ORIGINAL

City of Echo

Transportation System Plan

Final Report

June 2001

Prepared by:

David Evans and Associates, Inc. and
Umatilla County in cooperation with
Oregon Department of Transportation

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CHAPTER 1: INTRODUCTION

The City of Echo Transportation System Plan (TSP) guides the management of existing transportation facilities and the design and implementation of future facilities for the next 20 years. This Transportation System Plan constitutes the transportation element of the city's Comprehensive Plan and satisfies the requirements of the Oregon Transportation Planning Rule established by the Department of Land Conservation and Development. It identifies and prioritizes transportation projects for inclusion in the Oregon Department of Transportation's (ODOT's) Statewide Transportation Improvement Program (STIP).

PLANNING AREA

The City of Echo Transportation System Plan planning area covers the entire area within the Echo Urban Growth Boundary (UGB). The planning area is shown on Figure 1-1. Roadways included in the Transportation System Plan fall under three jurisdictions: the City of Echo, Umatilla County, and the state of Oregon.

Echo is located in the northwestern portion of Umatilla County in the northeastern corner of Oregon. It is a small agricultural community with a population of approximately 630 people. The City is divided into two distinct grids by the Union Pacific Railroad track. The Umatilla River bound it on the west and development is restricted in the east by the existence of Furnish Ditch and Feed Canal; however, there are residential dwellings above these canals and Golf Course Road. The canals cut westward through the largely undeveloped area north of the City but within the UGB. Commercial and city services are concentrated along Main Street (Lexington-Echo Highway) east to west, and Thielsen Street (County Road 1300) north to south. There is a light industrial area located along the railroad line and Thielsen Street near the northern city limits, and an area zoned for commercial/light industrial off Thielsen Road near the I-84 freeway interchange.

Most of the city streets in Echo are paved, with the exception of a few dead-end streets. County and state roads function as arterials and collectors within Echo. The Lexington-Echo Highway is the only state roadway within the UGB, and county roads 1300 (locally called Thielsen Street and Rieth Road) and 1357 (locally called Kennedy Road) are the only county roads. The City has jurisdiction over the rest of the existing roadways.

Thielsen Street becomes Thielsen Road north of Main Street. This road is paved and connects Echo to I-84, US 395, and the Stanfield UGB north of the City. Kennedy Street extends to Ramos Lane south of the UGB. Also, the Lexington-Echo Highway (Main Street and Gerone Street through town) connects with I-84 east of the City and OR 207 west of Echo.

The Union Pacific Railroad runs northwest to southeast through the middle of the City.

Agriculture, food processing, wood products, tourism, manufacturing, and recreation serve as the principal industries within Umatilla County. Employment in agriculture and wood products is subject to seasonal variations, which tend to parallel growing and construction seasons.

PLANNING PROCESS

The Echo Transportation System Plan was prepared as part of an overall effort in Umatilla County to prepare TSPs for Umatilla County and eight small municipalities: the cities of Adams, Athena, Echo, Helix, Pilot Rock, Stanfield, Ukiah, and Weston. Each plan was developed through a series of technical analyses

combined with systematic input and review by the county, the cities, the management team, the Transportation Advisory Committee (TAC), ODOT, and the public. The TAC consisted of staff, elected and appointed officials, residents, and business people from Umatilla County, and the eight cities. Key elements of the process include:

- Involving the Echo community (Chapter 1)
- Defining goals and objectives (Chapter 2)
- Reviewing existing plans and transportation conditions (Chapters 3, 4; Appendices A and B)
- Developing population, employment, and travel forecasts (Chapter 5, and Appendix C)
- Developing and evaluating potential transportation system improvements (Chapter 6)
- Developing the Transportation System Plan and a capital improvement plan (Chapter 7)
- Evaluate funding options and develop financial plan (Chapter 8)
- Developing recommended policies and ordinances (Chapter 9)

Community Involvement

Community involvement is an integral component in the development of a TSP for the city of Echo, Umatilla County and each of the other seven cities covered under the Umatilla County TSP process. Since the communities faced many similar transportation and land use issues, a public involvement program involving all the jurisdictions, was used. The process allowed for individual attention when needed, and general problem solving for all jurisdictions as appropriate. Several different techniques were utilized to involve each local jurisdiction, ODOT, and the general public.

A combined management team and transportation advisory committee (TAC) provided guidance on technical issues and direction regarding policy issues to the consultant team. Staff members from each local jurisdiction, from ODOT, and a local resident from each community served on the TAC. This group met several times during the course of the project.

The second part of the community involvement effort consisted of community meetings within Umatilla County. The first public meeting was held in June 1998. The Echo general public was invited to learn about the TSP planning process and provide input on transportation issues and concerns. A second public meeting was held in July 1998. The third and final public meeting was held in September 1998. The public was notified of the public meetings through public announcements in the local newspapers and on the local radio station.

Goals and Objectives

Based on input from the community, the county, and the management team/TAC, a set of goals and objectives were defined for the TSP. These goals and objectives were used to make decisions about various potential improvement projects. They are described in Chapter 2.

