

METRO 2040

## Modal Targets Project

# Evaluation of Potential Measures for Achieving Modal Targets

## Final Report



**METRO**

PEOPLE PLACES

OPEN SPACES

July, 2005

PREPARED BY:



# **ACKNOWLEDGMENTS**

## **Project Management and Research Team**

Kim Ellis, Project Manager, Metro  
John Mermin, Metro  
Matt Hastie, Cogan Owens Cogan, Consultant Team Leader  
Mia Birk, Alta Planning + Design  
Steve Faust, Cogan Owens Cogan  
Arif Khan, Alta Planning + Design  
Scott Richman, David Evans and Associates, Peer Review and Contract Management  
Ross Kevlin, TGM Grant Manager, ODOT

## **Project Oversight Committee**

Bill Barber, Regional Travel Options Program, Metro  
Bob Cortright, DLCD  
Tom Kloster, Metro  
Margaret Middleton, City of Beaverton  
Ron Skidmore, Clackamas County

## **TPAC Workshop Participants**

Ed Abrahamson, Multnomah County	Jeanne Harrison, Portland Office of Transportation
Lenny Anderson, Swan Island Transportation Management Association (TMA)	Christine Heycke, SMART/City of Wilsonville
Andy Back, Washington County	Nancy Kraushaar, Oregon City
Scott Bricker, Bicycle Transportation Alliance (BTA)	Jen Massa, SMART/City of Wilsonville
Blair Crumpacker, Washington County	Mike McKillip, City of Tualatin
Danielle Cowan, City of Wilsonville	Margaret Middleton, City of Beaverton
Marianne Fitzgerald, DEQ	Ron Papsdorf, City of Gresham
Mark Garrity, WSDOT – Southwest Region	Jessica Roberts, BTA
Kathryn Harrington, Citizen, Washington County	Phil Selinger, TriMet
	Ron Skidmore, Clackamas County
	John Wiebke, City of Hillsboro

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 (ODOT) and the Oregon Department of Land Conservation and Development (DLCD). This TGM grant is financed in part by federal Transportation Equity Act for the 21st Century (TEA-21), local government and the State of Oregon funds.

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





---

## Table of Contents

<b>Executive Summary .....</b>	<b>2</b>
Background and Methodology .....	2
Organization of the Report.....	3
Overall Findings and Conclusions.....	3
Summary Recommendations.....	11
<b>Chapter 1. Objectives and Methodology.....</b>	<b>17</b>
Project Objectives .....	17
Methodology.....	20
<b>Chapter 2. Existing Requirements and Current Efforts .....</b>	<b>22</b>
Metro and Other Requirements to Reduce SOV Trips.....	22
Metro Implementation Monitoring.....	25
Summary of Findings for Local Jurisdiction Efforts .....	26
Conclusions.....	28
<b>Chapter 3. Strategies and Tools for Future Implementation .....</b>	<b>30</b>
Strategies Researched.....	30
Research and Project Process.....	33
Summary of Key Findings, Observations and Conclusions .....	34
Recommended Regional Requirements and Implementation .....	38
Section 1. Existing Minimum Regional Requirements .....	38
Section 2. Additional Minimum Regional Requirements .....	42
Section 3. Other Possible Strategies to Achieve Modal Targets .....	51
Section 4. Additional recommendations for implementation, measurement and monitoring .....	67
Section 5. Possible RTP amendments needed to implement project recommendations .....	68
<b>Chapter 4. Next Steps .....</b>	<b>70</b>
Appendix A. Detailed Report of Jurisdictional Compliance.....	71
Appendix B. Bibliography.....	91
Appendix C. Pedestrian and Bicycle Count Methodology .....	98
Appendix D. Transportation Policy Advisory Committee (TPAC) Workshop Summaries .....	103
Appendix E. Detailed Review of Strategies.....	110

# Executive Summary

## Background and Methodology

Metro's Regional Transportation Plan (RTP) is the blueprint that guides investment in the Portland metropolitan region's transportation system for all forms of travel – motor vehicle, transit, bike, pedestrian and freight. The 20-year plan, last updated in 2004, includes 2040 modal targets and specific actions to reduce the number of drive-alone trips as part of the region's strategy to support the 2040 Growth Concept, provide travel options, reduce vehicle emissions, decrease congestion and increase capacity for freight movement. A basic construct of the 2040 Growth Concept is to reduce the region's reliance on the automobile by focusing growth in centers and along major transportation corridors. It relies on a balanced transportation system that accommodates walking, bicycling, driving, transit and national and international goods movement. The RTP includes policies and projects to expand travel choices throughout the region, and encourage transit, walking, bicycling and carpooling.

