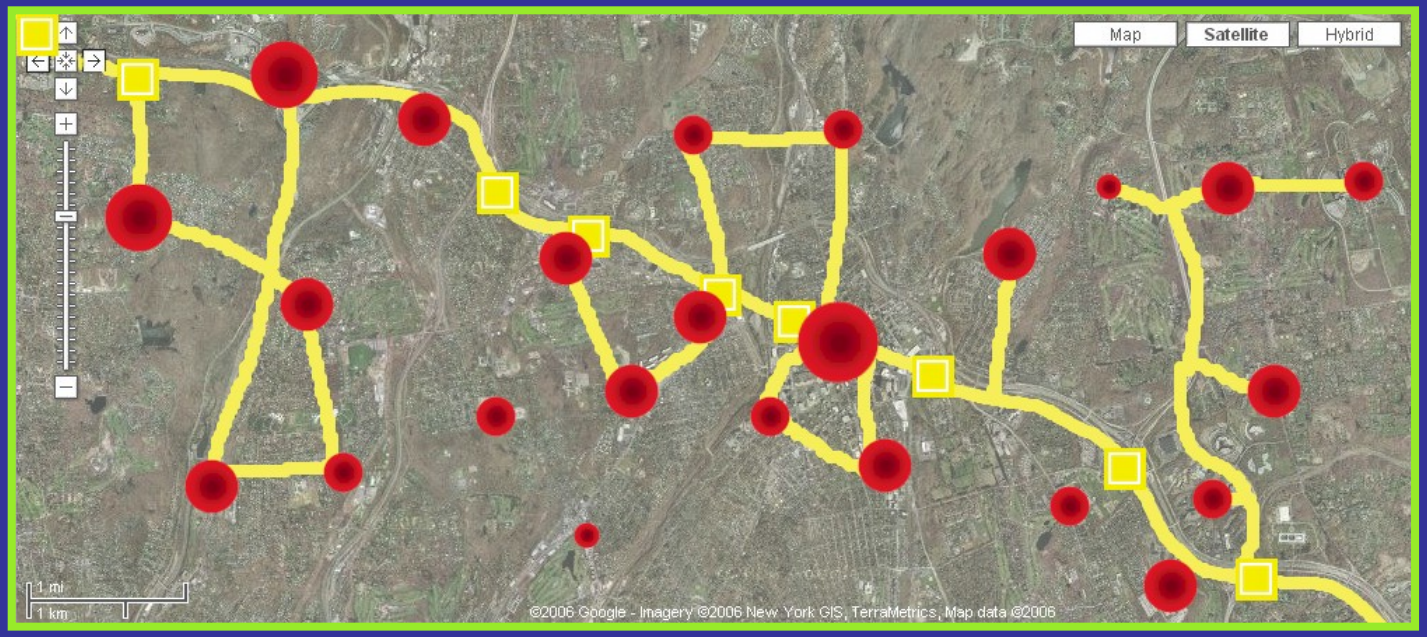


Transit and Land Use: Weak Strategy

…and sprawling development will continue to dominate the landscape.