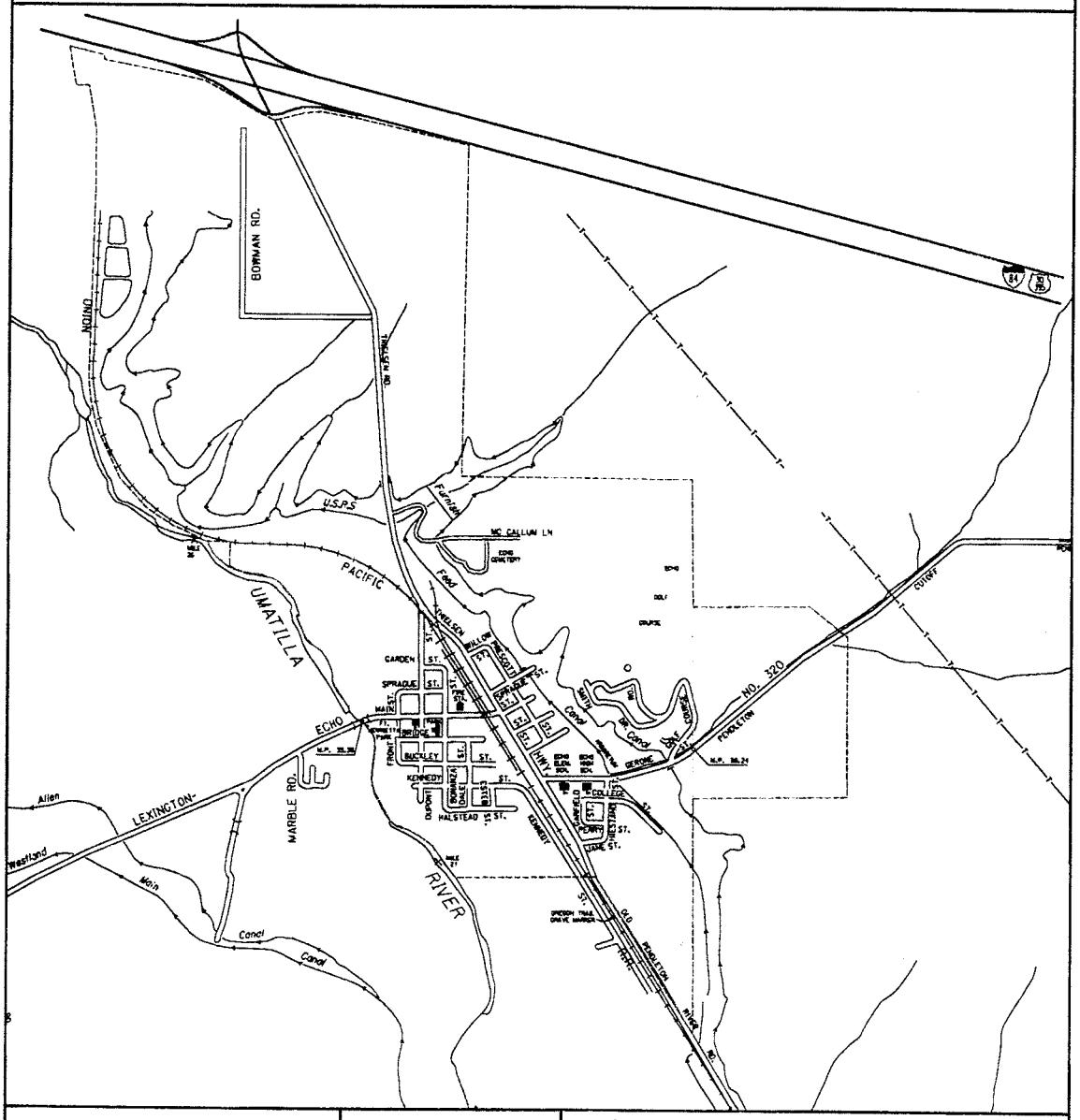
Review and Inventory of Existing Plans, Policies, and Public Facilities

To begin the planning process, all applicable Echo and Umatilla County transportation and land use plans and policies were reviewed and an inventory of public facilities was conducted. The purpose of these efforts

LEGEND:

---------- URBAN GROWTH BOUNDARY

CITY LIMITS



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NORTH
(Not to Scale)

FIGURE 1-1

Planning Area -Echo

City of Echo TSP

UMCO0001/ECHO1-1.DGN/TNT/07-03-98

was to understand the history of transportation planning in the Echo area, including the street system improvements planned and implemented in the past, and how the City is currently managing its ongoing development. Existing plans and policies are described in Appendix A of this report.

The inventory of existing facilities catalogs the current transportation system. The results of the inventory are described in Chapter 3, while Chapter 4 describes how the system operates. Appendix B summarizes the inventory of the existing arterial and collector street system.

Future Transportation System Demands

The Transportation Planning Rule requires the Transportation System Plan to address a 20-year forecasting period. Future traffic volumes for the existing and committed transportation systems were projected using ODOT's *Level 1 – Trending Analysis* methodology. The overall travel demand forecasting process is described in Chapter 5.

Transportation System Potential Improvements

Once the travel forecasts were developed, it was possible to evaluate a series of potential transportation system improvements. The evaluation of potential transportation improvements was based on a qualitative review of safety, environmental, socioeconomic, and land use impacts, as well as estimated cost. These improvements were developed with the help of the local working group, and they attempt to address the concerns specified in the goals and objectives (Chapter 2). After evaluating the results of the potential improvements analysis, a series of transportation system improvements were selected. These recommended improvements are described in Chapter 6.

Transportation System Plan

The Transportation System Plan addresses each mode of transportation and provides an overall implementation program. The street system plan was developed from the forecasting and potential improvements evaluation described above. The bicycle and pedestrian plans were developed based on current usage, land use patterns, and the requirements set forth by the Transportation Planning Rule. The public transportation, air, water, rail, and pipeline plans were developed based on discussions with the owners and operators of those facilities. Chapter 7 details the plan elements for each mode.

Funding Options

The city of Echo will need to work with Umatilla County and ODOT to finance new transportation projects over the 20-year planning period. An overview of funding and financing options that might be available to the community are described in Chapter 8.

Recommended Policies and Ordinances

Suggested Comprehensive Plan policies and implementing zoning and subdivision ordinances are included in Chapter 9. These policies and ordinances are intended to support the TSP and satisfy the requirements of the Transportation Planning Rule (TPR).

RELATED DOCUMENTS

The City of Echo TSP addresses the regional and rural transportation needs in the City. There are several other documents which address specific transportation elements or areas in Umatilla County that may directly or indirectly impact transportation elements in and around Echo.

