



Previous Transit Studies

Agenda



- Project timeline
- Final transit recommendation (2011)
- Transit planning and development (2002 – 2011)
- Moving forward (2011 – 2013)

Project Timeline

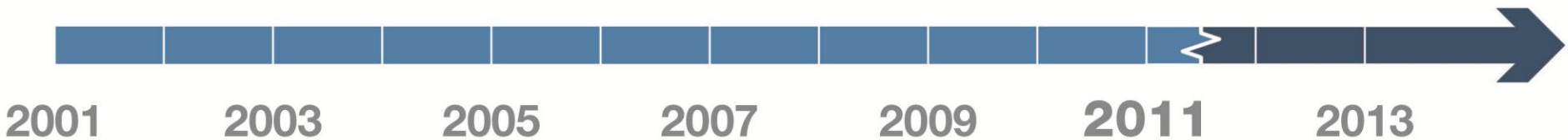


Tappan Zee / I-287 Corridor Project

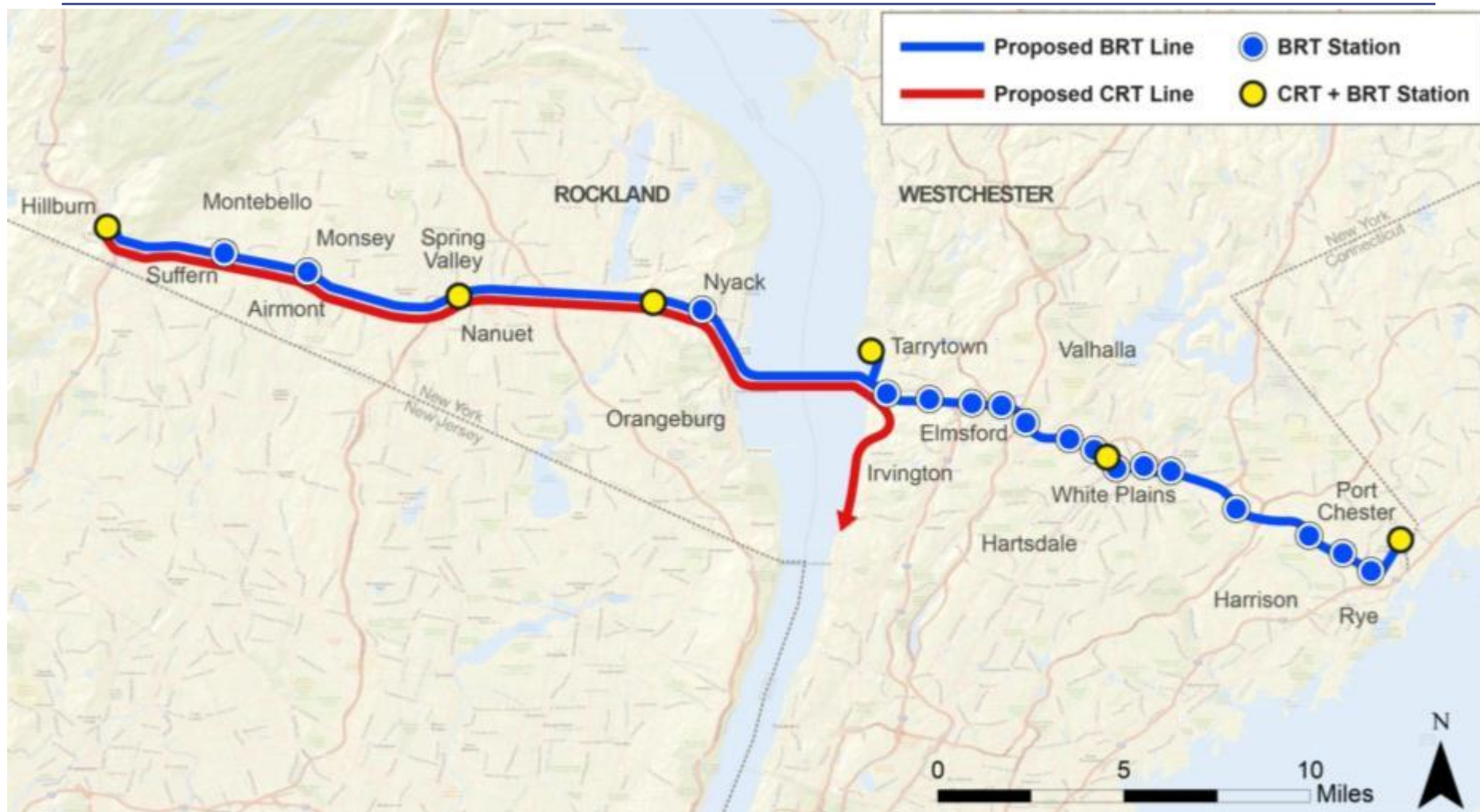
(accommodates transit)



(does not preclude transit)



Final Transit Recommendation (2011)

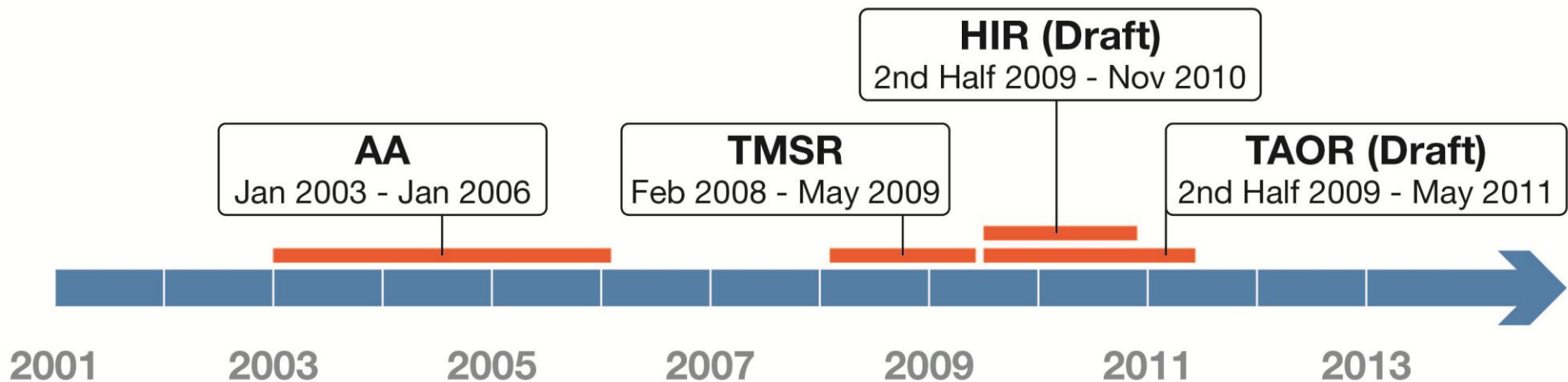




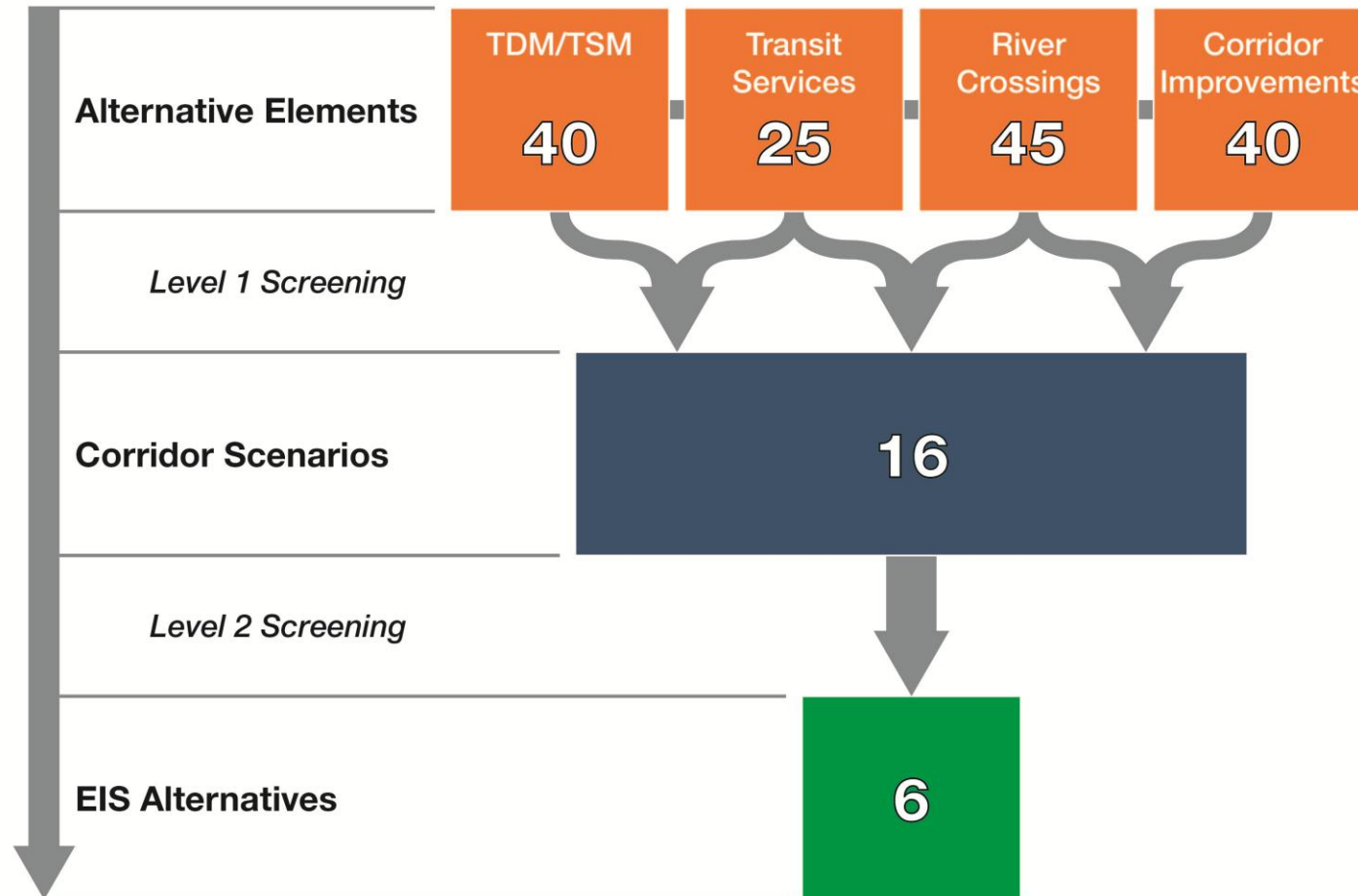
Transit Planning and Development 2002 – 2011

Prior Reports


























- Alternatives Analysis (AA), 2006
- Transit Mode Selection Report (TMSR), 2009
- Transit Alignment Options Report (TAOR), 2011
- Highway Improvements Report (HIR), 2010




























Alternatives Analysis (2006)



Transit Mode Selection Report (2009)


























Mode	Alternative	Rockland	Hudson Line Connection	Westchester
BRT	Full Corridor BRT		 Transfer	
	Full Corridor BRT Westchester Busway		 Transfer	
CRT	Full Corridor CRT		 Direct	
	Full Corridor CRT		 Transfer	
LRT	Full Corridor LRT		 Transfer	
CRT & LRT	Rockland CRT Westchester LRT		 Direct	
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	Rockland CRT Full Corridor BRT	 	 Direct	

Transit Mode Selection Report (2009)

