



Transportation System Plan

Prepared by the City of Milwaukie
in association with DKS Associates

Adopted Ord. #1975 December 4, 2007

ACKNOWLEDGEMENTS

Milwaukie City Council

Jim Bernard, Mayor
Deborah Barnes
Carlotta Colette
Joe Loomis
Susan Stone

Milwaukie Planning Commission

Jeff Klein, Chair
Dick Newman, Vice Chair
Lisa Batey
Theresa Bresaw
Scott Churchill
Charmaine Coleman
Paulette Qutub

City of Milwaukie Staff

Katie Mangle, Planning Director
Susan Shanks, Associate Planner
Mike Swanson, City Manager
Kenny Asher, Community Development and
Public Works Director
Gary Parkin, PE, Engineering Director
JoAnn Herrigel, Community Services Director
Alex Campbell, Resource and Econ. Dev. Specialist
Brett Kelder, Assistant Planner
Beth Ragel, Program Coordinator
Gavin Hales, Transportation Liaison
Ryan Marquardt, Assistant Planner
Jeanne Garst, Office Supervisor
Marcia Hamley, Admin. Specialist
Karin Gardner, Admin. Specialist
Michelle Rodriguez, Admin. Specialist
George MacGregor, PE, Civil Engineer
Brenda Schleining, Associate Engineer
Grady Wheeler, Public Information Coordinator
Sarah Lander, Code Compliance Assistant
Kate Rosson, GIS Coordinator

Consultants

DKS Associates: Carl Springer, PE; Alan Snook;
Michael Thomasini
Jeanne Lawson and Associates: Jamie Damon
BPM Development: Rick Williams
Winterbrook Planning
Alta Planning + Design: Rory Renfro

Agency Participation

Gail Curtis and Andrew Johnson, ODOT
Stacey Humphrey and Bill Holmstrom, DLCD
Shari Gilevich, Clackamas County
John Mermin, Metro
Young Park, TriMet
Phil Selinger, TriMet
Ron Schumacher and Mace Childs, North Clackamas
Fire District
Kelly Carlisle, North Clackamas Schools
Marty Hanley, Milwaukie Center

Citizen Participants

The Milwaukie Transportation System Plan was developed with the valuable assistance of the following people:

George Anderson	Nick Dougher	Steven Kung	Dick Samuels
Heather Andrews	Sherri Dow	Bill Lake	Joe Sandfort
Lorenzo Araque	Phil Favorite	Tom MacFarlane	Leslie Schockner
Melissa Arne	Parker Fitzpatrick	Dolly Macken-Hambright	Todd Schwartz
David Aschenbrenner	Steve Flury	Sarah Maier	Pam Shea
Cheryl Ausmann-Moreno	Forris Frick	Matt Menely	Dion Shepard
Jean Baker	Mark Gamba	Gary Michael	Charlie Stephens
Charles Bishop	Emily Gardner	Todd E. Mobley	Jon Stoll
Jerry Bitz	Alicia Hamilton	Renee Moog	Ron Swanson
Ray Bryan	Neil Hankerson	Bernadine Moore	Paul Sylvester
Sandi Burns	Brian Heiberg	Tim Morris	Aaron Tarfman
Kathy Buss	Greg Hemer	Keith Neubauer	Dottie Teeple
Greg Chaimov	Lee Holzman	Cara Nolam	Marge Tipton
Jill Chapman	Ben Horner-Johnson	Anne Nottingham	Cami Waner
Libby Clark-Agosti	Willi Horner-Johnson	Connie Ottoboni	Mike Wells
John Climaldi	Gary Hunt	Susanna Pai	Ann Wilson
Tim Clouse	Lynda Hunter	Virginia Pai	Julie Wisner
Lanice Coleman	Christopher Hunterman	Ed Parecki	Nancy Wittig
Bruce Conachan	Jason Jenkins	Ray Peck	Ed Zumwalt
Noah Cowgill	Michole Jensen	Matt Picio	
Debbie Cronk	Tom Kemper	Zach Rogers	
David DeVore	Paul Klein	Pat Russel	

This project is partially funded by a grant from the Transportation and Growth Management (TGM) Program, a joint program of the Oregon Department of Transportation and the Oregon Department of Land Conservation and Development. This TGM grant is financed, in part, by federal Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), local government, and State of Oregon funds.

The contents of this document do not necessarily reflect views or policies of the State of Oregon.

