

Benton County Transportation System Plan

Public Works Department

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Benton County Transportation System Plan

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Overview

This chapter provides a summary overview of the Benton County Transportation System Plan (TSP). It includes brief introductory information about the following: why a TSP is required by the State of Oregon, the planning process used to develop Benton County's TSP, transportation policy review and necessary changes, the TSP's key findings, achievements, and remaining issues. This Overview also includes a summary version of the Transportation Improvement Plan (TIP), which discusses funding and lists the recommended transportation improvements. References to more detailed information contained in the following chapters is also included.

Introduction

Welcome to the Benton County Transportation System Plan, or TSP. This document is the final result of a collaborative effort among the citizens of Benton County, County staff, and individuals at a number of state and local agencies who worked collectively to research and analyze the County's existing transportation system, and to recommend improvements to the system.

The TSP is required to provide a transportation system that accommodates the expected 20-year growth in population and employment resulting from implementation of the currently adopted Benton County comprehensive land use plan.

Background

In the fall of 1995, Benton County initiated a study of the area transportation system (the most recent Benton County Transportation Plan was completed in 1980). The County conducted this study to prepare a TSP in full compliance with State of Oregon Revised Statute 197.712 and the Oregon Land Conservation and Development Commission (LCDC) Administrative Rule known as the Transportation Planning Rule (TPR). *(The full text of the TPR appears in Appendix A.)*

This Statute and Rule require local jurisdictions to prepare a TSP as part of their overall Comprehensive Plan, in coordination with adjacent and affected agencies. Accordingly, this document provides the necessary elements for Benton County to adopt and implement its TSP. In addition, it provides the cities of Corvallis, Philomath, Albany, Monroe, and Adair, as

well as the Oregon Department of Transportation (ODOT), with the necessary recommendations for incorporation into their respective TSPs.

(For more information about how existing state and local plans, policies, and agencies affected the development of this TSP, see Chapter 2, "How the TSP was Developed.")

State Planning Requirements

The Transportation Planning Rule requires that the TSP contain the following elements:

- ◆ A Bicycle/Pedestrian Plan
- ◆ An Air, Rail, and Pipeline Plan
- ◆ A Transportation Finance Plan
- ◆ Policies and ordinances for implementing the Transportation System Plan

The TPR also requires that alternative transportation modes be given equal consideration during preparation of the TSP, and that reasonable effort be applied to the development and enhancement of these alternative modes to provide reasonable travel options for the public in development of the future transportation system. In addition, the TPR requires local jurisdictions to adopt land use and subdivision ordinance amendments to protect transportation facilities.

The Analysis and Planning Sequence

The TPR not only stipulates that modal plans be developed for roadway, bicycle, pedestrian, public transit, air, rail, and pipelines, but also provides the blueprint for how the analysis should be approached. It suggests the following sequence for the analysis of each mode:

- ◆ Inventory of the existing system
- ◆ Performance evaluation of the existing system
- ◆ Identification and consideration of mitigation measures
- ◆ Establishment of current needs
- ◆ Forecast of future (20-year) travel demand
- ◆ Performance evaluation of the future system
- ◆ Identification of alternative mitigation
- ◆ Selection of a preferred improvement plan
- ◆ Consideration of the financial feasibility

Therefore, the Benton County TSP follows this sequence for each of the modal plans contained in Chapters 3 through 6.

The Planning and Development Process

This TSP is the result of a long and thorough planning and development process during which County staff worked closely with the citizens of Benton County, members of a Task Force and a Technical Advisory Committee, and individuals at a number of state and local agencies.

At the beginning of the planning process, the Board of County Commissioners appointed individuals to serve on the Task Force and the Technical Advisory Committee. Guided by

Benton County staff, these two committees participated in and oversaw development of the TSP, which was accomplished in two primary phases.

During **Phase One**, the Task Force and the Technical Advisory Committee worked with consultants and staff to assemble the TSP Background Document, which contains descriptions, definitions, and analyses of each major transportation element within Benton County, existing transportation deficiencies, a forecast of future deficiencies, cost estimates, and more.

During **Phase Two**, project staff presented the information and findings contained in the Background Document to many community-based gatherings and interest groups to verify issues and findings, solicit input and comments, facilitate visioning and goal setting, and to evaluate and select preferred alternatives.

The resulting Benton County Transportation System Vision Statement is shown below:

**Benton County Transportation System
VISION STATEMENT**

The Benton County Transportation System seeks to preserve, protect, and promote the County's sustainability, livability, and economic vitality by:

- Providing choices of alternative travel modes
- Maximizing the efficiency of existing facilities
- Intertwining quality of life, land use, and transportation decision making

The Benton County Transportation System will provide equitably funded, safe, efficient, cost-effective mobility and accessibility to all County residents, businesses, and emergency services within and across County boundaries.

(For an in-depth description of the overall process used to develop the TSP, including goals, evaluation criteria, and the level of public involvement, see Chapter 2, "How the TSP was Developed.")

Key Findings

The combination of public feedback and technical analysis confirmed the following key findings:

- ◆ The majority of roadway congestion will occur on the state highway system.
- ◆ Limited new road construction to improve connectivity could allow the County road system to relieve some congestion.
- ◆ Even with improved connectivity and aggressive efforts to decrease dependence on automobile travel, U.S. 20 between Albany and Corvallis and U.S. 20/Highway 34 between Corvallis and Philomath will need to be widened to provide operational capacity that complies with state capacity standards for the next 20 years.

- ◆ Financial constraints will require the lowest-cost alternatives suitable for meeting the needs of the next 20 years and may require a compromise of the vision and/or goals.

Integration and Coordination of Multi-Modal Solutions

Future deficiencies will occur on many of Benton County's transportation systems if travel behavior remains relatively constant and nothing is done to improve the existing system. The majority of these deficiencies will occur on the state highway system, those elements of the roadway system County residents rely on most. Alternative modes are not adequately developed to offer reasonable options for most County residents and would not substantively relieve constrained highway sections. Multi-modal solutions are necessary to alleviate existing and avoid future and more significant constraints. A list of these solutions developed and evaluated with the public to address identified deficiencies appears later in this chapter.

Transportation Policy Review and Changes

The Benton County Comprehensive Plan (1982, reprinted 1989) includes the Transportation Element, which contains the general policies that support the overall objective of providing a balanced transportation system. Additional policy recommendations and enhancements to existing policy are necessary to comply with the TPR and to more clearly address standards in the TPR.

This TSP contains additions and enhancements to the County's transportation policies (*see Chapter 2*). Modal-specific policy information can be found in the corresponding chapters (*see Chapters 3 through 6*). In these chapters, the County's current transportation policies are listed for reference, followed by the proposed new policies. These proposed new policies will replace the current policies when approved.

Growth Management/Land Use Alternatives

The preferred alternative being recommended in the Benton County TSP uses modified land use strategies to achieve the goals and vision of the plan. Specifically, the land use strategies call for concentration of development in certain rural service centers and cities. These land use strategies have particular impact on existing County policies.

Transportation Improvement Plan (TIP)

The Transportation Improvement Plan (TIP) contains specific improvements needed over the next 20-year period at a total estimated cost \$120 million. In the following tables, the projects and corresponding costs have been prioritized in three timeframes, 0-5 years, 5-10 years, and 10-20 years. A list of the specific improvements appears following the tables.

TIP Funding Summary

The two tables below summarize the costs for implementing the TIP, first by general type of improvement and responsible jurisdiction, and then by timeframe. *(For more detailed information about costs and implementation timing on a project-by-project basis see **Table 7-1** in Chapter 7.)*

**Table 1-1
TIP Cost Summary By Category (\$1,000s)**

	Estimated Total Cost	City*	Federal/ State	County
BRIDGE REPLACEMENTS				
0-5 Year Bridge Replacement Costs	\$3,452		\$2,866	\$586
5-10 Year Bridge Replacement Costs	\$500	\$0	\$425	\$75
10-20 Year Bridge Replacement Costs	\$125		\$106	\$19
Bridge Replacement TOTAL	\$4,077	\$0	\$3,397	\$680
SAFETY REPLACEMENTS				
0-5 Year Safety Improvements Costs	\$1,015	\$110	\$300	\$605
5-10 Year Safety Improvements Costs	\$418	\$0	\$0	\$418
10-20 Year Safety Improvement Costs	\$720	\$135	\$450	\$135
Safety Improvements TOTAL	\$2,153	\$245	\$750	\$1,158
BIKEWAY IMPROVEMENTS				
0-5 Year Bikeway Improvement Costs	\$426	\$426	\$0	\$0
5-10 Year Bikeway Improvement Costs	\$5,869	\$0	\$0	\$5,869
10-20 Year Bikeway Improvement Costs	\$2,279	\$0	\$1,683	\$596
Bikeway Improvement TOTAL	\$8,574	\$426	\$1,683	\$6,465
LEVEL OF SERVICE (Volume-to-Capacity)/INCREASED CAPACITY IMPROVEMENTS				
0-5 Yr. Level of Service/Increased Cap.	\$4,720	\$0	\$0	\$4,720
5-10 Yr. Level of Service/Increased Cap.	\$14,441	\$204	\$12,682	\$1,555
10-20 Yr. Level of Service/Increased Cap.	\$56,770	\$0	\$53,040	\$3,730
Level of Service (V/C) TOTAL	\$75,931	\$204	\$65,722	\$10,005
PAVEMENT PRESERVATION				
0-5 Year Pavement Preservation Costs	\$11,611	\$0	\$6,611	\$5,000
5-10 Year Pavement Preservation Costs	\$5,000	\$0	\$0	\$5,000
10-20 Year Pavement Preservation Costs	\$10,000	\$0	\$0	\$10,000
Pavement Preservation TOTAL	\$26,611	\$0	\$6,611	\$20,000
TRANSIT IMPROVEMENT COSTS (Funding Sources Not Identified)				
0-5 Year Transit Improvement Costs	\$0	\$0	\$0	\$0
5-10 Year Transit Improvement Costs	\$400	\$0	\$0	\$0

10-20 Year Transit Improvement Costs	\$1,725	\$0	\$0	\$0
Transit Improvement TOTAL	\$2,125	\$0	\$0	\$0

* Figures shown are from various city TSPs.

**Table 1-2
TIP Cost Summary By Timeframe (\$1,000s)**

	Estimated Total Cost	City	Federal/ State	County
0-5 Year Total	\$21,224	\$536	\$9,777	\$10,911
5-10 Year Total	\$26,628	\$204	\$13,107	\$12,917
10-20 Year Total	\$71,619	\$135	\$55,279	\$14,480
20-Year Capital Improvement Costs SUBTOTAL	\$117,346	\$875	\$78,163	\$38,308
Transit Improvement Costs	\$2,125	\$0	\$0	\$0
20-Year Capital Improvement Costs TOTAL	\$119,471	\$875	\$78,163	\$38,308

Future Funding Needs

The funding of transportation system costs is a difficult challenge shared by most communities throughout Oregon and the United States. Cutbacks in federal transportation programs have heightened this problem and forced local governments to look for new ways to fund necessary transportation services. While the State of Oregon continues to provide a large portion of funding through the state gas tax, this source of revenue has not kept pace with increasing needs. Against this stagnant funding picture, many communities, including Benton County, face a funding gap in which current and future transportation system needs exceed available revenues.

Roads and Bridges

This TSP identifies approximately \$120 million of capital improvement projects in Benton County over the next 20 years. Of this amount, \$78 million is expected to be funded from state and federal sources. Approximately \$1 million are projects belonging to cities or urban development in Benton County. The remainder of the projects, totaling \$38 million, will be the responsibility of the County. *(For a more detailed discussion of funding sources available to local government for transportation improvements, see Chapter 7.)*

The County's estimated needs have been based on the assumption that during the 20-year period Benton County will obtain partial or full funding from state and federal sources for improvements to County facilities and services, particularly bridge replacements and safety projects. Recent historical expenditures for improvements of the types identified in the TSP have averaged about \$400,000 per year. The unfunded need throughout all jurisdictions within Benton County over the 20-year period is \$55 million. Of this amount approximately \$30 million of new road fund revenue is required.

Transit

This TSP also identifies new or expanded intercity and rural public transit service within the County with a capital cost of \$2,125,000, and operating costs of \$12,090,000 over the 20-year planning horizon.

Of the total shortfall over the next 20 years, the amount that is directly related to public transit expansion is \$14 million. The future role of the County in funding expanded rural and intercity transit service has not been determined at this time. Possible governance includes expansion of the Linn Benton Loop partnership of the participating agencies or the creation of a transportation district.

Proposed Funding Options

Early in the development of the TSP, a survey of community leaders and key stakeholders was conducted to seek their view on many issues linked to the County transportation plan. Most stakeholders believe future transportation needs will require a balanced package that enables all system beneficiaries to contribute, with existing residents and businesses and new development shouldering their fair share of the cost load. They identified the local gas tax and system development charges as preferred funding sources for transportation system improvements.

Due to the magnitude of the unfunded costs of the projects identified in the TSP, the local gas tax and system development charges would not be sufficient to fund all of the needed projects. Consideration should be given to including a local option levy and/or general obligation bonds as a portion of the future funding strategy.

Recommended Project List

Listed below are the recommended improvement projects contained in the TSP. Some projects arose only out of the public involvement process, while others came from the technical analysis and field observations. Evaluation and selection of the projects are given in Chapters 3 through 6, with the cost and timeline of each project shown in **Table 7-1** at the end of Chapter 7. Project numbers [in brackets] correspond to the discussions presented in Chapters 3 through 7, and to the maps at the end of Chapter 7 (**Figures 3-A, 3-B, 3-C.1, and 3-C.2**) indicating the locations of the projects.

State Highway Widening

- ◆ U.S. 20—widening to four lanes, Conifer Avenue to North Albany Road [A1]
- ◆ U.S. 20/Highway 34—widening, Highway 99W to U.S. 20/Highway 34 junction [C1]
- ◆ U.S. 20—widening, U.S. 20/Highway 34 junction to Woods Creek Road [D1]
- ◆ Highway 99W—widening to four lanes, Walnut Boulevard to WPRR overpass [E1]
- ◆ Highway 99W—widening to four lanes, Rivergreen Avenue to Airport Avenue [F7]
- ◆ Highway 34 curve near Alsea—realignment [K9]

State Highway Bridge Replacements

- ◆ Van Buren Avenue bridge replacement (City/ODOT decision) [H6]

State Highway Intersection Improvements

- ◆ U.S. 20/Highway 34 Junction—traffic signal [C2]
- ◆ Independence Highway/U.S. 20—traffic signal [A4]
- ◆ Arnold Avenue/Highway 99W—traffic signal [E3]
- ◆ Highway 99W—traffic signal in Monroe [G4]
- ◆ Highway 223/U.S. 20—turn lanes [G5]
- ◆ Priest Road/U.S. 20—signing [K4]
- ◆ Eddyville-Blodgett Highway/U.S. 20—turn lanes [G6]
- ◆ Scenic Drive/U.S. 20—turn lanes [A5]
- ◆ Greenberry Road/Highway 99W—turn lanes [F5]
- ◆ Old River Road/Highway 99W—turn lanes [G7]
- ◆ Highway 34/Fish Hatchery Road—turn lanes [K8]
- ◆ Wren Road/Highway 223—realignment, channelization, signing [K3]
- ◆ U.S. 20/Marys River Estates—right turn deceleration lane [K7]
- ◆ Eastbound U.S. 20/Highway 34 to southbound Highway 99W—improvements [F3]

County Road Bikeway/Shoulder Widening

- ◆ Crystal Lake Drive—between Park Avenue and South 3rd Street [M2]
- ◆ Chapel Drive—between 19th Street and Bellfountain Road [M4]
- ◆ 19th Street—between U.S. 20/Highway 34 and Chapel Drive [M5]
- ◆ Bellfountain Road—between Airport Avenue and Greenberry Road [M6] *
- ◆ NE Granger Avenue—between Pettibone and U.S. 20 [M8]
- ◆ Independence Highway—between Camp Adair Road and U.S. 20 [M9]
- ◆ Metge Avenue—between Independence Highway and Oak Grove Dr [M10]
- ◆ County Club Drive—between Barley Hill Drive and U.S. 20/Highway 34 [M12]

County Road Bridge Replacements

- ◆ Llewellyn Road bridge overflow channel [H4]
- ◆ Crescent Valley bridge [H7]
- ◆ Norton Creek bridge [H8]
- ◆ Old River Road bridge [H9]
- ◆ Chapel Drive bridge [H10]
- ◆ Tampico Road bridge [H11]
- ◆ Harris Road bridge over Alder Creek [H12]
- ◆ Elliot Circle bridge [H13]
- ◆ Llewellyn bridge #25 [H14]
- ◆ Bellfountain Road bridge over Oliver Creek [H15]
- ◆ Llewellyn bridge #2 [H16]
- ◆ Airport Avenue bridge [H17]
- ◆ Harris Covered bridge [H18]
- ◆ Price Creek bridge [H19]

County Road Intersection Improvements

- ◆ West Hills Road/Reservoir Road—traffic signal [G1]
- ◆ West Hills Road/SW 53rd Street—traffic signal [G2]
- ◆ Greenberry Road/Bellfountain Road—minor alignment improvement [F4] *
- ◆ Bellfountain Road/Airport Avenue—intersection improvements [F6] *
- ◆ Independence Highway/Springhill Drive—signing [K1]
- ◆ Palestine Avenue/Oak Grove Drive—alignment [K6]
- ◆ Gibson Hill Road/Scenic Drive—alignment [A6]
- ◆ Ryals Avenue/Independence Highway—signing [K5]
- ◆ Grange Hall Road/Fern Road—signing [K2]

County Road Level of Service/Increase Capacity

- ◆ South Fork Road—paving [J1]
- ◆ Reservoir Road/SW 53rd Street—traffic signal, at-grade railroad crossing [C3]
- ◆ Airport Avenue improvements per Corvallis Airport Master Plan [I1]
- ◆ Gravel Road Surfacing Program [O2]

County Road Pavement Preservation Program [O1]

Rural Transit/Transportation Demand Management (TDM)

- ◆ Satellite Park-and-Ride Shuttle—Provide shuttle service to Adair, Lewisburg and Monroe [L1]
- ◆ Satellite Park-and-Ride Lots—Negotiate shared parking agreements for park-and-ride lot usage in Adair, Lewisburg, and Monroe [L2]
- ◆ Express Bus Service—Provide express bus service from Albany to Philomath [L3]
- ◆ Support Expanded Corvallis Transit System Service [L4]**
- ◆ County Cruiser—New vehicles, expanded service [L5]
- ◆ Continued Valley Retriever Service [L6]**
- ◆ Continued Rural Rounds Service [L7]**
- ◆ Continued Linn-Benton Loop Service [L8]**

**For more information about these projects, see section 3.4.1.F “Bellfountain Road Refinement Plan” in Chapter 3. The final decision on the construction or modification of these projects will be made through the development of and approval of the refinement plan.*

***No cost associated with these projects in summary tables.*

Plan Achievements

Within this TSP, the citizens of Benton County have a new Vision Statement for their transportation system to support, defined goals and objectives for implementation of the TSP, and goal-based evaluation criteria to support future decision making for transportation related issues.

Most importantly, Benton County has a compliant and executable Transportation System Plan that supports this vision and accomplishes these goals of the community.

Remaining Issues

A major focus of the state's Transportation Planning Rule is to avoid capacity-increasing highway improvements through modal shifts, and other modifications to travel behavior effected through land use regulation or other local policy changes. This plan concludes that all of the increased capacity needs outside of urban growth boundary areas within Benton County are on the state highway system.

This plan also concludes that to meet State Highway Plan criteria, capacity improvements will be required on U.S. 20 throughout Benton County during the 20-year planning horizon. Viable alternative strategies under the control of Benton County that could reduce travel demand, thereby avoiding the need for highway capacity improvements, were not identified. The details of the extent and timing of the capacity improvements should be completed by the State during the corridor planning process and development of highway refinement plans.

This TSP proposes a refinement plan for the Bellfountain Road corridor. This refinement plan will identify, analyze, and recommend specific actions to improve safety while retaining the rural character of the area.

A policy needs to be drafted to address how the transfer of road jurisdictions occurs when County land is annexed into a city. City annexations adjacent to County roads should include the road right-of-way in the description to facilitate transfer of jurisdiction when appropriate.

Road maintenance operations constitute the largest component of the County's transportation program. The maintenance work program should be enhanced to refine current management systems and to better plan, schedule, and measure work expended in the road system.

How this Document is Organized

The chapters that follow this summary Overview contain:

- ◆ An in-depth description of the process used to develop the TSP, including public involvement, goals, objectives, and evaluation criteria (*Chapter 2*)
- ◆ A description of this plan's relationship to other plans, policies, and transportation agencies (*Chapter 2, second half*)
- ◆ Separate modal plans that present new and retained transportation policies and the preferred alternatives (*Chapters 3 through 6*):

Chapter 3: Roadway Plan

Chapter 4: Bicycle and Pedestrian Plan

Chapter 5: Public Transportation Plan

Chapter 6: Air, Rail, and Pipeline Plan

- ◆ A Transportation Improvement Plan for the 20-year planning period, with prioritized improvements, timing of improvement needs, and an implementation and funding strategy (*Chapter 7*)

- ◆ Two Appendices:
 - Appendix A: State of Oregon Transportation Planning Rule
 - Appendix B: Oregon Department of Transportation's Access Management Standards

2

How the TSP Was Developed

This chapter describes the process Benton County used to develop the Transportation System Plan (TSP), including the level of public involvement in the development process, the vision statement, goals, and evaluation criteria used to guide the process, and the key role other plans, policies, and transportation agencies played in the development of this TSP.

2.1 The Planning Process

At the beginning of the planning process, the Board of County Commissioners appointed individuals to serve on two committees, a Task Force and a Technical Advisory Committee. Guided by Benton County staff, these two committees participated in and oversaw development of the TSP, which was accomplished in two primary phases.

During **Phase One**, these groups worked with consultants (Kittleson and Associates) and staff to assemble the TSP Background Document, which contains descriptions, definitions, and analyses of each major transportation element within Benton County, existing transportation deficiencies, a forecast of future deficiencies, cost estimates, and more.

During **Phase Two**, project staff presented the information and findings contained in the Background Document to many community-based gatherings and interest groups to verify issues and findings, solicit input and comments, and facilitate visioning and goal setting. Phase Two also provided extensive public outreach to develop, consider, and evaluate various alternatives to address the existing and future transportation needs of the community, and to select the preferred alternative. This phase culminated in development of this document, which includes information from the Background Document, the various TSP elements representing the preferred alternative, and the recommended policy language in support of this TSP.

The Technical Advisory Committee

The Technical Advisory Committee was comprised of planning staff from transportation agencies with jurisdiction within Benton County representing local, county, state, and federal agencies, including representatives from Oregon State University and the Willamette and Pacific Railroad. This Committee was primarily responsible for the following:

- ◆ Ensuring consistency with existing and ongoing plans, policies, and planning activities
- ◆ Providing direction, review, and comment on the technical analysis and findings
- ◆ Supporting development of a TSP that complies with the TPR

Members of the Technical Advisory Committee included:

Darrel Tedesch, *Chief*, Albany Fire Department
Eric Teitelman, *Transportation Services Supervisor*, City of Albany
Virginia Grilley, *Recreation/Engineering Staff Officer*, U.S. Forest Service
Peter Idema, *Planner*, ODOT
John Koch, *Facilities Planner*, OSU

Charles Gilbert, *Office Engineer*, Willamette & Pacific Railroad
Fred Towne, *Planner*, City of Corvallis
Scott Olson, *Assistant County Engineer*, Benton County Public Works Dept.
Jim Blair, *Public Works Director*, Benton County Public Works Dept.
Roger Irvin, *Director*, Benton County Development Dept.
Jim Hope, *Advance Planner*, Benton County Development Dept.
Dave Copley, *Project Coordinator*, Benton County Public Works Dept.

The Task Force

The Benton County Board of Commissioners appointed a group of 12 citizens to comprise the Task Force. Members included public and private employees, individuals with professional expertise in transportation, and others with expertise in particular local transportation interests. This Committee was responsible for the following:

- ◆ Representing the broad views of County citizenry
- ◆ Contributing to the identification of issues, the development of the vision statement, goals, and objectives, and the application of evaluation criteria
- ◆ Providing input and comment on the information and findings developed throughout the process
- ◆ Assisting with the identification, evaluation, and selection of alternatives to support and develop the overall transportation system

Members of the Task Force included:

Rick Luebbers (Chair)	Joseph Heaney
John Deagan	Howard Kraus
Walter Eichler	Claire Keith
Terri Tower	Jim Kinnear
Randy Hereford	Lanny Zoeller
Jean Nath	Marcy Eastham

2.1.2 PHASE ONE: Identifying the Issues and Developing the TSP Background Document

Phase One began with an assessment of the existing transportation system conditions, stakeholder interviews, issues identification, current plan and policy review, and inventory of the physical and operational characteristics of the existing multi-modal transportation systems. County staff gathered information that described and defined each major transportation element within Benton County, including data on physical features, existing uses and demands, and capabilities and carrying capacities of each element, as appropriate. A forecast of future transportation deficiencies was completed, and alternative strategies toward selection of the components that comprise the recommended plan were developed.

Project and County staff identified a list of 42 key stakeholders to be interviewed for the purpose of determining public opinion of the transportation system and identifying significant issues to be addressed during the TSP process. The project staff, County staff, Task Force, and Technical Advisory Committee reviewed and discussed the comments, opinions, and issues from the stakeholder interviews and approved a final set of issue statements to guide the study process. This first identification of issues helped to focus the study and analysis of the transportation system under existing and future conditions. This phase culminated in completion of the TSP **Background Document**, published in June, 1996.

The Background Document contains the stakeholder interview summary, review of current plans and policies, a system inventory, analysis of safety and operational performance, evaluation of connectivity and mobility, future travel demand forecast, identification of existing and future deficiencies, strategies for making improvements, and cost estimates for projects and overall strategies. The Background Document provided the

material necessary to support the concentrated public involvement effort undertaken in Phase Two of the project.

2.1.3 PHASE TWO: Involving the Public and Preparing the TSP

When the TSP Background Document was complete, County staff initiated an extensive public involvement process in order to identify the community's opinion of and concern about the transportation system, and to formulate solutions most appropriate for their needs and desires. The meetings of Phase Two took place primarily in two series:

- ◆ Visioning, Goal Setting, Issues Identification, and Strategies Development
- ◆ Evaluating Alternatives and Selecting Preferred Alternatives

The **first series** of meetings presented the information contained in the Background Document, developed the vision statement and TSP goals, expanded the understanding of the community's transportation-related issues, and discussed and prioritized strategies to develop solutions.

Project staff led the groups in a process of developing a single vision statement and set of goals. Participants responded to ideas, offered their own, refined the wording, and ultimately affirmed or rejected the various elements of these statements. Only majority support from participants at all public involvement meetings qualified a goal to remain in the final set. *(A complete list of the goals and criteria used in developing the TSP, appears later in this chapter.)*

The **second series** of meetings used the adopted vision statement and goals to evaluate the results of various proposed strategies, and to identify specific projects to best meet the County's transportation needs. In these meetings, participants also used criteria developed from the goals to evaluate four sets of potential transportation improvements, based on the core strategies. These evaluations, along with further input on specific projects and programs, provided the basis for the preferred alternative that was selected and presented in a May 1997 newsletter and at the May 28, 1997 Town Hall Meeting.

All of the analysis, public involvement, and guidance by staff, the Task Force, and the Technical Advisory Committee have shaped this TSP. Some of the information contained in the Background Document has been incorporated into this document, providing a single, comprehensive resource.

2.1.3.A Public Involvement

This TSP was shaped by extensive public involvement throughout its development. Public awareness of the transportation planning process was promoted through newsletters, newspaper articles, and direct mailings. Committee and public meetings were held 50 times in various locations throughout the County to solicit ideas and input, identify issues and needs, confirm analysis and findings, and obtain comment and direction.

The results of these efforts include the vision statement, goals for the plan, community-based strategies to address identified needs, evaluation criteria for proposed projects, and ultimately this document, the final TSP. Equally important, this public process has informed and educated the public and afforded Benton County the opportunity to engage the public in development of their future transportation system.

Benton County is home to citizens with a broad range of social and economic interests. The development of the TSP relied on both the local knowledge and the guiding values of the County's citizens. Participants in public meetings from North Albany to Alsea and from Monroe to Kings Valley were able to offer direct, day-to-day experience of the needs and potentials of the various parts of the County's transportation system. Citizens with interests in farming, teaching, and manufacturing; in bicycling, hauling logs, and commuting to work, all brought to bear the values and visions that underlie Benton County, in the development of this TSP. The goal of the public involvement process was to build on the local knowledge and guiding values of citizens to shape a TSP that will find broad support and provide for a transportation system that meets the County's needs for the coming 20 years.

The following sections summarize the various methods employed to inform and engage the public. Sharing information, inviting input and comment, and facilitating open discussions of issues and solutions were keys to the public outreach that was provided.

County-wide Newsletters

Two County newsletters were devoted to the transportation planning process. Each newsletter was prepared in full color on newsprint, in a 17" x 23" multi-fold layout, and printed in production runs of approximately 35,000 issues. The newsletters were bulk-mailed to County residential mailing addresses.

The **Summer 1996 Issue** presented information from the Background Document created in the first phase of the TSP development. It gave an overview of the planning process, summarized existing conditions, and identified problem areas/issues. It explained the set of overall strategies to be studied as approaches to meeting present and future needs. In addition, the newsletter solicited the general public, community groups and associations, and special committees on transportation to provide input to the process.

The **May 1997 Issue** presented the results of the transportation alternatives analysis and public involvement. It included the vision statement and TSP goals and objectives. A map included in the newsletter illustrated the major modal elements of the proposed TSP and recommended improvements. The newsletter invited citizens to attend a County-wide Town Hall Meeting held in late May 1997 to provide comment on each of the plan elements and recommended improvements.

Newspaper Articles

Articles published in the Corvallis Gazette Times newspaper featured transportation issues and proposed solutions that were being discussed and debated during the TSP development process. These articles included information on transportation issues being considered by the Cities of Philomath, Monroe, North Albany, Albany, and Corvallis, as well as Benton County. During the course of the TSP development, both the Gazette Times and the Oregonian newspapers published articles on statewide transportation issues (including pending transportation funding legislation) that had potentially significant impact on Benton County.

Direct Mailings

The County sent direct mailings to interested citizens announcing public meetings to be held in their area and inviting them to attend to discuss local and countywide transportation issues. These mailings were targeted to geographic areas (usually one or more communities) of the County. Mailing lists of interested parties were maintained and expanded by the County, as more citizens became involved in the process.

Stakeholder Interviews

Early in the project, community leaders and key "stakeholders" were asked their views on many issues linked to the County transportation plan. The 42 people interviewed included leading transportation and planning professionals, citizens involved in community affairs, and others potentially affected by transportation issues. Among the broad cross-section interviewed were top managers of jurisdictions, regulatory/resource agency staff, business/economic development interests, developers and realtors, and other community leaders and area residents.

Participants were asked to share their views on issues related to the Benton County TSP: values and principles to guide the planning, preferred types and locations for new facilities, environmental factors, financial and social costs, citizen participation, and other issues. Interviews were conducted on a confidential basis, and a summary of the issues identified through the interviews is presented in the Background Document.

Committee Meetings

The Task Force and Technical Advisory Committees each met 11 times during the course of the project, providing critical guidance on the development of the TSP. These two committees had the greatest influence over the process and development. Meeting minutes of both Committees were recorded, edited, approved, and made a part of the public record for the planning process. In addition, the meetings were publicized and open to the public, providing another means of public access to the planning process.

The Technical Advisory Committee reviewed all analysis, findings, and recommendations before they were forwarded to the Task Force. Comments, issues, discussions, and recommendations that occurred during Task Force meetings were reviewed and approved by the County staff and/or the Technical Advisory Committee, wherever appropriate.

Issues raised by the public were discussed with both Committees, and an appropriate course of action selected. Public perceptions were also discussed and addressed, usually through some form of additional information and/or public outreach.

Communities and Special Interest Groups

Project staff met with community representatives, advisory committees, governmental bodies, and citizens at large on 32 separate occasions. Groups and meeting locations were chosen to reach a full cross section of the County and to draw on the most involved and knowledgeable citizens. Groups of concerned citizens were gathered by geographic location (typically associated with local communities) at key points in the process to ensure that no area of the County was overlooked. Meetings were held with ongoing committees charged with advising the County on transportation related issues and with business groups focused on similar issues. Finally, at key points during the planning process, project staff made presentations to the County Planning Commission and the County Commissioners on the status and key findings of the study.

Meetings with the various community-based gatherings and interest groups were held from two to four times to obtain input for the TSP. Area residents were notified of these public meetings via public service announcements, community newsletters, and direct mailings issued by County staff. The Summer 1996 County Newsletter contained an invitation for citizens to participate in the Citizen Advisory Committees for their areas. In those areas of the County where these committees were active, they served as the core of local community-based gathering.

Community-Based Gatherings

Benton County staff divided the County into five geographic areas for the purpose of providing more extensive public outreach and focused discussion of local as well as County-wide issues and needs. Two or more meetings were facilitated in each one of these five areas, with the location of the meetings sometimes varied to reach different communities.

The five geographic areas and the locations where community-based meetings were held are listed below:

- ◆ Southwest Benton County Alsea
- ◆ Northwest Benton County Blodgett and Wren
- ◆ South Benton County Monroe

- ◆ Mid Benton County Philomath and Corvallis (Benton County Fairgrounds)
- ◆ North Benton County Adair Village

Interest Groups and Standing Committees

Several official committees that address transportation-related issues exist within Benton County. Two or more meetings were facilitated with each of these Committees to specifically discuss the process and development of the TSP.

In addition, meetings were arranged to discuss the TSP with two active interest groups that focus on transportation and economic development in Benton County. Both groups met twice to discuss issues, needs,

and considered solutions. Listed below are the committees and interest groups with whom project staff was able to meet:

- ◆ Benton County Roads Advisory Board
- ◆ Benton County Bicycle Advisory Committee
- ◆ Benton County Special Transportation Advisory Committee
- ◆ City of Corvallis Chamber of Commerce Transportation Sub-Committee
- ◆ City of Corvallis Chamber of Commerce
- ◆ Benton County Staff
- ◆ Benton County Planning Commission
- ◆ Benton County Board of Commissioners

One County-wide Town Hall Meeting was also held at a central location in downtown Corvallis, presenting the preliminary draft plan elements and soliciting input on recommendations. This was the most well attended meeting held during development of the TSP, with approximately 60 individuals attending.

2.1.3.B Development and Evaluation of the Recommended Alternative

Both the public process and the technical analysis contributed to an understanding of the County’s transportation system needs over the next 20 years, helping to identify many specific issues and problem areas.

The core strategies discussed below helped shape development of potential solutions for each existing and future need. These potential solutions were then subject to public input, technical analysis, and committee and public evaluation, resulting in the selection of the “recommended alternative.”

Finally, consideration was given to existing policies that could limit implementation of certain recommended improvements. Improvements that had to meet specific policy requirements were identified, and, where appropriate, alternative improvements were determined.

The transportation improvements that comprise the recommended alternative for Benton County’s transportation system were categorized by mode of travel and type of need or improvement that is required, as listed below:

Vehicular Needs:

- ◆ U.S. 20 Corridor—Corvallis to Albany
- ◆ North Albany Road/Gibson Hill Drive Corridor in N. Albany
- ◆ U.S. 20/Highway 34 Corridor—Philomath to Corvallis
- ◆ U.S. 20 Corridor—Lincoln County Line to Highway 34
- ◆ North Highway 99W Corridor
- ◆ Bellfountain Road/South Highway 99W Corridor
- ◆ Intersection Capacity Projects
- ◆ Bridge Replacement Projects
- ◆ Airport-related Project
- ◆ Other Roadway Capacity/Connectivity Projects
- ◆ Safety Projects

Multi-modal Needs:

- ◆ Rural Transit/Transportation Demand Management (TDM)
- ◆ Bicycle and Pedestrian Connectivity

Planning Projects: (various)

These categories are intended to facilitate an orderly and helpful presentation of a rather large set of recommended improvement projects. The recommended improvement projects are illustrated in **Figures 3-A, 3-B, 3-C.1, 3-C.2, 4-1B, 5-2.**

2.1.3.C Core Strategies and Transportation Deficiency Issues

Working with the Task Force and the Technical Advisory Committee, project staff developed four core strategies, described briefly below, as tools to develop and analyze various approaches to addressing the identified needs.

- ◆ **Capital Intensive Roadway Strategy** identifies what will be required in terms of construction and costs for the County to build its way out of congestion by providing additional roadway capacity.
- ◆ **Transit/Transportation Demand Management (TDM) Strategy** greatly expands existing public transit service and encourages other means of reducing peak-hour, single-occupant vehicles in an attempt to reduce the amount of road construction required.
- ◆ **Transportation System Management (TSM) Strategy** includes measures that squeeze the maximum possible amount of efficiency out of the existing roadway system before turning to road construction.
- ◆ **Modified Land Use Strategy** ties future land use decisions and transportation planning together to create a more efficient transportation system.

Potential solutions to each identified need were developed to specifically reflect the merits of each strategy. More than 150 potential solutions were developed and analyzed to address the 65 existing and future needs identified through the public process and the technical analysis. The committees determined that approximately 60 potential solutions were infeasible or less desirable than other solutions and were dropped from further consideration.

Each of the alternative strategies was expressed in a set of projects designed to meet the identified problems. Tables 12-1 through 12-4 in the June 1996 Background Document list 65 separate problem areas with the solution or solutions proposed under each core strategy. Key findings of the technical analysis and possible solutions development were highlighted during the public consideration and evaluation process. Public feedback confirmed these key findings to be:

- ◆ The majority of roadway congestion will occur on the state highway system.
- ◆ Limited new road construction to improve connectivity could allow the county road system to relieve some congestion.
- ◆ Even with improved connectivity and aggressive efforts to decrease dependence on automobile travel, U.S. 20 between Albany and Corvallis and U.S. 20/Highway 34 between Corvallis and Philomath would need to be widened to provide operational capacity that complies with State capacity standards for the next 20 years.
- ◆ Financial constraints will require the lowest-cost alternatives suitable for meeting the needs of the next 20 years and may require a compromise of the vision and/or goals.

Public meetings reflected on the core strategies, including their underlying philosophies and applied results. This public involvement effort also resulted in a vision statement and goals for the transportation system. From these a set of evaluation criteria were developed and applied to select the best set of alternatives that fulfilled the vision and goals. In addition, the meetings provided reactions to specific proposed projects, identification of further areas of need, and additional potential solutions. All of this went into the development of the recommended alternative.

The Task Force and Technical Advisory Committee then applied the evaluation criteria to the recommended alternative, resulting in further changes. In general, projects with no apparent public support received low priority. When alternative solutions had no clear public preference, lower-cost solutions were favored. Some otherwise very desirable projects were not included because the various costs (monetary, social, and environmental) were judged prohibitive. When the evaluation criteria revealed an imbalance in the support of differing transportation modes, the project mix was adjusted accordingly.

Projects included in the 1980 Transportation Management Plan were considered as part of this analysis. These projects were verified for inclusion in this plan, and their scheduled implementation is shown in Chapter 7. Improvement projects dropped from the previous plan include the extension of North Albany Road (from Scenic Drive to Oak Grove Drive) and the extension of Bellfountain road to U.S. 20/Highway 34. The North Albany Road project was considered and dropped in both this TSP and the Albany TSP due to its limited benefit and the likely difficulty of obtaining a statewide land use goal exception (for constructing a new roadway through Exclusive Farm Use (EFU) lands). The Bellfountain Road project was deleted due to lack of public support and the uncertainty of qualification for a statewide land use goal exception.

2.2 Transportation System 20-Year Vision

During meetings of the Benton County Transportation Plan Task Force, citizen members raised concerns that the County lacked a comprehensive, community-based vision for its transportation system. The Task Force determined that as a part of the public involvement process, the communities of Benton County should be engaged in a discussion that would ultimately lead to the development of such a vision. Therefore, as a part of the initial community-based public meetings held in each of the five areas of the County, project staff and community members worked together to formulate a vision statement that represented the public's desire for the future transportation system.

At each meeting, staff presented two draft vision statements as a beginning point for discussion. Attendees defined terms, suggested alternative phrases, and prepared a draft vision statement. Information generated by discussions at previous meetings were shared in subsequent meetings to facilitate a collective development of ideas. When all of the community-based meetings were completed, the Task Force reviewed the compiled final draft vision statement, suggested minor edits, and the final vision statement was prepared.

The vision statement presented below was published and included in newsletters distributed throughout the County, to every residential household. This vision statement became an integral part of the decision making process during the development and evaluation of transportation improvement alternatives.

2.2.1 Benton County Transportation System Vision Statement

**Benton County Transportation System
VISION STATEMENT**

The Benton County Transportation System seeks to preserve, protect, and promote the County's sustainability, livability, and economic vitality by:

- Providing choices of alternative travel modes
- Maximizing the efficiency of existing facilities
- Intertwining quality of life, land use, and transportation decision making

The Benton County Transportation System will provide equitably funded, safe, efficient, cost-effective mobility and accessibility to all County residents, businesses, and emergency services within and across County boundaries.

2.2.1.A A Vision for Rail Service in the 21st Century

Benton County believes rail will be a principal component of multi-modal transportation in the County sooner rather than later, especially if work begins within this planning period to increase passenger use of rail and to shift more freight traffic off of roadways and onto rail.

Benton County has existing rail and rail rights-of-way that extend east/west from Albany to the western edge of the County. North/south rail extends from the Polk County boundary in the north to the City of Monroe in the south. Existing rail lines could serve to connect the expanding Amtrak service available in Albany with major employers and municipalities in Benton County, reducing vehicle traffic on roadways, especially U.S. 20 and Highway 34.

A major portion of employees working at employers in Benton County live outside of the County or at a distance that creates commuter traffic. Embracing and developing passenger rail service will help stem the increasing load of greenhouse gases in the atmosphere, and a shift to freight rail will relieve mounting truck traffic on county and state roads and highways, which increases road maintenance and also contributes to greenhouse gas production.

2.3 Transportation System Goals

During the same community-based meetings at which attendees helped develop the vision statement, they also worked to develop goals/objectives. Starting with an initial list of draft goals, put together with assistance from the Task Force, attendees followed a process similar to that used to develop the vision statement, which again supported the collective development of ideas. At the conclusion of each meeting, attendees were asked to vote in favor or against each goal/objective. Only those goals/objectives that had majority support of the public were accepted as final goals. The final goals listed below were also presented to the Technical Advisory Committee and Task Force for final approval.

2.3.1 Mobility, Circulation, and Safety Goals

- ◆ Develop a transportation system to facilitate appropriate travel modes.
- ◆ Ensure sufficient capacity is provided concurrent with future travel demand to, within, and through Benton County.
- ◆ Provide safe interactive multi-modal facilities.
- ◆ Ensure mobility to the transportation disadvantaged.
- ◆ Coordinate with local agencies and providers to expand transit services countywide.
- ◆ Ensure an adequate truck route network to reduce commercial/neighborhood conflicts.
- ◆ Provide both primary and secondary access for emergency services.

2.3.2 Capital Improvement Goals

- ◆ Maximize the useful life of existing facilities.
- ◆ Maximize the cost effectiveness of transportation improvements.
- ◆ Ensure adequate and equitable long-term funding mechanisms.
- ◆ Maintain a Transportation Improvement Plan.

2.3.3 Community Goals

- ◆ Provide transportation services that preserve and protect the scenic and natural resources and rural character of Benton County.
- ◆ Minimize conflicting uses on the transportation system that degrade neighborhoods and rural communities.

2.3.4 Economic Development Goals

- ◆ Preserve and protect transportation corridors essential to the economic vitality of the County.
- ◆ Promote the use of freight rail and air service to reduce trucking activity on County roads.
- ◆ Promote efficient and affordable ground transportation to existing regional airports (Portland and Eugene).

2.3.5 Relevant Oregon Highway Plan Actions

- ◆ Develop plans and projects in accordance with roadway classifications and functions; work to maintain highway mobility and access management standards. (OHP Action 3A.3, p. 110)
- ◆ Conduct County transportation planning and development in coordination with other local jurisdictions and ODOT, as applicable. (This is specified for bicycles, but not for roadways.)
- ◆ Maintain and improve freight movement efficiency and access to intermodal connections. (OHP Policy 4A, p. 121)
- ◆ Consider traffic circulation, safety, and mobility in land use decisions so that potential degradation of transportation facilities by adjacent land use is considered.

2.4 Evaluation Criteria

A set of evaluation criteria was developed, based on the goals, to assist in the decision making process and ensure that the TSP was appropriately developed. Each criterion was developed to represent one or more specific goals identified by the public. Project staff prepared a set of draft evaluation criteria and presented them to the TSP Committees for review and comment. Listed below is the final set of evaluation criteria used in the evaluation of transportation improvement alternatives and selection of the preferred set of alternatives.

- ◆ Improves safety and maintains acceptable Levels of Service (LOS) and or Volume/Capacity (V/C) ratios for Local Streets, Collector Streets, Arterial Streets, and State Highways?
- ◆ Balances all travel modes: Pedestrians, Bicycles, Automobiles, Commercial Trucks, Freight Rail, Public Transit?
- ◆ Provides freedom of movement across modes?
- ◆ Offers circulation alternatives?
- ◆ Provides for mobility of the transportation disadvantaged?
- ◆ Maximizes the useful life of existing facilities?
- ◆ Maximizes the cost effectiveness of improvements?
- ◆ Preserves and promotes economic viability?
- ◆ Preserves scenic and natural resources of the County?

- ◆ Relies on and/or upgrades existing facilities where appropriate?
- ◆ Preserves the rural character of the County where appropriate?
- ◆ Minimizes degradation to neighborhoods and rural communities?
- ◆ Provides reasonable ground transportation to regional airports?
- ◆ Provides connectivity for bicycle users to City/State routes?
- ◆ Preserves/improves emergency vehicle access?

The application of these evaluation criteria supported the decision making process and facilitated the development of a TSP that truly provides for the stated needs and desires of the community.

2.5 Relationship to Other Plans, Policies, and Transportation Agencies

2.5.1 State Plans and Policies

Oregon Department of Transportation (ODOT) and Oregon Department of Land Conservation and Development (DLCD)

Several key State plans, policies, and rules influence the form, content, and/or process of preparing the TSP. In addition, consistency and coordination with these plans is essential to the success of the TSP. Therefore, the following review was prepared of these key documents:


- ◆ Oregon Transportation Planning Rule
- ◆ Oregon Transportation Plan
- ◆ Oregon Highway Plan
- ◆ Oregon Bicycle and Pedestrian Plan
- ◆ Oregon Rail Plan
- ◆ Oregon Statewide Transportation Improvement Program

2.5.1.A Oregon Transportation Planning Rule

The Transportation Planning Rule (TPR), found in the Oregon Administrative Rule Chapter 660, Division 12, is provided for implementing the Statewide Planning Goal 12 (Transportation). In addition, the purpose of the TPR is to explain the procedures necessary for local governments to comply with other statewide planning goals and identify how transportation facilities are to be provided on rural lands, consistent with the 15 statewide goals. The TPR requires local jurisdictions to develop TSPs and amend land use regulations to achieve several objectives. Listed below are the relevant objectives of the TPR that must be addressed in the TSP. (*For the full text of the TPR, see Appendix A.*)

- ◆ Plan for local transportation systems in a way that is consistent with state plans.
- ◆ Develop travel demand forecasts that reflect accomplishment of TPR objectives and compact urban development.
- ◆ Consider low-cost facilities and services to remedy identified deficiencies and to reduce reliance on the automobile.

- ◆ Identify a road network that reduces reliance on arterials for local trips and identifies local street connections and extensions.
- ◆ Plan and provide funding for a network of streets, sidewalks, bikeways, and accessways to provide for convenient bike and pedestrian circulation.
- ◆ Consider and adopt alternatives that can be implemented at reasonable cost, considering likely funding sources.
- ◆ Develop and adopt plan policies, ordinance standards, and, where possible, maps that assure existing and new streets will be extended and connected to provide direct and convenient routes for bikes and pedestrians to typical neighborhood destinations.
- ◆ Reduce excessive standards for local street width and right-of-way, to make streets more livable and safer for bicyclists and pedestrians.
- ◆ Assure that new developments and land divisions include bicycle and pedestrian accessways and circulation patterns that are safe, convenient, and attractive.

The TPR was amended in 1995 and this TSP was prepared using the September 1995 version of the TPR as a guideline. This TSP has been developed in light of the TPR requirements and the above mentioned objectives 

2.5.1.B Oregon Transportation Plan

The 1992 Oregon Transportation Plan (OTP) contains a policy element that defines the goals, policies, and actions for the State over the next forty years. It offers direction for coordinating transportation modes and enhancing the relationship of transportation to land use, economic development, the environment, and energy use. It also addresses the coordination of transportation with federal, state, regional, and local plans. The second part of the OTP defines the system elements of the plan. It identifies a coordinated multi-modal transportation system, with a network of facilities and services for all modes of travel including air, rail, highway, bikeway, pedestrian, public transit, pipelines, waterways, and marine transportation.

The state of Oregon adopted the OTP through the Oregon Transportation Commission on September 15, 1992. The financing program and legislation needed to implement the OTP was submitted to the 1993 legislature; however, the financing plan failed to win legislative approval at that time. It was submitted again to the legislature in both 1995 and 1997 and failed to gain approval. The 1999 legislature approved an increased gas tax and replaced the weight mile tax on trucks with a diesel fuel tax. The American Automobile Association led an initiative petition effort that resulted in repeal of the tax increase at the polls. The goals and policies stated in the OTP define a balanced and efficient transportation system that promotes accessibility to all potential users. The purpose of the OTP is to guide the development of a safe, convenient, and efficient system that promotes economic prosperity and livability for all Oregonians. The goals of the Oregon Transportation Plan are:

GOAL 1—Characteristics of the System. To enhance Oregon’s comparative economic advantage and quality of life by the provision of a transportation system with the following characteristics: balance, efficiency, accessibility, environmental responsibility, connectivity among places, connectivity among modes and carriers, safety, and financial stability.

GOAL 2—Livability. To develop a multi-modal transportation system that provides access to the entire state, supports acknowledged comprehensive land use plans, is sensitive to regional differences, and supports livability in urban and rural areas.

GOAL 3—Economic Development. To promote the expansion and diversity of Oregon’s economy through the efficient and effective movement of goods, services, and passengers in a safe, energy efficient, and environmentally sound manner.

GOAL 4—Implementation. To implement the Transportation Plan by creating a stable but flexible financing system, using good management practices, supporting transportation research and technology, and cooperatively working with federal, regional, local, and Indian tribal governments, and the private sector and citizens.

In regard to Benton County, the Oregon Transportation Plan identifies specific transportation system improvements and minimum service levels to meet Goals 1 through 4, including:

- ◆ An intercity bus passenger terminal subject to public control in the Albany/Corvallis area to assure open access to all carriers
- ◆ Direct connections between intercity bus, air, rail, airport limousine services, and local transit in the Albany/Corvallis area
- ◆ A minimum of three round trip connections to Portland should be available each day via intercity passenger modes from the Albany/Corvallis area
- ◆ One round trip per day should be available between Newport and Corvallis by an intercity passenger mode
- ◆ Intercity bus lines and local transit services should be coordinated with intercity rail service in Albany to provide timely and convenient connections
- ◆ Intelligent Vehicle Highway Systems (IVHS) should be established within metropolitan areas to increase system capacity, improve motorist information, and improve travel efficiency
- ◆ Urban transit services should be provided in all parts of the urbanized area, once Corvallis becomes a Metropolitan Planning Organization (MPO) area at population 50,000
- ◆ Service frequencies for all routes should be no less frequent than one-half hour at peak times, once Corvallis becomes an MPO

The OTP is part of an ongoing transportation planning process within the Oregon Department of Transportation. Oregon Revised Statute 184.168(1) requires state agencies to use the OTP to guide and coordinate transportation activities. The OTP and the supporting modal plans must comply with the State Agency Coordination Program and the statewide planning goals. The TPR requires ODOT to identify a system of transportation facilities and services adequate to meet identified state transportation needs. The OTP, including the policy and system elements and adopted modal and facility plans, is intended to meet the requirements for the state transportation system plan.

2.5.1.C Oregon Highway Plan (1991)

The 1991 Oregon Highway Plan (OHP) was a policy and strategies document that served as the highway element of the Oregon Transportation Plan until adoption of the current OHP adopted in December 1999. It guided operating and financial decision-making through the development of roadway standards, the identification of roadway needs between 1991 and 1999, and the development of funding strategies to address these needs. The Benton County TSP process leading up to the draft document published in February 2000 was completed prior to adoption of the 1999 OHP. The Benton County TSP planning effort has endeavored to comply with the 1991 OHP. Benton County will need to make some modifications to the County's TSP during the next periodic review cycle to bring the document into compliance with the new OHP. The 1991 Plan established a level of importance (LOI), comparable to a functional class, that identifies a roadway's function and establishes level of service and access standards for it. The following levels of importance are defined:

Interstate highways connect major cities, regions of the state, and other states. These highways should provide "safe and efficient high-speed continuous-flow operation in urban and rural areas."

Statewide highways connect larger urban areas, ports, and major recreation areas not directly served by the Interstate highway system. They should provide "safe and efficient high-speed continuous-flow operation in rural areas and high- to moderate-speed operations with limited interruptions of flow in urban and urbanizing areas."

Regional highways connect smaller population centers to larger population centers and to higher level facilities. Land access is a secondary function. They should provide "safe and efficient high-speed continuous-flow operation in rural areas, except where there are significant environmental constraints, and moderate- to low-speed operation in urban and urbanizing areas with moderate interruptions to flow."

District highways serve local traffic and provide land access, providing a function similar to county roads. They should provide “safe and efficient moderate- to high-speed continuous-flow operation in rural areas reflecting the surrounding environment, and moderate- to low-speed operation in urban and urbanizing areas with moderate to high level of interruptions to flow.”

U.S. 20 west of Corvallis and Highway 34 east of Corvallis had statewide LOIs, U.S. 20 northeast of Corvallis and Highway 99W had regional LOIs, and all other state highways in Benton County had district LOIs. Some LOI classifications fall into more than one access management category; however, the Oregon Highway Plan did not list state highways by category type.

Oregon developed the Access Oregon Highway (AOH) system to provide a system of highways that “link major economic and geographic activity centers to each other, to other high level highways, to ports, and to other states.” Access Oregon highways were intended to have a level of access control sufficient to maintain their statewide function. While the intent was to manage these highways as corridors serving longer-distance through trips, the AOH program was defined as “sensitive to the needs and desires of existing communities and cities and will accommodate these needs where possible.” AOH highways typically had operating speeds of at least 55 mph in rural areas, and lower density urban fringe areas, and 45 mph in higher density urban areas. The U.S. 20/Highway 34 corridor between Newport and I-5 was designated as an AOH facility.

Trucks weighing up to 80,000 pounds GVW are allowed on a continuous basis on 91 percent of the state highway system, with another five percent of the system planned to be upgraded by the year 2010. The remaining four- percent consists primarily of scenic and historic highways that carry little significant truck traffic. These highways are not planned to be upgraded. Within Benton County, two state highways fall into the latter category: the Eddyville-Blodgett Highway and the Alsea-Deadwood Highway. The OHP recommends transferring both of these highways to the County. Were the County to accept transference of these state highways, the County would then be obligated to pay and provide for their maintenance. This TSP does not recommend the County participate in transference of either of these facilities at this time.

The 1999 OHP has replaced the Level of Importance (LOI) with a state highway classification, which includes the Nation Highway System (NHS). The classification system includes the following categories:

- ◆ Interstate Highways (NHS)
- ◆ Statewide Highway (NHS)
- ◆ Regional Highway
- ◆ District Highway
- ◆ Local Interest Roads
- ◆ Expressways

The new OHP no longer refers to Access Oregon Highways. The 1999 plan does identify a State Highway Freight System: “It is the policy of the state of Oregon to balance the need for movement of goods with other uses of the highway system, and to recognize the importance of maintaining efficient through movement on major truck freight routes.” It is also the policy of the state of Oregon to “...seek to balance the needs of long distance and through freight movements with local transportation needs on highway facilities in both urban areas and rural communities.” The plan identifies performance measures for the State Highway Freight System. The OHP also provides several investment scenarios according to available funding.