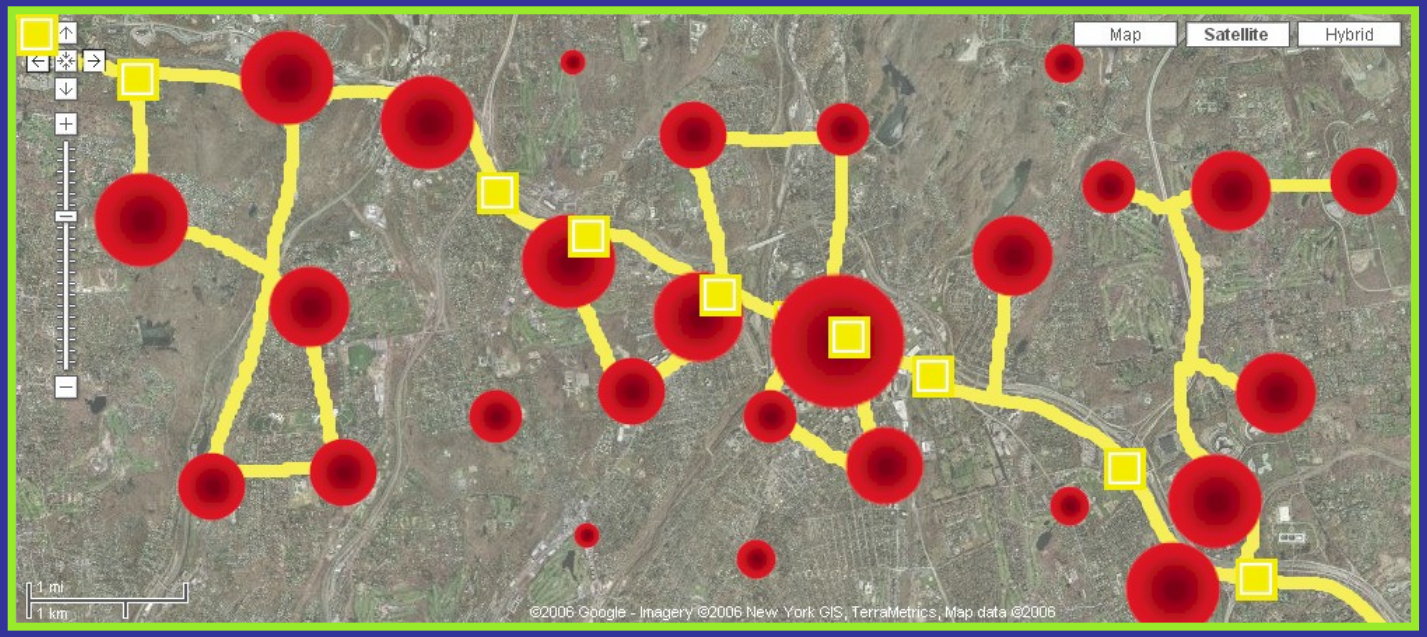
Transit and Land Use: Strong Strategy

If you can connect existing places, you can make transit convenient…



Transit and Land Use: Strong Strategy

…and encourage transit oriented development around those destinations.



Tappan Zee Transit Options

The Thruway Authority and Metro-North have narrowed down a list of alternatives to four possible transit services:

1. Full corridor Commuter Rail Transit
2. Full corridor Bus Rapid Transit
3. Manhattan-bound commuter rail with light rail in Westchester
4. Manhattan-bound commuter rail with bus rapid transit in Westchester

Full Corridor Commuter Rail

Pros

- One-seat ride for commuters traveling to Grand Central and destinations near rail stations.

Full Corridor Commuter Rail

Pros

- Long range potential to direct development around new stations.

