

# Milwaukie 2013 TSP

## Table of Contents

|            |  |                    |
|------------|--|--------------------|
| Chapter 1  | Executive Summary .....  | 1-1                |
|            | <i>Composite Master Plan map</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 map</i> .....                                | <i>Figure 5-1a</i> |
|            | <i>Pedestrian Action Plan</i> .....                                    | <i>Table 5-3</i>   |
| Chapter 6  | Bicycle Element .....  | 6-1                |
|            | <i>Bicycle Master Plan map</i> .....                                   | <i>Figure 6-8a</i> |
|            | <i>Bicycle Action Plan</i> .....                                       | <i>Table 6-3</i>   |
| Chapter 7  | Public Transit Element .....   | 7-1                |
|            | <i>Public Transit Master Plan map</i> .....                            | <i>Figure 7-3</i>  |
|            | <i>Public Transit Action Plan</i> .....                                | <i>Table 7-2</i>   |
| Chapter 8  | Street Network Element .....   | 8-1                |
|            | <i>Street Network Master Plan map</i> .....                            | <i>Figure 8-5</i>  |
|            | <i>Street Network Action Plan</i> .....                                | <i>Table 8-11</i>  |
| Chapter 9  | Freight Element .....  | 9-1                |
|            | <i>Freight Master Plan map</i> .....                                   | <i>Figure 9-1</i>  |
|            | <i>Freight Action Plan</i> .....                                       | <i>Table 9-2</i>   |
| Chapter 10 | Street Design .....  | 10-1               |
|            | <i>Street Design Cross Sections by Functional Classification</i> ..... | <i>Figure 10-1</i> |
| Chapter 11 | Neighborhood Traffic Management.....                                   | 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 Projects</i> .....                     | <i>Table 12-2</i>  |
|            | <i>Downtown Parking Action Plan</i> .....                              | <i>Table 12-3</i>  |
| Chapter 13 | Funding and Implementation Plan.....                                   | 13-1               |
|            | <i>Projected Transportation Revenue</i> .....                          | <i>Table 13-1</i>  |
|            | <i>Operations, Maintenance, and Capital Costs</i> .....                | <i>Table 13-2</i>  |
|            | <i>Consolidated Action Plan</i> .....                                  | <i>Table 13-3</i>  |
|            | <i>Prioritized Master Plan Project List</i> .....                      | <i>Table 13-4</i>  |
| Chapter 14 | Transportation Planning Rule Implementation.....                       | 14-1               |

## **Appendices**

|            |   |                   |
|------------|---|-------------------|
| Appendix A | Neighborhood Information                              |                   |
|            | Purpose .....   | A-1               |
|            | <i>Pedestrian Master Plan map</i> .....               | <i>Figure A-1</i> |
|            | <i>Bicycle Master Plan map</i> .....                  | <i>Figure A-2</i> |
|            | <i>Public Transit Master Plan map</i> .....           | <i>Figure A-3</i> |
|            | <i>Street Network Master Plan map</i> .....           | <i>Figure A-4</i> |
|            | <i>Freight Master Plan map</i> .....                  | <i>Figure A-5</i> |
| Appendix B | Public Involvement Summary.....                       | B-1               |
| Appendix C | Prioritized Master Plan Project List .....            | C-1               |
| Appendix D | Conceptual Design Options .....                       | D-1               |
| Appendix E | Glossary of Technical Terms .....                     | E-1               |
| Appendix F | Levels of Service (LOS) Descriptions.....             | F-1               |
| Appendix G | Traffic Data:   |                   |
|            | Peak-Hour Turn Movement and 24-Hour Tube Counts ..... | G-2               |
|            | Existing Conditions Synchro Analysis .....            | G-98              |
|            | Future Conditions Synchro Analysis.....               | G-122             |
|            | Signal Warrant Worksheet .....                        | G-145             |
|            | Crash Data.....                                       | G-146             |
|            | Project Cost Estimates.....                           | G-166             |