2.5.1.D Oregon Bicycle and Pedestrian Plan (Updated 1996)

The 1996 Oregon Bicycle and Pedestrian Plan (OBPP) presents the state’s bicycle- and pedestrian-related programs, design practices, and standards relating to bicycle and pedestrian transportation. The OBPP suggests priorities for implementing bicycle and pedestrian improvement projects. The OBPP also summarizes the requirements for bicycle and pedestrian elements in local and regional transportation system plans (Section I.3).

2.5.1.E Statewide Transportation Improvement Program (1998-2001)

Oregon's Statewide Transportation Improvement Program (STIP) is a multi-modal, 4-year construction and developmental program that fulfills the requirements of the federal Transportation Efficiency Act for the 21st Century (TEA-21). The STIP prioritizes and schedules projects on the state, county, and city transportation systems, as well as National Parks and Forests, Indian Reservations, and metropolitan planning organizations (MPOs) that are of regional interest or significance. These projects are funded through a variety of federal and state funding programs and reflect ODOT's allocation of resources to projects given the highest priority.

Development of the STIP involves local and regional governments, transportation agencies, and the interested public. ODOT and affected local jurisdictions, using information from available plans (corridor, modal, TSP, etc.), select and prioritize projects for funding under the TEA-21 or National Highway System (NHS) programs. STIP projects must meet TEA-21 requirements including consistency with long-range statewide transportation plans, metropolitan improvement programs, and state implementation plan for air quality conformity, and must be constrained to expected available revenue. Adoption of the STIP reflects the agreement by the federal government, state, county, MPO, and local jurisdictions that the projects scheduled in the first three years of the STIP are selected for implementation and funding, as scheduled.

Projects are categorized in the STIP by mode of transportation including aeronautics, rail freight, passenger and high-speed rail, bicycle and pedestrian, transportation safety, public transit, and highway. The variety of project types available for funding is dependent on the mode of transportation, with the broadest range of project types being available through the highway mode.

It is ODOT's intent to deliver projects in the years identified in the STIP; however, some projects may be delayed. Delays may result from the need not being realized, final design or impact assessment not being completed in a timely manner, or funding limitations. If a project is delayed, the priority rating is retained and the project is funded and implemented in advance of projects originally scheduled in later years.

2.5.2 City and Community Plans and Policies

2.5.2.A City of Corvallis

2.5.2.A.1 Corvallis Transportation Plan (August 1996)

The Corvallis Transportation Plan (CTP) is intended to set community goals for the City's transportation system, establish a capital improvement plan, guide future decisions regarding the transportation system, and inform the City of and clarify policies regarding transportation issues. The CTP recognizes that the City's transportation system interconnects with the County's and that regional coordination between the City, the County, the City of Philomath, and other jurisdictions is required. Examples of past coordination efforts include the SW 53rd Street Corridor Study, the 1985 Corvallis Area Transportation Study, and the addition of Philomath into the Corvallis traffic model.

Many of the City's arterials connect to the County road system. In most cases, the City and County functional classifications are the same, but there are two differences: SW 53rd Street south of U.S. 20, and Granger Avenue/Lewisburg Road are both designated as arterials by the City, but as collectors by the County. The City plan does not identify policies for County roads maintained within the City limits, nor does it identify such roads.

Future coordination efforts with the County identified in the CTP include the following:

- ◆ Alignments of future roadways in North Corvallis
- ◆ Pursuing the preferred alternative from the SW 53rd Street Corridor Study
- ◆ Extending 72nd Street to U.S. 20 and aligning it with a future Bellfountain Road extension
- ◆ Additional access to Northwest and South Corvallis

- ◆ The impacts of roadway development on wetlands
- ◆ The provision of adequate right-of-way for future arterials and collectors within the urban growth boundary during the County land partitioning process

Public transit activities within the County are currently focused on Corvallis. The City operates a fixed-route bus service (the Corvallis Transit System), which provides service within the city limits. Expanded service to Crescent Valley, Lewisburg, and Philomath has been proposed at public meetings, but no funding source has been developed. When Corvallis reaches 50,000 population and the Corvallis/Philomath area forms a Metropolitan Planning Organization, expanded service will be required within the MPO area. The Linn/Benton Loop provides service between Corvallis, Linn-Benton Community College, and Albany, and is investigating the possibility of a transfer agreement between the Loop, CTS, and Albany Transit. City comprehensive plan sections dealing with transit coordination consist of the following:

The City of Corvallis shall cooperate with neighboring jurisdictions to provide a regional transportation system, which facilitates convenient, energy efficient travel. This shall address the needs of persons who, for whatever reason, do not use private automobiles.

The City of Corvallis should participate in a trial operation of a Philomath-Corvallis transit system before making long term commitments to this regional service.

The Corvallis Municipal Airport is operated by the City but serves all of Benton County. The vision for the airport is for it to meet the needs of both individual and corporate users and to be adequate for commuter passenger air service. Coordination efforts regarding the airport mentioned in the City's comprehensive plan and quoted in the transportation plan consist of the following:

The City shall work to insure that land uses surrounding the airport both in and outside of the City and UGB are developed in a fashion that maintains the City's ability to enable the airport to function as an important element of the transportation system.

UGB expansions and other land use actions affecting property around the Corvallis Airport shall fully protect airport functions, viability, and expansion potential.

2.5.2.A.2 Corvallis Trails Master Plan (1990)

The Corvallis Trails Master Plan (CTMP) inventoried existing trails in the Corvallis vicinity, proposed a future trails network, and suggested methods to implement the Plan. A survey quoted in the CTMP that was conducted for a recreational study for the McDonald Forest found that more than half of Corvallis residents (56 percent) walk or hike more than six times a year and that only 13 percent do not walk or hike for recreation at all. The CTMP also addressed trail usage by bicyclists, runners, and equestrians, and special needs associated with each group.

2.5.2.A.3 Corvallis Airport Master Plan (1990)

The Corvallis Airport Master Plan (CAMP), prepared by W & H Pacific, Inc., is intended to guide airport growth during the period 1990–2010. The CAMP presents an inventory of existing airport navigation and support facilities, annual aircraft operations, and numbers of based aircraft. Key needs identified in the CAMP include lengthening Runway 17–35 to serve a greater variety of aircraft, helicopter parking pads, fencing, up to 30 additional T-hangers, additional paved automobile parking, and an aircraft washing facility. Current land use restrictions around the airport are sufficient to protect airport operations during the planning period. Several of the proposed project have been completed including extension of the main runway to accommodate larger jet aircraft.

2.5.2.A.4 Corvallis Airport Industrial Park Master Plan (1995)

The Corvallis Airport Industrial Park Master Plan provides concepts for how an industrial park should be developed in the area northwest of the Corvallis Airport. Transportation-related concepts included consist of the following:

- ◆ Creating a gateway image at the Airport Avenue/Highway 99W intersection through improved signing and intersection functional design
- ◆ Upgrading Airport Avenue to create a “boulevard feel,” including a landscaped median, bike lanes, sidewalks, street trees, street lighting, and planter strips
- ◆ Upgrading Airport Place and constructing a future north-south connector with bike lanes, sidewalks, and street trees
- ◆ A landscaped traffic circle at the Airport Avenue/Airport Place intersection
- ◆ Signalizing the Airport Avenue/Highway 99W and future east-west connector/ Highway 99W intersections, when warranted

2.5.2.A.5 West Corvallis Growth Management Plan

The West Corvallis Growth Management Plan (WCGMP) was funded by the Transportation and Growth Management Program and was completed by Blaney Dyett in August 1995. The goal of the project was to provide a plan for the mostly undeveloped land in the western portion of the Corvallis UGB. In addition to other growth management policies, the West Corvallis Growth Management Plan developed the following transportation-related goals:

- ◆ ensure pedestrian-friendly neighborhoods
- ◆ enhance overall circulation for walking, driving, using transit, or biking
- ◆ encourage walking with circulation paths
- ◆ redesign and expand transit service to better link West Corvallis to the rest of the area

Chapter 3 of the WCGMP proposes a specific circulation plan to ensure a more balanced transportation system serving pedestrians, bicycles, transit, and automobiles. County coordination with the Cities of Corvallis and Philomath would be crucial to the plan’s success. Likewise, the roadways and automobile will need close coordination with Benton County since they address road standards and widths.

Finally, the plan proposes amendments to the Benton County Comprehensive Plan and the Benton County Development Code. Such amendments would be consistent with the TSP, TPR, and related plans, if the County elects to make them. The following list illustrates the types of suggested changes relevant to transportation and land use:

- ◆ include new arterials and collectors in the County’s “study corridor” map
- ◆ revise the alley policy
- ◆ create smaller lot sizes in Rural Residential “Clusters”
- ◆ incorporate the proposed “Urban Transition” zone
- ◆ make several specific changes to residential zoning districts to increase density in specific overlay areas
- ◆ create new site standards for Urban Transition areas
- ◆ create a Community Core zoning district

2.5.2.A.6 Corvallis Transportation Demand Management Plan

(draft 1995)

The Transportation Planning Rule requires that metropolitan planning organizations (MPOs)—cities with populations of 50,000 or more—meet certain per-capita vehicle-miles-traveled reduction goals. The City of Corvallis has reached MPO status in the 2000 census. Parametrix, Inc. prepared the City’s Transportation Demand Management (TDM) plan. The draft plan was not available for review; however, two background

documents were reviewed. These documents list various TDM strategies, such as increased transit service, carpooling incentive programs, bike lockers and showers, fuel tax increases, and growth controls, and compare their potential costs and effectiveness.

2.5.2.A.7 City of Corvallis Capital Improvement Program, 1996–2001

The Corvallis Capital Improvement Program is prepared to comply with federal and state requirements and identifies the funded improvements that are to be accomplished within the timeframe. Coordination between the City and the County is provided to ensure that projects of significance to both jurisdictions are identified and prioritized for completion.

2.5.2.B City of Albany

2.5.2.B.1 Albany Comprehensive Plan (1989, with North

Albany-related amendments in 1992)

The Albany Comprehensive Plan (ACP) “provides a framework for making better decisions regarding the uses of land and its resources,” guides short- and long-term development, identifies existing conditions, projects future conditions, sets policy, and suggests methods for implementing these policies. The ACP’s transportation element is intended to “provide a safe, diversified, and efficient transportation system that protects and enhances Albany’s economy, environment, neighborhood quality, and cultural and scenic values.”

Although the City of Albany is the county seat of Linn County, the North Albany area lies within Benton County and within the City’s Urban Growth Boundary. Therefore, the City’s comprehensive plan affects Benton County. Much of the City’s buildable lands within its UGB are located in Benton County, within the North Albany area. An election in June 1991 annexed all of the remaining land within the Benton County portion of the City’s UGB to the City of Albany. As a result, the Comprehensive Plan was amended in 1992 to incorporate changes resulting from this annexation.

As of 1989, three miles of bikeways had been constructed in North Albany. The ACP noted that the City’s existing bikeway system was “generally unlinked and uncoordinated” and that few of the facilities designated in the City’s Master Bike Plan had actually been constructed. Since the 1989 plan adoption, the bikeway system has become linked with the development of over 30 miles of bikeways. The ACP also noted that transit service was likely to be extended to North Albany within the next 20 years and that it would follow existing or proposed arterials. (Transit service was provided in North Albany by the Albany Transit System during 1994–95.)

Exhibit B of the ACP identifies the following policies that have joint City/County applicability:

- ◆ The City should develop and maintain a Transportation Master Plan in conjunction with Linn and Benton Counties
- ◆ Support efforts to maintain regional bus systems, whose services are coordinated with the Albany system
- ◆ Ensure that new construction and major improvement of County roads within the UGB are undertaken in accordance with standards previously agreed upon between the City and Linn and Benton Counties
- ◆ Encourage Linn and Benton Counties and the State of Oregon to forward to the City, for review and comment, all plans for construction or reconstruction of roads, highways, and bridges within or adjacent to the UGB

North Albany–related policies added in 1992 include:

- ◆ As part of the citywide Transportation Master Plan, address transportation planning issues in North Albany, emphasizing a balanced transportation system that includes the following: (a) the distribution

of automobile traffic to avoid overuse of one or two main corridors, (b) the need for pedestrian and/or bicycle ways to provide alternative transportation, (c) the provision of mass transit opportunities, and (d) the location of future local, collector, and arterial streets, and pedestrian and bicycle ways.

- ◆ Consider the transfer of Benton County roads and streets to the City of Albany.

2.5.2.B.2 Albany Transportation Systems Plan (August 1997)

The City of Albany has developed the Albany Transportation System Plan as part of the overall City Comprehensive Plan. The Albany TSP addresses the lands within the jurisdiction of the City of Albany and its Urban Growth boundary, and is intended to be consistent with the Linn and Benton County TSP's and adopted elements of the state TSP. Based upon the requirement of the Transportation Planning rule, the Albany TSP includes the following elements.

- ◆ A roadway plan for collector and arterial streets
- ◆ A public transit plan
- ◆ A bicycle plan
- ◆ A pedestrian plan
- ◆ An air, rail, water, and pipeline plan
- ◆ Transportation system management
- ◆ Transportation demand management

The goal established for the Albany TSP is to: Provide a safe, diversified, economical, and efficient transportation system that protects and enhances Albany's economy, environment, neighborhood quality, cultural, and scenic values. For purposes of the TSP, a transportation system includes auto, transit, bicycles, pedestrian, rail, and air transportation.

A set of policies has also been developed that serve as benchmarks for identifying deficiencies. Key policies that were developed include the following:

1. When planning for, designing and providing transportation systems:
 - a. Coordinate the requirements of the various transportation types with each other and minimize operational and safety conflicts.
 - b. Coordinate proposed projects with impacted agencies and businesses and applicable neighboring cities, county, state, and federal agencies.
 - c. Notify and coordinate with affected agencies regarding the transportation impacts of proposed development within or adjacent to the Urban Growth Boundary.
2. Protect transportation facilities, corridors, and sites for their identified functions.
 - a. Develop access control measures and encourage land development patterns that minimize direct access onto collector and arterial roads.
 - b. Develop a roadway system that appropriately allocates on-street parking to manage traffic on arterial, collector and local streets.
 - c. Protect the future operation of corridors by obtaining sufficient right-of-way or building setbacks to provide for future capacity in transportation corridors and by conditioning development proposals to minimize impacts.
 - d. Review land use designations, densities, and design standards for consistency with the functions, capacities, and levels of service of facilities identified in the TSP.
 - e. Negotiate a means to transfer ownership of county roads that are within the city limits of Albany. Coordinate with the county for the construction, right-of-way acquisition, improvement or repair

of any county road within the city limits or with a 1/4 mile of the Urban Growth Boundary for improvements recommended in the TSP.

3. Develop a roadway system that is efficient and safe for the traveling public while preserving neighborhood quality and character.
4. Develop a transportation system, encourage land use patterns and design standards, and promote transportation projects, programs, and policies, which reduce dependency on the automobile and encourage alternatives such as public transit, bicycling, walking, car and van pools.
 - a. Require new and existing developments, through building and site design measures, to address the needs of those who use alternate transportation modes such as public transit, bicycles, walking, and wheelchairs.
5. Develop a transit/paratransit system that promotes ridership by serving a large number of potential users, and provides the opportunity for individuals with disabilities to use public transportation services.
6. Promote a transit/paratransit system that identifies future alternative fuel options that are clean, renewable, and cost-efficient.
7. Support local and area-wide public transit/paratransit including:
 - a. Operation and improvement of the Albany Transit System to meet Albany's transit needs.
 - b. Efforts to maintain region bus systems whose services are coordinated with the Albany system, such as the Linn-Benton Loop System and the Sweet Home-Albany-Lebanon route.
8. Develop an adequately connected bicycle and pedestrian system to encourage bicycling and walking as alternative modes of transportation.
 - a. Develop safe and convenient bicycle and pedestrian routes, facilities, and improvements which are reasonable free from hazards (particularly automobile traffic that would discourage these modes for short trips), provide a direct route of travel between destinations such as a transit stop and a store, and meet travel needs (destination and length of trip) of cyclists and pedestrians.
 - b. Provide bikeways on arterial and collector streets as well as appropriate separated bike facilities.
 - c. Develop a pedestrian system that provides the opportunity for individuals with disabilities to use the pedestrian system.
9. Support the development of high and higher speed rail facilities or other passenger rail programs including the existing train station site and structures.
10. Maintain safe and efficient automobile, pedestrian, and bicycle railway crossings.
 - a. Monitor the performance of existing railroad crossings and work with the Oregon Department of Transportation Rail Safety Division and railroad companies to evaluate the need for new crossings, eliminating existing crossings and to upgrade existing crossings to improve public safety and convenience.
11. Coordinate with Oregon Department of Transportation Rail Safety Division and railroad companies to ensure that rail traffic does not impede the smooth and safe flow of vehicular traffic.
12. Support the development of airport services that serve the needs of the community.
13. Support the coordination of interstate and regional utilities.

Within the North Albany area, the U.S. 20/Scenic Drive intersection currently operates at a minimally acceptable level of service (LOS) E for left turns from Scenic Drive. This level of service is projected to drop to an unacceptable LOS F by the year 2015. The signalized U.S. 20/North Albany Road and U.S. 20/Spring Hill Drive intersections are expected to approach or drop below minimum level of service standards by the year 2015 (LOS D-E). The existing portion of North Albany Road and all of U.S. 20 west of the Willamette River are expected to operate at or above capacity (LOS E-F) by the year 2015.

Sight distance deficiencies exist at the Pineview Drive/Scenic Drive and Gibson Hill Road/Broadway Street intersections. Sight distance deficiencies also exist along Gibson Hill Road, Valley View Road and Scenic Drive due to these roadways' horizontal and/or vertical alignments. Accidents in the North Albany area are typically caused by speeding, with vehicles running off the road and striking fixed objects, and are not concentrated in any specific area.

Other automobile-related deficiencies that were identified include the following:

- ◆ Spring Hill Drive is prone to flooding north of Country Club Drive.
- ◆ Only one bridge crossing over the river in the Albany area limits access between North Albany and the rest of the city, and causes traffic to be funneled through downtown.
- ◆ Virtually all collectors and arterials in North Albany lack curb and gutter.
- ◆ Southbound trucks from Independence Highway tend to divert to North Albany Road and Spring Hill Drive due to the difficulty of making left turns onto U.S. 20 from Independence Highway.

Two major transit-related deficiencies were identified that affect Benton County. First, service on the Linn-Benton Loop starts too late and ends too soon to serve the three largest shifts at Hewlett Packard in Corvallis. The service frequencies of both the Loop and the Albany Transit System would also need to be increased to serve these potential riders. By doing so, though, traffic volumes along U.S. 20 between Albany and Corvallis could be reduced. Second, transfer delays between the Loop and the Albany Transit System can be as much as 30 minutes, and better schedule coordination is needed. (note: the Loop schedule has been modified subsequent to the Albany Transportation Systems Plan (August 1997).)

Bikeways in poor condition in North Albany include Gibson Hill Road between Hillcrest Drive and Scenic Drive and Quarry Road between North Albany Road and Twins Lane. Major streets without bikeways in North Albany include Valley View Drive, Hickory Road, Scenic Drive, West Thornton Lake Drive, and Spring Hill Road. Bike connections are needed between Oak Grove School and Scenic Drive and between North Albany Middle School and Quarry Road. Finally, bike-crossing improvements are needed on West Thornton Lake Road crossing North Albany Road and on Gibson Hill Road crossing Scenic Drive.

The Air Transportation Element states the "City staff advised that the [Albany] airport site should be considered as a light industrial employment hub." Such a shift in airport use may impact the level of air traffic at the Corvallis airport.

2.5.2.B.3 North Albany Local Street System Plan (completed 1995)

The North Albany Local Street System Plan (NALSSP) is prepared as a guide to the alignment and design of future street construction. Public involvement was solicited throughout the development of the NALSSP. The key values identified by local citizens for future streets were affordable construction and maintenance costs and streets that meet the needs of their users, including persons with disabilities. Citizens favored curbs, gutters, sidewalks, and bike lanes on collectors and arterials but did not favor on-street parking and were divided over the use of street trees. On local streets, citizens favored curbs and gutters, did not favor bike lanes, and had mixed opinions about on-street parking, sidewalks, and street trees. Other important issues raised by citizens included the need for alternate routes to the south and west, and safety concerns at the North Albany Road/West Thornton Lake Drive, Scenic Drive/Oakgrove Drive, and Scenic Drive/Gibson Hill Road intersections. The NALSSP proposes narrower local street design standards to encourage lower traffic speeds while not impeding emergency vehicles.

2.5.2.B.4 City of Albany Transportation System Capital

Improvement Program

The Albany Capital Improvement Program (ACIP) is prepared to comply with federal and state requirements and identifies the funded improvements that are to be accomplished within the timeframe of the ACIP. With the North Albany area of Benton County having been annexed into the

City of Albany, many transportation-related projects have or will become the responsibility of the City. Therefore, coordination between the City and the County is provided to ensure that projects of significance to both jurisdictions are identified and prioritized for completion.

2.5.2.C City of Philomath

2.5.2.C.1 Philomath Comprehensive Plan (1983, with revisions through 1993)

Chapter VI of the Philomath Comprehensive Plan (PCP) addresses transportation policies for this city of approximately 3,600 people. The transportation policies address the following subjects:

- ◆ Industrial traffic generated east of 12th Street and north of the city limits will be served by a northern extension of 13th Street and shall not be allowed to access 12th Street in order to protect residential areas.
- ◆ Arterial and collector street improvement projects shall include the upgrading of railroad crossings to alleviate hazardous conditions.
- ◆ Sidewalks shall be developed along streets in all new residential and commercial developments in the City.
- ◆ The City shall identify appropriate locations for future bike paths and bike lanes, which may include all of Applegate Street, Green Road and West Hills Road between Philomath and Corvallis, and along Newton Creek.
- ◆ The City will cooperate with ODOT to improve U.S. 20 to be a more efficient transportation corridor.
- ◆ The City shall encourage the State to develop U.S. 20 as a one-way couplet using College and Main Streets between 12th Street and Newton Creek, and Main and Applegate Streets between 14th Street and the U.S. 20/Highway 34 intersection. (An alignment has not been determined between 12th and 14th Streets). An ordinance adopted on June 14, 1993 cited traffic congestion as the primary reason for the couplet.
- ◆ The City will use its Street Improvement Program to serve as a guide for street improvement projects.

There are other transportation-related policies in the PCP, including promotion of orderly commercial development by limiting and consolidating accesses onto U.S. 20. The City has a policy to develop off-street parking areas to promote the viability of the downtown commercial area. Urbanization policy #11 states that the City and County will cooperate to develop road standards in accordance with the Urban Fringe Management Agreement.

2.5.2.C.2 Philomath Area Transportation Needs Assessment (August 1994)

The Philomath Area Transportation Needs Assessment (PATNA) document was prepared by the University of Oregon's Community Planning Workshop to evaluate existing transportation services available to Philomath residents and to identify present and future transportation needs, especially for elderly, disabled, and low-income residents. As part of the PATNA, more than 1,000 survey responses were received from area residents. Some frequently occurring comments included:

- ◆ People have concerns about their future transportation needs: they are self-sufficient now, but may not be so in the future.
- ◆ Commuter routes to large employers (e.g., Hewlett Packard and OSU) are needed.

- ◆ Children need an independent transportation mode. Many parents' work schedules do not accommodate transporting children to after-school activities and many teenagers could find part-time work if they had reliable transportation.
- ◆ Low-income families would benefit significantly from public transportation.

The PATNA developed three recommendations for improving transportation services for Philomath residents. These recommendations were based on survey findings and an evaluation of services provided elsewhere in Benton County and in Oregon. The recommendations consisted of:

- ◆ Pooling existing transportation resources presently provided by a number of social service agencies. This would reduce costs by sharing drivers, vehicles, and insurance costs, while increasing the availability of paratransit services.
- ◆ Expanding Dial-A-Bus service by attracting more volunteer drivers.
- ◆ Extending the Corvallis Transit System to Philomath. As a result, equivalent paratransit service would also be provided within one-quarter mile of the fixed route.

2.5.2.C.3 Draft Philomath Strategic Plan for Economic Development: From Vision to Action

The Philomath Strategic Plan for Economic Development (PSPED) addresses issues that will help Philomath "diversify its economy and expand beyond its traditional timber base." The PSPED was developed over a six-month period beginning in October 1992 by a non-profit strategic planning organization with input from community representatives. Transportation issues and potential projects identified in the plan include:

- ◆ a vision statement that includes an item about highway system improvements that make "Philomath a friendlier and more convenient place to shop."
- ◆ a need for sidewalks, storm drains, and paved streets in many areas
- ◆ a bridge on Applegate Street (estimated cost: \$270,000)
- ◆ the need to work with ODOT to make (unspecified) "needed improvements" to U.S. 20/Highway 34
- ◆ additional bike paths within the city (only one existed at the time) and the integration of these paths with the Benton County and Forest Service bike path and trail networks

2.5.2.C.4 Philomath Transportation System Plan -1999

The Philomath Transportation System Plan (TSP) contains a 20-year transportation systems plan for the Philomath area. It plans for the different transportation modes in Philomath to meet state planning requirements identified in the Oregon Transportation Planning Rule.

As part of the planning process, six goals with a number of objectives were established for the TSP. The six goals are as follows:

1. Relieve increasing traffic congestion on US 20/OR34.
2. Improve traffic circulation and safety throughout the city.
3. Promote increased use of alternative modes.
4. Develop a master plan that defines future street locations.
5. Provide alternate routes to deter truck traffic in the downtown core and residential neighborhoods.
6. Integrate the transportation system plan with other land use planning projects in Philomath.

The transportation system inventory revealed needs and resulted in recommended projects including street overlays, bicycle lanes, and improved street name signing. It also found that trucks are limited to certain routes due to weight limits on several streets. The current and forecast traffic analysis showed that transportation operations will be at levels below acceptable criteria in the future without needed transportation improvements on US20/OR34 (U.S. 20/Highway 34). A phased one-way couplet project was recommended as part of the year 2016 plan for Philomath. The first phase of the project would make improvements to College and Applegate Streets, maintaining two-way traffic on all the streets until the second phase is needed and constructed using Main, Applegate and College Streets.

As part of the analysis a West Hills Road connection to U.S. 20 at the Alsea Highway 34 was evaluated. It was found that this project would not attract enough traffic to bypass the downtown area to avoid increasing capacity on U.S. 20/Highway 34 through town to satisfy expected demand. However it was found that this connection would likely be desirable at some time beyond the 20-year period for the TSP.

The TSP includes future street and bicycle network maps, and future truck routes. Narrower street standards for local streets are also proposed. Pedestrian and rail improvements are proposed as well as other street improvement projects.

2.5.2.D City of Adair Village

2.5.2.D.1 Adair Village Comprehensive Plan (1981)

The Adair Village Comprehensive Plan (AVCP) guides development within the City of Adair Village, located eight miles north of Corvallis and eight miles west of Albany. The transportation element of the AVCP identifies the ownership (state, county, city, and private) of the roadways within the community and indicates that many streets within the city allow only one travel lane, with curbside parking on one side only. No bikeways were identified within the City and only one footpath, linking Columbia Avenue and Laurel Drive, was listed. The City's zoning ordinance as quoted in the AVCP provides for intersection sight triangles and defines minimum roadway rights-of-way and pavement widths. Important transportation-related policy items included in the AVCP consist of the following:

- ◆ Curb, gutters, storm drainage, and underground utilities should be provided.
- ◆ Curvilinear, discontinuous streets should be used to discourage through traffic in residential areas.
- ◆ The use of land adjacent to arterials shall not be allowed to conflict with the safe and efficient movement of traffic,
- ◆ Arnold Way is to be preserved and maintained as the City's primary arterial.
- ◆ Parcels are to be preserved for a future extension of Columbia Avenue.
- ◆ Narrow local residential streets are not to be widened; as doing so would result in a loss of off-street parking and front yard areas.
- ◆ The City should be included in general inter-city bus service. Transit service to Albany and Corvallis was desired.
- ◆ The City shall develop a bicycle and pedestrian plan in the future.

2.5.2.E City of Monroe and Vicinity

2.5.2.E.1 Community Strategic Plan for Monroe, Alpine, Bellfountain, and Irish Bend

The Community Strategic Plan for Monroe, Alpine, Bellfountain, and Irish Bend addresses issues affecting southeast Benton County. The Plan was developed over a ten-month period and involved the City of Monroe

and the communities of Alpine, Bellfountain, and Irish Bend. Members of all four communities developed the Plan, with representatives of businesses, civic groups, institutions, and local government taking part.

One of the techniques used to identify key issues affecting these communities was a survey that was sent to the 1,300 households in the area. Twenty-five percent of these surveys were returned. The key transportation issues identified in the survey were the following:

- ◆ Safe streets and highways were identified by 33 percent of respondents as being one of the five most important issues affecting the area.
- ◆ Highway 99W “provides easy access to neighboring communities,” according to 76 percent of the respondents.
- ◆ Streets that provide for non-auto travel were important to 63 percent of respondents.

Other transportation issues identified in the Plan include:

- ◆ Widening Highway 99W to five lanes in the future.
- ◆ Improving rural secondary roads and paving gravel roads that carry log trucks.
- ◆ Improving street lighting.
- ◆ Building sidewalks.
- ◆ Improving access onto Highway 99W during peak hours.
- ◆ Improving the safety of the intercity bus stop in Monroe.
- ◆ Controlling traffic speeds through Bellfountain.
- ◆ Developing a Street Master Plan for Monroe that identifies future roadway locations, establishes uniform standards for roads, sidewalks, curbs, and gutters, and prioritizes upgrades of existing roadways.

2.5.2.F The Alsea Area

2.5.2.F.1 Alsea Community Strategic Plan

The Alsea Community Strategic Plan addresses issues affecting Alsea and Lobster Valley. This Plan was developed over an 18-month period and included a community survey, town meetings, and bimonthly meetings of the strategic planning committee. Transportation-related issues included on the survey are listed below, along with the percentage of respondents answering “needs improvement”:

- ◆ Non-auto travel provided for on streets (48 percent)
- ◆ Roads provide easy and safe access to neighboring communities (27 percent)
- ◆ Roads provide easy delivery vehicle access to neighboring communities (22 percent)
- ◆ North Fork Bridge safe and un-crowded (62 percent)

Specific projects identified in the Plan include the following:

- ◆ **Reduce Alsea Area Road Hazards.** Identify road hazards in the area with the potential for fatal or serious injuries and consider accident frequency and causes. The project would identify corrective actions to reduce or eliminate these hazards.
- ◆ **Redesign/Relocate School Crosswalk for Safety.** Shrubbery and a curve on the highway obscure Alsea’s lone school crossing at the Highway 34/3rd Street intersection. The project would redesign or move the crosswalk.

- ◆ **Install Needed Street Lighting.** Other than a few private lights, Alsea streets have no lights. This project would install lights where needed to promote safety.
- ◆ **Improve/Replace the North Fork Bridge East of Alsea.** The North Fork Bridge is narrow and poses a safety hazard for bicyclists and pedestrians, as well as for large vehicles. This project would monitor the status of ODOT's bridge replacement project, which is currently scheduled for 1998, and would advocate pedestrian and bicycle facilities and the earliest possible replacement (This project was subsequently dropped from the STIP by ODOT).

2.5.3 Regional Efforts

2.5.3.A Benton County Plans and Policies

The County currently operates under several plans that influence the way the transportation system is provided and/or maintained. A review of these documents identified updates that are necessary, modifications to existing standards, and recommendations for changes and/or additions to specific policies and practices. This review included the following documents:

- ◆ Benton County Comprehensive Plan
- ◆ Benton County Transportation Management Plan
- ◆ Benton County DRAFT #1 Proposed FY98/99 Capital Improvement Plan
- ◆ Benton County Development Code
- ◆ Benton County Comprehensive Plan (1982, amended 1984, reprinted 1989)

2.5.3.A.1 Benton County Comprehensive Plan

The Benton County Comprehensive Plan (BCCP) provides the official policies that are used in County decision making processes. The BCCP's Transportation Element is intended to provide the framework for an efficient and effective transportation system in Benton County. The policies contained in the Transportation Element are based on the 1980 Benton County Transportation Management Plan, which is described later.

The Transportation Element defines the following functional classification system:

Principal Arterials connect communities, provide through movement, and are primarily state highways. Access is limited and controlled, and parking is generally prohibited.

Minor Arterials connect areas of principal traffic generation to principal arterials, provide through movement, and distribute traffic to collector and local roadways. Access and parking are controlled.

Major Collectors carry local traffic between neighborhoods, or between neighborhoods and arterials, and provide access to minor collectors and community services. Access and parking are controlled.

Minor Collectors serve internal traffic within areas having a single land use pattern, and serve minor traffic generators such as schools or neighborhood shopping or community centers. They should not form a continuous network in urban areas. Access and parking are allowed.

Resource Collectors connect timber and agricultural areas with the arterial system. Their design standards take the characteristics of resource-oriented traffic into account.

Local Roads provide on-street parking and direct access to abutting property. Their design discourages through traffic. Dead-end street lengths are minimized.

Maps included in the Comprehensive Plan identify the functional classification of County roads. These maps are reproduced in Chapter 3 of this document, as Figure 3-1.

The BCCP establishes policies for developing roadway design standards and provides requirements for mitigating the traffic impacts of new developments on roadways. The BCCP states that major transportation

facilities should be located in such a way that “existing economic farm units” and “urban social units” are not divided unless no feasible alternative exists. It also calls for the development of transportation-related ordinances, the establishment of an annual maintenance program and a transportation advisory committee, and the periodic review and update of plans and projects.

During the course of this TSP development, many of these objectives have been accomplished. Specifically:

- ◆ Transportation-related ordinances have been drafted for various aspects of the transportation system;
- ◆ Maintenance of pavement and bridges has been considered and specific improvements recommended;
- ◆ Components of the TSP can be used as updates to certain elements of the Comprehensive Plan relating to land use and transportation; and,
- ◆ The TSP provides a prioritized list of projects and timeline for implementation.

Comprehensive Plan policies dealing with alternative transportation modes include the following:

- ◆ Pedestrian, bicycle, and equestrian facilities should be established, as funding is available.
- ◆ Pipelines should be considered as a means of transporting certain goods.
- ◆ The County should pursue an effective public transportation system, including the joint use of school buses and private transit, as resources permit.
- ◆ The provision of public transit and paratransit for persons with disabilities and the transportation-disadvantaged should be pursued.
- ◆ The development of air, rail, and water modes should be encouraged.
- ◆ Bus turnout standards shall be established.
- ◆ A bikeway system shall be identified.

The TSP provides specific plan elements for bicycle and pedestrian facilities and identifies projects, staging, and funding sources for implementation. Pipelines are considered as a critical component of the Air, Water, and Pipeline Plan element for the TSP. The public and TSP committees have placed the provision of county-wide public transportation among the highest goals to achieve through the development and implementation of this TSP and have committed a significant proportion of the County’s future transportation-related expenditures to support and expand this mode of travel.

Examples of how the TSP addresses the above mentioned Comprehensive Plan policies are listed below:

Specific plan elements are provided for bicycle and pedestrian facilities and identify the selected projects, staging, and funding sources for implementation.

Pipelines are recognized as an underutilized component in the Air, Water, and Pipeline Plan element. Service capacity exists that could be employed to more efficiently transport certain goods.

The provision of an expanded and accessible public transportation system is a specific goal of the TSP, as defined by the public and committees involved in development of the TSP. Support of this goal and the underlying Comprehensive Plan policy, is evidenced by the proportionate share of project funding this plan element has received in relation to the total financial commitment made to transportation.

Particular efforts were made by members of the public and TSP committees to preserve, protect, enhance, and expand rail service capabilities within and across Benton County. The Rail Plan element acknowledges the limitations and potential that exist on the system. The Rail Plan element seeks to extend support to the current rail operator and encouragement to possible rail users to take advantage of this vital transportation system.

2.5.3.A.2 Benton County Transportation Management Plan (1980)

The Benton County Transportation Management Plan (TMP) developed what eventually became the Transportation Element of the Benton County Comprehensive Plan. In doing so, it went into considerable

detail providing first a framework for the Transportation Element and then mechanisms for funding, implementing, and evaluating projects that carry out the policies stated in the Transportation Element. The TMP developed the County's functional classification system, identified study corridors for future roadways, and developed design standards based on a roadway's location (urban or rural) and its functional classification.

To prioritize project funding, the TMP presents a priority rating system for improvements that includes the following factors: traffic safety, transportation mobility, roadway horizontal and vertical alignment, turn lanes and intersection channelization, and general plan conformance. The TMP identifies potential funding sources for projects, develops a roadway improvement program and a road maintenance program, and develops an alternative transportation mode improvement program covering public transit, air, rail, and water modes. Finally, the TMP calls for periodic review and evaluation of these programs.

The TSP has been prepared as an update of the TMP. Specific updates and/or modifications have been developed in the TSP for the functional classification system and roadway standards, as well as specific plans and maps for roads, transit, bicycles/pedestrians, and air/rail/water/pipeline. New projects have been identified, considering such factors as capacity, traffic safety, connectivity, transportation mobility, transportation accessibility, automobile dependence, roadway horizontal and vertical alignment, traffic control, turn lanes and intersection channelization, and other transportation system and transportation demand management techniques. The TSP identifies potential funding sources and provides a timeline for implementation of recommended projects.

The framework of the TMP and the Transportation Element has been maintained. Similar evaluation criteria to those used for the TMP were incorporated into the TSP process of selecting the recommended alternative. These evaluation criteria are listed in Section 3.

2.5.3.A.3 Benton County Capital Improvement Plan

Benton County updates a five-year Capital Improvement Plan (CIP) annually as part of the budget adoption process. The CIP is developed consistent with the Capital Improvement Financial Policies. The CIP identifies improvement for which funding within the planning period is assured or probable. A partial listing of unfunded needs is appended to the CIP as supplemental information. Annual capital budgets are prepared to reflect projects included in the Plan. In recent years, transportation improvement projects have been funded almost solely from dedicated transportation funds.

2.5.3.A.4 Benton County Development Code (1990, with amendments through 1994)

The Benton County Development Code (BCDC) provides the regulations that implement Comprehensive Plan policies. The County Comprehensive Plan and the comprehensive plans of the incorporated jurisdictions within the County are incorporated by reference into the Development Code. The BCDC defines the zoning used within the County, listing permitted and conditionally allowed uses within each zone, minimum parcel sizes, and other development standards. Development Code regulations that specifically affect the County's transportation system involve the Airport Overlay zone, development standards for the provision of new roadways and accesses, and design standards based on a roadway's functional classification.

The BCDC establishes standards for land divisions (minor partitions and subdivisions) for lands located outside corporate limits in Benton County. The Development Code also describes zoning districts, including districts to be applied within the Urban Growth Boundaries of Corvallis and Philomath. The BCDC further describes Rural Service Center zoning districts, which permit commercial and residential development in existing rural communities. Zoning districts describe how and what type of development will occur in various zones throughout Benton County. These districts include specific "Siting Standards" that give specific requirements for transportation amenities required of all development. Other pertinent sections of the code include the definitions, parking lot standards and requirements, and general development standards.

The County's Airport Overlay zone is intended to protect the utility of the Corvallis Municipal Airport by incorporating recommendations provided by the Corvallis Airport Master Plan. The overlay zone prevents "the establishment of any structure or use of land which unreasonably obstructs the airspace required for the safe flight of aircraft in landing or taking off or is otherwise hazardous to such landing or taking off of aircraft." It

prohibits uses that create hazards to aircraft or air navigation, as well as uses especially sensitive to noise. The Code requires covenants in certain areas adjacent to airport runways and facilities that waive the right to remonstrate against airport noise impacts. The Code also requires the notification of the Federal Aviation Administration (FAA) and the ODOT Aeronautics Division of any proposed construction or alteration on land within the Airport Overlay zone.

Development standards that directly impact the transportation system include the following:

- ◆ Roads should be located in upland areas on benches, ridge tops, and gentle slopes rather than on steep hillsides or in narrow canyon bottoms.
- ◆ Where existing right-of-way does not comply with minimum County standards, applicants for land partitions shall dedicate sufficient right-of-way to meet the standards.
- ◆ New accesses onto State or County roadways require road approach permits from ODOT or the County, respectively.
- ◆ Streets should be aligned to join planned collector and arterial streets and/or existing streets, and intersections should be approximate or actual right angles.

Rural design standards, including minimum right-of-way; surface, and shoulder widths; design speeds; bike path and sidewalk requirements; and, parking restrictions are set forth for various combinations of functional classification, population, and zone, as shown in **Table 3-14**.

Code modifications resulting from the TSP process and specific to the current BCDC are presented following this section on review of documents. These recommended modifications are provided in response to requirements of the State and/or in order to ensure consistency among related plans.

2.5.4 Revisions to Benton County Comprehensive Plan Transportation Policies

The Benton County Comprehensive Plan (1982, reprinted 1989) includes a Transportation Element, which contains the general policies that support the overall objective of providing a balanced transportation system. The following policy recommendations are necessary to comply with the TPR, or to enhance the existing policy to more clearly address standards in the TPR.

Section E: Transportation

This element of the Comprehensive Plan is intended to provide the framework for an efficient and effective transportation system in Benton County. Policies are intended to be implemented through the County's Transportation System Plan (TSP) and the Benton County Development Code.

The Transportation System Plan and the following policies address various forms of transportation, including pedestrian, bikeways, motorized vehicles, public transportation, air and water transportation, and railroads. The objective is to achieve a balanced system, which develops and utilizes each of these types of transportation. Benton County's functional roadway classification system is included in Chapter 3 of the Transportation System Plan. The following policies are based on information included in the Transportation System Plan, which is incorporated into the Comprehensive Plan by reference. The County seeks to preserve, protect, and promote the County's livability, sustainability, and vitality by:

- ◆ Providing choices of alternative travel modes
- ◆ Maximizing the efficiency of existing facilities
- ◆ Intertwining quality of life, land use, and transportation decision-making
- ◆ Providing equitably funded, safe, efficient, cost-effective mobility and accessibility to all County residents, businesses, and emergency services within and across County boundaries.

Mobility, Circulation, and Safety Policies

The viability of the railroad in Benton County is interdependent with the whole WPRR system. If rail service were terminated, truck traffic could increase throughout the County, depending on the reason service was terminated (obviously, closure of a mill would cease all freight movement from that location, whether by rail or by truck). This truck traffic would use the road corridors that already carry the most traffic and experience the greatest congestion. Therefore, it is in the County's interest to encourage continued rail freight service, whether or not the County ever develops as a more significant freight generator. Passenger rail service from Corvallis east to Albany or north to McMinnville and Portland is not economically viable at this point; however, the County should encourage more frequent and convenient public transit connections to existing passenger rail service, particularly when high speed rail service begins operating in the Willamette Valley.

In order to promote the viability of rail transportation, and to facilitate its operation, Benton County should:

- ◆ Minimize rail crossings of the automobile roadway system
 - ◆ Maintain safe operations at rail crossings for all modes
 - ◆ Minimize delays to rail operations due to conflicts with the automobile roadway system
 - ◆ Discourage residential development near rail lines
 - ◆ Actively plan for and promote the idea of commuter rail service between Albany and Philomath at the earliest possible time
1. Benton County shall develop a transportation system to facilitate appropriate travel modes including:
 - a. Providing safe interactive multi-modal facilities.
 - b. Ensuring mobility to the transportation disadvantaged.
 - c. Coordinating with local agencies and providers to expand transit services.
 - d. Seeking ways to provide public transportation choices within the commuter corridors within the county.
 2. Benton County shall develop plans and projects in accordance with roadway classification and functions.
 3. Benton County shall support ODOT's efforts to maintain highway mobility and implement access management standards
 4. Benton County shall ensure an adequate truck route network for hauling local farm and forest products.
 5. Benton County shall not encourage diversion of through truck traffic from State highways onto the County system
 6. Benton County shall ensure that major new developments provide both primary and secondary access for emergency services.
 7. County bicycle facilities shall be developed with ongoing citizen and community involvement.
 8. In bicycle facility planning, high priority will go to projects that complete needed links or otherwise eliminate obstacles to full use of existing facilities. Priority shall be given to completing commuter routes.
 9. Land division rules and road standards shall address the need for bike and pedestrian accessways that ensure connections between activity centers through the use of easements or right-of-way dedication. The Oregon Bicycle and Pedestrian Plan (1995) may be used for reference in creating appropriate standards.
 10. Where possible, community activity centers such as schools, parks, and employment centers, shopping areas and major transit stops (including commercial uses allowed in policy 20) shall provide bicycle and pedestrian facilities into their site design.
 11. Traffic impacts of development will be mitigated by requiring:

- a. A traffic analysis that identifies adverse impacts to transportation flow caused by development and demonstrates how adverse impacts will be mitigated.
 - b. Rights-of-way dedication of land where existing rights-of-way are inadequate or are needed for future roadways as development occurs.
 - c. Developers to make roadway improvements for their portion of the roadway based on: 1) existing conditions, 2) rough proportionality to the impacts of the development and 3) the functional classification of the road.
 - d. Bonding or agreement to participate in future improvements when the development has a significant impact that is identified through a traffic analysis and which impact cannot be mitigated in conjunction with or through design of the particular development.
12. Benton County shall seek ways to provide public transportation choices within the commuter corridors in the County.
 13. The formation of a Transit District is the preferred means of providing intercity and rural transportation services within the region
 14. Land use actions affecting state highways shall be consistent with the Oregon Highway Plan.
 15. Benton County shall use volume/capacity ratios and spacing standards from the Oregon Highway Plan (OHP) for projects and development proposals affecting state highway facilities. Decisions on alternatives shall be evaluated in accordance with the OHP.
 16. Benton County commits to making necessary transportation policy changes to the Benton County Plan in the next periodic review cycle as follows: existing and projected traffic volumes will be updated, and traffic capacity analysis will be changed from level of service (LOS) to volume/capacity (V/C) ratios.

Capital Improvement Policies

17. Benton County shall maximize the useful life of existing facilities by implementing a pavement management system and evaluating how proposed uses will impact traffic circulation.
18. Benton County shall work towards achieving adequate and equitable long-term funding mechanisms.
19. Benton County shall maintain a Transportation Improvement Program.
20. Project scheduling shall be considered in a systematic manner, based on a priority rating process, ODOT's funding strategies, and available financial resources. Consideration shall include safety and economic factors.
21. Projects impacting state highway facilities are identified in the plan, but identified solutions are suggestions and will be evaluated and determined through ODOT's planning and project development process.

Community Policies

22. Benton County shall provide transportation services that preserve and protect the scenic and natural resources and rural character of Benton County to the extent possible.
23. The Transportation System Plan will be periodically evaluated and updated, to assure consistency with changing needs and philosophies.
24. When considering major transportation projects, Benton County will address the following concerns:
 - a. the more energy efficient alternative shall be preferred whenever practical.
 - b. the economic analysis shall consider long-term user costs, travel time, construction costs and maintenance costs, and other economic factors.

- c. minimizing adverse social, economic and environmental impacts shall be considered including alternative mode considerations.
 - d. transportation needs of persons with disabilities shall be considered in design of facilities.
 - e. coordination shall be pursued with adjacent governmental jurisdictions.
25. Benton County shall coordinate development of its transportation planning and project development with all affected jurisdictions, including federal, state, regional, county, and cities. One part of the ongoing coordination will be to notify public agency transportation providers (metropolitan planning organization, public transit operators, municipal airport, and ODOT) of the following land use actions:
- a. land use applications that require a public hearing;
 - b. subdivision and partition applications;
 - c. other applications which affect private access to roads; and
 - d. other applications within airport noise corridors and imaginary surfaces, which affect airport operations.
26. Comprehensive Plan amendments affecting land use designations, densities and design standards shall be consistent with capacities and levels of service of facilities identified in the Benton County TSP.

Economic Development Policies

27. Benton County shall preserve and protect transportation corridors essential to the economic vitality of the County.
28. Benton County shall promote the use of freight rail and air service to reduce trucking activity on County roads.
29. In order to promote the viability of rail transportation, and to facilitate its operation, Benton County should:
- a. Minimize rail crossings of the automobile roadway system;
 - b. Maintain safe operations at rail crossings for all modes;
 - c. Minimize delays to rail operations due to conflicts with the automobile roadway system; and
 - d. Discourage residential development near rail lines.
30. Benton County shall promote efficient and affordable transportation to existing regional airports (Portland and Eugene)
31. Major transportation facilities shall be located so as to avoid dividing existing economic farm units and urban social units, unless no feasible alternative exists.
32. Benton County shall cooperate with the Oregon Department of Transportation in the programming, environmental review, design, and where appropriate, construction of state highway improvement projects within the County. [Ord 91-0080]
33. Any proposal to designate an area for residential development within the Airport Overlay Zone's Approach Safety Zone shall be subject to an assessment of the impact of the proposed development on airport operations and expansion in accordance with the Corvallis Airport Master Plan
34. Benton County shall provide for the protection of the Corvallis Airport by ensuring that lands within the surrounding area will not develop so as to conflict with airport operations or programmed expansion. [Ord 91-0080]

Potential Policy Solutions

- ◆ Continue to work with Benton County cities to focus population, employment centers, and development in existing cities (or annexed areas).

- ◆ Allow mixed-use development in existing rural communities.
- ◆ Create strong limits to non-resource employment resource zone

3

Roadway Plan

This chapter describes the current conditions of county roadways within Benton County, forecasts the conditions of these roadways in the future, lists current policies and necessary policy changes, and describes the preferred alternatives for improving the roadway system throughout the County (section 3.4).

3.1 Existing Conditions

Roadways carry the majority of transportation trips made in Benton County. The County's roads are used by residents traveling to and from work, shopping, etc.; by trucks carrying farm, forest, and other products; and by recreational and tourist traffic passing through or traveling to the County. The County's roadways also serve bicyclists, pedestrians, and public transit, all of which are discussed further in the respective modal plans.

Substantial effort was used to inventory the roadway system, because it is by far the County's most significant transportation infrastructure in terms of cost and use. Due to the sheer size of the roadway network within the County, it was determined that only those roadways classified as collector level and above would be inventoried and analyzed. This approach complies with both the letter and intent of the Transportation Planning Rule (TPR). (See Appendix A for the full text of the TPR.)

3.1.1 Functional Classifications

A roadway's functional classification determines its intended purpose, the amount and type of traffic (local or through) it is expected to carry, and its design standards. Listed below are the functional classification definitions for Benton County and for the Oregon Department of Transportation (ODOT). The ODOT classification system is also included here, as a preface to the performance evaluation of the transportation system and in recognition of the importance to the County of this critical subset of the roadway network.

3.1.1.A Benton County Functional Classification System

This Transportation System Plan (TSP) continues the functional classification system defined in the 1980 Comprehensive Plan Transportation Element:

Principal Arterials connect communities, provide through movement, and are primarily state highways. Access is limited and controlled, and parking is generally prohibited.

Minor Arterials connect areas of principal traffic generation to principal arterials, provide through movement, and distribute traffic to collector and local roadways. Access and parking are controlled.

Major Collectors carry local traffic between neighborhoods, or between neighborhoods and arterials, and provide access to minor collectors and community services. Access and parking are controlled.

Minor Collectors serve internal traffic within areas having a single land use pattern, and serve minor traffic generators such as schools or neighborhood shopping or community centers. They should not form a continuous network in urban areas. Access and parking are allowed.

Resource Collectors connect timber and agricultural areas with the arterial system. Their design standards take the characteristics of resource-oriented traffic into account.

Local Roads provide direct access to abutting property and may provide on-street parking. Their design discourages through traffic. Dead-end street lengths are minimized.

Figure 3-1 presents the functional classifications for the Benton County roadway system, including the roadways listed by category below:

Principal Arterials

- ◆ U.S. 20
- ◆ Highway 34
- ◆ Highway 99W
- ◆ Kings Valley Highway (OR 223)
- ◆ Territorial Highway (OR 200)

Minor Arterials

- ◆ Independence Highway
- ◆ Camp Adair Road
- ◆ Lewisburg Road
- ◆ Highland Drive
- ◆ Lester Avenue
- ◆ Granger Avenue
- ◆ Metge Avenue
- ◆ Scenic Drive (Valley View Drive to Gibson Hill Drive)
- ◆ North Albany Road
- ◆ Springhill Drive (U.S. 20 to north of Nebergall Loop)
- ◆ Walnut Boulevard
- ◆ SW 53rd Street (north of U.S. 20/ Highway 34)
- ◆ Reservoir Avenue
- ◆ West Hills Road (Reservoir Avenue to 9th Street)
- ◆ Bellfountain Road
- ◆ Airport Avenue
- ◆ Decker Road
- ◆ Greenberry Road
- ◆ Alpine Road (Bellfountain Road to Alpine Cutoff)
- ◆ Alpine Cutoff
- ◆ Alsea Deadwood Highway
- ◆ Granger Avenue

Major Collectors

- ◆ Springhill Drive (Independence Highway to north of Nebergall Loop)
- ◆ Scenic Drive (Springhill Drive to north of Valley View Drive)
- ◆ Valley View Drive
- ◆ Crocker Lane
- ◆ Gibson Hill Drive
- ◆ West Thornton Lake Drive
- ◆ Scenic Drive (Gibson Hill Drive to U.S. 20)
- ◆ Oak Grove Drive
- ◆ Ryals Avenue
- ◆ Arnold Avenue
- ◆ Coffin Butte Road
- ◆ Soap Creek Road (Coffin Butte Road to Tampico Road)

- ◆ Tampico Road (Soap Creek Road to Highway 99W)
- ◆ Mountain View Drive
- ◆ Crescent Valley Drive (north-south portion)
- ◆ Oak Creek Drive
- ◆ West Hills Road (east from Reservoir Road)
- ◆ 19th Street
- ◆ Hoskins Road
- ◆ Marys River Road (Hoskins Road to U.S. 20)
- ◆ Priest Road
- ◆ 13th Street-Fern Road (from U.S. 20/Highway 34 south)
- ◆ Chapel Drive
- ◆ Plymouth Drive
- ◆ SW 53rd Street (U.S. 20/Highway 34 to Plymouth Drive)
- ◆ Airport Avenue (Fern Road to Bellfountain Road)
- ◆ Llewellyn Road (Fern Road to Highway 99W)
- ◆ Dawson Road (Foster Road to Highway 99W)
- ◆ Alpine Road (Nichols Road to Bellfountain Road)
- ◆ Bellfountain Road (Alpine Road to Cherry Creek Road)
- ◆ Alpine Road (Alpine Cutoff to Highway 99W)
- ◆ Coon Road

Minor Collectors

- ◆ Palestine Avenue
- ◆ Hillcrest Drive-Edgewood Drive
- ◆ Pettibone Drive
- ◆ Robison Road
- ◆ Rifle Range Road
- ◆ Tampico Road (west of Soap Creek Road)
- ◆ Arboretum Road
- ◆ 9th Street
- ◆ Oak Creek Drive (north of Cardwell Hill Drive)
- ◆ Cardwell Hill Drive (near Oak Creek)
- ◆ Country Club Drive
- ◆ Grange Hall Road
- ◆ Ervin Road
- ◆ Peterson Road
- ◆ Llewellyn Road (west of Fern Road)
- ◆ Dykstra Road
- ◆ Larson Road
- ◆ Larkin Road
- ◆ Foster Road
- ◆ Orchard Tract Road

The following roads have had their functional classifications changed by this TSP:

- ◆ **Oak Grove Drive** (Metge Avenue to Scenic Drive): from Major Collector to Minor Arterial
- ◆ **West Hills Road** west of Reservoir Road: from Major Collector to Minor Arterial
- ◆ **Reservoir Road**: from Minor Collector to Minor Arterial
- ◆ **Crescent Valley Drive**: from Minor Arterial to Major Collector (consistent with City of Corvallis' designation as Neighborhood Collector)
- ◆ **Airport Avenue** east of Bellfountain: from Major Collector to Minor Arterial

- ◆ **Priest Road:** from Minor Arterial to Major Collector
- ◆ **Alpine Road** east of Alpine Cutoff: from Minor Arterial to Major Collector
- ◆ **Alpine Cutoff:** from Major Collector to Minor Arterial

These changes recognize changing traffic patterns, new routes created by planned road extensions, and general improvements to the overall system network of streets and roads. The system of functional classifications and the assignment of specific roads to these classes seek to balance access and mobility throughout the system. Local roads provide direct access to abutting property and are not suited to provide a high degree of mobility through the areas they serve. Local roads connect to higher-classification roadways that provide progressively less access and progressively greater mobility. The highest-type facility, a fully controlled freeway or expressway, limits access to connections with well-spaced minor arterials and major collectors, allowing excellent mobility.

