



Massachusetts Bay Transportation Authority

SPMT
PROGRAM FOR MASS TRANSPORTATION

Produced by the Central Transportation Planning Staff
for the Massachusetts Bay Transportation Authority

THE PROGRAM FOR MASS TRANSPORTATION

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

Deval Patrick, *Governor*

Tim Murray, *Lieutenant Governor*

Jeffrey B. Mullan, *Secretary of Transportation and CEO, Massachusetts Department of Transportation*

William A. Mitchell, Jr., *Acting General Manager, Massachusetts Bay Transportation Authority,
and Acting Rail and Transit Administrator, MassDOT*

Project Managers

Joseph M. Cosgrove, *Director of Planning and Development, MBTA*

Elizabeth M. Moore, *Manager of Transit Service Planning, CTPS*

Contributors

Sree Allam

Jonathan Belcher

Annette Demchur

Ben Dowling

Robert Guptill

Ian Harrington

John Hersey

Thomas J. Humphrey

Kathy Jacob

Bruce Kaplan

Sanjay Kaul

Maureen Kelly

Grace King

David Kruse

William Kuttner

Scott A. Peterson

Alicia Wilson

Cartography

Kenneth A. Dumas

Kathy Jacob

Cover and Document Design

Kate Parker-O'Toole

Photography

Carol Gautreau Bent

Kenneth A. Dumas

MBTA Marketing

Kim Noonan

The preparation of this document was supported by the Executive Office of Transportation and Public Works of the Commonwealth of Massachusetts and by the Federal Transit Administration, through \$5303 grants MA-80-0001, MA-80-0002, and MA-80-0003, and MBTA Planning Contract X94PS23.

Prepared for the Massachusetts Bay Transportation Authority by the Central Transportation Planning Staff.

CTPS is directed by the Boston Region Metropolitan Planning Organization. The MPO is composed of state and regional agencies and authorities, and local governments.

December 2009



ACKNOWLEDGMENT

The Massachusetts Bay Transportation Authority wishes to recognize the substantive contributions made by the Program for Mass Transportation Stakeholder Advisory Committee. This dedicated group of agency and community representatives, through its active engagement and professional approach to deliberations, provided highly insightful guidance and useful input. Members' commitment to developing a forward-looking regional vision and their ability to articulate the considered views of the organizations and public they represent was of great value in the development of this PMT. Many thanks are extended to each member organization and the representatives.

William A. Mitchell, Jr.

Acting General Manager, MBTA, and Acting Rail and Transit Administrator, MassDOT

PMT Stakeholder Advisory Committee Members

A Better City

Thomas Nally

Access Advisory Committee to the MBTA

Philip Beaulieu, James Oliver

Blue Cross Blue Shield of Massachusetts

Richard Page

Boston Transportation Department

Paul Christner, Vineet Gupta

Chelsea Collaborative

T.J. Hellmann

City of Medford

Ken Krause

Codman Square Neighborhood Development Corporation

Marcos Beleche, Gail Latimore

Executive Office of Housing and Economic Development

Patrick Hart, Mark Siegenthaler

Executive Office of Energy and Environmental Affairs

Marc Breslow

Executive Office of Transportation and Public Works

Steve Woelfel

Livable Streets Alliance

Jeffrey Rosenblum

Massachusetts Bay Transportation Authority

Joe Cosgrove, Ron Morgan, Victor Rivas

MBTA Advisory Board

Paul Regan

MBTA Rider Oversight Committee

Karen Wepsic

Massachusetts Institute of Technology

Nigel Wilson

MassRIDES

Kay Carson

Medical Academic and Scientific Community Organization (MASCO)

Christi Apicella, Ulla Hester

Metropolitan Area Planning Council

Barbara Lucas

Regional Transportation Advisory Committee

Steve Olanoff

Town of Acton

F. Dore Hunter

University of Massachusetts, Boston

Steve Martinson, Susan Wolfson

On November 1, 2009, the Commonwealth implemented a reorganization of its transportation agencies. This reorganization integrated transportation agencies and authorities into a new entity, the Massachusetts Department of Transportation (MassDOT). As of this date, MassDOT oversees four new divisions: Highway, Rail and Transit, Aeronautics and Registry of Motor Vehicles (RMV). All references throughout the PMT of future activities by the Executive Office of Transportation (EOT) will now refer to the new agency – MassDOT.