Other Transportation System Plans Prepared Concurrently with the Echo TSP

In addition to the Echo TSP, seven small city TSPs were prepared in conjunction with the Umatilla County TSP project. These documents include:

- City of Adams TSP
- City of Athena TSP
- City of Helix TSP
- City of Pilot Rock TSP
- City of Stanfield TSP
- City of Ukiah TSP
- City of Weston TSP

In Process or Completed Plans

The following references were reviewed for relevance to the city of Echo TSP process:

Echo Comprehensive Plan

The Echo Comprehensive Plan was adopted in 1979 and was due for a periodic review in 1998. The plan provides a statement of the City's goals and policies for guiding the future growth and development of the City. Two of the City's 13 goals strongly impact the development of the Transportation System Plan; Public Facilities and Services. The City's transportation goal is, "To provide and encourage a safe, convenient and economic transportation system." Four policies are listed to implement this goal. They include repaving city streets and providing curbs and sidewalks as resources are available; encouraging the Union Pacific Railroad to landscape its right-of-way through the City; to encourage Umatilla County to improve County Road Number 1300 (Thielsen Road) between the City and the I-84 Freeway interchange and to plan for adequate access to adjacent property; and to work with Umatilla County to develop joint policies concerning local roads and streets within the Urban Growth Boundary.

The City's overall goal for public facilities and services is, "To plan and develop a timely, orderly, and efficient arrangement of public facilities and services to serve as a framework for urban development." Applicable policies include: J) 4. To develop, maintain, update, and expand police and fire services, streets and sidewalks. J) 10. To identify approximate location of future streets, water tank sites, and other public facilities; and J) 11. to require necessary on-site public facilities to be provided in new subdivisions including...streets.

The Echo Comprehensive Plan Technical Report gives a good economic and social history of the City, but is highly outdated regarding current economic and land use conditions. The population projections exemplify

this problem. In 1977, the Technical Report population projections for 1995 were 2,514 to 4,064 people. In reality, Echo's population was 630 in 1999.

Umatilla County Comprehensive Plan

The Umatilla County Comprehensive Plan was written in 1983 to meet the statewide requirements for planning. It was last amended in 1987. The plan is broken into three sections: the Introduction; Plan Elements – Findings, Recommended Policies; and the Plan Map. The Plan Elements section is broken into sections dealing with the fourteen goals. This includes a Transportation Element with findings and recommended policies.

Umatilla County Development Code

The Umatilla County Development Ordinance was adopted in 1983, and last amended in November of 1991. In 1997 this ordinance was recodified and retitled as Chapter 1528 Development Code. The portions of the code most relevant to the Transportation System Plan include sections on off-street parking requirements, driveways, and road standards. Amendments to the development code include road standards for county roads.

Traffic Impact Analysis

A Traffic Impact Analysis for the Wal-Mart Distribution Center, located on 220 acres in rural Umatilla County, approximately 1 1/2 miles north of Stanfield, and 2 miles south of Hermiston was prepared in October 1994, and revised in August 1995. The project includes a distribution center with approximately 1.2 million square feet of floor area and paved parking, receiving and shipping areas. Traffic generated is estimated at about 700 trucks per day and about 300 passenger vehicles per day. The purpose of the study was to assess the traffic impact of the proposed development on the nearby road system and to recommend any required mitigation measures. Primary roadways impacted by the development include: Feedville Road, US 395, US 730, I-82, and I-84. A more detailed summary of the report findings is available in Appendix A of this TSP.

Stanfield Community Visioning and Buildable Land Inventory

The Stanfield Community Visioning and Buildable Lands Inventory project addresses the following issues and community needs:

- An influx, currently in progress, of numerous large industrial and institutional employers in western Umatilla County and northeastern Morrow County including: the Two Rivers Prison, a Wal-Mart distribution center north of Stanfield, the Hinkle Railyard expansion, and increased activity at the Umatilla Army Depot.

- Anticipated rapid population growth will generate demand for residential and commercial land development as workers and their families migrate to the area. This growth, together with major increases in freight movement associated with the new employment centers, will produce significant travel demand increases and pattern changes.

- The capacity of the existing town center to accommodate growth and redevelopment is severely constrained. The central business district and much of the residential area around it are within the 100-year floodplain boundary. In addition, Highway 395 through the center of town is expected to carry increasing freight movement between I-84 and the new Wal-Mart distribution center.

US 395 North Corridor Plan

The US 395 Corridor Plan prepared by OTAK, Inc. and Kittelson and Associates, Inc., covers a section of US 395 extending from I-84 (including the city of Echo) to US 730 in the city of Umatilla. This plan addresses transportation system improvement projects and an access management plan for the entire US 395 north corridor.

Airport Master Plans

The *1986 Hermiston Municipal Airport Master Plan Update* provides a comprehensive analysis of the Hermiston Airport including an inventory of facilities, a discussion of use for a twenty-year planning period (ending in 2006), and recommendations for facility improvements. The introduction of the plan also provides a good overview of all the major transportation facilities serving Hermiston and northeast Oregon. This plan is currently being updated by Aaron Fagre & Associates.

The primary objective of the *Master Plan Update for Eastern Oregon Regional Airport at Pendleton* was to re-evaluate the recommendations of previous airport planning studies, to determine the long-range requirements for airport development, to identify and assess development alternatives, and to produce an airport development/improvement plan that will yield a safe, efficient, economical, and environmentally acceptable public facility with capacity for future air transport needs of the eastern Oregon area. When approved by the various local, regional, state, and federal agencies, the Airport Master Plan represents the long-term intentions of all agencies regarding the location and extent of airport improvements. This permits long-range programming and budgeting, reduces lengthy review periods for each project, and provides for orderly and timely development. A more detailed summary of this reference is provided in Appendix A.