## **Complete List of Figures**

|              |  |      |
|--------------|--|------|
| Figure 1-1   | Composite Master Plan map .....  | 1-6  |
| Figure 1-2   | Pedestrian Master Plan map .....   | 1-8  |
| Figure 1-3   | Bicycle Master Plan map.....   | 1-10 |
| Figure 1-4   | Public Transit Master Plan map .....                                     | 1-12 |
| Figure 1-5   | Street Network Master Plan map .....                                     | 1-14 |
| Figure 1-6   | Freight Master Plan map.....   | 1-16 |
| Figure 3-1a  | Study Area Context map .....   | 3-2  |
| Figure 3-1b  | Study Area map .....   | 3-3  |
| Figure 3-2   | Sidewalk Inventory map .....   | 3-5  |
| Figure 3-3a  | Existing Pedestrian & Bicycle P.M. Peak-Hour Volumes .....               | 3-7  |
| Figure 3-3b  | Existing Pedestrian & Bicycle P.M. Peak-Hour Volumes .....               | 3-8  |
| Figure 3-4   | Bicycle Facility Inventory map .....                                     | 3-10 |
| Figure 3-5   | Transit Routes and Shelters map.....                                     | 3-14 |
| Figure 3-6   | Functionality of Access versus Movement .....                            | 3-17 |
| Figure 3-7   | Functional Classification map.....                                       | 3-19 |
| Figure 3-8   | Roadway Jurisdiction map .....   | 3-22 |
| Figure 3-9   | Posted Speed Inventory map.....  | 3-23 |
| Figure 3-10  | Intersection Controls map .....  | 3-24 |
| Figure 3-11  | Stormwater and Topography map.....                                       | 3-25 |
| Figure 3-12  | Location of Street Surface Maintenance Program (SSMP) Projects map ..... | 3-27 |
| Figure 3-13a | 24-Hour Tube Count Data on SE McLoughlin Blvd and Hwy 224.....           | 3-29 |
| Figure 3-13b | 24-Hour Count Volumes.....   | 3-30 |
| Figure 3-13c | 24-Hour Count Volumes: Historic Comparison.....                          | 3-31 |
| Figure 3-14a | Existing P.M. Peak-Hour Traffic Volumes .....                            | 3-32 |
| Figure 3-14b | Existing P.M. Peak-Hour Traffic Volumes .....                            | 3-33 |
| Figure 3-15  | Zoning Map.....  | 3-35 |
| Figure 3-16  | Truck Routes map.....  | 3-39 |
| Figure 3-17  | Rail Routes & Crossings map .....  | 3-42 |
| Figure 3-18  | Downtown Parking map .....   | 3-44 |
| Figure 3-19  | Transit Disadvantaged map .....  | 3-49 |
| Figure 3-20  | Wetlands, Flood & Cultural Features map.....                             | 3-51 |
| Figure 3-21  | Environmental Resources—Goal 5 map .....                                 | 3-52 |
| Figure 3-22  | Environmental Resources—Zoning & Vegetation map.....                     | 3-53 |
| Figure 4-1   | Transportation Analysis Zones map.....                                   | 4-3  |
| Figure 4-2   | Travel Forecasting Model Process.....                                    | 4-5  |
| Figure 4-3   | 2035 Beta Model Financially Constrained Non-SOV Percentage map .....     | 4-9  |

|             |   |       |
|-------------|---|-------|
| Figure 5-1a | Pedestrian Master Plan map .....  | 5-5   |
| Figure 5-1b | Pedestrian Master Plan Downtown Inset map .....   | 5-6   |
| Figure 6-1  | Multiuse Path .....   | 6-4   |
| Figure 6-2  | Cycle Track .....   | 6-4   |
| Figure 6-3  | Bike Lane .....   | 6-5   |
| Figure 6-4  | Shared Roadway .....  | 6-5   |
| Figure 6-5  | Bicycle Signs and Markings .....  | 6-6   |
| Figure 6-6  | Neighborhood Greenway .....   | 6-6   |
| Figure 6-7  | Sample Traffic Calming Measures .....   | 6-7   |
| Figure 6-8a | Bicycle Master Plan map .....   | 6-11  |
| Figure 6-8b | Bicycle Master Plan Downtown Inset map .....  | 6-12  |
| Figure 7-1  | Peak-Hour Transit Coverage map .....  | 7-4   |
| Figure 7-2  | Off-Peak Transit Coverage map .....   | 7-5   |
| Figure 7-3  | Public Transit Master Plan map .....  | 7-12  |
| Figure 8-1  | Functional Classification map .....   | 8-3   |
| Figure 8-2a | Percent Increase in P.M. Peak-Hour Volumes .....  | 8-7   |
| Figure 8-2b | 2035 P.M. Peak-Hour Volume/Capacity for Major Roads .....   | 8-9   |
| Figure 8-3  | 2035 Future No-Build Operations Study Area Intersections .....  | 8-13  |
| Figure 8-4  | Proposed Street Connectivity Plan map .....   | 8-19  |
| Figure 8-5  | Street Network Master Plan map .....  | 8-29  |
| Figure 9-1  | Freight Master Plan map .....   | 9-6   |
| Figure 10-1 | Street Design Cross Sections by Functional Classification .....   | 10-6  |
| 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 .....   | 12-9  |
| Figure 13-1 | Projected Transportation Revenue<br>for the 22-Year Planning Period (in 2012 dollars) .....   | 13-5  |
| Figure 13-2 | Projected Transportation Costs<br>for the 22-Year Planning Period (in 2012 dollars) .....   | 13-7  |
| Figure 13-3 | Spending Scenario 1: Funding Limited to Capital-Restricted Revenue<br>over the 22-Year Planning Period (in 2012 dollars) .....            | 13-8  |
| Figure 13-4 | Spending Scenario 2: Funding All Capital Projects on Consolidated<br>Action Plan over the 22-Year Planning Period (in 2012 dollars) ..... | 13-8  |

