Benefits of Long-Range Capital Planning

Presentation at the Transportation Research Board
9th National Conference on Transportation Asset Management

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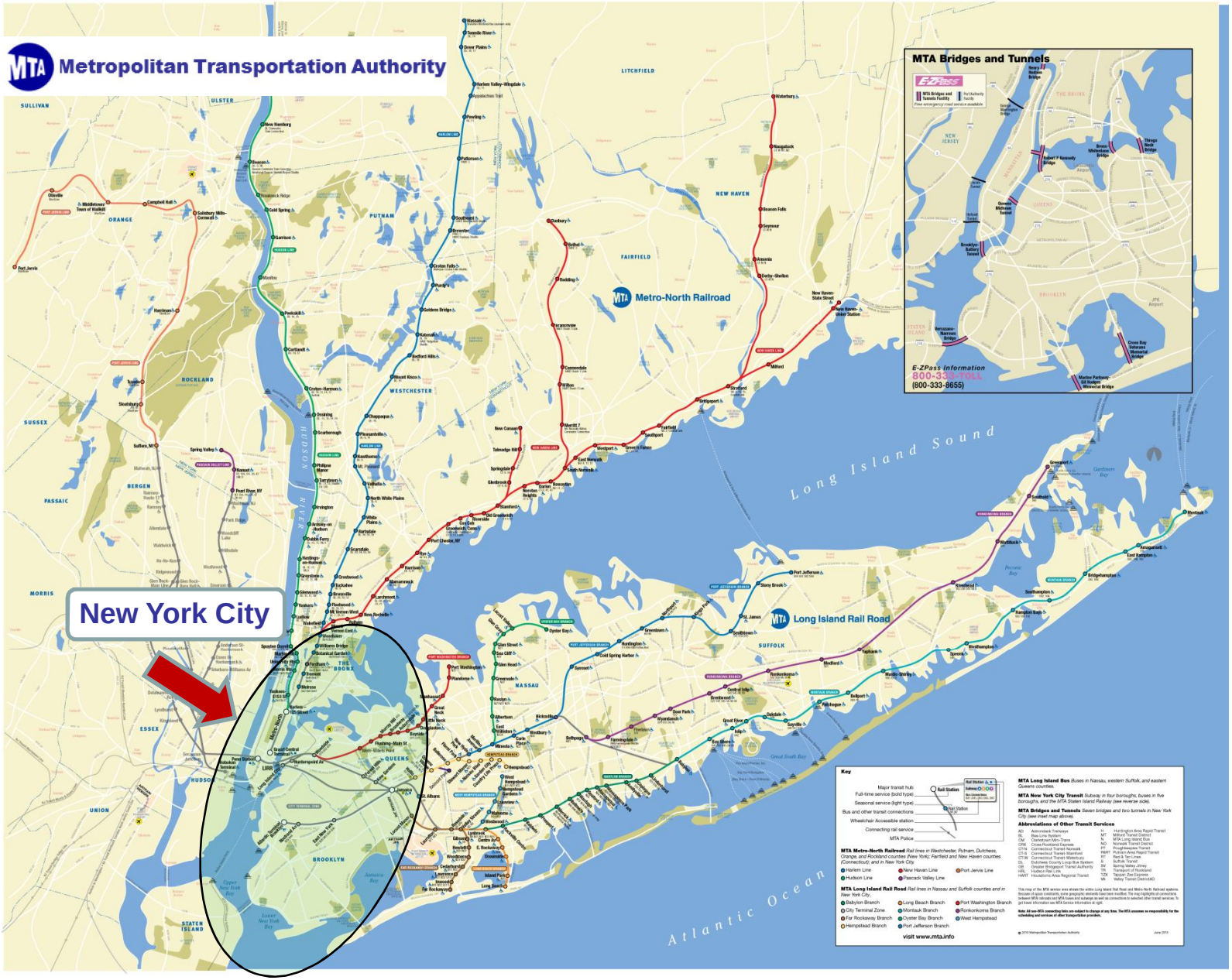
MTA CAPITAL PROGRAM

April 18, 2012

Agenda

1. MTA System Overview
2. Origins of the Capital Plan
3. Capital Planning and the
   Twenty Year Needs Assessment
4. Benefits to Date

The Nation's Largest Transit System



NYC Transit/Staten Island Railway

Key Facts on Subways

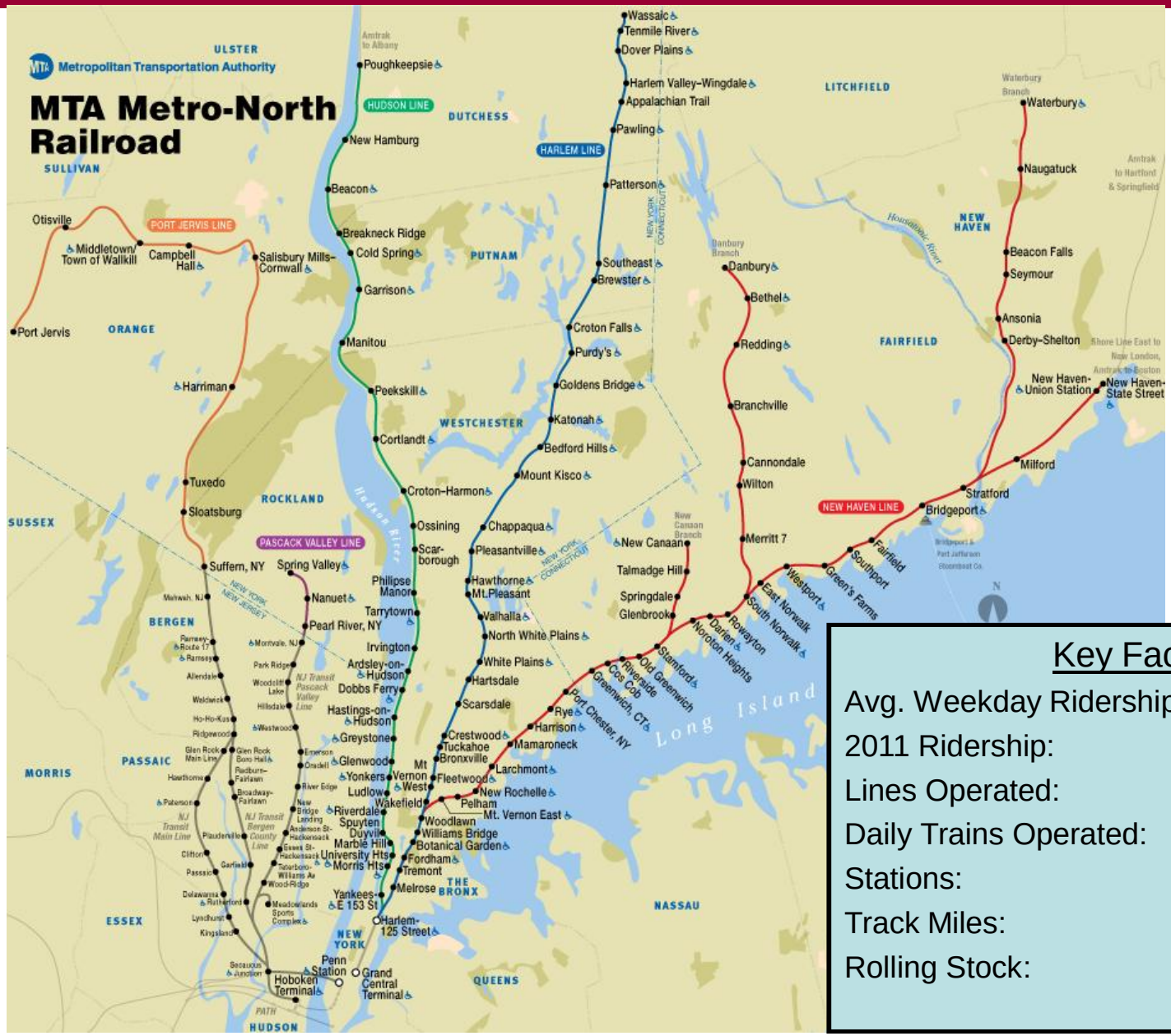
Avg. Weekday Riders:	5,284,930
2011 Ridership:	1,640,327,811
Lines Operated:	23
Daily Trains Operated:	8,279
Stations:	468
Track Miles:	631
Subway Cars:	6,311
Signals:	12,080
Mainline Switches:	3,259