In an urban setting, planners strive for a rough grid of streets of each functional classification, with minor collectors in a fairly close grid and freeways in a very large-scale grid. Although the rural nature and hilly terrain of much of Benton County do not lend themselves to this simple grid plan, the principal of balancing access and mobility still holds. Most trips should start and end on lower-type facilities (high access) and be served in the middle by higher-type facilities (high mobility).

3.1.1.B Oregon Highway Classifications

The 1991 **Oregon Highway Plan (OHP)** established a level of importance (LOI), comparable to a functional class, which identified a roadway's function and established level of service and access standards for it. The following levels of importance were defined:

Interstate Highways connect major cities, regions of the state, and other states. These highways should provide "safe and efficient high-speed continuous-flow operation in urban and rural areas."

Statewide Highways connect larger urban areas, ports, and major recreation areas not directly served by the interstate highway system. They should provide "safe and efficient high-speed continuous-flow operation in rural areas and high- to moderate-speed operations with limited interruptions of flow in urban and urbanizing areas."

Regional Highways connect smaller population centers to larger population centers and to higher level facilities. Land access is a secondary function. They should provide "safe and efficient high-speed continuous-flow operation in rural areas, except where there are significant environmental constraints, and moderate- to low-speed operation in urban and urbanizing areas with moderate interruptions to flow."

District Highways serve local traffic and provide land access, providing a function similar to county roads. They should provide "safe and efficient moderate- to high-speed continuous-flow operation in rural areas reflecting the surrounding environment, and moderate- to low-speed operation in urban and urbanizing areas with moderate to high level of interruptions to flow."

The Oregon Transportation Commission adopted an amended OHP in March 1999. The 1999 OHP is an innovative document that will guide how the state highways are developed and managed over the next 20 years. The plan responds to the challenges of major population growth and limited resources by emphasizing the following:

- ◆ Investments consistent with state and local community priorities
- ◆ Efficient management of the highway system and use of new techniques to increase safety and extend capacity
- ◆ Partnerships with other agencies and local governments
- ◆ Closer links between land use and transportation
- ◆ Closer links with other transportation modes

The 1999 OHP also modifies the classification system, identifying roadway functions and establishing mobility and spacing standards for these roadways. Policy 1A establishes the State Highway Classification System and states: “It is the policy of the State of Oregon to develop and apply the state highway classification system to guide ODOT priorities for system investment and management.” The Benton County background work, inventory, and analysis leading to this TSP were completed prior to adoption of the 1999 OHP. Consequently, the above description of the 1991 OHP classification system has been retained in this document. The 1999 OHP provides the following new definitions for Interstate, Statewide, Regional, and District Highways, and also establishes new classifications of Expressways and Local Interest Roads:

Interstate Highways (National Highway System, NHS) provide connections to major cities, regions of the state, and other states. A secondary function in urban areas is to provide connections for regional trips within the metropolitan area. The Interstate Highways are major freight routes and their objective is to provide mobility. The management objective is to provide for safe and efficient high-speed continuous-flow operation in urban and rural areas.

Statewide Highways (National Highway System, NHS) typically provide inter-urban and inter-regional mobility and provide connections to larger urban areas, ports, and major recreation areas that are not directly served by Interstate Highways. A secondary function is to provide connections for intra-urban and intra-regional trips. The management objective is to provide safe and efficient, high-speed, continuous-flow operation. In constrained and urban areas, interruptions to flow should be minimal. Inside Special Transportation Areas (STAs), local access may also be a priority.

Regional Highways typically provide connections and links to regional centers, Statewide or Interstate Highways or economic or activity centers of regional significance. The management objective is to provide safe and efficient, high-speed, continuous-flow operation in rural areas and moderate to high-speed operations in urban and urbanizing areas. A secondary function is to serve land uses in the vicinity of these highways. Inside STAs, local access is also a priority. Inside Urban Business Areas, mobility is balanced with local access.

District Highways are facilities of county-wide significance and function largely as county and city arterials or collectors. They provide connections and links between small urbanized areas, rural centers and urban hubs, and also serve local access and traffic. The management objective is to provide for safe and efficient, moderate to high-speed continuous-flow operation in rural areas reflecting the surrounding environment and moderate to low-speed operation in urban and urbanizing areas for traffic flow and for pedestrian and bicycle movements. Inside STAs, local access is a priority. Inside Urban Business Areas, mobility is balanced with local access.

Local Interest Roads function as local streets or arterials and serve little or no purpose for through traffic mobility. Some are frontage roads; some are not eligible for federal funding. Currently, these roads are District Highways or unclassified and will be identified through a process delineated according to Policy 2C. The management objective is to provide for safe and efficient, low to moderate speed traffic flow and for pedestrian and bicycle movements. Inside STAs, local access is a priority. ODOT will seek opportunities to transfer these roads to local jurisdictions.

The Land Use and Transportation Policy of the OHP encourages compact development patterns while serving the mobility needs of the through traveler on state highways that also serve as the main streets of many communities. Compact development patterns benefit the transportation system by reducing local trips and travel on state highways to shop and do business, by encouraging more opportunity to walk, bicycle, or use available transit services, and by increasing opportunities to develop transit. Encouraging growth in more compact development patterns is partially accomplished in the policy with the use of the highway classification “Expressway,” a subset of Statewide, Regional, and District Highways, and the highway segment designations of:

- ◆ Special Transportation Areas (STAs)
- ◆ Urban Business Areas (UBAs)
- ◆ Commercial Centers

It is the goal of the OHP to ensure mobility on designated highways and highway segments while encouraging compact development patterns in urban areas. Expressways ensure mobility while STAs promote community vitality and livability in downtowns and compact centers. UBAs and Commercial Centers are tools to improve

the connections between highway use and commercial activity. Expressways, STAs, UBAs, and Commercial Centers are used in conjunction with one another as a set of tools to balance mobility and livability on the state highway system.

The 1999 OHP replaces the old Level of Service (LOS) standard with a mobility standard. The Highway Mobility Standards Policy applies primarily to transportation and land use planning decisions. By defining acceptable levels of highway system mobility, the policy provides direction for identifying highway system deficiencies. The policy does not, however, determine what actions should be taken to address the deficiencies. The highway mobility standards in the policy (volume/capacity ratio, or V/C) are neutral regarding whether solutions to mobility deficiencies should be addressed by actions that reduce highway volumes or increase highway capacities.

The Highway Mobility Standards Policy will primarily affect land use decisions through the requirements of the TPR. The TPR requires that regional and local transportation system plans be consistent with plans adopted by the Transportation Commission. The TPR also requires that comprehensive plan amendments and zone changes which significantly affect a transportation facility be consistent with the adopted function, capacity, and performance measures for the affected facility. The Highway Mobility Standards Policy establishes ODOT's mobility performance measures for state highways. The mobility standards that apply outside of the Portland metropolitan area are contained in Table 6 of the OHP, reproduced in this TSP as **Table 3-1**, below.

Table 3-1
(Table 6 from the Oregon Highway Plan)
Maximum Volume to Capacity Ratios for Peak Hour Operating Conditions
Through a Planning Horizon for State Highway Sections Located Outside the
Portland Metropolitan Area Urban Growth Boundary

Highway Category	Land Use Type/Speed Limits					
	Inside Urban Growth Boundary				Outside Urban Growth Boundary	
	STAs	MPO	Non-MPO outside of STAs where non-freeway speed limit is <45 mph	Non-MPO where non-freeway speed limit is >= 45 mph	Un-incorporated communities	Rural lands
Interstate Highways and Statewide (NHS) Expressways	N/A	0.80	0.70	0.70	0.70	0.70
Statewide (NHS) Freight Routes	0.85	0.80	0.75	0.70	0.70	0.70
Statewide (NHS) Non-Freight Routes and Regional or District Expressways	0.90	0.85	0.80	0.75	0.75	0.70
Regional Highways	0.95	0.85	0.80	0.75	0.75	0.70
District/ Local Interest Roads	0.95	0.90	0.85	0.80	0.80	0.75

Table 6 Notes:

- ◆ Interstates and Expressways shall not be identified as Special Transportation Areas (STAs).
- ◆ For the purposes of this policy, the peak hour shall be the 30th highest annual hour. This approximates weekday peak hour traffic in larger urban areas.
- ◆ For the purposes of Policy 1F and Table 6, the MPO category includes areas within the planning boundaries of the Eugene/Springfield, Medford, and Salem/Keizer Metropolitan Planning Organizations, and any other MPO areas that are designated after the adoption of this plan.

This Benton County TSP was prepared from an analysis of the levels of service of state highways along with the county roads. The background work leading to the Benton County Plan was completed in June 1996. **Table 3-3** provides an approximate conversion from LOS to volume/capacity ratio (V/C). Inclusion of the following policies is intended to bring the adoption of this plan into acceptable compliance with the TPR and OHP requirements at this time:

- ◆ Land use actions affecting state highways shall be consistent with the Oregon Highway Plan.
- ◆ Benton County shall use V/C ratios and spacing standards from the OHP for projects and development proposals affecting state highway facilities. Decisions on alternatives shall be evaluated in accordance with the OHP.
- ◆ Benton County shall commit to making necessary transportation policy changes to the Benton County Plan in the next periodic review cycle as follows: existing and projected traffic volumes will be updated, and traffic capacity analysis will be changed from LOS to V/C ratios.
- ◆ Benton County shall coordinate development of its transportation planning and project development with all affected jurisdictions, including federal, state, regional, county, and cities. One part of the ongoing

coordination will be to notify public agency transportation providers (metropolitan planning organization, public transit operators, municipal airport, and ODOT) of the following land use actions that require a public hearing:

- a. subdivision and partition applications
- b. other applications that affect private access to roads
- c. other applications within airport noise corridors and imaginary surfaces that affect airport operations

Projects identified in this plan that impact state highway facilities are potential solutions that will require further evaluation in accordance with the OHP during the project development process.

Appendix C of the 1999 OHP contains new Access Management Standards that must be applied to new or modified public or private access to state highways. These Access Management Standards have been included in Appendix B of this Benton County TSP.

3.1.2 Description of the Roadway System

The public roadway system within Benton County is maintained and under the jurisdiction of five agencies:

- ◆ The Oregon Department of Transportation (ODOT), which operates approximately 122 miles of roadway within the County, including all of the most heavily traveled.
- ◆ Benton County is responsible for approximately 470 miles of roadway, including a few roadways within incorporated cities.
- ◆ The Federal Government, through agencies such as the U.S. Forest Service and the Bureau of Land Management.
- ◆ Special Road Districts, which may tax themselves to maintain certain public local access roadways.
- ◆ Local cities (Corvallis, Albany, Philomath, Adair Village, and Monroe), with jurisdiction of the remaining public roadways within their boundaries.

3.1.2.A State Highways

The following roadways within Benton County are maintained by and under the jurisdiction of ODOT:

Corvallis-Newport Highway (U.S. 20) provides the primary connection between Benton County and the coast, and serves communities in the northwest portion of the County, including Philomath, Wren, Burnt Woods, and Blodgett. This highway is classified as a Statewide NHS (National Highway System) Highway and is a designated Freight Route.

Corvallis-Lebanon Highway (Highway 34) is the main connection between Benton County and I-5 and provides the most direct route to Santiam Pass leading into Central Oregon. The highway is classified as a Statewide NHS Highway and is a designated Freight Route.

Pacific Highway West (Highway 99W) provides the main north-south route through Benton County, connecting communities along the west side of the Willamette Valley, including Monroe, Corvallis, Lewisburg, and Adair Village. This highway is classified as a Regional Highway.

Albany-Corvallis Highway (U.S. 20) follows the west side of the Willamette River between Albany and Corvallis and serves as an alternate route to I-5 from Benton County. The highway provides the only bridge crossing of the Willamette River between Corvallis and Independence. The highway is classified as a Regional Highway.

Alsea Highway (Highway 34) provides a secondary connection to the coast, departing U.S. 20 at Philomath, climbing over the side of Marys Peak, and passing through Alsea on its way to Waldport. This road has a number of low-speed, windy sections, especially the portions east of Marys Peak Road and west of Alsea. This is classified as a District Highway.

Kings Valley Highway (Highway 223) connects Wren with Kings Valley, Falls City, and Dallas. This is classified as a District Highway.

Eddyville-Blodgett Highway provides an alternate route to U.S. 20 over the Coast Range, leaving U.S. 20 at Blodgett and passing through Summit and Nashville before returning to U.S. 20 at Eddyville. This highway is classified as a District Highway.

Territorial Highway connects Monroe to Cheshire, Veneta, and other communities in Lane County. This is classified as a District Highway.

Alsea-Deadwood Highway heads south from Alsea, providing access to South Fork, Hazel Glen, and Lobster Valley Roads. This is classified as a District Highway.

3.1.2.B County Roads

The County is responsible for many roadways within Benton County. The following sections describe the roadways and current conditions in detail.

3.1.2.B.1 Pavement Conditions

Benton County has jurisdiction over approximately 470 miles of roads. Of this total, the surface of approximately 113 miles are asphaltic concrete, 132 miles of oil mat, 189 miles of gravel, 17 miles of dirt, and 19 miles of an unclassified surface.

During the summer of 1995, as part of the roadway inventory work conducted for this TSP, a pavement conditions survey was conducted on paved County roadways outside urban growth boundaries. The roadways were rated using a good-fair-poor system developed by the Strategic Highway Research Program and adopted by ODOT. ODOT's goal, as stated in the 1991 OHP, is to maintain 90 percent of the state system in fair-or-better condition. **Table 3-2** describes the pavement conditions and riding qualities associated with each category. **Figure 3-2** shows the results of the 1995 pavement condition survey.

**Table 3-2
Pavement Condition Categories**

Category	Asphaltic Concrete	Portland Cement Concrete
GOOD	Minor cracking, generally hairline and hard to detect. Very good riding qualities. Rutting less than 1/2 inch. Only improvement needed is rejuvenation of the wearing surface.	Original surface texture evident or worn only in wheel tracks. No faulting is evident. Minor cracking or spalling. Ride qualities are good.
FAIR	Minor areas of structural weakness evident. Cracking easier to detect. Patched, but not excessively. Rutting more pronounced and easier to detect. Riding qualities are good. Improvements range from a thin oil mat for low volume roads to a 2-inch overlay for higher-volume roads.	Some spalling and cracking, with a few areas requiring minor levels of repair. Shoulder joints may show evidence of deterioration and loss of slab support. Faulting may be evident. Ride qualities are good.
POOR	Areas of instability, marked evidence of	Cracking patterns are evident.

	structural deficiency, large crack patterns, heavy and numerous patches, and very noticeable deformation. Riding qualities range from acceptable to poor. Improvements range from a 2- to 4-inch overlay to reconstructing the roadway.	Occasional punch out repair evident. Some joints and cracks show loss of base support. Ride may continue to be acceptable.
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Benton County also rates its roadways as part of its Pavement Management System (PMS). With few exceptions, the pavement condition survey ratings and the County’s ratings agree on pavement sections in fair-or-better condition (number of locations existed where one entity rated a pavement section fair while the other rated it good, and visa-versa). Pavement ratings shown in **Figure 3-2** for roadways within the urban growth boundaries of Albany, Corvallis, and Philomath are taken from the County’s pavement management system.

Regular maintenance of roadways will reduce costs over the long term. **Figure 3-3** illustrates the relationship between pavement condition and time (“Pavement Management System Study Summary Report,” Metropolitan Transportation Commission, Oakland CA, 1985). The rate of deterioration increases rapidly in the later years of a pavement’s useable lifetime. Typical pavements will show a 40 percent quality drop after the first 75 percent of their useable lifetime.

The next 40 percent quality drop will occur in only the next 12 percent of the usable lifetime. Moreover, every dollar spent on pavement rehabilitation when pavement quality is still fair will correspond to four to five dollars required for rehabilitation if maintenance is deferred until pavement quality is very poor. These factors make deferred maintenance very expensive, and an appropriate PMS very desirable.

Pavement Preservation

Benton County is responsible for approximately 245 miles of hard surface roadways. The cost of maintaining these roadways varies from \$45,000 to \$200,000 per mile of overlay, based on road conditions and width. The average life span of roadway paving and resurfacing is approximately 20 years. Over the 20-year span that this TSP represents, it could reasonably be assumed that all 245 miles of hard surface roadway in the County would require resurfacing. This assumes of course that the County determines that maintaining all 245 miles as hard surface roadways is desirable. This results in a 20-year fiscal need of approximately \$24.5 million, or approximately \$1.225 million on an average annual basis.

Benton County uses a Pavement Management System (PMS) to determine which roadways require preservation work and the timing of the need. This PMS considers the daily volume of traffic, vehicle mix (truck, auto, recreational vehicle, etc.), roadway classification, and current condition of the roadway as key factors in determining need and timing of improvements.

The key elements of a PMS include: scheduled, regular inspections of all paved roads, established thresholds from roughness and/or visual distress surveys that will trigger a structural survey of a given road segment, correlation between the age of the existing surface, its present condition, and projected time of most economical major maintenance, and an annually updated list of anticipated minor and major maintenance for at least five years ahead.

Roadways identified in poor condition include:

- ◆ Northern half-mile of Luckiamute Road
- ◆ Most of the Alsea-Deadwood Highway
- ◆ Paved section of Old Peak Road near Highway 34

In addition to these poorly rated roadways, several other roadways were identified as likely needing preservation work within the near-term (zero to five-year period), including:

- ◆ SW 53rd Street between Reservoir Avenue and U.S. 20/Highway 34
- ◆ West Hills Road east of SW 53rd Street to Western Boulevard

- ◆ Country Club Road between SW 53rd Street and U.S. 20/Highway 34
- ◆ Oak Creek Drive north of Cardwell Hill Road
- ◆ Ponderosa Drive west of Deer Run Street
- ◆ The section of Harrison Boulevard under County jurisdiction

Expenditures to maintain these roadway pavements will increase substantially if preservation activities are postponed. The County's PMS is calibrated to maximize the efficiency of the roadway system and minimize the overall capital expenditure for such preservation work.

Only when preservation is performed within a reasonable timeframe on the identified need, is the County able to minimize its preservation expenditures in total.

Current funding levels for pavement preservation are not keeping pace with needs. In fact, recent funding levels for pavement preservation have been only approximately 15 percent of the identified average annual need. Information provided in Chapter 7 identifies methods of funding to support the average annual need through the 20-year planning horizon.

An alternative to providing funding at approximately \$1.225 million annually would be for the County to convert some of its hard surface roadways to gravel roads. This approach would reduce the financial need, but incur other potential costs and impacts. Roadways converted back to gravel create dust and other environmental/livability impacts, result in increased frequency of automobile repairs, increase travel times, and divert traffic to other paved roads. Although this list of potential costs and impacts resulting from such a policy decision is not complete, it is sufficient to identify the significance of the decision.

Should it become necessary for the County to convert hard surface roadways to gravel, it is recommended that County staff uses the PMS to identify those roadways that would result in the least adverse impacts due to the conversion. Ideally, identified roadways would have low average daily traffic volumes (generated by the lowest population densities) and alternative access via a paved road.

3.1.2.B.2 Railroad Crossings and Bridges

Railroad crossing improvements and bridge repairs account for a number of the County's capital improvement projects. **Figure 3-4** identifies bridges and railroad crossings in the County. In 1996, 16 bridges in Benton County had weight restrictions and two had height restrictions (as shown in **Figure 3-4**).

Many of the bridges in Benton County need to be replaced due to deterioration, structural inadequacy, weight limits, and seismic safety. Within the City of Corvallis, the Van Buren Street Bridge over the Willamette River has been identified for replacement. This project, estimated to cost \$5 million, will eliminate a bottleneck for eastbound traffic leaving Corvallis. ODOT has jurisdiction over this bridge. The Corvallis Transportation System Plan recommends this project for inclusion in the State Transportation Improvement Plan. Proposals have been made to retain the existing structure for pedestrian and bicycle use.

The future north Corvallis bypass will provide a northern crossing of the Willamette River in the Corvallis area, providing a faster route between northern Benton County and I-5 and allowing north Highway 99W through traffic to avoid the Corvallis central business district.

CH2M Hill conducted a seismic safety study of Oregon bridges for ODOT, the Association of Oregon Counties, and the League of Oregon Cities ("Seismic Vulnerability of Local Agency Bridges," 1995). This study identified 31 bridges under Benton County's jurisdiction that are in need of seismic upgrades, at a total estimated cost of \$4.02 million. The study also identified 26 bridges in Benton County under ODOT's jurisdiction that are seismically vulnerable.

Three historic covered bridges are located in Benton County. One is on Hayden Road over the Alsea River west of Alsea, another is on Harris Road over the Marys River west of Wren, and the third is located on the Oregon State University Campus Way bike path in Corvallis.

3.1.2.B.3 Intersection Alignment and Control

Figure 3-5 identifies the controls used at intersections of arterials and collectors within the County, including whether exclusive left- or right-turn lanes are provided on the main roadway.

The following intersections are currently uncontrolled:

- ◆ Coffin Butte Road/Soap Creek Road
- ◆ Airport Avenue/Peterson Road
- ◆ Bellfountain Road/Nichols Road/Cherry Creek Road.

The intersections listed below are not conventional three- or four-leg intersections. Instead they are “Y” intersections or intersections where the through route makes a 90-degree turn via a horizontal curve in one quadrant of the intersection.

- ◆ Palestine Avenue/Oak Grove Drive
- ◆ Bellfountain Road/Dawson Road
- ◆ Stow Pit Road/Old River Road
- ◆ West Ingram Island Road/Old River Road
- ◆ Dodge Island Road/Old River Road
- ◆ Alesa-Deadwood Highway/Lobster Valley Road/Hazel Glen Road

3.1.2.B.4 Road Shoulders

Road shoulders are commonly used by bicyclists, for emergency parking, and for the movement of farm and other low-speed motorized equipment. They also provide a buffer zone between the travel lane and roadside obstacles such as slopes, ditches, and trees.

Shoulders that are six feet or wider provide sufficient room for vehicles to pull off the roadway in an emergency and allow most low-speed equipment movement without blocking the travel lane. When paved, they also function as bikeways. Shoulders in the range of two to five feet in width still act as buffers and allow vehicles to pull partially off the road. When paved, they function as narrow bikeways. Shoulders narrower than two feet provide no emergency parking, offer limited buffer between the travel lane and roadside obstacles, and bicycles share the travel lane with vehicles. **Figure 3-6** identifies paved shoulder widths on County roads.

Roads with inadequate shoulder widths include a number of roads used by touring and recreational bicyclists, including portions of Bellfountain Road, Soap Creek-Sulphur Springs Road, Highway 34, and South Fork Road.

3.1.2.B.5 Vehicular Demand/Roadway Capacity

Figure 3-7 depicts the most recent available traffic volumes on collectors and arterials within Benton County. Traffic volumes on state highways are 1994 counts, while traffic volumes on County roads are counts from 1989 through 1995.

Residual capacity exists on all of the state and county roadways considered in this TSP, under existing conditions. In 1996, the existing demand exceeded planned level of service thresholds on several segments of the state highway system within Benton County, including:

- ◆ U.S. 20 from approximately Clemens Mill Road west to the County line
- ◆ U.S. 20 from Conifer Avenue north to approximately Blossom Lane
- ◆ Highway 99W from Tampico Road south to approximately Mountain View Drive
- ◆ Highway 99W from Park Avenue south to approximately Kiger Island Drive

3.1.3 Performance Evaluation of the Existing Systems

The following section describes the analysis methodologies applied to determine the adequacy of the existing system. System performance was evaluated in terms of capacity, safety, connectivity, and/or mobility. Analysis findings are summarized and deficiencies identified.

3.1.3.A Roadway Level of Service Analysis

To determine how well county roadways are operating under current traffic volumes, a planning level arterial LOS analysis was conducted using the 1995 Florida Level of Service Manual. The Florida method is based on the 1994 Highway Capacity Manual (HCM), but is focused more toward planning applications where only minimal information is available, such as average daily traffic (ADT) volumes and the number of lanes, rather than on detailed operational analyses. The main differences between the two methods are that the default values used in the Florida method are based on studies conducted in Florida by the Florida Department of Transportation, and the Florida method provides capacity adjustment factors for the presence of left-turn lanes and medians along roadways that the HCM does not.

The Florida method provides several levels of detail, depending on the amount of information available to the planner. The lowest level of detail is Florida's Generalized Level of Service Tables, which apply defaults to all of the inputs required for the various HCM methods. These tables list maximum ADTs for particular levels of service for various types of roadways and settings (rural, transitional, or urban). More detail is available through the use of Florida's table-generating spreadsheets, which allow planners to override defaults with locally collected data to create level of service tables individualized for a particular roadway or set of roadways. When signal timing and spacing data are available, a third level of detail is available for analyzing interrupted-flow facilities such as urban arterials.

Benton County roadways were analyzed using several of these methods. In general, state highways were divided into segments having similar traffic and geometric and adjacent land use characteristics. Each segment was analyzed individually. County roadways were grouped into broad categories of roads having similar characteristics. Florida's rural two-lane uninterrupted highway spreadsheets were used for all highways outside of urban growth boundaries and the Alpine/Bellfountain area. The urban two-lane uninterrupted spreadsheets were used for roadways in rural communities and areas transitioning to urban areas. Finally, the detailed arterial planning spreadsheets were used for signalized segments of U.S. 20 and Highway 99W within urban growth boundaries.

Levels of service (LOS) range from A to F, with LOS "A" indicating free-flow, unconstrained conditions, LOS "E" indicating operation at capacity, and LOS "F" indicating over-capacity, congested conditions. For rural two-lane roads, level of service is based on volume/capacity ratio, terrain, and the percent of the roadway segment striped for no passing. For urban arterials, LOS is based on average travel speeds through a particular roadway segment. It should be noted that arterial LOS is not the same as the delay-based intersection levels of service typically reported in traffic studies, which can be higher or lower than the overall arterial LOS. **Figure 3-8** depicts existing roadway levels of service for arterials and major and minor collectors in Benton County.

The 1999 OHP replaces the LOS standards for state highways with V/C ratios and mobility standards. **Table 3-3** provides an approximate conversion for LOS to V/C.

Table 3-3
Level of Service (LOS) to Volume /Capacity Ratio (V/C) Conversions

LOS Value	Rural V/C Range	Urban V/C Range
A	0.00-0.20	0.00-0.26
B	0.21-0.35	0.27-0.42
C	0.36-0.50	0.43-0.56
D	0.51-0.70	0.57-0.75

E	0.71-0.99	0.76-0.99
F	1.0	1.0

Table 3-3 Notes:

- ◆ Rural applies to the Rural Two-Lane Uninterrupted Highways; used for all highways in Benton County that are outside of the UGB.
- ◆ Urban applies to the Urban Two-Lane Uninterrupted Highways; used for roadways in Benton County that are in rural communities and areas transitioning into urban areas.

3.1.3.B Signal Warrant Analysis

Thirty-five higher-volume intersections were analyzed to determine the possible need for signalization. This need is based on the national-standard signal warrants given in the Manual on Uniform Traffic Control Devices (1988). The Manual provides 11 signal warrants, including those based on accident experience, pedestrian volumes, and coordinated signal systems. This analysis only evaluated two of the volume-based warrants. A signal should not be installed until at least one warrant is met; however, the satisfaction of a warrant is not, of itself, sufficient reason to install a signal. Further engineering evaluation must be conducted and the judgment of an engineer applied to verify the appropriateness of such a treatment.

The two warrants evaluated were Warrant 1 (Minimum Vehicular Volume) and Warrant 2 (Interruption of Continuous Traffic). Both of these warrants are based on 8th-highest hour volumes; in order to satisfy these warrants, traffic volumes on the major and minor intersection approaches must be greater than the warrant volumes for at least eight hours out of the day. The warrant volumes vary by the importance of the approach (major street vs. minor street), the number of through lanes on the approach, the posted or 85th-percentile speed on the major street, and the area population.

To satisfy Warrant 1 with single-lane approaches on both roadways, the total major street volume must be at least 500 vehicles per hour for eight hours of the day, and the higher minor street approach volume must be at least 150 vehicles per hour for eight hours of the day. To satisfy Warrant 2 under the same conditions, the total major street volume must be 750 vehicles per hour, and the higher minor street approach volume must be at least 75 vehicles per hour. When the major street speed is greater than 40 mph or the intersection is located within the built-up area of an isolated community having a population less than 10,000, the warrant volumes are 70 percent of those shown above.

A “planning level” signal warrant analysis was conducted first to identify the most likely locations for potential signals. At this level of analysis, several assumptions are made to convert daily roadway volumes into 8th-highest hour approach volumes. For the purposes of this initial analysis, it was assumed that p.m. peak hour traffic was 10 percent of the average daily traffic, and that the 8th-highest hourly volume was 70 percent of the p.m. peak hour traffic (equivalent to 7 percent of the ADT). It was also assumed that the directional distribution of traffic on minor street intersection approaches was two-thirds in the peak direction and one-third in the off-peak direction. These assumptions are based on averages from national studies. **Table 3-4** lists the intersections that meet at least one signal warrant using this method.

Table 3-4
Planning Level Existing Conditions Signal Warrants

Intersection	Warrant 1	Warrant 2
Scenic Drive/U.S. 20	YES	YES
Highway 34/U.S. 20	YES	YES
Walnut Boulevard/Harrison Boulevard	YES	YES
Reservoir Road/SW 53rd Street	YES	YES
Independence Highway/U.S. 20	NO	YES
Granger Avenue/U.S. 20	NO	YES
Arnold Way/Highway 99W	NO	YES

Once the list of potential signal locations had been narrowed, p.m. peak hour turning movement counts were conducted at these intersections and several other key intersections to more accurately determine existing intersection operation and the need for signalization. The LOS at each intersection was then analyzed using the procedures given in the 1995 HCM. **Table 3-5** lists the results of this analysis and **Figure 3-8** depicts the levels of service at these intersections.

Table 3-5
Existing Conditions Intersection Levels of Service

Intersection	Signalized/All-Way Stop		Unsignalized		LOS
	V/C	Intersection Delay (sec)	Critical Movement	Movement Delay	
Scenic Drive/U.S. 20			SB	33.6	E
Independence Highway/U.S. 20			SB	>60.0	F
Granger Avenue/U.S. 20			SB	>60.0	F
Highway 34/U.S. 20			NB LT	16.2	C
Camp Adair Road/Highway 99W			WB TH/LT	10.1	C
Arnold Avenue/Highway 99W			WB	12.2	C
Greenberry Road/Highway 99W			EB	6.7	B
Walnut Boulevard/Harrison Boulevard	*	9.5			B
Reservoir Road/SW 53rd Street			EB	15.4	C
West Hills Road/SW 53rd Street			EB	7.4	B
West Thornton Lake Road/North Albany Road			EB	5.8	B
Alpine Road/Highway 99W			EB	5.9	B

Orchard Road/Highway 99W			EB	5.7	B
Philomath Boulevard/SW 53rd Street	0.62	18.4			C

V/C: Volume-to-Capacity Ratio LOS: Level of Service

* : A refined level of service analysis was required for this multi-lane approach, all-way stop intersection.

Table 3-5B provides an approximate conversion from LOS to V/C ratio for signalized intersection segments that allow comparison of LOS values on Highway 99W and U.S.20 intersections inside Urban Growth Boundaries.

**Table 3-5B
LOS to V/C Ratio Conversion for Signalized Intersections**

LOS Value	V/C Range
A	0.00-0.50
B	0.51-0.61
C	0.62-0.75
D	0.76-0.85
E	0.86-0.99
F	1.00

Two intersections currently operate at level of service F: Independence Highway/U.S. 20 and Granger Avenue/U.S. 20. All other intersections currently operate at acceptable levels of service. The Scenic Avenue/U.S. 20 intersection operates at LOS E because of the low volume of traffic approaching the intersection from Scenic Avenue during the weekday p.m. peak hour. It is likely that much of the traffic that might use this intersection diverts to other roads, particularly Gibson Hill and North Albany Roads.

Once actual p.m. peak hour turning movement counts had been obtained, an “operations level” signal warrant analysis was performed again to determine more accurately the need for signalization at key intersections. At this level of analysis, the only assumption is the ratio of 8th highest-hour traffic to peak-hour traffic. **Table 3-6** lists the results of this analysis. **Figure 3-9** shows the locations that meet signal warrants.

**Table 3-6
Operations Level Existing Conditions Signal Warrants**

Intersection	Warrant 1	Warrant 2
Scenic Drive/U.S. 20	NO	NO
Highway 34/U.S. 20	NO	YES
Walnut Boulevard/Harrison Boulevard	YES	NO
Reservoir Road/SW 53rd Street	YES	NO
Independence Highway/U.S. 20	NO	NO
Granger Avenue/U.S. 20	NO	YES
Arnold Way/Highway 99W	NO	NO

As shown in **Table 3-6**, no intersections meet both warrants 1 and 2. Two intersections along U.S. 20 with poor levels of service (Scenic Drive and Independence Highway) fail to meet signal warrants because of insufficient minor street approach volumes. Signalization is not needed at the Reservoir Road/SW 53rd Street intersection, despite the warrants, because it operates at an acceptable level of service C and because a large portion of the major-street volume that satisfies the warrants is right-turning volume that would not benefit from a signal. Similarly, the U.S. 20/Highway 34 intersection meets signal warrants primarily because of the northbound

right-turn movement, which can be accommodated by other means. The remaining two intersections would be isolated signals, if constructed, and therefore other mitigation measures should also be considered.

3.1.3.C Roadway Safety

The accepted statewide methodology for analyzing the safety of roadways involves a comparative analysis of similar roadway segments across a broad cross section (i.e., all state highways) to identify roadways and segments that have higher than average accident rates. The accidents that occur on these segments are then analyzed to determine if there is an inherent geometric safety problem associated with the roadway. This section summarizes any such deficiencies.

3.1.3.C.1 Roadway Accident History

ODOT accident histories for state highway segments outside of Corvallis were analyzed for the period 1990-92, the most recent years for which accident tables had been published. **Table 3-7** identifies roadway segments that had accident rates higher than the statewide average of similar roads during the same period. Accident rates are measured as number of accidents per million-vehicle-miles (MVM).

**Table 3-7
State Highway Accident Rates**

Highway	Segment	1990-92 Accidents/MV M	Statewide Average Accidents/ MVM
99W	Corvallis SCL-Kiger Island Road	1.25	0.92
	Territorial Highway-Long Tom River	12.48	3.61
34	Lincoln County-Alsea	1.27	0.92
	Summit-Hide Creek Road	1.05	0.92
	Hide Creek Road-Junction U.S. 20	1.37	0.92
U.S. 20	Junction Highway 223-Junction Highway 34	1.09	0.92
	Corvallis NCL-Albany NCL	1.05	0.92
	Corvallis NCL-Albany NCL	1.16	0.92
223	Luckiamute River-Junction U.S. 20	1.29	1.27

NCL: North City Limits

SCL: South City Limits

MVM: Million Vehicles Miles

The roadway segments with higher-than-average accident rates tend to have higher volumes (U.S. 20 between Corvallis and Albany, Highway 99W immediately south of Corvallis) or have a number of horizontal and vertical curves (Highway 34, Highway 223, U.S. 20 between Highway 223 and Philomath). The very high accident rate for the segment of Highway 99W between Territorial Highway and the Long Tom River is a methodological anomaly, due to the mathematical effect of examining an extremely short segment length (0.06 miles). This segment experienced four accidents during the period 1990–92.

When individual intersections are analyzed, an accident rate greater than 1.0 accidents per million entering vehicles (MEV) generally indicates a need for further study to identify potential accident causes. During the period 1990-92, no rural intersection on a state highway in Benton County had an accident rate higher than 0.58 accidents/MEV (the junction of U.S. 20 and Highway 34 west of Philomath).

County accident records for the period January 1993-March 1996 were also analyzed to identify potential safety problems. Five intersections were identified as having accident rates greater than 1.0 accidents/MEV, as shown in **Table 3-8**.

**Table 3-8
Benton County Accident Rates**

Location	Accidents/ MVM	Total Number of Accidents
Independence Highway/Springhill Drive	2.53	3
Independence Highway/Pettibone Road	1.91	4
Highway 34/Marys Peak Road	1.10	2
Highway 34/Fish Hatchery Road	1.26	2
Bellfountain Road/SW Airport Avenue	1.22	3

The higher accident rates on County roads are partially due to lower traffic volumes, which tend to magnify the effects of a single accident. However, two intersections (Independence Highway/Springhill Drive and Bellfountain Road/Airport Avenue) also appear on the “intersections of concern” list shown in **Table 3-9**. Two of the four accidents at the Independence Highway/Pettibone Road intersection occurred during icy conditions. The other two intersections are on Highway 34 between Alsea and Philomath; each had two accidents in three years.

**Table 3-9
Intersections of Concern**

Intersection	Problem(s)
Bellfountain Road/Airport Avenue	poor sight distance on west approach due to horizontal and vertical curves to north
Granger Avenue/U.S. 20	high-volume intersection, curve and railroad tracks prior to intersection on Granger Avenue
Bellfountain Road/Greenberry Road	unusual geometry, no southbound left-turn lane, bridge to north
Independence Highway/U.S. 20	high-volume intersection, adjacent railroad tracks
Independence Highway/Ryals Avenue	intersection at hill crest, poor sight distance for northbound left turns, no left-turn lane
Scenic Drive/U.S. 20	high-volume intersection, short intersection spacing with railroad tracks between
Old River Road/Highway 99W	horizontal curve to north, no left-turn lane
Reservoir Avenue/SW 53rd Street	railroad undercrossing creates poor sight distance and roadway obstruction
Cox Lane/Larkin Road	intersection located on horizontal curve, poor sight distance for northbound left turn
Independence Highway/Springhill Drive	intersection located on horizontal curve, unusual intersection geometry
Grange Hall Road/Fern Road	intersection located on horizontal curve, bridge to north restricts sight distance

Intersection	Problem(s)
Stow Pit Road/Hwy 99W	horizontal curve south of intersection, trees and poles further restrict sight distance
Wren Road/Highway 223	intersection located on horizontal curve, unusual intersection geometry
Palestine Avenue/Oak Grove Drive	unusual intersection geometry
Priest Road/U.S. 20	horizontal curve west of intersection, no left-turn lane

3.1.3.C.2 Rail Safety

When railroad safety is considered in the public context, at-grade roadway crossings are usually the prevalent issue. Other concerns can be the haulage of hazardous materials and derailments. Neither of the latter two aspects has been identified as issues in Benton County. Materials that are carried in the County that might be considered low-level hazardous include fertilizers, LPG (Liquid Petroleum Gas), and flue dust.

From the stakeholders' point of view, it appears that the concern with crossings is mainly that of inconvenience in Corvallis. ODOT has documented 89 public crossings in Benton County. Of these, ten are separated crossings and two are pedestrian only. Of the total, 36 crossings lie within the Corvallis City limits. In order to consider the density of crossings within "downtown" Corvallis, this area could be considered to be bounded by U.S. 20 on the south, Buchanan Avenue on the north, 15th Street on the west, and the Willamette River on the east. There are 17 at-grade crossings within these boundaries and 10 of these lie in the 6th Street corridor. Within this area, ODOT has recorded only two accidents in the last five years, one at 6th and Washington and one at 7th near Western.

Elliot Circle: Three accidents in the past five years have been recorded at the railroad crossing at Elliot Circle. The crossing is marked with cross bucks and controlled with stop signs. ODOT Rail Safety Section staff have not supported the county's request for crossing protection improvements at this location due to the proximity to Highway 99W and the lack of a traffic signal on the highway at Elliot Circle. A signal on the highway would allow for rail preemption of the signal so traffic queued on Elliot Circle could enter the highway upon the approach of a train. The traffic volume on Elliot Circle is too low to meet signal warrants. ODOT staff has suggested that the full or partial closure of the Elliot Circle intersection is a preferred alternative. Closure of the intersection would result in out of direction travel to Granger Avenue and back for truck traffic serving the mill that is proximate to the intersection. Traffic would be diverted past the elementary school at the intersection of Granger Avenue and Elliot Circle. This intersection is located within the Corvallis urban growth boundary.

Granger Avenue/U.S. 20: Granger Avenue intersects U.S. 20 from the northwest after rounding a curve. The track lies about 40 feet from U.S. 20. Visibility is fair from both roads except for the reduced vision distance caused by the curve. Gates and signals protect the crossing. There have been no accidents recorded at this crossing in the past five years. Fourteen buses are scheduled to use this crossing. Because the railroad is less than 100 feet from the parallel highway, motorists making a turn off U.S. 20 need to be warned that a crossing is ahead. Therefore, and because of the curve, advance warning signs should be present on both roads.

Independence Highway/U.S. 20: Independence Highway intersects U.S. 20 from the north. The track lies parallel to and about 80 feet from U.S. 20. Because the track lies on a berm above U.S. 20, visibility is good. Gates and signals protect the crossing, and no accidents have been recorded at this crossing in the past five years. Four buses are scheduled to use this crossing. Because the railroad is less than 100 feet from the parallel highway, motorists making a turn off U.S. 20 need to be warned that a crossing is ahead. Therefore, advance-warning signs should be present on both roads.

Scenic Drive/U.S. 20: Scenic Drive first intersects West Thornton Lake Drive, then U.S. 20, from the north. The track lies parallel to and between both roads, about 70 feet from West Thornton Lake Drive and about 80 feet from U.S. 20. Visibility is good except for traffic approaching from the east on U.S. 20 where vision is obstructed by trees and brush. Gates and signals protect the crossing. There have been no accidents recorded at this crossing in the past five years. Ten buses are scheduled to use this crossing. Because the railroad is less than 100 feet from the parallel roadways, motorists making a turn from either need to be warned that a crossing is

ahead. Therefore, advance-warning signs should be present on both roads. Vegetation control would also improve the sight lines.

Reservoir Avenue/SW 53rd Street: The railroad track lies parallel to and about 50 feet from Reservoir and crosses SW 53rd Street above grade on a trestle. Because the grades are separated there is no danger of a vehicle-train accident. The trestle does limit the view of northbound traffic on SW 53rd Street from Reservoir Avenue.

The intersection of Reservoir Avenue and SW 53rd Street should be relocated to the southerly line of the Fairgrounds to facilitate improvement of the railroad crossing either as an at-grade or road overpass. This location was approved by the Board of Commissioners as the preferable alignment at their meeting on May 26, 1999.

According to the five-year train/vehicle accident history in Benton County there were 19 incidents recorded. Three each at Elliot Circle, and North 12th Street in Philomath. Two each at the two crossings in sequence at the west end of Philomath, North 7th Street and U.S. 20 (spur track at Flynn). One each at the following crossings: North Albany Road, SW 7th Street near Western Boulevard, Reservoir Avenue (westernmost crossing, Conroy, spur track), Greenberry Road, Llewellyn Road, Airport Avenue, SW Washington at 6th, Ryals Avenue, and McFarland Road.

It is worth noting that Greenberry Road, Llewellyn Road, and Airport Avenue lie in a series south of Corvallis. This fact may be a coincidence, because the terrain is relatively open and flat and the track is a fair distance from Highway 99W. Although there is no apparent reason for the incidents, further investigation may be warranted. Gates and signals were recently installed at Ryals Avenue.

3.1.3.D Connectivity

The existing transportation system has a number of discontinuities due to physical constraints and/or obstructions (i.e. rivers, mountains, flood plains, and steep slopes). While it is expected and accepted that some discontinuities will be present in hilly terrain and lowland areas such as exist in Benton County, certain discontinuities may severely inhibit safety, emergency response, and/or livability.

Connectivity of the transportation system must be considered at two levels. The first is from a system-wide perspective that examines the reasonableness of the functional classification system. The second is at the local level and examines the specific issue of secondary access, primarily for safety reasons.

3.1.3.D.1 Connectivity of the Functional Classification System

The functionally classified street system is planned to provide an orderly series of roadways that accommodate trips of an appropriate nature. With few exceptions, interconnected roads should be of the same order or one step higher or lower in the hierarchy. As an example, rarely should a Minor Collector provide direct access to a Minor Arterial or Principal Arterial. Instead, a Major Collector should be used to “bridge the gap” between these functional classes and serve the appropriate travel demand. Therefore, where such “gaps” exist in the existing system, an examination was performed to determine if the roads are appropriately classified for the demand being served and whether it is necessary to provide a new connection at the appropriate classification level.

The findings of this examination of the existing system revealed that connectivity between roadway classifications has been adequately planned for and addressed.

3.1.3.D.2 Connectivity of the Local Street System

As noted above, safety, emergency response, and livability are central issues of concern with regard to connectivity of the transportation system. This is particularly true for secondary access in the local street system. Rural residential areas that have developed over time may have restricted emergency access due to a lack of alternative access roads. This can potentially result in an area being entirely cut off in the event of a failure of the existing facility. Under such circumstances, emergency response could be adversely impacted, resulting in significant service delays. The absence of good alternate routes may severely limit the available modes of travel and significantly increase the overall vehicle-miles-traveled.

Rural areas with significant growth potential should be examined for the possibility of providing both primary and secondary access routes as development occurs. Connectivity for the primary travel modes (vehicle, pedestrian, bicycle, transit) should be considered not only for large areas of development, but also in areas where piece-meal development has or will exacerbate the dependence on a single access point to serve ever-growing demand.

Retrofitting connectivity to a rural residential area can be particularly difficult and very costly. Therefore, emphasis should be placed on guiding future development to ensure that reasonable access is provided with equity among all properties benefiting from such access. Opportunities to provide secondary access in developing and fully developed areas must be actively sought with the participation of the impacted property owners. Equity and minimization of cost and impact are of particular concern to most rural residents in the process of obtaining reasonable or secondary access.

An examination of the local street system in Benton County revealed some areas that are constrained to a primary access only, including:

- ◆ Oak Creek Drive
- ◆ Cardwell Hill Road
- ◆ Brooklane Drive
- ◆ Emergency Access road between the Wooded Knolls area and the Chinook Road District

The City of Corvallis Transportation Alternatives Analysis Study recommends a \$2.61 million improvement to complete Brooklane Drive as a continuous facility between its intersections with U.S. 20/Highway 34 and SW 53rd Street. This improvement will overcome the identified deficiency. *(For more information, see section “Transfer of County Road Jurisdiction to Cities” in section 3.3.2 in this chapter.)*

3.1.3.D.3 Lifeline Routes

A map of the lifeline routes is included in **Figure 3-13** and depicts alternate routing that can be utilized during periods of loss of roadway function such as bridge failure.

A goal of the transportation system is to provide emergency access to communities in the County when natural events such as flooding, landslides, earthquake, and wildfire or accidents close normal routes. The County will evaluate susceptibility of its transportation infrastructure to natural disasters and identify alternate routes, within available resources. The Lifeline Route map will be updated as this information is available and will be utilized for emergency planning and management.

3.1.3.E Identified Deficiencies and Required Mitigation

Deficiencies identified through the previously described existing system performance evaluation are summarily described below. Types of system-level and specific mitigation strategies for the identified existing deficiencies are provided.

3.1.3.E.1 Roadway System Deficiencies

As previously described, all County-owned roads operate at acceptable levels of service, although some individual intersections may operate at unacceptable levels of service or have operational or safety deficiencies. The old level of service standards for state highways varied by the highway’s level of importance (LOI) and the type of area, as previously described. **Table 3-10** lists roadway segments that did not meet ODOT’s level of service standards at the time the Benton County TSP analysis was completed.

**Table 3-10
Roadway Segments Not Meeting Level of Service Standards (1995)**

Highway	Segment	LOI	LOS Standard	1995 LOS
U.S. 20	Lincoln County to Philomath	Statewide	B	C-D

U.S. 20	Downtown Philomath	Statewide	C	E
U.S. 20	Conifer Boulevard to North Albany	Regional	C	D-E
Highway 99W	Tampico Road to Mountain View Avenue	Regional	C	D
Highway 99W	Goodnight Avenue to Kiger Island Road	Regional	C	D

LOI: Level Of Importance

A total of 27 miles of state roadways within Benton County fell below ODOT’s level of service standards for their level of importance. It should be noted that this does not necessarily mean that the roadways have failed from a functional standpoint, it means only that traffic does not flow as freely as desired.

Mitigation strategies are developed at both the system-level and at the specific level. Examples of system-level mitigation include additional travel lanes for state highways and the expansion of transit service to existing or new areas. Specific mitigation includes improvements such as intersection signalization, railroad crossing arm installation, and the completion of a missing bicycle link. Potential system-level mitigation and specific mitigation to identified existing deficiencies are presented below.

3.1.3.E.2 System Strategies

Deficiencies identified for a specific location may actually be symptomatic of a larger problem. Providing mitigation at the specified location may not solve the larger problem, and could actually exacerbate a deficiency at another location. Therefore, it is appropriate to examine deficiencies from the system’s perspective. This provides the opportunity to identify the larger problem and/or a solution that truly addresses the inherent problem. The following provides a description of this approach and potential system-level mitigation to identified deficiencies.

3.1.3.E.2 a General Discussion

System-level strategies can be divided into two basic groups: **capacity improvements**, which range from the relatively minor (left-turn lanes) and more involved (passing lanes) to the most expensive (additional through lanes), and **access management and control strategies**.

Adding left-turn lanes to a roadway at all major intersection reduces delay to through vehicles that would otherwise stop behind left-turning vehicles waiting for opposing traffic to clear. The Florida Level of Service Manual adjusts a roadway’s ideal capacity up or down by as much as +5 to –25 percent to reflect the effects of left-turn lanes and raised medians. Providing passing lanes at intervals along a heavily traveled highway allows faster traffic to get past slower traffic when curves or opposing traffic volumes do not permit ordinary passing. The Florida LOS Manual increases a roadway’s capacity by as much as 30 percent to reflect the benefits of passing lanes. Providing additional through lanes provides the greatest capacity benefit at the greatest cost.

Access management and control strategies determine how and where vehicles are allowed access onto a highway. Raised medians reduce interruptions to through traffic by prohibiting left turns onto and off of the highway. Driveway spacing standards determine the locations where vehicles may access the highway and are intended to minimize the number of potential conflict and delay points along a highway. Signal spacing standards set minimum distances between traffic signals, in order to minimize potential delays caused by traffic signals. Frontage roads provide access to land uses adjacent to the highway, while the main highway serves only through traffic. Divided highways provide the benefits of raised medians and also allow side-road traffic to cross or merge onto a highway in two steps, rather than one, thus reducing the need to signalize intersections. Grade-separated interchanges improve intersection safety by changing turning and crossing movements into merging and diverging movements, while maintaining uninterrupted flow along the main highway.

The 1999 OHP Major Improvements Policy includes the following:

Since road construction is very expensive and funding is very limited, it is unlikely that many new highways will be built in the future. Instead, the emphasis will be on maintaining the current system and improving the efficiency of the highways the State already has. The Major Improvements Policy reflects this reality by directing ODOT and local jurisdictions to do everything possible to protect and improve the efficiency of the highway system before adding new highway facilities. This policy carries out the direction of the Oregon Benchmarks. This direction includes improving traffic operations and maintaining the roadway for legal size vehicle travel. These priorities—laid out in Action 1G.1—take precedence over the other actions in this policy.

Policy 1G: Major Improvements

It is the policy of the State of Oregon to maintain highway performance and improve safety by improving system efficiency and management before adding capacity. ODOT will work in partnership with regional and local governments to address highway performance and safety needs.

Action 1G.1

Use the following priorities for developing corridor plans, transportation system plans, the Statewide Transportation Improvement Program, and project plans to respond to highway needs. Implement higher priority measures first unless a lower priority measure is clearly more cost-effective or unless it clearly better supports safety, growth management, or other livability and economic viability considerations. Plans must document the findings which support using lower priority measures before higher priority measures.

- 1. Protect the existing system.** The highest priority is to preserve the functionality of the existing highway system by means such as access management, local comprehensive plans, transportation demand management, improved traffic operations, and alternative modes of transportation.
- 2. Improve efficiency and capacity of existing highway facilities.** The second priority is to make minor improvements to existing highway facilities such as widening highway shoulders or adding auxiliary lanes, providing better access for alternative modes (e.g., bike lanes, sidewalks, bus shelters), extending or connecting local streets, and making other off-system improvements.
- 3. Add capacity to the existing system.** The third priority is to make major roadway improvements to existing highway facilities such as adding general purpose lanes and making alignment corrections to accommodate legal size vehicles.
- 4. Add new facilities to the system.** The lowest priority is to add new transportation facilities such as a new highway or bypass.

3.1.3.E.2b Intersection Operation

Many of the mitigation strategies described below may be applicable to a number of intersections within the County. These strategies are described in general terms below, and more specific information is provided as needed for specified deficiencies.

Intersection channelization involves road widening to provide painted islands and turn lanes to better indicate how vehicles should travel through an intersection, and to benefit through traffic and overall safety by removing stopped cars from through lanes. Sufficient right-of-way needs to be available for the additional pavement width not only in the intersection but also for some distance before and after to allow the roadway to taper out to its

full width. This distance depends on the roadway's posted speed. The need for left-turn lanes is generally determined by warrants based on the volumes of left-turning, through, and opposing traffic, and on the posted speed.

Realigning intersections can be done for a number of reasons, including:

- ◆ Converting a heavy left-turn movement at a "T" intersection into a through movement
- ◆ Moving a skewed intersection approach so that it intersects at a 90-degree angle
- ◆ Moving the entire intersection to make room for other roadway improvements
- ◆ Moving the entire intersection away from horizontal and/or vertical curves that impair sight distance

Additional right-of-way may be required, depending on the amount of realigning necessary.

Regrading intersections typically involves lowering the roadway grade to provide better sight distance or cutting back slopes adjacent to the roadway to improve sight lines around corners. This strategy is relatively expensive, due to the need to cut and haul away earth, to reconstruct the roadway after the grade has been lowered, and potentially to purchase additional right-of-way, depending on how far back slopes need to be cut.

Additional traffic control devices can be placed at or before intersections to provide advance warning of intersections to motorists, especially when their view of the intersection may be obstructed. These devices include advance-warning signs, posting advisory speeds, and installing flashing beacons. Traffic signals can be installed at higher-volume intersections to allow minor-road traffic easier access onto the main road. The possible need for traffic signals is determined by signal warrants based on traffic volumes, roadway speeds, and area type (urban or rural). Isolated traffic signals are generally not desirable on rural roadways, because motorists do not expect interruptions in the flow of traffic and higher accident rates may result. When utilized, isolated signals are often accompanied by a lower posted speed and advance warning signs and beacons.

3.1.3.E.2c Specific Strategies

Table 3-9 listed specific intersections that were identified by County staff as having safety or operational problems. **Figure 3-9** shows existing deficiencies throughout Benton County. Potential mitigation options for each location are described below. The intersection number listed for each location is keyed to the numbers shown in **Figure 3-9**. Although not specifically mentioned, it should be kept in mind that the "no-build" or "do-nothing" option should also be considered as an alternative in each case.

Specific mitigation measures for state highway projects will be determined through a refinement plan and or project development.

1. Bellfountain Road/Airport Avenue

Existing Conditions: This hillcrest intersection is located on a horizontal curve on Bellfountain Road. The Airport Avenue approaches are stop-controlled and located on upgrades. A flashing beacon is located over the center of the intersection. "STOP AHEAD" signs are posted on Airport Avenue, while "SLOW/40 MPH" and Cross Road signs are posted on Bellfountain Road. The intersection does not meet warrants for left-turn lanes or signalization. A 50-mph speed zone was created on Bellfountain Road from Greenberry Road to north of this intersection in the fall of 1995.