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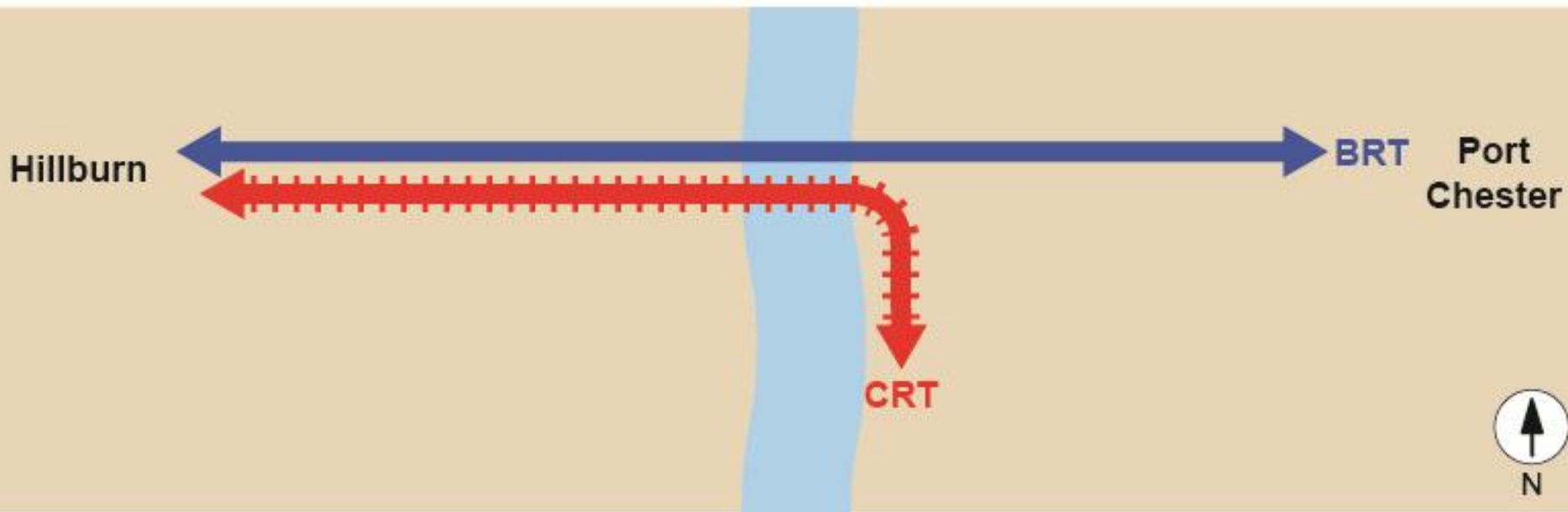
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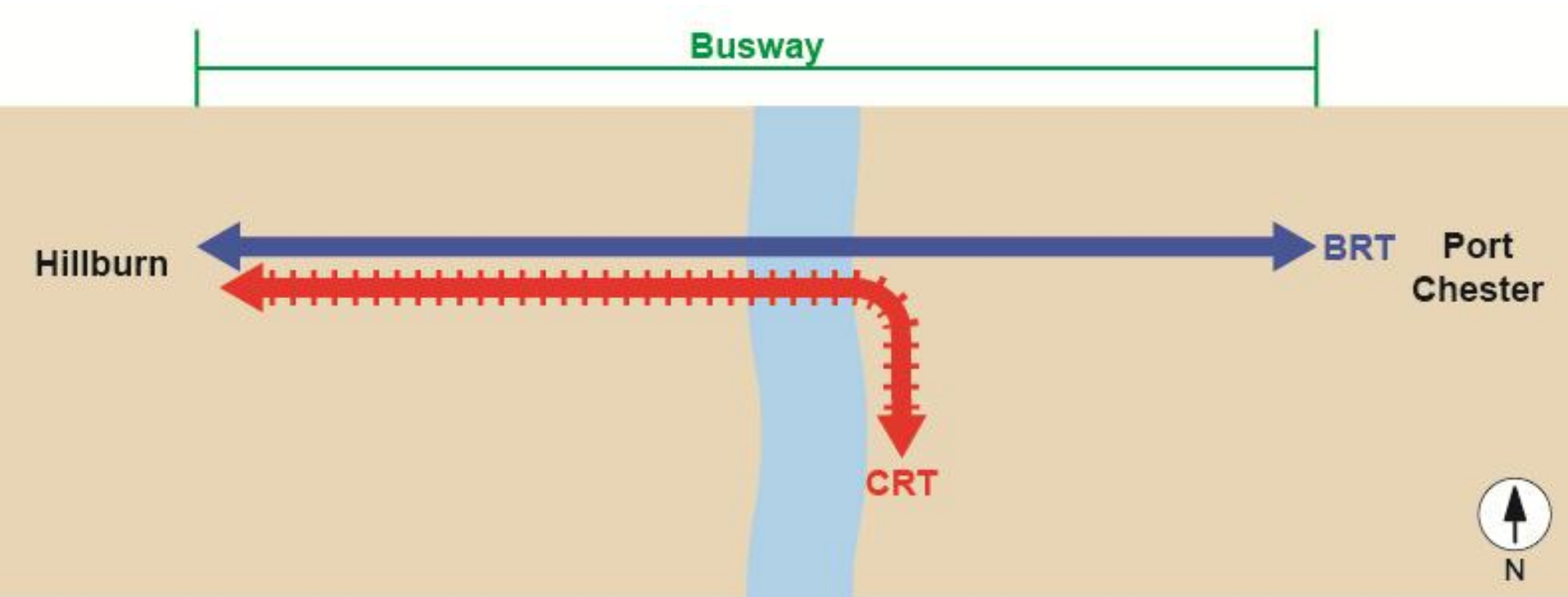
Transit Alignment Options Report (2011)

- Recommends 4 build alternatives for further study in the EIS
- All alternatives include a replacement bridge, Rockland CRT and full-corridor BRT



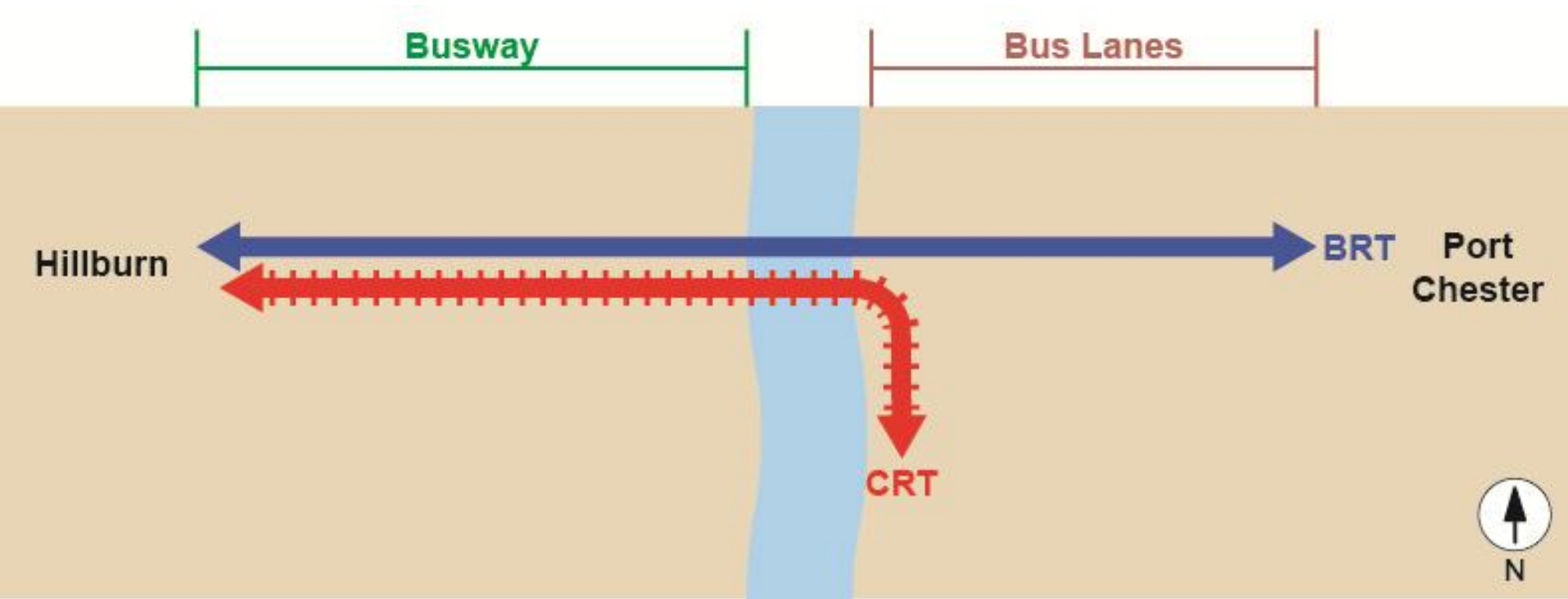
Transit Alignment Options Report (2011)

Alternative B



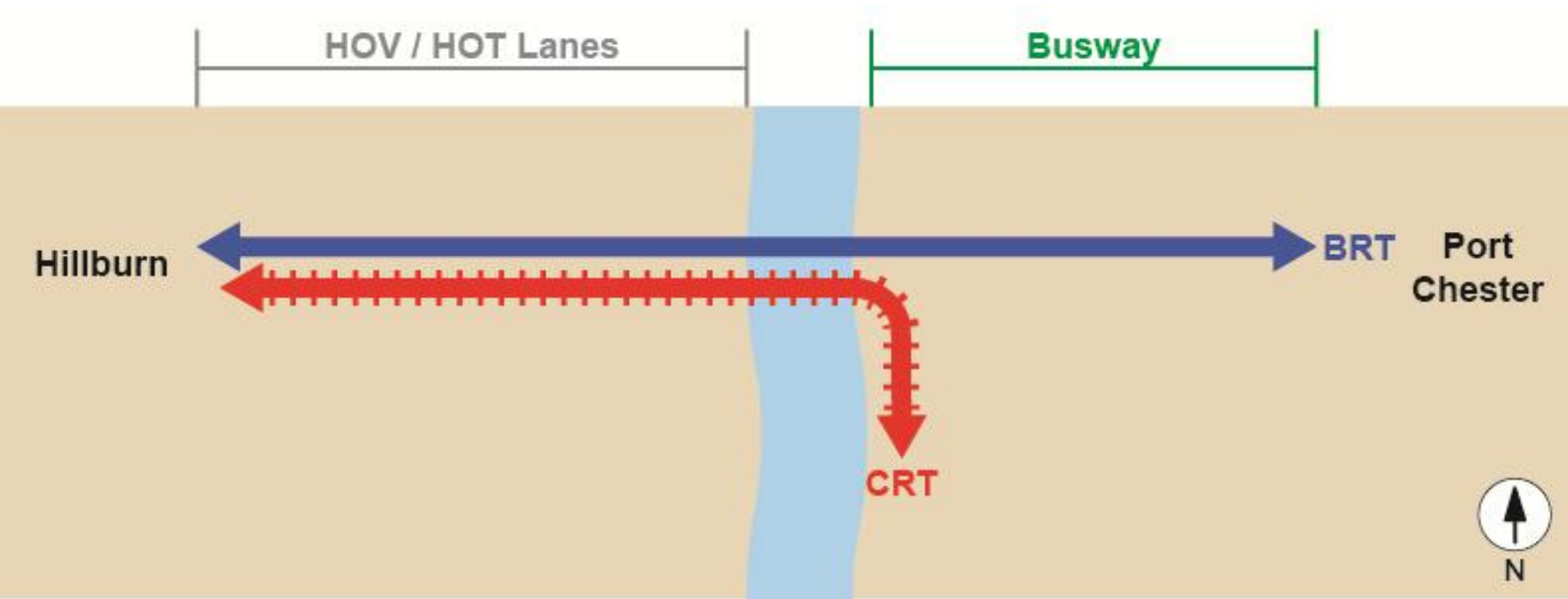
Transit Alignment Options Report (2011)