proposed Camden, NJ transit center
NJTransit

Full Corridor Commuter Rail

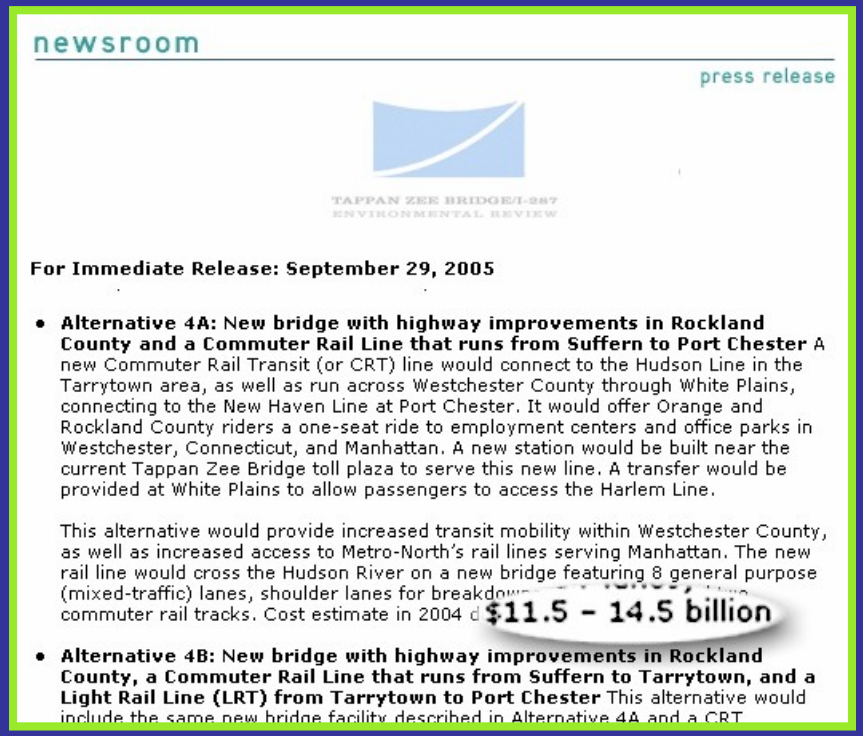
Pros

- Institution (Metro-North) already in place.

Full Corridor Commuter Rail

Cons

- Very expensive - $6.7-$8.5 billion ($11.5-$14.5 billion, w/ T-Z replacement); more difficult to secure federal and state funding.



newsroom

press release

TAPPAN ZEE BRIDGE/I-287
ENVIRONMENTAL REVIEW

For Immediate Release: September 29, 2005

- **Alternative 4A: New bridge with highway improvements in Rockland County and a Commuter Rail Line that runs from Suffern to Port Chester** A new Commuter Rail Transit (or CRT) line would connect to the Hudson Line in the Tarrytown area, as well as run across Westchester County through White Plains, connecting to the New Haven Line at Port Chester. It would offer Orange and Rockland County riders a one-seat ride to employment centers and office parks in Westchester, Connecticut, and Manhattan. A new station would be built near the current Tappan Zee Bridge toll plaza to serve this new line. A transfer would be provided at White Plains to allow passengers to access the Harlem Line.

  This alternative would provide increased transit mobility within Westchester County, as well as increased access to Metro-North's rail lines serving Manhattan. The new rail line would cross the Hudson River on a new bridge featuring 8 general purpose (mixed-traffic) lanes, shoulder lanes for breakdown[illegible] commuter rail tracks. Cost estimate in 2004 d[illegible] **$11.5 – 14.5 billion**

- **Alternative 4B: New bridge with highway improvements in Rockland County, a Commuter Rail Line that runs from Suffern to Tarrytown, and a Light Rail Line (LRT) from Tarrytown to Port Chester** This alternative would include the same new bridge facility described in Alternative 4A and a CRT

Full Corridor Commuter Rail

Cons

- Rugged topography would require heroic engineering.
- Extensive construction: 5 miles of tunnel in Westchester and 3 miles in Rockland.
- Possible ventilation shafts.

Full Corridor Commuter Rail

Cons

- NJ Transit provides Rockland to Manhattan commuter rail, via Secaucus.
- ARC tunnel would make that a one-seat ride.

Full Corridor Commuter Rail

Cons

- Likelihood of few stations west of Hudson requires big park-n-rides and could contribute to local traffic problems.