NYC Transit/MTA Bus

Key Facts on Buses

Avg. Weekday Riders:	2,522,290
2011 Ridership:	783,562,437
Bus Routes:	297
Buses:	5,900
Bus Stops:	15,226

Metro-North Railroad



Key Facts

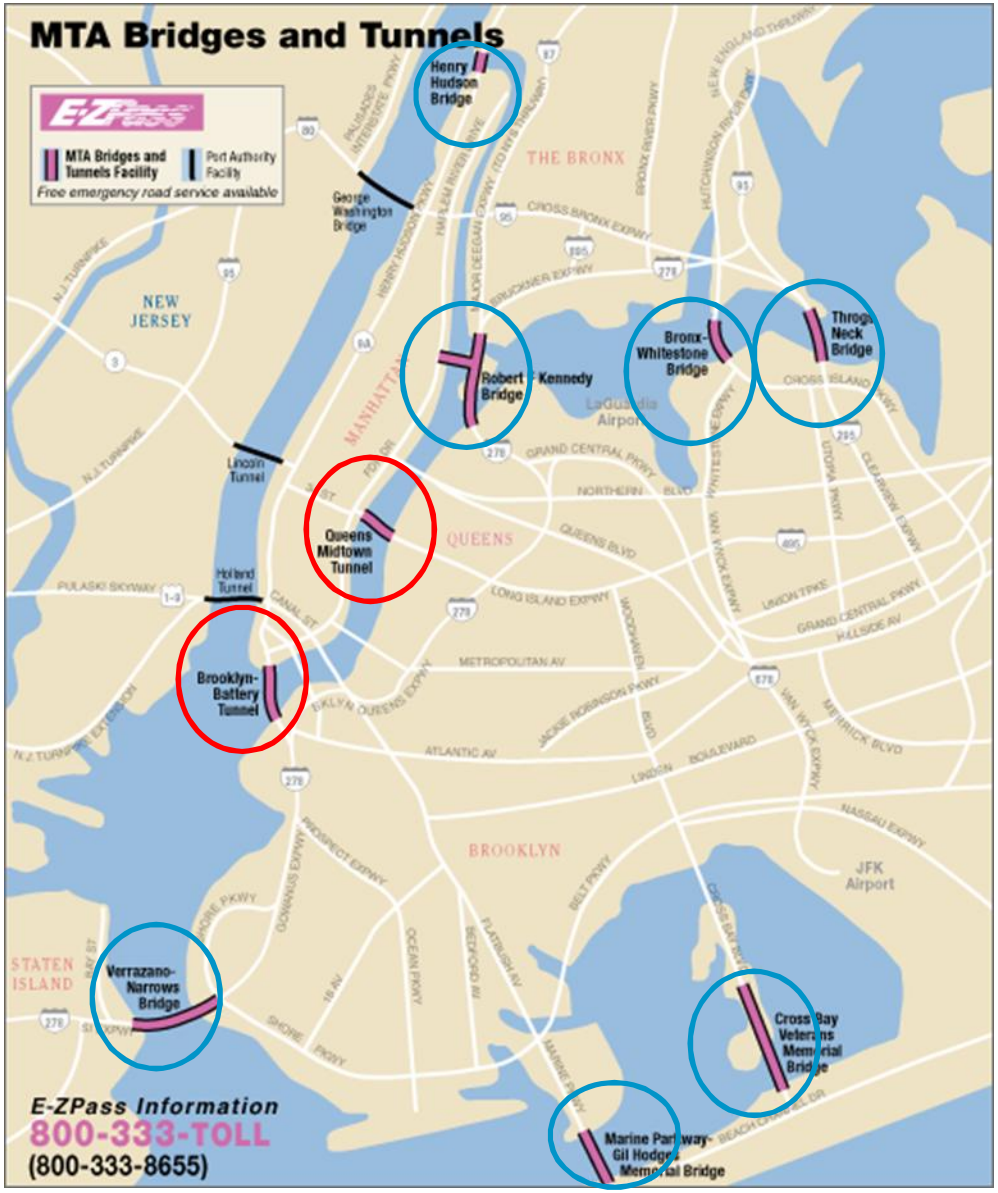
Avg. Weekday Ridership:	281,445
2011 Ridership:	82,037,786
Lines Operated:	8
Daily Trains Operated:	728
Stations:	120
Track Miles:	775
Rolling Stock:	1,193

Long Island Rail Road

Key Facts

Avg. Weekday Riders :	283,248
2011 Ridership:	80,983,003
Lines Operated:	11
Daily Trains Operated:	735
Stations:	124
Track Miles:	594
Rolling Stock:	1,185