Alternative C



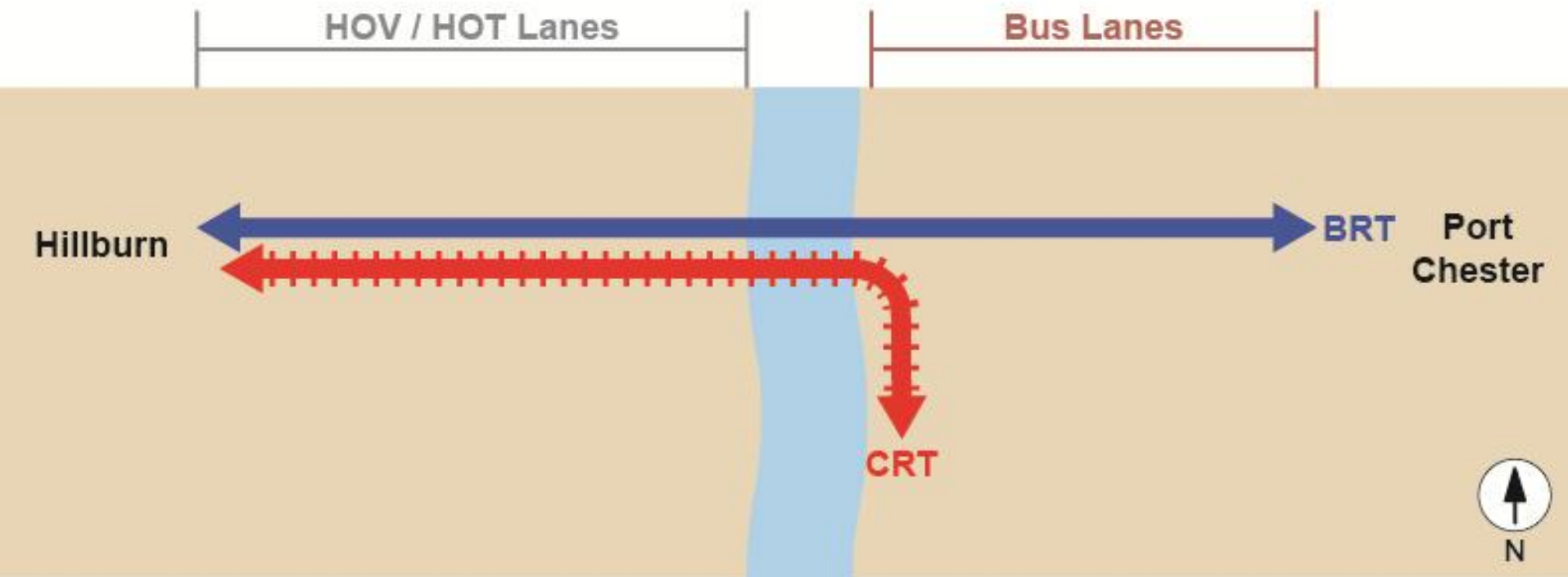
Transit Alignment Options Report (2011)

Alternative D



Transit Alignment Options Report (2011)

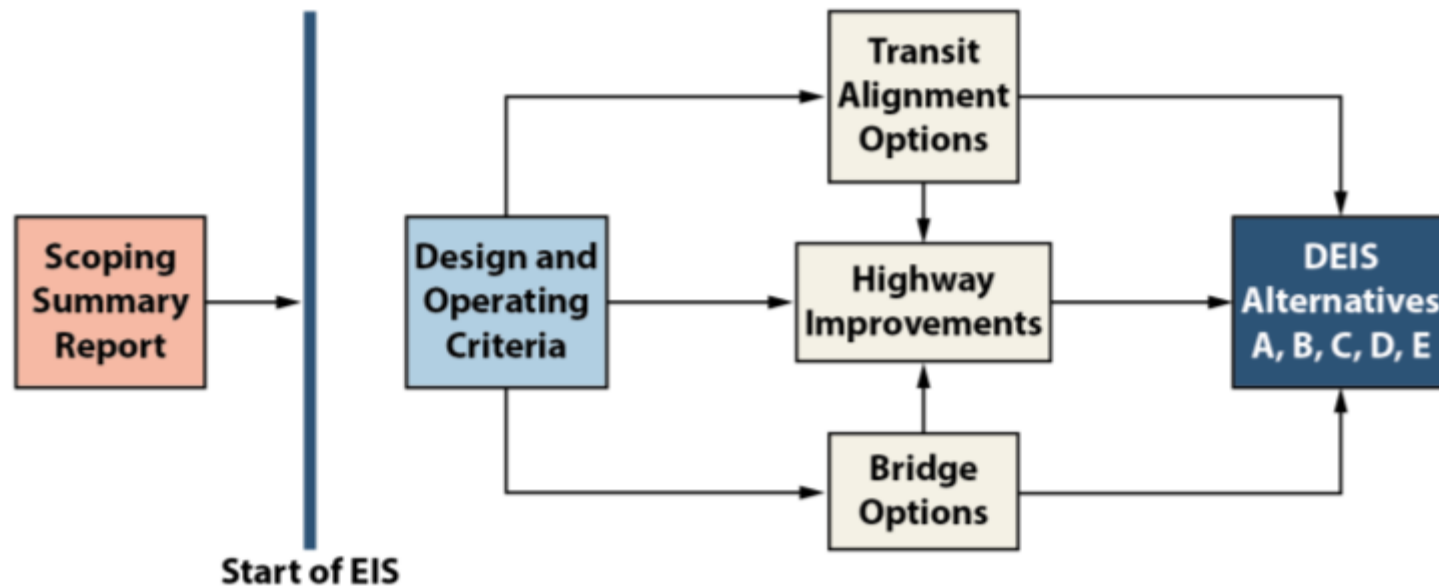
Alternative E



Highway Improvements Report (2010)

Proposes highway improvements to be studied in EIS

- Climbing lanes
- Collector/distributor roads at Interchange 13
- Interchange 10 improvements
- Interchange 11 improvements





Moving Forward 2011 – 2013

Project Pivot



Tappan Zee Bridge / I-287 Corridor Project

- December 2002 – October 2011
- Includes transit

The New NY Bridge

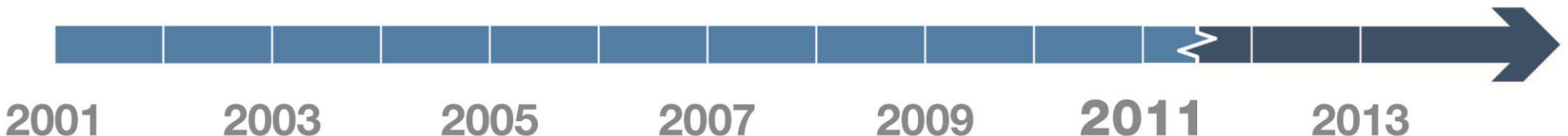
- October 2011 - present
- Does not preclude transit

Tappan Zee / I-287 Corridor Project

(accommodates transit)



(does not preclude transit)



Mass Transit Task Force

Call for Mass Transit

- Advocacy groups & community leaders
- Petition
- Website
- Comments on DEIS
- Local resolutions passed
- Letters to the Governor and representatives



Mass Transit Task Force Formed by Governor

- Identify short-, medium- and long-term transit options
- Develop funding strategies to implement & sustain transit operations
- Submit a final recommendation for a comprehensive transit plan



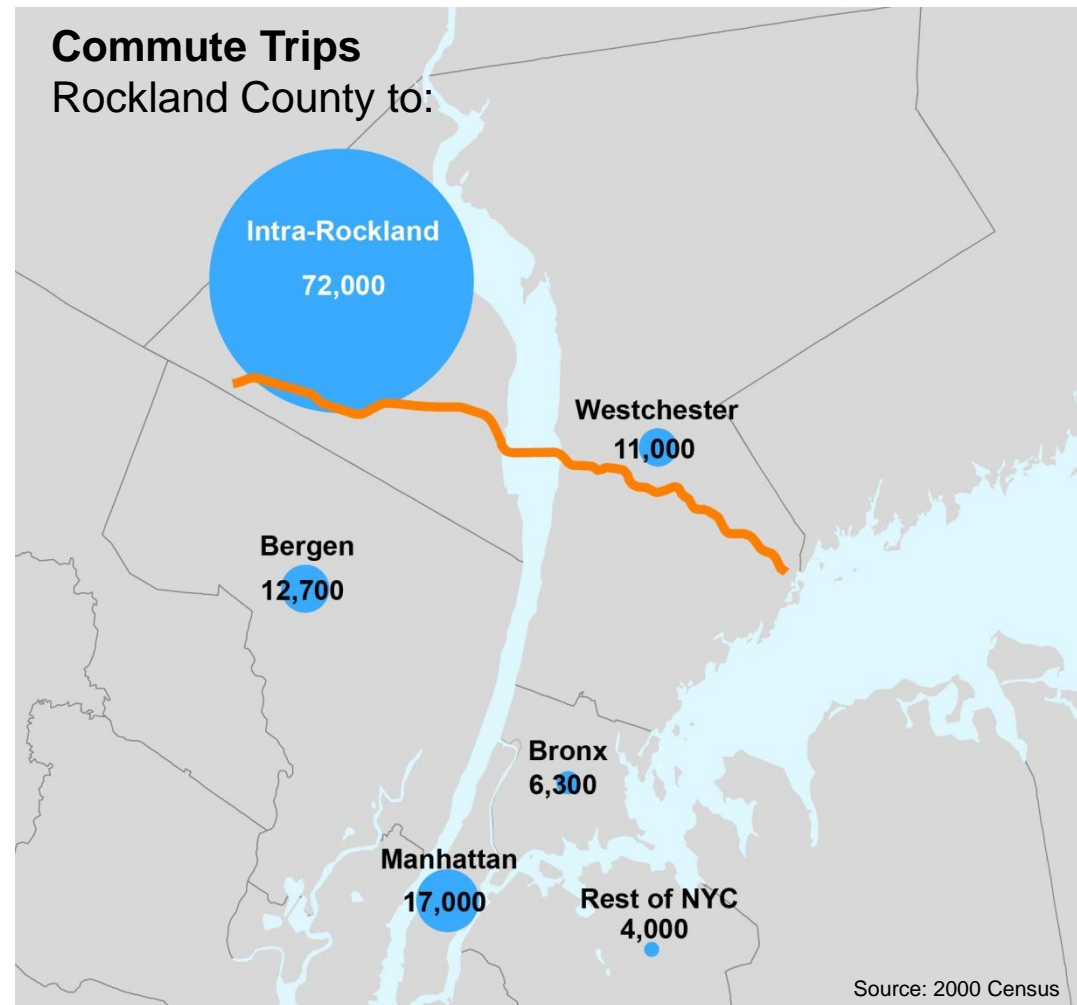
Discussion



Transit Needs

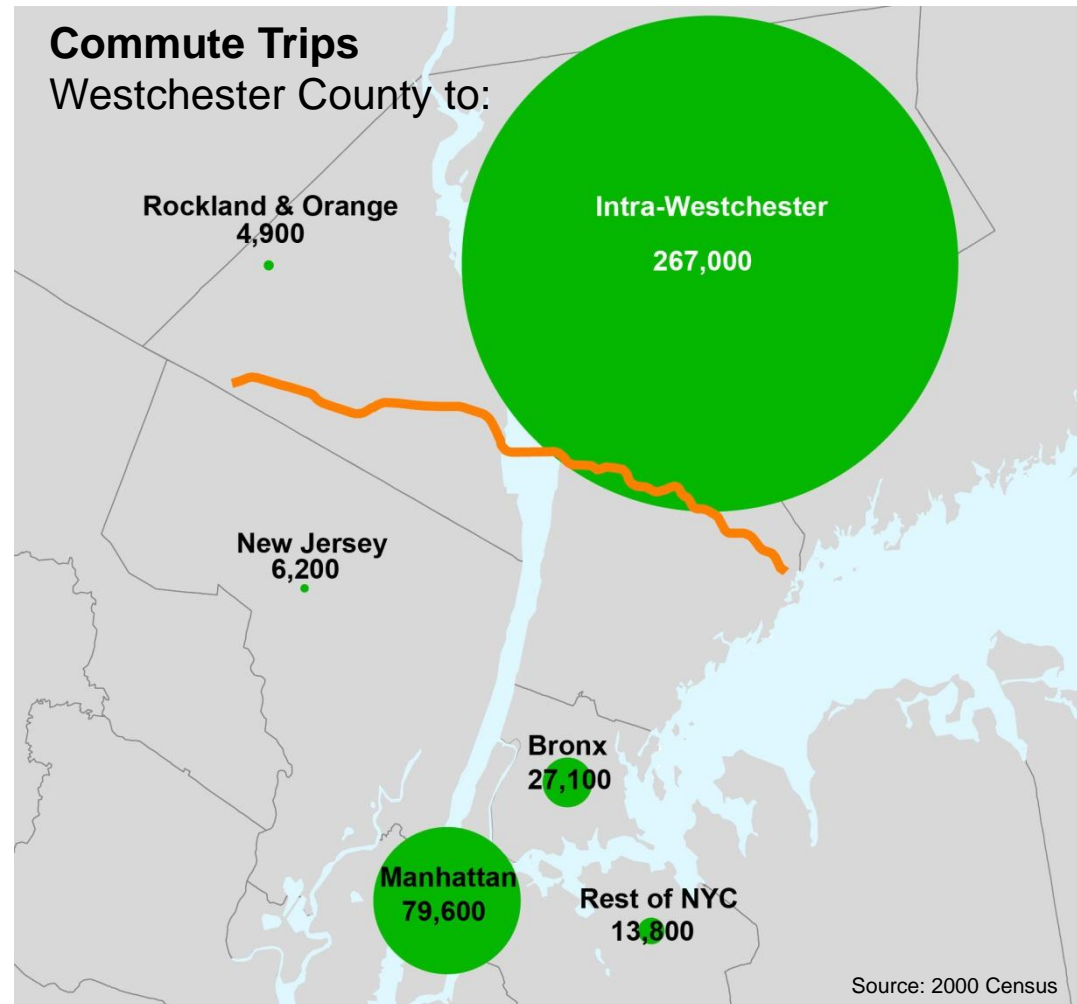
Top Travel Markets – Rockland

1. Intra-Rockland
2. Manhattan
 - Midtown West (4,250)
 - Midtown East (3,400)
 - Uptown (3,900)
 - Lower Manhattan (3,400)
3. Bergen
4. Westchester
5. Bronx
6. Rest of NYC
7. Other NY, NJ, and CT
 - Less than 2,000 trips