Other State Plans

In addition to the ODOT corridor strategy, coordination with the following state plans is required:

- Oregon Transportation Plan (1992)
- Oregon Highway Plan (1999)
- Oregon Bicycle and Pedestrian Plan (1995)
- Oregon Public Transportation Plan (1996)
- Oregon Rail Freight Plan (1994)
- Oregon Rail Passenger Policy and Plan (1992)
- Oregon Traffic Safety Action Plan (1995)
- Oregon Aviation System Plan (in development).

CHAPTER 2: GOALS AND OBJECTIVES

The purpose of the TSP is to provide a guide for Echo to meet its transportation goals and objectives. The following goals and objectives were developed from information contained in the city's Comprehensive Plan and reflect public concerns as expressed during public meetings. An overall goal was drawn from the plan, along with more specific goals and objectives. Throughout the planning process, each element of the plan was evaluated against these parameters.

OVERALL TRANSPORTATION GOAL

To provide and encourage a safe, convenient, and economic transportation system.

Goal 1

Preserve the function, capacity, level of service, and safety of the nearby highways.

Objectives

A. Develop access management standards.

B. Develop alternative, parallel routes where practical.

C. Promote alternative modes of transportation.

D. Promote transportation demand management programs.

E. Promote transportation system management.

F. Develop procedures to minimize impacts to and protect transportation facilities, corridors, or sites during the development review process.

Goal 2

Ensure that the road system within the City is adequate to meet public needs, including those of the transportation disadvantaged.

Objectives

A. Meet identified maintenance level of service standards on the county and state highway systems.

B. Pave city streets and provide curbs and sidewalks as resources are available.

C. Develop and adhere to a five-year road program for maintenance and improvement of the existing city road system.

D. Review and revise, if necessary, street cross section standards for local, collector, and arterial streets to enhance safety and mobility.

E. Develop access management strategies where needed.

F. Evaluate the need for traffic control devices.

G. Evaluate the safety of the street system and develop plans to mitigate any safety hazards.

H. Encourage Union Pacific Railroad to landscape its right-of-way through the City.

Goal 3

Improve coordination among Echo and nearby cities, the Oregon Department of Transportation (ODOT), the US Forest Service (USFS), the Federal Highway Administration (FHWA), and the county.

Objectives

A. Work with Umatilla County to coordinate roadway maintenance and improvements and to develop joint policies concerning local roads and streets within the Urban Growth Boundary.

B. Cooperate with ODOT in the implementation of the Statewide Transportation Improvement Program (STIP).

C. Work with the county in establishing right-of-way needed for new roads identified in the Transportation System Plans.

D. Take advantage of federal and state highway funding programs.

E. Encourage the county to improve the existing road systems to and within the City. In particular, encourage Umatilla County to improve County Road No. 1300 (Thielsen Street) between the City and the I-84 freeway interchange and plan for adequate access to adjacent property. This may include widening the road, additional signage, and adequate pedestrian amenities.

F. Work with ODOT to improve safety conditions at the I-84 and Thielsen Road Interchange.

G. Consider pooling resources with other cities and the county to provide services that benefit areas both in and outside the City.

Goal 4

Increase the use of alternative modes of transportation (walking, bicycling, and public transportation) through improved access, safety, and service.

Objectives

A. Cooperate with other cities and the county to pursue an inter-city transit service.

B. Encourage the rerouting of Greyhound to pass through the community.

C. Provide sidewalks or shoulders and safe crossings on collectors and arterials.

D. Explore opportunities for bicycle facilities and coordinate with the county bicycle plan.

E. Seek Transportation and Growth Management (TGM) and other funding for projects evaluating and improving the environment for alternative modes of transportation.

CHAPTER 3: TRANSPORTATION SYSTEM INVENTORY

As part of the planning process, David Evans and Associates, Inc. conducted an inventory of the existing transportation system in Echo. This inventory covered the street system as well as the pedestrian, bikeway, public transportation, rail, air, water, and pipeline systems.

STREET SYSTEM

The most common understanding of transportation is of roadways carrying cars and trucks. Most transportation dollars are devoted to building, maintaining, or planning roads to carry automobiles and trucks. The mobility provided by the personal automobile has resulted in a great reliance on this form of transportation. Likewise, the ability of trucks to carry freight to nearly any destination has greatly increased their use.

Encouraging the use of cars and trucks must be balanced against costs, livability factors, the ability to accommodate other modes of transportation, and negative impacts on adjacent land uses; however, the basis of transportation in nearly all American cities is the roadway system. This trend is clearly seen in the existing Echo transportation system, which consists almost entirely of roadway facilities for cars and trucks. Because of the rural nature of the area, the street system will most likely continue to be the basis of the transportation system for at least the 20-year planning period; therefore, the emphasis of this plan is on improving the existing street system for all users.

The existing street system inventory was conducted for all highways, arterial roadways, and collector roadways within Echo, as well as those in Umatilla County that are included in the TSP planning area. Inventory elements include:

- Street classification and jurisdiction
- Street width
- Number of travel lanes
- Presence of on-street parking, sidewalks, or bikeways
- Speed limits
- General pavement conditions

Figure 3-1 shows the roadway functional classification and jurisdiction. Appendix B lists a complete inventory.

City Street Classification

The current Comprehensive Plan for the city of Echo does not provide functional classifications for the streets within the City. Typically, streets are classified as either arterials, collectors or local streets. Based on conditions observed during the field reconnaissance (traffic volumes, street widths, etc.), DEA classified all streets within the City. The classification system includes city, county, and state roadways.

Arterials

Arterials form the primary roadway network within and through a region. They provide a continuous road system that distributes traffic between cities, neighborhoods and districts. Generally, arterials are high capacity roadways that carry high traffic volumes entering or leaving the City.