Potential Mitigation: The easier mitigation strategies have already been used at this intersection. Two potential strategies have been identified: (a) Flashing beacons could be installed on the Cross Road signs in advance of the intersection to provide additional warning for motorists unfamiliar with the area, but would not be likely to affect the behavior of the majority of motorists due to the presence of other warning signs and beacons. (b) The ultimate solution to the sight distance problems at this intersection would be to regrade and/or realign Bellfountain Road to provide better sight distance. The feasibility of this strategy depends on weighing the construction costs against the potential for fewer accidents.

2. Granger Avenue/U.S. 20

Existing Conditions: This intersection is a four-leg intersection located next to a horizontal curve on Granger Avenue and the Willamette & Pacific Railroad tracks. The intersection's existing level of service is F and the intersection meets one signal warrant. Left-turn lanes and advance signing are present on U.S. 20. There is not enough room between U.S. 20 and the railroad tracks to store a truck.

Potential Mitigation: Potential mitigation measures are discussed in detail in the system strategies, Section 3.2.1.C.1.

3. Bellfountain Road/Greenberry Road

Existing Conditions: This intersection is a "T" intersection located just south of a bridge over Beaver Creek. Westbound left-turns from Greenberry Road are stop-controlled, while westbound-right turns have a yield-controlled channelized right turn. Decker Road intersects Bellfountain Road a short distance north of the bridge. Side Road signs are posted on Bellfountain Road prior to both intersections. The bridge has no room for adding a left-turn lane or even part of a taper in advance of a left-turn lane. Bellfountain and Greenberry Roads are a commonly used truck route between the Philomath area and Highway 99W south. The southbound left-turn has significant volumes of traffic. The intersection does not meet warrants for signalization but may meet warrants for left-turn lanes.

Potential Mitigation: Three potential strategies have been identified. (a) One strategy moves the intersection sufficiently far south of the bridge to allow a left-turn lane to be constructed. This strategy requires additional right-of-way for the realigned segment of Greenberry Road, creates a small amount of out-of-direction travel, and introduces two new curves onto Greenberry Road. (b) The second strategy widens or replaces the existing bridge on Bellfountain Road to provide three lanes plus bike lanes. The middle lane would be used to provide left-turn lanes on Bellfountain Road at both Greenberry and Decker Roads. (c) The third strategy realigns Greenberry Road to intersect Bellfountain Road opposite Decker Road. This strategy requires a second bridge over Beaver Creek. In addition, there is insufficient room to provide a northbound left-turn lane without moving the intersection farther north, which is difficult due to the location of a school on the northwest corner of the intersection.

4. Independence Highway/U.S. 20

Existing Conditions: This intersection is a "T" intersection located adjacent to the Willamette & Pacific Railroad tracks. The intersection's existing level of service is F; however, the intersection does not meet signal warrants. Left- and right-turn lanes and advance signing are present on U.S. 20. There is a significant change in elevation between the railroad tracks and U.S. 20 and there is insufficient room between the tracks and U.S. 20 to store a truck. Independence Highway is a popular truck route.

Potential Mitigation: Potential mitigation measures are discussed in the system strategies, Section 3.2.1.C.1.

5. Independence Highway/Ryals Avenue

Existing Conditions: This intersection is a "T" intersection located on a ridge, with all three approaches climbing to the intersection. Ryals Avenue is stop-controlled. Sight distance is restricted because of the vertical curvature of the two roadways. Side Road signs are posted on Independence Highway prior to the intersection. The northbound left turn has a significant volume of traffic, but is likely not enough to meet left-turn lane warrants. The intersection does not meet signal warrants.

Potential Mitigation: Three alternative strategies have been identified. (a) Because of the limited sight distance, a left-turn lane should be considered to separate left-turning vehicles from the through traffic, and provide left-turning motorists with a safer, more comfortable opportunity to look for oncoming traffic. This strategy would require some additional regrading to make room for the widened roadway. Other alternatives would be to (b) lower the entire intersection through more extensive regrading, in order to improve sight lines, or (c) post an advisory speed appropriate to the existing sight distance.

6. Scenic Drive/U.S. 20

Existing Conditions: This intersection is a “T” intersection located just south of the Willamette & Pacific Railroad tracks. Scenic Drive intersects West Thornton Lake Drive just north of the railroad tracks. The intersection’s existing level of service is E and the intersection does not meet signal warrants. A left turn lane and advance signing are present on U.S. 20. There is not enough room between the tracks and U.S. 20 to store a truck.

Potential Mitigation: Potential mitigation measures are discussed in detail in the system strategies, Section 3.2.1.C.1.

7. Old River Road/Highway 99W

Existing Conditions: This intersection is located south of a horizontal curve on Highway 99W. Old River Road is stop-controlled and carries relatively low volumes (225 average daily traffic [ADT]). The intersection does not meet left-turn lane or signal warrants. Side Road signs are posted in advance of the intersection on Highway 99W.

Potential Mitigation: The only possible mitigation might be to construct a left-turn lane to reduce the possibility of left-turning vehicles being struck from behind by inattentive drivers coming around the curve on Highway 99W.

8. Reservoir Avenue/SW 53rd Street

Existing Conditions: This intersection is located just north of a low, narrow undercrossing of the Willamette & Pacific Railroad tracks. Supports for the trestle are located in the middle of SW 53rd Street, creating a potential hazard. Because of the undercrossing, sight distance to the south is restricted for Reservoir Avenue traffic. About half of the southbound traffic during the weekday p.m. peak hour turns right onto Reservoir Avenue, while the other half continues through on SW 53rd Street.

Potential Mitigation: Following the 1985 SW 53rd Street Corridor Study, a new overcrossing and the realignment of Reservoir Road to the north was identified as the preferred alternative. The project cost was estimated in 1985 to be \$3.7 million. Although the project was identified as an immediate need, it has not yet been placed in the County Capital Improvement Program. However, growth in the area has been much less than predicted in the study.

9. Cox Lane/Larkin Road

Existing Conditions: Cox Lane and Larkin Road are two local roads that intersect on a horizontal curve in the Alpine area. Because of a slope on the east side of Larkin Road, sight distance is restricted for northbound left-turning traffic.

Potential Mitigation: Regrading or realigning Larkin Road would solve the sight distance problem, but may not be justified in terms of the amount of traffic benefiting from the improvements. Installing warning signing would be an alternative.

10. Independence Highway/Springhill Drive

Existing Conditions: This intersection is located along a horizontal curve on Independence Highway. The highest-volume movements at this intersection are the north-to-east and east-to-north movements. Westbound left turns are stop-controlled on Springhill Drive, while eastbound right turns are channelized and yield-controlled. Side Road signs are posted on Independence Highway. Southbound motorists approaching the intersection first see the channelized east-to-north right turn lane, posted with “DO NOT ENTER” signs, but do not see the rest of the intersection until after they start to round the curve, which may cause some driver confusion. The intersection does not meet left-turn lane or signal warrants.

Potential Mitigation: Three potential strategies have been identified. (a) Because the highest-volume movements are a left turn and the corresponding right turn in the opposite direction, it may be appropriate to reconfigure the intersection so that southbound Independence Highway to eastbound Springhill Drive becomes the through movement. Southbound traffic continuing on Independence Highway could receive a channelized

right-turn, while northbound traffic would be forced to stop and turn. Appropriate guide signing would be needed. This configuration would improve the intersection's operation and sight lines, and any potential driver confusion can be minimized with good signing. Less-elaborate mitigation measures include (b) closing the channelized right-turn, which would reduce potential driver confusion but would also cause added delay for westbound vehicles, and (c) building a southbound left-turn lane to better guide southbound traffic through the intersection.

11. Grange Hall Road/Fern Road

Existing Conditions: This intersection is located immediately south of a bridge over the Marys River and along a horizontal curve on Fern Road. These two elements combine to restrict the sight lines of northbound motorists desiring to make a left turn onto Grange Hall Road. The intersection does not meet left-turn lane or signal warrants. No signs are posted in advance of the intersection on either road.

Potential Mitigation: Two potential strategies have been identified. (a) Side Road signs posted on Fern Road would provide advance warning of the intersection and might be all that is required. (b) A more-involved mitigation strategy would be to realign Fern Road so that the curve occurs south of the intersection. This option would require a significant amount of new right-of-way.

12. Stow Pit Road/Highway 99W

Existing Conditions: This intersection is located immediately north of a horizontal curve on Highway 99W. Trees and utility poles are located along the inside of this curve and block sight lines to and from the intersection. Side Road signs are posted on Highway 99W. Stow Pit Road carries relatively low traffic volumes (225 ADT). The intersection does not meet left-turn lane or signal warrants.

Potential Mitigation: Removing the trees that block sight lines and possibly relocating the utility poles is likely all that is required.

13. Wren Road/Highway 223

Existing Conditions: This intersection is located along a horizontal curve on Highway 223. A steep bank is located along the inside of the curve, which tends to obscure sight lines. Advance warning of the intersection is provided along Highway 223. Northbound left turns from Wren Road are stop-controlled, while northbound right turns are channelized and yield-controlled. Because the northbound right-turn lane is located relatively far away from the rest of the intersection, it may be confusing to southbound drivers who see the "DO NOT ENTER" signs for the lane, but not the rest of the intersection. Volumes on Wren Road are relatively low, but virtually all traffic to and from Wren must pass through this intersection. This intersection does not meet signal warrants or left-turn lane warrants.

Potential Mitigation: Mitigation options include (a) closing the channelized northbound right-turn lane and (b) posting a lower speed between U.S. 20 and a location north of this intersection, if needed to achieve adequate stopping sight distance. Cutting back the hillside or realigning Highway 223 is likely to be infeasible.

14. Palestine Avenue/Oak Grove Drive

Existing Conditions: This intersection is a "Y," with Palestine Avenue as the east and west legs and Oak Grove Drive as the south leg. The south-to-west movement is uncontrolled, the south-to-east, west-to-south, and west-to-east movements are stop-controlled, and the east-to-west and east-to-south movements are yield-controlled. The heaviest volumes occur on the east and west legs. This intersection does not meet left-turn lane or signal warrants.

Potential Mitigation: To serve the higher-volume movements and to decrease the intersection's complexity, the simplest mitigation option would be reconfigure the intersection as a "T" intersection, with Oak Grove Drive stop-controlled.

15. Priest Road/U.S. 20

Existing Conditions: Priest Road is designated as a minor arterial in the County's Comprehensive Plan because it serves as a shortcut between U.S. 20 and Highway 223; however, it only carries about 290 ADT and has a truck weight restriction. The intersection is located east of a horizontal curve on U.S. 20 and eastbound motorists' views of the intersection are obscured by vegetation growing along the inside of the curve. No advance signing is provided on U.S. 20. The intersection does not meet signal or left-turn lane warrants.

Potential Mitigation: One or more of the following mitigation strategies could be used to reduce the potential for rear-end collisions: (a) installing Side Road signs in advance of the intersection, (b) clearing vegetation on the inside of the curve on U.S. 20 to improve stopping sight distance, (c) constructing a left-turn lane, and (d) restricting access to right-in, right-out only. In the latter scenario, southbound traffic would be required to divert to Highway 223.

16. Signal Warrant Locations

Existing Conditions: The following intersections meet at least one signal warrant. All operate at LOS C or better.

- ◆ U.S. 20/Highway 34
- ◆ Walnut Boulevard–SW 53rd Street/Harrison Boulevard–Oak Creek Road
- ◆ Reservoir Avenue/SW 53rd Street
- ◆ Granger Avenue/U.S. 20

Potential Mitigation: Because these intersections now operate at good levels of service, signalization is not required immediately. These intersections should be monitored on a regular basis (no less than every three years, sooner if significant development occurs in the area) to determine when signalization will be necessary.

17. Elliot Circle/Highway 99W South Junction

Existing Conditions: This intersection is located adjacent to the Willamette & Pacific Railroad tracks and has limited stacking distance. Westbound movements across the tracks are controlled by a stop sign, but eastbound movements are uncontrolled.

Potential Mitigation: Strategies include closing this intersection, which would require traffic to divert to the Lewisburg Road/Highway 99W intersection.

18. U.S. 20-Highway 34/Highway 99W Interchange

Existing Conditions: Two highway-to-highway movements at this interchange must use local streets to accomplish the desired connection; these being the eastbound-to-southbound and northbound-to-westbound movements. These movements are reliant on either B Avenue or Western Boulevard in downtown Corvallis to continue in desired direction of travel. The turns are difficult for trucks to make, which may encourage them to use Bellfountain and Greenberry Roads as alternates to U.S. 20 and Highway 99W. New ramps at this interchange would require new bridges over the Marys River and Willamette & Pacific Railroad line.

Potential Mitigation: See section 3.4.1.F Bellfountain Road/South Highway 99W Corridor for description of potential mitigation for this interchange.

3.1.4 Summary

Overall, the Benton County transportation system is in good condition and provides adequate service and safety to its users. The component of the overall system that experiences the greatest demands and most significant constraints is the state highway system. The citizens of Benton County recognize the importance of this subset of the Benton County roadway system to the economic viability and livability of the community. Preserving and protecting the capacity and safety of these facilities is, therefore, imperative. Although Benton County does not have direct control over these facilities, it is dedicated to providing acceptable solutions to identified needs, both on and off the state highway system.

3.2 Forecast of Future Conditions

3.2.1 Introduction

This section presents a summary of the travel demand estimate based on accepted 20-year population and employment projections, assessment of performance of the existing transportation system under future conditions, and identification of future deficiencies requiring mitigation.

Accordingly, this section is divided into three main sub-sections:

- ◆ Forecasting Future Travel Demand
- ◆ Assessment of Future Conditions
- ◆ Identification of Deficiencies

The Benton County 2020 population and employment projections adopted in the Comprehensive Plan are 94,045 and 43,765 respectively. The countywide travel demand estimate was prepared in concert with the Cities of Corvallis and Albany and the Oregon Departments of Transportation (ODOT) and Land Conservation and Development (DLCD). The future performance assessment was performed according to acknowledged and accepted practice using the same methodology as employed for existing conditions. Deficiencies were identified in terms of capacity, mobility, and connectivity (safety problems are identified for existing conditions only).

3.2.1.A Forecasting Future Travel Demand

Estimates of future travel demand were prepared for each transportation system element, as appropriate. Gravity models, econometrics-based modeling methodologies, historical trending methodologies, and capacity-based ridership demand models were used to develop these estimates. Each forecasting tool and methodology was reviewed and approved by the Technical Advisory Committee, representing the authorization of each participating agency in the Benton County TSP process. The results of each modal forecast were also refined by the Technical Advisory Committee and approved for use in the planning process.

3.2.1.A.1 Roadway System (Forecasting Methodology Development)

Several forecasting methodologies were incorporated to develop a complete vehicular demand estimate for Benton County that was acceptable by all participating agencies. Summarized below is the methodology used to prepare the 20-year vehicular demand forecast.

Future traffic volumes were forecast using information from several sources. In general, Albany and Corvallis/Philomath travel demand models were used for roadways inside urban growth boundaries for these areas.

Forecasts of future traffic growth from single-family development in rural areas were developed from housing growth forecasts supplied by Benton County and from trip generation rates provided by the Institute of Transportation Engineers' (ITE) Fifth Edition Trip Generation Manual. These trips were distributed onto the County roadway network as described later in this section.

Forecasts of future traffic growth on state highways were developed from 20-year growth factors developed and approved by ODOT.

Traffic volumes from the urban traffic models were generally used as-is, with two notable exceptions. First, the Corvallis model projects an average daily traffic (ADT) volume of 23,400 on U.S. 20 northeast of Granger Avenue, while the Albany model projects an ADT of 27,300 on U.S. 20 west of Scenic Drive. The only major source of traffic between these two roadways is Independence Highway, which is not likely to supply 4,000 north-to-east vehicles. As a result, the ADT for the section of U.S. 20 between Independence Highway and Scenic Drive was assumed to be 25,300 (the midpoint in the range created by the two model forecasts). The second notable exception was the section of Airport Avenue between Highway 99W and the airport. The Corvallis model projects a year 2015 ADT of 190, which is far below the existing ADT of 920. A 3 percent

annual growth rate was assumed instead for this section of Airport Avenue, providing a year 2015 ADT of 1,500.

3.2.1.A.2 Estimation of Future Travel Demand and Trip Distribution

ODOT has developed annual growth factors for all state highways, based on a linear regression of traffic growth over a 20-year period. **Table 3-11** lists the growth factors that have been developed for state highways in rural portions of Benton County.

In areas where the ODOT growth factor was used as-is, it was assumed that the growth factor adequately allows for future development in rural portions of Benton County, as well as growth in through trips and trips generated by the Albany and Corvallis urban areas. On U.S. 20 west of Philomath, traffic volumes were increased by 2,000 ADT above the factored volumes in order to match year 2015 traffic volumes east of Toledo that were projected in the Toledo Transportation System Plan. Highway 34 volumes east of Corvallis were taken from the Corvallis traffic model rather than from the growth factors, as the model volumes were higher.

Future traffic volumes on Highway 99W between Corvallis and Monroe, as well as future traffic volumes on rural county roads outside the North Albany area, were calculated using a different method. Benton County supplied housing growth forecasts for ten areas in the County (Alpine, Bellfountain, Blodgett, Greater Monroe, Greater Philomath, Missouri Bend, North Albany, North Corvallis, Summit, and West Corvallis). Daily trip generation estimates were developed for each area, using a value of 9.55 trips/household, based on the value given in the ITE Fifth Edition Trip Generation Manual. Based on research reported in NCHRP 187 (National Cooperative Highway Research Program) and on values used in nearby counties, it was assumed that 33 percent of these trips would be work trips, while the remainder would be other kinds of trips (shopping, recreation, etc.).

Work trips were assigned to Albany, Corvallis, Eugene, Monroe, Philomath, and Salem in relationship to each city’s population and the distance to each city (the formula used was population/distance^3). Other trips were assigned to Albany, Corvallis, Eugene, Salem, Philomath (west county only), and Monroe (south county only) in relationship to the distance to each community (the formula used was 1/distance). One-quarter of the trips assigned to Philomath or Monroe using this formula were assumed to stop at the nearest community currently containing a market (Alpine, Alsea, Bellfountain, or Blodgett), if one of these communities was closer to the trip’s origin than Philomath or Monroe. All of the trips were then distributed onto the County’s roadway system using existing traffic patterns as a guide. Future traffic volumes on Highway 99W and rural County roads outside North Albany are equal to existing traffic plus 10 percent (to take into account background traffic growth over 20 years) plus the new trips.

Figures 3-10A and 3-10B show year 2015 projected residential growth in various parts of Benton County and average daily traffic volumes on Benton County roadways, respectively.

Table 3-11
ODOT State Highway Annual Growth Factors

Highway	Growth Factor	Used As-Is?
U.S. 20, west of Philomath	3%	N
Highway 34, west of Philomath	2.5%	Y
Alsea-Deadwood Highway	1%*	Y
Eddyville-Blodgett Highway	2%	Y
Highway 223	2.5%	Y
Highway 99W, north of Lewisburg	2.5%	Y
Highway 99W, South Corvallis to Monroe	1.5%	N
Highway 99W, south of Monroe	1.5%	Y
Territorial Highway	3%	Y
Highway 34, east of Corvallis	3%	N

* 20-year regression shows a slight decrease in traffic; ODOT is assuming 1 percent future growth.

3.2.1.B Performance Evaluation of the Future No-Build Systems

An assessment of the no-build transportation system was performed using the future travel demand estimates assigned to the appropriate systems. The no-build system assumes the existing transportation system with only those funded projects in adopted Improvement Programs. The same performance evaluation procedures as those used for existing conditions were used for the future no-build evaluation. Presented below are the no-build evaluations for each transportation system.

3.2.1.B.1 Roadway System

To determine how well County roadways will operate under year 2015 volumes, a planning level arterial LOS analysis was conducted using the 1995 Florida Level of Service Manual. This methodology is described in section 3.1.3.A, “Roadway Level of Service Analysis.” For the purposes of this analysis, it was assumed that no changes would be made to the County’s road system, other than those currently programmed by ODOT, the County, or the various cities in Benton County. **Figure 3-11** shows year 2015 no-build roadway levels of service for arterials and major and minor collectors in Benton County.

In the year 2015, all County-owned roads are forecast to operate at acceptable levels of service. (Again, it should be noted that individual intersections may operate at higher or lower levels of service.) Gibson Hill Drive/North Albany Road southeast of Crocker Lane and Springhill Drive south of Hickory Street are the only non-state facilities operating at LOS D or worse. Level of service standards for state highways vary by the highway’s level of importance (LOI) and the type of area, as previously described. For the purposes of applying ODOT’s LOS standards, it was assumed that the Corvallis/Philomath area would be a Metropolitan Planning Organization by the year 2015. **Table 3-12** lists roadway segments that are projected not to meet ODOT’s LOS standards in the year 2015.

As shown in **Table 3-12**, 39 miles of state highways, including most of U.S. 20 through Benton County, Highway 99W north of Corvallis, and Highway 34 entering Corvallis from Linn County, will operate below ODOT’s old LOS standards in the year 2015. U.S. 20 between Philomath and Corvallis, between Granger Avenue and the start of the four-lane section in North Albany and east of North Albany Road will operate at LOS F by the year 2015.

The Major Improvement Policy from the 1999 OHP is applicable to the suggested state highway improvements. The final solutions will be developed through a refinement plan and/or project development. Volume/Capacity analysis will be necessary to evaluate conformity with the current OHP mobility standards.

3.2.1.C Future Capacity, Mobility, and Connectivity Deficiencies

The performance evaluation of future conditions on the no-build roadway system resulted in deficiencies being identified. Included were deficiencies of capacity, mobility, and connectivity. The identified future deficiencies are summarized below.

3.2.1.C.1 Roadway Capacity

As previously noted, the only future roadway capacity deficiencies outside of urban areas are located on the state highway system. Approximately 39 miles of state highway in Benton County will fail to meet ODOT’s old LOS standards in the year 2015.

Table 3-12 lists the number of weekday p.m. peak hour trips that will need to be shifted to other facilities, other modes, or other times of the day in order to maintain LOS standards on Benton County roadways. (Weekday p.m. peak hour trips are estimated from daily trips by applying a factor of 7-10 percent, depending on the facility type. Since the weekday p.m. peak hour is the time of day with the greatest traffic volumes, it determines how much capacity needs to be provided on a particular roadway.)

**Table 3-12
Required Trip Shifts to Achieve ODOT Level of Service Standards (1991 OHP)**

Highway	Segment	2015 Volume	2015 LOS	Required LOS	Maximum Volume for LOS	Required Peak Hour Trip Shift
U.S. 20	Lincoln County-Philomath	8,700-15,800	D-E	B	3,400-5,900	635-1,490 334-1,190
	Philomath-Corvallis	27,700-31,200	F	D	18,000	1,165-1585
	Circle-North Albany	16,100-23,600	E-F	C	8,100-13,200	960-1,860 350-1,250
	North Albany	38,100-49,600	D-F	D	44,500	0-510
Highway 34	South Bypass	18,900	D	B	12,800-17,300	730-190
Highway 99W	Polk County-Mountain View	10,500-14,700	D-E	C	7,700-12,800	335-840 230
	Walnut-Downtown Corvallis	18,700-21,500	E	D	17,500-20,000	145-180
	Goodnight-Airport	8,900	D	C	6,900	240

As **Table 3-12** indicates, significant amounts of road widening would be required to maintain adequate levels of service on state highways. Less-expensive strategies, such as adding passing lanes in spot locations, were also investigated but found to be inadequate. In some cases, such as U.S. 20 west of Philomath, and Highway 99W north of Lewisburg, road widening was necessitated more by ODOT’s policy to maintain high levels of service on highways of statewide or regional levels of importance rather than by a functional failure of the roadway.

It is anticipated that these roadway segments will also fail to satisfy the v/c mobility standards now contained in the OHP. The OHP’s Policy 2C, states, “The State of Oregon shall avoid highway capacity improvements, which primarily serve commuters from outside of urban growth and urban containment boundaries.” It is acknowledged that much of the forecasted travel demand in Benton County is from inter-urban commuters. Comments on the Draft Benton County TSP from the DLCDC include, “We acknowledge the concerns ... that some OTP and OHP policies, when taken individually, appear to be in conflict. We strongly urge you to raise concerns related to compliance with the OHP and OTP in the TSP narrative.” The OHP mobility standards do not distinguish between sources of traffic demand. In developing refinement plans or during project development, ODOT will need to demonstrate how highway improvements respond to OTP goals.

3.2.1.C.1.a U.S. 20 Between Corvallis and Albany

The section of U.S. 20 between Corvallis and Albany requires special attention. Potential mitigation strategies include one or more of the following:

- ◆ Add an additional through lane in each direction to the existing highway. Two through lanes are required in each direction on U.S. 20 between Corvallis and North Albany to accommodate projected year 2015 traffic; three through lanes may be needed through North Albany. Only two lanes in each direction are available on the Willamette River bridges at downtown Albany.
- ◆ Realign U.S. 20 further away from the railroad tracks. The three main intersections along this section of U.S. 20—Granger Avenue, Independence Highway, and Scenic Drive—have insufficient room to store a truck between the highway and the railroad tracks, which creates potential conflicts between trains and

trucks. Realigning U.S. 20 would also improve the grade differential between the highway and the tracks at Independence Highway.

- ◆ Realign Granger Avenue to Independence Highway using a new frontage road north of the railroad tracks. This would consolidate access points along U.S. 20 without forcing out-of-direction travel between Lewisburg and Albany. Land use issues regarding road construction through farmland would need to be resolved.
- ◆ Close or restrict the Scenic Drive/U.S. 20 intersection. Closure would divert more traffic onto North Albany Road, but would reduce access (and potential accident) points along U.S. 20. A less drastic step would be to restrict Scenic Drive to right-in, right-out access only at U.S. 20, but this would not dramatically improve the intersection's safety. If the Scenic Drive intersection were to be closed, Kouns Drive could be extended to Rondo Street or Independence Highway as an alternate route out of North Albany.
- ◆ Convert the existing highway into a frontage road and build a new 4- or 5-lane roadway. The old highway would be allowed access onto the new controlled-access facility at one point, most likely at Independence Highway.
- ◆ Signalize the Granger, Independence, and Scenic intersections. This option would improve access onto U.S. 20 from these roads, but would also result in longer travel times between Corvallis and Albany on U.S. 20 due to delays from the signals. Signals would improve safety at the railroad crossings, as a green signal could be provided to clear out traffic before the arrival of a train. However, signals could also degrade safety in that unfamiliar drivers will not be expecting them in a seemingly rural area. In order to provide adequate levels of service at these intersections, U.S. 20 would need two through lanes in each direction. In order to alert drivers of the not-quite-rural nature of the highway following the installation of these signals, a lower posted speed might be appropriate in addition to providing advance signing.
- ◆ Construct U.S. 20 as a divided highway. This option would postpone the need for signalization at the Granger, Independence, and Scenic intersections by allowing minor road traffic to make left turns in two steps, rather than trying to find the rare simultaneous gaps in traffic on U.S. 20. As traffic volumes continue to increase on U.S. 20 beyond the year 2015, other mitigation options would be needed in order to safely serve minor road traffic.
- ◆ Grade separate one or more intersections. This option creates the least delay to both U.S. 20 and minor road traffic, but requires expensive overpasses. The most likely candidate for an overpass would be Independence Highway, because of its central location and the high number of trucks using the intersection and the existing grade differential between the railroad and the highway..
- ◆ Construct a split-diamond interchange at North Albany Road and Springhill Drive in North Albany. This strategy eliminates the need to widen U.S. 20 to seven lanes through North Albany and allows the existing two-lane bridges over the Willamette River to remain functional. The interchange would be expensive to construct and is constrained by the proximity of the bridges, the river paralleling the highway, adjacent development, and Tadena Landing park.
- ◆ Construct a U.S. 20 bypass of Albany. This strategy reduces through traffic using downtown streets, provides another route into and out of North Albany, and allows the existing Willamette River bridges to remain functional. The bridges would be expensive to construct and it is not clear where the best route for a bypass would be on the Linn County side of the river.

3.2.1.C.2 Intersection Operations

Thirty-five higher-volume intersections were analyzed to determine the possible need for signalization. This need was determined based on signal warrants 1 (Minimum Vehicular Volume) and 2 (Interruption of Continuous Traffic) from the Manual on Uniform Traffic Control Devices (1988). For the purposes of this analysis, it was assumed that p.m. peak hour traffic was 10 percent of the average daily traffic, and that the 8th-highest hourly volume was 70 percent of the p.m. peak hour traffic (equivalent to 7 percent of the ADT). It was also assumed that the directional distribution of traffic on minor street intersection approaches was two-thirds in the peak direction and one-third in the off-peak direction. Where the heaviest movement at "T" intersections were left turns from the major street to the minor street, it was assumed that the intersection would be realigned

first (making the left turn a through movement and the former through movement a right turn). **Table 3-13** lists the intersections that meet one or both signal warrants and **Figure 3-12** shows their locations.

Table 3-13
Operating Level Year 2015 Signal Warrants

Intersection	Warrant 1	Warrant 2
Scenic Drive/U.S. 20	YES	YES
Granger Avenue/U.S. 20	YES	YES
Highway 223/U.S. 20	YES	YES
Highway 34/U.S. 20	YES	YES
Walnut Boulevard/Harrison Boulevard	YES	YES
Reservoir Road/SW 53rd Street	YES	YES
North Albany Road/Hickory Street	YES	YES
Springhill Drive/Hickory Street	YES	YES
Gibson Hill Drive/Crocker Lane	YES	NO
Independence Highway/U.S. 20	NO	YES
Camp Adair Road/Highway 99W	NO	YES
Arnold Avenue/Highway 99W	NO	YES
Airport Avenue/Highway 99W	NO	YES
Eddyville-Blodgett Highway/U.S. 20	NO	YES
West Hills Road/SW 53rd Street	NO	YES
West Hills Road/Reservoir Road	NO	YES
North Albany Road/West Thornton Lake Drive	NO	YES
Greenberry Road/Highway 99W	NO	YES
Alpine Cutoff/Highway 99W	NO	YES
Coon Road/Highway 99W	NO	YES

As **Table 3-13** indicates, up to 20 intersections may require signalization by the year 2015. However, it should be noted that signalization may not be the most appropriate treatment in each case. Depending on turning movements at these intersections, improved channelization (i.e., left-turn lanes) may be all that is required (for example, at the Greenberry Road/Highway 99W intersection). Isolated signals on the state highway system, such as would occur in Wren or Blodgett, are usually undesirable because of safety concerns. Grade-separated interchanges and/or divided highways can also be considered for higher-volume roadways at a significantly higher cost. Alternative modes, such as buses or trains, can also be considered to help reduce future traffic volumes and potentially reduce the need for some mitigation measures.

It should also be noted that the planning level signal warrant analysis for existing conditions was conservative in that it identified more intersections as warranting signalization than did the more detailed operations-level analysis. It is likely that the same situation will hold true in the future. Monitoring these intersections on a regular basis (no less frequently than every three years) would be desirable, to determine if and when signalization is warranted, or other appropriate mitigation.

3.2.1.C.3 Signal Warrant Locations

The following intersections are projected to meet at least one signal warrant under future conditions. They have been separated into two categories: 1) County road intersections meeting warrant under future conditions, and 2) State highway intersections meeting warrant under future conditions.

The following County road intersections are projected to meet at least one signal warrant by the year 2015:

- ◆ Gibson Hill Drive/Crocker Lane
- ◆ North Albany Road/West Thornton Lake Drive
- ◆ North Albany Road/Hickory Street
- ◆ Springhill Drive/Hickory Street
- ◆ West Hills Road/Reservoir Road
- ◆ West Hills Road/SW 53rd Street

Potential Mitigation: These intersections should be monitored on a regular basis (approximately every three years) to determine if and when signalization will be necessary. It should be noted that the planning level signal warrants tend to be conservative in that they predict the need for signalization in some cases where no need exists. There are no apparent reasons why these intersections should not be signalized when volumes warrant; however, any future Hickory Street signals will need to be interconnected with the signals just south on U.S. 20 in order for North Albany Road and Springhill Drive to function satisfactorily with the short signal spacing.

These State highways intersections are projected to meet at least one signal warrant by the year 2015:

- ◆ Camp Adair Road/Highway 99W
- ◆ Arnold Avenue/Highway 99W
- ◆ Greenberry Road/Highway 99W
- ◆ Alpine Cutoff/Highway 99W
- ◆ Orchard Road/Highway 99W
- ◆ Highway 223/U.S. 20
- ◆ Eddyville-Blodgett Highway/U.S. 20

Potential Mitigation: These intersections should be monitored on a regular basis (approximately every three years) to determine if and when signalization will be necessary. With the exception of Orchard Road/Highway 99W in Monroe, all of these intersections are on rural roadway sections posted for 55 mph, where drivers do not normally expect to encounter signals. Consequently, alternative mitigation measures should be sought to eliminate the need for signalization or to lower the potential for accidents should signals need to be installed. These measures are discussed in more detail in later sections. For example, at intersections such as Greenberry Road/Highway 99W, improved channelization may be all that is necessary because the movement helped most by signalization, the minor-road left turn, is a very low volume movement.

The OHP Action 3A.3 establishes signal spacing standards for state highways. The identified intersections on the state system are expected to meet the spacing standards. Detailed engineering study is required for all of the possible signal installations prior to programming for construction.

3.2.1.C.4 Roadway Connectivity

Increased travel demand resulting from growth in local population and employment as well as increased through travel will exacerbate the transportation system connectivity constraints. Continued out-of-direction travel and congestion due to these deficiencies will result in longer delays, increased vehicle-miles-traveled and increased emissions.

The following collector and arterial network connectivity deficiencies have been identified, and potential road extensions considered:

- ◆ Bellfountain Road Extension to U.S. 20/Highway 34 and continued north to West Hills Road
- ◆ West Hills Road Extension to the U.S. 20/Highway 34 junction in Philomath
- ◆ U.S. 20/Highway 34 to Highway 99W South Ramp Connections
- ◆ Highway 34 North By-Pass Extension to U.S. 20 (Corvallis to Albany section)
- ◆ Wake Robin Avenue Extension to Brooklane Road

These classified street system deficiencies have far-reaching impacts that affect most Benton County residents and their travel patterns, as well as those through travelers using the state highway system to bisect Benton County.

A project to complete the connection of U.S. 20/Highway 34 with Highway 99W is included in this plan. None of the other connectivity deficiencies are expected to be corrected during the next 20 year period.

3.2.1.C.5 Local Street System

The future development of the local street system must include a concerted effort to guide development in such a way as to ensure that connectivity, and secondary access in particular, are provided. In addition, solutions must be provided for those existing areas of the County that experience connectivity constraints, including the following:

- ◆ Oak Creek Drive
- ◆ Cardwell Hill Road
- ◆ Brooklane Drive

Through coordinated planning efforts between Benton County and affected property owners, equitable and fundable solutions to these constraints can be effectively developed and implemented.

3.3 Roadway Policies

3.3.1 Existing Policies

Existing policies will be modified when the new policy recommendations are approved.

3.3.1.A Road Standards

Standards for state highways in Benton County are as adopted by ODOT. For all other roadways in unincorporated portions of the County, design standards are as adopted in the Benton County Development Code (1990 with amendments). Standards for traffic volume, right-of-way, road width, shoulder type, maximum grade, pedestrian and bicycle facilities, and parking are presented for rural roads in **Table 3-14**. Design

standards for bikeways are presented in the 1995 Oregon Bicycle and Pedestrian Plan, Section II.1, except where the Benton County Development Code calls for a higher standard.

Table 3-14
Rural Street Design Standards

Classification	ADT	Min. ROW (ft)	Width (ft)	Shoulder Type	Max. Grade	Shoulder Bike/Walking	Marked for Bike	Parking
Arterial (RA-2)	>5,000	80-100	50-70	6-12 ft paved	4-6%	Y	Shoulder	N
Arterial (RA-1)	1,000-5,000	80	24-34	6 ft paved	5-8%	Y	Shoulder	N
Collector (RC-2)	750-2,000	60-70	24	5 ft paved	10%	Y	Shoulder*	N
Collector (RC-1)	100-750	60	20	5 ft paved	12%	Y	Shoulder*	N
Local (RL-3)	100-750	60	20	5 ft paved	15%	Y	Shoulder*	N
Local (RL-2)	0-200	50	18	4 ft gravel	15%	N	N	Y
Local (RL-1)	0-100	50	18	4 ft gravel	17%	N	N	N

* If in RR (Rural Residential) zone

ADT: Average Daily Traffic

ROW: Right-of-Way

The urban street standards contained in the Development Code should be replaced with a policy that requires the appropriate city standards within areas subject to annexation into the cities of Adair, Corvallis, Philomath, and Monroe. In urban fringe areas outside the city limits of Albany, Corvallis, and Philomath, but within the urban growth boundaries, Benton County road standards should be consistent with the road standards of these cities within their respective urban growth boundaries. This will facilitate an orderly transition of these roadways from the County to the City. Urban standards may also be an appropriate design alternative for some rural areas.

Based on physical, social, funding, or environmental limitations, it may not be desirable to improve all county roadways to the designated standard. The County should establish a process by which exceptions could be addressed.

3.3.1.B Access Standards

Access standards for state highways in Benton County are set by Appendix B in the 1999 Oregon Highway Plan. Based on the OHP, U.S. 20 west of Corvallis is classified as a statewide NHS (National Highway System) highway; U.S. 20 northeast of Corvallis and Highway 99W are classified as regional highways; and all other state highways in Benton County are designated district highways. All principal arterials in Benton County are State Highways. The functional classification of County roads also calls for access standards for minor arterials and major collectors. The County Comprehensive Plan states:

Access control standards for each functional classification shall discourage access on principal and minor arterials, provide controlled access to industrial and commercial development from collectors, discourage access to collectors from residential units, and allow for the use of medians to control access.

Access decisions for resource collectors must be made on a case-by-case basis taking into account the characteristics and needs of the local resource-based traffic (i.e., log trucks, farm machinery). Access standards within urban growth boundaries should be coordinated with the municipality. The Corvallis-Philomath area will

be designated a Metropolitan Planning Organization (MPO). Accordingly, the Cities and County should further coordinate road and access standards within the urban boundary.

3.3.2 New Policy Recommendations

The efforts of reviewing related documents and identifying policy issues with staff, agencies, and the public has resulted in the identification of policies and codes that are recommended for modification. Summarized below are the recommendations.

Identified Policy Issues

In addition to the issues identified during the formal plans and policies review process, several policy issues were identified and new policy solutions developed during the public process of the TSP development. County staff, the TSP committees, the Roads Advisory Committee, stakeholders, and the public identified these issues.

State and County Shared Funding Opportunities

Road financing mechanisms are often separate for state facilities and county facilities; however, there is a growing desire for multi-agency partnerships and an expectation that local jurisdictions participate in the funding of state highway improvements. Due to a significant disparity in road improvement resources available to counties throughout Oregon, those counties able to contribute significantly to state highway improvement projects may be leveraging the limited state highway improvement funds to their areas. The County seeks to establish appropriate partnerships that will secure needed improvements to the state highway system within Benton County.

Proposed New Policy

Where feasible, the County should consider sharing in the costs of state highway improvements on a project-by-project basis when there is a clear County benefit.

Road Improvement Financing

Because current financing mechanisms do not provide adequate funds to maintain existing facilities, much less to improve them to standards, the County should develop new ways to pay for transportation improvements.

Proposed New Policy

The county should develop funding systems that equitably charge those benefiting from the facilities or the improvements.

Maintenance Financing

Benton County maintains 470 miles of public roads. There are approximately another 200 miles of public roads that are not maintained by the County. Some of these are maintained by formal road district, others by road or neighborhood associations, and for some of these roads there is no recognized body that has assumed maintenance responsibility. These roads are maintained only as the road users choose to so invest individually. Some of the roads that are maintained by the County do not differ in use or level of improvement from other public roads that it does not maintain. The County is seeking more equitable policies to handle the prioritization and distribution of funding for ongoing road maintenance.

Over 90 percent of the road maintenance revenues are generated from highway users through gas taxes and equivalent weight mile fees on trucks. The use of most local access roads does not generate adequate revenue to support the required maintenance activity. Road users of higher volume routes are paying for local access road maintenance that benefits the abutting property.

Proposed New Policy

- ◆ Benton County supports the continuation of the state's role of collecting and distributing adequate road use revenues to avoid the need for local option road use taxes or fees.
- ◆ Maintenance activity should be prioritized by functional classification.

- ◆ Identify a minimum level of maintenance by functional class and road use and consider Special Road Districts to provide a higher level of maintenance, if desired.
- ◆ Consider a maintenance policy requiring those who benefit from road use to pay.
- ◆ Consider elimination of County maintenance on roads that do not serve a through travel function, or significant resource use.
- ◆ Consider functional and improvement criteria for the acceptance of new or additional roads into the County road maintenance list.

Revision of the Oregon Highway Plan (OHP) in 1999

The OHP was revised and significantly modified in 1999 after the Draft Benton County TSP had been prepared.

Proposed New Policy

Include Policies from the OHP in the Benton County TSP as follows:

- ◆ Consider traffic circulation, highway safety, and mobility in land use decisions.
- ◆ Maintain mobility standards on highways by limiting expansion of development along the highway, providing adequate local street network, reducing access, clustering compact development off the highway, avoiding expansion of urban growth boundaries along the highway, and discouraging strip development. (OHP Action 1B.1,p.47 and 1B.4,p.49)
- ◆ Include designing and orienting buildings to support various modes. (OHP Action 1B.1,p.47)
- ◆ Current Access Management Standards from the OHP, Appendix B, shall be utilized on state highways within Benton County.
- ◆ Apply freight route performance standards for U.S. 20/Highway 34 (OHP Policy 1C, p. 64; Policy 4A, p. 121). Action 1C.4 (OHP p. 64): Consider importance of timeliness in freight movements in developing and implementing plans and projects on freight routes. Maintain and improve freight movement efficiency on state highways and access to intermodal connections. Action 4A.1 (OHP p. 121): Identify roadway obstacles and barriers to efficient truck movements on state highways (e.g., bridges with load limits, geometric constraints prohibiting legal size vehicles). Identify highway segments that hinder or prevent freight movements.
- ◆ Benton County commits to making necessary transportation policy changes to the Benton County TSP in the next periodic review cycle. At that time, existing and projected traffic volumes will be updated, and traffic capacity analysis will be changed from level of service (LOS) to volume/capacity (V/C) ratios.
- ◆ Land use actions affecting state highways will be consistent with the OHP and the Oregon Administrative Rule for Highway Approaches, Access Control, Spacing Standards and Medians (OAR 734-051). Benton County will provide notice to ODOT of land use actions in accordance with OAR 660-012-0045(2)(f).
- ◆ Benton County will use V/C ratios and spacing standards from the OHP for projects and development proposals affecting state highway facilities. Decisions on alternatives will be evaluated in accordance with the OHP.
- ◆ Projects impacting state highway facilities are identified in this plan, but identified solutions are suggestions and will be evaluated and determined through ODOT's planning and project development process.

Policies to Protect the Highway Function

Protection of the highway function in Benton County could be accomplished, and capacity- increasing improvements avoided or delayed, through a variety of policies.

Proposed New Policy

Benton County shall:

- ◆ Work with local jurisdictions to foster changes in land use ordinances to encourage a better jobs-to-housing balance.
- ◆ Protect the existing capacity of commuting routes through enhanced access management measures.
- ◆ Limit development along rural commuting routes and at the urban interface.
- ◆ Plan for infrastructure that promotes alternative modes of travel and Transportation Demand Management (TDM) measures.
- ◆ Work with ODOT to target minor improvements to major commuting routes, as necessary, to improve safety or existing capacity of commuting routes.
- ◆ Accept some levels of congestion on major commuting routes during peak commute hours.
- ◆ Reserve opportunities for major improvements to major commuting routes until needed and after other reasonable measures have been implemented.

Transfer of County Road Jurisdiction to Cities

State law requires that cities agree to accept the jurisdiction of county roads annexed into the City even when they no longer serve a county road function. Cities often require counties to reconstruct county roads to urban standards prior to accepting jurisdiction. Urban development activities under the jurisdiction and control of the cities cause extensive damage to the existing roads. As these areas are annexed, the city share of the state highway revenue increases but they are not obligated to accept additional road maintenance responsibility.

Proposed New Policy

Benton County supports a change in state law that will promote city acceptance of an equitable share of jurisdictional responsibilities for roadways annexed into developing areas.

Fire Access Policy

Benton County shall support construction of secondary access to residential and public lands in high fire hazard areas

Benton County Open Space Lands/Chinook Road District

Benton County supports the policy stated in the City of Philomath TSP, which states,

“...the Philomath Transportation Plan supports the goal of connecting its community to the public resource lands and trails to the north, particularly County owned Open Space lands. The access road will also fulfill a goal of the Chinook Road district by providing a secondary emergency access for the Philomath Rural Fire District and an escape route for their residents. Connection to this resource will provide more travel options to the residents of Philomath, Corvallis, and Benton County. Livability will be enhanced through this direct link to this recreation Open Space resource for the residents of Philomath.”

SW 53rd Street Design Standard

The 1985 Corridor Study recommended a five-lane facility for SW 53rd Street from U.S. 20/ Highway 34 to Harrison Boulevard. The 1996 Corvallis Transportation Plan (CTP) also supports pursuing this standard. Traffic modeling for this TSP, however, suggests that a two-lane facility with center turn lanes/median and bike lanes will be adequate for the 20-year planning horizon.

Benton County will work with the City of Corvallis to reconstruct and upgrade this corridor to the above lane standard with maintenance activity, development, and other funding that may become available.

3.4 Preferred Alternatives

Preferred alternatives for addressing the identified deficiencies are presented below in four improvement categories:

1. Seven roadway corridors with capacity issues
2. Intersection capacity deficiencies in other corridors
3. Bridge replacement needs
4. Roadway and intersection safety improvements

3.4.1 Corridors With Projected Capacity Deficiency

The seven corridors with projected capacity deficiencies are:

- ◆ U.S. 20 Corridor, Corvallis to Albany
- ◆ North Albany Road/Gibson Hill Road Corridor in North Albany
- ◆ U.S. 20/Highway 34, Philomath to Corvallis
- ◆ U.S. 20/Lincoln County line to Highway 34 Junction
- ◆ North Highway 99W Corridor
- ◆ Bellfountain Road/South Highway 99W Corridor
- ◆ South Fork Road Corridor

It is important to understand that for state highway alternatives, the OHP requires adherence to the Major Improvement Strategy and the final solutions to the identified deficiencies to be developed through refinement plans and/or project development. The LOS analysis completed for development of this plan will need to be refined to demonstrate compliance with the mobility, spacing, and signal standards contained in the 1999 OHP.

3.4.1.A U.S. 20 Corridor, Corvallis to Albany

The U.S. 20 corridor connecting Corvallis and Albany faces present and future needs for improved safety and greater capacity. Transportation demand in this corridor will continue to grow. The various strategies suggested numerous ways to meet this increasing demand. The Roadway Build strategy would widen highways as needed. The Transit/TDM strategy

seeks to minimize the auto demand on the roadway by providing for alternative modes. The TSM strategy calls for accepting lower levels of service. These strategies play against each other over a variety of specific decisions. The recommended plan and options discussed below are indicated in **Figures 3-A, 3-B, 3-C.1, and 3-C.2.**

The preferred alternative suggests the following improvements to the U.S. 20 corridor between Corvallis and Albany:

- ◆ Express bus service (*For more information, see Chapter 5.*)
- ◆ Traffic signal and left turn channelization at Granger Road
- ◆ Independence Highway traffic signal [A4]
- ◆ Scenic Drive turn lanes [A5]

- ◆ Gibson Hill Road/Scenic Drive/Oak Grove Drive Intersection realignment [A6]
- ◆ U.S. 20 widening to four lanes, Conifer Boulevard to North Albany Road [A1] (This alternative would be pursued only if other alternatives are not acceptable.)

This group of projects addresses capacity and safety issues along U.S. 20 between Corvallis and Albany. Traffic demand on U.S. 20 will require widening the roadway to a four-lane cross-section within the 20-year study period. Demand for a six-lane section is indicated in the section connecting North Albany to Albany. Since the Willamette River bridges have a four-lane capacity and the downtown Albany street system is not planned to be expanded to accept additional bridge capacity the six-lane improvement between North Albany Road and Springhill Drive is not included in the preferred alternative. This is consistent with the adopted City of Albany TSP.

Frequent all-day express bus service could provide an alternative to the private automobile in the corridor, but would not attract enough trips to eliminate the need for road widening. Express bus service provides four times the service at half the price of operating commuter rail along the railroad tracks paralleling the highway. (*For more information, see "Rural Transit and Transportation Demand Management (TDM)," in Chapter 5.*)

Traffic signals and turn lanes are required at Independence Highway and Granger Road for safety and capacity reasons. No signal is proposed at Scenic Drive, as less expensive treatments will still provide adequate access.

An alternative plan to realign Granger Avenue to Independence Highway, thereby reducing the number of access points, rail crossings, and potential signal locations along U.S. 20, should be considered in the U.S. 20 corridor refinement planning efforts because of its potential to address capacity needs within the highway corridor. The realignment would require an encroachment on EFU land, requiring a statewide land use goal exception. However, on balance, improvement to U.S. 20 capacity may warrant the encroachment.

3.4.1.B North Albany Road/Gibson Hill Road Corridor in Albany

North Albany Road and Gibson Hill Road are county roads serving as a minor arterial route through the City of Albany. The city's TSP has identified eleven projects to improve this corridor. The projects in the preferred alternative below are consistent with the Albany plan.

The preferred alternative for this corridor includes:

- ◆ Improvement of Gibson Hill Road to an urban minor arterial
- ◆ Realignment of the Gibson Hill Road and Oakgrove Drive intersections with Scenic Drive
- ◆ The re-designation of Oakgrove Drive between Scenic Drive and Metge Avenue from a collector to a minor arterial
- ◆ Improvement of North Albany Road as an urban minor arterial
- ◆ The extension of a new major collector from the intersection of Gibson Hill Road and North Albany Road to Scenic Drive
- ◆ Traffic signals and intersection improvements along North Albany Road at U.S. 20, Hickory Street, West Thornton Lake Drive, Gibson Hill Road, and at Crocker Lane and Gibson Hill Road

NOTE: The preferred alternative does not include the extension of a new road between Scenic and Metge across EFU lands that was included in earlier Benton County plans.

The Albany TSP also anticipates the urban upgrade of the following county maintained roads within the city limits: Springhill Drive, Quarry Road, Crocker Lane, Valley View, Scenic Drive, and West Thornton Lake Drive.

3.4.1.C U.S. 20/Highway 34 Corridor, Philomath to Corvallis

The primary transportation issues in this corridor are capacity, connectivity, and safety. Travel between Philomath and Corvallis is served by several partial or complete parallel routes. Drivers and bicyclists will tend to select among these routes based on directness for their particular destination, perceived speed, and comfort and safety. Transportation improvements in this corridor should seek to make the best use of all routes while preserving a balance of roadway functional classification. The recommended plan and options considered are indicated on **Figures 3-A, 3-B, 3-C.1, and 3-C.2.**

The main roadways serving the corridor are:

- ◆ U.S. 20/Highway 34
- ◆ West Hills Road
- ◆ Reservoir Avenue
- ◆ SW 53rd Street
- ◆ North 19th Street

U.S. 20/Highway 34 serves local travel between Philomath and Corvallis and regional and state level travel to and from the coast. Through-travel movements in this corridor to and from Highway 99W south of Corvallis are discussed separately below (“Bellfountain Road/South Highway 99W Corridor”). Regional and statewide travel will continue to be primarily by automobile and truck.

The preferred alternative will provide additional east-west capacity between Highway 99W in Corvallis and the U.S. 20/Highway 34-junction west of Philomath.

The preferred alternative for this corridor includes:

- ◆ U.S. 20/Highway 34 expanded capacity, Highway 99W to the U.S. 20/Highway 34 junction [C1]
- ◆ U.S. 20/Highway 34 Junction traffic signal [C2]
- ◆ Reservoir Avenue/SW 53rd Street traffic signal
- ◆ Widen SW 53rd to two through lanes between U.S. 20/Highway 34 and Harrison Boulevard
- ◆ Construct new railroad grade crossing on SW 53rd Street
- ◆ West Hills Road traffic signal at SW 53rd Street
- ◆ Traffic Signal at SW 53rd Street and Harrison Boulevard

These projects address capacity and connectivity issues on the main east-west routes between Philomath and Corvallis. Traffic demand requires two through lanes in each direction on U.S. 20/Highway 34 between Corvallis and Philomath. The roadway through downtown Philomath is identified as a one-way couplet in the Philomath Transportation System Plan.

The extension of West Hills Road to the U.S. 20/Highway 34 junction to provide a bypass of Philomath for regional traffic to and from Corvallis was considered. It would need to cross resource-zoned property and would require an exception to state land use goals to construct. Analysis completed for the City of Philomath TSP suggests that the extension of West Hills Road would not eliminate the need for additional capacity on the highway through Philomath. The improvement may be warranted in the future, beyond the 20-year planning period. It is not included in the preferred alternative for development prior to 2015. The corridor should be further considered for its value to the future roadway network beyond the planning period.

The Reservoir Avenue/SW 53rd Street traffic signal is needed to provide adequate capacity. Reconstructing the SW 53rd Street undercrossing to an at-grade crossing or overcrossing should be pursued as the most cost-effective improvement to meet capacity and safety needs. Railroad operations with the adjacent siding and spur tracks may complicate traffic operations for an at-grade crossing. Modification to the railroad facilities should be considered in refining plans for the rail crossing at this location.

The SW 53rd Street/West Hills Road traffic signal will be required by development within the Corvallis urban growth boundary.

3.4.1.D U.S. 20—Lincoln County Line to Highway 34

U.S. 20 to the east of Philomath is projected to operate at unacceptable levels based upon standards prescribed in the 1991 Oregon Highway Plan. The 1991 OHP had relatively high standards for operations of highways of “statewide level of importance,” that will not be met on U.S. 20 in this section.

The preferred alternative is:

- ◆ Provide continuous left turn lane on U.S. 20 from Highway 34 to Woods Creek Road [D1]

Provision of a continuous left-turn lane on U.S. 20 from the Highway 34 junction west of Philomath to Woods Creek Road will restore LOS “D” operations to this highway. While this is a lower LOS than is indicated in the 1991 OHP, this improvement is more feasible given the limited funding expected to become available within the planning period.

3.4.1.E North Highway 99W Corridor

In the rural section of Highway 99W north of Corvallis, the primary transportation issue is ensuring continued safe and efficient intersection operations, particularly in the vicinity of Adair Village.

The preferred alternative includes:

- ◆ Widen Highway 99W from Willamette & Pacific Railroad crossing through Walnut Boulevard from two to four lanes [E1]
- ◆ Arnold Avenue/Highway 99W traffic signal [E3]

These projects address capacity and safety issues. Arnold Avenue is the main entrance to Adair Village from Highway 99W; turn lanes already exist at this intersection. A traffic signal will provide appropriate capacity and safety for this city’s entrance.

The Camp Adair Road intersection serves traffic connecting to Independence Highway to the east and heavy truck traffic to and from the landfill to the west. The westbound approach of Camp Adair Road to Highway 99W currently divides, separating out the northbound (right-turn) traffic to a separate stop sign at an oblique approach. Realigning Camp Adair Road will improve safety by bringing all approaching traffic to Highway 99W at one intersection, at a ninety-degree angle.

3.4.1.F Bellfountain Road/South Highway 99W Corridor

Traffic between U.S. 20/Highway 34 west of Corvallis and Highway 99W south of Corvallis should be encouraged to use the state highway system. The highway-to-highway connection on Third and 4th Streets in Corvallis, just north of the Marys River is awkward, has limited capacity, and sometimes experiences long delays. Increasing congestion on South 3rd Street further compromises this all-state route. As a result, more local automobile traffic is cutting through on Avery Avenue, and longer distance automobile and truck traffic avoids this connection by using South 19th Street and Chapel Drive in Philomath, and then Bellfountain, Llewellyn, and Greenberry Roads, a shorter and less congested route.

Bellfountain and Greenberry Roads are currently classified as minor arterials. In order to reach Greenberry Road, traffic must pass over a section of Bellfountain Road that is poorly suited for heavy traffic, especially trucks. The pavement on this section is narrow, the road shoulders are inadequate, and the road winds through a set of low hills, creating areas of poor sight distance and moderate grades. This route also passes Inavale School and areas of rural residential development.