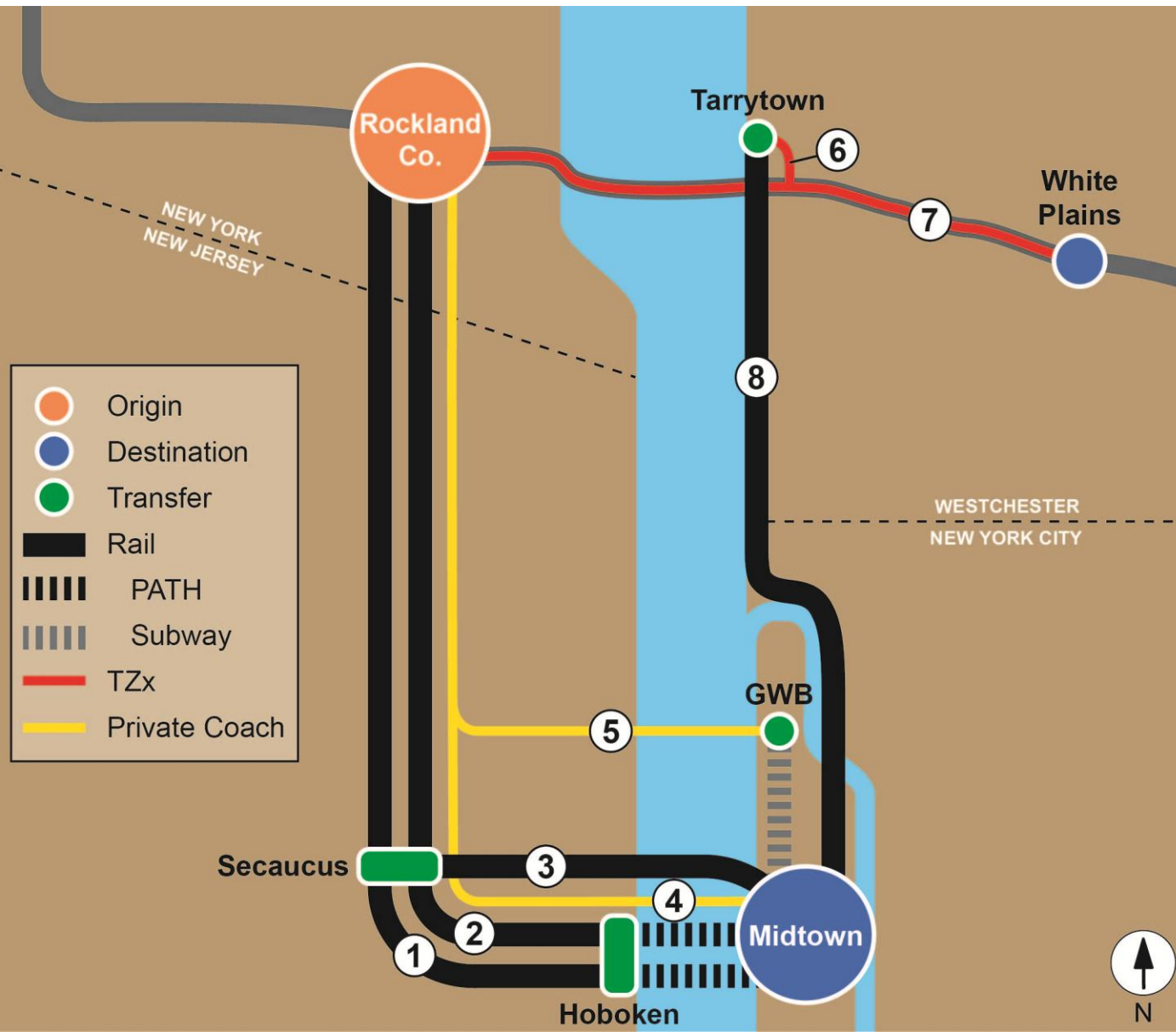


Top Travel Markets – Westchester

1. Intra-Westchester
2. Manhattan
 - Midtown East (24,700)
 - Midtown West (20,700)
 - Uptown (12,700)
 - Lower Manhattan (12,000)
3. Bronx
4. Rest of NYC
5. New Jersey
6. Rockland & Orange
7. Other NY and CT
 - Less than 2,000 trips



Existing Transit



Route	Travel Times (Auto / Transit)
1	0:50 / 1:30
2	0:50 / 1:20
3	0:50 / 1:10
4	0:50 / 1:20
5	0:50 / 1:10
6	0:25 / 0:50
7	0:35 / 1:15
8	0:50 / 1:45

All times approximate



Discussion



Potential Transit Solutions

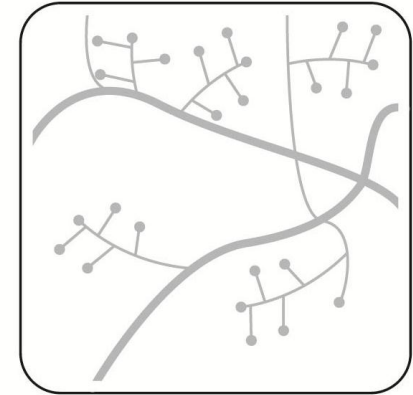
Agenda



- Land use typologies
 - Suburbs
 - Corridors
 - Centers
 - Cities
- Transit options
 - Local bus
 - Bus rapid transit (BRT)
 - Express bus
 - Commuter rail transit (CRT)
- U.S. case studies

Suburbs

- Curvilinear street pattern
- Large block sizes
- Dispersed development patterns
- Mainly residential
- Few transit options
- Difficult to serve with fixed route transit
- Origin zones

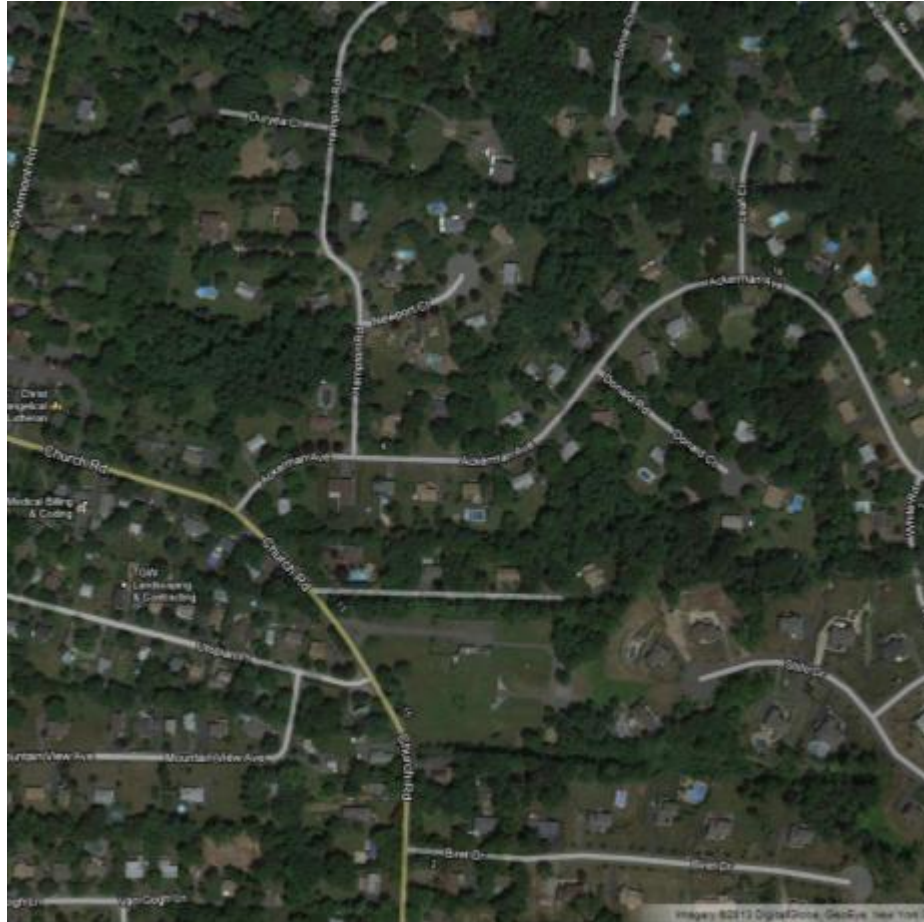


Regional Examples:

- Airmont
- Ardsley



Suburbs



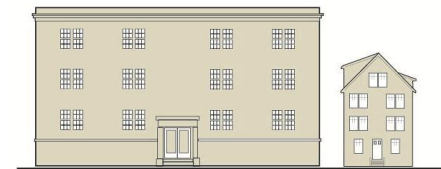
Corridors

- Mixed curvilinear/grid street pattern
- Large block sizes
- Employment focused: retail, office parks
- Mostly peak period bus ridership
- Mainly a destination



Regional Examples:

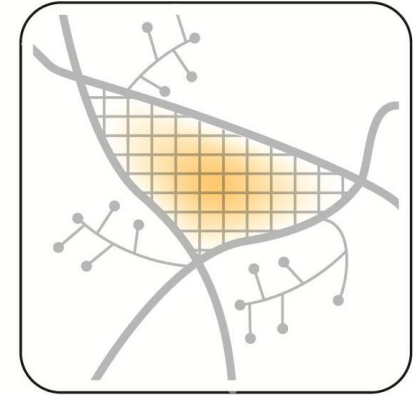
- White Plains Rd / Route 119
- Westchester Ave / Platinum Mile





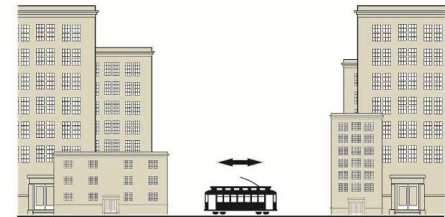
Centers

- Gridded street pattern
- Integrated pedestrian and bicycle facilities
- Clustered, mixed-use development
- Multiple transit connections
- Both an origin and destination