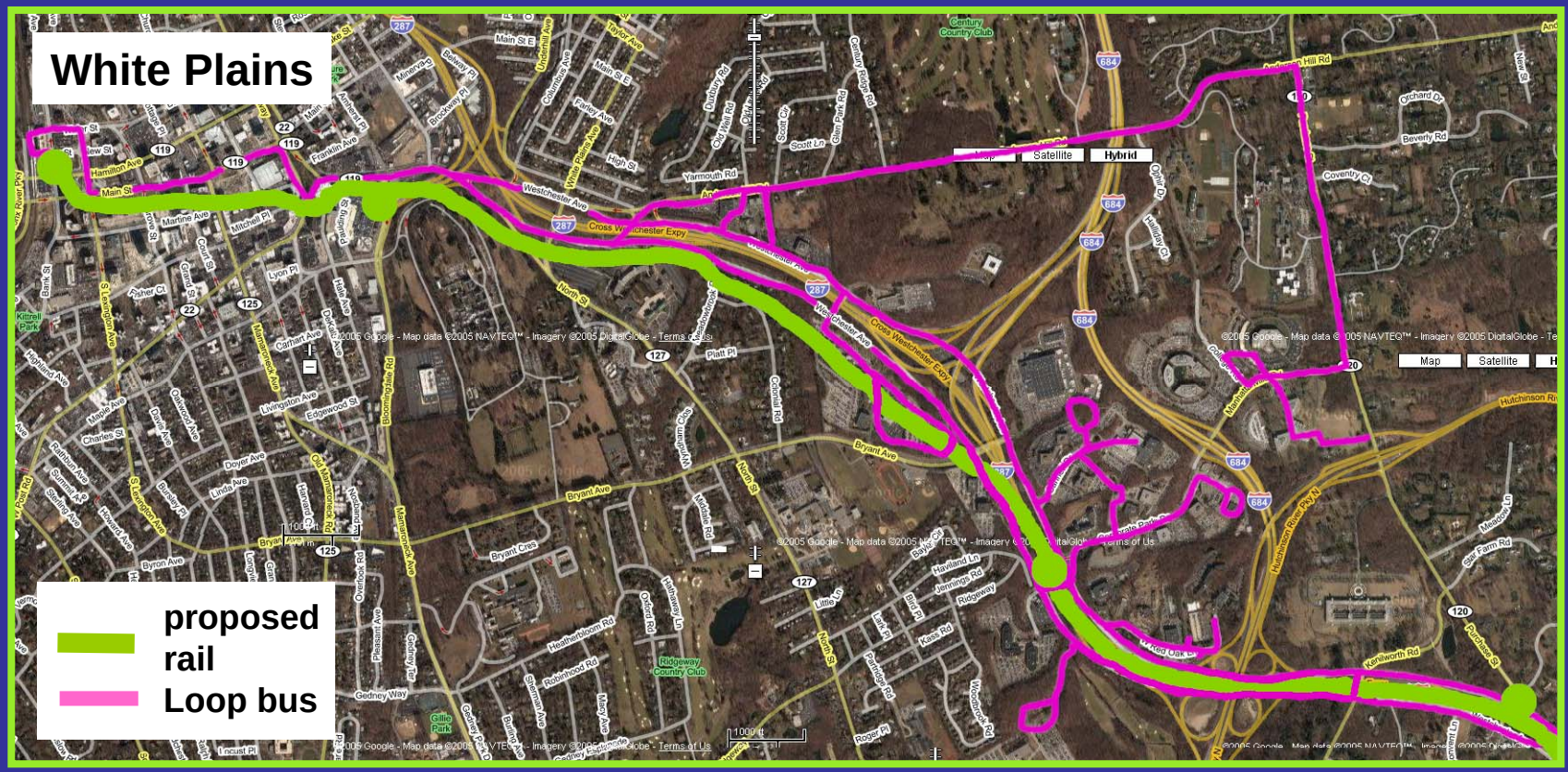
Full Corridor Commuter Rail

Cons

- Would require shuttles to serve areas far from rail stations, like White Plains office parks.

Rail Alternatives

Will require commuters to transfer to shuttle buses to reach spread out offices.