The RTP identifies 2040 Non-Single Occupancy Vehicle (Non-SOV) Targets in place of and consistent with the Oregon Transportation Planning Rule (TPR) requirement to reduce vehicle miles of travel (VMT) per capita. The mode share targets are intended to be goals for cities and counties to work toward as they implement the 2040 Growth Concept and RTP at the local level. As required by the RTP and the TPR, jurisdictions within the Metro region must adopt policies and actions that encourage a shift towards non-SOV modes (Section 6.47 of the RTP). The TPR also requires Metro and other Metropolitan Planning Organizations to evaluate the effectiveness of these measures.

The ultimate goal of this project is to help Metro set realistic and defensible procedures and strategies for implementation by local jurisdictions in complying with RTP targets to reduce drive-alone trips in the region. With this goal as their focus, Metro staff, with the assistance of a consulting team led by Cogan Owens Cogan and Alta Planning + Design, undertook the following three major activities:

- Summarized existing Metro non-SOV mode share targets and related requirements, current efforts of a sample of local jurisdictions to meet these requirements, and ways in which these efforts are being measured and evaluated.
- Conducted and summarized the results of a comprehensive literature review of the effectiveness of strategies employed by various entities that are required or recommended by Metro to meet non-SOV mode share targets.
- Identified recommendations for future RTP requirements including minimum and supplemental requirements to meet modal targets, as well as best practices for implementation, procedures to measure effectiveness and processes to monitor compliance.

During each of these steps, a Project Oversight Committee and members of Metro's Transportation Policy Advisory Committee (TPAC) reviewed and commented on draft work products and provided guidance for subsequent tasks. The methodology for these tasks is described in more detail in subsequent sections of this report.

## Organization of the Report

The remainder of this report is organized as follows:

- **Chapter 1 – Introduction.** This chapter provides a more detailed description of project objectives and methodology.
- **Chapter 2 – Existing Requirements.** This chapter summarizes existing Metro requirements for meeting modal targets, use of the Metro travel model to measure projected impacts on mode share, and methods by which selected jurisdictions in the region are helping meet the targets.
- **Chapter 3 – Strategies and Tools for Implementation.** This chapter describes strategies recommended to meet modal targets, including:
  - How they work
  - Their relative effectiveness in shifting mode share
  - Best practices for implementation
  - Procedures for measuring success and monitoring implementation

This chapter also identifies additional recommendations to help achieve modal targets and test effectiveness of specific strategies, as well as specific potential changes to the RTP.



- **Chapter 4 – Next Steps.** This chapter identifies how Metro expects to use the results of this report in the process of updating and implementing the RTP.
- **Appendices.** These provide more detailed information about Metro requirements, local implementation, research results, and summaries of advisory group meetings conducted during this project.

## Summary of Findings and Conclusions

Following is summary of findings and conclusions that resulted from this project. They are described in more detail in Chapters 2 and 3.

### Current Efforts to Achieve Modal Targets and to Measure Progress Toward Targets

Currently, the RTP requires local jurisdictions to implement the following strategies to help achieve modal targets:

1. Adopt 2040 modal targets in local Transportation System Plan (TSP) policies
2. Adopt street connectivity plans and implementing ordinances
3. Adopt maximum parking ratios to implement the parking requirements of Title 2 of the Urban Growth Management Functional Plan
4. Form and support transportation management associations (TMAs) where appropriate
5. Adopt fareless area transit policies in regional centers

6. Adopt transit strategies, including planning for adequate transit facilities and service; pedestrian facility planning and infrastructure that support transit use; location and design of buildings in transit zones that encourage transit use; and adoption of a transit system map, consistent with Metro requirements.

In addition to the six approaches listed above, the RTP identifies a variety of other tools related to land use, transit, bicycling, walking, parking, and employer-based strategies that may be considered or implemented by local jurisdictions. These are described in more detail in Chapters 2 and 3 of this report. In addition to Metro's requirements, the Oregon Department of Environmental Quality (DEQ) requires local companies and agencies having more than 50 employees to implement Employee Commute Options (ECO) programs to reduce drive-alone commute trips. While many of the jurisdictions provide some technical support to help companies comply with the ECO rule, TMAs and TriMet provide most of the support for employers' trip reduction programs through Metro's Regional Travel Options (RTO) Program. Partner agencies include Metro, TriMet, SMART, C-TRAN, Oregon DEQ, ODOT, Oregon Office of Energy, Port of Portland, the cities of Portland and Gresham, and Clackamas, Multnomah and Washington counties.