In Echo, the Lexington-Echo Highway and Thielsen Road function as arterial roadways. The Lexington-Echo Highway shares alignment locally with Main, Thielsen, and Gerone Streets within the Echo urban area. This roadway serves as the focus for much of the commercial development in the urban area. Thielsen Road carries the highest amount of traffic in the urban area by providing a direct connection between Echo and the interchange of two major highways to the north: I-84 and OR 395. Most of Main Street and Thielsen Road is under the jurisdiction of the county. It is a two-lane road with narrow shoulders.

Collectors

Collectors serve traffic within the commercial, industrial and residential neighborhood areas. They connect local neighborhoods or districts to the arterial network. Collectors help form part of the grid system; however, they are not intended to function as alternate routes to the arterial system.

Three streets in Echo were identified as functioning as collectors: Bonanza Street, Dupont Street and Rieth Road (County Road 1300). Bonanza Street runs north/south from Halstead Street collecting traffic from many local streets to the south of the Lexington-Echo Highway; it eventually connects with Dupont Street at Garden Street. Dupont Street provides a more direct connection to the downtown commercial and residential areas from Thielsen Road and a quicker route to the west along the Lexington-Echo Highway. Rieth Road begins south of Gerone Street and connects Echo with several smaller communities to the southwest such as Nolin, Barnhart, and Rieth. It also provides an alternative route to the city of Pendleton, other than along I-84.

Local Streets

Local streets provide access to all parcels of land and serve travel over relatively short distances. They are designed to carry the very low traffic volumes associated with the local uses that abut them. Through traffic movements are discouraged on local streets.

The local streets in Echo are comprised of all streets not classified as either arterials or collectors. Local streets in Echo also form part of the grid system.

Street Layout

The majority of the Echo streets are positioned in a grid pattern. Block sizes vary but are typically 200 feet square. The grid system loses its rigidity on the fringes of the urbanized area. Figure 3-1 shows the roadway functional classification and jurisdiction. Appendix B lists the complete inventory.

State Highways

Discussion of the Echo street system must include the state highways that traverse the planning area. Although Echo has no direct control over the state highways, adjacent development and local traffic patterns are heavily influenced by the highways. Echo is served by one state highway: The Lexington-Echo Highway. This highway serves as a major route through town with commercial and industrial development focused along the corridor. Echo's Urban Growth Boundary extends to, but does not encompass, I-84 in the vicinity of the US 395 interchange. Discussion of the physical inventory and operating conditions on I-84 can be found in the Umatilla County TSP.

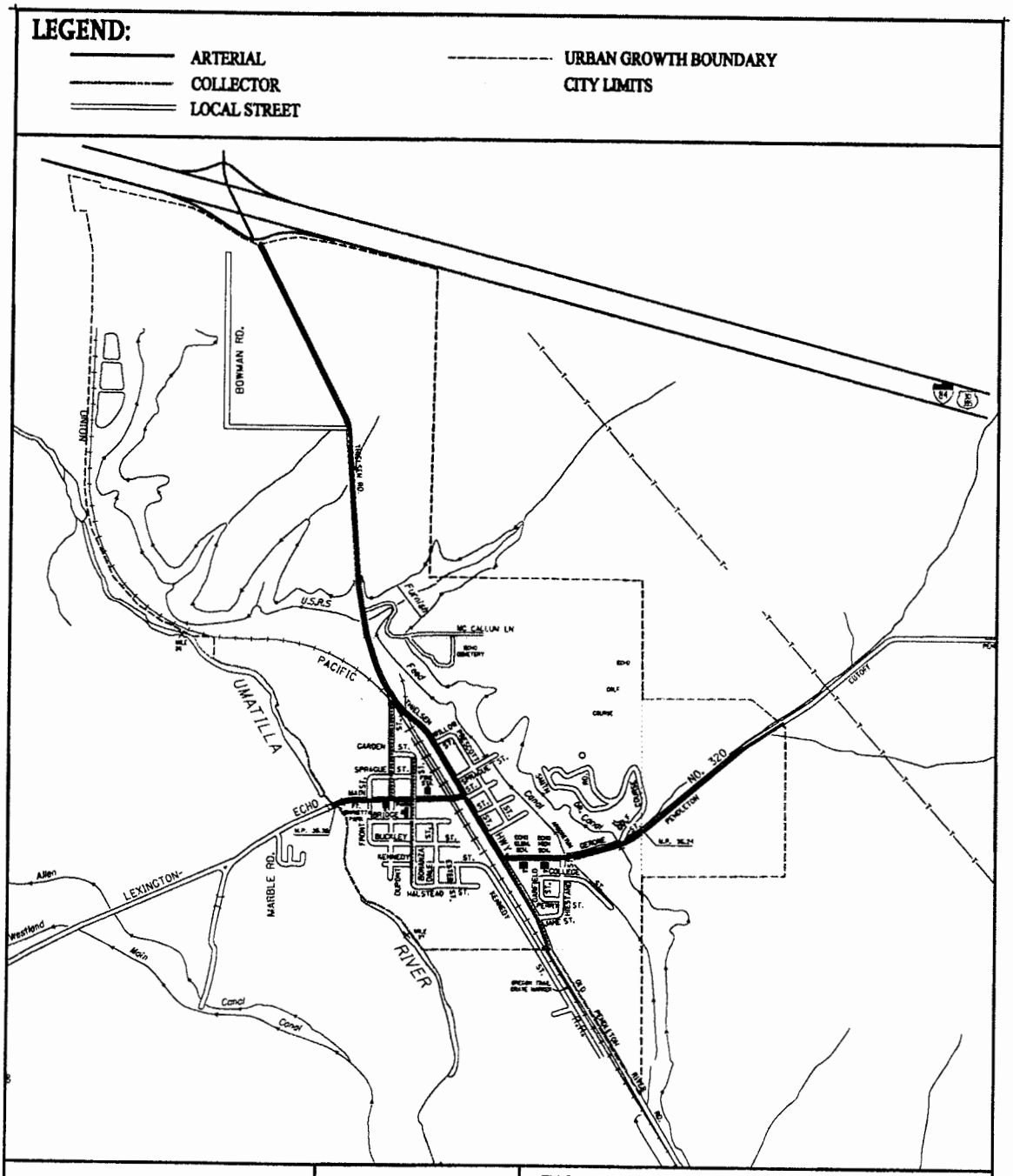

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FIGURE 3-1

Roadway Functional Classification -Echo

City of Echo TSP

UMCO0001/ECHO3-1.DGN/TNT/07-03-98

Lexington-Echo Highway

The 1999 Oregon Highway Plan (OHP) classifies the state highway system into five categories: Interstate, Statewide, Regional, District, and Local Interest. ODOT has established primary and secondary functions for each type of highway and objectives for managing the operations for each one.