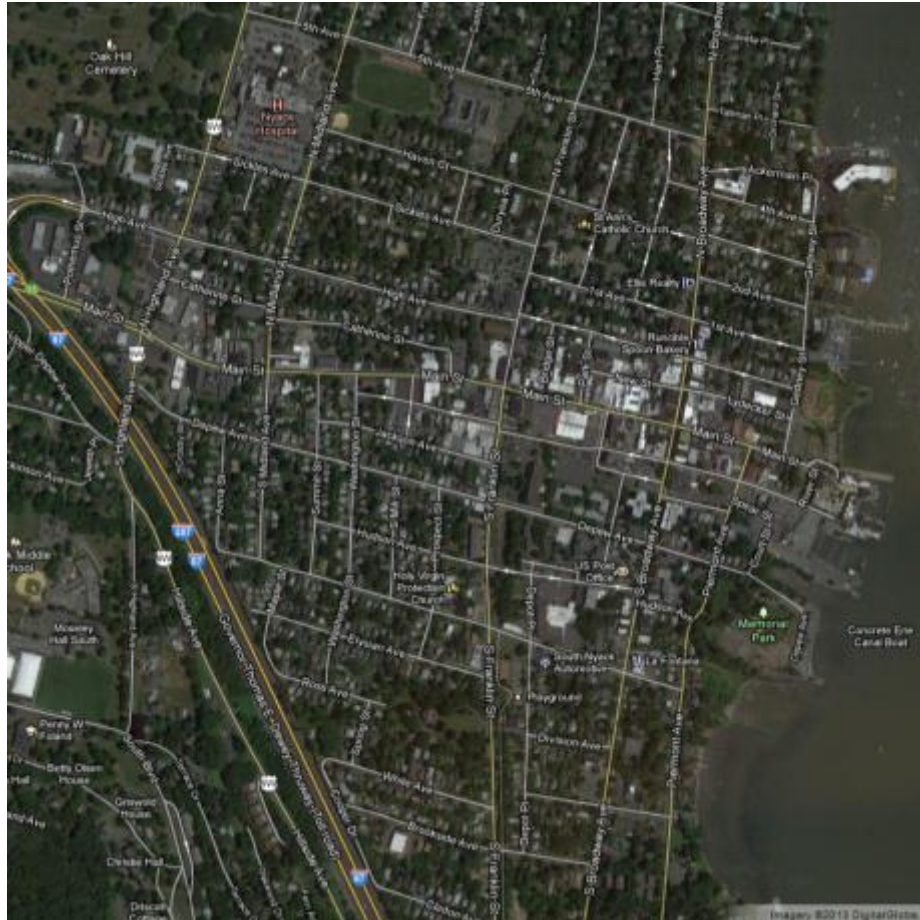


Regional Examples:

- Nyack
- Tarrytown

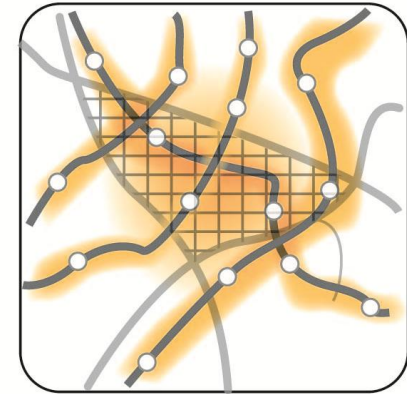


Centers



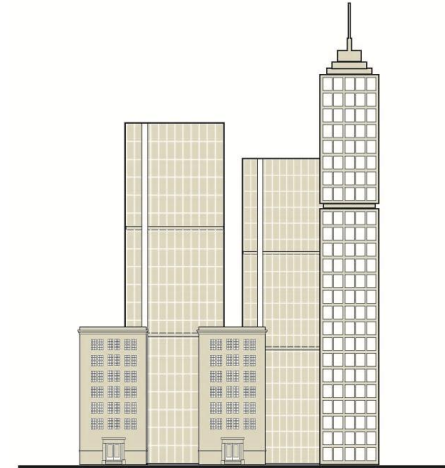
Cities

- Fully connected street system
- Pedestrian and bicycle networks
- Clustered, mixed-use, transit-oriented development
- Multi-layered transit options
- Origin and destination

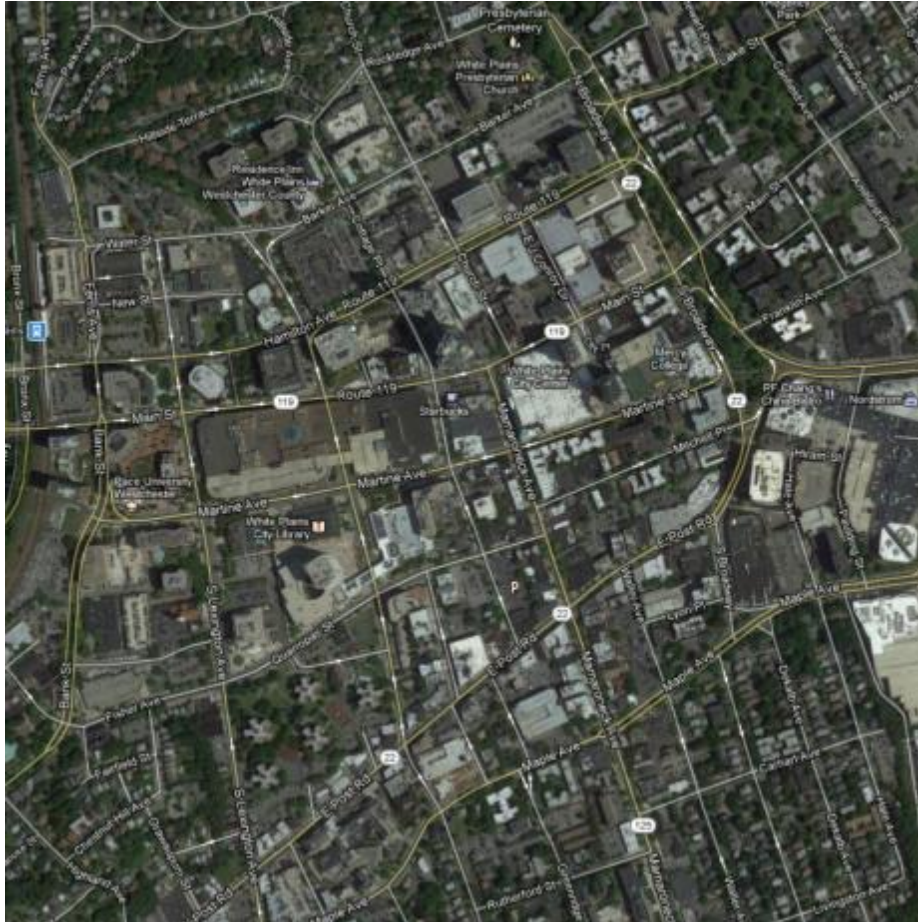


Regional Examples:

- White Plains
- New York



Cities



Transit Options



Local Bus



BRT



Express Bus



CRT

Local Bus Characteristics



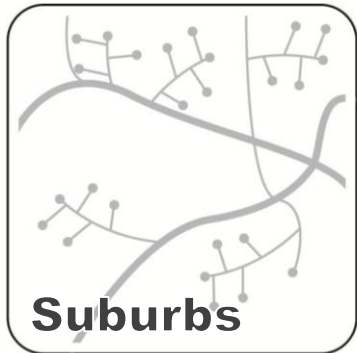
Local Bus Characteristics



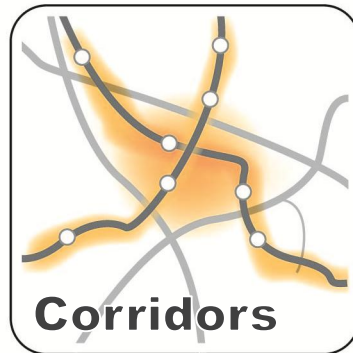
- Service Qualities
 - Local access
 - Frequent stops
 - Headway-based schedules
 - Feeder systems to other modes
 - Flexible routing
 - Mixed-traffic
- Passenger Experience
 - Short trips
 - Corner stops
 - Low ride comfort
 - Lowest fares
 - On-board fare payment

Local Bus Characteristics

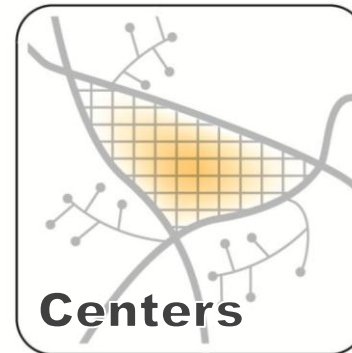
- Operational Environment



Lifeline
service



Connects
destinations



Local
circulation



Local
circulation

BRT Characteristics



BRT Characteristics



- Service Qualities

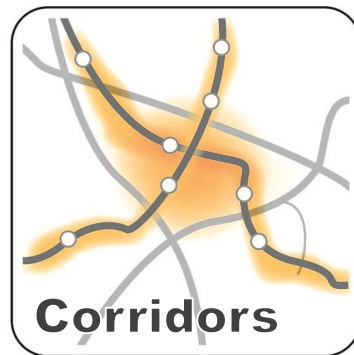
- Fixed routing
- Exclusive running ways
- Technology enhancements
- Headway based schedules
- Short waiting times
- Integration with other modes

- Passenger Experience

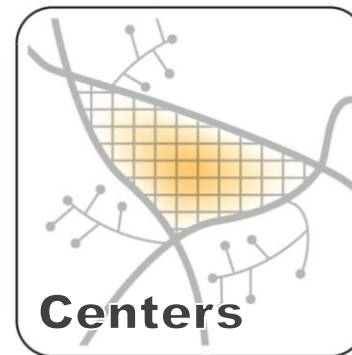
- Branding
- High-capacity, rail-like vehicles
- High quality stations
- Pre-board fare payment
- Real-time bus arrival information

BRT Characteristics

- Operational Environment



Connects
destinations



Local
circulation



Local
circulation

Express Bus Characteristics



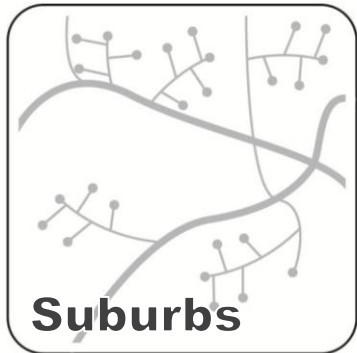
Express Bus Characteristics



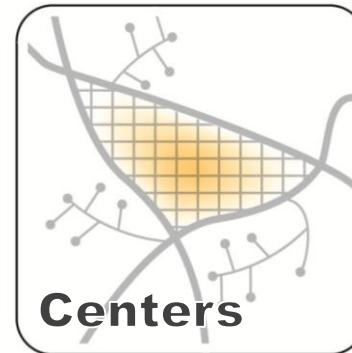
- Service Qualities
 - Regional access
 - Peak-hour service
 - Timetable based schedules
 - Runs on highways
 - Collects in origins and distributes in major destinations
 - Serves commuters/special events
- Passenger Experience
 - Park-and-ride facilities
 - Passenger amenities
 - Comfortable vehicles
 - Higher fares

Express Bus Characteristics

- Operational Environment



CBD access



CBD access



Key destination
access

CRT Characteristics



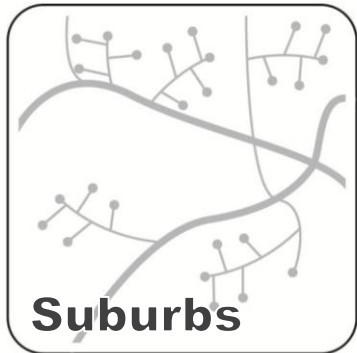
CRT Characteristics



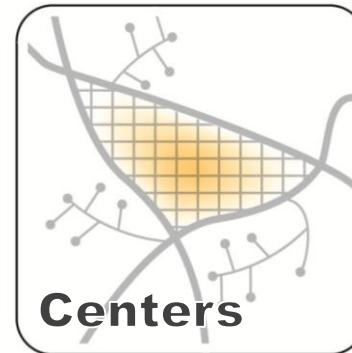
- Service Qualities
 - Regional access
 - Service to urban core
 - Timetable based schedules
 - Exclusive rights-of-way
 - Infrequent stops, with some express service
 - Integration with other modes
- Passenger Experience
 - High-capacity, comfortable vehicles
 - High quality stations
 - Park-and-ride facilities