CONTENTS (cont.)	PAGE
CHAPTER 5 – PRIORITIES FOR ACHIEVING A STATE OF GOOD REPAIR	5-1
Revenue Vehicles	5-2
Non-Revenue Vehicles	5-5
Track/Right-of-Way	5-5
Signals	5-7
Communications	5-8
Power	5-9
Maintenance Facilities	5-9
Stations	5-10
Facilities	5-11
Bridges	5-11
Technology	5-12
CHAPTER 6 – OPPORTUNITIES FOR SYSTEM ENHANCEMENT AND EXPANSION	6-1
Systemwide Projects	6-1
Corridor Projects	6-14
Central Area	6-16
Northeast Corridor	6-20
North Corridor	6-22
Northwest Corridor	6-26
West Corridor	6-30
Southwest Corridor	6-32
Southeast Corridor	6-36
CHAPTER 7 – ILLUSTRATIVE SCENARIOS	7-1
Description of Scenarios	7-2
Modeling Results for Illustrative Scenarios	7-3
Meeting the Evaluation Targets	7-5
APPENDIX A–NORTHEAST CORRIDOR: MOBILITY PROBLEMS AND PROPOSED SOLUTIONS	A-1
APPENDIX B–NORTH CORRIDOR: MOBILITY PROBLEMS AND PROPOSED SOLUTIONS	B-1
APPENDIX C–NORTHWEST CORRIDOR: MOBILITY PROBLEMS AND PROPOSED SOLUTIONS	C-1
APPENDIX D–WEST CORRIDOR: MOBILITY PROBLEMS AND PROPOSED SOLUTIONS	D-1
APPENDIX E–SOUTHWEST CORRIDOR: MOBILITY PROBLEMS AND PROPOSED SOLUTIONS	E-1
APPENDIX F–SOUTHEAST CORRIDOR: MOBILITY PROBLEMS AND PROPOSED SOLUTIONS	F-1
APPENDIX G–CENTRAL AREA: BOSTON PROPER AND CIRCUMFERENTIAL MOBILITY PROBLEMS AND PROPOSED SOLUTIONS	G-1

CONTENTS (cont.)	PAGE
<i>APPENDIX H: PROJECTS REQUIRED FOR ACHIEVING A STATE OF GOOD REPAIR BY 2030</i>	<i>H-1</i>
<i>APPENDIX I: MODELING SUMMARY RESULTS</i>	<i>I-1</i>

FIGURES	PAGE
2-1 CIP Funds Budgeted for SGR	2-6
2-2 System Ridership Growth	2-8
2-3 Average Monthly Elevator Reliability SFY 2006–SFY 2009	2-11
2-4 Average Monthly Escalator Reliability SFY 2006–SFY 2009	2-12
3-1 PMT Planning and Programming Process	3-2
4-1 2000 Population Density Comparison	4-4
4-2 MBTA Region 2000–2030 Population Growth: Top-Ten Communities in Order of Population Increase	4-5
4-3 MBTA Region 2000–2030 Employment Growth: Top-Ten Communities in Order of Employment Increase	4-6
4-4 2000 Travel Modes to Work by Boston Region Central Area Residents	4-6
4-5 2000 Travel Modes to Work to Boston and Cambridge by Boston Region Central Area Residents	4-7
A-1 Northeast Corridor 2000–2030 Population Growth: Top-Ten Communities in Order of Increase	A-4
A-2 Northeast Corridor 2000–2030 Employment Growth: Top-Ten Communities in Order of Increase	A-5
A-3 2000 Travel Modes to Work by Northeast Corridor Residents	A-8
A-4 2000 Travel Modes to Work by Northeast Corridor Residents To Boston and Cambridge	A-8
A-5 Northeast Corridor Trip Increases 2000–2030: Top-Ten in Order of Increase	A-9
B-1 North Corridor 2000-2030 Population Growth: Top Ten Communities in Order of Increase	B-4
B-2 North Corridor 2000-2030 Employment Growth: Top Ten Communities in Order of Increase	B-5
B-3 2000 Travel Modes to Work by North Corridor Residents	B-5
B-4 2000 Travel Modes to Work by North Corridor Residents to Boston and Cambridge	B-8
B-5 North Corridor Trip Increases 2000 - 2030: Top Ten in Order of Increase	B-8
C-1 Northwest Corridor 2000-2030 Population Growth: Top Ten Communities in Order of Increase	C-4
C-2 Northwest Corridor 2000-2030 Employment Growth: Top Ten Communities in Order of Increase	C-5
C-3 2000 Travel Modes to Work by Northwest Corridor Residents	C-5
C-4 2000 Travel Modes to Work by Northwest Corridor Residents to Boston and Cambridge	C-8
C-5 Northwest Corridor Trip Increases 2000-2030: Top Ten in Order of Increase	C-9
D-1 West Corridor 2000-2030 Population Growth: Top Ten Communities in Order of Increase	D-4
D-2 West Corridor 2000-2030 Employment Growth: Top Ten Communities in Order of Increase	D-5
D-3 2000 Travel Modes to Work by West Corridor Residents	D-5
D-4 2000 Travel Modes to Work by West Corridor Residents to Boston and Cambridge	D-8
D-5 West Corridor Trip Increases 2000-2030: Top Ten in Order of Increase	D-9
E-1 Southwest Corridor 2000-2030 Population Growth: Top Ten Communities in Order of Increase	E-4
E-2 Southwest Corridor 2000-2030 Employment Growth: Top Ten Communities in Order of Increase	E-5

FIGURES (cont.)