Metro evaluates local progress toward achieving the non-SOV modal targets through periodic updates to the RTP. Metro also reviews local TSPs of the 25 cities and three counties within the region using a checklist to ensure that RTP requirements are being met as they pertain to preparation of TSPs.

Metro estimates the impact of strategies primarily through its regional travel model. Appendix 1.8 of the RTP: "Transportation Analysis Zone Assumptions for Parking Transit and Connectivity Factors," identifies specific modeling assumptions by transportation analysis zone that are intended to mirror the expected improvements and programs proposed in the RTP and their impact on mode choice. The model provides relatively accurate and measurable mode share results from connectivity, transit and parking strategies that are incorporated into the model. It is less accurate in assessing the effect of pedestrian, bicycle, and ride-sharing strategies.

A survey of a sample of local jurisdictions in the region shows that most are making substantial progress in implementing existing Metro requirements. Table 1 summarizes results of this survey.

**Table 1. Summary of Major Transportation Demand Management (TDM) Measures by Jurisdiction**

TDM Measure	Portland	Beaverton	Gresham	Wilsonville	Oregon City	Clackamas County
Modal Targets (RTP)	●	●	●	●	●	●
Parking Management and Requirements (RTP)	●	●	●	●	●	●
Support of TMAs (RTP)	●	●	●	⊙	○	●
Roadway Connectivity Requirements (RTP)	●	●	●	●	⊙	●
Transit Pass Program in Regional Centers (RTP)	●	●	○	●	○	⊙
Other Transit Strategies	●	●	●	●	●	●
Neighborhood-based Travel Management	●	○	○	⊙	○	○
Development Incentives	●	●	●	●	○	⊙
Implementing Bicycle/Pedestrian Facilities	●	●	●	●	●	●
Carpool/ Match	●	○	●	⊙	○	●
Other	Carshare support	○	○	Shuttles	○	⊙

*Sources of Data:* City of Wilsonville TSP, Clackamas County TSP, Clackamas County Zoning Ordinance 1007.07, Clackamas County Comprehensive Plan, City of Gresham TSP, City of Portland TSP, City of Portland Comprehensive Plan, City of Beaverton TSP, City of Oregon City TSP, and telephone interviews with staff of respective jurisdictions.

Legend:

- Not in TSP or Codes
- ⊙ In TSP
- In TSP or Codes and currently implementing

Although local jurisdictions are making progress in meeting Metro requirements for implementation, relatively little has been done to evaluate the effectiveness of specific strategies at the local level, in part because local evaluation is not required and can be costly and difficult, given limited local resources. Of the six jurisdictions surveyed, only the City of Portland is actively measuring the causal effects of a specific TDM initiative, using its TravelSmart™ program. The City of Portland also has been tracking bicycle use over time in the central city and other areas, and analyzing the correlation between bikeway facilities and bicycle demand, safety, and other factors. In addition, TMAs and employers have been measuring progress towards mode shift targets through employee-questionnaires as part of ECO-rule requirements.

During the past 10 years, the RTO program has focused on working with ECO employers to reduce drive-alone commute trips. The program evaluates itself annually to better understand and respond to changes in individual travel behavior. Included in the data are survey reports from each employment site subject to ECO rules, plus sites surveyed voluntarily (those with 50 or fewer employees). The program surveys employees about their travel behaviors to provide employers with appropriate strategies for increasing non-SOV use. Initial surveys also help identify baseline measures of mode share to be monitored over time. Additional annual surveys gauge the effects of

programs and improvements and monitor progress towards the mode-shift goal for a particular employment site. The annual reports also identify other strategies that, if implemented, may help reduce drive-alone trips. Current data shows non-drive-alone trips to and from work increased from 26 percent in 1996 to 31 percent in 2003.<sup>1</sup>

More recent travel behavior research indicates that most trips are not work related. The RTO program and subcommittee are taking a new direction to better address non-work-related trips through a newly envisioned collaborative marketing program. New survey tools will be developed that measure the impact of the RTO program marketing efforts on increased use of non-auto modes of transportation. New evaluation techniques identified through this project and future RTO program efforts also may help the region better measure progress toward achieving the RTP's regional non-SOV modal targets.