Full Corridor Bus Rapid Transit

Pros

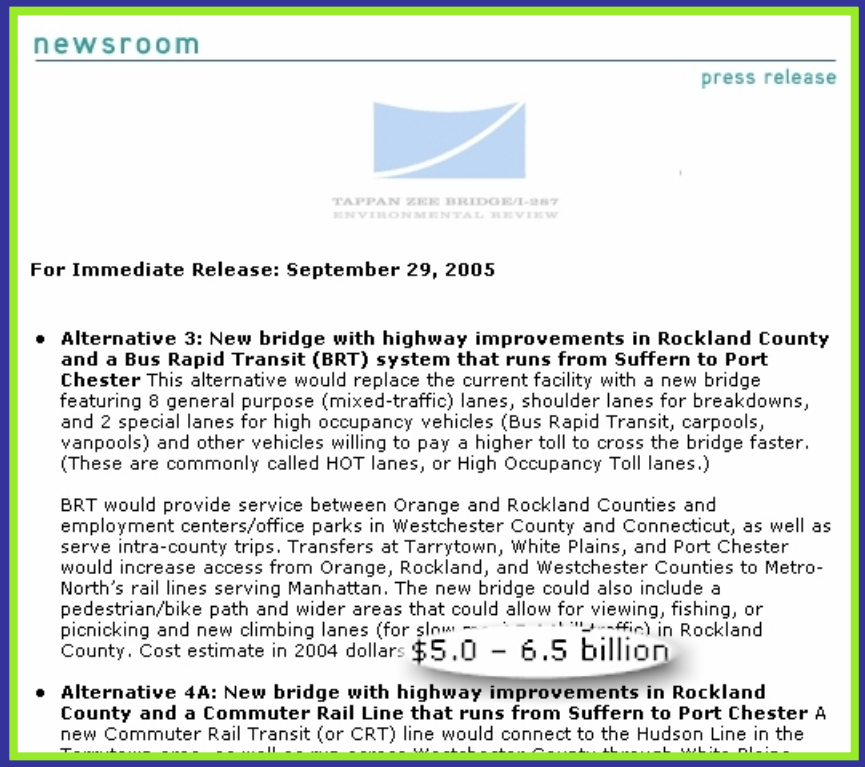
- Potential for development near stations

proposed Camden, NJ transit center
NJTransit

Full Corridor Bus Rapid Transit

Pros

- Relatively inexpensive -- $1.9-$2.4 billion ($5 to $6.5 billion, w/ T-Z replacement) and quicker to build.



newsroom

press release

TAPPAN ZEE BRIDGE/I-287
ENVIRONMENTAL REVIEW

For Immediate Release: September 29, 2005

- **Alternative 3: New bridge with highway improvements in Rockland County and a Bus Rapid Transit (BRT) system that runs from Suffern to Port Chester** This alternative would replace the current facility with a new bridge featuring 8 general purpose (mixed-traffic) lanes, shoulder lanes for breakdowns, and 2 special lanes for high occupancy vehicles (Bus Rapid Transit, carpools, vanpools) and other vehicles willing to pay a higher toll to cross the bridge faster. (These are commonly called HOT lanes, or High Occupancy Toll lanes.)

  BRT would provide service between Orange and Rockland Counties and employment centers/office parks in Westchester County and Connecticut, as well as serve intra-county trips. Transfers at Tarrytown, White Plains, and Port Chester would increase access from Orange, Rockland, and Westchester Counties to Metro-North's rail lines serving Manhattan. The new bridge could also include a pedestrian/bike path and wider areas that could allow for viewing, fishing, or picnicking and new climbing lanes (for slow [illegible] traffic) in Rockland County. Cost estimate in 2004 dollars: $5.0 – 6.5 billion

- **Alternative 4A: New bridge with highway improvements in Rockland County and a Commuter Rail Line that runs from Suffern to Port Chester** A new Commuter Rail Transit (or CRT) line would connect to the Hudson Line in the [illegible]

Full Corridor Bus Rapid Transit

Pros

- Potential for more, smaller stations and finely-tuned routes.