CRT Characteristics

- Operational Environment



CBD access



Regional
circulation



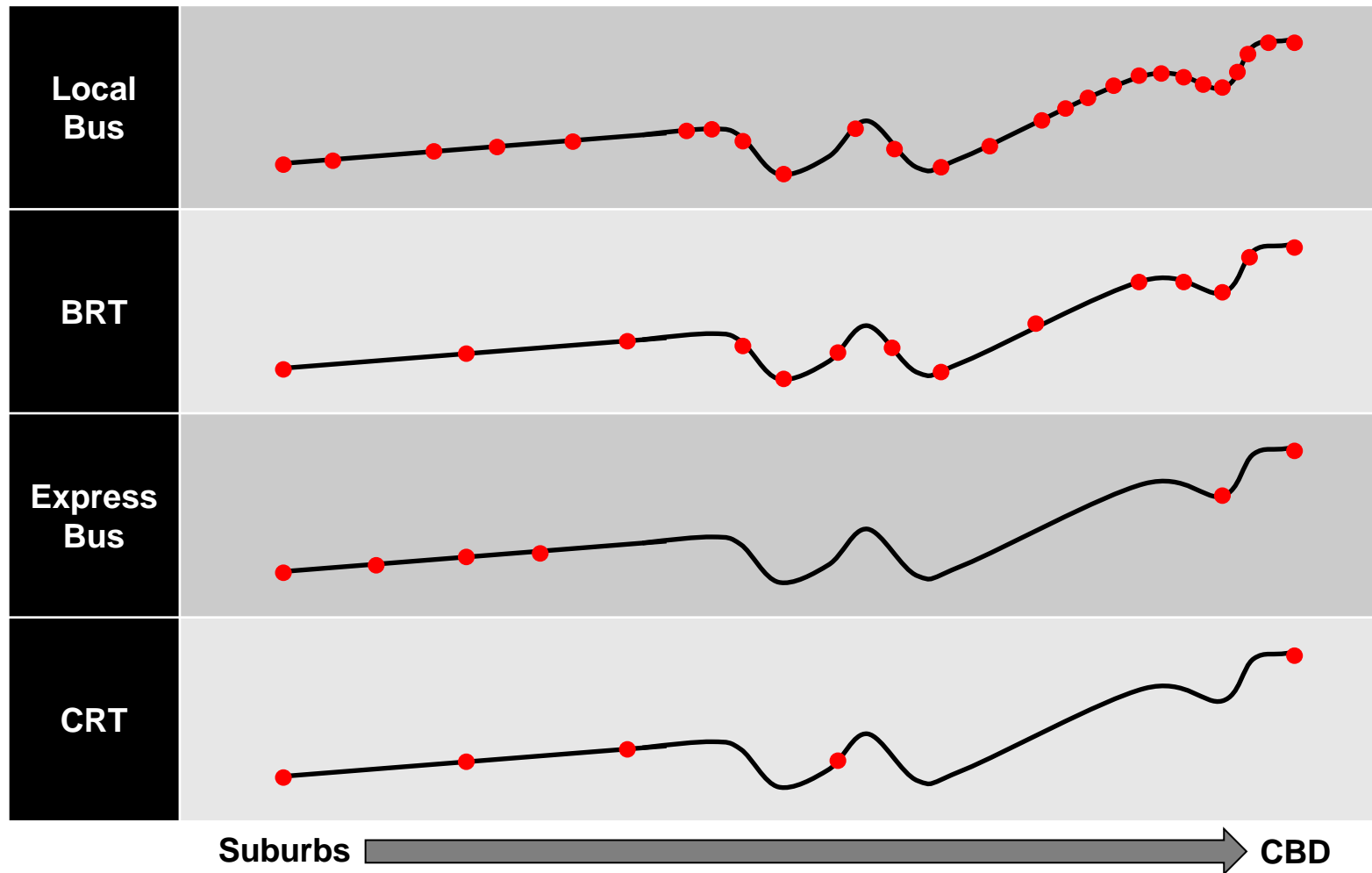
Regional
circulation

Transit Mode Comparison



	Land Use Relation	Stop Spacing	Operations	Schedule	Fare Payment	Amenities	Brand Differentiation
Local Bus	Responds	500-1,000 feet	Mixed traffic	Headway based	On-board	Few	No
BRT	Influences	0.25 - 2 miles	Mixed traffic, exclusive ROW	Headway based	Off-board	High-quality stations	Yes
Express Bus	Responds	1 - 5 miles	Mixed traffic, HOV	Timetable based	On/Off-board	WiFi, personal lights, air control, stations	Yes
CRT	Shapes	1 - 5 miles	Exclusive ROW	Timetable based	Off-board	WiFi, on-board restrooms, stations	No