MTA Bridges & Tunnels



Key Facts

7 Bridges	2 Tunnels
Daily Vehicles:	over 800,000
2011 Vehicles:	280 million
Avg. Daily Travelers:	1 million
Toll Revenue:	$1.3 billion
% to transit:	over 50%

Origins of the Capital Plan

By 1982 the system was on the brink of collapse

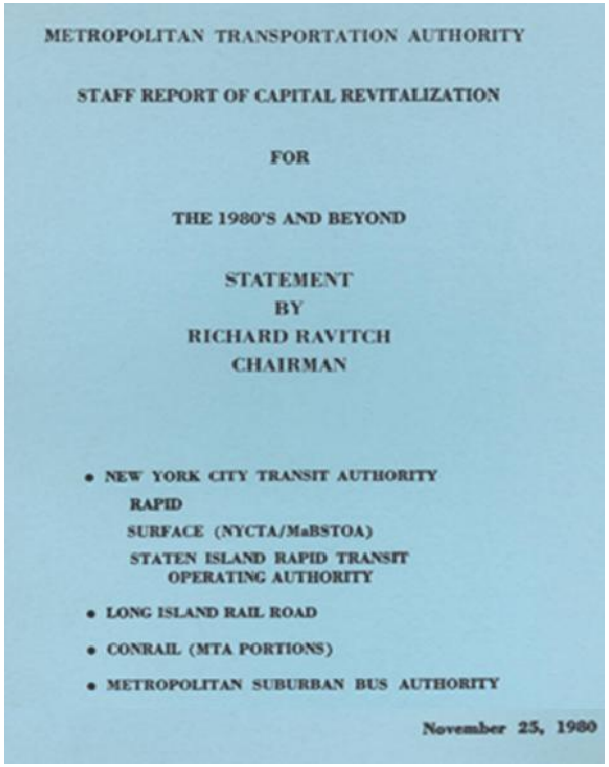
- Graffiti, crime and poor image
- Subway ridership fell 40%
- Crumbling network of legacy railroads
- Frequent breakdowns and derailments

"Photo Credit: "The Canarsie Kid" on Flickr

Origins of the Capital Plan

***Paradigm shift* to rescue the system**

- Five year investment plan mandated by state legislature since 1982.
- Establishment of an Independent Engineer Consultant for better oversight
- Twenty Year capital planning and asset management process:
  - ➢ Identify needs to maintain state of good repair
  - ➢ Support long-term service goals


METROPOLITAN TRANSPORTATION AUTHORITY

STAFF REPORT OF CAPITAL REVITALIZATION

FOR

THE 1980'S AND BEYOND

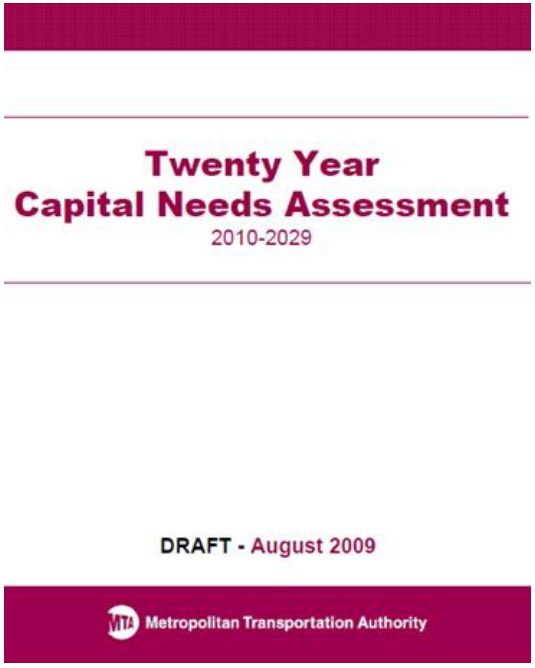
STATEMENT
BY
RICHARD RAVITCH
CHAIRMAN

- NEW YORK CITY TRANSIT AUTHORITY
  - RAPID
  - SURFACE (NYCTA/MaBSTOA)
  - STATEN ISLAND RAPID TRANSIT OPERATING AUTHORITY
- LONG ISLAND RAIL ROAD
- CONRAIL (MTA PORTIONS)
- METROPOLITAN SUBURBAN BUS AUTHORITY

November 25, 1980

The Process

1. Asset Inventory and Condition Assessment Update.
2. Long-term priorities and impacts in five year increments.
3. Integration of a Transit Asset Management (TAM) Model.
4. Regional Strategic Review.



MTA Summary of Continuing Needs: 2010-2029
(2008 $ in millions)

Agency	2010-2014	2015-2019	2020-2024	2025-2029	Total
NYC Transit	$22,180	$20,126	$22,117	$19,723	$84,146
Long Island Rail Road	3,492	4,232	4,091	4,557	16,372
Metro-North Railroad	2,106	3,820	3,281	2,579	11,786
MTA Bus Company	708	988	839	663	3,198
MTA Bridges and Tunnels	3,025	3,459	4,141	1,731	12,356
MTA Police and Security	651	239	39	43	972
Total	$32,162	$32,864	$34,508	$29,295	$128,832

1. Asset Inventory and Condition Assessment Update

The Data: Asset Inventory & Condition Assessment

- MTA agencies inventory and rate conditions of all assets.

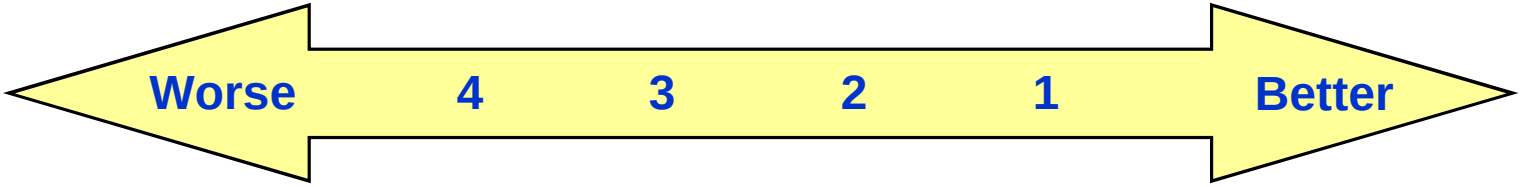
Mainline Signals

Budget Category: T-08 Signals & Communications Sponsor Dept: Electrical (RC #2900) Maintaining Dept: Signal System Maint. (RC #2930) Standard in Effect: Y/N Useful life: 50