Boston Silver Line's Union Park Street Station

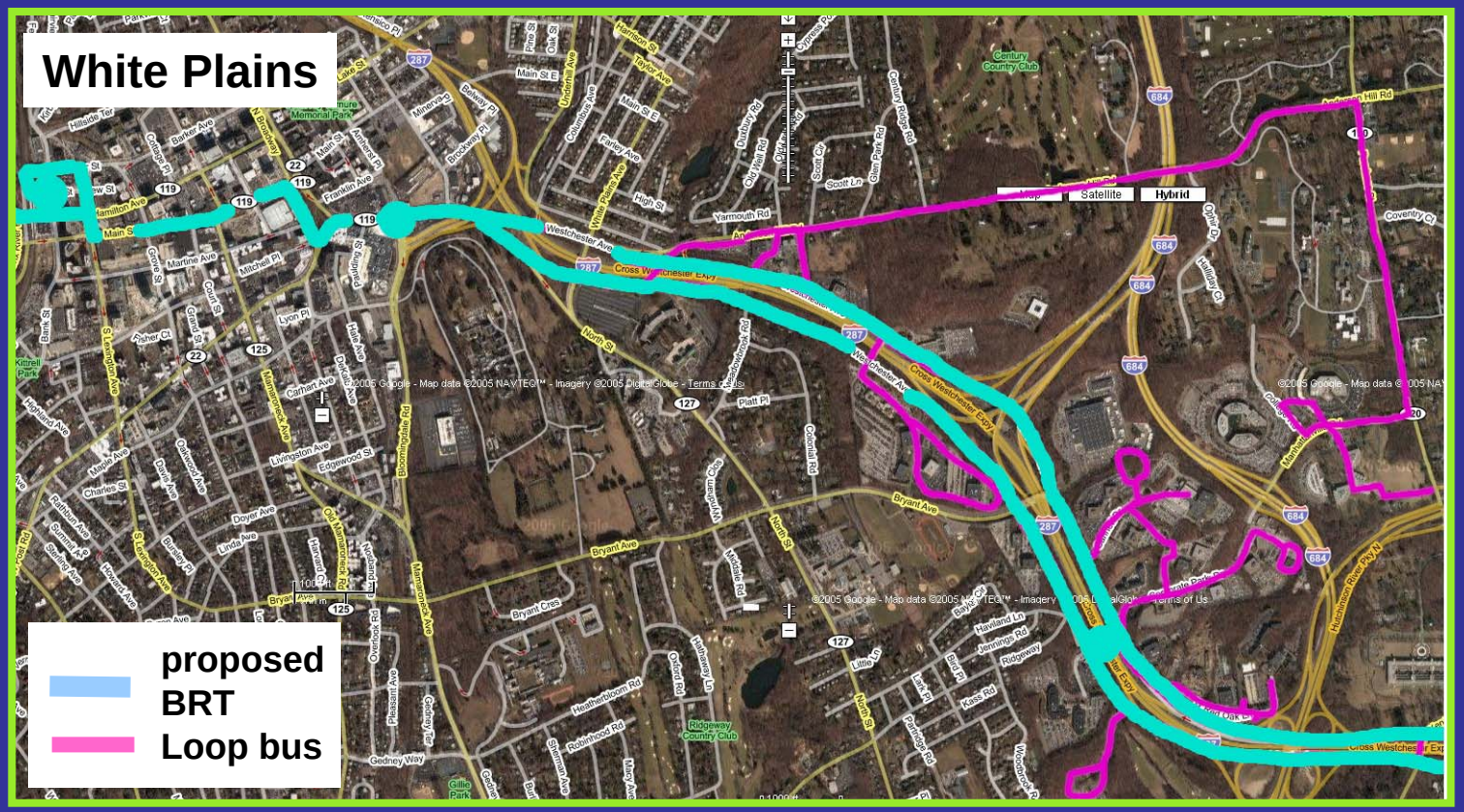
Full Corridor Bus Rapid Transit

Pros

- Potential for more one-seat rides to employment centers in biggest T-Z commute market – buses can run on and off main corridor.

Bus Rapid Transit Alternatives

Can offer one-seat rides by combining mainline and feeder functions in one vehicle.



Full Corridor Bus Rapid Transit

Cons

- May require creation of a new entity to fund and operate.

Full Corridor Bus Rapid Transit

Cons

- New York City-bound commuters would need to transfer to commuter rail lines.