PAGE

E-3	2000 Travel Modes to Work by Southwest Corridor Residents	E-5
E-4	2000 Travel Modes to Work by Southwest Corridor Residents (Excluding Boston)	E-8
E-5	2000 Travel Modes to Work in Boston and Cambridge by Southwest Corridor Residents	E-8
E-6	2000 Travel Modes to Work in Boston and Cambridge by Southwest Corridor Residents (Excluding Boston)	E-8
E-7	Southwest Corridor Trip Increases 2000-2030: Top Ten in Order of Increase	E-9
F-1	Southeast Corridor 2000-2030 Population Growth: Top Ten Communities in Order of Increase	F-4
F-2	Southeast Corridor 2000-2030 Employment Growth: Top Ten Communities in Order of Increase	F-5
F-3	2000 Travel Modes to Work by Southeast Corridor Residents	F-5
F-4	2000 Travel Modes to Work by Southeast Corridor Residents to Boston and Cambridge	F-8
F-5	Southeast Corridor Trip Increases 2000-2030: Top Ten in Order of Increase	F-9
G-1	Central Area 2000-2030 Population Growth Top Ten Communities/Neighborhoods in Order of Increase	G-4
G-2	Central Area 2000-2030 Employment Growth Top Ten Communities/Neighborhoods in Order of Increase	G-5
G-3	2000 Travel Modes to Work by Central Area Residents	G-8
G-4	2000 Travel Modes to Work to Boston and Cambridge by Central Area Residents	G-8
G-5	Central Area Trip Increases 2000-2030 Top Ten Communities/Neighborhoods in Order of Increase	G-9

MAPS

6-1	PMT Corridors	6-15
6-2	Central Area Potential Improvements	6-17
6-3	Circumferential Corridor Potential Improvements	6-19
6-4	Northeast Corridor Potential Improvements	6-21
6-5	North Corridor Outer Area Potential Improvements	6-23
6-6	North Corridor Inner Area Potential Improvements	6-25
6-7	Northwest Corridor Outer Area Potential Improvements	6-27
6-8	Northwest Corridor Inner Area Potential Improvements	6-29
6-9	West Corridor Potential Improvements	6-31
6-10	Southwest Corridor Outer Area Potential Improvements	6-33
6-11	Southwest Corridor Inner Area Potential Improvements	6-35
6-12	Southeast Corridor Outer Area Potential Improvements	6-37
6-13	Southeast Corridor Inner Area Potential Improvements	6-39
A-1	Northeast Corridor of the MBTA Service Area Population Density, 2000	A-2
A-2	Northeast Corridor of the MBTA Service Area Projected Change in Population Density from 2000 to 2030	A-3
A-3	Northeast Corridor of the MBTA Service Area Employment Density, 2000	A-6
A-4	Northeast Corridor of the MBTA Service Area Projected Change in Employment Density from 2000 to 2030	A-7
B-1	North Corridor of the MBTA Service Area Population Density, 2000	B-2
B-2	North Corridor of the MBTA Service Area Projected Change in Population Density from 2000 to 2030	B-3
B-3	North Corridor of the MBTA Service Area Employment Density, 2000	B-6