Location						Last Major Capital Project					Equipment											Condition			
Line	Area	Sect.	Div.	From (Origin)	To (Destination)	Planning No.	Project Description	Award Yr	Ben Use Yr	Subst Compl Yr	Cost ($M)	Eqpt Type	Volt.	Freq.	Design Headway (Sec)	Reverse Signal (Y/N)*	SOGR Year	Last Install	Field	Engineering	Age	Total Rating	Track Miles	Enclosure	Cable	Wayside Equip.	Overall
Queens	17	H	IND	S/O 169th St.	N/O 169th St.							Air	110	60	90	Y		1934	48	100	25	48	2.9	4	4	4	4
Queens	17	I	IND	S/O 179th St.	N/O 179th St.							Elect	110	60	90	Y		1934	60	100	25	54	1.9	3	3	3	3
Archer	18	A	IND	S/O Jamaica Van Wyck	N/O Jamaica Van Wyck	EN12-1288	Signals: Route 131D, Added Capacity	1982	1987	1987	$25.6	Elect	110	60	120	Y	1982	1982	100	100	75	91	1.3	1	1	1	1
Archer	18	B	IND	S/O Sutphin Blvd	N/O Sutphin Blvd	EN12-1288	Signals: Route 131D, Added Capacity	1982	1987	1987	$25.6	Elect	110	60	120	Y	1982	1982	100	100	75	91	1.0	1	1	1	1
Archer	18	C	IND	S/O Parsons Blvd.	N/O Parsons Blvd.	EN12-1288	Signals: Route 131D, Added Capacity	1982	1987	1987	$25.6	Elect	110	60	120	Y	1982	1982	100	100	75	91	1.1	1	1	1	1
63rd St.	19	A	IND	N/O 57th St	S/O Lex Ave.	EN12-1290	Signals: Route 131A, Added Capacity	1981	1986	1986	$22.6	Elect.	110	60	180	Y	1981	1981	100	100	75	91	0.7	1	1	1	1
63rd St.	19	B	IND	N/O Lex Ave UL	S/O Lex Ave UL	EN12-1290	Signals: Route 131A, Added Capacity	1981	1986	1986	$22.6	Elect	110	60	180	Y	1981	1981	100	100	75	91	1.0	1	1	1	1
63rd St.	19	C	IND	N/O Lex Ave	S/O Lex Ave	EN12-1290	Signals: Route 131A, Added Capacity	1981	1986	1986	$22.6	Elect	110	60	180	Y	1981	1981	100	100	75	91	0.9	1	1	1	1

Long-Term Priorities and Impacts in Five-Year Increments

MTA Uniform condition rating framework



- Asset conditions rated on a scale of 1 (best) to 4 (worst) and informs capital needs 5 year and beyond
- ***4 = Deteriorated:*** Serious functional deficiencies; unacceptable stoppage expected.
  - *Priority capital investment.*
- ***3 = Deficient:*** Serious functional deficiencies; stoppages can be minimized through maintenance.
  - *Capital investment can be deferred at some expense.*
- ***2 = Acceptable:*** Considered to be adequate; stoppages addressed through maintenance.
  - *Capital investment can be deferred.*
- ***1 = Modernized:*** meet most standards.
  - *Replacement not needed in next 5 years.*

The Data: Asset Inventory & Condition Assessment

- Evaluates asset investment strategies for optimal replacement:
  - ***Cyclical or needs-based*, *component*** or ***renewal needs***
- Develops strategies for each asset category to prioritize critical needs.
- Projects the SGR backlog.
- Prioritizes SGR needs.
- Constrained only by:
  - operations
  - market for construction
  - Internal resources

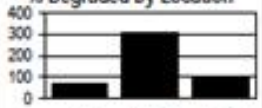
The Data: Asset Inventory & Condition Assessment

Part A: Summary of Capital Assets — T-4 Stations

Passenger Stations

Primary Data
Total Units*: 467
Useful Life: TBD
Avg. Age (2009): 45.5 Yrs
Units of Measure: Stations
* Excludes Cortlandt / BW7 part of WTC reconstruction

Station Components — % Degraded by Location



0%	1-65%	>65%
69	307	91

Recent Investment

Program	Units	Nom $
2000-2004:	68	$1,644
2005-2009:	25	$798
10-year Total:	93	$2,442

Asset Status
Specific condition back-log, refer to the Component tables below, ratings 3 or greater.
Basis for Backlog: A
Catch-up Year: 2024

Platforms

Primary Data
Total Units: 904
Units of Measure: Platforms

Condition Distribution

1/UC	2	3	4
76	293	429	106

Recent Investment

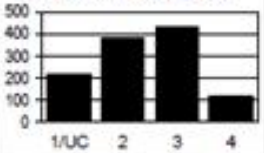
Program	Units	Nom $
2000-2004:	N/A	N/A
2005-2009:	N/A	N/A
10-year Total:	0	$0

Asset Status
41%
NY Cycle: 41% 369
Overdue: 59% 535
Overdue Basis: A
Catch-up Year: 2024

Platform Edges

Primary Data
Total Units: 1,159
Units of Measure: Platform Edges

Condition Distribution



1/UC	2	3	4
216	383	437	115

Recent Investment

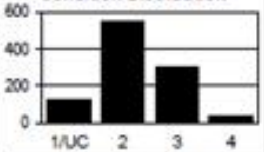
Program	Units	Nom $
2000-2004:	N/A	N/A
2005-2009:	N/A	$28
10-year Total:	0	$28

Asset Status
52%
NY Cycle: 52% 607
Overdue: 48% 552
Overdue Basis: A
Catch-up Year: 2024

Mezz-anines

Primary Data
Total Units: 1,014
Units of Measure: Mezzanines

Condition Distribution



1/UC	2	3	4
130	545	305	34

Recent Investment

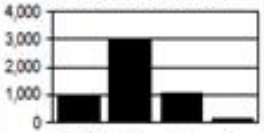
Program	Units	Nom $
2000-2004:	N/A	N/A
2005-2009:	N/A	N/A
10-year Total:	0	$0

Asset Status
67%
NY Cycle: 67% 675
Overdue: 33% 339
Overdue Basis: A
Catch-up Year: 2024

Stairs

Primary Data
Total Units: 5,105
Units of Measure: Stairs

Condition Distribution



1/UC	2	3	4
925	2,952	1,078	150

Recent Investment

Program	Units	Nom $
2000-2004:	N/A	N/A
2005-2009:	N/A	$29
10-year Total:	0	$29

Asset Status
76%
NY Cycle: 76% 3,877
Overdue: 24% 1,228
Overdue Basis: A
Catch-up Year: 2024

2. Long-term priorities and impacts in five year increments

Long-Term Priorities and Impacts in Five-Year Increments

The results of this process include…

- Identification of investment options to maximize passenger service benefits.
- Descriptions, costs, and time periods for all investment categories.
- Framework for next five-year capital plan.
- Future capital investment informed through asset class strategy.