## **Research on Effects of Strategies**

For this project, the project team conducted a comprehensive literature review of studies that have assessed the effectiveness of a variety of transportation demand management (TDM) measures. For the purpose of this study, TDM measures include all strategies that are being implemented to reduce SOV use and/or encourage non-SOV use. These include measures currently required of local jurisdictions in the Metro region or identified as other possible strategies for consideration, such as transit, bike, and pedestrian infrastructure improvements, land use strategies, pricing and encouragement programs. A primary goal of this research was to identify existing research results that show direct and measurable correlations between implementation of specific strategies and effects on mode share. As noted below, this goal proved to be somewhat elusive. However, the research still yielded useful results. Summary observations include:

- It is very difficult to quantify the direct effect of any individual strategy on mode share; few studies have isolated and attributed changes in mode share to specific tools. Availability of quantitative measures of effectiveness varied significantly by strategy.
- Although a limited number of studies document quantitative relationships of cause and effect, a significant amount of research shows that the strategies required or recommended by Metro to reduce SOV mode share are effective in varying degrees.
- Individual strategies are generally more effective when used in combination with a variety of strategies.
- Different strategies have various levels of effectiveness in different parts of the region. Factors such as density of development (both residential and employment density), access to transit, level of connectivity, proximity to major employment centers, and other conditions affect potential effectiveness.
- The effectiveness of strategies, particularly in newly developed or developing areas, needs to be measured over a long period of time. Continued monitoring and measurement, including through use of Metro's regional travel model, is essential to gauge long-term effectiveness.
- The most effective strategies included parking pricing, transportation-efficient development and area-wide application of peak-period or mileage-based pricing strategies. A variety of other strategies also have documented impacts on mode share.

---

<sup>1</sup> 2003 Regional Travel Options Program Evaluation Report, page 6.

- Data collection is critical to monitoring the effectiveness of strategies (and measuring their success).

Table 2 summarizes the results of our research, as well as potential applicability in the Portland region and ease of implementation by local jurisdictions or others. Assessments of applicability are relative in comparison to other potential strategies. More detailed information is found in Chapter 3 and Appendix E.

Table 2. Summary of Literature Review Research

Strategy	Quantitative Evidence (SOV)	U.S. Studies	Oregon Studies	Relative Ease of Implementation	Applicability (PDX Region)	Regional Applicability				Modal Share Impact
						Central City, Regional and Town Centers	Targeted Areas	Transit/Mixed-use Corridors	Other Urban Areas	
<b>Land Use</b>										
Connectivity	○	●	●	◐	●	✓	✓	✓	✓	1% - 2% VMT
Transportation-Efficient Development	●	●	●	◐	●	✓		✓		15% - 24% SOV <sub>12</sub>
<b>Parking</b>										
Parking Pricing	●	●	●	●	●	✓	✓	✓	✓	2.5% - 5% SOV <sub>12</sub> 20% SOV <sub>1</sub> 5% - 35% SOV <sub>1</sub>
Parking Supply and Management	●	●	●	◐	◐	✓		✓		28% RDI <sub>1</sub> ; 40% - 50% PKD
Timed Parking	●	●	○	●	●		✓			
<b>Fare Free Area</b>										
Fareless Area	●	●	●	◐	◐	✓				2% - 3% SOV
<b>Transit</b>										
Bus Service Improvements	◐	●	●	●	●	✓	✓	✓	✓	4% - 30% RDI
Demand Responsive / ADA Service	○	●	○	◐	●	✓	✓	✓	✓	40% wheelchair RDI
High Capacity Transit Service	◐	●	◐	◐	●	✓		✓		20% - 72% of new riders shifted mode from auto; 92% RDI over previous bus route
HOV Lane	◐	●	○	◐	◐			✓		Reduce vehicle trips 4% - 30%
Park-and-Ride/ Carpool Lots	●	●	●	◐	●				✓	40% - 60% SOV <sub>2</sub>
Pricing and Fares	●	○	●	◐	○					18% SOV; 12% - 59% mode shift from auto
Site Design / Accessibility	●	●	○	◐	●	✓	✓	✓	✓	2% to 4.75% SOV <sub>12</sub>
<b>Transportation Management and Employer-Based Strategies</b>										
Alternate Work Schedule and Telecommute	◐	●	○	●	●	✓	✓	✓	✓	Auto commute reduced 7% - 10% <sup>9</sup>
Carshare	◐	●	●	◐	●	✓				47% VMT <sup>10</sup>
Guaranteed Ride Home	○	●	○	◐	●				✓	N/A