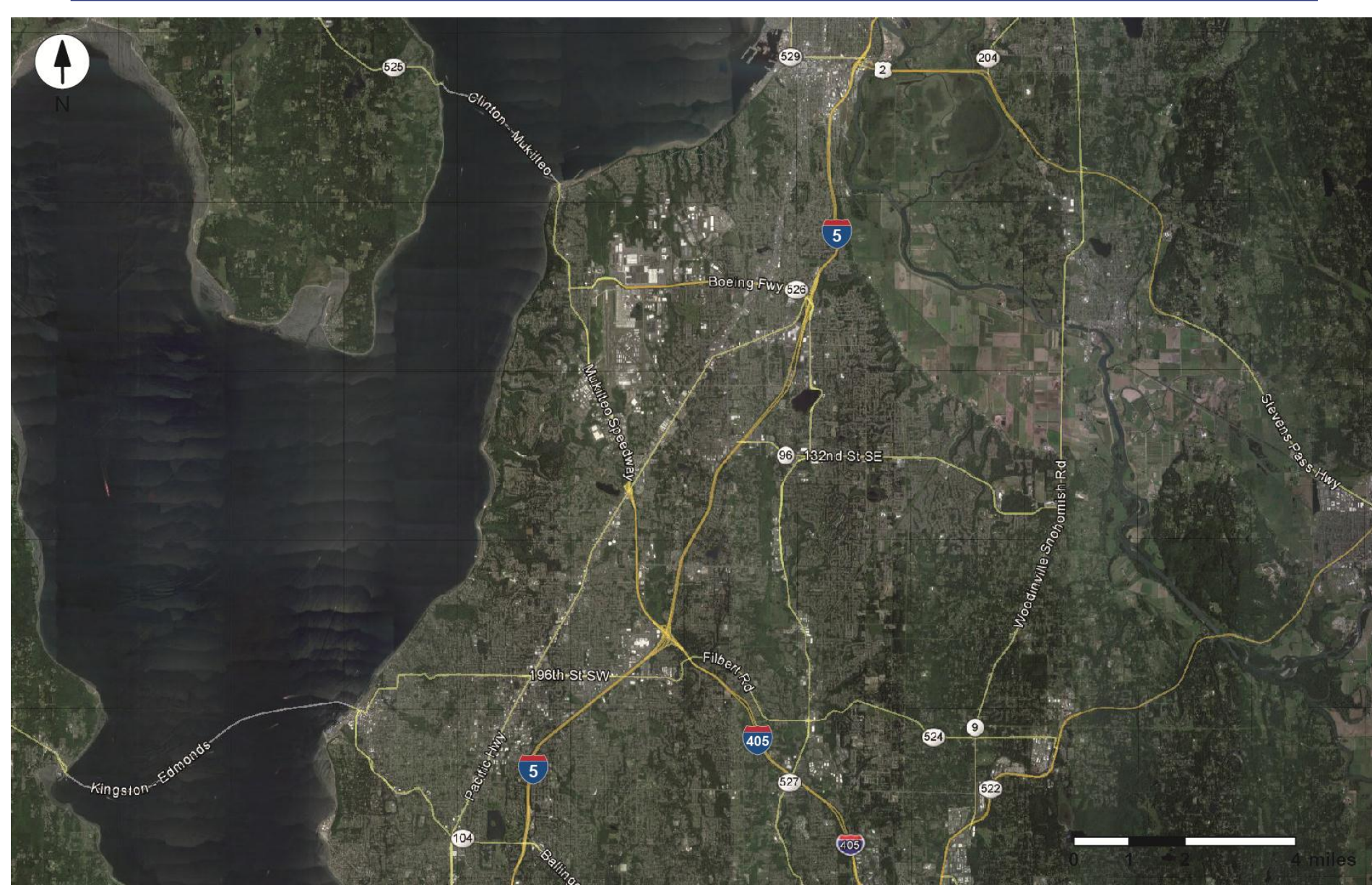
Transit Routing





Case Studies

Swift, King & Snohomish Counties, WA



Swift, King & Snohomish Counties, WA



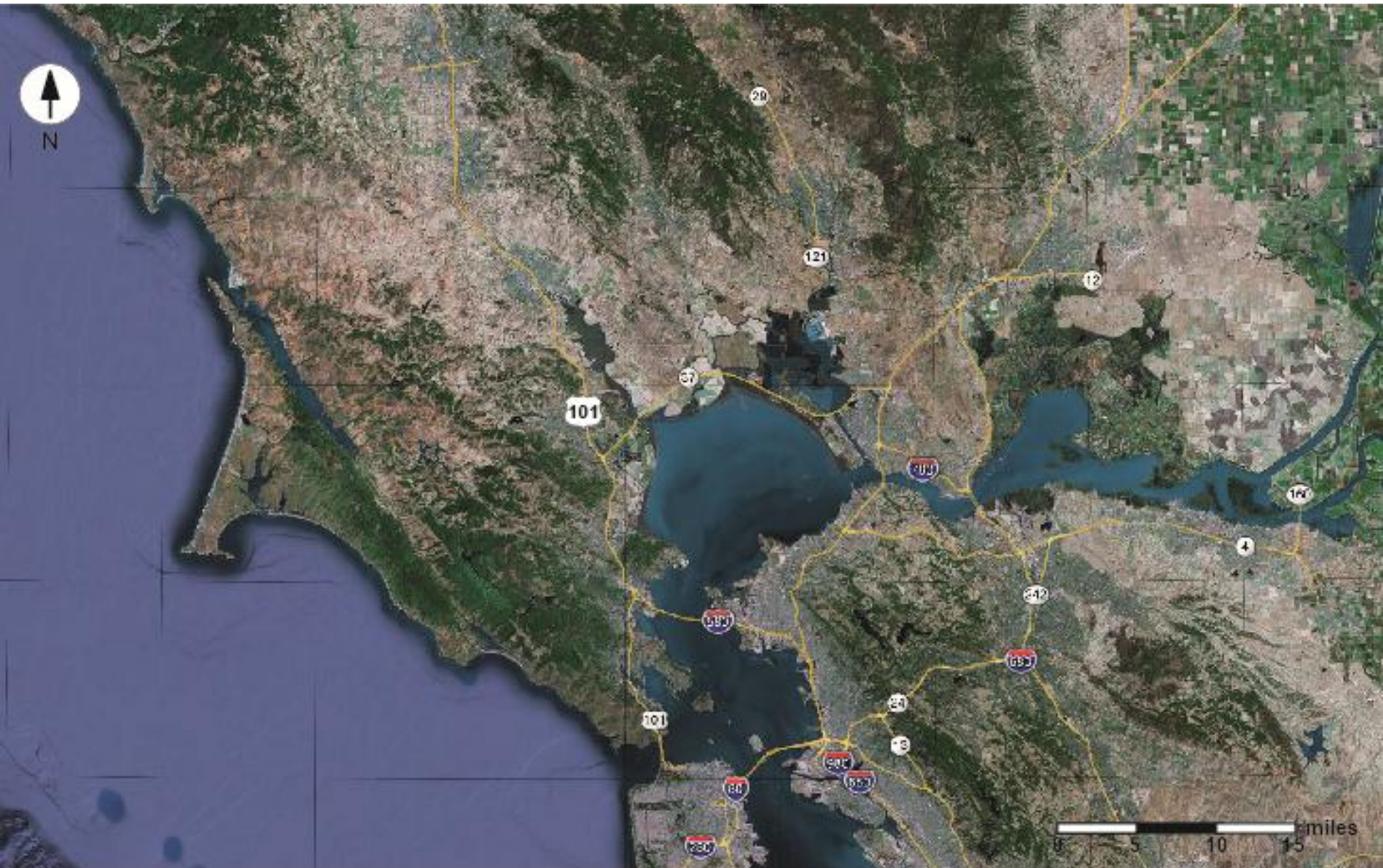
Swift, King & Snohomish Counties, WA



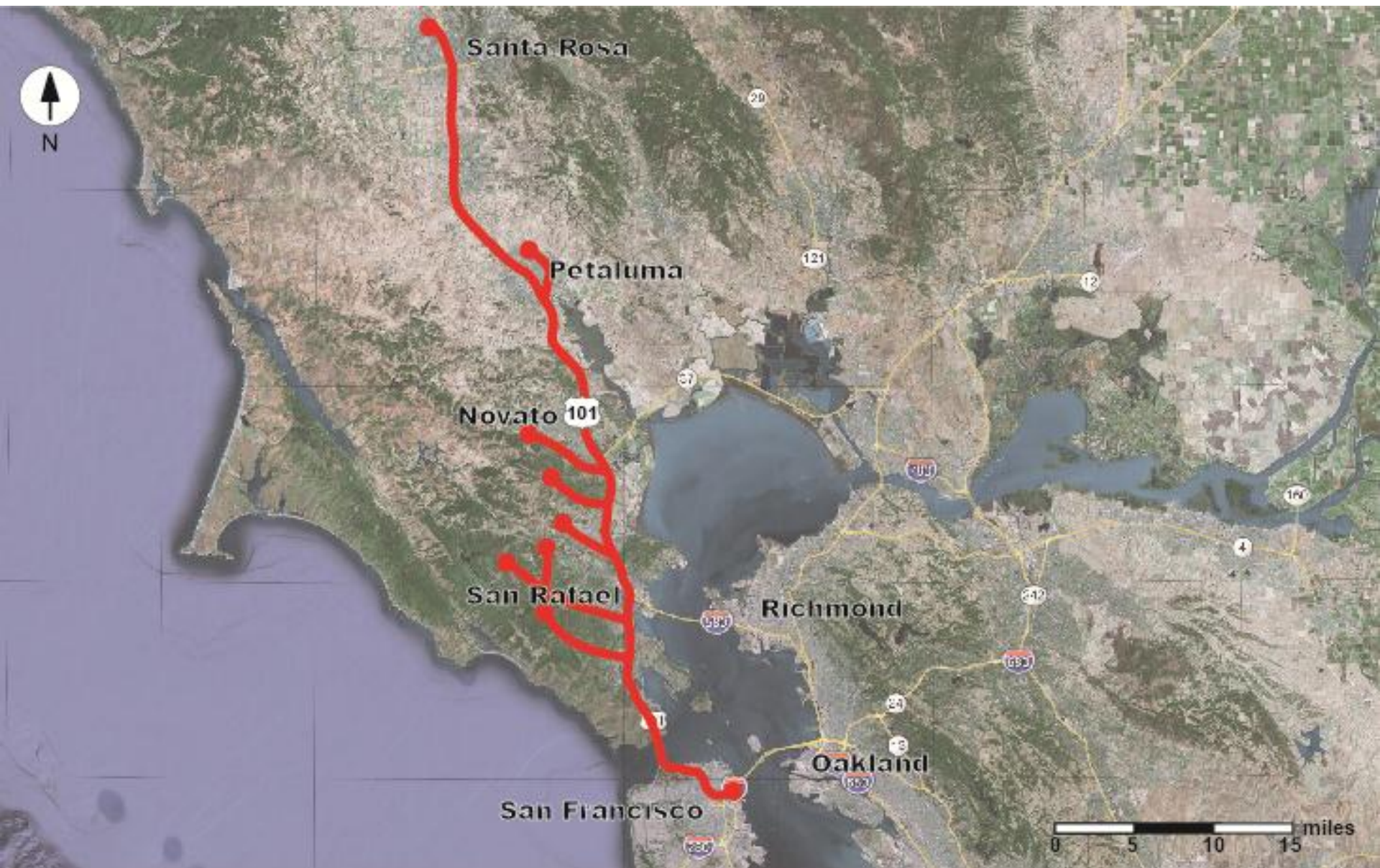
Type of Transit	BRT
Year Built	2009
Operations	Mixed traffic, bus lanes
Number of Routes	1
Length	17 miles
Stations	28 (both ways)
Daily Ridership	3,500 (2010)
Service frequency	12 minutes (peak hour)
Fare	\$2 (off-board payment)
Farebox Recovery	28% (Bus & Commuter Bus)
Capital Cost	\$29 million
Funding Sources	State, federal, grants



GGT 101 Routes, San Francisco, CA



GGT 101 Routes, San Francisco, CA



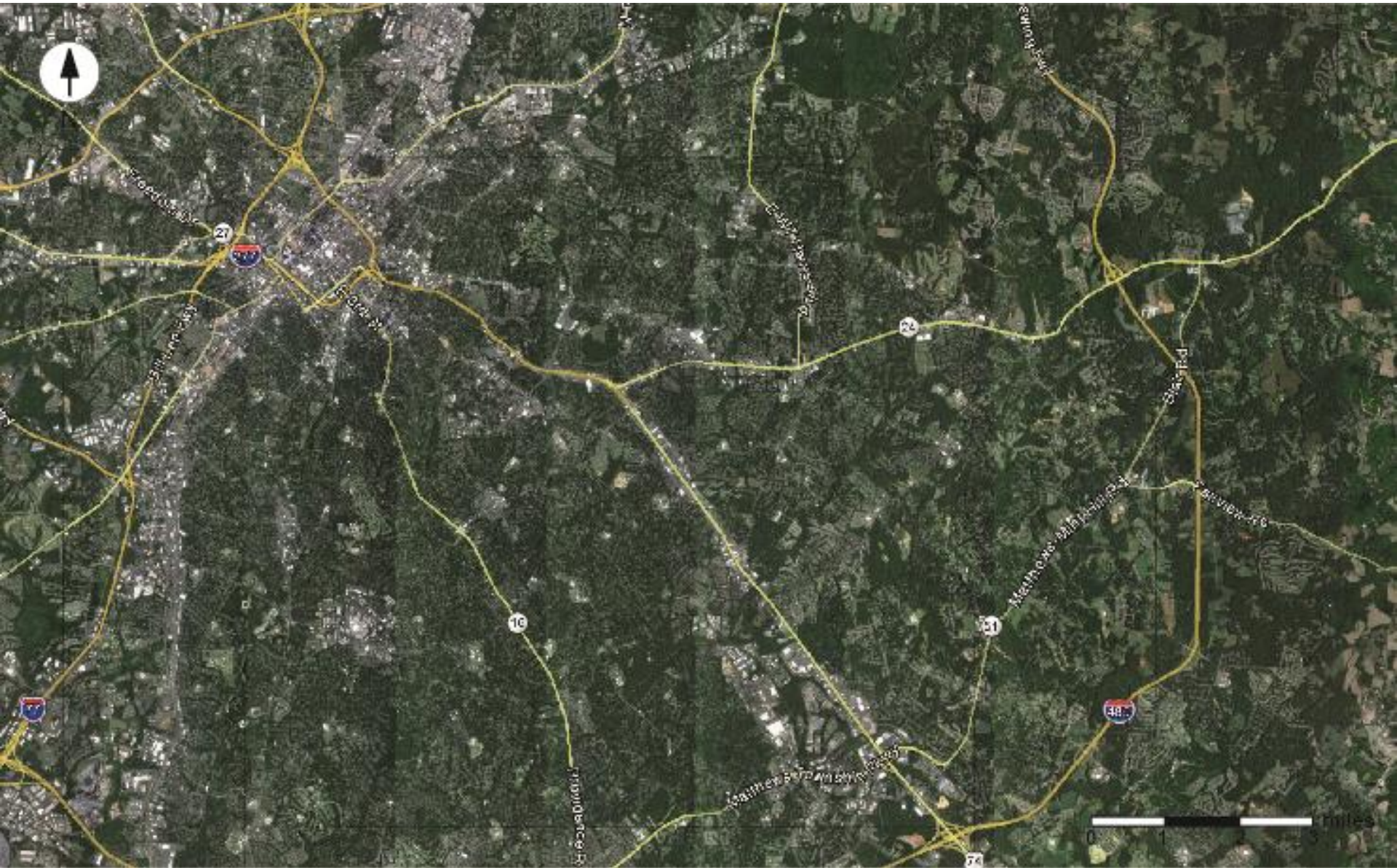
GGT 101 Routes, San Francisco, CA



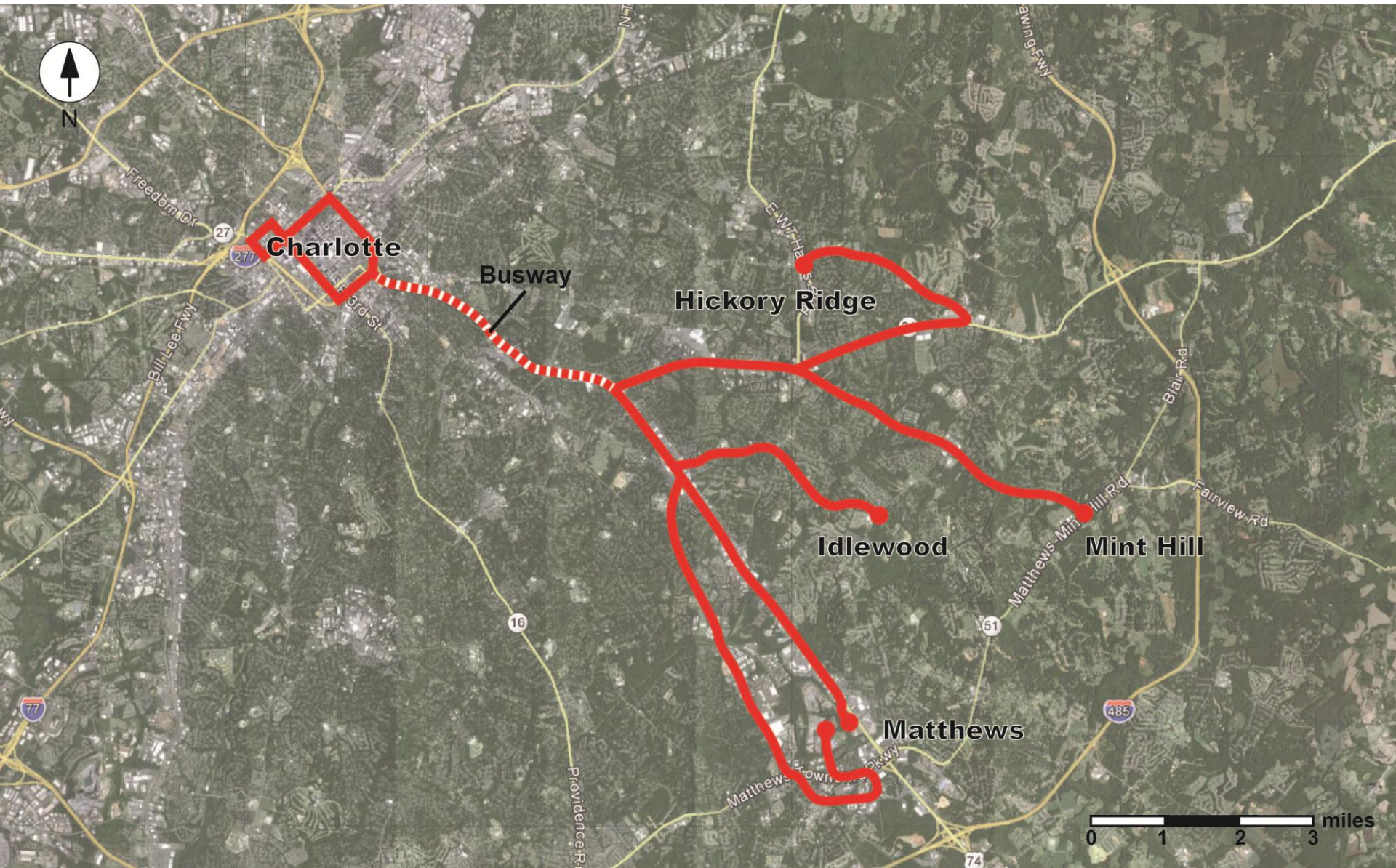
Type of Transit	Local and express buses
Year Introduced	1970
Operations	Mixed-traffic, HOV lanes
Number of Routes	22 GGT bus routes travel across Golden Gate Bridge/Highway 101
Length	20-60 miles
Stops	NA
Daily Ridership	NA
Service frequency	30-60 minutes (Each route); 45 buses an hour across bridge
Fare	\$4 - \$10.75 (Zone based)
Farebox Recovery	29% (Regional Commute Buses)
Capital Cost	NA
Funding Sources	Federal, state, bridge tolls