The Lexington-Echo Highway (Highway 320) is a district highway. The primary function of a district highway is to 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. "provide connections and links to areas within regions of the state, between small urbanized areas and larger population centers, and to higher level facilities."

Crossing the Umatilla/Morrow County line and extending through the town of Echo, the Lexington-Echo Highway continues east to the I-84 junction. This stretch of highway is a two-lane roadway with a speed limit of 55 mph, except within a speed transition zone where the posted speed is 45 mph, which is further reduced to a speed limit of 25 mph inside the Echo city limits.

GENERAL PAVEMENT CONDITIONS

City Streets

The ODOT Pavements Unit published a 1994 report entitled, *Pavement Rating Workshop, Non-National Highway System.* This report thoroughly defines the characteristics that pavements must display to be categorized as Very Good and so on. The report also provides color photographs of roadways that display these characteristics, which aids in field investigation and rating of pavement condition. These established guidelines were employed by DEA in conducting a subjective evaluation of pavement condition for all collectors within the city of Echo.

An inventory of collector roadways was conducted in November 1997 by DEA. Both collectors, Thielsen and Dupont Streets, were rated as being in fair pavement condition.

State Highways

The Oregon Department of Transportation's (ODOT) Pavement Unit surveys the state highway system on an annual basis. Observed severity levels of certain distress types are used to determine a pavement condition rating score. These scores are used to stratify pavement segments into five condition categories: (1) Very Good, (2) Good, (3) Fair, (4) Poor, and (5) Very Poor. *The Umatilla County Transportation System Plan* briefly defines these condition categories.

According to the 1997 ODOT Pavement Condition Report, the section of the Lexington-Echo Highway that runs through the Echo urban area is in fair pavement condition.

BRIDGES

The Oregon Department of Transportation maintains an up to date inventory and appraisal of Oregon bridges. Part of this inventory involves the evaluation of three mutually exclusive elements of bridges. One element identifies which bridges are structurally deficient. This is determined based on the condition rating for the deck, superstructure, substructure, or culvert and retaining walls. It may also be based on the appraisal rating of the structural condition or waterway adequacy. Another element identifies which bridges are functionally obsolete. This element is determined based on the appraisal rating for the deck geometry, under clearances, approach roadway alignment, structural condition, or waterway adequacy. The third element summarizes the sufficiency ratings for all bridges. The sufficiency rating is a complex formula which takes into account four separate factors to obtain a numeric value rating the ability of a bridge to service demand. The scale ranges from 0 to 100 with higher ratings indicating optimal conditions and lower ratings indicating insufficiency. Bridges with ratings under 55 may be nearing a structurally deficient condition.

There are a total of two bridges within the Echo city limits; both are located along the Lexington-Echo Highway and are state-owned and maintained. The ODOT bridge inventory information indicates that one of the two bridges is functionally obsolete. This bridge, known as the Echo Bridge (ODOT bridge No. 01165), is located at the Echo west city limits. This bridge is scheduled for replacement according to ODOT's final 1998-2001 Statewide Transportation Improvement Program (STIP). This project is scheduled for completion around the beginning of the year 2000. No bridge improvements are scheduled within Echo under ODOT's 2000-2003 STIP update.

PEDESTRIAN SYSTEM

The most basic transportation option is walking. Walking is the most popular form of exercise in the United States and can be performed by people of all ages and all income levels. However, it is not often considered as a means of travel. Because pedestrian facilities are generally an afterthought, they are not planned as an essential component of the transportation system.

The relatively small size of Echo indicates that walking could be employed regularly, weather permitting, to reach a variety of destinations. Encouraging pedestrian activities may not only decrease the use of the personal automobile, but may also provide benefits for retail businesses. Where people find it safe, convenient, and pleasant to walk, they may linger and take notice of shops overlooked before. They may also feel inclined to return to renew the pleasant experience time and again.

As is typical of most towns the size of Echo, the sidewalk system in the older core of the City is more complete than fringe areas. Sidewalks are generally complete along Main Street from Front Street to east of Bonanza Street and along Dupont and Bonanza Streets between Bridge and Sprague Streets. Additional, but incomplete, segments of sidewalk exist along Bonanza and Dupont Streets. The completeness of the sidewalk system defines the downtown as shown in Figure 3-2. Sidewalks and other pedestrian facilities are notably lacking outside of this area. Curb cuts for wheelchair access are largely lacking even where sidewalks exist.