"If you don't know where you're going, chances are you will end up somewhere else."
- Yogi Berra

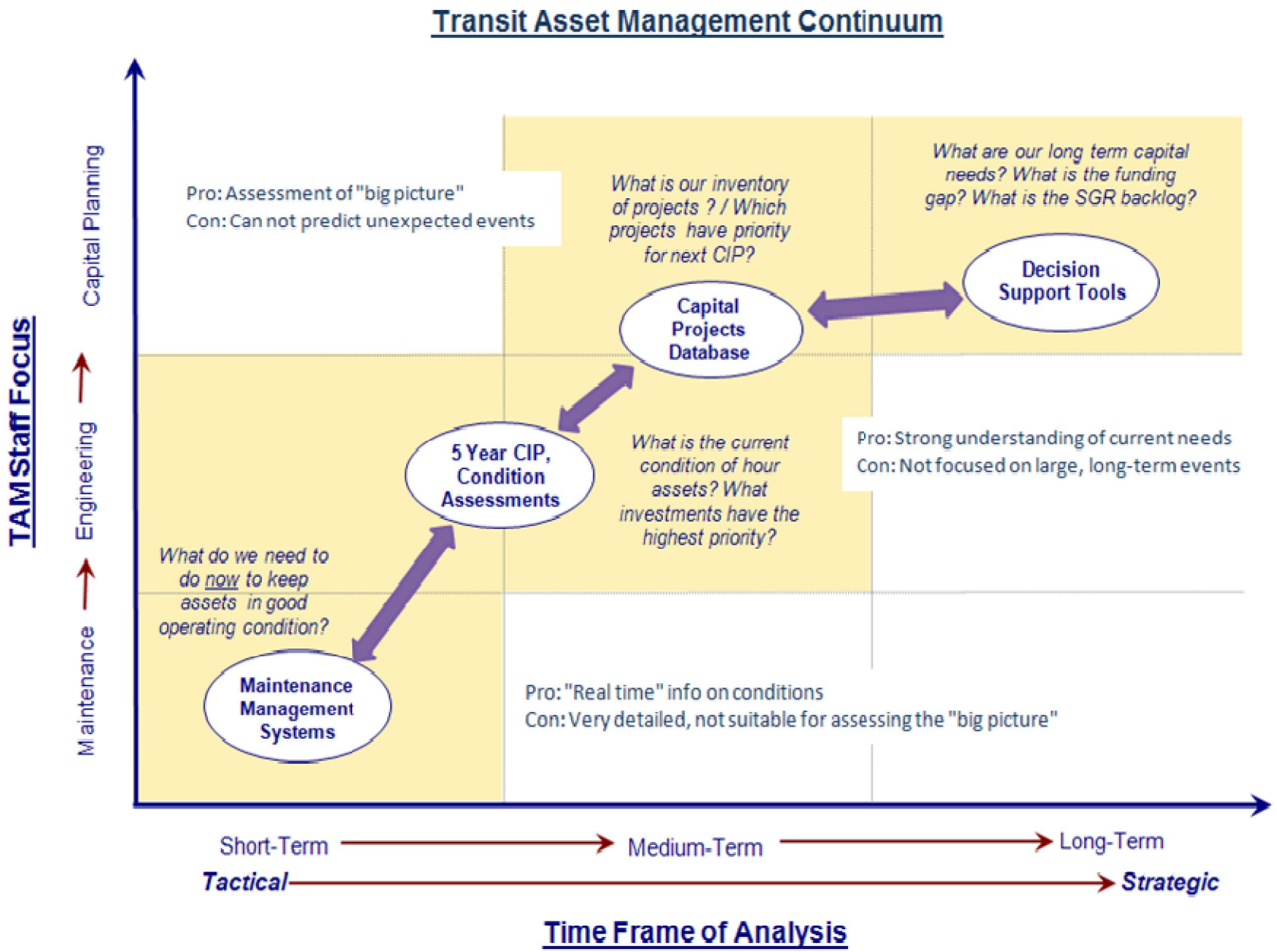
Long-term priorities and impacts in five year increments

Part B:	Category:	7/15/2009
Capital Needs by 5 - year Period	T - 4: Passenger Stations	

Investment Subcategory		2010-14		2015-19		2020-24		2025-29		TOTAL	
		UNITS	$	UNITS	$	UNITS	$	UNITS	$	UNITS	$
Station Rehabilitations	Overdue	44	$1,505.4	46	$1,489.0	46	$1,489.0			136	$4,483.4
	NR										
	SI										
	Other										
Units: Stations	TOTAL	44	$1,505.4	46	$1,489.0	46	$1,489.0			136	$4,483.4
Cyclical Rehabilitation Work	Overdue	84	$1,071.0	83	$1,018.0	83	$1,018.0			250	$3,107.0
	NR							81	$ 998.0	81	$ 998.0
	SI										
	Other										
	TOTAL	84	$1,071.0	83	$1,018.0	83	$1,018.0	81	$ 998.0	331	$4,105.0
Station Elevators	Overdue	5	$ 20.0							5	$ 20.0
	NR	25	$ 114.8	14	$ 56.0	47	$ 188.0	81	$ 324.0	167	$ 682.8
	SI										
	Other										
Units: Elevators	TOTAL	30	$ 134.8	14	$ 56.0	47	$ 188.0	81	$ 324.0	172	$ 702.8