MAPS (cont.)	PAGE
B-4 North Corridor of the MBTA Service Area Projected Change in Employment Density from 2000 to 2030	B-7
C-1 Northwest Corridor of the MBTA Service Area Population Density, 2000	C-2
C-2 Northwest Corridor of the MBTA Service Area Projected Change in Population Density from 2000 to 2030	C-3
C-3 Northwest Corridor of the MBTA Service Area Employment Density, 2000	C-6
C-4 Northwest Corridor of the MBTA Service Area Projected Change in Employment Density from 2000 to 2030	C-7
D-1 West Corridor of the MBTA Service Area Population Density, 2000	D-2
D-2 West Corridor of the MBTA Service Area Projected Change in Population Density from 2000 to 2030	D-3
D-3 West Corridor of the MBTA Service Area Employment Density, 2000	D-6
D-4 West Corridor of the MBTA Service Area Projected Change in Employment Density from 2000 to 2030	D-7
E-1 Southwest Corridor of the MBTA Service Area Population Density, 2000	E-2
E-2 Southwest Corridor of the MBTA Service Area Projected Change in Population Density from 2000 to 2030	E-3
E-3 Southwest Corridor of the MBTA Service Area Employment Density, 2000	E-6
E-4 Southwest Corridor of the MBTA Service Area Projected Change in Employment Density from 2000 to 2030	E-7
F-1 Southeast Corridor of the MBTA Service Area Population Density, 2000	F-2
F-2 Southeast Corridor of the MBTA Service Area Projected Change in Population Density from 2000 to 2030	F-3
F-3 Southeast Corridor of the MBTA Service Area Employment Density, 2000	F-6
F-4 Southeast Corridor of the MBTA Service Area Projected Change in Employment Density from 2000 to 2030	F-7
G-1 Central Area of the MBTA Service Area Population Density, 2000	G-2
G-2 Central Area of the MBTA Service Area Projected Change in Population Density from 2000 to 2030	G-3
G-3 Central Area of the MBTA Service Area Employment Density, 2000	G-6
G-4 Central Area of the MBTA Service Area Projected Change in Employment Density from 2000 to 2030	G-7

TABLES

I-a MBTA Statement of Revenue and Expenses, FY 2001 to FY 2009	x, xi
I-b MBTA Revenue and Expenses, Pro Forma FY 2010 to FY 2015 No Assumed Fare Increases or Other Additional Relief	xii
I-c MBTA Capital Investment Program FY 2010 to FY 2014 (\$ in millions)	xiv
4-1 Typical Weekday Boardings by Mode (Federal Fiscal Year 2005)	4-2
5-1 Revenue Vehicle Fleet: Remaining Useful Life	5-3, 5-4
5-2 Rapid Transit Track	5-6
5-3 Rapid Transit Signal System Components	5-7
5-4 Bus Maintenance Facilities	5-9
6-1 Station Accessibility Status by Line	6-5
6-2 Key Station Accessibility Status	6-5
6-3 Station Accessibility Enhancement Priorities	6-6 to 6-8
6-4 Parking Enhancement Priorities	6-9, 6-10
7-1 Enhancement Illustrative Scenario: Component Projects	7-2
7-2 Expansion Projects in Illustrative Scenario	7-3

TABLES (cont.)	PAGE
7-3 Comparison of Illustrative Scenarios	7-4
A-1 Northeast Corridor Station Parking at 85% Usage or Greater	A-12
A-2 Northeast Corridor Bicycle Parking Improvements	A-13
A-3 Northeast Corridor Infrastructure Enhancement Projects	A-14
A-4 Northeast Corridor State-of-Good-Repair Projects	A-15
B-1 North Corridor Station Accessibility Priorities	B-11
B-2 North Corridor Station Parking at 85% Usage or Greater	B-11
B-3 North Corridor Bicycle Parking Improvements	B-12
B-4 North Corridor Infrastructure Enhancement Projects	B-14
B-5 North Corridor State-of-Good-Repair Projects	B-15
C-1 Northwest Corridor Station Accessibility Priorities	C-11
C-2 Northwest Corridor Station Parking at 85% Usage or Greater	C-12
C-3 Northwest Corridor Proposed Bicycle Parking Enhancements	C-13
C-4 Northwest Corridor Proposed Enhancement Projects	C-14
C-5 Northwest Corridor State-of-Good-Repair Projects	C-15
D-1 West Corridor Station Accessibility Priorities	D-12
D-2 West Corridor Station Parking at 85% Usage or Greater	D-13
D-3 West Corridor Bicycle Parking Improvements	D-14
D-4 West Corridor Infrastructure Enhancement Projects	D-16
D-5 West Corridor State-of-Good-Repair Projects	D-17
E-1 Southwest Corridor Station Accessibility Priorities	E-13
E-2 Southwest Corridor Station Parking at 85% Usage or Greater	E-13
E-3 Southwest Corridor Bicycle Parking Improvements	E-14
E-4 Southwest Corridor Infrastructure Enhancement Projects	E-17
E-5 Southwest Corridor State-of-Good-Repair Projects	E-18
F-1 Southeast Corridor Station Parking at 85% Usage or Greater	F-12
F-2 Southeast Corridor Bicycle Parking Improvements	F-13
F-3 Southeast Corridor Infrastructure Enhancement Projects	F-15
F-4 Southeast Corridor State-of-Good-Repair Projects	F-16
G-1 Urban Ring Activity Centers	G-12
G-2 Inner-Suburban Activity Centers	G-13
G-3 Outer-Suburban Activity Centers	G-15
I-1 Results of Individual Project Modeling: Ridership	I-2, I-3
I-2 Results of Individual Project Modeling: Air Quality	I-4, I-5