Strategy	Quantitative Evidence (SOV)	U.S. Studies	Oregon Studies	Relative Ease of Implementation	Applicability (PDX Region)	Regional Applicability				Modal Share Impact
						Central City, Regional and Town Centers	Targeted Areas	Transit/Mixed-use Corridors	Other Urban Areas	
Rideshare	○	●	○	◐	●	✓	✓	✓	✓	Represents 2% - 7% of commute trips
Shuttle Service	--	--	--	--	--				✓	N/A
Marketing and Promotion	◐	●	●	●	●	✓	✓	✓	✓	21% RDI
<b>Bicycle and Pedestrian</b>										
Bikeway Improvements	◐	○	●	●	●	✓	✓	✓	✓	1 – 4% SOV; 100 – 150% Bike RDI <sup>13</sup>
Elimination of Auto Access	--	--	--	--	--	✓				N/A
Encouragement, Promotional and Individualized Marketing Programs	●	●	●	●	●	✓	✓	✓	✓	6% SOV; 12% VMT
End-of-Trip Facilities	●	●	●	◐	●	✓	✓	✓	✓	77% SOV <sup>4</sup>
Free Bike and “Smart Bike” Programs	○	○	●	◐	◐		✓			N/A
Pedestrian Improvements <sup>7</sup>	--	--	--	--	--	✓	✓	✓	✓	N/A
Safe Routes to School	●	●	○	●	●	✓	✓	✓	✓	13% SOV <sup>11</sup>
Traffic Calming	○	○	○	◐	◐	✓	✓	✓	✓	5% - 54% Ped/Bike RDI
<b>Pricing</b>										
Congestion Pricing	●	●	●	●	◐	✓	✓	✓	✓	15% – 30% transit RDI; 1% - 3% SOV; 28% - 30% transit shift <sup>3</sup>
Vehicle Miles Traveled Tax	○	○	○	○	○	✓	✓	✓	✓	13% VMT <sup>5</sup>
Vehicle Miles Traveled Insurance	○	●	○	◐	◐	--	--	--	--	13% VMT <sup>6</sup>

Evidence of Mode Share Impact

-- = No evidence

● = Direct evidence of impact on SOV use or mode share

◐ = Anecdotal relationship, including quantitative evidence of change in VMT

○ = Indirect relationship based on anecdotal evidence

Examples and Data Availability

● = Yes

○ = No

Implementation and Applicability

● = High (easy to implement or very applicable)

◐ = Moderate

○ = Low (difficult to implement or relatively un-applicable)

Modal Share Impact

SOV = Single occupancy vehicle trips

VMT – Vehicle miles traveled

RDI = Ridership increase

PKD = Parking demand

**Table 2: Notes**

1. Applies to commuting trips only.
2. Applies only to percentage of people using park-and-ride lots who switched from SOV to carpool or transit use.
3. Some figures apply only to users of priced facilities.
4. Applies only to percentage of people using BikeCentral who switched from SOV to bicycle commute.
5. Extrapolated from modeling results.
6. Extrapolated from modeling results; applies only to mileage-based insurance policy-holders.
7. See connectivity for related effects, including quantitative measure of impacts.
8. Some studies used apply only to those surveyed who drove to work before they lived near transit.
9. Estimates based on modeling.
10. Applies only to participants in carsharing program.
11. Applies to participants in Safe Routes To School program.
12. Extrapolated from a study of this strategy's effects on SOV commute trips and assumes that commute trips make up 25% of all trips.
13. Studies reviewed for this effort indicate this range of impact. However, impacts can be even more significant over time. For example, bicycle ridership on some facilities in the Portland area has increased from about 200 to several thousand riders a day, an increase of several thousand percent.