Full Corridor Bus Rapid Transit

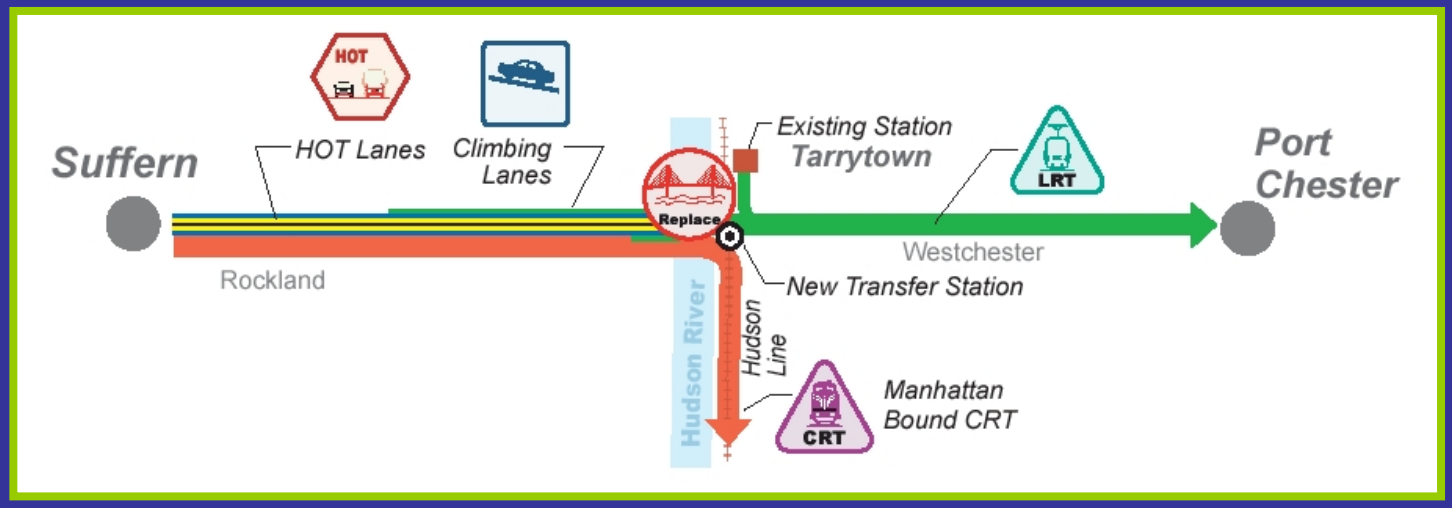
Cons

- Anti-bus bias.

The Hybrid Options:

- Manhattan-bound Commuter Rail with Light Rail in Westchester

- Manhattan-bound Commuter Rail with Bus Rapid Transit in Westchester



Manhattan-bound CRT with Light Rail or BRT in Westchester

Pros

- One-seat ride for commuters to NYC.
- Long term potential to direct development around new stations.

Manhattan-bound CRT with Light Rail or BRT in Westchester

More Pros

- One-seat ride for commuters to NYC.
- Bus rapid transit can serve dispersed destinations more conveniently than rail.
- Requires less tunneling in Westchester.

Manhattan-bound CRT with Light Rail or BRT in Westchester

Cons

- Requires multiple transfers for east-west commuters.
- Would require shuttles to serve destinations far from rail stations (e.g. White Plains office parks).

Manhattan-bound CRT with Light Rail or BRT Westchester

More Cons

- Expensive- $6.9-$8.8 billion ($10 to $12.5 billion, including Tappan Zee replacement) for LRT
- $4.5-$5.8 billion ($9 to $11.5 billion, incl. Tappan Zee replacement) for BRT.
- Requires heroic engineering and may need new entity to fund and operate light rail or BRT.