3. Integration of a Transit Asset Management (TAM) Model

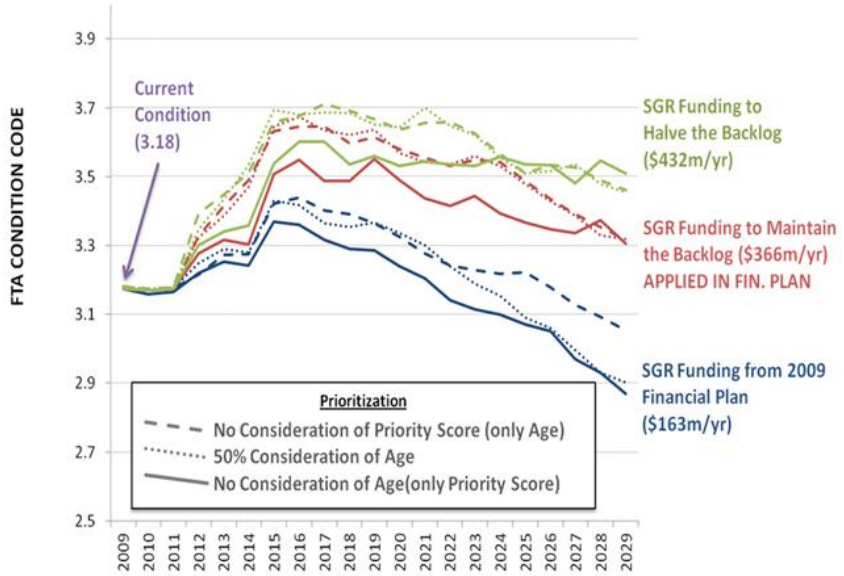
Integration of Transit Asset Management Model



Integration of Transit Asset Management Model (continued)

- Leverages 30 years of experience
- Builds on evolving asset maintenance management capabilities to develop a compelling argument for sufficient and continual capital funding

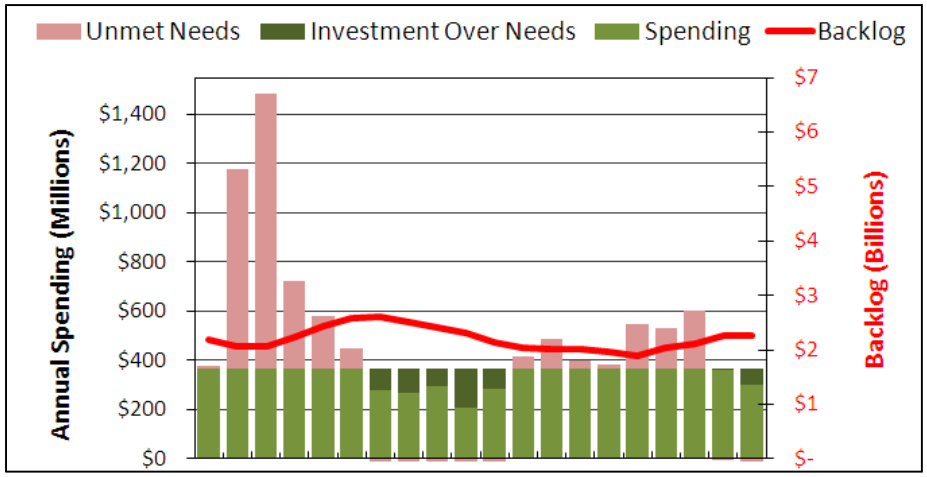
- Analytical, off-the-shelf decision support software tool to examine impacts of alternative funding scenarios on future asset conditions



Integration of Transit Asset Management Model (continued)

The Output:

- Run scenarios:
  - Asset-based projections of state-of-good-repair (SGR) backlog
  - Future SGR needs
  - Future condition of MTA assets
  - Operating implications in fiscally constrained scenarios



- Prioritize SGR needs:
  - Age
  - Operational Impact
  - Cost Effectiveness

- Integrate into Capital Planning Process:
  - Twenty Year Needs Assessment
  - Five-Year Capital Program