This plan proposes a policy that states, “Benton County shall not encourage diversion of through truck traffic from state highways onto the County system.” The projects proposed for this corridor are consistent with that proposed policy. The projects address the need for an improved connection from Philomath and points west to Highway 99W south of Corvallis, improved safety on the route, and retention of the low volume character of

the Greenberry-Bellfountain-Chapel corridor to the greatest extent possible. The recommended plan and options considered are indicated on **Figures 3-A, 3-B, 3-C.1, and 3-C.2.**

The preferred alternative includes:

- ◆ U.S. 20/Highway 34 and Highway 99W interchange improvements [F3]
- ◆ Highway 99W: Rivergreen Avenue to Airport Avenue Improvements [F7]
- ◆ Highway 99W: Kiger Island Drive to Bruce Road Improvements [F8]
- ◆ The Bellfountain Road Refinement Plan (see below).

Analysis showed that due to the congestion and delay along Philomath Boulevard and South 3rd Street in Corvallis, constructing ramps and bridges over the Marys River to improve the interchange between U.S. 20/Highway 34 and Highway 99W would not effectively divert through traffic from the Bellfountain Road corridor. The completion of a full interchange at the highway junction is widely believed to be a significant deficiency in the local transportation system. The improvement is included in the City of Corvallis TSP and is a part of the preferred alternative in this plan. The project has not been supported by ODOT or included in the STIP up to this time.

A relatively inexpensive project was proposed during the planning effort that would improve the existing U-turn connection for eastbound-to-southbound and northbound-to-westbound movements at the interchange. The improvement would greatly increase the turning radii, make the connecting section from South 3rd to South 4th one-way, provide channelization improvements, thereby facilitating conversion of stop-controls to yield-control for these movements, and potentially replace the stop sign at South 4th with a merge lane. Refinement planning efforts for the U.S. 20 corridor should further consider this alternative, perhaps as an interim improvement to the full interchange.

Capacity needs indicate that widening Highway 99W between Rivergreen Avenue and Airport Avenue from two lanes to four lanes is needed. ODOT STIP projects from Kiger Island Drive to Bruce Road will preserve Highway 99W for the planning horizon. Left turn channelization at additional intersections along Highway 99W should be developed to improve safety and preserve capacity.

Bellfountain Road Refinement Plan

The Bellfountain Road Refinement Plan will identify, analyze, and recommend specific actions to improve safety and retain the rural character of the area. Projects to be considered include:

- ◆ Bellfountain Road/Airport Avenue intersection improvements [F6]
- ◆ Bellfountain Road shoulder improvements [M6]
- ◆ Greenberry Road/Bellfountain Road minor alignment improvements [F4]
- ◆ Other projects as appropriate, including signing, Inavale School sight distance improvements, speed controls, etc.

Alternatives Considered But Not Included

- ◆ Airport Avenue Connection to SW 53rd Street/Borden Road

A new route connecting Bellfountain Road to Airport Avenue via Borden Road/SW 53rd Street was considered during development of this TSP. It is believed that the route would reduce travel times and help to relieve congestion at the connections between U.S. 20/Highway 34 and Highway 99W, as well as on South 3rd Street (Highway 99W). If constructed, potential projects at Airport Avenue/Bellfountain Road, Greenberry Road/Bellfountain Road, and Greenberry Road/Highway 99W might be eliminated or reduced in scale. These roads would then remain deficient in width and alignment for the remaining traffic if a bypass via Airport Avenue were developed.

The Airport Avenue connection was proposed in an attempt to route traffic away from the sight-restricted Airport Avenue/Bellfountain Road intersection. The proposed road would have to cross Muddy Creek and the associated riparian areas. Wetland mitigation would be required. It would also require exceptions to state land use goals for encroachment into resource-zoned lands.

This project has not been included in the preferred alternative due to the considerable expense associated with development of this route, the extent of negative environmental impacts, the poor condition of portions of the existing Airport Avenue pavement strength, and the lack of a significant constituency in support of the project.

◆ Northerly Extension of Bellfountain Road

This plan also considered a northerly extension of Bellfountain Road from Plymouth Drive to U.S. 20/Highway 34. This project has been included in previous Benton County Transportation Plans, including the Comprehensive Plan. The extension would be built to minor arterial standards, with the connection from Plymouth Drive to U.S. 20/Highway 34 providing a needed link in the arterial level structure of the road system. It would reduce cut-through traffic on collectors Chapel Drive and Plymouth Drive and help relieve congestion on South 3rd Street in Corvallis. Design of the final alignment would need to avoid the cemetery and the existing residential development. The alignment would also need to provide for traffic safety at the intersection of Country Club Drive with U.S. 20/Highway 34 by assuring adequate separation of the intersections.

The projected need and justification for development of this route during the next 20 years is not deemed adequate to overcome the funding and land use issues associated with this proposal.

3.4.1.G South Fork Road Corridor

The preferred alternative includes:

◆ South Fork Road paving [J1]

The last few miles of South Fork Road that are still unpaved (from the eastern terminus of South Mountain Road to about three miles westward near Tobe Creek Road) severely inhibit this route for travel between the rural communities of Alsea and Alpine. While the volume of travel between these communities is relatively low, paving this section would improve connectivity between the two communities for both vehicles and bicyclists. The Bureau of Land Management has designated this route as a Scenic Byway. The designation may attract visitors with vehicles inappropriate for the primitive nature of the unpaved portion of this road. The cost of this improvement is estimated at \$4,866,000.

3.4.2 Intersection Capacity Projects

The analysis identified a number of locations where traffic signal warrants are met now or may be met in the 20-year future. Depending on the location and the projected traffic volumes, intersection improvements may take the form of traffic signals or new turn lanes. Modern roundabouts should be considered a potential alternative to traffic signals on a case-by-case basis.

Signalization

Based on an evaluation of existing and future traffic conditions, traffic volumes are projected to grow to a level requiring signalization at numerous intersections throughout the county. Most of these new signals have been described in association with other projects (i.e. road extensions or widenings). Three locations that are expected to require signalization are the intersections at West Hills Road/Reservoir Road, West Hills Road/SW 53rd Street, and SW 53rd/Harrison. They will meet warrants for the installation of traffic signals due to the general growth in traffic in Corvallis and Philomath. As traffic volumes grow on Highway 99W, signalized access from the City of Monroe onto Highway 99W may become necessary. The intersection at Highway 99W/Orchard Street has been identified as the most likely point of signalized access to the highway within the City of Monroe.

Turn Lanes

In addition to those locations in which new turn lanes have been identified to be associated with other roadway projects, the analysis identified three locations requiring turn lanes. These locations are at higher volume highway locations in which turning volumes require some protection, but do not warrant the full protection of a traffic signal. **Figures 3-A, 3-B, 3-C.1, and 3-C.2** show the locations of the recommended projects.

The preferred alternative includes:

- ◆ West Hills Road/Reservoir Road traffic signal [G1]
- ◆ West Hills Road/SW 53rd Street traffic signal [G2]
- ◆ Highway 99W/Orchard Street traffic signal in Monroe [G4]
- ◆ Highway 223/U.S. 20 turn lanes [G5]
- ◆ Eddyville-Blodgett Highway/U.S. 20 turn lanes [G6]
- ◆ Old River Road/Highway 99W turn lanes [G7]

The choice between signalization and adding turn lanes depends mainly on two factors: (1) the intersection location, rural vs. urbanizing, and (2) the traffic volume that would benefit from signalization, which is generally the side road left-turning and crossing movements. Motorists do not expect to find traffic signals in rural areas and installing them in such locations may only replace one safety issue (unsafe turning maneuvers by impatient motorists) with another (red-light running and rear-end crashes caused by inattentive motorists). If side road left-turning and crossing movements were relatively low at a rural location, the recommended course of action was to separate the side road right-turning movements (which experience less delay) from the other side road movements, and to provide left-turn lanes on the main road, if not already present.

3.4.3 Bridge Replacement Projects

The preferred alternative includes:

- ◆ Llewellyn Road bridge over Overflow Channel (2001) [H4]
- ◆ Van Buren Avenue bridge over Willamette River [H6]
- ◆ Crescent Valley bridge (1999) [H7]
- ◆ Norton Creek bridge (2000) [H8]
- ◆ Old River Road bridge (1999) [H9]
- ◆ Chapel Drive bridge (2000) [H10]
- ◆ Tampico Road bridge (1999) [H11]
- ◆ Harris Road bridge over Alder Creek (2003) [H12]
- ◆ Elliot Circle bridge (2000) [H13]
- ◆ Llewellyn bridge #25 (2001) [H14]
- ◆ Bellfountain Road bridge over Oliver Creek (2000) [H15]
- ◆ Llewellyn Bridge #2 (2002) [H16]
- ◆ Airport Avenue bridge [H17]
- ◆ Harris Covered bridge [H18]

- ◆ Price Creek Road Bridge [H19]
- ◆ North Fork Alsea Road at Highway 34 [H20]

These bridge replacement projects will address the identified issues of weight restricted bridges, poor condition, and structural inadequacies.

3.4.4 Airport-Related Project

The Corvallis Airport Master Plan identifies Airport Avenue as needing improvements to urban standards in order to promote land use development supportive of the airport. The City of Corvallis designates Airport Avenue as an arterial street. As future development occurs on Airport Avenue, this street should be improved to urban standards (i.e. underground storm drainage, streetlights, etc.). **Figure 3-C.1** shows the location of the recommended project.

The preferred alternative includes:

- ◆ Airport Avenue improvement to City Arterial Standards [I1]

This project will support the further urban development in and around the Corvallis Airport. The Corvallis Airport Master Plan calls for the improvement of Airport Avenue to arterial standards.

3.4.5 Safety Projects

The analysis and public involvement process identified a variety of safety-related issues at intersections around Benton County. These issues included poor sight distance, unusual intersection configurations, sharp curves, and locations where heavy volumes of vehicles must slow or stop in a travel lane while making a turn off of a highway. **Figure 3-B** shows the locations of each of the recommended projects.

The preferred alternative includes:

- ◆ Independence Highway/Springhill Drive intersection reconfiguration [K1]
- ◆ Grange Hall Road/Fern Road advance beacons, signing, and striping [K2]
- ◆ Wren Road/Highway 223 intersection reconfiguration [K3]
- ◆ Priest Road signing at U.S. 20 [K4]
- ◆ Independence Highway/Ryals Avenue signing [K5]
- ◆ Palestine Avenue/Oak Grove Drive realignment [K6]
- ◆ U.S. 20/Marys River Estates right-turn lane [K7]
- ◆ Highway 34/Fish Hatchery Road turn lanes [K8]
- ◆ Highway 34 curve realignment, Alsea area [K9]

Sight distance concerns will be addressed at the Grange Hall Road/Fern Road, Priest Road/U.S. 20, and Ryals Avenue/Independence Avenue intersections by providing improved advance warning of the intersection.

The Independence Highway/Springhill Drive intersection will be reconfigured to improve operation and sight lines. Two intersections with yield-controlled legs, Wren Road/Highway 223 and Palestine Avenue/Oak Grove Drive, are planned to be realigned to form conventional “T” intersections.

Turn lanes will be constructed at the U.S. 20/Marys River Estates and Highway 34/Fish Hatchery Road intersections to allow vehicles to slow and/or stop out of the through travel lane, improving safety at these locations. Another safety project along Highway 34 consists of realigning a curve near Alsea with a history of accidents.

3.4.5 Substandard and Non-Programmed Roadway Needs

Many of the roadways within the County road system are substandard with respect to width, vertical or horizontal alignment, and, in the case of cities, the lack of urban features such as curbs and piped storm drains. Projects included in the TSP have been prioritized on capacity and safety needs. The projects identified in this plan are not intended to limit or impede the improvement of any substandard road as opportunities present themselves.

4

Bicycle & Pedestrian Plan

This chapter describes current bicycle and pedestrian facilities within Benton County, forecasts future needs for these modes of transportation, lists current policies and necessary policy changes, and describes the preferred alternatives for improving conditions for bicyclists and pedestrians (section 4.4).

4.1 Existing Conditions

4.1.1 Existing Facilities Inventory

Existing bicycle and pedestrian facilities were inventoried and summarized in text and maps in the Benton County TSP Background Document, Chapter 5. Bicycle facilities are classified as follows (as described in the 1995 Oregon Bicycle and Pedestrian Plan):

Multi-Use Path: A facility separated from motor vehicle traffic by an open space or barrier, either within the roadway right-of-way or within an independent right-of-way. These are typically used by pedestrians, joggers, skaters and bicyclists as two-way facilities. Multi-use paths are appropriate in corridors not well served by the street system (if there are few intersecting roadways), to create short cuts that link destination and origin points, and as elements of a community trail plan.

Bikelane: A portion of the roadway designated for preferential use by bicyclists. Bikelanes are appropriate on urban arterials and major collectors. They may be appropriate in rural areas where bicycle travel and demand is substantial. Bikelanes must always be well marked to call attention to their preferential use by bicyclists.

Shoulder Bikeway: Paved roadway shoulders on rural roadways provide a suitable area for bicycling, with few conflicts with faster moving motor vehicle traffic. Most rural bicycle travel on the state highway system is accommodated on shoulder bikeways.

The term **Bicycle Facilities** refers to bike paths, lanes, ways, and routes, and more broadly can include bicycle racks, storage lockers, bike racks on buses, or other physical objects that facilitate bicycle travel.

Pedestrian Facilities include sidewalks, multi-use paths not specifically prohibited for shared-use, and shoulder bikeways where no sidewalks exist. In addition, pedestrians may use trails that are not suited to or are forbidden to bicyclists.

Benton County provides signed and striped bikelanes on a number of roads in the northern half of the County, as shown in **Figure 4-1A**. However, none are located on roadways in the southern half (south of Airport Avenue). Multi-use paths are provided parallel to the south side of U.S. 20, through and between

Corvallis and Philomath, and along the west side of SW 53rd Street/NW Walnut Boulevard, from Country Club Drive to Walnut Park.

The City of Corvallis maintains a well-developed system of bike facilities and multi-use paths, some of which continue beyond the city limits to become County operated facilities in unincorporated areas. Multi-use paths parallel the south side of U.S. 20 between Corvallis and Philomath, the west side of SW 53rd Street/NW Walnut Boulevard, and a section of Campus Way on the Oregon State University campus.

Most signed state highways within Benton County have bikelanes or shoulder bikeways, except parts of Highway 99W in the Monroe and Lewisburg areas, U.S. 20 southeast of Wren, and approximately two-thirds of Highway 34 west of Philomath.

The Linn-Benton Loop bus is equipped with a bicycle rack. Bicycle parking will be provided at the new Corvallis intermodal transfer center. The transfer center will provide a comfortable, safe, central location for transfers among Corvallis Transit System buses, Linn-Benton Loop buses, bicycling, and walking.

Maintained trails in Benton County are located in MacDonald Forest, Siuslaw National Forest, and the Finley National Wildlife Refuge. These areas provide extensive systems of trails and logging roads suitable for hiking and mountain biking. A portion of Cardwell Hill Road is closed to motorized traffic and is used by bicyclists, pedestrians, and equestrians, connecting Oak Creek and Kings Valley northwest of Cardwell Hill. The Benton County Parks Comprehensive Plan identifies trail facilities within the County.

4.1.2 Bicycle and Pedestrian Needs Assessment

Both safety and connectivity needs have been identified through review of existing documents, technical analysis, and public involvement. Caution areas in the rural parts of Benton County are indicated on the Corvallis Area Bikeways and Benton County Bicycling Guide map, including the following:

- ◆ Highway 99W from Monroe south to Lane County
- ◆ Highway 34 west of Campbell Park and the grade east of Mary's Peak Road
- ◆ U.S. 20 from Wren southeast to the summit (this deficiency has since been corrected)
- ◆ Bellfountain Road in the vicinity of Airport Avenue
- ◆ Portions of West Hills Road

No figures are available for bicycling demand on Benton County facilities. Information provided by County staff and the Bicycle Advisory Committee identified heavily used routes and times of the year when bicycling activity is at its highest.

During these peak times capacity is generally not the issue. With few exceptions the only impedance to bicyclists are continuity of route and volume of vehicular/pedestrian traffic. Discontinuous routes impact choice of mode and choice of route when bicycling is considered. Volume of traffic impacts the quality of the route and influences both mode and route choice. Existing vehicular traffic volumes on sections of U.S. 20 and Highway 99W during peak times of the year, are reported to impact bicycle ridership according to the Bicycle Advisory Committee. In addition, heavy pedestrian traffic on multi-use paths sometimes causes riders to resort to riding on the adjacent roadway to reduce friction or increase the timeliness of the ride.

Bicycling outside of the urban areas of Benton County takes the form of recreational riding for pleasure and fitness, as well as bicycle commuting between population and employment centers. Deficiencies in the bicycle facilities on the commuter routes between cities within Benton County are an impediment to the use of this mode of travel. Providing adequate facilities for cycling on these routes promotes a shift to cycling from the single occupant motor vehicle, helping to preserve capacity on the highways. The mild climate of the Willamette Valley makes year around bicycle commuting viable. Many bicycle commuters choose to rely upon bicycles for their commute during the drier, and warmer seasons.

Widening paved shoulders on rural recreational bicycling roads with higher traffic volume benefits all users of the road by minimizing conflicts and improving the overall safety of the road, particularly for trucks. Independence Highway and Bellfountain Road experience high truck use and regular recreational bicycle use, yet lack adequate shoulders.

Additional areas of concern include Independence Highway, Granger Avenue, Bellfountain Road, and Highway 223 south of Kings Valley. Sections of these facilities are narrow, with limited sight distance, sharp curves and/or steep grades, all of which compromise safe and efficient bicycling and pedestrian use.

Connectivity issues include the need for safe, accessible Willamette River crossings at Albany and Corvallis, and the desire to pave the remaining gravel portion of South Fork Road.

Better bus service and carriage of bikes on buses is needed to extend the practical range of these transportation modes in the County. The entire Corvallis Transit System bus fleet has recently been equipped with bicycle racks.

There are no sidewalks associated with Benton County roads, outside of urban areas. Multi-use paths have been developed through and between Corvallis and Philomath south of U.S. 20, along the west side of SW 53rd Street/ Walnut Boulevard, and along a portion of Campus Way on OSU campus. These pedestrian facilities are illustrated in

Figure 4-1A.

A Corvallis-to-the-Sea Trail has been proposed that would provide day-use and overnight recreation opportunities for hikers, bicyclists, and equestrians. No funding has yet been identified to commence development of this trail.

No figures are available for the existing pedestrian demand associated with any Benton County facilities. Anecdotal information suggests that demand is sparse, intermittent, and somewhat unpredictable. The exception to this is in school zones in rural areas. Several members of the community noted locations of school-aged pedestrians traveling to/from school on oftentimes inadequate facilities. These locations include the following (adequacy of roadway shoulder widths in these areas is the identified capacity constraint):

- ◆ Bellfountain Road near Inavale School
- ◆ Highway 223 near the rural communities of Kings Valley and Wren
- ◆ North Albany Road near North Albany School and Middle School
- ◆ Granger Avenue near Mountain View School
- ◆ Highway 34 near Alsea

4.2 Forecast of Future Conditions

The performance evaluation of future conditions on the no-build transportation system identified deficiencies of capacity, mobility, and connectivity for bicycle and pedestrian travel. Future travel demand on the transportation system will exacerbate certain existing deficiencies of the bicycle system and may dissuade future use of this transportation mode. Conflicts between cyclists and motorists will increase as traffic volumes for both modes increases as projected. The effect on the transportation system would likely be a greater reliance on the automobile for safe and timely travel.

The noteworthy bicycle system connectivity/mobility deficiencies of the no-build scenario include the following:

- ◆ U.S. 20 Willamette River bridge crossing (substandard bikelane)
- ◆ Independence Highway south of Camp Adair Road (substandard shoulders)

- ◆ Granger Avenue (substandard shoulders)
- ◆ Bellfountain Road: Airport Avenue to Greenberry Road (substandard shoulders)
- ◆ Highway 99W: Dawson Road to Lane County Line (substandard shoulders)
- ◆ Highway 34: west of Decker Road to Alsea (substandard shoulders)

These missing or unsafe links are barriers to full use and access for the bicycle mode. Provision for these improvements would provide a complete and interconnected primary bicycle system with the inherent safety necessary to promote this travel mode as a reasonable alternative to the automobile.

4.3 Bicycle and Pedestrian Policies

4.3.1 Existing Policy

Existing policies will be modified when the new policy recommendations are approved.

4.3.1.A Benton County Comprehensive Plan

Section E: Transportation

11. A system of bikeway routes will be identified in a bikeway master plan, which connects residential, school, commercial, employment, and recreational areas. Standards will be established to provide for adequate widths, grades, [etc.], to allow maximum safe use.

Section H: Environmental Quality, Air Quality Policies

11. The County shall plan for and develop bike paths along existing and future roads for commuter and recreational use.

4.3.1.B Benton County Development Code

The roadway standards for the shoulder bikeways and walkways are contained within the roadway standards in Chapter 99 of the Development Code. Paved shoulders of five foot minimum are standard for collector and arterial roads.

4.3.2 New Policy Recommendations

The efforts of reviewing related documents and identifying policy issues with staff, agencies, and the public has resulted in the identification of policies and codes that are recommended for modification. Summarized below are the recommendations.

Purpose

A safe, useable, and fundable bicycle and pedestrian system is an essential element in meeting Benton County's transportation goals. County citizens and staff have expressed the importance of providing transportation choices, of safe operations for all travel modes, and of maintaining the qualities that define Benton County as a highly desirable place in which to live. Bicycling and walking are important elements in all of these concerns.

Role of Bicycling and Walking

Bicycling and walking are alternatives to motorized transportation. Within Corvallis and other urbanized areas of Benton County, these modes can be used effectively for many types of trips that in most instances would otherwise require use of an automobile. A smaller, but still significant, number of rural residents use bicycling as a commute mode and walking for local trips. In addition to direct transportation use—getting from one point to another—bicycling and walking provide healthful, non-polluting recreation. The same large, open, rural areas that provide excellent recreational opportunities also limit the numbers of rural residents who will choose to walk or bicycle as an alternative to driving a car for some or all of their trips. Nonetheless, bicycle and pedestrian transportation modes should continue to grow as improvements are made to the convenience and safety of facilities and as citizen awareness increases. Provision for bicycling and walking is also an essential element in providing for those residents who are unable to drive. Non-motorized transportation will continue to play a small but important role in meeting the County’s goals for its transportation system.

Proposed New Policies

A set of policies expresses the goals and process for developing Benton County’s bicycle and pedestrian system. These policies resulted from the public involvement process. Based on this input, it is clear that: (1) the safety of bicyclists and the public is of greatest importance; (2) both commuting and recreational uses are important factors in planning an appropriate bicycle system for Benton County, and; (3) multi-modal connections can expand the opportunities for bicycling.

These policies will guide future refinement of specific plans. The policies are:

- ◆ Bicycle facility planning and development for the County shall be conducted in coordination with other local jurisdictions and with ODOT.
- ◆ County bicycle facilities shall be developed with ongoing citizen and community involvement.
- ◆ Expected cost-effectiveness shall be a major consideration in bicycle facility planning. High priority will go to relatively small projects that complete needed links or otherwise eliminate obstacles to full use of existing facilities. Priority should be given to completing commuter routes.
- ◆ The Oregon Bicycle and Pedestrian Plan (1995) may be used for reference in creating appropriate standards. Land partitioning rules and road standards shall address the need for bike and pedestrian accessways that ensure connections between activity centers with easements or right-of-way dedication.
- ◆ Where possible, community activity centers such as schools, parks, employment centers, shopping areas, and major transit stops (including commercial uses allowed in policy 20) shall provide bicycle and pedestrian facilities into their site design.

4.4 Preferred Alternatives

The County’s bicycle network contains a number of gaps, which forces bicyclists to share travel lanes with traffic, creating potential safety hazards and discouraging bicycling as an alternative travel mode. Some County collector roadways are within the Urban Growth Boundaries of cities and eventually will need sidewalk facilities to be brought up to urban standards. The development of this recommended project list was coordinated with the Benton County Bicycle Advisory Committee.

4.4.1 Planned Bikeway & Walkway Projects

County staff, the general public, and the Bicycle Advisory Committee identified many potential bicycle/pedestrian improvement projects. These potential projects were evaluated within the framework of the transportation system goals. Based on this evaluation, the projects are presented below in two groups:

Planned projects are those included in this current 20-year Transportation System Plan; they meet definite needs for safety and connectivity and/or are part of otherwise needed road improvements and they can be funded within the projected resources available to the county.

Other projects are those that cannot be included at this time due to financial constraints.

Patterns of development, bicycle and pedestrian use, and/or unanticipated funding possibilities may move any of these projects to a higher level. The planned bicycle and pedestrian improvement projects are shown in **Figure 4-1B**.

- ◆ Crystal Lake Drive [M2]
- ◆ Chapel Drive, 19th Street to Bellfountain Road [M4]
- ◆ 19th Street, U.S. 20/Highway 34 to Chapel Drive [M5]
- ◆ Bellfountain Road, Airport Avenue to Greenberry Road [M6]
- ◆ Granger Avenue, Pettibone to Independence Highway/U.S. 20 [M8]
- ◆ Independence Highway, Camp Adair Road to U.S. 20 [M9]
- ◆ Metge Avenue, Independence Highway to Oak Grove Drive [M10]
- ◆ Country Club Drive, Barley Hill Drive to U.S. 20/Highway 34 [M12]
- ◆ Highway 99W, Dawson Road to Lane County line [M14]

4.4.1.A Planned Projects

The following projects reflect concerns identified in the public process, through the work of the Bicycle Advisory Committee, and by the County staff and consultants. These are the projects recommended as part of the overall Transportation System Plan for Benton County. Widening of the roadway to provide six-foot shoulder bikeways will be the most appropriate treatment, except where otherwise noted. In some cases this may be in conjunction with significant roadway realignment, to improve sight distances and overall safety and operations.

Crystal Lake Drive: Park Avenue to S. 3rd Street [M2]

The City of Corvallis TSP includes upgrading this roadway to Collector standards, including bikelanes and sidewalks.

Chapel Drive: 19th Street to Bellfountain Road [M4]

19th Street: U.S. 20/Highway 34 to Chapel Drive [M5]

This will complete a missing link connecting Bellfountain Road/Plymouth Drive bikelanes to Philomath and the U.S. 20/Highway 34 multi-use path. This is a developing area; schools are also present here. Sidewalks should be constructed as part of development. Widened shoulders will serve pedestrians in the intervals between sidewalks.

Bellfountain Road: Airport Avenue to Greenberry Road [M6]

This project will continue existing bikelanes, providing a critical north/south connection between Philomath/west Corvallis and the south County. Widened shoulders will also provide for safety and comfort of walkers. *(For more information on this project, see “Bellfountain Road Refinement Plan” in Chapter 3, section 3.4.1.F.)*

Granger Avenue: Pettibone Road to U.S. 20 [M8]

Granger Avenue links the bikelanes serving the Lewisburg/Crescent Valley area with bikelanes on U.S. 20 to North Albany and Albany. These improvements will serve pedestrians as well as bicyclists.

Independence Highway: Camp Adair Road to U.S. 20 [M9]

This road is heavily used by bicyclists. Narrow shoulders, vertical curves, and truck traffic create problems for cyclists and discourage higher use. Wider shoulders will also provide for safety and comfort of walkers.

Metge Avenue: Independence Highway to Oak Grove Drive [M10]

This provides an attractive east-west link between Adair and North Albany. Widened shoulders will also provide for safety and comfort of walkers.

Country Club: Barley Hill Drive to U.S. 20/Highway 34 [M12]

This project completes bikelanes on the west end of Country Club Drive. A parallel multi-use path exists and will continue to provide for the needs of walkers. It is anticipated that this link will be completed in conjunction with development after this area is annexed into Corvallis.

Highway 99W: Dawson Road to Lane County line [M14]

Complete widening of Highway 99W south of Corvallis. Creates continuous bikeway connection between Monroe and Corvallis. (A complete link to Junction City will require widening of Highway 99W in Lane County.) Widened shoulders will also provide for safety and comfort of walkers.

4.4.1.B Other Projects

These additional projects also reflect concerns identified in the public process, through the work of the Bicycle Advisory Committee, and by the County staff and consultants. These projects, though desirable, cannot at this time be justified for inclusion in the recommended projects for implementation in the twenty-year time horizon due to limited resources. However, these projects have been identified as needs, based on either the technical analysis or public input. For the projects identified below, widening of the roadway to provide six-foot shoulder bikeways will be the most appropriate treatment except where otherwise noted. In some cases this may be in conjunction with significant roadway realignment to improve sight distances and overall safety and operations.

Highway 34: Botkin Road to Mary's Peak Road

Highway 34 connects Alsea and Lobster Valley with the central and northern parts of the county. No alternate route is available. The curves east of Mary's Peak Road combine poor sight distance, poor shoulders, and high truck traffic—a hazardous combination for cyclists, walkers, and motorists alike.

Highway 34: Yewood Lane to Alsea-Deadwood Highway

Highway 34 connects Alsea and Lobster Valley with the central and northern parts of the county. No alternate route is available.

Alsea-Deadwood Highway: through curves around Little Lobster Road, from south of Bummer Creek Road to north of Hazel Glen Road

This has been mentioned as a dangerous area for bicyclists, but apparently is not an area of significant bicycle demand.

Kings Valley Highway: U.S. 20 north to County Line

Further study of the Kings Valley Highway is proposed to better understand the safety concerns and needs of all travel modes.

U.S. 20 Bridges

The bridge between Rondo and Independence Highway is currently narrow with inadequate shoulders to facilitate a shoulder bikeway. A second deficiency in this corridor involves the absence of bicycle access to the sidewalk on Willamette River Bridge to Albany. Taken together these would provide a continuous bikeway connection from Corvallis to Albany. However, given the high cost of widening these bridges, this improvement is currently cost-prohibitive.

Scenic Drive: Oak Grove to U.S. 20

A shoulder bikeway would provide connection between U.S. 20 and the areas served by Scenic Drive without out-of-direction travel.

5

Public Transportation Plan

This chapter describes public transportation services currently operating within Benton County, forecasts future public transportation needs, lists current policies and necessary policy changes, and describes the preferred alternatives for improving public transportation throughout the County (section 5.4). It also includes a summary of a recent Intercity Transit Feasibility Study performed by a private firm.

5.1 Existing Conditions

5.1.1 Description of Service

The Corvallis Transit System (CTS) currently provides local transit service within the City of Corvallis, and the Linn-Benton Loop connects Corvallis, Linn-Benton Community College (LBCC), and Albany. Greyhound provides intercity bus service to points north and south, and the Valley Retriever provides service from Newport on the west to Bend in the east. Regular shuttle service is currently provided to the Eugene Airport. In addition, regular shuttle service is provided from Corvallis to Albany, from which another shuttle provides service to Portland International Airport.

CTS operates eight routes within the City of Corvallis, with bus service at one-hour headways on weekdays and Saturdays. The bus system provides service within five blocks of virtually all residences within the City, and service to all major employment areas and shopping centers. In the past, the public has suggested service to areas outside the Corvallis city limits, such as Philomath and Crescent Valley High School, and service to Philomath was added in 2000. CTS connects to the Linn-Benton Loop at the downtown transfer center and on the Oregon State University campus. An improved intermodal transfer center downtown, with bicycle parking and additional shelter space, is planned and has been funded. CTS provides regular service to major generators in the county, including OSU and Hewlett Packard.

Albany Transit provided weekday a.m. and p.m. peak service during 1994–95 at 30-minute headways between North Albany and downtown Albany, serving Springhill Drive, Quarry Road, North Albany Road, Gibson Hill Drive, Crocker Lane, and adjacent subdivisions. The route connected in downtown Albany to Albany Transit's other two routes and to the Linn-Benton Loop. This service was terminated in 1995, due to funding constraints and low ridership. North Albany is still served during the peak hour by the Linn-Benton Loop, but most Loop trips are oriented towards the community college. The Loop also provides on-demand service to the Amtrak depot in Albany.

The Linn-Benton Loop is operated by the Albany Transit System, with funding assistance from Benton County, the City of Corvallis, and Linn-Benton Community College. The Loop provides eight weekday trips between Oregon State University, downtown Corvallis, Linn-Benton Community College, and

downtown Albany, with peak-hour trips also stopping in North Albany and at Hewlett-Packard. Three additional trips travel only between LBCC and either Corvallis or Albany. The Loop connects to CTS in downtown Corvallis and at OSU, to Amtrak at the Albany depot, and to the Albany Transit System at LBCC and downtown Albany. The Loop bus is equipped with a bicycle rack.

Greyhound provides daily service from the bus depot in downtown Corvallis north to Albany, Salem, and Portland, and south to Eugene. The Valley Retriever provides three weekday trips, two Saturday trips, and one Sunday trip between Corvallis and Newport, with stops in Philomath, Blodgett, Burnt Woods, Eddyville, and Toledo. The Valley Retriever also provides two weekday trips and one weekend trip east to downtown Albany and the Albany Amtrak station, with one trip Monday-Saturday continuing to and from Salem, Mill city, Detroit, Sisters, and Bend. The Linn Shuttle provides a Lebanon, Sweet Home, Albany route.

Transportation services for senior citizens and persons with disabilities are provided by the Benton County Dial-A-Bus/County Cruiser within Benton County and by Call-A-Bus within the City of Albany. Dial-A-Bus services are available in the Corvallis area Monday through Friday between 7 a.m. and 4 p.m. (7 p.m. for Americans With Disabilities Act-eligible riders) and between 10:00 a.m. and 4:30 p.m. on Saturdays. These services include demand-responsive service providing door-to-door transportation, rural rounds providing scheduled transportation services on a rotational basis to rural communities, and contract services providing transportation to and from work for citizens associated with designated agencies.

5.1.2 Transit Demand and Existing Capacity

Ridership information that is readily available from the local transit service providers revealed that transit capacity exceeds existing demands in all but a few cases. Benton County's Dial-A-Bus service has had occasion to turn away patrons due to the inability to provide service at the time(s) requested. Although isolated, these occurrences are significant, as these patrons are partially or wholly dependent on public transit.

Ridership information for the Linn-Benton Loop, CTS, and Albany Transit System indicates that the current capacity provided exceeds demands in most cases. However, it should be noted that "quality of service," the measure of convenience and frequency of service provided, has been identified as a deficiency by users of the transit systems.

The following transit-related deficiencies have been identified within the County:

- ◆ No fixed-route transit service is provided to urbanized areas adjacent to Corvallis, such as Crescent Valley. (Service to Philomath was started in 2000.)
- ◆ Only limited transit service is available to senior citizens and persons with disabilities in the rural portions of Benton County.
- ◆ Residents in Benton County outside the City of Corvallis have no access to regular transit service.
- ◆ The schedule for the Linn-Benton Loop and the shift-change times at Hewlett-Packard don't match each other.
- ◆ No direct public transportation is available to commercial airports in Portland or Eugene.
- ◆ Transferring between CTS, the Linn-Benton Loop, and Albany Transit System requires payment of up to three separate fares per trip between Corvallis and Albany.
- ◆ Transit service is not available on Sundays or late evenings.

5.2 Forecast of Future Conditions

5.2.1 Performance Evaluation of the Future No-Build System

An assessment of the no-build transportation system was performed, using the future travel demand estimates assigned to the system. The no-build system assumes the existing transportation system with only those funded projects in adopted Improvement Programs. The same performance evaluation procedures as those used for existing conditions were used for the future no-build evaluation. The performance evaluation of future conditions on the no-build transportation system resulted in the identification of deficiencies in the transit system which are summarized below.

Rapidly growing North Albany will remain without transit service. Service to rural portions of Benton County will remain limited or unavailable. Growth in rural communities will likely create added pressure on already limited public transit resources. However, the Linn-Benton Loop will have excess capacity to accommodate growth during the next 20 years.

Under a no-build transit scenario, new development within the City of Corvallis will be required to provide bus amenities, such as shelters and pullouts, but in most cases would not receive service, since most growth is likely to occur beyond CTS' existing service area. Under this scenario, CTS ridership would likely only marginally increase, but the mode split between automobiles and buses would likely be shifted more toward automobile use. This would be due to residents of these new developments being forced to drive due to a lack of other options.

Without new service to rural areas of the County, the automobile will continue to be the only transportation mode available to most segments of the rural population, and transportation options for senior citizens and persons with disabilities will continue to be limited. Transit service will continue to be unavailable on Sundays and evenings.

Commuters traveling to work in Corvallis from Linn County communities will continue to lack a viable modal alternative to the private automobile. Payment of up to three separate fares to travel between Corvallis and Albany hinders the use of transit. This form of transit connectivity issue will continue to limit future ridership, resulting in higher auto demand. In addition, inadequate intermodal connectivity, including buses without bicycle racks, must be addressed.

When the Corvallis/Philomath area achieves MPO status, fixed-route transit service will need to be expanded throughout the entire area, along with corresponding paratransit service. The question is how the expanded service will be paid for. A more stable funding source than the current three-year serial levy will also be needed.

Future Demand Estimate

A capacity-based ridership demand model procedure was used to develop the public transit demand estimate. Several scenarios were developed to estimate potential ridership due to expanded transit service. These scenarios are described below.

5.2.2.A Express Bus Service

Express bus service would be operated between Albany and Philomath, with stops at North Albany, Hewlett-Packard, downtown Corvallis, and OSU. Service would be provided at half-hour headways during peak hours and at one-hour headways during weekday off-peak hours and on Saturdays, for a total of 16 weekday trips and 10 Saturday trips. Assuming 50 riders per weekday round trip and 25 riders per Saturday round trip, this service would attract 800 daily weekday riders and 250 Saturday riders. Annual ridership would be approximately 217,000.

Good Samaritan Hospital is the third largest employer in Benton county. During design of express bus service efforts should be made to serve the hospital campus with intercity express bus service.

5.2.2.B Airport Park-and-Ride

Corvallis Transit System Route 6 would be modified to serve a new park-and-ride lot near the Corvallis Airport, with half-hourly service on weekdays and Saturdays.

5.2.2.C Satellite Park-and-Ride

Satellite park-and-ride lots would be established in Alpine, Monroe, Wren, and Adair Village, with shuttle service provided between these locations and Corvallis. An Alpine-Monroe shuttle is estimated to attract 160 daily and 37,000 annual riders. A Wren shuttle is estimated to attract 120 daily and 27,700 annual riders. An Adair Village shuttle is estimated to attract 120 daily and 27,700 annual riders.

5.3 Public Transportation Policies

5.3.1 Existing Policy

The following policies on public transportation are contained in the Benton County Comprehensive Plan. Existing policies will be modified when the new policy recommendations are approved.

Section E: Transportation

5. Benton County shall provide for alternative transportation modes by:
 - c. pursuing an effective public transportation system including joint use of school buses and other private transit as resources permit;
 - d. pursuing various forms of public transit and paratransit for the handicapped and transportation disadvantaged; [and]

8. When considering major transportation projects, the following concerns will be addressed:
 - a. The more energy efficient alternative shall be preferred whenever practicable.
 - b. The alternative with the least adverse economic impacts shall be preferred whenever practicable. The economic analysis shall consider long term user costs, travel time, construction costs, maintenance costs, and other economic factors.
 - c. Consideration to minimize adverse social, economic and environmental impacts shall occur, including alternative mode considerations.
 - d. Physically handicapped and transportation disadvantaged shall be considered in design of facilities.

Section G: Energy, Transportation Energy Conservation Policies

1. Areas zoned for increased housing density should be concentrated along major transportation routes. Limited access to these major routes shall be required to insure planned efficient and safe ingress and egress from developments.
2. The County should support or implement as appropriate the bus loop system connecting Albany, LBCC, Corvallis, and Philomath, as recommended in the Linn-Benton Transit Development Plan (Buttke Report).
3. The County should adopt measures to encourage the use of carpools and mass transit by both public and private employees in the County.

Section H: Environmental Quality, Air Quality Policies

10. The County shall financially support the Albany-Corvallis-Philomath transit loop programs.

5.3.2 New Policy Recommendations

The efforts of reviewing related documents and identifying policy issues with staff, agencies, and the public has resulted in the identification of policies and codes that are recommended for modification. Summarized below are the recommendations.

Purpose

Transit service provides mobility to County residents who do not have access to automobiles, and provides an alternative to driving for those who do. Increasing congestion in the corridors between the County's major population centers, and the limited funding available to continue to widen roadways, calls for providing transit choices to divert some trips from private automobiles. Transit service must meet the needs both of travelers within the County and those of travelers making connections to other travel modes outside the County, including intercity bus, passenger rail, and air services.

Proposed New Policy

Benton County shall seek ways to provide public transportation choices within the commuter corridors within the county.

The formation of a Transit District is the preferred means of providing intercity and rural transportation services within the region.

5.4 Preferred Alternatives

Rural Transit and Transportation Demand Management (TDM)

The growing population of Corvallis, coupled with rising housing prices, is one cause of a growing amount of long distance commuting from outlying communities into Corvallis. Public transportation service in the rural portions of Benton County, other than intercity passenger service along U.S. 20, is available only to senior citizens and persons with disabilities, which forces rural residents to use their private automobiles for trips, even if it is not their preference.

Transportation Demand Management (TDM) is most appropriately implemented within urban areas, and a TDM program will have a negligible effect on rural county travel. In any case, Benton County supports the cities' efforts in carrying out TDM plans. Benton County will have its greatest impact in managing transportation demand through the implementation of relatively modest transit improvements.

The preferred alternatives for public transportation include the following. (The first three items are shown in detail in **Figure 5-2**).

- ◆ Satellite Park-and-Ride Shuttle Service in Highway 99W Corridor to Adair Village, Lewisburg, and Monroe [L1]
- ◆ Satellite Park-and-Ride Lots in North Albany, Philomath, Adair Village, Lewisburg, and Monroe [L2]
- ◆ Express Bus Service in U.S. 20 Corridor Between Albany and Philomath [L3]
- ◆ Support Expanded Corvallis Transit System Service [L4]
- ◆ Expand Dial-A-Bus/County Cruiser Service [L5]
- ◆ Continued Valley Retriever Service [L6]
- ◆ Continued Rural Rounds Service [L7]
- ◆ Continued Linn-Benton Loop Service [L8]

Rural transit and TDM projects have two goals: (1) to delay the need for road widening on critical rural highway corridors, such as Highway 99W; and (2) to provide transportation alternatives for residents in rural portions of the County. The satellite park-and-ride lots and shuttle service provide frequent transit connections from communities along the Highway 99W corridor into Corvallis and may encourage some

commuters from outside the County to use transit for part of their trip. Express bus service on U.S. 20 from Albany to Philomath, with associated park-and-ride lots, are recommended in corridors of higher frequency travel. The expanded Dial-A-Bus/County Cruiser service will provide some degree of public transit service to all rural residents for the first time. County support of expanded CTS service to Philomath is recommended. Continued provision of paratransit services currently provided is also recommended.

Regional planning is also needed to address the need for greater connectivity of city, rural, and statewide alternative transportation systems. Commuter service in the Highway 34 corridor between Corvallis and Lebanon has not been addressed in the preferred alternative. Planning should include both the public and private sector. Operators of the Willamette & Pacific Railroad (WPRR) have expressed the hope that it will become economically possible to restore passenger rail service to the coast, though there are no plans for this in the foreseeable future. Passenger rail service between Corvallis and Albany is also included in the vision for Benton County's future.

The proposed public transit plan consists of four major parts:

1. Expanding bus service in the U.S. 20 corridor between Philomath and Albany
2. Providing shuttle service in the Highway 99W corridor between Monroe and Adair Village
3. Expanding transit availability and service frequency throughout rural Benton County
4. Continuing existing rural transit services

5.4.1 Express Bus Service in U.S. 20 Corridor Between Albany & Philomath [L3] Satellite Park-and-Ride Lots in Albany, North Albany, and Philomath [L2]

The U.S. 20 corridor is currently the most congested in Benton County, connecting the major population centers in the County and passing by two of the area's largest employers, as well as providing an important route from the Willamette Valley to the coast. The only public transportation services currently operating in this corridor are the Linn-Benton Loop, which provides five weekday peak hour one-way trips between Albany and Corvallis via U.S. 20, and the Valley Retriever's Corvallis-Newport route, which provides three weekday trips between Philomath and Corvallis, two Saturday trips, and one Sunday trip.

The proposed express bus service would operate six days a week in the U.S. 20 corridor between Philomath and Albany, with six stops located at Philomath, Oregon State University, downtown Corvallis, Hewlett Packard, North Albany, and the Amtrak station in Albany.

Shared parking arrangements would facilitate improvement and use of existing parking facilities to provide three park-and-ride lots in Albany, North Albany, and Philomath, each with an estimated capacity of 150 spaces. The exact routing and park-and-ride lot locations would be determined during service planning prior to the development of service. Consideration for serving the Good Samaritan Hospital Complex should be further evaluated during planning and development of express bus service.

Express Bus service would be provided during the following times:

- | | |
|------------|---|
| Weekdays: | 7 a.m. to 9 a.m. and 4 p.m. to 6 p.m., 30-minute headways |
| | 9 a.m. to 4 p.m. and 6 p.m. to 8 p.m., 60-minute headways |
| Saturdays: | 8 a.m. to 6 p.m., 60-minute headways |

Express bus service is desirable in the U.S. 20 corridor to provide reliable transportation alternatives for those who cannot or prefer not to drive, and to provide some measure of relief to traffic congestion on U.S. 20. Provision of frequent transit service during commute periods will also provide the foundation needed for the City of Corvallis to develop successful transportation demand management programs, which will help reduce traffic on roads in unincorporated areas of the County. Express bus service would substantially increase the amount of transit service provided within the corridor (from 3-5 weekday trips currently to 17 and from 0-2 Saturday trips currently to 10). Express bus service would attract an estimated 800 riders daily.

A decision will need to be made on how to administer the service. There are three public transit systems in the Albany/Corvallis area (Albany Transit System, Corvallis Transit System, and the Linn-Benton Loop). The potential also exists to create a transit district, which would have a broader range of options for funding sources, and would provide opportunities to better coordinate transit services. This may be coordinated through the development of a regional transit plan between Linn and Benton Counties. However, a regional system administered through a transit district would also mean that individual communities might have less political influence and control. It further requires the establishment of a new, unique governing body along with the costs inherent therein. The voters must approve the creation of a transit or transportation district. In any case, it is imperative that the expanded transit service recommended in this plan be well coordinated with local service currently provided.

5.4.2 Satellite Park-and-Ride Shuttle Service in Highway 99W Corridor to Adair Village, Lewisburg, and Monroe [L1] Park-and-Ride Lots in Monroe, Lewisburg, and Adair Village [L2]

Public transportation service is not available in the Highway 99W corridor at present. Greyhound currently operates one bus a day between Corvallis and Eugene via Junction City, but this bus does not stop in Monroe.

The proposed shuttle service would provide public transportation service to rural population centers that currently have no service by developing park-and-ride lots in Monroe, Lewisburg, and Adair Village, and providing shuttle service from these locations into Corvallis. Stop locations, routing, and the potential for diverting to Alpine and Bellfountain would be determined during the service planning process prior to the development of service. Service would be operated at 60-minute intervals between 6 a.m. and 8 p.m. weekdays and between 9 a.m. and 3 p.m. Saturdays. As with the U.S. 20 corridor express buses, a decision will need to be made about how to administer the service.

5.4.3 Enhance and Expand Dial-A-Bus/County Cruiser Service [L5]

Public transportation in the rural portions of Benton County is currently provided in a number of ways. The County Cruiser is the demand responsive car and van service provided by Dial-A-Bus, which is available to senior citizens and persons with disabilities. The number of trips between rural communities and Corvallis during a week is extremely limited, as there is no dedicated vehicle fleet for this service. The County Cruiser service should be enhanced and expanded, as funding and demand allows. Priorities for service improvements are:

1. Purchasing one or more vehicles to be dedicated to this service, providing a visible transit presence in rural communities
2. Expanding service eligibility to cover all members of the public
3. Expanding the number of days that service is provided to rural communities

This service will provide an alternative to the private automobile for residents of rural Benton County.

5.4.4 Continued Valley Retriever Service [L6]

The Valley Retriever provides three weekday trips, two Saturday trips, and one Sunday trip between Corvallis and Newport, with stops in Philomath, Blodgett, Burnt Woods, Eddyville, and Toledo. The Valley Retriever also provides two weekday trips and one weekend trip east to downtown Albany and the Albany Amtrak station, with one trip Monday-Saturday continuing to and from Salem, Mill City, Detroit, Sisters, and Bend.

5.4.5 Continued Rural Rounds Service [L7]

Rural Rounds is planned to provide scheduled transportation services on a rotational basis to rural communities. Vans provided by Benton County are expected to be driven by trained volunteers to provide service to rural communities in the County. Past experience with this service has been mixed. While

ridership has been relatively low, public input from citizens in many of the rural communities indicated that this service provides a valuable link for the transit-dependent. Grant funds are currently available to develop this service. Future service levels should respond to demand.

5.4.6 Continued Linn-Benton Loop Service [L8]

The Linn-Benton Loop is operated by the Albany Transit System, with funding assistance from Benton County, the City of Corvallis, and Linn-Benton Community College. The Loop provides eight weekday trips between Oregon State University, downtown Corvallis, Linn-Benton Community College, and downtown Albany, with peak-hour trips also stopping in North Albany and at Hewlett-Packard. Three additional trips travel only between LBCC and either Corvallis or Albany. The Loop connects to CTS in downtown Corvallis and at OSU, to Amtrak at the Albany depot, and to the Albany Transit System at LBCC and downtown Albany. The Loop bus is equipped with a bicycle rack.

5.4.7 Support Expanded Corvallis Transit System Service to Philomath [L4]

The Corvallis-Philomath area will soon become a Metropolitan Planning Organization (MPO). According to the Oregon Transportation Planning Rule, MPO's must provide regular transit service within their boundaries. Thus, Corvallis Transit System service may be required to serve Philomath. Service to Philomath was initiated in 2000. Benton County supports this transit expansion, and should coordinate its services with the expanded CTS service.

5.4.8 Coordination

Three public fixed-route transit operators, two paratransit providers, and two intercity carriers currently operate within Benton County. This plan proposes two new transit services and expansion of a third. Coordination of services is essential to meet the following objectives:

- ◆ Minimizing transfer times between different services
- ◆ Avoiding duplication of service
- ◆ Integrating fares structures and transfer policies, and developing a single ticket system
- ◆ Providing for adequately sized intermodal facilities
- ◆ Assuring that all transit services are bicycle friendly

5.5 Intercity Transit Feasibility Study

In June 1999 Nelson/Nygaard Consulting Associates completed a Regional Public Transportation Plan. The effort led by the Cascades West Council of Governments (CWCOG) evaluates the feasibility of intercity transit in Linn and Benton Counties. The project was 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. The CWCOG formed a Steering Committee representing local jurisdictions, major employers, current transportation providers, and citizens from the around the two counties. The Steering Committee provided guidance and feedback.

The Regional Public Transportation Plan concludes that enhancing intercity transit in Linn and Benton Counties is feasible, and that enhanced service as recommended would operate within reasonable industry standards for transit productivity and efficiency. The Existing Conditions section of the Regional Public Transportation Plan demonstrates the need for enhanced intercity service, which was supported through a phone survey and the interdependence of the communities within the region.

The Existing Conditions section presents background information on the communities, current travel, existing transit services, and future growth projections. It also provides information about intercity transit

in similar communities around the country. The telephone survey found strong support for enhanced intercity transit among the general public. Current travel patterns indicate high levels of travel between different communities in Linn and Benton Counties, indicating that new travel options for these trips would be welcomed. A peer review profiles systems from around the country that offer intercity transit service in regions similar to Linn and Benton Counties, showing that other communities have found the motivation and funding to offer service similar to that proposed in the Regional Public Transportation Plan.

The long-term plan presents an intercity transit system that would provide service to all of the larger communities in Linn and Benton Counties. It maximizes integration with local transit service, relying heavily on Corvallis Transit System and Albany Transit System for local circulation within these two communities. Four routes would provide service between Albany, Corvallis, Lebanon, Philomath, and Sweet Home, while serving such important locations as Linn-Benton Community College and Hewlett-Packard. Together with Dial-A-Bus for elderly and disabled passengers and carpool/vanpool services, the plan presents a complete intercity public transportation system for the two counties. The service design reflects goals that were developed and refined by the Steering Committee.

The short-term plan offers various options for service to provide incremental steps toward the long-term plan. The Regional Public Transportation Plan details options for links between different communities, along with the purpose, cost, and service details of each option. The Steering Committee identified three links to pursue first (in no particular order):

- ◆ Albany-Corvallis Link
- ◆ Corvallis-Philomath Link
- ◆ Lebanon-Corvallis/Albany Link

The Plan reviewed governance alternatives for future intercity transit service in Linn and Benton Counties and concluded that expanded service would likely take one of two forms:

- ◆ Continuation and expansion of the Linn-Benton Loop Transit Commission
- ◆ Establishment of a Transportation District

The Steering Committee recommended expansion of the existing Linn-Benton Loop governance structure. At least in the short term, this allows for incremental growth as community interest and political will (and therefore financing) allow.

The current structure has the benefit of being flexible and allowing community support for intercity service to coalesce over time. However, it also has several drawbacks. First, several funding sources are available only to transportation districts. This includes the In-Lieu payroll tax, which would represent a large sum of money. Also, without a transportation district, the service will rely on a mix of different sources from multiple jurisdictions. Unless these are dedicated funds, long term stability of the funding is questionable.

For the longer term, any intercity service should preserve the option of forming a transportation district. Though this would raise integration issues between intercity service and the existing local service, it would provide a stable funding source. In order to form a transportation district, a majority of voters must approve the formation. The main reason for forming a transportation district would be to secure additional, reliable funding.

The City of Corvallis is considering initiation of a Corvallis area transportation district in the near term. Once a district is formed, additional areas can be annexed to the district by vote of the annexing area. Based upon LBCC voting trends, it is likely that support for transit is higher in Benton County than Linn County. It should be recognized that if Corvallis has already organized a transportation district it may be more difficult to bring Linn County communities into the district in the future.

The Regional Public Transportation Plan concludes with a review of current land use plans and codes for their level of support of effective and efficient transit. A strategy is presented to integrate transit and land-use by defining intercity transit corridors, so that communities can focus land use efforts and transit service to provide the best benefit and support the most effective transit service.

The Nelson/Nygaard Regional Public Transportation Plan does not support the Highway 99W Shuttle Service between Monroe and Adair Village that is proposed in this Benton County Transportation System Plan. The Nelson/Nygaard Plan proposes continuation of Dial-A-Bus and carpool/vanpool efforts in this corridor. Other public transportation enhancements proposed in the Benton County Plan are supported by the Nelson/Nygaard plan.

6

Air, Rail, and Pipeline Plan

This chapter describes air, rail, and pipeline transportation modes currently operating within Benton County, forecasts future needs for these transportation modes, lists current policy and necessary policy changes, and describes preferred alternatives for improving these modes (section 6.4).

6.1 Existing Conditions

6.1.1 Rail System

6.1.1.A Freight Rail System

Rail service within Benton County is provided by the Willamette & Pacific Railroad (WPRR), a class III short-line railroad formed in 1993 that operates on tracks leased from the Union Pacific (UP) Railroad that UP acquired from the Southern Pacific as a result of its merger. The WPRR operates 178.9 miles of track in Oregon, making it the fourth-longest railroad in the state.

Since 1994, the Genesee & Wyoming (parent company of WPRR) has leased additional track from both the Southern Pacific and the Burlington Northern Santa Fe (BNSF) (53 miles from each) and formed the Portland & Western Railroad (PNWR). This system serves the Tualatin Valley, connects with the WPRR line at Newberg which then continues to Portland, and runs down the I-5 corridor to Quinaby, north of Salem.

The significance of this acquisition to Benton County is that it allows the WPRR to single-line haul to Portland, where it can interchange with either the UP or the BNSF, and adds additional potential for intra-system shipping. A corollary to the latter advantage and a possible indirect benefit to the County is that the WPRR track covers a relatively large region, but with relatively few customers, while the PNWR is the reverse. This situation improves the overall operating balance, which should lead to an even more viable railroad with more development potential.