## Complete List of Tables

|            |   |      |
|------------|---|------|
| Table 2-1  | 2040 Regional Metro Targets for Non-Single-Occupant Vehicles (non-SOVs) ..... | 2-3  |
| Table 3-1  | Service Route Schedules and Destinations.....                                 | 3-12 |
| Table 3-2  | Neighborhood Service Routes and Transit Amenities .....                       | 3-13 |
| Table 3-3  | TriMet Service Routes and Weekday Peak Period Level of Service.....           | 3-15 |
| Table 3-4  | Functional Classification Comparison Arterial and Collector Streets .....     | 3-20 |
| Table 3-5  | Average Pavement Condition Index.....   | 3-26 |
| Table 3-6  | Pavement Condition Index Rating by Functional Classification .....            | 3-26 |
| Table 3-7  | Existing P.M. Peak-Hour Study Area Intersection Operations .....              | 3-36 |
| Table 3-8  | SPIS Rating of Milwaukie TSP Update Study Area Intersections .....            | 3-38 |
| Table 3-9  | Inventory of Existing Downtown Parking .....                                  | 3-43 |
| Table 3-10 | Use of Parking Spaces by Type .....   | 3-45 |
| Table 3-11 | Downtown Parking Demand—Mixed Land Use to Built Supply .....                  | 3-46 |
| 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. Peak Period) .....             | 4-6  |
| Table 4-4  | Milwaukie Vehicle Trip Distribution (2-Hour P.M. Peak Period) .....           | 4-7  |
| Table 5-1  | Pedestrian Master Plan Projects .....   | 5-7  |
| Table 5-2  | Potential Measures for Enhancing Pedestrian Crossings.....                    | 5-13 |
| Table 5-3  | Pedestrian Action Plan.....   | 5-14 |
| Table 6-1  | Bikeway Types.....  | 6-3  |
| Table 6-2  | Bicycle Master Plan Projects.....   | 6-13 |
| Table 6-3  | Bicycle Action Plan .....   | 6-18 |
| Table 7-1  | Public Transit Master Plan Projects .....                                     | 7-13 |
| Table 7-2  | Public Transit Action Plan .....  | 7-15 |
| Table 8-1  | City of Milwaukie Functional Classifications .....                            | 8-4  |
| Table 8-2  | RTP Financially Constrained Motor Vehicle Capacity Improvements .....         | 8-6  |
| Table 8-3  | Summary of Travel Time Reliability Measures by Corridor.....                  | 8-8  |
| Table 8-4  | 2035 Base Case Intersection Level of Service (P.M. Peak Hour) .....           | 8-11 |
| Table 8-5  | Summary of Motor Vehicle System Gaps and Needs.....                           | 8-14 |
| Table 8-6  | Access Spacing Standards for City Street Facilities .....                     | 8-17 |
| Table 8-7  | Access Spacing Standards for ODOT Facilities .....                            | 8-17 |
| Table 8-8  | TDM Improvements included in the RTP Financially Constrained System .....     | 8-22 |
| Table 8-9  | Improvements Needed for City Intersections to Meet City Standards .....       | 8-23 |
| Table 8-10 | Street Network Master Plan Projects.....                                      | 8-30 |
| Table 8-11 | Street Network Action Plan .....  | 8-33 |
| Table 8-12 | 2035 Action Plan Intersection Level of Service (P.M. Peak Hour) .....         | 8-34 |
| Table 9-1  | Freight Master Plan Projects .....  | 9-7  |

|            |   |       |
|------------|---|-------|
| Table 9-2  | Freight Action Plan.....  | 9-8   |
| Table 10-1 | Pedestrian Facility Design Alternatives .....   | 10-7  |
| Table 10-2 | Green Street Design Treatments .....  | 10-8  |
| Table 11-1 | Neighborhood Traffic Management (NTM) "Tool Box".....   | 11-3  |
| Table 11-2 | Neighborhood Traffic Management Action Plan .....   | 11-13 |
| Table 12-1 | Parking Facility Priorities by Parking User Type.....   | 12-10 |
| Table 12-2 | Downtown Parking Master Plan Projects .....   | 12-14 |
| Table 12-3 | Downtown Parking Action Plan .....  | 12-14 |
| Table 13-1 | Projected Transportation Revenue<br>for the 22-Year Planning Period (in 2012 dollars) .....           | 13-5  |
| Table 13-2 | Operations, Maintenance, and Capital Costs<br>for the 22-Year Planning Period (in 2012 dollars) ..... | 13-6  |
| Table 13-3 | Consolidated Action Plan .....  | 13-10 |
| Table 13-4 | Prioritized Master Plan Project List .....  | 13-16 |