CATS Express Bus, Charlotte, NC



CATS Express Bus, Charlotte, NC



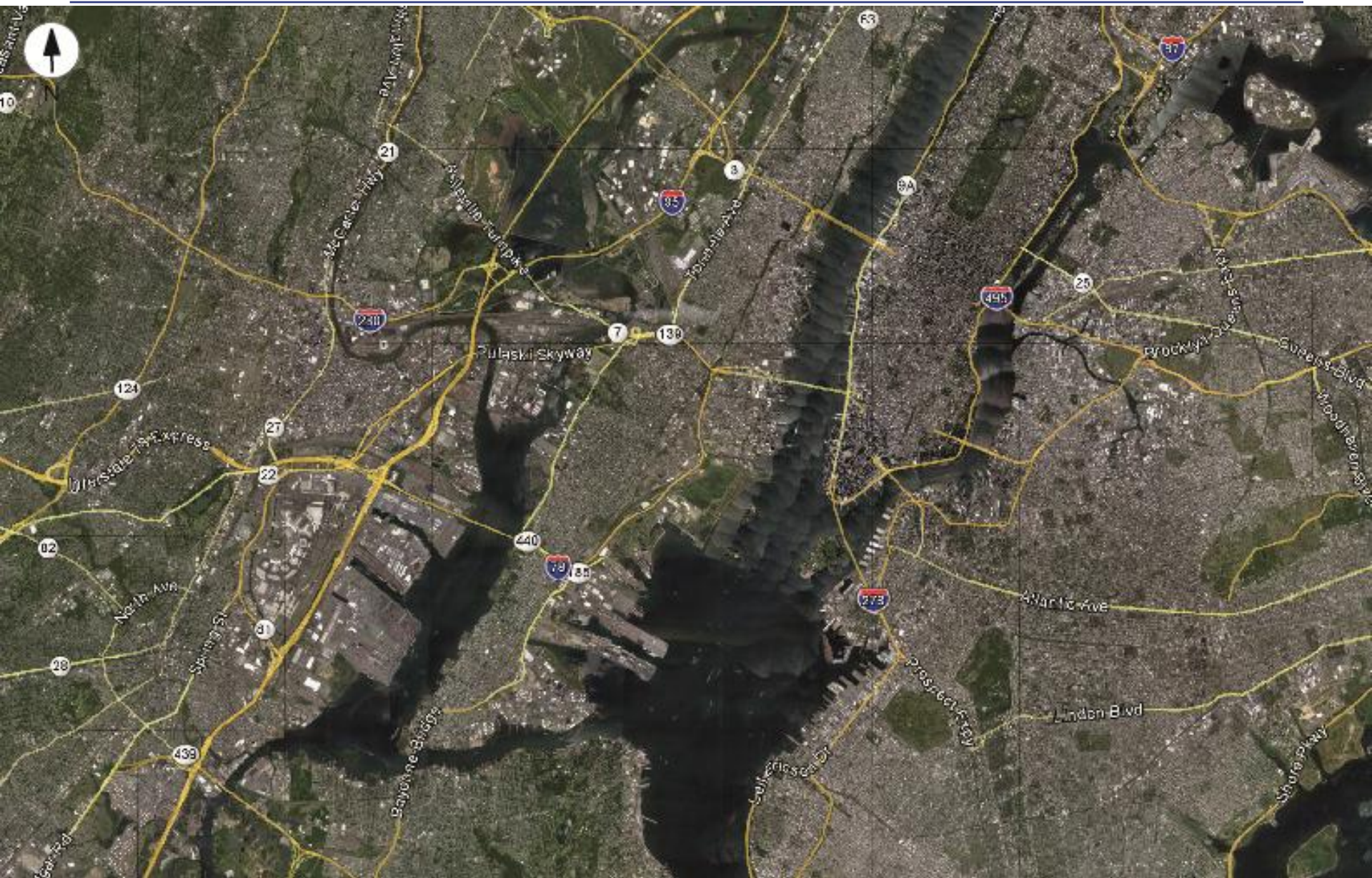
CATS Express Bus, Charlotte, NC



Type of Transit	Express bus
Year Built	2000
Operations	Busway, mixed traffic
Number of Routes	18 (5 use busway)
Length	3.9 miles of busway
Stations	637
Daily Ridership	4,600 (Express)
Service frequency	15-20 minutes (Peak periods)
Fare	\$2 (Local) 2.75 (Express)
Farebox Recovery	24% (All CATS buses)
Capital Cost	NA
Funding Sources	Federal, CMAQ grants



Hudson-Bergen LRT, NJ





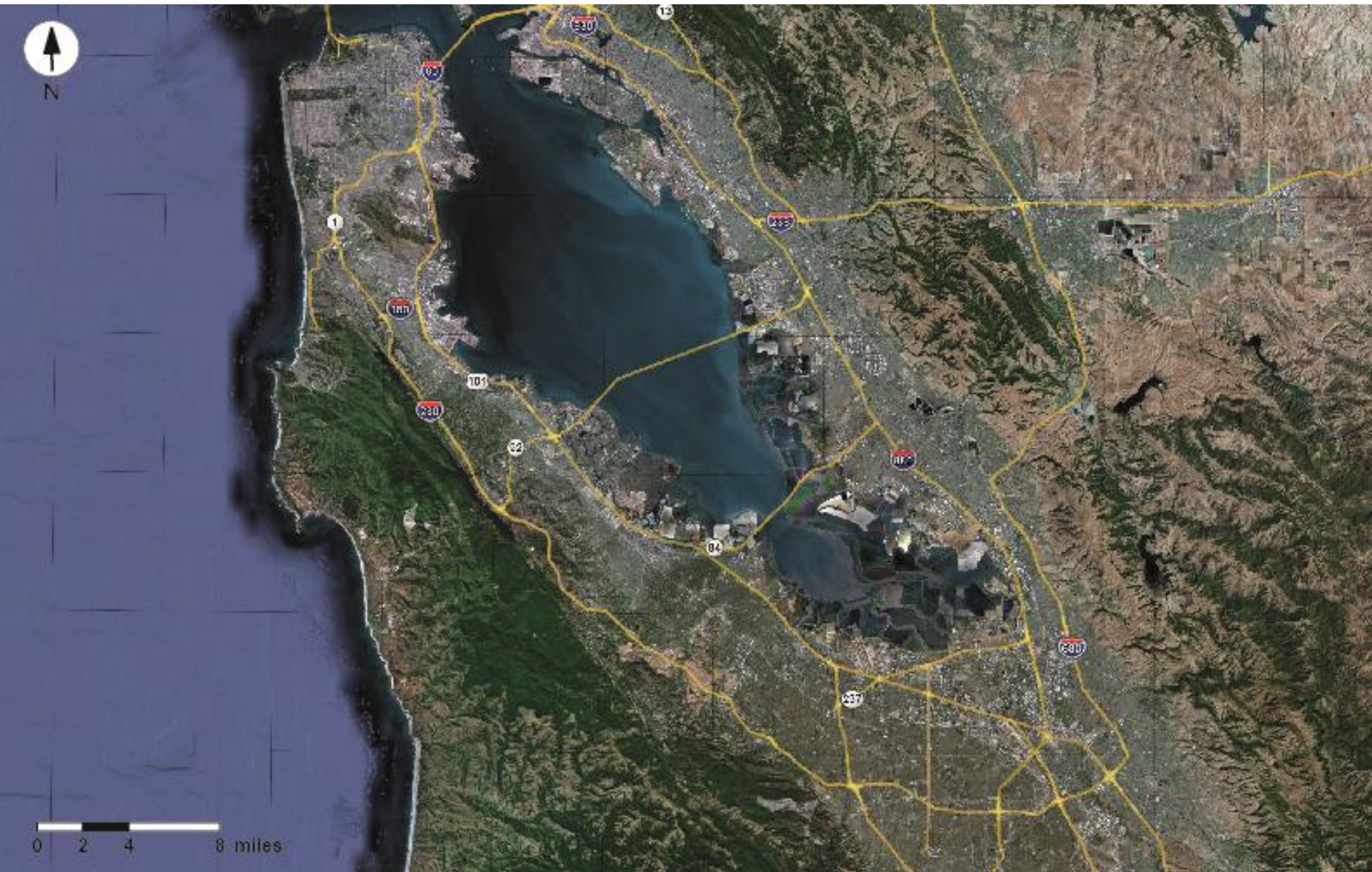
Hudson-Bergen Light Rail, NJ



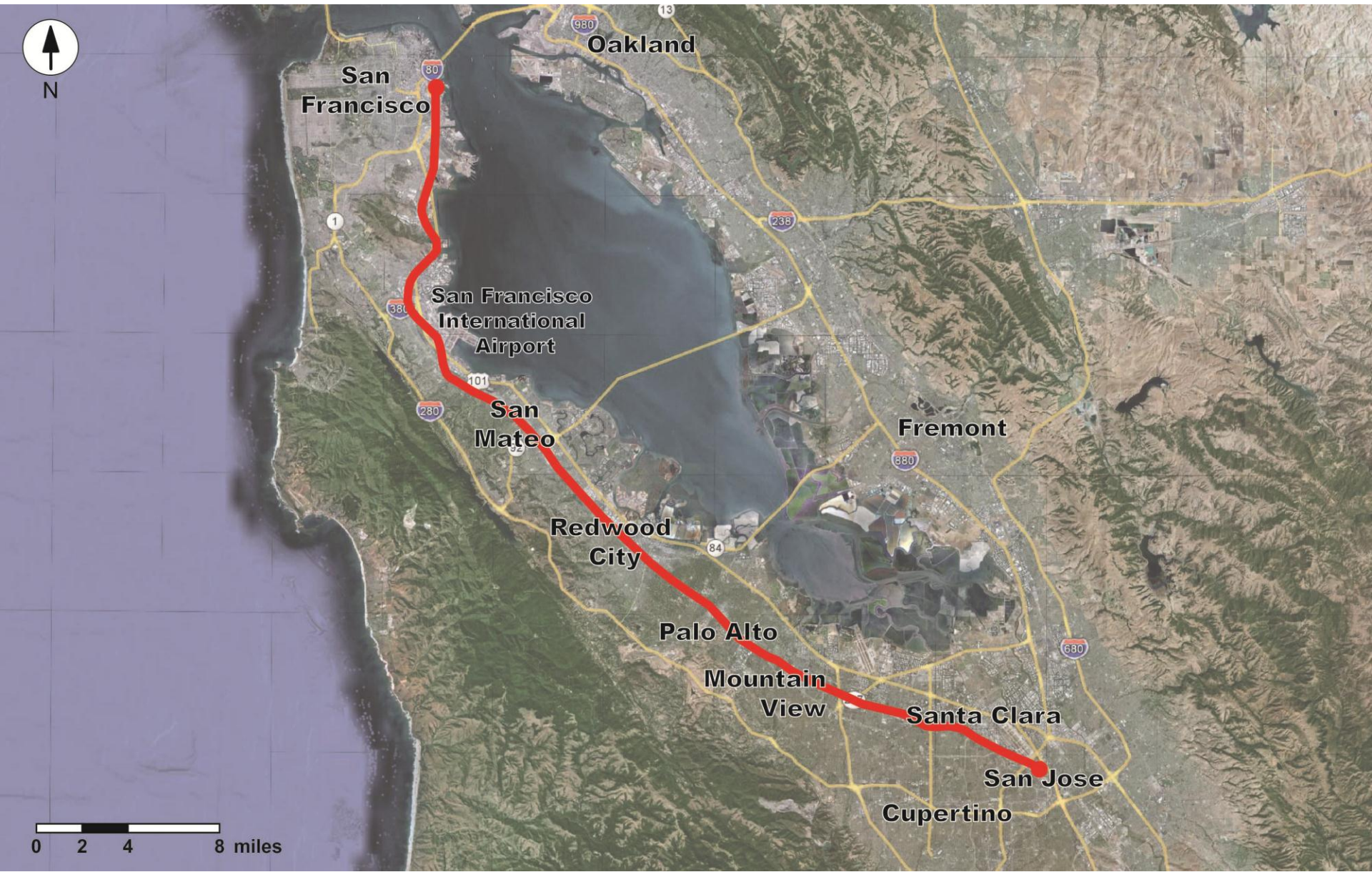
Type of Transit	Light Rail
Year Built	2000 - 2011
Operations	Exclusive right of way, mixed traffic
Number of Routes	3
Length	21 miles
Stations	24
Daily Ridership	44,000 (FY?)
Service frequency	6-15 minutes (Peak period)
Fare	\$2.10, off-board
Farebox Recovery	NA
Capital Cost	\$2.2 billion
Funding Sources	Federal and state



Caltrain, West/South Bay, CA



Caltrain, West/South Bay, CA



Caltrain, West/South Bay, CA

Type of Transit	Commuter rail
Year Built	1992
Operations	Exclusive right of way
Number of Routes	1
Length	77 miles
Stations	32
Daily Ridership	42,350 (2012)
Service frequency	6-21 minutes (Peak period)
Fares	\$2 to \$3 per zone (6 zones)
Farebox Recovery	58% (2012)
Capital Costs	NA
Funding Sources	Federal, state grants





Discussion