BIKEWAY SYSTEM

Like pedestrians, bicyclists are often overlooked when considering transportation facilities. Bicycles are not often considered as a serious mode of transportation. However, cycling is a very efficient mode of travel. Bicycles take up little space on the road or parked, do not contribute to air or noise pollution, and offer

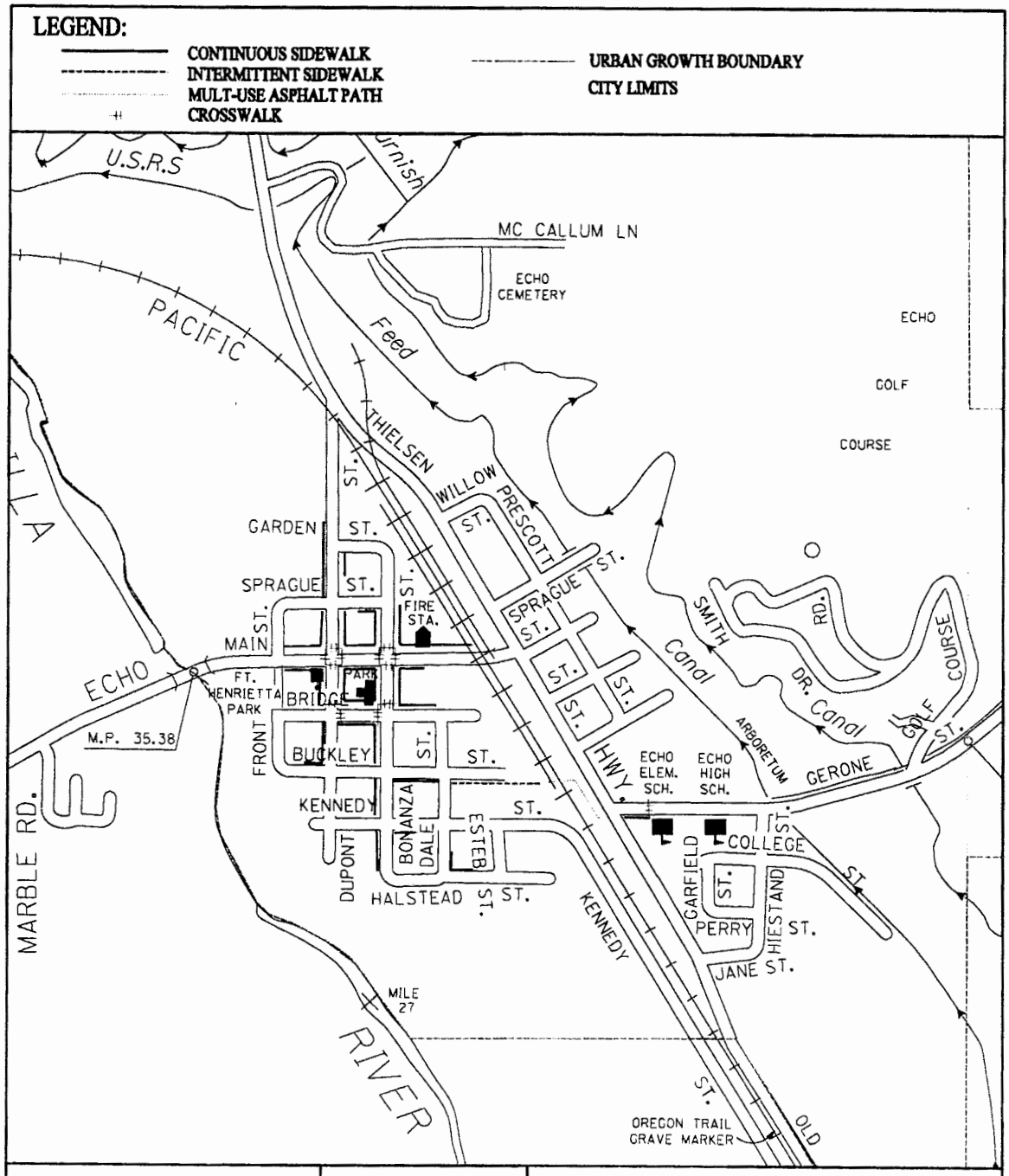

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FIGURE 3-2

Pedestrian and Bikeway System Inventory -Echo

City of Echo TSP

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relatively higher speeds than walking. Because of the small size of Echo, a cyclist can travel to any destination in town within a matter of minutes.

Bicycling should be encouraged for short trips in order to reduce some of the negative aspects of urban growth and automobile use. Noise, air pollution, and traffic congestion could be mitigated if more short trips were taken by bicycle or on foot. Typically, a short trip that would be taken by bicycle is around two miles; on foot, the distance commonly walked is around one half mile.

Echo currently has no designated bikeways, however the field inventory did reveal the presence of a short multi-use asphalt path connecting Thielsen and Buckley Streets as shown in Figure 3-2. In general, bicyclists must share the roadways with motorized vehicles. On low volume roadways, such as many of the local streets, bicyclists and automobiles can both safely and easily use the roadway. On higher volume roadways, particularly the arterial streets, safety for the bicyclists is an important issue.

The City currently has one bike rack installed downtown on Main Street at the grocery store and a second rack at the city school, and a third at the city hall/library.

PUBLIC TRANSPORTATION

The only intercity bus service in Umatilla County is provided by Greyhound bus lines that provides service along I-84, US 395, and OR 11 within Umatilla County. Greyhound has terminals located in Hermiston and Pendleton that connect these cities to each other and major population centers outside of the county. The Hermiston terminal has two departures heading southeast (with stops in Pendleton, La Grande, Boise, and Salt Lake City); three buses running west to Portland; and two buses heading north on US 395 to Pasco and Spokane daily. The Pendleton terminal has three departures southeast (with stops in La Grande, Boise and Salt Lake City); three departures west to Portland; and two departures north to Seattle via Walla Walla, Pasco, and Spokane daily. The line to Seattle could serve Milton-Freewater as it runs through the City along OR 11.

Although Pendleton, Hermiston, Pilot Rock, and the Umatilla Indian Reservation have dial-a-ride type transit service available for the transportation disadvantaged, it is not available in Echo at this time. Dial-a-ride service is defined as door-to-door service initiated by a user's request for transportation service from their origins to specific locations on an immediate or advance reservation basis. These services are provided by the Pendleton Senior Center in Pendleton, the Confederated Tribes of the Umatilla Indian Reservation on the Umatilla Indian Reservation, the Hermiston Senior Center in Hermiston, and the Pilot Rock Lions Club in Pilot Rock. A similar kind of service could be appropriate for Echo.