- Graphical Representation

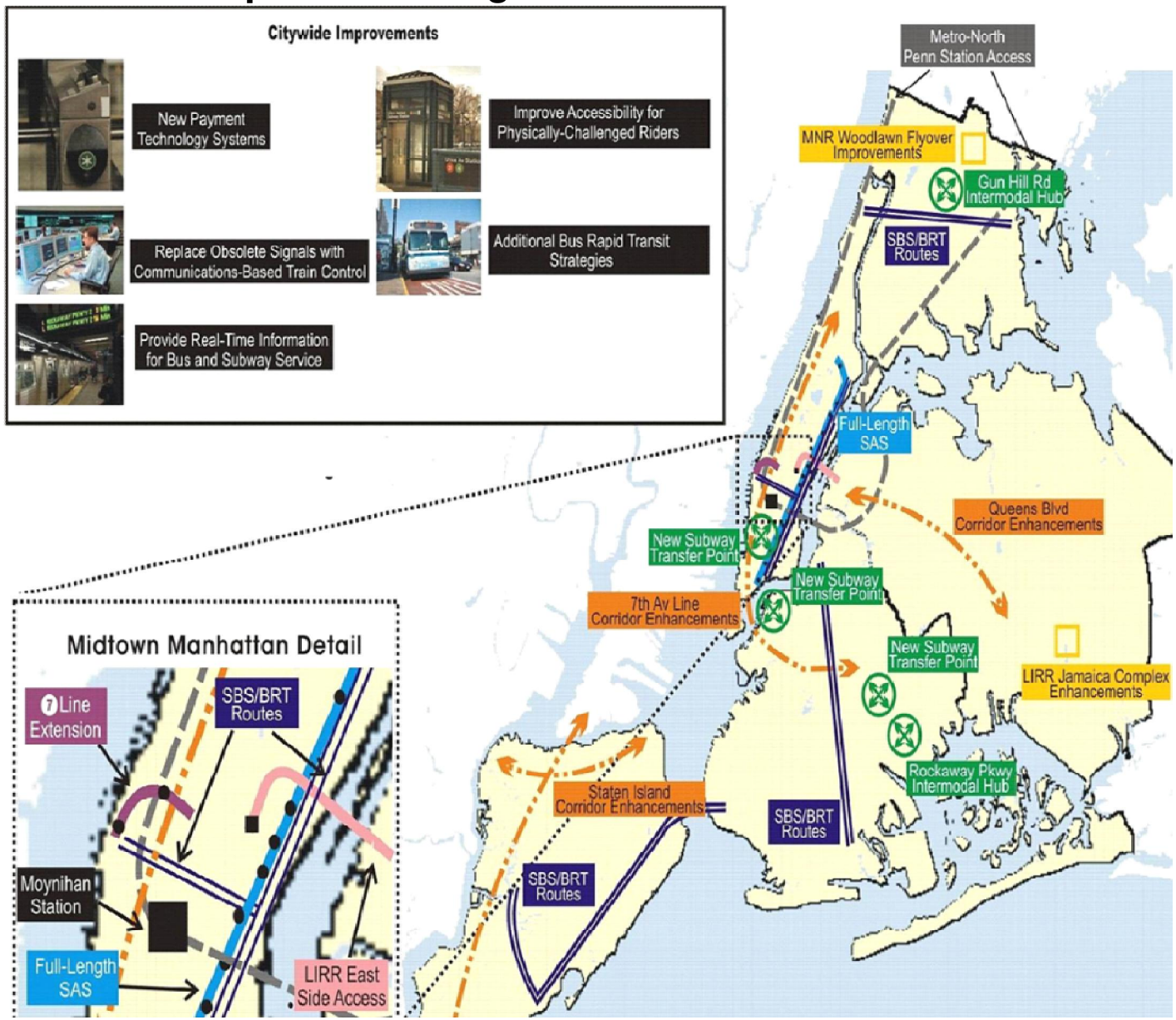
4. Regional Strategic Review

Regional Strategic Review

- A regional scan is conducted every five years to help identify the need for strategic investments that could be made over the next several capital plans
  - Analyze demographic, economic and travel trends
  - Determine the ability of the future network to accommodate these trends
    - Evaluate alternate growth, network and development scenarios
  - Previously identified studies/capital initiatives will address capacity/travel deficits
    - **New Fare/Customer Information technology**
    - **Reverse-peak commuter rail capacity**
    - **Bus network enhancements**
    - **Corridor studies**

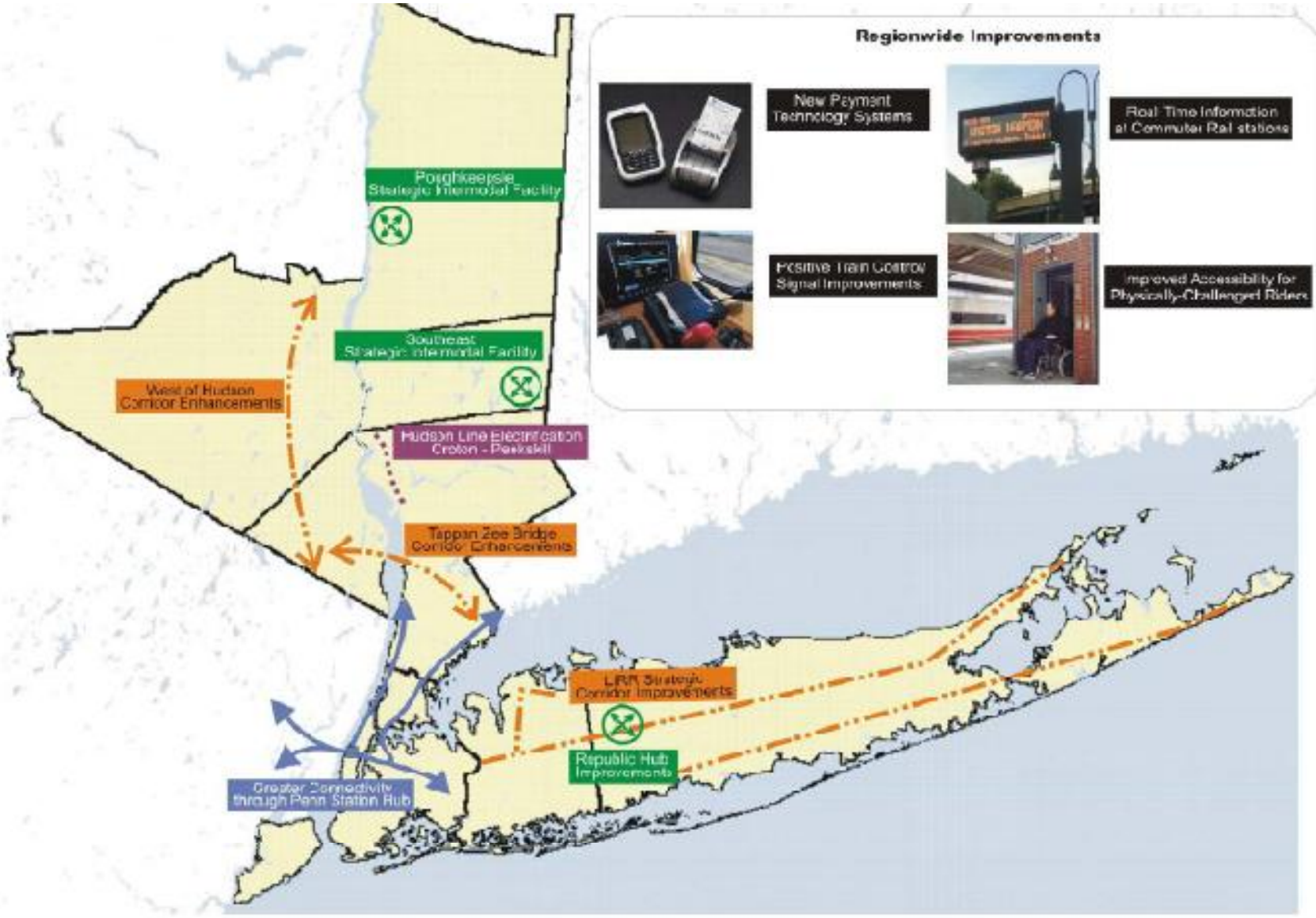
Regional Strategic Review

Proposed Strategic Enhancements: 2010-2029



Regional Strategic Review

Proposed Strategic Enhancements: 2010-2029



Benefits to Date

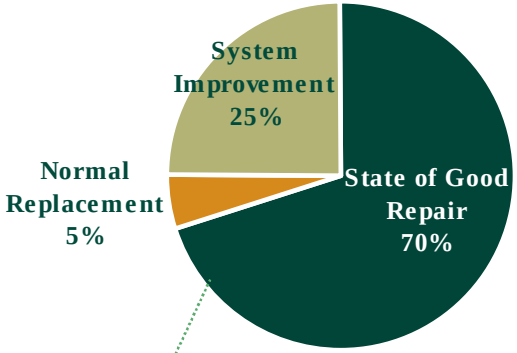
Benefits to Date

In the 1980s: Stabilized the System

- Old rolling stock overhauled or replaced
- Eliminated graffiti
- Rebuilt track and stations
- Reduced derailments and breakdowns.