The stakeholder interviewed for this project considered rail service and facilities to be “good, but under-utilized,” and that “new WPRR management is wonderful, keeping lines well maintained.” This under-utilization is reflected by the amount of traffic the system handles, as follows:

- ◆ One train of about 40 cars a day, seven days a week round trip from Albany to Toledo.
- ◆ A Tuesday and Thursday and sometimes Saturday train, totaling 20+ cars a month, to Hull-Oakes Lumber Company in Dawson.
- ◆ A resident switching locomotive in Corvallis provides local service including a daily round trip to Wrens (the railroad’s spelling) and service south of Corvallis, which boosts the Corvallis-Monroe traffic to perhaps 30 cars a month.

- ◆ Traffic north of Corvallis amounts to two trains a day, 7 days a week, varying greatly in the number of cars, but averaging perhaps 50.

The apparent public appreciation of the WPRR is in contrast to the feelings in most localities about the UP, which is just the opposite. This attitude, in turn, is indicative of the shift in the railroad industry, the results of which will likely affect smaller localities. The Class I carriers are interested in high volumes, long hauls, and unit trains if possible. They are not interested in short haul, manifest type, local and/or switching service. This position is why the national railroads have been abandoning, leasing, and selling their branch lines. The short line carriers such as WPRR have moved to fill this void and have become feeder lines for the major railroads. Because the local railroads are vested in developing and maintaining a local customer base, the potential exists for service changes to one of lower cost, more flexibility and responsiveness, and better product care. This improved operating environment then can encourage existing businesses to convert to rail and new companies to locate in the region.

The combined WPRR and PNWR now serve more than 100 customers. This amount has almost doubled in one year due to the acquisition of the PNWR. Prior to the combination, just under 85 percent of the annual carloads were generated by four customers: Georgia-Pacific in Toledo, Hampton Lumber out of Willamina, Cascade Steel at McMinnville, and Smurfit Newsprint in Newberg. Now these four account for a little over 60 percent, but the increased traffic has occurred in the PNWR system, which does not affect Benton County. Of these, only Georgia-Pacific cars pass through the County and even they do not originate or terminate in Benton County.

The WPRR, in concert with the UP, currently offers Benton County single-line access to 13 states. This has dramatically changed the access picture since the merger of Union Pacific and Southern Pacific.

WPRR operates three lines in Benton County, on tracks leased from the Union Pacific (SP) Railroad (as shown in **Figure 6-1**).

The class of track determines the maximum speed allowed on the track. Regular classes range from 1 (low) to 5 (high). Excepted track is lower than Class 1, which may see train service under strict guidelines and with freight operating speeds limited to 10 mph.

Benton County is not a major rail traffic generator, with less than one-half million tons of freight originating or terminating in the County.

Westside Branch

This branch continues UP's Westside Branch south from Yamhill County through Monmouth and Corvallis to Monroe, for a total of 67 miles. The line intersects the Toledo Branch at Corvallis and the Bailey Branch at Alpine Junction, near Monroe. The line carries approximately one million gross tons of freight per year, primarily forest products and agricultural products such as grain and fertilizer. North of Corvallis, the track is Class 2 and 3; south of Corvallis it is excepted track.

Toledo Branch

This branch runs 75 miles between Albany and Toledo, through Corvallis. The line carries one to five million gross tons of forest products annually. The line is Class 3 northeast of Corvallis and Class 2 west of Corvallis. Cars over 85 feet long are prohibited west of Summit.

Bailey Branch

This line runs 6.9 miles west from Alpine Junction to Dawson. It carries less than one million gross tons of products each year, with wood products being the predominant commodity. The entire track on this branch is excepted track. Work required to upgrade the track to Class 1 condition includes replacing an average of 800 ties per mile, adding ballast, and surfacing the track. The total cost of the improvements is estimated to be \$330,000.

6.1.1.B Rail System Deficiencies

The Benton County portion of the rail system is limited to speeds of 25-40 mph (Class 2 and 3) north and east of Corvallis and to Toledo, and to 10 mph (Excepted) from Corvallis south to Monroe and Dawson. The Willamette & Pacific Railroad attributes most of the restriction to defective cross-ties. Field observations support the fact that trackage west, north, and east of Corvallis is in better condition than south and that there is a need for tie rehabilitation. Additional Federal Railroad Administration defects that were observed include poor drainage caused mostly by silting in the ballast section and most noticeable at crossings, vegetation in the gage and field sides of the rail, insufficient and fouled ballast, and high spikes and loose and/or missing tie plates. Given the above, the track geometry looked reasonably good, although no measurements were taken.

The viability of the railroad in Benton County is interdependent with the whole WPRR system. In this context, it is reported that the railroad is currently operating on excepted track from Whiteson (south of McMinnville) to Independence and from Newberg to Cook (south of Tigard). This condition renders the track “barely adequate from Corvallis to McMinnville.” In order to improve this situation, the WPRR is engaged in a 5-year, \$3.5 million upgrade program for the Westside corridor, including tie replacements and relay of 112# CWR (Continuous Welded Rail). Results are expected to be evident in the near future with a “faster, more reliable, safer line within 1-1/2 years.” Included in this program is a goal of improving the Corvallis-Monroe section to Class 2.

In terms of locomotive power (24 units) and cars, the physical plant is considered to be in good shape. Combining the operating characteristics of the WPRR and the PNWR helps to effectively use the resources.

Although Benton County is not a major rail freight generator, the freight that is transported by rail is freight that does not have to travel by truck over the County’s roads. Maintaining the availability of rail service helps reduce road maintenance costs and postpones the need for road improvements to accommodate additional truck traffic.

6.1.1.B. Passenger Rail System

There is no regularly scheduled passenger rail service in Benton County. Track conditions limit maximum passenger train speed to 30-60 mph north and east of Corvallis and do not allow passenger service south of Corvallis. The closest Amtrak station is located in Albany, which is served by Amtrak’s Coast Starlight, providing one run daily northbound to Portland and Seattle and southbound to Eugene, Sacramento, Oakland/San Francisco, and Los Angeles. Four additional trains (some are Thruway Busses) provide regular additional service between Eugene and Portland, connecting in Portland with service north to Seattle and Vancouver, BC. The Valley Retriever bus line provides twice daily service between the Albany Amtrak station and Newport via Corvallis and Philomath.

Amtrak officials classify the level of passenger demand experienced at the Albany station as moderate, depending on the time of year. There are no records kept for passenger requests for frequency or types of service not currently provided. Trains operating through the Albany generally not at capacity. There is no record of a patron being unable to board at the Albany station due to a fully booked train.

6.1.2 Existing Air, Water, and Pipeline System

Introduction

Although air, water, and pipeline systems are not major elements of the transportation system in Benton County, these facilities serving Benton County are shown in

Figure 6-2.

6.1.2.A Air Freight/Passenger System

Within the County, Corvallis Municipal Airport is the only airport serving the general public. It is located approximately five miles south of the Corvallis central business district. Two full-service fixed-base operators provide commercial general aviation services. The Corvallis Municipal Airport Master Plan (1991) is the principal document detailing operations and future plans. Benton County supports the airport master plan. The plan states that the airport will continue to provide for private and corporate aircraft and will maintain facilities necessary for air carrier service. Commercial airline passengers from Benton County are currently served by Mahlon-Sweet Field in Eugene, Oregon and by Portland International Airport in Portland, Oregon.

The County has created an Airport Overlay Zone in the airport vicinity to protect the airport's viability by restricting or prohibiting uses that could interfere with aircraft operation or could be impacted by airport noise. Federal Express provides airfreight service from the Corvallis Municipal Airport.

The nearest regional airport with scheduled passenger service is Mahlon Sweet Field in Eugene, approximately 15 miles south of the southern County line. Portland International Airport, approximately 90 miles north of the north County line, provides national and international passengers service. Portland International Airport also provides complete airfreight service to regional, national, and international destinations. **Figure 6-2** shows the location of airport facilities.

The Corvallis Municipal Airport's main runway, 17-35, was recently lengthened by 850 feet, giving it a total length of 5,900 feet. This length serves on an unconstrained basis all aircraft expected to use the airport (typical critical aircraft are corporate jets such as the Gulfstream II and the Lear 35). Runway 17-35 is 150 feet wide. The airport's secondary runway, 9-27 has a useable length of 3,769 feet and is 150 feet wide. An instrument landing system is available on Runway 17. Other landing aids include medium-intensity runway lights (MIRLs) on both runways, a medium intensity approach lighting system with runway alignment indicator lights (MALSR) on Runway 17, visual approach slope indicators (VASIs) on Runways 17 and 35, a precision approach path indicator (PAPI) on Runway 27, and runway end identifier lights (REILs) on Runway 35. A VOR/DME air navigation facility is located at the airport. The airport also has a rotating beacon, lighted wind cones, a wind "T," and a segmented circle, which is a system of visual indicators that provide traffic pattern information at airports without operating control towers.

As of 1990, the airport had 46 paved tie-downs, 54 T-hanger spaces, and 13 other indoor aircraft storage spaces, according to the 1990-2010 Airport Master Plan. One full-service fixed-base operator was located at the airport and facilities were available for another (which has since been leased to a second FBO). A total of 77 aircraft were based at the airport in 1990 and a total of 47,500 operations (40 percent locally based and 60 percent itinerant) occurred at the airport.

The Corvallis Municipal Airport provides ample opportunity and capacity for both air passenger and freight service. The facilities are maintained sufficiently well to allow jet aircraft operations at a regional level.

Three private airports are located in Benton County, as shown in **Figure 6-2**. Good Samaritan Hospital currently has a helicopter and helipad, providing county-wide air ambulance service.

6.1.2.B Water & Pipeline Systems

6.1.2.B.1 Water

Although the Willamette River is considered a navigable waterway, no regular commercial use now exists or is anticipated. In earlier times steamboats carried goods to and from Corvallis and the (now defunct) town of Orleans across the river. The required bridge clearances on the Willamette are based on maintaining the usability of the river for transportation; however, the swing span of the Van Buren Avenue bridge has not been opened for many years. The viability of the Willamette as a commercial transportation link is relatively limited.

The Willamette River forms the eastern boundary of Benton County. Currently, this portion of the river is used primarily for recreation. The Army Corps of Engineers maintains this navigable waterway. No

commerce is presently conducted on the river, within Benton County. Bridge crossings of the river located in Corvallis and Albany are stationary and limit the height and width of river vessels. No specified depth limitations were identified by the Army Corps of Engineers for the section of river within Benton County. Industry sources consider the Willamette River to not be a viable mode of transportation, due to the lack of service and significantly slower speed at which freight could be moved.

6.1.2.B.2 Pipeline

No significant through-transmission pipelines exist in Benton County. Transmission lines for electricity and telephone service exist within the County. Water pipelines convey water from the City of Corvallis' watershed on Mary's Peak into the City's water system. No long-distance oil or gas pipelines are located within the County. There are no known capacity constraints for any pipeline or transmission line service within Benton County.

6.2 Forecast of Future Conditions

6.2.1 Rail System

6.2.1.A Freight Rail

Historical trending, extrapolation, and econometric models were employed to prepare the future freight rail demand. The potential for rail growth in the Benton County area can be extrapolated from two sources: the Willamette & Pacific Railroad (WPRR) and ODOT. Since the WPRR took over from the Southern Pacific (since acquired by the Union Pacific) in the 2nd quarter of 1993, they have experienced an average growth in total carloads of about 5 percent per year. Since this growth has been partly attributable to reclaiming customers from trucks, they expect the trend to continue for the next three to five years, but probably not indefinitely.

The Oregon Rail Plan (ORP) cites rail traffic increase of 28 percent from 1986 to 1992. This growth translates to about 4 percent annually, a rate that is consistent with the WPRR experience due to the movement back to rail from trucks. The Oregon Transportation Plan projects freight rail growth to be 2.5 percent per year for the foreseeable future. Although the ORP fully describes the difficulties in predicting freight traffic (see the ORP for a more in-depth analysis), given the recent history of 4-5 percent growth and the national trends, a 2.5 percent sustained growth does not seem unreasonable.

In terms of overall economic growth, the Corvallis-Benton County Economic Development Partnership (EDP) states that the region has enjoyed a steady 1-1.5 percent annual increase, and that this trend is expected to continue. Given the railroad projections, this amount would seem to be a minimum for the range of probability. In terms of the railroad, the EDP is actively involved with prospective companies interested in the south Corvallis industrial area, several of whom desire rail access. The EDP sees this area of the County as more active economically and gradually filling in with businesses.

The WPRR/PNWR is actively pursuing more freight from existing customers as well as new types of business. Examples include servicing the expansion of Georgia-Pacific and the hauling chips to the plant that are now being transported by truck. The Governor's Transportation Initiative calls for removing chip trucks from U.S. 20. One means of accomplishing this is to develop a reload facility in Philomath and convert from truck to rail shipment at that point. There is also the possibility of an increase in production at the Georgia-Pacific small log mill in Philomath. Another potential includes a short haul market for aggregates and wood products.

Nationally, the merger of the Union Pacific and Southern Pacific has had a dramatic and, unfortunately, negative effect on rail activity. Congestion on primary lines has had the backlash effect of converting more commercial freight to trucks. This is seen as a short-term limitation, with strong possibilities to regain lost

freight volume and expand future volume. Because the WPRR connects with the UP system, it will then have direct connection to the UP routes, giving it single-line access to 24 states (instead of the 13 previously mentioned).

As part of the lease agreement with the UP, the WPRR must respect the original UP customers on the line and switch them to the UP line for destinations beyond the WPRR system. So, even though the WPRR can physically interchange with the Burlington Northern/Santa Fe at either Eugene or Portland, most of the Benton County traffic travels on the UP system. Historically, BNSF access to California ended at Bieber, CA. Recently, the UP entered into an agreement with the BNSF that extends BNSF trackage rights beyond Bieber into California; however, the BNSF has to use UP tracks from Eugene to Chemult if it does not want to route Willamette Valley traffic north through Portland to Wishram and then south through Bend.

The UP is committed to working with the State to achieve the competitiveness situation it desires and the BNSF will be included in the discussions.

The advantages of UP merging with SP to the WPRR and hence to Benton County and its shippers was well presented by ODOT, as the State's representative, in the following quoted comments:

“Establishing open interchange for customers located on Oregon short lines will provide clear public benefit. Open interchange will allow Oregon shippers to reduce use of reloads, and thereby reduce truck traffic on Oregon highways. The traffic that will return to Oregon's short lines, from mill to interchange point, will allow our very important short lines to (sic) their revenue base. We know first hand that Oregon short lines that have the ability to interchange with more than one Class I carrier have clear advantages over those who do not. They handle more carloads, and therefore, receive more revenue. The communities they serve would also benefit by being better positioned for retaining existing businesses and attracting new industry.”

6.2.1.B Future Passenger Rail

Rising traffic levels in the U.S. 20 (Philomath/Corvallis/Albany) and Highway 99W corridors have raised public interest in commuter trains. In addition to commuter traffic, the Benton County system could also feed destination trips. The Amtrak Coast Starlight runs daily on the UP main line through Albany, so the trackage and connection points are already in place. The only problem is that the UP lease precludes the WPRR from using their trackage for passenger traffic. Amtrak has made a request to the UP to let them run several special trains a year from Albany to OSU for popular athletic events, so the commuter idea is already being tried.

As can be seen by the Amtrak model, the only requirements to operate passenger trains on freight rail lines are permission from the railroad and a source of funds. With at most a couple of trains per day, the WPRR has no objection (if the UP will agree) to supporting passenger traffic. The corridors under consideration run largely through open farmland and there are no obvious physical impediments to instituting commuter trains.

To estimate potential commuter rail ridership, the following scenario was developed: A commuter rail line would run along the WPRR tracks between the Albany Amtrak station and Philomath, with stops at North Albany, Hewlett-Packard, downtown Corvallis, and the Oregon State University campus. Four round-trips would be operated daily. Potential ridership was estimated by assuming the following: average vehicle occupancy during peak hours is 1.14 persons, 50 percent of the ADT in the corridor consists of commute trips, and 3 percent of commuters in the corridor would use the train if four round trips were provided. Under these assumptions, daily ridership would be 485 persons and annual ridership (6 days a week, 51 weeks a year) would be 148,400.

6.2.1.C Rail Deficiencies

Existing rail facilities have considerable capacity for growth in both freight and passenger traffic. However, freight speeds are severely limited by track conditions south of Corvallis. Therefore, the constraint is not in capacity but in the ability to provide rail service as a viable option to motor freight or vehicular travel.

As stated earlier, the rail system is underutilized. A system that sees one train a day, each way, can accommodate a considerable increase in traffic without major capital investment. In the case of the WPRR, the primary reaction to increased business would be to accelerate the track rehabilitation and improvement program that is already under way. With a significant increase in car loadings, more cars and locomotive power would also be required. As with the track structure, these acquisitions would follow the cash flow generated by the increased revenues.

With an increase in the number of trains, running at higher speeds, an additional need would be more sidings to accommodate trains passing in opposite directions. The location and size of these passing sidings would depend on the traffic patterns/train schedules that develop in response to the market. Because much of the WPRR system lies in open country, siting these installations should not prove to be a significant physical or economic problem.

From the public point of view, increased rail activity means that there will be more use of existing railroad crossings and a call for additional crossings to serve new industrial spurs. Public planners will need to recognize these needs in preparing zoning plans and other restrictions.

The fundamental challenge facing the use of freight rail for passenger traffic is that of speed. As stated in the Oregon Rail Plan (ORP), and as very evident in the WPRR system, rail trackage has largely lost its higher speed capability as railroads concentrated on the reduced level of track maintenance needed to serve their freight customers.

ODOT's program for upgrading the Oregon high speed rail corridor provides a good outline of the kinds of improvements that typically need to be made to achieve a viable passenger line:

- ◆ Upgrading track and signals
- ◆ Changing access to train stations
- ◆ Providing supplemental feeder bus service
- ◆ Upgrading safety devices at grade crossings
- ◆ Adding new alignment and construction to provide track geometry that will accommodate higher train speeds
- ◆ Enhancing grade separations

Determining how much of these types of improvements would be needed in Benton County to establish a viable commuter/passenger system is beyond the scope of this TSP. As a minimum, it appears that track structure would need to be upgraded to at least 40 mph capacity and that the numerous grade crossings be reviewed and upgraded. Because commute distances are relatively short, slower train speeds may be acceptable, which helps mitigate crossing problems.

An order of magnitude rough estimate of the cost of these kinds of improvements within the County can be obtained using the ODOT estimate for the high-speed rail corridor. From border to border, (approximately 300 miles), the entire ODOT program is projected at \$450 million. This amount translates to \$1.5 million per mile. If improvement corridors from both Albany and Philomath to Corvallis are assumed, a combined distance of approximately 17 miles, the total cost might be on the order of \$25 million. Granted, the ODOT figures are for train speeds up to 125 mph, but there are sections of less density and economies of scale, and the physical plant is already in better condition, being the SP main line. Even at half this cost, the adaptation would not be inexpensive.

As a final note, it should be observed that there is an inherent conflict between industrial development and the increased use of rail and highways and urban development. A plan for the resolution of this conflict is in part the purpose of the TSP; however, this subject is well covered in the ORP and will not be repeated here.

As the high speed rail corridor between Vancouver B.C. and Eugene evolves over the next few decades, capacity will need to be increased on the single track UP line between Portland and Eugene as freight and

passenger train density grows. The most likely solution to address this anticipated growth is to add a second main track between Portland and Eugene, or to double-track the route.

Another option is to double-track the UP line between Eugene and Junction City and build approximately 10 miles of new single-track line paralleling Highway 99W from Junction City to Monroe. At Monroe, the line would connect with the existing railroad between Monroe and Corvallis, which would be upgraded. It is always more cost effective to upgrade an existing line than to build a new railroad.

From Corvallis to the north, there are two options. One is to upgrade the line between Corvallis and Albany for fast passenger operation. The second, and perhaps best long term option, is to upgrade the rail line paralleling Highway 99W to Portland for passenger operation.

The first option would avoid the expense of building a second main track along the UP mainline between Albany and Junction City, including a new bridge across the Willamette River at Harrisburg to carry the second track. Some strategic sidings would have to be constructed between Corvallis and Junction City to accommodate the meeting of opposing passenger trains. Because passenger trains are short, however, these sidings would not need to be long. The majority of freight traffic would remain on the UP mainline.

This plan solves the problem of how to link Corvallis, the most populous area in the mid-Willamette Valley, to the high-speed rail system without sacrificing Albany or Junction City. The Albany, Corvallis, Eugene route is more circuitous than the existing UP line via Halsey but the slightly longer transit times may be justified by making the service available to a greater population. If there was a demand for time-sensitive and limited stop express trains between Eugene and Portland they could be routed via the shorter route.

The second option to extend passenger train capability north from Corvallis to Portland is via Independence, McMinnville and Newberg. If done soon, this option could negate the need to construct a second main track on the UP line between Portland and Albany, and at the same time offer rail passenger service to some of the fastest growing sections of the greater Portland metro area. The line from McMinnville to Portland is already being considered for potential commuter train operation. The bottleneck on this route is the railroad's crossing of Rex Hill, northeast of Newberg, where grades and curves restrict train speed significantly. While tunneling under Rex Hill might be a solution, others have suggested reconstruction of 18 miles of abandoned line between St. Joseph (northeast of McMinnville) and Gaston via Yamhill and Carlton, recreating a former Southern Pacific branch that connected McMinnville with Hillsboro. Not only does this route offer minimum grade and curvature problems, it would link into the high-speed network of the fast growing communities of Forest Grove, Cornelius, and Hillsboro, with a connection to TriMet's Westside light rail system at the end point. The right of way for the 18 miles of missing track still exists as a corridor and belongs to the UP.

There is an opportunity through judicious planning to create a dual route rail system that would serve most of the major population centers in the Willamette Valley. The concept is surprisingly similar to the solution embraced by last century's highway builders when confronted with how to route Highway 99. They solved the dilemma of which communities to serve by splitting the road into 99E and 99W segments between Junction City and Portland, thus providing U.S. highway access to the majority of the population residing in the valley.

6.2.2 Air System

The Corvallis Airport Master Plan, 1990-2010, prepared by W&H Pacific, Inc., provides forecasts of airport usage through the year 2010. The number of aircraft based at Corvallis Municipal Airport is forecast to increase at an average rate of 1.8 percent per year, from 77 aircraft in 1990 to 110 aircraft in 2010. General aviation operations are forecast to increase from 46,900 annually to 81,400 during the same time period, while military operations are forecast to decrease from 600 annually to 400 annually. In 1990, 88 percent of the aircraft registered to Benton County residents were based in Benton County. Only four aircraft registered to Benton County residents were based in Linn County and only five aircraft registered to Linn County residents were based in Benton County. The Runway 17-35 extension is expected to "serve

all airplanes expected to use this facility on an unconstrained basis.” The Master Plan identified the need for 34 new hangar spaces and 29 new paved automobile parking spaces by the year 2010. Without additional construction, there will be insufficient hangar and paved parking lot space to accommodate demand by the year 2010. Benton County residents will remain dependent on airports in Eugene and Portland for most air travel.

Infrastructure improvements recently completed at the Portland International Airport are projected to serve travel demands for this region well beyond the 20-year future. The regional airport in Eugene has not identified any passenger air service constraints within the next 20 years.

No public transit service is available to the Eugene or Portland airports. However, private shuttle service is available that adequately addresses those who are transportation disadvantaged.

6.2.3 Water and Pipeline Systems

Existing facilities within urban areas have sufficient capacity to accommodate growth through the year 2015.

6.3 Air, Rail, and Pipeline Transportation Policies

6.3.1 Existing Policy

Existing policies will be modified when the new policy recommendations are approved.

6.3.1.A Benton County Comprehensive Plan

Section E, Transportation:

4. Existing and potential transportation facilities and corridors as identified in the Comprehensive Plan or its amendments shall be protected.
5. Benton County shall provide for alternative transportation modes by:
 - b. considering the development of pipelines as a viable form for transportation of certain goods;
 - e. encouraging development of airway, railway, and waterway transportation resources to effectively supplement conventional transportation alternatives by: adopting the Corvallis Airport Master Plan, locating residential development away from flight patterns, and pursuing passenger use of existing railways.

6.3.1.B Benton County Development Code

Chapter 86, Airport Overlay, meets the Transportation Planning Rule requirements for the protection of airport facilities.

6.3.2 New Policy Recommendations

The efforts of reviewing related documents and identifying policy issues with staff, agencies, and the public has resulted in the identification of policies and codes that are recommended for modification. Summarized below are the recommendations.

The viability of the railroad in Benton County is interdependent with the whole WPRR system. If rail service were terminated, truck traffic could increase throughout the County, depending on the reason service was terminated (obviously, closure of a mill would cease all freight movement from that location, whether by rail or by truck). This truck traffic would use the road corridors that already carry the most traffic and experience the greatest congestion. Therefore, it is in the County's interest to encourage continued rail freight service, whether or not the County ever develops as a more significant freight generator. Passenger rail service from Corvallis east to Albany or north to McMinnville and Portland is not economically viable at this point; however, the County should encourage more frequent and convenient public transit connections to existing passenger rail service, particularly when high speed rail service begins operating in the Willamette Valley.

Proposed New Policies

In order to promote the viability of rail transportation, and to facilitate its operation, Benton County should:

- ◆ Minimize rail crossings of the automobile roadway system
- ◆ Maintain safe operations at rail crossings for all modes
- ◆ Minimize delays to rail operations due to conflicts with the automobile roadway system
- ◆ Discourage residential development near rail lines
- ◆ Actively plan for and promote the idea of commuter rail service between Albany and Philomath at the earliest possible time

6.4 Preferred Alternatives

Corvallis Airport improvements are planned and included in the City of Corvallis TSP. These include installing access gates; acquiring land for enlarged runway protection zones, and construction of two helicopter pads. The cost of these improvements is \$204,000.

Additional improvements called for in the Corvallis Airport Master Plan include completing the fencing of the airport, constructing additional automobile parking, and construction of additional T-hangar spaces. The local share of these projects is approximately \$165,000; the federal share is approximately \$97,000. The improvement plan also provides for four corporate hangers to be built by users.



Transportation Improvement Plan

This chapter discusses the financial aspects of the TSP, including current and potential revenue sources for transportation costs in Benton County, past and projected transportation expenditures, as well as proposed funding options. Also included is a multi-page table that lists all improvement projects by number, location, description, estimated total cost, and timing.

7.1 Priorities and Criteria

The goals and evaluation criteria developed as part of the TSP planning process are presented in Chapter 2 and therefore not repeated here. During the planning effort citizen stakeholders, project consultants, County staff, the Task Force, the Technical Advisory Committee, and County policy decision makers utilized the goals and evaluation criteria, as well as the vision statement, shown below, to compare and consider alternative strategies and actions. This resulted in a list of preferred actions and projects to meet Benton County's transportation needs during the next 20 years. *(For a complete description of the process used to develop this TSP, including goals, evaluation criteria, and public involvement, see Chapter 2.)*

**Benton County Transportation System
VISION STATEMENT**

The Benton County Transportation System seeks to preserve, protect, and promote the County's sustainability, livability, and economic vitality by:

- Providing choices of alternative travel modes
- Maximizing the efficiency of existing facilities
- Intertwining quality of life, land use, and transportation decision making

The Benton County Transportation System will provide equitably funded, safe, efficient, cost-effective mobility and accessibility to all County residents, businesses, and emergency services within and across County boundaries.

7.2 Needs and Improvement Timing

Development of the modal plans for this TSP culminated in a list of improvement projects, which the County acknowledges supporting within the Plan. The multi-page **Table 7-1** at the end of this chapter

summarizes this list and identifies those projects that are funded and/or acknowledged in current transportation plans of participating agencies.

Many of the improvement projects are located on facilities under the jurisdiction of other agencies. Such projects are likely to be funded by the jurisdictional agency or on a shared basis with the County, through agreement. The following sections attempt to define the available funding levels for these projects, and, where shortfalls are anticipated, to present options for the County to raise sufficient revenues to fund the prioritized projects over the next 20 years.

Table 7-1 also includes timing information for the implementation of the improvement projects listed in this TSP. Timing is divided into three time frames: 0 to 5 years, 6 to 10 years, and 11 to 20 years. The projects have been prioritized within each time frame based on considerations such as: type of deficiency (safety, capacity, connectivity, accessibility, balance of modes, etc.), timing of need, relationship to other identified improvements (i.e., multi-use shoulder associated roadway requiring capacity widening), support/implementation of TSP goals, and funding availability.

7.3 Funding and Implementation Strategy

The funding of transportation system costs is a difficult challenge shared by most communities throughout Oregon and the United States. Cutbacks in federal transportation programs have heightened this problem and forced local governments to look for new ways to fund necessary transportation services. While the State of Oregon continues to provide a large portion of funding through the state gas tax, this source of revenue has not kept pace with increasing needs. Against this stagnant funding picture, many communities, including Benton County, face a funding gap where current and future transportation system needs exceed available revenues.

This TSP identifies approximately \$120 million of capital improvement projects in Benton County over the next 20 years. Of this amount, \$78 million is expected to be funded from state and federal sources. Approximately \$1 million are projects belonging to cities or urban development in Benton County. The remainder of the projects, totaling \$38 million, will be the responsibility of the County. **Table 7-1**, at the end of this Chapter, lists the estimated capital costs for the improvements.

This TSP also identifies new or expanded intercity and rural public transit service within the County with a capital cost of \$2,125,000, and operating costs of \$12,090,000 over the 20-year planning horizon.

The remainder of this chapter assesses the magnitude of capital needs, projects future funding levels by category, and determines the adequacy of these funds. In addition, potential funding sources to make up the shortfall are recommended.

7.3.1 State Projects

This Benton County TSP divides the identified projects into State Projects and Local Projects. The reason for this division is that funding of state highways is not primarily a task for the Benton County area. Counties and cities can petition the State for the improvements they believe desirable and consistent with its local transportation and land use plans, and they can influence the design and timing of those improvements; however, it is ultimately the State that must fund and construct the improvements.

There are three State highways that serve Benton County: U.S. 20, Highway 34, and Highway 99W. All three State highways include roadway segments that do not meet Level of Service (LOS) standards identified by Benton County. The Oregon Department of Transportation (ODOT) is responsible for maintenance and capital improvements on all three facilities.

This TSP has identified capital improvements to the State highway system that are required over the 20-year planning period. As shown in **Table 7-1**, the projects identified are expected to cost \$78,848,000 for capital improvements. This amount includes \$7,833,000 of anticipated federal and state funding on County

jurisdiction roads for bridge replacements, safety improvements, and forest access or scenic byway funding for improvements to South Fork Road.

7.3.1.A Status of State Transportation Funding

Revenue for ODOT maintenance activities comes through the State Highway Fund, which is funded through the state gas tax, vehicle registration fees, and weight-mile fees. The State Highway Fund is shared with local cities and counties. Revenue forecasts for ODOT’s statewide maintenance/preservation program indicate that available funding will decline unless additional revenue can be obtained through increases in the state gas tax, vehicle registration fee, and/or weight fees. As shown in **Table 7-2** below, according to ODOT’s 1998-2001 Statewide Transportation Improvement Program (STIP), funding statewide was at \$1.575 billion for the four-year period.

**Table 7-2
ODOT STIP 1998-2001 (\$1,000s)**

	Total Needs	Current Funding	Unfunded Needs
Modernization	1,235,000	388,371	846,629
Preservation	902,000	435,019	466,981
Bridge	238,800	236,234	2,566
Transit	551,000	414,478	136,522
Safety	100,872	100,872	0
Total	3,027,672	1,574,974	1,452,698

In addition to capital improvement funding through the State Highway Fund, U.S. 20, Highway 34, and Highway 99W are eligible for federal funding through the Transportation Efficiency Act of the Twenty-First Century (TEA-21) program.

As with local governments, the State has identified significant shortfall in revenues versus transportation needs. ODOT's STIP for 1998 to 2001 shows that its funding could meet only 52percent of its needs, leaving 48 percent of its identified transportation projects unfunded. For Region 2, the State's STIP for the four-year period 1998 to 2001, showed similar levels of unfunded needs, as shown in **Table 7-3** below.

**Table 7-3
ODOT STIP 1998-2001 Region 2 (\$1,000s)**

	Total Needs	Current Funding	Unfunded Needs
Modernization/Preservation	487,500	194,262	293,238
Bridge	72,800	59,573	13,227
Transit	132,400	42,446	89,954
Total	692,700	296,281	396,419

Without significant increases in federal funding as well as approval of a new Oregon transportation funding package, the State will continue to see significant numbers of unfunded projects.

7.3.1.B State Funding of Projects

ODOT maintenance responsibilities on U.S. 20, Highway 34, and Highway 99W include repair of road surfaces, filling and patching potholes, overlays, vegetation removal, and pavement markings. Actions to extend the life of existing pavement or rebuild the pavement structure are also included in this category.

Funding for capital improvements on U.S. 20, Highway 34, and Highway 99W comes from a variety of state and federal funding sources. Capital improvements are programmed by ODOT through the State Transportation Improvement Program (STIP). Both state and federal capital project funding is included in the STIP. Priorities for project funding are set every two years when ODOT updates the STIP. Local input is solicited regarding project priorities to be considered for funding through the STIP. Recommendations regarding project priorities and timing will be and should be used as a guide for both ODOT and the Benton County area as input on project priorities during the next update of the STIP.

ODOT officials have continually stressed the importance of coordination and collaboration among local jurisdictions in prioritizing local transportation needs. To the extent that projects in the Benton County area have both local and state components, the County should coordinate these projects closely with the State to maximize State funds and minimize County expenditures.

State funding programs such as the Special Public Works Program (funded through Lottery proceeds) or the Immediate Opportunity Fund (funded through an annual allotment from the State Highway Fund) may be available to certain projects or elements of projects. Projects that demonstrate a significant benefit to economic development and job creation are eligible for funding through these programs. For example, to the extent that there is a relationship between recommended transportation improvements and economic development and revitalization, it may be possible to seek these funding sources to pay for part of the transportation improvements that would support this strategy.

Local funding participation in projects on these facilities may enable the State to accelerate the priority of an improvement in the STIP. While not normally a requirement of project funding, local participation does demonstrate to ODOT a strong project commitment, and local funds may leverage state funds.

7.3.2 Historical Funding for Benton County Transportation Projects

Historically, Benton County has accounted for transportation funding sources through a special revenue fund, the Road Fund 102, and through the Capital Improvement Fund 302, collectively referred to as the “Road Fund” hereafter.

The Road Fund accounts for revenues from the state gasoline tax apportioned from the State of Oregon, federal forest revenues, and federal resources. Expenditures from the fund are typically used for road maintenance, road overlays, road construction, bike lanes, bridge replacement, and safety improvements.

Table 7-4 provides an illustration of the revenues for the County’s Road Fund between fiscal years 1994-95 and 1997-98.

7.3.2.A Revenues

As noted in **Table 7-4**, a significant percentage of the County’s Road Fund comes from the State Highway fund distribution, federal forest revenues, and federal aid.

7.3.2.A.1 Highway Apportionment

The Highway apportionment has been generally stagnant. Since 1993, the State has attempted to increase the gas tax and the vehicle registration fee without success. During the 1997 Legislative Session, a proposal to increase the gasoline tax by 6 cents and the registration fee by \$20 per two years was defeated. Under this proposal, Benton County would have received additional highway apportionment funds of approximately \$230,000 in FY 97-98, \$885,000 in FY 98-99 and \$1,250,000 annually thereafter.

The 6-cent gasoline tax and registration fee increase approved by the 1999 legislature did not survive an initiative before the voters in May of 2000. The measure has been opposed by the American Automobile Association due to the repeal of the weight-mile tax on trucks included with the tax and fee increase.

7.3.2.A.2 Federal Forest Revenues

Federal forest revenues have been declining over time. Forest revenues available for roads were \$266,000 in 1994-95, \$247,000 in 1996-97, and fell to \$229,000 by 1999-2000. New legislation passed in 2000 is expected to increase Benton County Forest receipts for roads by as much as \$200,000.

7.3.2.A.3 Federal Aid

The County also receives Federal aid as program dedicated funds. This funding source can vary widely since they are distributed as reimbursements for specific eligible projects.

Fiscal Year	Amount
1992-93	\$0
1993-94	\$255,900
1994-95	\$329,001
1995-96	\$907
1996-97	\$442,060

The major revenue sources for the Road Fund have either been stagnant, declining, or unstable funding. The County must find new sources of revenue in order to keep up with rising transportation expenditure needs.

7.3.2.B Expenditures

As shown on **Table 7-4**, the majority of expenditures from the Road Fund are for maintenance including road overlays. A relatively modest amount has been allocated to capital improvements.

**Table 7-4
Benton County Transportation Road Fund Revenues**

	FY 96/97Actual	FY 97/98Actual	FY 98/99Actual	FY 99/00Budge ted	FY 00/01Estim ate
Revenues					
Fees	\$285,677	\$207,880	\$609,869	\$282,100	\$222,100
Program dedicated funds					
Beginning fund balance	\$1,563,847	\$1,750,617	\$1,791,817	\$1,402,150	\$752,989
Intra governmental services	\$115,599	\$189,029	\$115,432	\$102,000	\$102,000
Highway apportionment	\$2,986,717	\$2,989,711	\$3,095,326	\$3,127,600	\$3,199,025
Federal forest revenues	\$247,643	\$237,777	\$228,149	\$219,487	\$210,080
Federal Aid - Secondary System	\$413,160	\$231,562	\$35,897	\$370,000	\$185,000
FEMA	\$60,571	\$84,765	\$0	\$0	\$0
Capital Improvements	\$127,503	\$0	\$407,498	\$99,118	\$289,800
Other dedicated funds	\$175,863	\$180,735	\$175,586	\$61,700	\$92,200
Total Revenues	\$5,976,580	\$5,872,076	\$6,459,574	\$5,664,155	\$5,053,194
Expenditures					
General Service & Administration	\$391,837	\$409,930	\$440,307	\$476,300	\$550,627
General Engineering Services	\$607,846	\$661,177	\$646,485	\$708,057	\$739,899
Road Maintenance	\$2,411,777	\$2,564,654	\$2,649,200	\$2,870,680	\$2,857,480
Reserve/Contingency	\$0	\$0	\$0	\$749,837	\$225,000
Capital Improvements	\$814,502	\$444,498	\$806,308	\$859,281	\$776,259
Total Expenditures	\$4,225,962	\$4,080,259	\$4,542,300	\$5,664,155	\$5,149,265
Surplus/(Deficit)	\$1,750,618	\$1,791,817	\$1,917,274	\$0	(\$-96,071)

Transportation System Plan Costs

Table 7-1 provides a listing of Transportation System Plan projects. The list includes projects, which are the responsibility of cities within the County, the State, and the County’s projects.

The County costs of the identified projects over a 20-year period are as follows:

Bridge replacement cost:	\$ 680,000
Roadway safety improvement cost:	\$ 1,158,000
Bikeway improvement cost:	\$ 6,465,000
Level of service, capacity improvement cost:	\$ 9,920,000
Pavement preservation cost:	\$20,000,000
Transit capital cost:	<u>\$ 2,125,000</u>
Total Capital Improvements:	\$40,348,000
Transit Operating Cost:	<u>\$12,090,000</u>
Total County Needs:	\$52,438,000

The estimated county needs have been based upon the assumption that during the 20-year future Benton County will obtain partial or full funding from state and federal sources for improvements to county facilities and services, particularly the bridge replacement and safety projects. Recent historical expenditures for improvements of the types identified in the TSP have averaged about \$400,000 per year. The unfunded need identified over the 20-year period is \$55 million. Of this amount approximately \$30 million, or \$1.5 million per year of new road fund revenue is required.

Of the total shortfall over the next 20 years, the amount that is directly related to transit expansion is shown in **Table 7-5** below. The future role of the County in funding expanded rural and intercity transit service has not been determined at this time. Possible governance includes expansion of the Linn Benton Loop partnership of the participating agencies or the creation of a transportation district.

**Table 7-5
Transit Projects Within Benton County (\$1,000s)**

Project No.	Project Description	Capital Cost	O&M Cost	Total 20-Year Cost
L1	Satellite Park & Ride Shuttle	200	2,720	2,920
L2	Satellite Park & Ride Lots	300	370	670
L3	Express Bus Service	1,225	6,000	7,975
L5	Expanded County Cruiser Service	400	3,000	3,400
TOTAL		2,125	12,090	14,215

The costs shown in **Table 7-5** are based on the assumption that Satellite and Express Bus Service will be provided in the second half of the 20-year time horizon. This is based on the recognition that: (1) transit does not reduce the need for roadway capacity improvements, and; (2) a disproportionate share of County funds will be spent over the next 5-10 years on bridge replacement of old structures. In the event that additional rural transit funds become available, expanded transit services will begin sooner.

Table 7-1 shows the capital projects, as assigned to jurisdiction of responsibility, over the time horizon of the this TSP. Projects have been assigned to the 0-5 year future (2000-2005), 5-10 years (2006-2010), and 10-20 years (2011-2020). Projects were assigned for completion during one of the time increments based on need, likely funding availability, estimated cost, and benefit. **Table 7-6** shows a summary of the capital costs, by funding jurisdiction, over the 20-year time horizon.

**Table 7-6
Summary of Capital Projects Costs Over Time (\$1,000s)**

	Years 0-5	Years 5-10	Years 10-20	Total
Benton County	10,911	12,862	14,450	38,223
Federal/ODOT	9,777	13,042	55,279	78,098
Cities	536	204	135	875
TOTALS	21,224	26,508	71,589	119,321

7.3.3 Revenue and Funding Sources for Local Transportation Projects

Funding for transportation improvement projects typically comes from three sources: federal, state, and local governments. This section describes some of the federal, state, and local funding and financing mechanisms available to localities for funding transportation projects. Some of the mechanisms provide one-time revenue or grants, while others provide recurring revenues. In some cases, funds may come from one level of government (such as federal) to be spent by another level of government (i.e., state). It may also be that some of the funding mechanisms have been or are more typically dedicated to maintenance or street repair rather than capital improvements. The decision on how the funds are spent is in most cases a policy issue.

7.3.3.A. Federal Funding Mechanisms

7.3.3.A.1 Intermodal Surface Transportation Efficiency Act (ISTEA)

ISTEA established several programs delivered by the Federal Highway Administration (FHA) that provide state and local governments with the flexibility to fund transportation projects that best meet locally determined goals and objectives for mobility, economic opportunity, and air quality.

The **Surface Transportation Program (STP)** provides for a broad range of highway and transit capital, planning, and “enhancement” activities.

Ten percent of each state’s annual STP apportionment is set aside for STP Transportation Enhancements. Enhancement projects are intended to integrate transportation facilities into their surrounding communities by increasing public access and enjoyments. Ten specific categories of transportation enhancements are eligible for funding:

- ◆ facilities for pedestrian and bicycles
- ◆ acquisition of scenic easements and scenic or historic sites
- ◆ scenic/historic highway programs
- ◆ landscaping
- ◆ historic preservation
- ◆ rehabilitation and operation of historic transportation facilities (including railroads and canals)
- ◆ preservation of abandoned railroad corridors (and their conversion to pedestrian and bicycle trails)
- ◆ control and removal of outdoor advertising
- ◆ archeological planning and research

- ◆ mitigation of water pollution due to highway runoff

National Highway System (NHS) funds provide for a wide range of transportation activities on any principal arterial. Eligible highway and transit include:

- ◆ construction and rehabilitation of road and bridges
- ◆ fringe and corridor parking facilities
- ◆ bicycle and pedestrian facilities
- ◆ carpool and vanpool projects
- ◆ public transportation facilities which improve the level of that on a specific NHS limited access facility

Bridge and Interstate Maintenance Program funds are apportioned among states based on the square footage of “deficient” highway bridges inventoried by each state.

The **Congestion Mitigation and Air Quality Improvement (CMAQ)** program focuses investment in highway and transit projects that improve air quality.

ISTEA and TEA-21 also significantly increased opportunities for involving private sector participation in transportation projects by allowing increased flexibility in blending federal aid with private financing and operating arrangements. In addition, the Federal Transit Administration has a number of transit funding programs that could be potential funding sources for identified transit project.

7.3.3.A.2. Federal Forest Revenues

The federal government provides funds from forest reserve rentals and sales of timber within the State of Oregon. The State distributes the funds to counties where forest reserves are located, including Benton County. By State law, 75 percent of the money is allocated to the counties’ road funds and 25 percent to schools.

In an agreement with the federal government in 1993, the Forest Service provides a guaranteed annual payment to Oregon for federal forest revenues. The formula provides an amount equal to 85 percent of the average revenue over the five-year period between 1986 and 1990. This amount is then reduced by 3percent each year for 10 years. In FY 2003, the amount will be 55 percent of the 1986-1990 average. When inflation is considered, the FY 2003 revenue will probably equal 25 percent of the annual revenue received in the mid-1980s. The guarantee itself requires continued annual appropriation; if the money is not appropriated, funding would cease and would result in a significant negative fiscal impact on counties, including Benton County.

The following chart shows the portion of Federal Forest Revenues distributed to Benton County that is restricted to the County’s Road Fund.

Fiscal Year	Amount
1994-95	\$266,000
1995-96	\$257,000
1996-97	\$247,000
1997-98	\$238,000
1998-99	\$228,249 (Budgeted)
1999-00	\$219,487 (Budgeted)

7.3.3.B State Funding Mechanisms

The following sections describe potential revenue sources available at the state level.

7.3.3.B.1 State Highway Trust Fund

The State of Oregon collects a state fuel tax (currently 24 cents a gallon), vehicle licensing fees, and a vehicle weight-mile tax to fund transportation needs. A majority of the funds are used for state transportation programs. Portions of the revenues are allocated to counties and cities. Each county's revenue distribution is based on its share of statewide vehicle registration.

The chart below shows the historical and projected State Highway Fund (also referred to as the Highway Apportionment) distribution to Benton County.

Fiscal Year	Amount
1996-97	\$2,987,717
1997-98	\$2,989,711
1998-99	\$3,095,326
1999-00	\$3,127,600

The State Highway Fund apportionment is not expected to increase unless the State finds some way of increasing fees or taxes. Since 1991, the Legislature has not increased the gasoline tax. The Legislature has failed repeated attempts to increase the state gas tax and other revenue-raising measures, most recently during the 1999 Legislative session. Local governments cannot look forward to any significant increase in their highway apportionment to fund local needs unless the 2001 Legislative Session successfully passes a transportation funding measure.

7.3.3.B.2 ODOT Immediate Opportunity Fund Program

ODOT administers a grant program designed to assist local and regional economic development efforts. The program was initiated through legislation in 1987. In 1996, it was extended until 2001. The program is funded to a level of approximately \$7 million per year through state gas tax revenues. Grants are given by the Oregon Transportation Commission on a case-by-case basis, upon the recommendation of the ODOT Region and OEDD Region officials who use the following as primary factors in determining eligible projects:

- ◆ funding used to improve public roads
- ◆ funding used for an economic development-related project of regional significance
- ◆ primary project must create primary employment
- ◆ preference to grantee providing local funds to match grant (lesser matches may also be considered)
- ◆ local matching funds can be provided by public or private entities

The maximum amount of the grant is 50 percent of the transportation project cost or \$500,000, whichever is less. Fifty transportation projects have been approved under the program, most of which involve manufacturing plants or distribution facilities. The City of Corvallis received two grants from this program: \$450,000 in 1993 and \$500,000 in 1996 to fund public roads associated with the Hewlett Packard plant. Additional recipients of the program (among others) include Washington County, Douglas County, Morrow County, Jackson County, Port of St. Helens, City of Newport, City of Medford, City of Eugene, and City of Hermiston.

7.3.3.B.3 Hazard Elimination Program (HEP)

HEP is a federally funded program that mandates that each state identify hazardous locations on all public roads, assign priorities for the necessary corrections at these locations, and establish a schedule of improvement projects. The mission of HEP is “to carry out safety improvement projects to reduce the risk, number, and/or severity of accidents at highway locations, sections, and elements on any public road.” Any public road, excluding interstate freeways, is eligible for HEP funds.

Standard match for HEP projects is 90 percent federal funds and 10 percent state or local agency funds. Program-eligible projects should cost less than \$500,000 and should be funded exclusively or primarily using HEP Program funds. The projects should be stand-alone projects and not portions of larger construction projects.

7.3.3.B.4 Oregon Special Public Works Fund (SPWF)

The SPWF provides grant and loan assistance to local governments primarily for the construction of public infrastructure that support commercial and industrial development and result in permanent job creation or job retention. To be awarded funds, each infrastructure project must support businesses wishing to locate, expand, or remain in Oregon. Awards can be used for improvement, expansion, and new construction of public sewage treatment works, public water supply works, public roads, and public transportation.

The maximum loan amount per project is \$10 million and the term of the loan cannot exceed the useful life of the project, or 25 years, whichever is less. Interest rates for loans funded with State of Oregon Revenue Bonds are based on the rate that the State may borrow through the Bond Bank. The Department may also make loans directly from the SPWF, whose term and rate can be structured to meet project needs. The maximum grant per project is \$500,000, but may not exceed 85 percent of the total project cost.

Although the program is capable of funding transportation improvements, its use for that purpose has been limited. However, Douglas County and the cities of Cornelius, Woodburn, Forest Grove, Portland, Reedsport, Wilsonville, Redmond, Bend, and Salem (among others) have received SPWF funding for projects involving some type of transportation-related improvements.

7.3.3.C Local Funding Mechanisms

The following sections describe some potential revenue sources available at the local level.

7.3.3.C.1 Transportation System Development Charges (SDCs)

SDCs are charges on new development for the costs it imposes on the transportation system. SDCs for sewer, water, and transportation are common fees imposed throughout the State.

Government entities are permitted to establish SDCs to fund needed capital improvement projects. Oregon Revised Statute (ORS) 223.297 to 223.314 prescribes specific requirements for SDCs. In creating a methodology for determining a charge amount, a government must consider the cost of the improvement, prior contributions of existing users, value of unused capacity (if any), and rate-making principles employed to finance publicly-owned capital improvements. In the case of transportation projects, charges are generally based on a measurement of the demand that a new development places on the street system, such as the number of vehicle trips generated by the development, and the capital cost of meeting that demand. SDCs are one-time fees collected from a new business or developer as its facilities come on line. Numerous cities and counties in Oregon presently charge transportation SDCs.

Since SDCs are charged on new development, its revenue stream fluctuates depending on growth patterns and is not a reliable source of long-term funding. It is, however, an appropriate fee to charge for transportation needs that arise from new development. The County has forecasted that rural household growth for Benton County will be 3,772 between 1995 and 2015. The forecast was not broken down into a smaller time period, so, for the purpose of this study, it is assumed that the growth is evenly spread over the 20-year period.

An SDC of \$2,000 per new development would generate approximately \$400,000 in annual revenues.

7.3.3.C.2 Local Gas Tax

Local governments may levy local gas taxes in addition to the state gas tax, where allowed by their charters or by voter approval. Revenues from the gas tax must be used to fund street-related improvements only. It appears that Benton County is allowed by its charter to levy this tax without obtaining voter approval.

Multnomah County and Washington County both have the local gas tax. Multnomah County's 3 cent per gallon tax generated \$7.7 million in 1996. Washington County's 1 cent per gallon tax generated \$1.7 million in 1996. These revenues are shared with local cities within the county boundaries. The Cities of Woodburn, The Dalles, and Tillamook also have the local gas tax.

The administration of a local gas tax is relatively easy. The Cities of The Dalles and Tillamook collect and administer the gas tax locally. Staffs in these cities believe that noncompliance and the administrative burden are relatively low. Multnomah County, Washington County, and the City of Woodburn have an agreement with the State Fuels Tax Division to collect the gas tax for them.

During the November 1997 elections, six counties sought voter approval for the gas tax and/or registration fee. The results are shown on **Table 7-7**.

**Table 7-7
1997 Local Option Measures**

County	Gas Tax (per gallon)	Annual Registration Fee	Pct. Yes	Pct. No
Clackamas	1 cent phased in over 3 years	\$15 auto, \$9 motorcycles, \$30 truck	32	68
Marion	3 cents, including diesel	\$10 auto, \$9 motorcycles, \$10 truck	16	84
Multnomah	None	\$15 auto, \$9 motorcycles, \$30 truck	49	51
Umatilla	3 cents, including diesel	None	24	76
Washington	2 cents, increase to 3 cents	\$15 auto, \$9 motorcycles, \$30 truck	32	68
Yamhill	5 cents	\$15 auto, \$9 motorcycles, \$30 truck	20	68

The revenue potential of such a tax for Benton County has not been estimated by the County or by ODOT. A rough estimate using population as a proxy shows that such a tax may generate \$300,000 per year for each 1-cent per gallon imposed in Benton County. Revenues for Benton County will be less, depending on the revenue sharing arrangements it would have with cities within Benton County. Assuming a 2-cent tax, with a split of 50/50 between the cities and county, Benton County would receive approximately \$300,000 per year from this tax.

7.3.3.C.3 Local Vehicle Registration Fee

Subject to voter approval, counties and districts in Oregon are authorized to impose local registration fees up to a maximum of \$30 for passenger vehicles and \$9 for motorcycles and mopeds, every two years. Distribution of revenues is 40 percent to cities and 60 percent to the County, as provided for by the Oregon Revised Statutes.

No county or district in Oregon has as yet imposed this fee. In the November 1997 election, Multnomah County asked voters to approve a local registration fee. The measure was defeated, with approximately 48 percent for and 52 percent against. Other counties also sought the local registration fee in conjunction with a gas tax. As shown on **Table 7-7**, none of the measures passed.

There would be start-up costs and annual administrative costs associated with collection of the registration fee. Collection of the fee is assumed to be administered by the State Driver and Motor Vehicle Services Division (DMV). The cost to implement and administer such a fee for Benton County is unknown; however, Washington County has estimated the start-up costs to be approximately \$130,000, with annual administration costs of \$106,000. The start-up and administrative costs would be reduced if more counties would also impose this tax. Washington County further estimates that it would require six months to one year to implement this tax.

According to ODOT, Benton County had 60,823 passenger vehicles registered in 1996. Assuming a \$30 fee every two years on passenger vehicles alone, Benton County could generate roughly \$1,800,000 every two years, or \$900,000 annually. Assuming administrative costs of \$100,000 annually, net revenues would be \$800,000 annually. Assuming further a 60/40 split between the County and the cities, Benton County would receive net revenues of \$480,000 annually.

7.3.3.C.4 Property Taxes

Property taxes are a widely used revenue source for funding capital projects in Oregon. At the November 6, 1990 General Election, Oregon voters approved Ballot Measure 5 (now Article XI, Section 11b of the Oregon Constitution), a property tax limitation measure, limiting the dollar amount of property taxes that municipalities may impose without a vote of the people. The Measure created a new definition of “property

taxes” that includes not only ad valorem property taxes, but also any other fees, charges, or assessments imposed by a governmental unit upon property or upon a property owner as a direct consequence of ownership of that property. Within certain narrowly defined exceptions, including voter-approved debt, incurred charges, assessments for local improvements, and indebtedness authorized by the Oregon Constitution, Measure 5 provides that non-school local government property tax may not exceed \$10 for each \$1,000 of property’s real market value. As a result, many municipalities and public entities have been forced to compress their levies in order to meet the tax limitation set by Measure 5.

In May 1997, Oregon voters approved Ballot Measure 50 that, in addition to limitations imposed by Measure 5, reduces property taxes statewide by 17 percent and caps future increases in assessed valuation to 3 percent per year.

Property taxes can now be levied in three ways: (1) tax base levies that are ongoing and can be increased up to 6 percent annually, subject to the 3 percent cap imposed by Measure 50, (2) local option levies that are temporary increases in tax authority, subject to Measure 5’s \$10/\$1,000 limitation, and (3) bond levies that are voter-approved for payment of principal and interest costs for bonded debt, not subject to either Measure 5 or Measure 50.

Bond and local property tax option levies must be approved by a majority of the voters voting on the question at either: (1) a general election in an even numbered year, or (2) any other election in which not less than 50 percent of the registered voters eligible to vote on the question cast a ballot.

7.3.3.C.4.a General Obligation Bond Levy

Bonds incurred for capital construction or capital improvements approved by voters pursuant to the voter participation requirement described above are exempt from both Measure 5 and Measure 50 tax limitations.