## Implications for Application in This Region

Many of the strategies researched for this project already are required by the RTP or the TPR and are being implemented to varying degrees in this region. They have been successful in increasing the share of bicycling, walking, transit and other non-SOV trips and include:

- Connectivity plans for new residential and mixed-use areas are required by local jurisdictions and implemented throughout the region.
- Fareless transit service areas have been implemented downtown extended to Lloyd District in Portland, and in Wilsonville. Fareless areas could be implemented in other regional centers in the future in coordination with transit service providers. Requirements related to this strategy are expected to be revisited as part of the RTP update.
- Transit-oriented design is required and implemented by local jurisdictions in specific areas. It is applicable throughout the region and most effective in denser residential, employment or mixed-use areas, including town and regional centers and transit corridors.
  - Transportation-efficient development (i.e., higher density and mixed use development with access to frequent transit service and bike and pedestrian facilities and with opportunities for short pedestrian and bicycle trips to near by destinations) is applied through housing and employment targets for regional and town centers and corridors in the region. This strategy is most applicable in these denser areas of the region.
- Parking maximum ratios are required through Title 2 of Metro's functional plan and have been implemented by most jurisdictions in the region. They are implemented throughout each jurisdiction.
- Formation and support for TMAs currently is required for all jurisdictions in the region. To date, they have been implemented in Portland, Troutdale, Gresham, Clackamas and northwestern Washington County through the Westside Transportation Alliance. They are most



applicable and effective in major employment centers with good access to transit, bicycle and pedestrian facilities. Requirements related to this strategy are expected to be revisited as part of the RTP update.

Other strategies that could be required and/or implemented by local jurisdictions through requirements in the RTP have varying applicability throughout the region, including the following:

- More aggressive parking pricing and management policies are recommended for future consideration but are likely to be effective only in areas without free or unmanaged on or off-street parking alternatives.
- Though not required by the RTP, bicycle and pedestrian improvements are mandated by state and federal requirements for specific facilities and are being implemented by local jurisdictions throughout the region. They are applicable in all areas of a given jurisdiction but likely to be most effective along major travel routes and easiest to implement in newly developing areas or as part of major transportation system improvements. Pedestrian improvements in particular are likely to be most effective in areas with the potential for high pedestrian use and to provide access to transit facilities.
- A variety of other bicycle-oriented strategies (end of trip facilities, promotional programs, etc.) can be implemented throughout the region but will have the greatest impact in major employment areas, including downtown Portland and regional and town centers.
- Frequent, comprehensive transit service is being implemented and is applicable throughout the region. Higher frequency service and certain types of facilities (e.g., light rail transit) require a certain level of residential or employment density to be cost-effective and successful.
- Notwithstanding successful local examples in the City of Portland, TravelSmart™ programs are expected to be best applied at the regional level, because of the cost and staffing resources associated with this individualized marketing approach. Data collection is also a critical component of this program.
- Pricing strategies, including peak period pricing and mileage-based insurance or fees can be implemented primarily by regional or state governments or the private sector. Facility-based pricing may be implemented by Metro and ODOT, with the cooperation of local governments on major highway facilities. Area-wide pricing is unlikely to be implemented in the foreseeable future.

## Summary Recommendations

Following are recommendations for strategies to achieve modal targets, as well as procedures to measure their success and local jurisdiction and Metro compliance in meeting requirements. Suggested amendments to the RTP also are briefly summarized. These recommendations are described in more detail in Chapter 3.

### Minimum and Other Requirements

The following **existing minimum requirements** are recommended for ongoing implementation and monitoring:

- Modal targets adopted in local TSPs

- Connectivity planning requirements
- Transit-oriented design requirements
- Maximum parking ratios

Two existing minimum requirements – formation of and support for TMAs and adoption of fareless areas – are recommended to be revisited and possibly eliminated as minimum requirements for all jurisdictions as part of the upcoming RTP update process. These two strategies would continue to be encouraged where feasible and where they are likely to be effective.

The following **additional minimum requirements** are recommended to be considered as part of a safe-harbor approach (i.e., acceptable, minimum set of strategies) for local jurisdictions during the next RTP update process.