Milwaukie 2007 TSP

Table of Contents

Chapter 1	Executive Summary	1-1
	<i>Composite Master Plan</i>	<i>Figure 1-1</i>
Chapter 2	Goals and Policies.....	2-1
Chapter 3	Existing Conditions	3-1
Chapter 4	Future Forecasting Process	4-1
Chapter 5	Pedestrian Element	5-1
	<i>Pedestrian Master Plan</i>	<i>Figure 5-1</i>
	<i>Pedestrian Action Plan</i>	<i>Table 5-3</i>
Chapter 6	Bicycle Element.....	6-1
	<i>Bicycle Master Plan</i>	<i>Figure 6-2</i>
	<i>Bicycle Action Plan</i>	<i>Table 6-3</i>
Chapter 7	Public Transit Element	7-1
	<i>Public Transit Master Plan</i>	<i>Figure 7-3</i>
	<i>Public Transit Action Plan</i>	<i>Table 7-2</i>
Chapter 8	Auto Street Network Element	8-1
	<i>Auto Street Network Master Plan</i>	<i>Figure 8-4</i>
	<i>Auto Street Network Action Plan</i>	<i>Table 8-9</i>
Chapter 9	Freight Element	9-1
	<i>Freight Master Plan</i>	<i>Figure 9-1</i>
	<i>Freight Action Plan</i>	<i>Table 9-2</i>
Chapter 10	Street Design Element	10-1
	<i>Street Design Cross Sections</i>	<i>Figure 10-1</i>
Chapter 11	Neighborhood Traffic Management Element.....	11-1
	<i>Neighborhood Traffic Management Process</i>	<i>Figure 11-1</i>
	<i>Neighborhood Traffic Management Action Plan</i>	<i>Table 11-2</i>
Chapter 12	Downtown Parking	12-1
	<i>Downtown Parking Master Plan Project List</i>	<i>Table 12-3</i>
	<i>Downtown Parking Action Plan</i>	<i>Table 12-4</i>
Chapter 13	Funding and Implementation Plan.....	13-1
	<i>Projected Transportation Revenue</i>	<i>Table 13-1</i>
	<i>Operations, Maintenance, and Action Plan Costs</i>	<i>Table 13-2</i>
	<i>Prioritized Master Plan Project List</i>	<i>Table 13-3</i>
Chapter 14	Transportation Planning Rule Implementation	14-1

Appendices

Appendix A	Public Involvement Summary	A-1
Appendix B	Prioritized Master Plan Project List	B-1
Appendix C	Conceptual Design Options.....	C-1
Appendix D	Glossary of Technical Terms.....	D-1
Appendix E	Levels of Service (LOS) Descriptions.....	E-1
Appendix F	Traffic Data:	
	Metro Model Data Output	F-1
	Peak Hour Turn Movement and 24-Hour Tube Counts.....	F-6
	Existing Conditions Synchro Analysis	F-106
	Future Conditions Synchro Analysis.....	F-128
	Signal Warrant Worksheet	F-150
	Crash Data	F-151
	Project Cost Estimates	F-170

Complete List of Figures

Figure 1-1	Composite Master Plan	1-5
Figure 1-2	Pedestrian Master Plan	1-7
Figure 1-3	Bicycle Master Plan	1-9
Figure 1-4	Public Transit Master Plan	1-11
Figure 1-5	Auto Street Network Master Plan	1-13
Figure 1-6	Freight Master Plan	1-15
Figure 1-7	Neighborhood Traffic Management Process	1-18
Figure 3-1a	Study Area Context	3-3
Figure 3-1b	Study Area	3-4
Figure 3-2	Sidewalk Inventory	3-6
Figure 3-3a	Existing Pedestrian & Bicycle p.m. Peak Hour Volumes	3-9
Figure 3-3b	Existing Pedestrian & Bicycle p.m. Peak Hour Volumes	3-10
Figure 3-4	Bicycle Facility Inventory	3-12
Figure 3-5	Transit Routes and Shelters	3-15
Figure 3-6	1997-2007 Functional Classification	3-21
Figure 3-7	Roadway Ownership/Jurisdiction	3-22
Figure 3-8	Posted Speed Inventory	3-25
Figure 3-9	Intersection Controls	3-26
Figure 3-10	Stormwater and Topography	3-27
Figure 3-11a	24-Hour Tube Count Data on SE McLoughlin Blvd and Highway 224	3-30
Figure 3-11b	24-Hour Count Volumes	3-31
Figure 3-11c	24-Hour Count Volumes: Historic Comparison	3-32
Figure 3-12a	Existing p.m. Peak Hour Traffic Volumes	3-33
Figure 3-12b	Existing p.m. Peak Hour Traffic Volumes	3-34
Figure 3-13	Zoning Map	3-36
Figure 3-14	Truck Routes	3-40
Figure 3-15	Rail Routes & Crossings	3-43
Figure 3-16	Parking Map	3-45
Figure 3-17	Transportation Disadvantaged	3-49
Figure 3-18	Wetlands, Flood & Cultural Features	3-52
Figure 3-19	Environmental Resources—Goal 5	3-53
Figure 3-20	Environmental Resources—Zoning & Vegetation	3-54
Figure 4-1	Transportation Analysis Zones	4-4
Figure 4-2	Model Process	4-5
Figure 4-3	2030 RTP Financially Constrained Non-SOV Percentage	4-9