ORS 287.054 limits indebtedness for general obligation bonds by counties to 2 percent of the latest real market value of the County, subject to voter authorization. Benton County’s 1997-98 real market value is \$5.29 billion. By law, the County’s general obligation debt is limited to 2 percent of its real market value, which translates to a debt ceiling of \$106 million.

Assuming that Benton County authorized a \$10 million general obligation bond issue to be repaid over a period of 20 years, the debt service will be approximately \$815,000 per year. This results in an average tax levy of 13 cents per thousand (or \$13.35 per \$100,000 of taxable value) each year for 20 years. While the average levy is 13 cents per thousand, the actual levy amount will start at 19 cents per thousand and will decline over time as the debt is retired.

It should be noted that there are guidelines about how general obligation bond proceeds may be used, which, if not followed, may place possible limitations on the property tax levy.

Measure 50 narrows the definition of capital construction and improvements for bonded indebtedness. Capital construction and improvements for which exempt bonded indebtedness can be authorized cannot, under Measure 50, include reasonably anticipated maintenance or repair items, or supplies and equipment that are not intrinsically part of the structure. It is important, therefore, for Benton County to apply its bond proceeds to the appropriate capital projects to satisfy this requirement.

Legislation implementing Measure 50 requires a local government that spends general obligation bond proceeds in violation of these restrictions to replace the misspent proceeds with other revenue. If the local government fails to replace the misspent funds, a court may subject the property tax levy for the bonds to the limits of Measure 5 limitations.

7.3.3.C.4.b Local Property Tax Option Levy

Local governments other than school districts will be able to override Measure 50 for limited term serial levies with voter approval that meets the voter participation requirements discussed above. Local option levies may be up to five years for any purpose or 10 years for capital projects.

Before Measure 50, all taxes subject to Measure 5's \$10 tax per \$1,000 assessed value limit compressed equally. Now, under Measure 50, local option levies compress to zero before permanent rates and urban renewal rates are compressed. Benton County lost a minimal amount of property taxes due to compression (\$975) for the fiscal year 1997-98. A local option levy could result in more tax accounts falling into compression, effectively causing tax accounts that still have room under the \$10 limit to bear a disproportionate share of the local option levy.

Because the local option levy is subject to Measure 5 limits, use of this option levy by one jurisdiction could have a negative impact on other jurisdictions within the same tax code areas, by causing other jurisdictions to also fall under compression. It is therefore very important that local governments with high tax areas coordinate their local option levies.

The assessed valuation (which is now different from real market value) of Benton County was \$4.16 billion for fiscal year 1997-98. A local option levy of \$1,000,000 per year would result in a tax rate of 24 cents per \$1,000 of taxable value. In other words, \$24 would be levied annually on a \$100,000 property for the local option levy.

7.3.3.C.5 Assessments

Oregon Statutes allow for the formation of Local Improvement Districts (LIDs) to construct public improvements including streets, sidewalks, and parking systems. Formation of a LID can be initiated by property owners or by a municipality, subject to remonstrance. LIDs are appropriate for improvements that provide primarily local benefits. When improvements are made within the district, the cost of the improvement is generally distributed according to the level of benefit to be obtained by each individual property. The property owner may pay the assessment or apply for assessment financing according to terms offered by the municipality. The cost becomes an assessment against the property, which is a lien equivalent to a tax lien.

All assessments that are secured by a lien or that are assessed on the basis of property ownership or use, are subject to Measure 5's \$10/\$1000 limitation, except assessments that:

- ◆ are for capital construction
- ◆ are special benefits
- ◆ are limited to the "actual cost"
- ◆ are assessed in a single assessment upon completion of the project
- ◆ have a repayment schedule that is spread over at least a 10-year period

7.3.3.C.6 Street or Transportation Utility Fee

The principle behind a street utility fee is that a street is a utility used by the citizens and businesses, just like a water pipe or a sewer line that supplies a connection to a home or business. A fee would be assessed by the County to all businesses and households for use of county streets, based on the amount of use typically generated. This fee is being used in the City of Medford and the City of Ashland.

The City of Ashland charges a flat rate of \$2.30 per month per residence. Businesses are charged based on anticipated trip generation. The fee generates approximately \$250,000 in annual revenues.

7.3.3.C.7 Business License Fee/Payroll Taxes

Many cities or special districts charge business license fees of all businesses in the jurisdiction. Revenues often go into the general fund. The Tri-Met Transit District in the Portland area charges a tax on all businesses based upon their gross payroll. The funds are used as part of Tri-Met's operating budget. Benton County does not currently have a business license fee or payroll taxes.

7.3.3.C.8 General Fund Revenues

Jurisdictions may also utilize revenues from their general funds to fund transportation projects. General fund revenues could also be pledged to enhance the security of revenue debt.

7.3.3.C.9 Public-Private Partnership

Private contributors could pay for capital improvement projects. Typically, the private contribution is the result of a development right swap where a city or county would grant development rights to a private company if the developer agrees to build a road or some other infrastructure improvement to accepted standards and then deed the project to the city or county upon completion. Recently, federal and state governments have liberalized their policies to allow certain private contributions to be counted as part of certain local matching requirements.

7.3.3.C.10 Mineral and Aggregate Extraction Fee

Columbia County has a mineral and aggregate extraction fee that is assessed on minerals extracted or hauled into the county. Benton County has considered this as a possible source of revenue to support road maintenance needs. Revenues have been estimated to be on the order of \$500,000 per year in Benton County.

7.3.3.C.11 Garbage Tipping Fees

It has been suggested that a tipping fee should be assessed to commercial garbage haulers at the landfill to offset the impact they have on the County Road system.

7.3.3.D Debt Financing Options

Many of the revenue sources described above can be used to support the financing of larger transportation projects. A number of debt financing alternatives are also available to the County. However, the use of debt to finance capital improvements must be balanced with the County's ability to make future debt service payments and to deal with the impact of debt on its overall debt capacity and underlying credit rating. Debt financing should be viewed not as a source of funding, but as a time shifting of funds available to the County. Large capital projects are typically financed through a combination of pay-as-you-go and debt financing.

While a wide variety of debt financing vehicles exist, some of the primary financing tools used for transportation-related projects are listed below. These include general obligation bonds, limited tax general obligation bonds, local improvement district bonds, and special tax revenue bonds.

7.3.3.D.1 General Obligation Bonds

A General Obligation Bond (GO bond) is a long-term borrowing, backed by the "full faith and credit" pledge of the jurisdiction's available general fund revenues and unlimited taxing power. There are two primary types of general obligation bonds:

- ◆ **GO bonds paid solely from property taxes.** In Oregon, levies for bonded debt are not subject to the 6 percent tax base limitation under Article XI, Section 11, of the Oregon Constitution. They are also not subject to Measure 5 or Measure 50 rate limitations, if they are for capital construction or improvements.
- ◆ **GO bonds paid from another revenue source** (such as user fees). These are often called "double barreled" or "self-supporting" GO bonds, and provide the General Obligation taxing power of the issuer as security if the revenues are not sufficient to retire the bonds.

The issuance of "unlimited tax" or "full" general obligation bonds is subject to voter approval. Unless the vote takes place during a general election, the bonds need to receive approval by the majority of registered voters, not just the majority of those voting in that election.

Advantages of general obligation bonds include:

- ◆ The interest cost is the least of any type of bond.
- ◆ The overall costs to issue are the least of any type of bond.
- ◆ The new levy is outside Measure 5 tax rate limitations and Measure 50, if it is issued for capital construction or improvements and property taxes can be levied outside a municipality's operating levy to pay debt service.

Disadvantages of general obligation bonds include:

- ◆ Voter approval is required.
- ◆ General obligation debt that applies to the jurisdiction's debt limit is increased.
- ◆ State law limits the total amount of unlimited general obligation debt local governments can issue. County bonded debt is limited to 2 percent of the County's total true cash value.

7.3.3.D.2 Limited Tax General Obligation Bonds

Limited Tax General Obligation Bonds (LTGOs) are similar to unlimited tax general obligation bonds except the issuer does not have the legal ability to levy unlimited taxes as a pledge of security. Rather, the obligations are secured by available general fund revenues. There is no special exemption from Oregon's Measure 5 or Measure 50 limitations.

There is no specific legal authorization for "limited tax general obligation bonds." Rather, this is a description of the type of security pledge commonly used to secure other types of bonds such as:

- ◆ Certificates of Participation (COPs)
- ◆ Limited Tax Revenue Bonds
- ◆ Limited Obligation Assessment Bonds

LTGOs do not require voter approval and do not count toward the General Obligation debt limitations. In addition, LTGOs are perceived to have a higher risk and therefore will carry a higher interest rate than unlimited tax general obligation bonds. The magnitude of this difference in interest rates depends on the financial condition of the issuer and the revenue stream used to pay the borrowing.

7.3.3.D.3 Limited Obligation Assessment Bonds

Limited Obligation Assessment Bonds are a type of bond used to finance local improvements such as streets, sewer, water, and storm drainage. The bonds are payable primarily from special assessments upon property owners who benefit from the project. For the purposes of collecting the charges (known as "assessments") made to property owners benefiting from a specific capital improvement, areas are grouped into a local improvement district (LID) and charges are directly levied or apportioned to all properties within the LID. The governmental unit must establish the LID's boundaries and publish the intention of establishing the LID to allow LID property owners the opportunity to remonstrate or object to the LID. After determining that the LID is to be established, the governmental unit will develop an estimate for the costs of the local improvement and calculate the assessments on the basis of the degree to which each property is benefited by the improvement. Formulas are usually based upon footage, square footage, or a combination of the two.

Property owners have the right to pay the assessment in installments over a period of at least 10 years. The governmental unit may charge a reasonable interest rate on installments. The agreement between the governmental unit and the property owner to pay the assessment in installment is called the assessment contract.

Special assessment (or Bancroft) bonds may be issued for the amount of the unpaid final assessments including amounts necessary to establish a debt service reserve and pay financing costs. These bonds are payable from assessments received from the LID property owners.

The governmental unit has the right to pledge the assessments as follows:

- ◆ If the bonds are voter-approved, the governmental unit may also pledge to make a general obligation tax levy not subject to tax limitation for shortfalls in assessments collected to pay debt service (a full general obligation pledge).
- ◆ If the bonds are not voter-approved, the governmental unit may pledge to pay shortfalls in assessments with property taxes receipts subject to tax limitation (a limited obligation pledge). With Measure 50, this is effectively a pledge of the government’s general fund.

7.3.3.D.4 Revenue Bonds

Revenue bonds are long-term obligations that are payable solely from a designated source of revenue generated by the project that was financed. No taxing power or general fund pledge is provided as security. Unlike general obligation bonds, revenue bonds are not subject to a jurisdiction’s statutory debt limitation nor is voter approval required unless, for those issued under the Oregon Revenue Bond Act, sufficient signatures are collected during the 90-day notice period to require an election.

If the revenue bonds are paid from the revenues of a particular project only, then the bonds are known as “project revenue bonds.” Likewise, if the revenues from an entire system (which may have several projects’ revenues) secure and retire the bonds, then the bonds are “system revenue bonds.” Clearly, the system bonds have more sources of revenue supporting them. Therefore, they are more secure and would command better interest rates.

There are times when the issuer prefers not to jeopardize the system revenues and wants the project to stand on its own. Then project bonds are issued, but the financing will be more costly, complex, and restrictive. The interest rate paid on revenue bonds reflects the quality of the revenue stream supporting repayment of the bonds. Where the revenue stream is active, i.e., the issuer can adjust user rates, the bonds are more secured than if the revenue stream is passive.

Revenue bonds have been used to fund projects such as water, sewer, and storm drainage facilities and improvements, and revenue-producing facilities such as electric facilities. Revenue bonds are sometimes used to finance toll roads or bridges. A few cities in Oregon have secured revenue bond issues with gas taxes or other special transportation revenues. In many cases, local governments have become accustomed to using state gas tax revenues solely for maintenance needs. Using gas tax revenues to pay debt service on bonds instead of funding maintenance would require an issuer to either reduce its maintenance budget or provide some other sources of funding for maintenance needs.

7.3.4 Proposed Funding Options

Early in the development of this TSP, a survey of community leaders and key stakeholders was conducted to seek their views on many issues linked to the County TSP. Most stakeholders believe future transportation needs will require a balanced package that enables all system beneficiaries to contribute, with existing residents, businesses, and new development shouldering their fair share of the cost load. They identified the local gas tax and system development charges as the preferred funding sources for transportation system improvements. *(For a complete description of the process used to develop this TSP, including public involvement, see Chapter 2.)*

Due to the magnitude of the unfunded costs of the projects identified in this TSP, the local gas tax and system development charges will not be sufficient to fund all of the needed projects. Therefore, consideration should be given to including a local option levy and/or general obligation bonds as a portion of the future funding strategy.

Table 7-8 shows revenues that could be potentially generated to meet expenditure needs over the next 20 years. For the purpose of this table, it is assumed that revenues and expenditures would be allocated equally each year over the 20-year period.

**Table 7-8
Revenues Required to Meet Expenditures Over 20 Years**

	Annual	Duration	20-Year Total
REVENUES			
System Development Charges	\$ 400,000	20	\$ 8,000,000
Local Gas Tax	\$ 300,000	20	\$ 6,000,000
Local Registration Fee	\$ 480,000	20	\$ 9,600,000
Highway Apportionment	\$ 1,200,000	18	\$21,600,000
Local Option Levy (first 5 years)	\$ 2,560,000	5	\$12,800,000
Local Option Levy (second 5 years)	\$ 1,500,000	5	\$ 7,500,000
Local option Levy (third 5 years)	\$ 1,300,000	5	\$ 6,500,000
General Obligation Bonds	\$10,000,000	2	\$20,000,000
Grants	\$ 200,000	20	\$ 4,000,000
TOTAL Revenues	\$17,940,000		\$96,000,000
EXPENDITURES			
Road Overlays	\$ 1,028,000	20	\$20,560,000
Local Access & Gravel Road	\$ 850,000	20	\$17,000,000
Road Shoulder Widening Program	\$ 367,000	20	\$ 7,340,000
TSP Capital	\$ 1,841,550	20	\$36,831,000
TSP O & M	\$ 693,300	20	\$13,866,000
TOTAL Expenditures	\$ 4,799,850		\$95,597,000

7.3.4.A Funding Options Assumptions

As can be seen in **Table 7-8**, the current unfunded needs and TSP-identified needs require that local revenue funding be increased significantly. The funding considerations assume the following:

- ◆ Implementation of a System Development Charges of \$2,000 per new development.
- ◆ Implementation of a local gas tax of 2 cents per gallon.
- ◆ Implementation of a local registration fee of \$30 per passenger vehicle, \$9 per motorcycle, \$30 per truck every two years.
- ◆ The legislature will pass a transportation measure, which would generate approximately the same amount of revenue to Benton County as was estimated during the 1997 legislative session.
- ◆ Grants totaling approximately \$200,000 per year would be available to offset expenditures.
- ◆ Passage of a general obligation bond authorization of \$10 million in the first 5-year period and a second GO bond authorization of \$10 million in the second 5-year period.

- ◆ Passage of a local option levy in the total amount of \$26.8 million over a 15-year period.

This would have the an impact on tax rates, as shown in **Table 7-9**.

**Table 7-9
Impact of Local Levy on Tax Rates**

	Local Option Levy Amount Validation	Average Assessed	Average Tax Rate (per thousand)
First 5 year period	\$2,560,000	\$4,611,425,820	\$0.56
Second 5 year period	\$1,500,000	\$5,476,927,296	\$0.27
Third 5 year period	\$1,300,000	\$6,504,871,546	\$0.20
Fourth 5 year period	\$ 0	\$ 0	\$0. 0

7.3.4.B Funding Options Considerations

There are important considerations regarding the proposed funding options.

Use of Funds Limitations

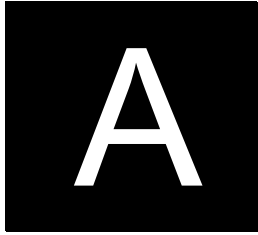
Limitations exist regarding the use of certain revenues. SDCs must be used on projects that are growth-driven. An SDC of \$2,000 per new development has been assumed for development in the rural areas of Benton County. The dollar amount of SDCs, which the County is able to assess, need to meet the legal requirements for establishing SDCs. General obligation bonds need to be used only for capital improvement projects and not maintenance.

Coordination With Other Governments

The ability to institute most of the proposed revenue sources is dependent upon coordination with other cities within the County. The allocation of local gas tax among jurisdictions is one example. The determination a local option property tax, in particular, needs to be done in consultation with other cities so that adverse impacts of compression are minimized.

Citizen Involvement

The success of this TSP is dependent upon the approval of significant taxes, fees and charges; therefore, the involvement of citizens is critical to the implementation of any funding strategy that is pursued.



APPENDIX A: Transportation Planning Rule

This appendix contains the full text of Oregon's Transportation Planning Rule (TPR).

Transportation Planning Rule (TPR)

NOTE: The official copy of an Oregon Administrative Rule is contained in the Administrative Order filed at the Archives Division, 800 Summer St. NE, Salem, Oregon 97310. Any discrepancies with the published version are satisfied in favor of the Administrative Order. The Oregon Administrative Rules and the Oregon Bulletin are copyrighted by the Oregon Secretary of State.

Purpose

The purpose of this Division is to implement Statewide Planning Goal 12 (Transportation) and promote the development of safe, convenient and economic transportation systems that are designed to reduce reliance on the automobile so that the air pollution, traffic and other livability problems faced by urban areas in other parts of the country might be avoided. It is also the purpose of this Division to explain how local governments and state agencies responsible for transportation planning demonstrate compliance with other statewide planning goals and to identify how transportation facilities are provided on rural lands consistent with the goals. The division sets requirements for coordination among affected levels of government for preparation, adoption, refinement, implementation and amendment of transportation system plans. Transportation system plans adopted pursuant to this Division fulfill the requirements for public facilities planning required under ORS 197.712(2)(e), Goal 11 and OAR Chapter 660, Division 11, as they relate to transportation facilities.

Through measures designed to reduce reliance on the automobile, this division is also intended to assure that the planned transportation system supports a pattern of travel and land use in urban areas which will avoid the air pollution, traffic and livability problems faced by other areas of the country. This portion of the rule aims to improve the livability of urban areas by promoting changes in land use patterns and the transportation system that make it more convenient for people to walk, bicycle and use transit, and drive less to meet their daily needs. Changing land use and travel patterns will also complement state and local efforts to meet other objectives, including containing urban development, reducing the cost of public services, protecting farm and forest land, reducing air, water and noise pollution, conserving energy and reducing emissions of greenhouse gases that contribute to global climate change.

The result of applying these portions of the rule will vary within urban areas. Some parts of urban areas, such as downtowns, pedestrian districts, transit-oriented developments and other mixed-use, pedestrian-friendly centers, will be highly convenient for a variety of modes, including walking, bicycling and transit, while others will be auto-oriented and include more modest measures to accommodate access and circulation by other modes. The rules in this Division are not intended to make local government determinations "land use decisions" under ORS 197.015(10). The rules recognize, however, that, under existing statutory and case law, many determinations relating to the adoption and implementation of transportation plans will be land use decisions.

Stat. Auth.: ORS 183 & ORS 197.040

Stats. Implemented: ORS 195.025, ORS 197.015, ORS 197.040, ORS 197.230, ORS 197.245, ORS 197.712 & ORS 197.717

Hist.: LCDC 1-1991, f. & cert. ef. 5-8-91; LCDD 6-1998 f. & cert. ef. 10-30-98

660-012-0005

Definitions

For the purposes of this division, the definitions in ORS 197.015, the Statewide Planning Goals and OAR Chapter 660 shall apply. In addition the definitions listed below shall apply:

(1) "Access Management" means measures regulating access to streets, roads and highways from public roads and private driveways. Measures may include but are not limited to restrictions on the siting of interchanges, restrictions on the type and amount of access to roadways, and use of physical controls, such as signals and channelization including raised medians, to reduce impacts of approach road traffic on the main facility.

(2) "Accessway" means a walkway that provides pedestrian and or bicycle passage either between streets or from a street to a building or other destination such as a school, park, or transit stop. Accessways generally include a walkway and additional land on either side of the walkway, often in the form of an easement or right-of-way, to provide clearance and separation between the walkway and adjacent uses. Accessways through parking lots are generally physically separated from adjacent vehicle parking or parallel vehicle traffic by curbs or similar devices and include landscaping, trees and lighting. Where accessways cross driveways, they are generally raised, paved or marked in a manner which provides convenient access for pedestrians.

(3) "Affected Local Government" means a city, county or metropolitan service district that is directly impacted by a proposed transportation facility or improvement.

(4) At or near a major transit stop: "At" means a parcel or ownership which is adjacent to or includes a major transit stop generally including portions of such parcels or ownerships that are within 200 feet of a transit stop. "Near" generally means a parcel or ownership that is within 300 feet of a major transit stop. The term "generally" is intended to allow local governments through their plans and ordinances to adopt more specific definitions of these terms considering local needs and circumstances consistent with the overall objective and requirement to provide convenient pedestrian access to transit.

(5) "Committed Transportation Facilities" means those proposed transportation facilities and improvements which are consistent with the acknowledged comprehensive plan and have approved funding for construction in a public facilities plan or the Six-Year Highway or Transportation Improvement Program.

(6) "Demand Management" means actions which are designed to change travel behavior in order to improve performance of transportation facilities and to reduce need for additional road capacity. Methods may include but are not limited to the use of alternative modes, ride-sharing and vanpool programs, and trip-reduction ordinances.

(7) "Local Street Standards" include but are not limited to standards for right-of-way, pavement width, travel lanes, parking lanes, curb turning radius, and accessways.

(8) "Major" means, in general, those facilities or developments which, considering the size of the urban or rural area and the range of size, capacity or service level of similar facilities or developments in the area, are either larger than average, serve more than neighborhood needs or have significant land use or traffic impacts on more than the immediate neighborhood:

(a) "Major" as it modifies transit corridors, stops, transfer stations and new transportation facilities means those facilities which are most important to the functioning of the system or which provide a high level, volume or frequency of service;

(b) "Major" as it modifies industrial, institutional and retail development means such developments which are larger than average, serve more than neighborhood needs or which have traffic impacts on more than the immediate neighborhood;

(c) Application of the term "major" will vary from area to area depending upon the scale of transportation improvements, transit facilities and development which occur in the area. A facility considered to be major in a smaller or less densely developed area may, because of the relative significance and impact of the facility or development, not be considered a major facility in a larger or more densely developed area with larger or more intense development or facilities.

(9) "Major transit stop" means:

(a) Existing and planned light rail stations and transit transfer stations, except for temporary facilities;

(b) Other planned stops designated as major transit stops in a transportation system plan and existing stops which:

(A) Have or are planned for an above average frequency of scheduled, fixed-route service when compared to region wide service. In urban areas of 1,000,000 or more population major transit stops are generally located along routes that have or are planned for 20 minute service during the peak hour; and

(B) Are located in a transit oriented development or within 1/4 mile of an area planned and zoned for:

(i) Medium or high density residential development; or

(ii) Intensive commercial or institutional uses within 1/4 mile of subsection (i); or

(iii) Uses likely to generate a relatively high level of transit ridership.

(10) "Metropolitan Planning Organization (MPO)" means an organization located within the State of Oregon and designated by the Governor to coordinate transportation planning in an urbanized area of the state including such designations made subsequent to the adoption of this rule. The Longview-Kelso-Rainier MPO is not considered an MPO for the purposes of this rule.

(11) "ODOT" means the Oregon Department of Transportation.

(12) "Parking Spaces" means on and off street spaces designated for automobile parking in areas planned for industrial, commercial, institutional or public uses. The following are not considered parking spaces for the purposes of OAR 660-012-0045(5)(c): park and ride lots, handicapped parking, and parking spaces for carpools and vanpools.

(13) "Pedestrian connection" means a continuous, unobstructed, reasonably direct route between two points that is intended and suitable for pedestrian use. Pedestrian connections include but are not limited to sidewalks, walkways, accessways, stairways and pedestrian bridges. On developed parcels, pedestrian connections are generally hard surfaced. In parks and natural areas, pedestrian connections may be soft-surfaced pathways. On undeveloped parcels and parcels intended for redevelopment, pedestrian connections may also include rights of way or easements for future pedestrian improvements.

(14) "Pedestrian district" means a comprehensive plan designation or implementing land use regulations, such as an overlay zone, that establish requirements to provide a safe and convenient pedestrian environment in an area planned for a mix of uses likely to support a relatively high level of pedestrian activity. Such areas include but are not limited to:(a) Lands planned for a mix of commercial or institutional uses near lands planned for medium to high density housing; or

(b) Areas with a concentration of employment and retail activity; and(c) Which have or could develop a network of streets and accessways which provide convenient pedestrian circulations.

(15) "Pedestrian plaza" means a small semi-enclosed area usually adjoining a sidewalk or a transit stop which provides a place for pedestrians to sit, stand or rest. They are usually paved with concrete, pavers, bricks or similar material and include seating, pedestrian scale lighting and similar pedestrian improvements. Low walls or planters and landscaping are usually provided to create a semi-enclosed space and to buffer and separate the plaza from adjoining parking lots and vehicle maneuvering areas. Plazas are generally located at a transit stop, building entrance or an intersection and connect directly to adjacent sidewalks, walkways, transit stops and buildings entrance or an intersection and connect directly to adjacent sidewalks, walkways, transit stops and building. A plaza including 150-250 square feet would be considered "small."

(16) "Pedestrian scale" means site and building design elements that are dimensionally less than those intended to accommodate automobile traffic, flow and buffering. Examples include ornamental lighting of limited height; bricks, pavers or other modules of paving with small dimensions; a variety of planting and landscaping materials; arcades or

awnings that reduce the height of walls; and signage and signpost details that can only be perceived from a short distance.

(17) "Planning Period" means the twenty-year period beginning with the date of adoption of a TSP to meet the requirements of this rule.

(18) "Preliminary Design" means an engineering design which specifies in detail the location and alignment of a planned transportation facility or improvement.

(19) "Reasonably direct" means either a route that does not deviate unnecessarily from a straight line or a route that does not involve a significant amount of out-of-direction travel for likely users

(20) "Refinement Plan" means an amendment to the transportation system plan, which resolves, at a systems level, determinations on function, mode or general location which were deferred during transportation system planning because detailed information needed to make those determinations could not reasonably be obtained during that process.

(21) "Roads" means streets, roads and highways.

(22) "Rural community" means areas defined as resort communities and rural communities in accordance with OAR 660-022-0010(6) and (7). For the purposes of this division, the area need only meet the definitions contained in the Unincorporated Communities Rule although the area may not have been designated as an unincorporated community in accordance with OAR 660-022-0020.

(23) "Transit-Oriented Development (TOD)" means a mix of residential, retail and office uses and a supporting network of roads, bicycle and pedestrian ways focused on a major transit stop designed to support a high level of transit use. The key features of transit oriented development include:

(a) A mixed use center at the transit stop, oriented principally to transit riders and pedestrian and bicycle travel from the surrounding area;

(b) High density of residential development proximate to the transit stop sufficient to support transit operation and neighborhood commercial uses within the TOD;

(c) A network of roads, and bicycle and pedestrian paths to support high levels of pedestrian access within the TOD and high levels of transit use.

(24) "Transportation Facilities" means any physical facility that moves or assist in the movement of people or goods including facilities identified in OAR 660-012-0020 but excluding electricity, sewage and water systems.

(25) "Transportation System Management Measures" means techniques for increasing the efficiency, safety, capacity or level of service of a transportation facility without increasing its size. Examples include, but are not limited to, traffic signal improvements, traffic control devices including installing medians and parking removal, channelization, access management, ramp metering, and restriping of high occupancy vehicle (HOV) lanes.

(26) "Transportation Needs" means estimates of the movement of people and goods consistent with acknowledged comprehensive plan and the requirements of this rule. Needs are typically based on projections of future travel demand resulting from a continuation of current trends as modified by policy objectives, including those expressed in Goal 12 and this rule, especially those for avoiding principal reliance on any one mode of transportation.

(27) "Transportation Needs, Local" means needs for movement of people and goods within communities and portions of counties and the need to provide access to local destinations.

(28) "Transportation Needs, Regional" means needs for movement of people and goods between and through communities and accessibility to regional destinations within a metropolitan area, county or associated group of counties.

(29) "Transportation Needs, State" means needs for movement of people and goods between and through regions of the state and between the state and other states.

(30) "Transportation Project Development" means implementing the transportation system plan (TSP) by determining the precise location, alignment, and preliminary design of improvements included in the TSP based on site-specific engineering and environmental studies.

(31) "Transportation Service" means a service for moving people and goods, such as intercity bus service and passenger rail service.

(32) "Transportation System Plan (TSP)" means a plan for one or more transportation facilities that are planned, developed, operated and maintained in a coordinated manner to supply continuity of movement between modes, and within and between geographic and jurisdictional areas.

(33) "Urban Area" means lands within an urban growth boundary, two or more contiguous urban growth boundaries, and urban unincorporated communities as defined by OAR 660-022-0010(9). For the purposes of this division, the area need only meet the definition contained in the Unincorporated Communities Rule although the area may not have been designated as an unincorporated community in accordance with OAR 660-022-0020.

(34) "Urban Fringe" means:

(a) Areas outside the urban growth boundary that are within 5 miles of the urban growth boundary of an MPO area; and

(b) Areas outside the urban growth boundary within 2 miles of the urban growth boundary of an urban area containing a population greater than 25,000.

(35) "Walkway" means a hard surfaced area intended and suitable for use by pedestrians, including sidewalks and surfaced portions of accessways.

(36) Vehicle Miles of Travel (VMT): means automobile vehicle miles of travel. Automobiles, for purposes of this definition, include automobiles, light trucks, and other similar vehicles used for movement of people. The definition does not include buses, heavy trucks and trips that involve commercial movement of goods. VMT includes trips with an origin and a destination within the MPO boundary and excludes pass through trips (i.e., trips with a beginning and end point outside of the MPO) and external trips (i.e., trips with a beginning or end point outside of the MPO boundary). VMT is estimated prospectively through the use of metropolitan area transportation models.

(37) "Metropolitan area" means the local governments that are responsible for adopting local or regional transportation system plans within a metropolitan planning organization (MPO) boundary. This includes cities, counties, and, in the Portland Metropolitan area, Metro.

Stat. Auth.: ORS 183, ORS 197.040 & ORS 197.2456

Stats. Implemented: ORS 195.025, ORS 197.015, ORS 197.040, ORS 197.230, ORS 197.245, ORS 197.712 & ORS 197.717

Hist.: LCDC 1-1991, f. & cert. ef. 5-8-91; LCDC 3-1995, f. & cert. ef. 3-31-95; LCDC 4-1995, f. & cert. ef. 5-8-95; LCDD 6-1998, f. & cert. ef. 10-30-98

660-012-0010

Transportation Planning

(1) As described in this division, transportation planning shall be divided into two phases: transportation system planning and transportation project development. Transportation system planning establishes land use controls and a network of facilities and services to meet overall transportation needs. Transportation project development implements the TSP by determining the precise location, alignment, and preliminary design of improvements included in the TSP.

(2) It is not the purpose of this division to cause duplication of or to supplant existing applicable transportation plans and programs. Where all or part of an acknowledged comprehensive plan, TSP either of the local government or appropriate special district, capital improvement program, regional functional plan, or similar plan or combination of plans meets all or some of the requirements of this division, those plans or programs may be incorporated by reference into the TSP required by this division. Only those referenced portions of such documents shall be considered to be a part of the TSP and shall be subject to the administrative procedures of this division and ORS Chapter 197.

(3) It is not the purpose of this division to limit adoption or enforcement of measures to provide convenient bicycle and pedestrian circulation or convenient access to transit that are otherwise consistent with the requirements of this division.

Stat. Auth.: ORS 183, ORS 197.040 & ORS 197.245

Stats. Implemented: ORS 195.025, ORS 197.040, ORS 197.230, ORS 197.245, ORS 197.712 & ORS 197.717

Hist.: LCDC 1-1991, f. & cert. ef. 5-8-91; LCDC 4-1995, f. & cert. ef. 5-8-95

660-012-0015

Preparation and Coordination of Transportation System Plans

(1) ODOT shall prepare, adopt and amend a state TSP in accordance with ORS 184.618, its program for state agency coordination certified under ORS 197.180, and OAR 660-012-0030, 660-012-0035, 660-012-0050, 660-012-0065 and 660-012-0070. The state TSP shall identify a system of transportation facilities and services adequate to meet identified state transportation needs:

(a) The state TSP shall include the state transportation policy plan, modal systems plans and transportation facility plans as set forth in OAR 731, Division 15;

(b) State transportation project plans shall be compatible with acknowledged comprehensive plans as provided for in OAR 731, Division 15. Disagreements between ODOT and affected local governments shall be resolved in the manner established in that division.

(2) MPOs and counties shall prepare and amend regional TSPs in compliance with this division. MPOs shall prepare regional TSPs for facilities of regional significance within their jurisdiction. Counties shall prepare regional TSPs for all other areas and facilities:

(a) Regional TSPs shall establish a system of transportation facilities and services adequate to meet identified regional transportation needs and shall be consistent with adopted elements of the state TSP;

(b) Where elements of the state TSP have not been adopted, the MPO or county shall coordinate the preparation of the regional TSP with ODOT to assure that state transportation needs are accommodated;

(c) Regional TSPs prepared by MPOs other than metropolitan service districts shall be adopted by the counties and cities within the jurisdiction of the MPO. Metropolitan service districts shall adopt a regional TSP for areas within their jurisdiction;

(d) Regional TSPs prepared by counties shall be adopted by the county.

(3) Cities and counties shall prepare, adopt and amend local TSPs for lands within their planning jurisdiction in compliance with this division:

(a) Local TSPs shall establish a system of transportation facilities and services adequate to meet identified local transportation needs and shall be consistent with regional TSPs and adopted elements of the state TSP;

(b) Where the regional TSP or elements of the state TSP have not been adopted, the city or county shall coordinate the preparation of the local TSP with the regional transportation planning body and ODOT to assure that regional and state transportation needs are accommodated.

(4) Cities and counties shall adopt regional and local TSPs required by this division as part of their comprehensive plans. Transportation financing programs required by OAR 660-012-0040 may be adopted as a supporting document to the comprehensive plan.

(5) The preparation of TSPs shall be coordinated with affected state and federal agencies, local governments, special districts, and private providers of transportation services.

(6) Mass transit, transportation, airport and port districts shall participate in the development of TSPs for those transportation facilities and services they provide. These districts shall prepare and adopt plans for transportation facilities and services they provide. Such plans shall be consistent with and adequate to carry out relevant portions of applicable regional and local TSPs. Cooperative agreements executed under ORS 197.185(2) shall include the requirement that mass transit, transportation, airport and port districts adopt a plan consistent with the requirements of this section.

(7) Where conflicts are identified between proposed regional TSPs and acknowledged comprehensive plans, representatives of affected local governments shall meet to discuss means to resolve the conflicts. These may include:

- (a) Changing the draft TSP to eliminate the conflicts; or
- (b) Amending acknowledged comprehensive plan provision to eliminate the conflicts;
- (c) For MPOs which are not metropolitan service districts, if conflicts persist between regional TSPs and acknowledged comprehensive plans after efforts to achieve compatibility, an affected local government may petition the Commission to resolve the dispute.

Stat. Auth.: ORS 183 & ORS 197.040

Stats. Implemented: ORS 184.618, ORS 195.025, ORS 197.040, ORS 197.180, ORS 197.230, ORS 197.245, ORS 197.712 & ORS 197.717

Hist.: LCDC 1-1991, f. & cert. ef. 5-8-91

660-012-0020

Elements of Transportation System Plans

- (1) A TSP shall establish a coordinated network of transportation facilities adequate to serve state, regional and local transportation needs.
- (2) The TSP shall include the following elements:
 - (a) A determination of transportation needs as provided in OAR 660-012-0030;
 - (b) A road plan for a system of arterials and collectors and standards for the layout of local streets and other important non-collector street connections. Functional classifications of roads in regional and local TSPs shall be consistent with functional classifications of roads in state and regional TSPs and shall provide for continuity between adjacent jurisdictions. The standards for the layout of local streets shall provide for safe and convenient bike and pedestrian circulation necessary to carry out OAR 660-012-0045
- (3) (b). New connections to arterials and state highways shall be consistent with designated access management categories. The intent of this requirement is to provide guidance on the spacing of future extensions and connections along existing and future streets which are needed to provide reasonably direct routes for bicycle and pedestrian travel. The standards for the layout of local streets shall address:
 - (A) Extensions of existing streets;
 - (B) Connections to existing or planned streets, including arterials and collectors; and
 - (C) Connections to neighborhood destinations.
- (c) A public transportation plan which:
 - (A) Describes public transportation services for the transportation disadvantaged and identifies service inadequacies;
 - (B) Describes intercity bus and passenger rail service and identifies the location of terminals;
 - (C) For areas within an urban growth boundary which have public transit service, identifies existing and planned transit trunk routes, exclusive transit ways, terminals and major transfer stations, major transit stops, and park-and-ride stations. Designation of stop or station locations may allow for minor adjustments in the location of stops to provide for efficient transit or traffic operation or to provide convenient pedestrian access to adjacent or nearby uses.
 - (D) For areas within an urban area containing a population greater than 25,000 persons, not currently served by transit, evaluates the feasibility of developing a public transit system at buildout. Where a transit system is determined to be feasible, the plan shall meet the requirements of paragraph (2)(c)(C) of this rule.
- (d) A bicycle and pedestrian plan for a network of bicycle and pedestrian routes throughout the planning area. The network and list of facility improvements shall be consistent with the requirements of ORS 366.514;
- (e) An air, rail, water and pipeline transportation plan which identifies where public use airports, mainline and branchline railroads and railroad facilities, port facilities, and major regional pipelines and terminals are located or

planned within the planning area. For airports, the planning area shall include all areas within airport imaginary surfaces and other areas covered by state or federal regulations;

(f) For areas within an urban area containing a population greater than 25,000 persons a plan for transportation system management and demand management;

(g) A parking plan in MPO areas as provided in OAR 660-012-0045(5)(c);

(h) Policies and land use regulations for implementing the TSP as provided in OAR 660-012-0045;

(i) For areas within an urban growth boundary containing a population greater than 2500 persons, a transportation financing program as provided in OAR 660-012-0040.

(3) Each element identified in subsections (2)(b)–(d) of this rule shall contain:

(a) An inventory and general assessment of existing and committed transportation facilities and services by function, type, capacity and condition:

(A) The transportation capacity analysis shall include information on:

(i) The capacities of existing and committed facilities;

(ii) The degree to which those capacities have been reached or surpassed on existing facilities; and

(iii) The assumptions upon which these capacities are based.

(B) For state and regional facilities, the transportation capacity analysis shall be consistent with standards of facility performance considered acceptable by the affected state or regional transportation agency;

(C) The transportation facility condition analysis shall describe the general physical and operational condition of each transportation facility (e.g., very good, good, fair, poor, very poor).

(b) A system of planned transportation facilities, services and major improvements. The system shall include a description of the type or functional classification of planned facilities and services and their planned capacities and levels of service;

(c) A description of the location of planned facilities, services and major improvements, establishing the general corridor within which the facilities, services or improvements may be sited. This shall include a map showing the general location of proposed transportation improvements, a description of facility parameters such as minimum and maximum road right of way width and the number and size of lanes, and any other additional description that is appropriate;

(d) Identification of the provider of each transportation facility or service.

Stat. Auth.: ORS 183, ORS 197.040 & ORS 197.245

Stats. Implemented: ORS 195.025, ORS 197.040, ORS 197.230, ORS 197.245, ORS 197.712 & ORS 197.717

Hist.: LCDC 1-1991, f. & cert. ef. 5-8-91; LCDC 4-1995, f. & cert. ef. 5-8-95

660-012-0025

Complying with the Goals in Preparing Transportation System Plans; Refinement Plans

(1) Except as provided in section (3) of this rule, adoption of a TSP shall constitute the land use decision regarding the need for transportation facilities, services and major improvements and their function, mode, and general location.

(2) Findings of compliance with applicable statewide planning goals and acknowledged comprehensive plan policies and land use regulations shall be developed in conjunction with the adoption of the TSP.

(3) A local government or MPO may defer decisions regarding function, general location and mode of a refinement plan if findings are adopted which:

- (a) Identify the transportation need for which decisions regarding function, general location or mode are being deferred;
 - (b) Demonstrate why information required to make final determinations regarding function, general location, or mode cannot reasonably be made available within the time allowed for preparation of the TSP;
 - (c) Explain how deferral does not invalidate the assumptions upon which the TSP is based or preclude implementation of the remainder of the TSP;
 - (d) Describe the nature of the findings which will be needed to resolve issues deferred to a refinement plan; and
 - (e) Demonstrate that the refinement effort will be completed within three years or prior to initiation of the periodic review following adoption of the TSP.
- (4) Where a Corridor Environmental Impact Statement (EIS) is prepared pursuant to the requirements of the National Environmental Policy Act of 1969, the development of the refinement plan shall be coordinated with the preparation of the Corridor EIS. The refinement plan shall be adopted prior to the issuance of the Final EIS.

Stat. Auth.: ORS 183 & ORS 197.040

Stats. Implemented: ORS 195.025, ORS 197.040, ORS 197.230, ORS 197.245, ORS 197.712 & ORS 197.717

Hist.: LCDC 1-1991, f. & cert. ef. 5-8-91

660-012-0030

Determination of Transportation Needs

- (1) The TSP shall identify transportation needs relevant to the planning area and the scale of the transportation network being planned including:
- (a) State, regional, and local transportation needs;
 - (b) Needs of the transportation disadvantaged;
 - (c) Needs for movement of goods and services to support industrial and commercial development planned for pursuant to OAR 660-009 and Goal 9 (Economic Development).
- (2) Counties or MPOs preparing regional TSPs shall rely on the analysis of state transportation needs in adopted elements of the state TSP. Local governments preparing local TSPs shall rely on the analyses of state and regional transportation needs in adopted elements of the state TSP and adopted regional TSPs.
- (3) Within urban growth boundaries, the determination of local and regional transportation needs shall be based upon:
- (a) Population and employment forecasts and distributions which are consistent with the acknowledged comprehensive plan, including those policies which implement Goal 14, including Goal 14's requirement to encourage urban development on urban lands prior to conversion of urbanizable lands. Forecasts and distributions shall be for 20 years and, if desired, for longer periods;
 - (b) Measures adopted pursuant to OAR 660-012-0045 to encourage reduced reliance on the automobile.
- (4) In MPO areas, calculation of local and regional transportation needs also shall be based upon accomplishment of the requirement in OAR 660-012-0035(4) to reduce reliance on the automobile.

Stat. Auth.: ORS 183 & ORS 197.040

Stats. Implemented: ORS 195.025, ORS 197.040, ORS 197.230, ORS 197.245, ORS 197.712 & ORS 197.717

Hist.: LCDC 1-1991, f. & cert. ef. 5-8-91

660-012-0035

Evaluation and Selection of Transportation System Alternatives

(1) The TSP shall be based upon evaluation of potential impacts of system alternatives that can reasonably be expected to meet the identified transportation needs in a safe manner and at a reasonable cost with available technology. The following shall be evaluated as components of system alternatives:

- (a) Improvements to existing facilities or services;
- (b) New facilities and services, including different modes or combinations of modes that could reasonably meet identified transportation needs;
- (c) Transportation system management measures;
- (d) Demand management measures; and
- (e) A no-build system alternative required by the National Environmental Policy Act of 1969 or other laws.

(2) Local governments in MPO areas of larger than 1,000,000 population shall, and other governments may also, evaluate alternative land use designations, densities, and design standards to meet local and regional transportation needs.

Local governments preparing such a strategy shall consider:

- (a) Increasing residential densities and establishing minimum residential densities within one quarter mile of transit lines, major regional employment areas, and major regional retail shopping areas;
- (b) Increasing allowed densities in new commercial office and retail developments in designated community centers;
- (c) Designating lands for neighborhood shopping centers within convenient walking and cycling distance of residential areas;
- (d) Designating land uses to provide a better balance between jobs and housing considering:
 - (A) The total number of jobs and total of number of housing units expected in the area or subarea;
 - (B) The availability of affordable housing in the area or subarea; and
 - (C) Provision of housing opportunities in close proximity to employment areas.

(3) The following standards shall be used to evaluate and select alternatives:

- (a) The transportation system shall support urban and rural development by providing types and levels of transportation facilities and services appropriate to serve the land uses identified in the acknowledged comprehensive plan;
- (b) The transportation system shall be consistent with state and federal standards for protection of air, land and water quality including the State Implementation Plan under the Federal Clean Air Act and the State Water Quality Management Plan;
- (c) The transportation system shall minimize adverse economic, social, environmental and energy consequences;
- (d) The transportation system shall minimize conflicts and facilitate connections between modes of transportation;
- (e) The transportation system shall avoid principal reliance on any one mode of transportation and shall reduce principal reliance on the automobile. In MPO areas this shall be accomplished by selecting transportation alternatives which meet the requirements in section (4) of this rule.

(4) In MPO areas, regional and local TSPs shall be designed to achieve the objectives listed in (a)-(c) below for reducing automobile vehicle miles traveled per capita for the MPO area. The VMT target and alternative standards are intended as means of measuring progress of metropolitan areas towards developing and implementing transportation systems and land use plans that reduce reliance on the automobile. It is anticipated that metropolitan areas will accomplish reduced reliance by changing land use patterns and transportation systems so that walking, cycling, and use of transit are highly convenient and so that, on balance, people need to and are likely to drive less than they do today:

- (a) In MPO areas of less than 1 million population, a 5% reduction within 20 years of the adoption of a plan as required by OAR 660-012-0055(1);

(b) In MPO areas of more than 1 million population, 10% reduction within 20 years of adoption of a plan as required by OAR 660-012-0055(1); and

(c) Through subsequent planning efforts, an additional 5 percent reduction within 30 years of adoption of a plan as required by OAR 660-012-0055(1).

(5) The Commission may authorize metropolitan areas to use alternative standards in place of the VMT reduction standard in 0035(4) to demonstrate progress towards achieving reduced automobile reliance as provided for in this section:

(a) The Commission shall approve such alternative standards by order upon demonstration by the metropolitan area that:

(A) Achieving the alternative standard will result in a reduction in reliance on automobiles;

(B) Achieving the alternative standard will accomplish a significant increase in the availability or convenience of alternative modes of transportation;

(C) Achieving the alternative standard is likely to result in a significant increase in the share of trips made by alternative modes, including walking, bicycling, ridesharing and transit;

(D) VMT per capita is unlikely to increase by more than 5%; and

(E) The alternative standard is measurable and reasonably related to achieving the goal of reduced reliance on the automobile as described in OAR 660-012-0000.

(b) In reviewing proposed alternative standards for compliance with (a), the Commission shall give credit to regional and local plans, programs, and actions implemented since 1990 that have already contributed to achieving the objectives specified in (A)–(E) above;

(c) If a plan using an alternative standard, approved pursuant to this rule, is expected to result in an increase in VMT per capita, then the cities and counties in the metropolitan area shall prepare and adopt an integrated land use and transportation plan including the elements listed in (A)–(E) below. Such a plan shall be prepared in coordination with the MPO and shall be adopted within three years of the approval of the alternative standard:

(A) Changes to land use plan designations, densities, and design standards listed in 0035(2)(a)–(d);

(B) A transportation demand management plan that includes significant new transportation demand management measures;

(C) A public transit plan that includes a significant expansion in transit service;

(D) Policies to review and manage major roadway improvements to ensure that their effects are consistent with achieving the adopted strategy for reduced reliance on the automobile, including policies that provide for the following:

(i) An assessment of whether improvements would result in development or travel that is inconsistent with what is expected in the plan;

(ii) Consideration of alternative measures to meet transportation needs;

(iii) Adoption of measures to limit possible unintended effects on travel and land use patterns including access management, limitations on subsequent plan amendments, phasing of improvements. etc.

[For purposes of this section a "major roadway expansion" includes new arterial roads or streets and highways, the addition of travel lanes, and construction of interchanges to a limited access highway.]

(E) Plan and ordinance provisions that meet all other applicable requirements of this division.

(d) Alternative standards may include but are not limited to:

(A) Modal share of alternative modes, including walking, bicycling, and transit trips;

(B) Vehicle hours of travel per capita;

(C) Vehicle trips per capita;

(D) Measures of accessibility by alternative modes (i.e. walking, bicycling and transit); or

(E) The Oregon Benchmark for a reduction in peak hour commuting by single occupant vehicles.

(e) Metropolitan areas that receive approval of an alternative standard shall adopt TSP policies to evaluate progress towards achieving the alternative standard at regular intervals, including monitoring and reporting of VMT per capita.

(6) Regional TSPs shall specify measurable objectives for each of the following and demonstrate how the combination selected will accomplish the objectives in section (4) of this rule:

(a) An increase in the modal share of non-automobile vehicle trips (i.e., transit, bicycle, pedestrian); for example, a doubling of the modal share of non-automobile trips;

(b) An increase in average automobile occupancy (i.e., persons per vehicle) during; for example, an increase to an average of 1.5 persons per vehicle; and

(c) Where appropriate, a decrease in the number or length of automobile vehicle trips per capita due to demand management programs, rearranging of land uses or other means.

(7) Regional and local TSPs shall include interim benchmarks to assure satisfactory progress towards meeting the requirements of this section at five year intervals over the planning period. MPOs and local governments shall evaluate progress in meeting interim benchmarks at five year intervals from adoption of the regional and local TSPs. Where interim benchmarks are not met, the relevant TSP shall be amended to include new or additional efforts adequate to meet the requirements of this section.

(8) The Commission shall, at five-year intervals from the adoption of this rule, evaluate the results of efforts to achieve the reduction in VMT and the effectiveness of the standard in achieving the objective of reducing reliance on the automobile. This shall include evaluating the requirements for parking plans and a reduction in the number of parking spaces per capita.

(9) Where existing and committed transportation facilities and services have adequate capacity to support the land uses in the acknowledged comprehensive plan, the local government shall not be required to evaluate alternatives as provided in this section.

(10) Transportation uses or improvements listed in OAR 660-012-0065(3)(d) to (g) and (o) and located in an urban fringe may be included in a TSP only if the improvement project identified in the Transportation System Plan as described in section (11) of this rule, will not significantly reduce peak hour travel time for the route as determined pursuant to section (10) of this rule, or the jurisdiction determines that the following alternatives can not reasonably satisfy the purpose of the improvement project:

(a) Improvements to transportation facilities and services within the urban growth boundary;

(b) Transportation system management measures that do not significantly increase capacity; or

(c) Transportation demand management measures. The jurisdiction needs only to consider alternatives that are safe and effective, consistent with applicable standards and that can be implemented at a reasonable cost using available technology.

(11) An improvement project significantly reduces peak hour travel time when, based on recent data, the time to travel the route is reduced more than 15% during weekday peak hour conditions over the length of the route located within the urban fringe. For purposes of measuring travel time, a route shall be identified by the predominant traffic flows in the project area.

(12) A "transportation improvement project" described in section (9) of this rule:

(a) Is intended to solve all of the reasonably foreseeable transportation problems within a general geographic location, within the planning period; and

(b) Has utility as an independent transportation project.

Stat. Auth.: ORS 183, ORS 197.040 & ORS 197.245

Stats. Implemented: ORS 195.025, ORS 197.040, ORS 197.230, ORS 197.245, ORS 197.712 & ORS 197.717

Hist.: LCDC 1-1991, f. & cert. ef. 5-8-91; LCDC 3-1995, f. & cert. ef. 3-31-95; LCDC 4-1995, f. & cert. ef. 5-8-95; LCDD 6-1998, f. & cert. ef. 10-30-98

660-012-0040

Transportation Financing Program

- (1) For areas within an urban growth boundary containing a population greater than 2,500 persons, the TSP shall include a transportation financing program.
- (2) A transportation financing program shall include the items listed in (a)–(d):
- (a) A list of planned transportation facilities and major improvements;
 - (b) A general estimate of the timing for planned transportation facilities and major improvements;
 - (c) A determination of rough cost estimates for the transportation facilities and major improvements identified in the TSP; and
 - (d) In metropolitan areas, policies to guide selection of transportation facility and improvement projects for funding in the short-term to meet the standards and benchmarks established pursuant to 0035(4)–(6). Such policies shall consider, and shall include among the priorities, facilities and improvements that support mixed-use, pedestrian friendly development and increased use of alternative modes.
- (3) The determination of rough cost estimates is intended to provide an estimate of the fiscal requirements to support the land uses in the acknowledged comprehensive plan and allow jurisdictions to assess the adequacy of existing and possible alternative funding mechanisms. In addition to including rough cost estimates for each transportation facility and major improvement, the transportation financing plan shall include a discussion of the facility provider's existing funding mechanisms and the ability of these and possible new mechanisms to fund the development of each transportation facility and major improvement. These funding mechanisms may also be described in terms of general guidelines or local policies.
- (4) Anticipated timing and financing provisions in the transportation financing program are not considered land use decisions as specified in ORS 197.712(2)(e) and, therefore, cannot be the basis of appeal under ORS 197.610(1) and (2) or ORS 197.835(4).
- (5) The transportation financing program shall provide for phasing of major improvements to encourage infill and redevelopment of urban lands prior to facilities and improvements which would cause premature development of urbanizable lands or conversion of rural lands to urban uses.

Stat. Auth.: ORS 183 & ORS 197

Stats. Implemented: ORS 197.040

Hist.: LCDC 1-1991, f. & cert. ef. 5-8-91; LCDC 4-1995, f. & cert. ef. 5-8-95; LCDC 11-1995, f. & cert. ef. 12-22-95; LCDD 6-1998, f. & cert. ef. 10-30-98

660-012-0045

Implementation of the Transportation System Plan

- (1) Each local government shall amend its land use regulations to implement the TSP.
- (a) The following transportation facilities, services and improvements need not be subject to land use regulations except as necessary to implement the TSP and, under ordinary circumstances do not have a significant impact on land use:
- (A) Operation, maintenance, and repair of existing transportation facilities identified in the TSP, such as road, bicycle, pedestrian, port, airport and rail facilities, and major regional pipelines and terminals;
 - (B) Dedication of right-of-way, authorization of construction and the construction of facilities and improvements, where the improvements are consistent with clear and objective dimensional standards;
 - (C) Uses permitted outright under ORS 215.213(1)(m) through (p) and ORS 215.283(1)(k) through (n), consistent with the provisions of 660-012-0065; and

(D) Changes in the frequency of transit, rail and airport services.

(b) To the extent, if any, that a transportation facility, service or improvement concerns the application of a comprehensive plan provision or land use regulation, it may be allowed without further land use review if it is permitted outright or if it is subject to standards that do not require interpretation or the exercise of factual, policy or legal judgment;

(c) In the event that a transportation facility, service or improvement is determined to have a significant impact on land use or to concern the application of a comprehensive plan or land use regulation and to be subject to standards that require interpretation or the exercise of factual, policy or legal judgment, the local government shall provide a review and approval process that is consistent with 660-012-0050. To facilitate implementation of the TSP, each local government shall amend its land use regulations to provide for consolidated review of land use decisions required to permit a transportation project.

(2) Local governments shall adopt land use or subdivision ordinance regulations, consistent with applicable federal and state requirements, to protect transportation facilities, corridors and sites for their identified functions. Such regulations shall include:

(a) Access control measures, for example, driveway and public road spacing, median control and signal spacing standards, which are consistent with the functional classification of roads and consistent with limiting development on rural lands to rural uses and densities;

(b) Standards to protect future operation of roads, transitways and major transit corridors;

(c) Measures to protect public use airports by controlling land uses within airport noise corridors and imaginary surfaces, and by limiting physical hazards to air navigation;

(d) A process for coordinated review of future land use decisions affecting transportation facilities, corridors or sites;

(e) A process to apply conditions to development proposals in order to minimize impacts and protect transportation facilities, corridors or sites;

(f) Regulations to provide notice to public agencies providing transportation facilities and services, MPOs, and ODOT of:

(A) Land use applications that require public hearings;

(B) Subdivision and partition applications;

(C) Other applications which affect private access to roads; and

(D) Other applications within airport noise corridors and imaginary surfaces which affect airport operations.