- Continue to require **transportation-efficient development** through efforts to meet density and other land use targets in centers and corridors as part of compliance with Metro Functional Plan and related requirements. This type of development includes higher density and mixed use development with access to frequent transit service and bike and pedestrian facilities and with opportunities for short pedestrian and bicycle trips to near by destinations. Local jurisdictions and the region as a whole would be given credit for these efforts as part of the modal targets monitoring process.
- Construct **bicycle and pedestrian improvements** as required by state and federal regulations, and consistent with local TSPs and regional guidelines. Local governments and Metro should prioritize improvements that enhance connectivity of the bicycle and pedestrian system and access to transit.
- Continued provision of **frequent and comprehensive transit service** by TriMet and other transit agencies. Local jurisdictions and the region as a whole would be given credit for these efforts as part of the modal targets monitoring process.
- Support and encourage efforts to implement **employer-based TDM strategies**.
- Encourage of efforts to **eliminate employer-subsidized parking** and/or support for parking cash-out, preferred HOV-parking or **other parking pricing strategies**. This strategy ultimately would be implemented primarily by the private sector. However, local governments would be required to encourage such practices and consider them in parking management and design regulation efforts. Local governments also could be required or encouraged to consider use of these strategies for their own employees.
- Support and coordinate **Safe Routes to School programs** and projects. Local jurisdictions and Metro should support and help coordinate these efforts by seeking and procuring project funding from federal, state and local sources, and providing technical assistance.

A variety of additional strategies are recommended for consideration by local jurisdictions, advocacy groups and private employers, including the following:

STRATEGY	PRIMARY IMPLEMENTATION ENTITY	SUPPORTING IMPLEMENTATION ENTITY
<i>Parking</i>		
<ul style="list-style-type: none"> <li>Additional parking management and supply strategies</li> </ul>	Local Jurisdictions	Private Sector, Metro
<i>Transit</i>		
<ul style="list-style-type: none"> <li>Bus service improvements</li> </ul>	Transit Agencies, SMART, Metro	Local Jurisdictions
<ul style="list-style-type: none"> <li>High capacity transit (Light rail, streetcar and bus rapid transit)</li> </ul>	Transit Agencies, Metro, Local jurisdictions	Local Jurisdictions
<ul style="list-style-type: none"> <li>Demand responsive / ADA service</li> </ul>	TriMet, Metro	Employers
<ul style="list-style-type: none"> <li>Marketing and Promotion, including individualized marketing (e.g., TravelSmart™)</li> </ul>	Transit Agencies	Local Jurisdictions, Employers
<ul style="list-style-type: none"> <li>Park-and-ride and carpool lots</li> </ul>	Transit Agencies, ODOT	Local Jurisdictions
<i>Transportation Management and Employer-Based Strategies</i>		
<ul style="list-style-type: none"> <li>Alternate Work Schedule and Telecommute</li> </ul>	Employers	TMAs, Metro
<ul style="list-style-type: none"> <li>Carshare</li> </ul>	Employers	TMAs, Metro
<ul style="list-style-type: none"> <li>Guaranteed Ride Home</li> </ul>	Employers	TMAs, Metro
<ul style="list-style-type: none"> <li>HOV Lane</li> </ul>	ODOT	Metro, Local Jurisdictions
<ul style="list-style-type: none"> <li>Rideshare</li> </ul>	Employers	TMAs, Metro
<ul style="list-style-type: none"> <li>Shuttle Service</li> </ul>	Employers	TMAs, Metro
<ul style="list-style-type: none"> <li>Marketing and Promotion, including individualized marketing (e.g., TravelSmart™)</li> </ul>	Metro, TMAs	Local Jurisdictions, Employers
<i>Bicycles and Pedestrians</i>		
<ul style="list-style-type: none"> <li>Encouragement, Promotional and Individualized Marketing Programs (e.g. TravelSmart™)</li> </ul>	Metro Advocacy Groups	Local Jurisdictions, Employers,
<ul style="list-style-type: none"> <li>End-of-Trip Facilities</li> </ul>	Employers, Local Jurisdictions	Metro, Transit Agencies
<ul style="list-style-type: none"> <li>Free Bike and “Smart Bike” Programs</li> </ul>	Employers, Advocacy Groups	
<ul style="list-style-type: none"> <li>Traffic Calming</li> </ul>	Local Jurisdictions	
<i>Pricing</i>		
<ul style="list-style-type: none"> <li>Peak period pricing – lane or facility-based pricing</li> </ul>	Metro, ODOT	Local Jurisdictions
<ul style="list-style-type: none"> <li>Mileage-based insurance</li> </ul>	Private Sector, State Legislature	Advocacy Groups
<ul style="list-style-type: none"> <li>Mileage-based fees</li> </ul>	ODOT, Legislature	Advocacy Groups
<ul style="list-style-type: none"> <li>Gas tax increase</li> </ul>	ODOT, Legislature	Advocacy Groups

*Note: HOV lane is located in Transportation Management and Employer-Based strategies for lack of an appropriate category.*

More detailed information about implementation of these strategies is included in Chapter 3.