Projected Ridership on New Transit

	Daily East-West Riders	Total Daily Riders
Full Corridor BRT	**42,000**	49,000
Manhattan-Bound CRT + Full Corridor BRT	**33,700**	63,700
Manhattan-Bound CRT + Westchester BRT	**30,700**	61,700
Manhattan-Bound CRT + Full Corridor LRT	**27,400**	55,400
Full Corridor CRT	**24,000**	57,000
Full Corridor LRT	**22,800**	28,000
Manhattan-Bound CRT + Westchester LRT	**21,400**	54,000

Comparison of Cost per Rider

	Cost per rider	Cost per east-west rider
Full Corridor BRT	$38,776	$45,238
Manhattan-Bound CRT + Westchester BRT	$72,934	$146,580
Manhattan-Bound CRT + Full Corridor BRT	$83,203	$157,270
Manhattan-Bound CRT + Westchester LRT	$92,593	$233,645
Full Corridor LRT	$96,429	$118,421
Full Corridor CRT	$117,544	$279,167
Manhattan-Bound CRT + Full Corridor LRT	$124,549	$251,825

Net Costs per Rider

	Net cost per rider
Full Corridor BRT	$5
Full Corridor CRT	$18
Manhattan-Bound CRT + LRT in Westchester	$21
Full Corridor LRT	$20-$29

Which Transit Option Is Most Appropriate?

- Commuter rail

- Light rail

- Bus rapid transit

- Combination

What Is Bus Rapid Transit?

"A rapid mode of transportation that can provide the quality of rail transit and the flexibility of buses."

-- Federal Transit Administration

Characteristics of BRT

A fully integrated system of:

- Vehicles
- Rights of way
- Stations
- Technology
- Service

Vehicles…Not Your Daddy's Bus

- Sleek, modern design
- Low floor for easy boarding
- On-board route information
- Potential for alternative fuel or hybrid technology

Right of Way…Defeating Congestion

- Streets designed for bus-ways and stations.
- Barrier-separated dedicated bus lanes.
- “Queue jumps” and signal prioritization.

Queue jump illustrated

Stations…Beyond the Bench

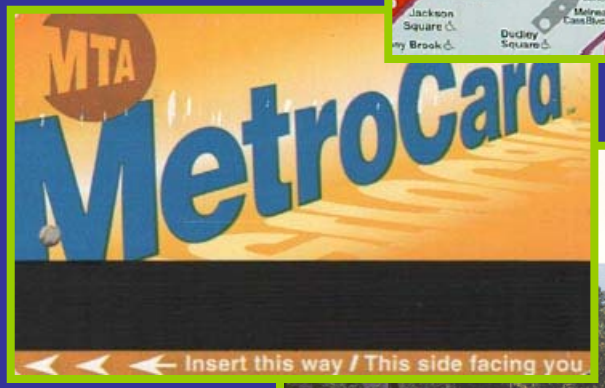
- High-concept, distinctive architecture
- Information
- Bigger stops may offer amenities such as cafes, markets, drycleaners

Technology…High Quality of Service

- Vehicle tracking allows real-time arrival information
- Special signals give buses priority at stoplights
- Guidance technology allows for precision stops at the curb

Operating Plan…Fast and Frequent

- Faster trip times (b/c of fewer stops, faster boarding, avoiding congestion)
- Frequent service
- Routes more like a rail system
- Integrated fare collection



BRT Is Up and Running Across the U.S.

And Coming Soon to Many More U.S. Cities

BRT Success: Boston

- Operates in bus lanes, dedicated bus tunnels, and on streets
- When complete, will extend 4.4 miles
- Ridership doubled in its first year of operation

BRT Success: Pittsburgh

- Operates on three dedicated busways
- Extends 18.4 miles in length
- First busway opened in 1977
- Serves 13.6 million riders annually

BRT Success: Los Angeles

- Operates on arterial streets, with priority signals
- 14 routes cover 205 miles
- Ridership has grown 40%
- Travel times are 29% faster

BRT Success: Charlotte

- Operates on a 2.6-mile dedicated busway, with queue jumps
- By 2002, ridership had doubled over it's 1998 opening.
- During peak periods, buses operate every 4 minutes