Figure 5-1	Pedestrian Master Plan	5-5
Figure 6-1	Bicycle Signs and Markings	6-4
Figure 6-2	Bicycle Master Plan	6-8
Figure 7-1	Transit Coverage	7-4
Figure 7-2	Off-Peak Transit Coverage	7-5
Figure 7-3	Public Transit Master Plan	7-13
Figure 8-1	Percent Increase in p.m. Peak Hour Volumes.....	8-5
Figure 8-2	2030 Future No-Build Operations Study Area Intersections.....	8-6
Figure 8-3a	Proposed Street Connectivity and Functional Class Change.....	8-13
Figure 8-3b	Functional Classification.....	8-14
Figure 8-4	Auto Street Network Master Plan	8-23
Figure 9-1	Freight Master Plan	9-6
Figure 10-1	Street Design Cross Sections by Functional Classification	10-7
Figure 10-2	Skinny Street Design Options.....	10-10
Figure 11-1	Neighborhood Traffic Management Process	11-12
Figure 12-1	Diagram of Parking Type Locations	12-10

Complete List of Tables

Table 3-1	Service Route Schedules and Destinations	3-14
Table 3-2	Neighborhood Service Routes and Transit Amenities.....	3-16
Table 3-3	TriMet Service Routes and Weekday Peak Period Level of Service.....	3-17
Table 3-4	Functional Classification Comparison Arterial and Collector Streets	3-23
Table 3-5	Average Pavement Condition Index.....	3-28
Table 3-6	Pavement Condition Index Rating by Functional Classification	3-28
Table 3-7	Existing p.m. Peak Hour Study Area Intersection Operations	3-37
Table 3-8	SPIS Rating of Milwaukie TSP Update Study Area Intersections	3-39
Table 3-9	Inventory of Existing Downtown Parking	3-46
Table 3-10	Use of Parking Stalls by Type	3-46
Table 3-11	Downtown Parking Demand—Mixed Land Use to Built Supply	3-47
Table 4-1	Milwaukie TSP Study Area Land Use Summary	4-2
Table 4-2	Approximate Average p.m. Peak Period Trip Rates Used in Metro Model.....	4-6
Table 4-3	Milwaukie Vehicle Trip Generation (2-Hour p.m. Period)	4-6
Table 4-4	Milwaukie Vehicle Trip Distribution (2-Hour p.m. Period)	4-7
Table 5-1	Pedestrian Master Plan Projects	5-6
Table 5-2	Potential Measures for Enhancing Pedestrian Crossings	5-10
Table 5-3	Pedestrian Action Plan	5-11
Table 6-1	Bikeway Types	6-3
Table 6-2	Bicycle Master Plan Projects.....	6-9
Table 6-3	Bicycle Action Plan.....	6-12
Table 7-1	Public Transit Master Plan Projects.....	7-14
Table 7-2	Public Transit Action Plan	7-16
Table 8-1	City of Milwaukie Functional Classifications.....	8-2
Table 8-2	RTP Financially Constrained Motor Vehicle Capacity Improvements	8-7
Table 8-3	2030 Base Case Intersection Level of Service (p.m. Peak Hour)	8-8
Table 8-4	Access Spacing Standards for City Street Facilities.....	8-11
Table 8-5	Access Spacing Standards for ODOT Facilities.....	8-11
Table 8-6	TDM Improvements included in the RTP Financially Constrained System	8-16
Table 8-7	Improvements Needed for City Intersections to Meet City Standards.....	8-17
Table 8-8	Auto Street Network Master Plan Projects	8-24
Table 8-9	Auto Street Network Action Plan	8-26
Table 9-1	Freight Master Plan Projects	9-7
Table 9-2	Freight Action Plan	9-9
Table 10-1	Pedestrian Facility Design Alternatives	10-8
Table 10-2	Green Street Design Treatments.....	10-9

Table 11-1	Neighborhood Traffic Management (NTM) "Tool Box"	11-3
Table 11-2	Neighborhood Traffic Management Action Plan.....	11-13
Table 12-1	Future Parking Demand/Supply Growth.....	12-3
Table 12-2	Parking Facility Priorities by Parking User Type.....	12-11
Table 12-3	Downtown Parking Master Plan Project List.....	12-15
Table 12-4	Downtown Parking Action Plan	12-16
Table 13-1	Projected Transportation Revenue for the 22-Year Planning Period (in 2007 dollars)	13-5
Table 13-2	Operations, Maintenance, and Action Plan Costs for the 22-Year Planning Period (in 2007 dollars)	13-6
Table 13-3	Prioritized Master Plan Project List	13-10