(g) Regulations assuring that amendments to land use designations, densities, and design standards are consistent with the functions, capacities and levels of service of facilities identified in the TSP.

(3) Local governments shall adopt land use or subdivision regulations for urban areas and rural communities as set forth below. The purposes of this section are to provide for safe and convenient pedestrian, bicycle and vehicular circulation consistent with access management standards and the function of affected streets, to ensure that new development provides on-site streets and accessways that provide reasonably direct routes for pedestrian and bicycle travel in areas where pedestrian and bicycle travel is likely if connections are provided, and which avoids wherever possible levels of automobile traffic which might interfere with or discourage pedestrian or bicycle travel.

(a) Bicycle parking facilities as part of new multi-family residential developments of four units or more, new retail, office and institutional developments, and all transit transfer stations and park-and-ride lots;

(b) On-site facilities shall be provided which accommodate safe and convenient pedestrian and bicycle access from within new subdivisions, multi-family developments, planned developments, shopping centers, and commercial districts to adjacent residential areas and transit stops, and to neighborhood activity centers within one-half mile of the development. Single-family residential developments shall generally include streets and accessways. Pedestrian circulation through parking lots should generally be provided in the form of accessways.

(A) "Neighborhood activity centers" includes, but is not limited to, existing or planned schools, parks, shopping areas, transit stops or employment centers;

(B) Bikeways shall be required along arterials and major collectors. Sidewalks shall be required along arterials, collectors and most local streets in urban areas, except that sidewalks are not required along controlled access roadways, such as freeways;

(C) Cul-de-sacs and other dead-end streets may be used as part of a development plan, consistent with the purposes set forth in this section;

(D) Local governments shall establish their own standards or criteria for providing streets and accessways consistent with the purposes of this section. Such measures may include but are not limited to: standards for spacing of streets or accessways; and standards for excessive out-of-direction travel;

(E) Streets and accessways need not be required where one or more of the following conditions exist:

(i) Physical or topographic conditions make a street or accessway connection impracticable. Such conditions include but are not limited to freeways, railroads, steep slopes, wetlands or other bodies of water where a connection could not reasonably be provided;

(ii) Buildings or other existing development on adjacent lands physically preclude a connection now or in the future considering the potential for redevelopment; or

(iii) Where streets or accessways would violate provisions of leases, easements, covenants, restrictions or other agreements existing as of May 1, 1995, which preclude a required street or accessway connection.

(c) Where off-site road improvements are otherwise required as a condition of development approval, they shall include facilities accommodating convenient pedestrian and bicycle travel, including bicycle ways along arterials and major collectors;

(d) For purposes of subsection (b) "safe and convenient" means bicycle and pedestrian routes, facilities and improvements which:

(A) Are reasonably free from hazards, particularly types or levels of automobile traffic which would interfere with or discourage pedestrian or cycle travel for short trips;

(B) Provide a reasonably direct route of travel between destinations such as between a transit stop and a store; and

(C) Meet travel needs of cyclists and pedestrians considering destination and length of trip; and considering that the optimum trip length of pedestrians is generally 1/4 to 1/2 mile.

(e) Internal pedestrian circulation within new office parks and commercial developments shall be provided through clustering of buildings, construction of accessways, walkways and similar techniques.

(4) To support transit in urban areas containing a population greater than 25,000, where the area is already served by a public transit system or where a determination has been made that a public transit system is feasible, local governments shall adopt land use and subdivision regulations as provided in (a)–(f) below:

(a) Transit routes and transit facilities shall be designed to support transit use through provision of bus stops, pullouts and shelters, optimum road geometrics, on-road parking restrictions and similar facilities, as appropriate;

(b) New retail, office and institutional buildings at or near major transit stops shall provide for convenient pedestrian access to transit through the measures listed in (A) and (B) below.

(A) Walkways shall be provided connecting building entrances and streets adjoining the site;

(B) Pedestrian connections to adjoining properties shall be provided except where such a connection is impracticable as provided for in OAR 660-012-0045(3)(b)(E). Pedestrian connections shall connect the on site circulation system to existing or proposed streets, walkways, and driveways that abut the property. Where adjacent properties are undeveloped or have potential for redevelopment, streets, accessways and walkways on site shall be laid out or stubbed to allow for extension to the adjoining property;

(C) In addition to (A) and (B) above, on sites at major transit stops provide the following:

(i) Either locate buildings within 20 feet of the transit stop, a transit street or an intersecting street or provide a pedestrian plaza at the transit stop or a street intersection;

(ii) A reasonably direct pedestrian connection between the transit stop and building entrances on the site;

- (iii) A transit passenger landing pad accessible to disabled persons;
 - (iv) An easement or dedication for a passenger shelter if requested by the transit provider; and
 - (v) Lighting at the transit stop.
- (c) Local governments may implement (4)(b)(A) and (B) above through the designation of pedestrian districts and adoption of appropriate implementing measures regulating development within pedestrian districts. Pedestrian districts must comply with the requirement of (4)(b)(C) above;
- (d) Designated employee parking areas in new developments shall provide preferential parking for carpools and vanpools;
- (e) Existing development shall be allowed to redevelop a portion of existing parking areas for transit-oriented uses, including bus stops and pullouts, bus shelters, park and ride stations, transit-oriented developments, and similar facilities, where appropriate;
- (f) Road systems for new development shall be provided that can be adequately served by transit, including provision of pedestrian access to existing and identified future transit routes. This shall include, where appropriate, separate accessways to minimize travel distances;
- (g) Along existing or planned transit routes, designation of types and densities of land uses adequate to support transit.
- (5) In MPO areas, local governments shall adopt land use and subdivision regulations to reduce reliance on the automobile which:
- (a) Allow transit-oriented developments (TODs) on lands along transit routes;
 - (b) Implements a demand management program to meet the measurable standards set in the TSP in response to 660-012-0035(4);
 - (c) Implements a parking plan which:
 - (A) Achieves a 10% reduction in the number of parking spaces per capita in the MPO area over the planning period. This may be accomplished through a combination of restrictions on development of new parking spaces and requirements that existing parking spaces be redeveloped to other uses;
 - (B) Aids in achieving the measurable standards set in the TSP in response to OAR 660-012-0035(4);
 - (C) Includes land use and subdivision regulations setting minimum and maximum parking requirements in appropriate locations, such as downtowns, designated regional or community centers, and transit oriented-developments; and
 - (D) Is consistent with demand management programs, transit-oriented development requirements and planned transit service.
 - (d) As an alternative to (c) above, local governments in an MPO may instead revise ordinance requirements for parking as follows:
 - (A) Reduce minimum off-street parking requirements for all non-residential uses from 1990 levels;
 - (B) Allow provision of on-street parking, long-term lease parking, and shared parking to meet minimum off-street parking requirements;
 - (C) Establish off-street parking maximums in appropriate locations, such as downtowns, designated regional or community centers, and transit-oriented developments;
 - (D) Exempt structured parking and on-street parking from parking maximums;
 - (E) Require that parking lots over 3 acres in size provide street-like features along major driveways (including curbs, sidewalks, and street trees or planting strips); and
 - (F) Provide for designation of residential parking districts.
 - (e) Require all major industrial, institutional, retail and office developments to provide either a transit stop on site or connection to a transit stop along a transit trunk route when the transit operator requires such an improvement.

(6) In developing a bicycle and pedestrian circulation plan as required by 660-012-0020(2)(d), local governments shall identify improvements to facilitate bicycle and pedestrian trips to meet local travel needs in developed areas. Appropriate improvements should provide for more direct, convenient and safer bicycle or pedestrian travel within and between residential areas and neighborhood activity centers (i.e., schools, shopping, transit stops). Specific measures include, for example, constructing walkways between cul-de-sacs and adjacent roads, providing walkways between buildings, and providing direct access between adjacent uses.

(7) Local governments shall establish standards for local streets and accessways that minimize pavement width and total right-of-way consistent with the operational needs of the facility. The intent of this requirement is that local governments consider and reduce excessive standards for local streets and accessways in order to reduce the cost of construction, provide for more efficient use of urban land, provide for emergency vehicle access while discouraging inappropriate traffic volumes and speeds, and which accommodate convenient pedestrian and bicycle circulation. Notwithstanding subsection (1) or (3) of this section, local street standards adopted to meet this requirement need not be adopted as land use regulations.

Stat. Auth.: ORS 183 & ORS 197

Stats. Implemented: ORS 197.040

Hist.: LCDC 1-1991, f. & cert. ef. 5-8-91; LCDC 4-1995, f. & cert. ef. 5-8-95; LCDC 11-1995, f. & cert. ef. 12-22-95; LCDD 6-1998, f. & cert. ef. 10-30-98

660-012-0050

Transportation Project Development

(1) For projects identified by ODOT pursuant to OAR Chapter 731, Division 15, project development shall occur in the manner set forth in that Division.

(2) Regional TSPs shall provide for coordinated project development among affected local governments. The process shall include:

(a) Designation of a lead agency to prepare and coordinate project development;

(b) A process for citizen involvement, including public notice and hearing, if project development involves land use decision-making. The process shall include notice to affected transportation facility and service providers, MPOs, and ODOT;

(c) A process for developing and adopting findings of compliance with applicable statewide planning goals, if any. This shall include a process to allow amendments to acknowledged comprehensive plans where such amendments are necessary to accommodate the project;

(d) A process for developing and adopting findings of compliance with applicable acknowledged comprehensive plan policies and land use regulations of individual local governments, if any. This shall include a process to allow amendments to acknowledged comprehensive plans or land use regulations where such amendments are necessary to accommodate the project.

(3) Project development involves land use decision-making to the extent that issues of compliance with applicable requirements remain outstanding at the project development phase. Issues may include, but are not limited to, compliance with regulations protecting or regulating development within floodways and other hazard areas, identified Goal 5 resource areas, estuarine and coastal shoreland areas, and the Willamette River Greenway. Where project development involves land use decision-making, all unresolved issues of compliance with applicable acknowledged comprehensive plan policies and land use regulations shall be addressed and findings of compliance adopted prior to project approval. To the extent compliance has already been determined during transportation system planning, including adoption of a refinement plan, affected local governments may rely on and reference the earlier findings of compliance with applicable standards.

(4) Except as provided in Subsection (1) of this section, where an Environmental Impact Statement (EIS) is prepared pursuant to the National Environmental Policy Act of 1969, project development shall be coordinated with the

preparation of the EIS. All unresolved issues of compliance with applicable acknowledged comprehensive plan policies and land use regulations shall be addressed and findings of compliance adopted prior to issuance of the Final EIS.

(5) If a local government decides not to build a project authorized by the TSP, it must evaluate whether the needs that the project would serve could otherwise be satisfied in a manner consistent with the TSP. If identified needs cannot be met consistent with the TSP, the local government shall initiate a plan amendment to change the TSP or the comprehensive plan to assure that there is an adequate transportation system to meet transportation needs.

(6) Transportation project development may be done concurrently with preparation of the TSP or a refinement plan.

Stat. Auth.: ORS 183 & ORS 197.040

Stats. Implemented: ORS 195.025, ORS 197.040, ORS 197.230, ORS 197.245, ORS 197.712 & ORS 197.717

Hist.: LCDC 1-1991, f. & cert. ef. 5-8-91; LCDD 2-1999 f. & cert. ef. 1-12-99

660-012-0055

Timing of Adoption and Update of Transportation System Plans; Exemptions

(1) MPOs shall complete regional TSPs for their planning areas by May 8, 1996. For those areas within a MPO, cities and counties shall adopt local TSPs and implementing measures within one year following completion of the regional TSP:

(a) If by May 8, 2000, a Metropolitan Planning Organization (MPO) has not adopted a regional transportation system plan that meets the VMT reduction standard in 0035(4) and the metropolitan area does not have an approved alternative standard established pursuant to 0035(5), then the cities and counties within the metropolitan area shall prepare and adopt an integrated land use and transportation plan as outlined in 0035(5)(c)(A)–(E). Such a plan shall be prepared in coordination with the MPO and shall be adopted within three years;

(b) Urban areas designated as MPOs subsequent to the adoption of this rule shall adopt TSPs in compliance with applicable requirements of this rule within three years of designation.

(2) For areas outside an MPO, cities and counties shall complete and adopt regional and local TSPs and implementing measures by May 8, 1997.

(3) By November 8, 1993, affected cities and counties shall, for non-MPO urban areas of 25,000 or more, adopt land use and subdivision ordinances or amendments required by OAR 660-012-0045(3), (4)(a)–(f) and (5)(d). By May 8, 1994 affected cities and counties within MPO areas shall adopt land use and subdivision ordinances or amendments required by OAR 660-012-0045(3), (4)(a)–(e) and (5)(d). Affected cities and counties which do not have acknowledged ordinances addressing the requirements of this section by the deadlines listed above shall apply OAR 660-012-0045(3), (4)(a)–(f) and (5)(d) directly to all land use decisions and all limited land use decisions.

(4)(a) Affected cities and counties that either:

(A) Have acknowledged plans and land use regulations that comply with this rule as of May 8, 1995, may continue to apply those acknowledged plans and land use regulations; or

(B) Have plan and land use regulations adopted to comply with this rule as of April 12, 1995, may continue to apply the provisions of this rule as they existed as of April 12, 1995, and may continue to pursue acknowledgment of the adopted plans and land use regulations under those same rule provisions provided such adopted plans and land use regulations are acknowledged by April 12, 1996. Affected cities and counties that qualify and make this election under this subsection shall update their plans and land use regulations to comply with the 1995 amendments to OAR 660-012-0045 as part of their transportation system plans.

(b) Affected cities and counties that do not have acknowledged plans and land use regulations as provided in subsection (a) of this section, shall apply relevant sections of this rule to land use decisions and limited land use decisions until land use regulations complying with this amended rule have been adopted.

(5) Cities and counties shall update their TSPs and implementing measures as necessary to comply with this division at each periodic review subsequent to initial compliance with this division. This shall include a reevaluation of the land use designations, densities and design standards in the following circumstances:

- (a) If the interim benchmarks established pursuant to OAR 660-012-0035(6) have not been achieved; or
 - (b) If a refinement plan has not been adopted consistent with the requirements of OAR 660-012-0025(3).
- (6) The director may grant a whole or partial exemption from the requirements of this division to cities under 10,000 population, counties under 25,000 population, and for areas of a county within an urban growth boundary that contains a population less than 10,000. Eligible jurisdictions may request that the director approve an exemption from all or part of the requirements in this division. Exemptions shall be for a period determined by the Director or until the jurisdiction's next periodic review, whichever is shorter.
- (a) The director's decision to approve an exemption shall be based upon the following factors:
 - (A) Whether the existing and committed transportation system is generally adequate to meet likely transportation needs;
 - (B) Whether the new development or population growth is anticipated in the planning area over the next five years;
 - (C) Whether major new transportation facilities are proposed which would affect the planning areas;
 - (D) Whether deferral of planning requirements would conflict with accommodating state or regional transportation needs; and
 - (E) Consultation with the Oregon Department of Transportation on the need for transportation planning in the area, including measures needed to protect existing transportation facilities.
 - (b) The director's decision to grant an exemption under this section is appealable to the Commission as provided in OAR 660-002-0020 (Delegation of Authority Rule).
- (7) Portions of TSPs and implementing measures adopted as part of comprehensive plans prior to the responsible jurisdiction's periodic review shall be reviewed pursuant to OAR Chapter 660, Division 18, Post Acknowledgment Procedures.

Stat. Auth.: ORS 183, ORS 197.040 & ORS 197.245

Stats. Implemented: ORS 195.025, ORS 197.040, ORS 197.230, ORS 197.245, ORS 197.610 - ORS 197.625, ORS 197.628 - ORS 197.646, ORS 197.712 & ORS 197.717

Hist.: LCDC 1-1991, f. & cert. ef. 5-8-91; LCDC 1-1993, f. & cert. ef. 6-15-93; LCDC 4-1995, f. & cert. ef. 5-8-95; LCDD 6-1998, f. & cert. ef. 10-30-98; LCDD 2-2000, f. & cert. ef. 2-4-00

660-012-0060

Plan and Land Use Regulation Amendments

- (1) Amendments to functional plans, acknowledged comprehensive plans, and land use regulations which significantly affect a transportation facility shall assure that allowed land uses are consistent with the identified function, capacity, and performance standards (e.g. level of service, volume to capacity ratio, etc.) of the facility. This shall be accomplished by either:
- (a) Limiting allowed land uses to be consistent with the planned function, capacity, and performance standards of the transportation facility;
 - (b) Amending the TSP to provide transportation facilities adequate to support the proposed land uses consistent with the requirements of this division;
 - (c) Altering land use designations, densities, or design requirements to reduce demand for automobile travel and meet travel needs through other modes; or
 - (d) Amending the TSP to modify the planned function, capacity and performance standards, as needed, to accept greater motor vehicle congestion to promote mixed use, pedestrian friendly development where multimodal travel choices are provided.
- (2) A plan or land use regulation amendment significantly affects a transportation facility if it:
- (a) Changes the functional classification of an existing or planned transportation facility;

- (b) Changes standards implementing a functional classification system;
- (c) Allows types or levels of land uses which would result in levels of travel or access which are inconsistent with the functional classification of a transportation facility; or
- (d) Would reduce the performance standards of the facility below the minimum acceptable level identified in the TSP.

(3) Determinations under subsections (1) and (2) of this section shall be coordinated with affected transportation facility and service providers and other affected local governments.

(4) The presence of a transportation facility or improvement shall not be a basis for an exception to allow residential, commercial, institutional or industrial development on rural lands under this division or OAR 660-004-0022 and 660-004-0028.

(5) In determining whether proposed land uses would affect or be consistent with planned transportation facilities as provided in 0060(1) and (2), local governments shall give full credit for potential reduction in vehicle trips for uses located in mixed-use, pedestrian-friendly centers, and neighborhoods as provided in (a)–(d) below;

(a) Absent adopted local standards or detailed information about the vehicle trip reduction benefits of mixed-use, pedestrian-friendly development, local governments shall assume that uses located within a mixed-use, pedestrian-friendly center, or neighborhood, will generate 10% fewer daily and peak hour trips than are specified in available published estimates, such as those provided by the Institute of Transportation Engineers (ITE) Trip Generation Manual that do not specifically account for the effects of mixed-use, pedestrian-friendly development. The 10% reduction allowed for by this section shall be available only if uses which rely solely on auto trips, such as gas stations, car washes, storage facilities, and motels are prohibited;

(b) Local governments shall use detailed or local information about the trip reduction benefits of mixed-use, pedestrian-friendly development where such information is available and presented to the local government. Local governments may, based on such information, allow reductions greater than the 10% reduction required in (a);

(c) Where a local government assumes or estimates lower vehicle trip generation as provided in (a) or (b) above, it shall assure through conditions of approval, site plans, or approval standards that subsequent development approvals support the development of a mixed-use, pedestrian-friendly center or neighborhood and provide for on-site bike and pedestrian connectivity and access to transit as provided for in 0045(3) and (4). The provision of on-site bike and pedestrian connectivity and access to transit may be accomplished through application of acknowledged ordinance provisions which comply with 0045(3) and (4) or through conditions of approval or findings adopted with the plan amendment that assure compliance with these rule requirements at the time of development approval; and

(d) The purpose of this section is to provide an incentive for the designation and implementation of pedestrian-friendly, mixed-use centers and neighborhoods by lowering the regulatory barriers to plan amendments which accomplish this type of development. The actual trip reduction benefits of mixed-use, pedestrian-friendly development will vary from case to case and may be somewhat higher or lower than presumed pursuant to (a) above. The Commission concludes that this assumption is warranted given general information about the expected effects of mixed-use, pedestrian-friendly development and its intent to encourage changes to plans and development patterns. Nothing in this section is intended to affect the application of provisions in local plans or ordinances which provide for the calculation or assessment of systems development charges or in preparing conformity determinations required under the federal Clean Air Act.

(6) Amendments to acknowledged comprehensive plans and land use regulations which meet all of the criteria listed in (a)-(c) below shall include an amendment to the comprehensive plan, transportation system plan the adoption of a local street plan, access management plan, future street plan or other binding local transportation plan to provide for on-site alignment of streets or accessways with existing and planned arterial, collector, and local streets surrounding the site as necessary to implement the requirements in Section 0020(2)(b) and Section 0045(3) of this division:

(a) The plan or land use regulation amendment results in designation of two or more acres of land for commercial use;

(b) The local government has not adopted a TSP or local street plan which complies with Section 0020(2)(b) or, in the Portland Metropolitan Area, has not complied with Metro's requirement for street connectivity as contained in Title 6, Section 3 of the Urban Growth Management Functional Plan; and

(c) The proposed amendment would significantly affect a transportation facility as provided in 0060(2).

(7) A "mixed-use, pedestrian-friendly center or neighborhood" for the purposes of this rule, means:

(a) Any one of the following:

(A) An existing central business district or downtown;

(B) An area designated as a central city, regional center, town center or main street in the Portland Metro 2040 Regional Growth Concept;

(C) An area designated in an acknowledged comprehensive plan as a transit oriented development or a pedestrian district; or

(D) An area designated as a special transportation area as provided for in the Oregon Highway Plan.

(b) An area other than those listed in (a) which includes or is planned to include the following characteristics:

(A) A concentration of a variety of land uses in a well-defined area, including the following:

(i) Medium to high density residential development (12 or more units per acre);

(ii) Offices or office buildings;

(iii) Retail stores and services;

(iv) Restaurants; and

(v) Public open space or private open space which is available for public use, such as a park or plaza.

(B) Generally include civic or cultural uses;

(C) A core commercial area where multi-story buildings are permitted;

(D) Buildings and building entrances oriented to streets;

(E) Street connections and crossings that make the center safe and conveniently accessible from adjacent areas;

(F) A network of streets and, where appropriate, accessways and major driveways that make it attractive and highly convenient for people to walk between uses within the center or neighborhood, including streets and major driveways within the center with wide sidewalks and other features, including pedestrian-oriented street crossings, street trees, pedestrian-scale lighting and on-street parking;

(G) One or more transit stops (in urban areas with fixed route transit service); and

(H) Limit or do not allow low-intensity or land extensive uses, such as most industrial uses, automobile sales and services, and drive-through services.

Stat. Auth.: ORS 183 & ORS 197.040

Stats. Implemented: ORS 195.025, ORS 197.040, ORS 197.230, ORS 197.245, ORS 197.610 - ORS 197.625, ORS 197.628 - ORS 197.646, ORS 197.712, ORS 197.717 & ORS 197.732

Hist.: LCDC 1-1991, f. & cert. ef. 5-8-91; LCDD 6-1998, f. & cert. ef. 10-30-98; LCDD 6-1999, f. & cert. ef. 8-6-99
660-012-0065

Transportation Improvements on Rural Lands

(1) This rule identifies transportation facilities, services and improvements which may be permitted on rural lands consistent with Goals 3, 4, 11, and 14 without a goal exception.

(2) For the purposes of this rule, the following definitions apply:

(a) "Access Roads" means low volume public roads that principally provide access to property or as specified in an acknowledged comprehensive plan;

(b) "Collectors" means public roads that provide access to property and that collect and distribute traffic between access roads and arterials or as specified in an acknowledged comprehensive plan;

(c) "Arterials" means state highways and other public roads that principally provide service to through traffic between cities and towns, state highways and major destinations or as specified in an acknowledged comprehensive plan;

(d) "Accessory Transportation Improvements" means transportation improvements that are incidental to a land use to provide safe and efficient access to the use;

(e) "Channelization" means the separation or regulation of conflicting traffic movements into definite paths of travel by traffic islands or pavement markings to facilitate the safe and orderly movement of both vehicles and pedestrians. Examples include, but are not limited to, left turn refuges, right turn refuges including the construction of islands at intersections to separate traffic, and raised medians at driveways or intersections to permit only right turns.

"Channelization" does not include continuous median turn lanes;

(f) "Realignment" means rebuilding an existing roadway on a new alignment where the new centerline shifts outside the existing right of way, and where the existing road surface is either removed, maintained as an access road or maintained as a connection between the realigned roadway and a road that intersects the original alignment. The realignment shall maintain the function of the existing road segment being realigned as specified in the acknowledged comprehensive plan;

(g) "New Road" means a public road or road segment that is not a realignment of an existing road or road segment.

(3) The following transportation improvements are consistent with goals 3, 4, 11, and 14 subject to the requirements of this rule:

(a) Accessory transportation improvements for a use that is allowed or conditionally allowed by ORS 215.213, 215.283 or OAR 660, Division 6 (Forest Lands);

(b) Transportation improvements that are allowed or conditionally allowed by ORS 215.213, 215.283 or OAR 660, Division 6 (Forest Lands);

(c) Channelization not otherwise allowed under subsections (a) or (b) of this section;

(d) Realignment of roads not otherwise allowed under subsection (a) or (b) of this section;

(e) Replacement of an intersection with an interchange;

(f) Continuous median turn lane;

(g) New access roads and collectors within a built or committed exception area, or in other areas where the function of the road is to reduce local access to or local traffic on a state highway. These roads shall be limited to two travel lanes. Private access and intersections shall be limited to rural needs or to provide adequate emergency access.

(h) Bikeways, footpaths and recreation trails not otherwise allowed as a modification or part of an existing road;

(i) Park and ride lots;

(j) Railroad mainlines and branchlines;

(k) Pipelines;

(l) Navigation channels;

(m) Replacement of docks and other facilities without significantly increasing the capacity of those facilities;

(n) Expansions or alterations of public use airports that do not permit service to a larger class of airplanes; and

(o) Transportation facilities, services and improvements other than those listed in this rule that serve local travel needs. The travel capacity and level of service of facilities and improvements serving local travel needs shall be limited to that necessary to support rural land uses identified in the acknowledged comprehensive plan or to provide adequate emergency access.

(4) Accessory transportation improvements required as a condition of development listed in subsection (3)(a) of this rule shall be subject to the same procedures, standards and requirements applicable to the use to which they are accessory.

(5) For transportation uses or improvements listed in subsection (3)(d) to (g) and (o) of this rule within an exclusive farm use (EFU) or forest zone, a jurisdiction shall, in addition to demonstrating compliance with the requirements of ORS 215.296:

(a) Identify reasonable build design alternatives, such as alternative alignments, that are safe and can be constructed at a reasonable cost, not considering raw land costs, with available technology. Until adoption of a local TSP pursuant to the requirements of OAR 660-012-0035, the jurisdiction shall consider design and operations alternatives within the project area that would not result in a substantial reduction in peak hour travel time for projects in the urban fringe that would significantly reduce peak hour travel time. A determination that a project will significantly reduce peak hour travel time is based on OAR 660-012-0035(10). The jurisdiction need not consider alternatives that are inconsistent with applicable standards or not approved by a registered professional engineer;

(b) Assess the effects of the identified alternatives on farm and forest practices, considering impacts to farm and forest lands, structures and facilities, considering the effects of traffic on the movement of farm and forest vehicles and equipment and considering the effects of access to parcels created on farm and forest lands; and

(c) Select from the identified alternatives, the one, or combination of identified alternatives that has the least impact on lands in the immediate vicinity devoted to farm or forest use.

(6) Notwithstanding any other provision of this division, if a jurisdiction has not met the deadline for TSP adoption set forth in OAR 660-012-0055, or any extension thereof, a transportation improvement that is listed in section (5) of this rule and that will significantly reduce peak hour travel time as provided in OAR 660-0120-035(10) may be allowed in the urban fringe only if the jurisdiction applies either:

(a) The criteria applicable to a "reasons" exception provided in Goal 2 and OAR 660, Division 4; or

(b) The evaluation and selection criteria set forth in OAR 660-012-0035.

Stat. Auth.: ORS 183, ORS 197.040, ORS 197.245, ORS 215.213, ORS 215.283 & ORS 215.296

Stats. Implemented: ORS 195.025, ORS 197.040, ORS 197.230, ORS 197.245, ORS 197.712, ORS 197.717, ORS 197.232, ORS 215.213 & ORS 215.283

Hist.: LCDC 1-1991, f. & cert. ef. 5-8-91; LCDC 3-1995, f. & cert. ef. 3-31-95; Administrative correction 9-29-98 660-012-0070

Exceptions for Transportation Improvements on Rural Land

(1) Transportation facilities and improvements which do not meet the requirements of OAR 660-012-0065 require an exception to be sited on rural lands.

(2) Where an exception to Goals 3, 4, 11, or 14 is required, the exception shall be taken pursuant to ORS 197.732(1)(c), Goal 2, OAR Chapter 660, Division 4 and this division.

(3) An exception adopted as part of a TSP or refinement plan shall, at a minimum, decide need, mode, function and general location for the proposed facility or improvement:

(a) The general location shall be specified as a corridor within which the proposed facility or improvement is to be located, including the outer limits of the proposed location. Specific sites or areas within the corridor may be excluded from the exception to avoid or lessen likely adverse impacts;

(b) The size, design and capacity of the proposed facility or improvement shall be described generally, but in sufficient detail to allow a general understanding of the likely impacts of the proposed facility or improvement. Measures limiting the size, design or capacity may be specified in the description of the proposed use in order to simplify the analysis of the effects of the proposed use;

(c) The adopted exception shall include a process and standards to guide selection of the precise design and location within the corridor and consistent with the general description of the proposed facility or improvement. For example, where a general location or corridor crosses a river, the exception would specify that a bridge crossing would be built but would defer to project development decisions about precise location and design of the bridge within the selected corridor subject to requirements to minimize impacts on riparian vegetation, habitat values, etc.;

(d) Land use regulations implementing the exception may include standards for specific mitigation measures to offset unavoidable environmental, economic, social or energy impacts of the proposed facility or improvement or to assure compatibility with adjacent uses.

(4) To address Goal 2, Part II(c)(1) the exception shall demonstrate that there is a transportation need identified consistent with the requirements of OAR 660-012-0030 which cannot reasonably be accommodated through one or a combination of the following measures not requiring an exception:

- (a) Alternative modes of transportation;
- (b) Traffic management measures; and
- (c) Improvements to existing transportation facilities.

(5) To address Goal 2, Part II(c)(2), the exception shall demonstrate that non-exception locations cannot reasonably accommodate the proposed transportation improvement or facility.

(6) To determine the reasonableness of alternatives to an exception under sections (4) and (5) of this rule, cost, operational feasibility, economic dislocation and other relevant factors shall be addressed. The thresholds chosen to judge whether an alternative method or location cannot reasonably accommodate the proposed transportation need or facility must be justified in the exception.

(7) To address Goal 2, Part II(c)(3), the exception shall:

- (a) Compare the economic, social, environmental and energy consequences of the proposed location and other alternative locations requiring exceptions;
- (b) Determine whether the net adverse impacts associated with the proposed exception site are significantly more adverse than the net impacts from other locations which would also require an exception. A proposed exception location would fail to meet this requirement only if the affected local government concludes that the impacts associated with it are significantly more adverse than the other identified exception sites;
- (c) The evaluation of the consequences of general locations or corridors need not be site-specific, but may be generalized consistent with the requirements of section (3) of this rule.

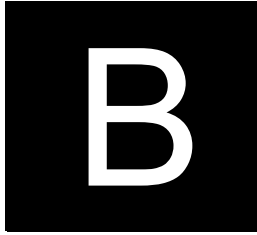
(8) To address Goal 2, Part II(c)(4), the exception shall:

- (a) Describe the adverse effects that the proposed transportation improvement is likely to have on the surrounding rural lands and land uses, including increased traffic and pressure for nonfarm or highway oriented development on areas made more accessible by the transportation improvement;
- (b) Adopt as part of the exception, facility design and land use measures which minimize accessibility of rural lands from the proposed transportation facility or improvement and support continued rural use of surrounding lands.

Stat. Auth.: ORS 183 & ORS 197.040

Stats. Implemented: ORS 195.025, ORS 197.040, ORS 197.230, ORS 197.245, ORS 197.712, ORS 197.717 & ORS 197.732

Hist.: LCDC 1-1991, f. & cert. ef. 5-8-91



APPENDIX B:

Access Management Standards

This appendix contains “Appendix C: Access Management Standards” from the Oregon Department of Transportation (ODOT).

Access Management Spacing Standards

The following tables show the access spacing standards for the access management classifications listed in Goal 3, Policy 3A: Classification and Spacing Criteria, Action 3A.1.

Table 12: Interchange Spacing¹

Access Management Classification	Area	Interchange Spacing ^{1, 2}
Interstate * and Non-Interstate Freeways (NHS)	Urban	3 miles (5 kilometers)
	Rural	6 miles (10 kilometers)
All Expressways on Statewide (NHS), Regional and District Highways	Urban	1.9 miles (3 kilometers)
	Rural	3 miles (5 kilometers)

* Interstate interchange spacing must be in conformance with federal policy.

¹ The spacing standards in Table 12 are for planning and design of new interchanges on freeways or expressways. A major deviation study is required to change these standards, but the deviation should consider the spacing requirements in the Interchange Access Management Area Tables 16-19.

² Crossroad to crossroad centerline distance.

³ A major deviations study is required to change these planning spacing standards.

Table 13: Access Management Spacing Standards for Statewide Highways
(Measurement is in Feet)*

Posted Speed	Rural		Urban			
	Expressway **	Other	Expressway **	Other	UBA	STA
≥55	5280	1320	2640	1320		
50	5280	1100	2640	1100		
40 & 45	5280	990	2640	990		
30 & 35		770		770	720	
≤25		550		550	520	

NOTE: The numbers in circles () refer to explanatory notes that follow tables.
 * Measurement of the approach road spacing is from center to center on the same side of the roadway.
 ** Spacing for Expressway at-grade intersections only. See Table 12 for interchange spacing.

Table 14: Access Management Spacing Standards for Regional Highways
(Measurement is in Feet)*

Posted Speed	Rural		Urban			
	Expressway **	Other	Expressway **	Other	UBA	STA
≥55	5280	990	2640	990		
50	5280	830	2640	830		
40 & 45	5280	750	2640	750		
30 & 35		600		600	425	
≤25		450		450	350	

NOTE: The numbers in circles () refer to explanatory notes that follow tables.
 * Measurement of the approach road spacing is from center to center on the same side of the roadway.
 ** Spacing for Expressway at-grade intersections only. See Table 12 for interchange spacing.

Table 15: Access Management Spacing Standards for District Highways
(Measurement is in Feet)*

Posted Speed	Rural		Urban			
	Expressway **	Other	Expressway **	Other	UBA	STA
≥55	5280	700	2640	700		
50	5280	550	2640	550		
40 & 45	5280	500	2640	500		
30 & 35		400		400	350	
≤25		400		400	350	

NOTE: The numbers in circles () refer to explanatory notes that follow tables.
 * Measurement of the approach road spacing is from center to center on the same side of the roadway.
 ** Spacing for Expressway at-grade intersections only. See Table 12 for interchange spacing.

Notes on Tables 13, 14 and 15:

- ① Where a right of access exists, access will be allowed to a property at less than the designated spacing standard only if that property does not have reasonable access and the designated spacing cannot be accomplished. If possible, other options should be considered such as joint access.

Where the right of access exists, the number of approach roads (driveways) to a single property shall be limited to one, even when the property frontage exceeds the spacing standards. More than one approach road may be considered if, in the judgment of the Region Access Management Engineer, additional approach roads are necessary to accommodate and service the traffic to a property, and additional approach roads will not interfere with driver expectancy and the safety of the through traffic on the highway.

Approach roads shall be located where they do not create undue interference or hazard to the free movement of normal highway or pedestrian traffic. Locations on sharp curves, steep grades, areas of restricted sight distance or at points which interfere with the placement and proper functioning of traffic control signs, signals, lighting or other devices that affect traffic operation will not be permitted.

If a property becomes landlocked (no reasonable access exists) because an approach road cannot be safely constructed and operated, and all other alternatives have been explored and rejected, ODOT might be required to purchase the property. (Note: If a hardship is self-inflicted, such as by partitioning or subdividing a property, ODOT does not have responsibility for purchasing the property.)

(Note ① has precedence over notes ②, ③ and ④.)

- ② These standards are for unsignalized access points only. Signal spacing standards supersede spacing standards for approaches.
- ③ Posted (or Desirable) Speed: Posted speed can only be adjusted (up or down) after a speed study is conducted and that study determines the correct posted speed to be different than the current posted speed. In cases where actual speeds are suspected to be much higher than posted speeds, ODOT reserves the right to adjust the access spacing accordingly. A determination can be made to go to longer spacing standards as appropriate for a higher speed. A speed study will need to be conducted to determine the correct speed.
- ④ Minimum spacing for public road approaches is either the existing city block spacing or the city block spacing as identified in the local comprehensive plan. Public road connections are preferred over private driveways, and in STAs driveways are discouraged. However, where driveways are allowed and where land use patterns permit, the minimum spacing for driveways is 175 feet (55 meters) or mid-block if the current city block spacing is less than 350 feet (110 meters).

Access Management Spacing Standards for Interchanges

The following tables show the access spacing standards for interchanges as discussed in Goal 3, Policy 3C: Interchange Access Management Areas.

Table 16: Minimum Spacing Standards Applicable to Freeway Interchanges with Two-Lane Crossroads

Category of Mainline	Type of Area	Spacing Dimension			
		A	X	Y	Z
FREEWAY	Fully Developed Urban	1 mi. (1.6 km)	750 ft. (230 m)	1320 ft. (400 m)	750 ft. (230 m)
	Urban	1 mi. (1.6 km)	1320 ft. (400 m)	1320 ft. (400 m)	990 ft. (300 m)
	Rural	2 mi. (3.2 km)	1320 ft. (400 m)	1320 ft. (400 m)	1320 ft. (400 m)

NOTES:

- 1) If the crossroad is a state highway, these distances may be superseded by the Access Management Spacing Standards, providing the distances are greater than the distances listed in the above table.
 - 2) No four-legged intersections may be placed between ramp terminals and the first major intersection.
- A = Distance between the start and end of tapers of adjacent interchanges
 X = Distance to the first approach on the right; right in/right out only
 Y = Distance to first major intersection; no left turns allowed in this roadway section
 Z = Distance between the last right in/right out approach road and the start of the taper for the on-ramp

Figure 18: Measurement of Spacing Standards for Table 16

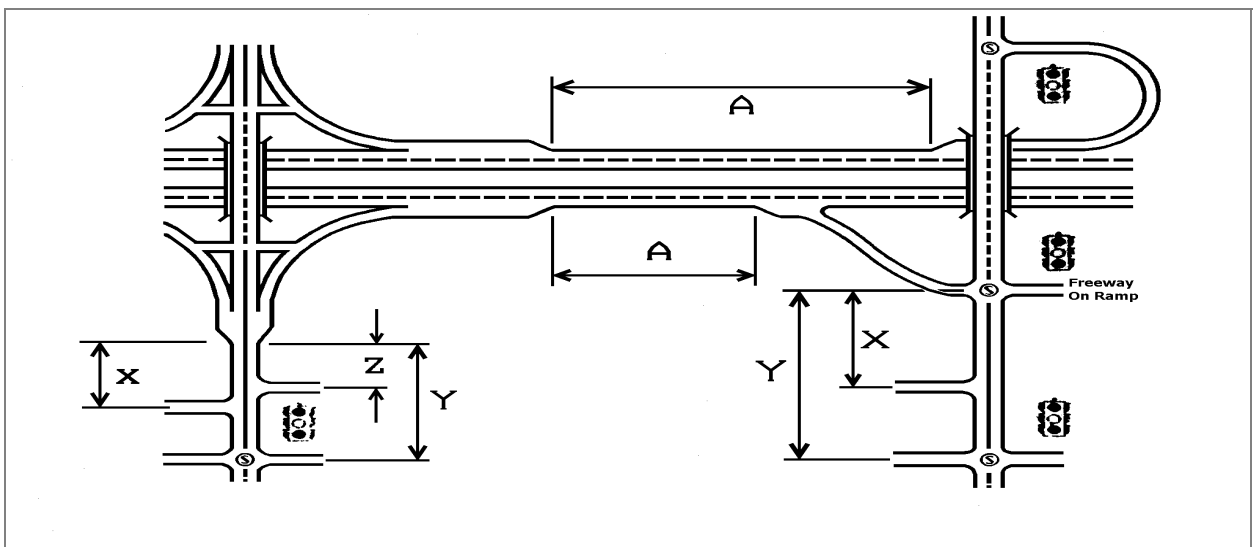


Table 17: Minimum Spacing Standards Applicable to Freeway Interchanges with Multi-Lane Crossroads

Category of Mainline	Type of Area	Spacing Dimension				
		A	X	Y	Z	M
FREEWAY	Fully Developed Urban	1 mi. (1.6 km)	750 ft. (230 m)	1320 ft. (400 m)	990 ft. (300 m)	1320 ft. (400 m)
	Urban	1 mi. (1.6 km)	1320 ft. (400 m)	1320 ft. (400 m)	1320 ft. (400 m)	1320 ft. (400 m)
	Rural	2 mi. (3.2 km)	1320 ft. (400 m)	1320 ft. (400 m)	1320 ft. (400 m)	1320 ft. (400 m)

NOTES:

- 1) If the crossroad is a state highway, these distances may be superseded by the Access Management Spacing Standards, providing the distances are greater than the distances listed in the above table.
 - 2) No four-legged intersections may be placed between ramp terminals and the first major intersection.
- A = Distance between the start and end of tapers of adjacent interchanges
X = Distance to first approach on the right; right in/right out only
Y = Distance to first major intersection
Z = Distance between the last approach road and the start of the taper for the on-ramp
M = Distance to first directional median opening. No full median openings are allowed in nontraversable medians to the first major intersection

Figure 19: Measurement of Spacing Standards for Table 17

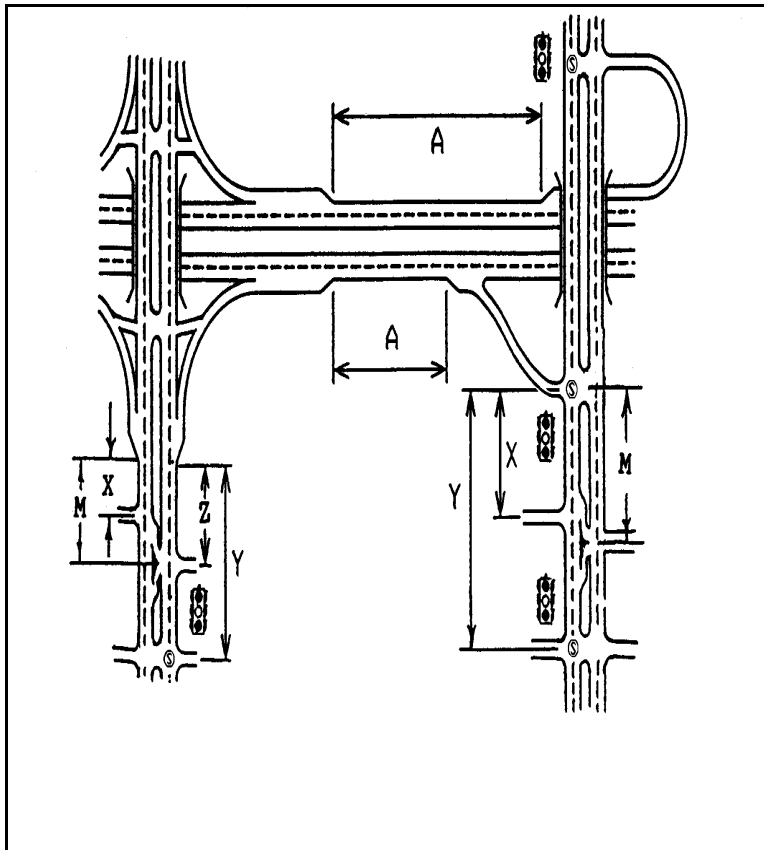


Table 18: Minimum Spacing Standards Applicable to Non-Freeway Interchanges with Two-Lane Crossroads

Category of Mainline	Type of Area	Speed of Mainline	Spacing Dimension				
			B	C	X	Y	Z
EXPRESSWAY	Fully Developed Urban	45 mph (70 kph)	2640 ft. (800 m)	1 mi. (1.6 km)	750 ft. (230 m)	1320 ft. (400 m)	750 ft. (230 m)
	Urban	45 mph (70 kph)	2640 ft. (800 m)	1 mi. (1.6 km)	1320 ft. (400 m)	1320 ft. (400 m)	990 ft. (300 m)
	Rural	55 mph (90 kph)	1 mi. (1.6 km)	2 mi. (3.2 km)	1320 ft. (400 m)	1320 ft. (400 m)	1320 ft. (400 m)

NOTES:

- 1) If the crossroad is a state highway, these distances may be superseded by the Access Management Spacing Standards, providing the distances are greater than the distances listed in the above table.
 - 2) No four-legged intersection may be placed between ramp terminals and the first major intersection.
 - 3) Use four-lane crossroad standards for urban and suburban locations that are likely to be widened.
 - 4) No at-grade intersections are permitted between interchanges less than 5 miles apart.
- B = Distance between the start and end of tapers
 C = Distance between nearest at-grade and ramp terminal intersections or the end/start of the taper section
 X = Distance to first approach on the right; right in/right out only
 Y = Distance to first major intersection
 Z = Distance between the last right in/right out approach road and the start of the taper for the on-ramp

Figure 20: Measurement of Spacing Standards for Table 18

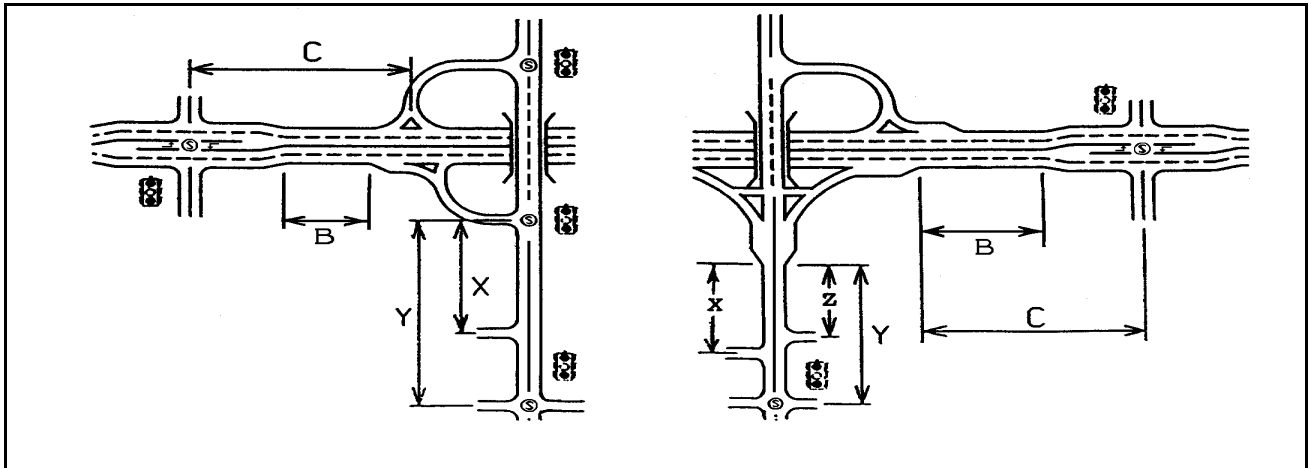


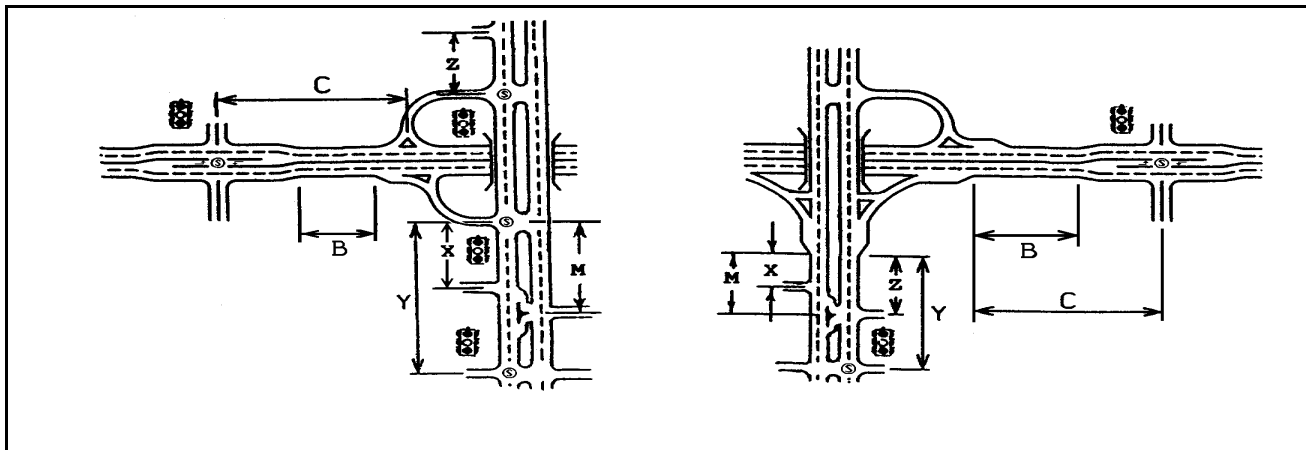
Table 19: Minimum Spacing Standards Applicable to Non-Freeway Interchanges with Multi-Lane Crossroads

Category of Mainline	Type of Area	Speed of Mainline	Spacing Dimension					
			B	C	X	Y	Z	M
EXPRESSWAY	Fully Developed Urban	45 mph (70 kph)	2640 ft. (800 m)	1 mi. (1.6 km)	750 ft. (230 m)	1320 ft. (400 m)	990 ft. (300 m)	1320 ft. (400 m)
	Urban	45 mph (70 kph)	2640 ft. (800 m)	1 mi. (1.6 km)	1320 ft. (400 m)	1320 ft. (400 m)	1320 ft. (400 m)	1320 ft. (400 m)
	Rural	55 mph (90 kph)	1 mi. (1.6 km)	2 mi. (3.2 km)	1320 ft. (400 m)	1320 ft. (400 m)	1320 ft. (400 m)	1320 ft. (400 m)

NOTES:

- 1) If the crossroad is a state highway, these distances may be superseded by the Access Management Spacing Standards, providing the distances are greater than the distances listed in the above table.
 - 2) No four-legged intersections may be placed between ramp terminals and the first major intersection.
 - 3) No at-grade intersections are permitted between interchanges less than 5 miles apart.
- B = Distance between the start and end of tapers
 C = Distance between nearest at-grade and ramp terminal intersections or the end/start of the taper section
 X = Distance to first approach on the right; right in/right out only
 Y = Distance to first major intersection
 Z = Distance between the last approach road and the start of the taper for the on-ramp
 M = Distance to first directional median opening. No full median openings are allowed in nontraversable medians to the first major intersection

Figure 21: Measurement of Spacing Standards for Table 19



Access Management Spacing Standard Minor Deviation Limits

The following tables show the access management spacing standard minor deviation limits for the access management classifications listed in Goal 3, Policy 3A: Classification Spacing Criteria, Action 3A.1. The Access Management Spacing Standards are shown in Tables 13, 14 and 15 of this Appendix. Minor deviations may be considered down to the deviation limits shown in Tables 20, 21 and 22. Any request to deviate beyond these limits is considered a major deviation.

Table 20: Access Management Spacing Standard Minor Deviation Limits for Statewide Highways
(Measurement is in Feet)*

Posted Speed	Rural		Urban			
	Expressways **	Other	Expressways **	Other	UBA	STA
≥55	(none)	(950)	(none)	(870)		
	[none]	[1150]	[none]	[1000]		
50	(none)	(700)	(none)	(640)		
	[none]	[900]	[none]	[810]		
40 & 45	(none)	(560)	(none)	(530)		
	[none]	[810]	[none]	[740]		
30 & 35		(400)		(350)	(350)	
		[675]		[600]	[600]	
≤25		(280)		(250)	(250)	
		[525]		[400]	[400]	

NOTE: The numbers in circles () refer to explanatory notes that follow the tables.

* Measurement of the approach road spacing is from center to center on the same side of the roadway.

** Spacing for Expressway at-grade intersections only. See Table 12 for interchange spacing.

() = Driveway Spacing Minor Deviation Limit.

[] = Public Street Spacing Minor Deviation Limit.

**Table 21: Access Management Spacing Standard Minor Deviation Limits for Regional Highways
(Measurement is in Feet)***

Posted Speed	Rural		Urban			
	Expressways **	Other	Expressways **	Other	UBA	STA
≥55	(none)	(700)	(none)	(700)		
	[none]	[870]	[none]	[870]		
50	(none)	(540)	(none)	(540)		
	[none]	[640]	[none]	[640]		
40 & 45	(none)	(460)	(none)	(460)		
	[none]	[550]	[none]	[550]		
30 & 35		(300)		(300)	(300)	
		[375]		[375]	[375]	
≤25		(220)		(220)	(220)	
		[350]		[350]	[350]	

NOTE: The numbers in circles () refer to explanatory notes that follow the tables.

* Measurement of the approach road spacing is from center to center on the same side of the roadway.

** Spacing for Expressway at-grade intersections only. See Table 12 for interchange spacing.

() = Driveway Spacing Minor Deviation Limit.

[] = Public Street Spacing Minor Deviation Limit.

**Table 22: Access Management Spacing Standard Minor Deviation Limits for District Highways
(Measurement is in Feet)***

Posted Speed	Rural		Urban			
	Expressways **	Other	Expressways **	Other	UBA	STA
≥55	(none)	(650)	(none)	(650)		
	[none]	[660]	[none]	[660]		
50	(none)	(475)	(none)	(475)		
	[none]	[525]	[none]	[525]		
40 & 45	(none)	(400)	(none)	(400)		
	[none]	[475]	[none]	[475]		
30 & 35		(275)		(275)	(250)	
		[325]		[325]	[300]	
≤25		(200)		(200)	(175)	
		[245]		[245]	[200]	

NOTE: The numbers in circles () refer to explanatory notes that follow the tables.

* Measurement of the approach road spacing is from center to center on the same side of the roadway.

** Spacing for Expressway at-grade intersections only. See Table 12 for interchange spacing.

() = Driveway Spacing Minor Deviation Limit.

[] = Public Street Spacing Minor Deviation Limit.

Notes on Tables 20, 21 and 22:

- ① Where a right of access exists, access will be allowed to a property at less than minor deviation limits only if that property does not have reasonable access and the minor deviation limits cannot be accomplished. If possible, other options should be considered, such as joint access.

Where the right of access exists, the number of approach roads (driveways) to a single property shall be limited to one, even when the property frontage exceeds the spacing standards. More than one approach road may be considered if, in the judgment of the Region Access Management Engineer, additional approach roads are necessary to accommodate and service the traffic to a property, and additional approach roads will not interfere with driver expectancy and the safety of the through traffic on the highway.

Approach roads shall be located where they do not create undue interference or hazard to the free movement of normal highway or pedestrian traffic. Locations on sharp curves, steep grades, areas of restricted sight distance or at points which interfere with the placement and proper functioning of traffic control signs, signals, lighting or other devices that affect traffic operation will not be permitted.

If a property becomes landlocked (no reasonable access exists) because an approach road cannot be safely constructed and operated, and all other alternatives have been explored and rejected, ODOT might be required to purchase the property. (Note: If a hardship is self-inflicted, such as by partitioning or subdividing a property, ODOT does not have responsibility for purchasing the property.)

(Note ① has precedence over notes ②, ③ and ④.)

- ② These standards are for unsignalized access points only. Signal spacing standards supersede spacing standards for approaches.
- ③ Posted (or Desirable) Speed: Posted speed can only be adjusted (up or down) after a speed study is conducted and that study determines the correct posted speed to be different than the current posted speed. In cases where actual speeds are suspected to be much higher than posted speeds, ODOT reserves the right to adjust the access spacing accordingly. A determination can be made to go to longer spacing standards as appropriate for a higher speed. A speed study will need to be conducted to determine the correct speed.
- ④ Minimum spacing for public road approaches is either the existing city block spacing or the city block spacing as identified in the local comprehensive plan. Public road connections are preferred over private driveways, and in STAs driveways are discouraged. However, where driveways are allowed and where land use patterns permit, the minimum spacing for driveways is 55 meters (175 feet), or mid-block if the current city block spacing is less than 110 meters (350 feet)