## **Measuring Success**

A primary recommendation of this study is for Metro to take the lead monitoring the region's progress in meeting modal targets both regionally and in specific portions of the region (e.g., centers and corridors). Processes for measuring success include the following:

- Continue to use the regional travel model to assess current and projected future progress in achieving modal targets. Assumptions about the impact of specific strategies should be refined based on the results of this study.
- Use the upcoming revised travel behavior survey as an opportunity to gather additional information about the potential effects of strategies to achieve modal targets. Use the results of the survey to further update the model. Possible additional survey questions are listed in Chapter 3, Section 4.



- Work with local jurisdictions to create and maintain a region-wide database of bicycle (and pedestrian) user counts, provide guidance on the methodologies, help organize or provide PSU students or interns to carry out these counts, and track the progress over time. The cost of data collection will be an important factor in devising a system to create and maintain this database.
- Compile, coordinate and help evaluate local surveys or data related to the potential effectiveness of specific strategies as described in Chapter 3 this report. Help identify and catalogue transportation-related survey efforts undertaken in the region by Metro, TriMet, local jurisdictions and others.
- Continue to evaluate the success of employer-based strategies through the RTO program and in cooperation with employers, TMAs and local jurisdictions.

In addition to Metro's efforts to evaluate success on a regional or sub-regional level, we recommend that local jurisdictions, TriMet and others conduct surveys to assess the effectiveness of specific strategies in increasing non-SOV mode share. Examples could include the following:

- Vehicle and non-vehicle ridership (transit, bicycle and pedestrian) counts in areas where bicycle, pedestrian or transit improvements are implemented, both before and after completion.
- Surveys of residents or employees in areas served by improved facilities to assess impacts on travel behavior. Local jurisdictions and others should seek opportunities to use grant funding, interns and other low-cost techniques to gather and evaluate this information.
- Evaluation of data currently being collected (e.g., park-and-ride lot origin-destination data and ridership surveys) to assess the effectiveness of given strategies on mode share or VMT, where feasible.

These recommendations are discussed in more detail in relationship to individual strategies in Chapter 3.

## **Monitoring Compliance**

A variety of procedures are recommended to monitor compliance with existing and new Metro requirements, including the following:

- Continue to review local TSPs using a refined checklist to ensure compliance with requirements for updating those plans.
- Continue to review comprehensive plans and development codes for compliance with Functional Plan requirements, including density and other land use and development targets for regional centers and corridors.
- Use the bicycle and pedestrian database described in the previous section to monitor progress in planning for and constructing bicycle and pedestrian improvements, and require each local jurisdiction to produce and regularly update bike/ped progress report outlining the effects to intersection nodes.
- Review annual reports prepared by the RTO program and DEQ related to ECO-rule compliance to assess progress in meeting those program goals; incorporate applicable results of these reports in RTP updates.
- Identify and track indicators related to transit system improvements, safe routes to school projects, elimination of employer subsidized parking, bicycle/pedestrian improvements and other strategies.
- Review and report on efforts by local jurisdictions and others to track progress in implementing optional strategies to meet modal targets, including before and after surveys, bicycle, pedestrian and other traffic counts, park-and-ride usage and related mode split data, and others (see Chapter 3 for more detailed information).

## **Updating the RTP**

The following types of Plan amendments are recommended for consideration in the upcoming RTP update process.

- Amend Chapter 1 to add or refine policies related to suggested new minimum RTP requirements.
- Revise descriptions of transportation elements in Chapter 1 to incorporate information in this report related to park-and-ride lots, bicycle and pedestrian system, traffic calming, transportation management and parking.
- Update modal requirements sections of Chapter 6 to incorporate the following recommendations of this report:
  - Suggested changes to existing requirements for TMAs and Fareless Areas (pending a discussion of these elements during the RTP update process).
  - Potential new minimum mode share target requirements.
  - Expanded and reorganized description of secondary, optional strategies.
  - New procedures for measuring impacts of required strategies on mode share.
  - Proposed procedures for monitoring compliance with existing and new minimum strategies.

- Summary information from Appendices 1.8 and 2.2 related to the relationship between modal targets and RTP modeling assumptions and which types of assumptions are included in the model.

These amendments are described in more detail in Chapter 3.