Photo credit (upper left): www.nycsubway.org, collection of Joe Testagrose

1982 – 1991 Program



$15.4 billion

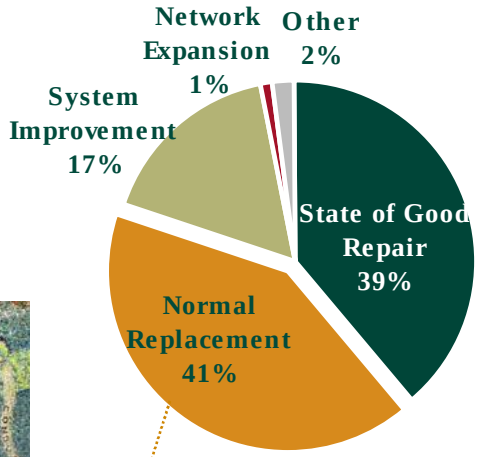
Emphasis on stabilizing the system

Benefits to Date

In the 1990s: Emphasis shift to Normal Replacement

- One third of subway stations rebuilt
- Lift-equipped buses for better ADA compliance
- High-level rail platforms for faster boarding
- Bi-level coaches increased LIRR capacity
- Introduced MetroCard

1992 – 1999 Program



$18.1 billion

BEFORE

AFTER

***Emphasis shifted* to Normal Replacement**

Benefits to Date

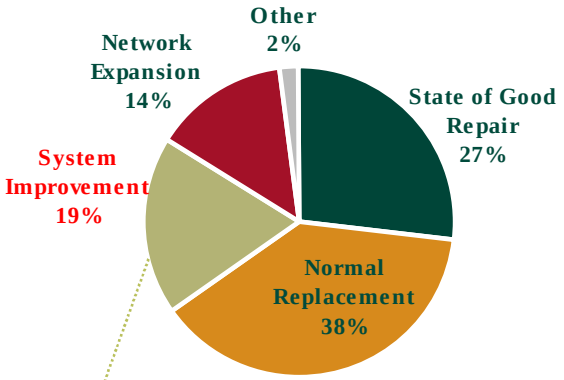
In the 21st Century: Shift to System Improvement

Improved stations & connections

Developed Bus Rapid Transit

Addressed delays with technology & information

2000 – 2004



$21.1 billion

Benefits of investment have freed up funds for System Improvements

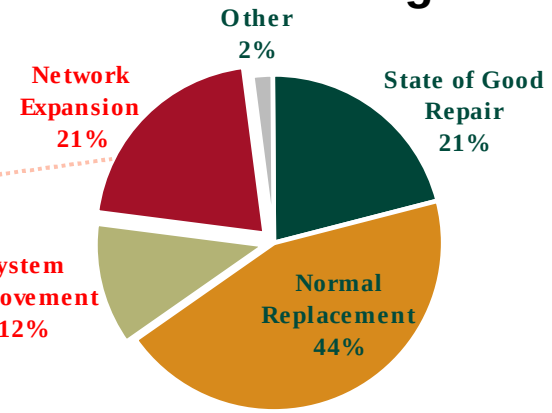
Benefits to Date

And a shift to Network Expansion

Network Expansion now a major focus

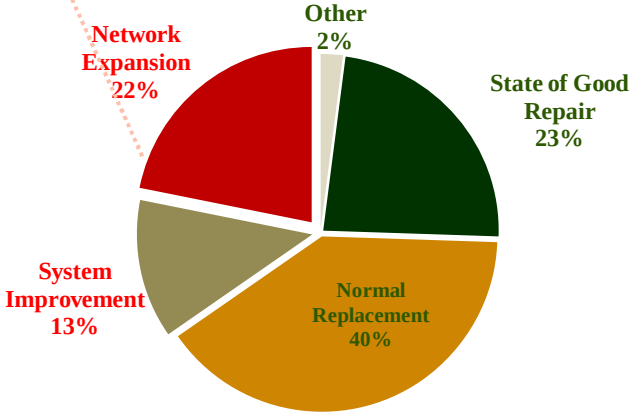
New subway and rail projects

2005 – 2009 Program



$21.3 billion

2010 – 2014 Program



$24.3 billion

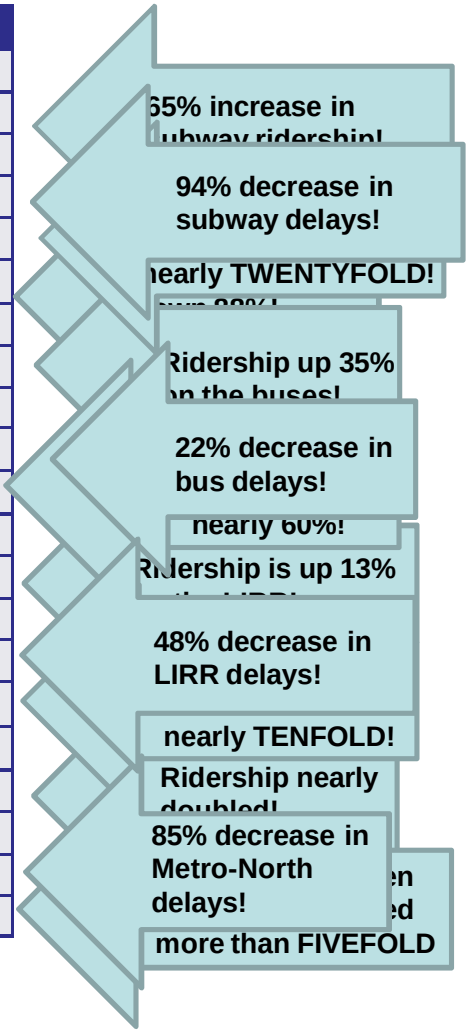
Station component renewal program

Then and Now

$72.4 billion later (or $107.5 billion in 2012 dollars)…….

	1982	Today
Subways		
• Ridership (in millions)	989.0	1,640
• On Time Performance %	50	85.4
• Train Delays	319,500	18,502
• MDBF (miles)	10,800	172,700
• Major Felonies	17,497 [1]	2,034
Buses		
• Ridership (in millions)	584.5	784.0
• On Time Performance %	83.8 [2]	89.1
• Bus Delays	276,958 [2]	216,503
• MDBF (miles)	2,466	3,910
Long Island Rail Road		
• Ridership (in millions)	71.4	80.9
• On Time Performance %	86.5	95.2
• Train delays	7852 [3]	4118
• MDBF (miles)	16,168	169,724
Metro-North Railroad		
• Ridership (in millions)	48.7	82.0
• On Time Performance %	80.5	96.9
• Train delays	16,064 [4]	2,414
• MDBF (miles)	18,520	114,347

[1] As of 1990; [2] As of 1989; [3] As of 1996; [4] As of 1985.



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