Echo has no local fixed-route transit service at this time. The small size and low traffic volumes on city streets indicate that mass transit is not necessary or economically feasible at this time. The Transportation Planning Rule exempts cities with a population of less than 25,000 from developing a transit system plan or a transit feasibility study as part of their Transportation System Plans.

RAIL SERVICE

Echo has no passenger or freight rail service. Until recently, AMTRAK service was available in Hermiston and Pendleton along the rail line that follows the I-84 corridor from Portland to Boise, Idaho and points east. Amtrak is currently experiencing a funding crisis. As a result, passenger service between Portland and Denver, including service to cities within Umatilla County, was discontinued in May 1997. This line serves only freight traffic now.

The nearest freight connection in Echo is at Hinkle, west of Stanfield. This major freight line is owned and operated by Union Pacific Railroad, a Class I line-haul freight railroad. There is also a Union Pacific main line that runs through Echo and east through Pendleton.

AIR SERVICE

The city of Echo is served by Hermiston Municipal Airport, which is approximately seven miles north of Echo and by Eastern Oregon Regional Airport in Pendleton, which is approximately 20 miles east of Echo.

The city of Hermiston owns and operates a municipal airport. No commercial flights are available at the present time, but there is charter service available. The Hermiston Municipal Airport is located one and a half miles from downtown Hermiston and had 12,380 annual operations in 1995. The airport is at an elevation of 641 feet above Mean Sea Level and has one runway that is 4,500 feet long and positioned in a northeast-southwest direction. The airport is often used by businesses such as Simplot, Gilroy Foods, Les Schwab Tires, UPS, and other large organizations such as PGE, Bonneville Power, and the Army Corps of Engineers. There is an agricultural spray operation based at the airport, and local residents also use the airport for recreational purposes.

Eastern Oregon Regional Airport in Pendleton is a tower-controlled airport with 40,600 annual operations. Passenger service includes 16 scheduled flights per day by Horizon Airlines, with flights to Portland and Seattle. The airfield is also home to 60 locally owned fixed-wing aircraft, four rotor, and eight CH-47 Chinook helicopters with the Oregon Army Air Guard.

PIPELINE SERVICE

Although not often considered transportation facilities, pipelines carry liquids and gases very efficiently. The use of pipelines can greatly reduce the number of trucks and rail cars carrying fluids such as natural gas, oil, and gasoline. There are currently no pipelines serving Echo. However there is a natural gas line that runs within four miles of the City. This line could be used to extend natural gas service to the City.

WATER TRANSPORTATION

Echo has no water-borne transportation services. The nearest commercial port is the Port of Umatilla located in the northwest corner of the county along the Columbia River.

CHAPTER 4: CURRENT TRANSPORTATION CONDITIONS

As part of the planning process, the current operating conditions for the transportation system were evaluated. This evaluation focused primarily on street system operating conditions since the automobile is by far the dominant mode of transportation in Echo. Census data were examined to determine travel mode distributions. Traffic counts were used to determine how well traffic is currently flowing.

TRAFFIC VOLUMES

Historic traffic volume counts, documented in the ODOT *Traffic Volume Tables*, exist for the Lexington-Echo Highway in Echo. ODOT also performed a traffic count where Thielsen Road intersects US Highway 395 and the I-84 eastbound on/off ramps, in June 1998.

Average Daily Traffic

The Average Daily Traffic (ADT) on the Lexington-Echo Highway for 1996 is shown in Figure 4-1, along with the June 1998 ADT along Thielsen Road, just south of the I-84 interchange.

Traffic volumes on the Lexington-Echo Highway increase from 590 vehicles per day (vpd) at the east city limits to a high of 1,100 vpd on Thielsen Street between Sprague and Bridge Streets, decreasing to 660 vpd at the west city limits. Average daily traffic growth, compounded annually since 1990, has ranged from approximately negative one percent immediately east of Front Street to zero percent immediately south of Main Street to a high of approximately four percent immediately east of Thielsen Street.

The traffic volumes shown on Figure 4-1 and other volume figures are average volumes for the year. Summer is the season when volumes are highest. ODOT data on area highways (US 730, I-82 and US 395 south of I-84) indicate that during the summer season, volumes are about 20 to 30 percent higher than average volumes.

The June 1998 ADT volume along Thielsen Road, south of I-84, reached 2,150 vpd, with a p.m. peak hour volume of 155 vph. No other daily or hourly traffic data were available for the city streets in Echo, nor were any counts taken. Because the 1996 daily volumes along the Lexington-Echo Highway and the June 1998 daily volume along Thielsen Road were so low, traffic volumes on the other city streets were expected to be much lower. The low level of traffic indicates capacity deficiencies on city streets are not an issue in Echo.

Street Capacity

Transportation engineers have established various standards for measuring traffic capacity of roadways or intersections. Each standard is associated with a particular level of service (LOS). In the 1991 OHP, levels of service were defined by a letter grade from A-F, with each grade representing a range of volume to capacity (v/c) ratios. A volume to capacity ratio (v/c) is the peak hour traffic volume on a highway divided by the maximum volume that the highway can handle. If traffic volume entering a highway section exceeds the section's capacity, then disruptions in traffic flow will occur, reducing the level of service. LOS A represents relatively free-flowing traffic and LOS F represents conditions where the street system is totally saturated with traffic and movement is very difficult. The 1999 OHP maintains a similar concept for measuring highway performance, but represents LOS by specific v/c ratios to improve clarity and ease of implementation. Table 4-1 presents the level of service criteria and associated range of v/c ratio for arterial and collector roadways.

TABLE 4-1
LEVEL OF SERVICE CRITERIA FOR ARTERIAL AND COLLECTOR STREETS

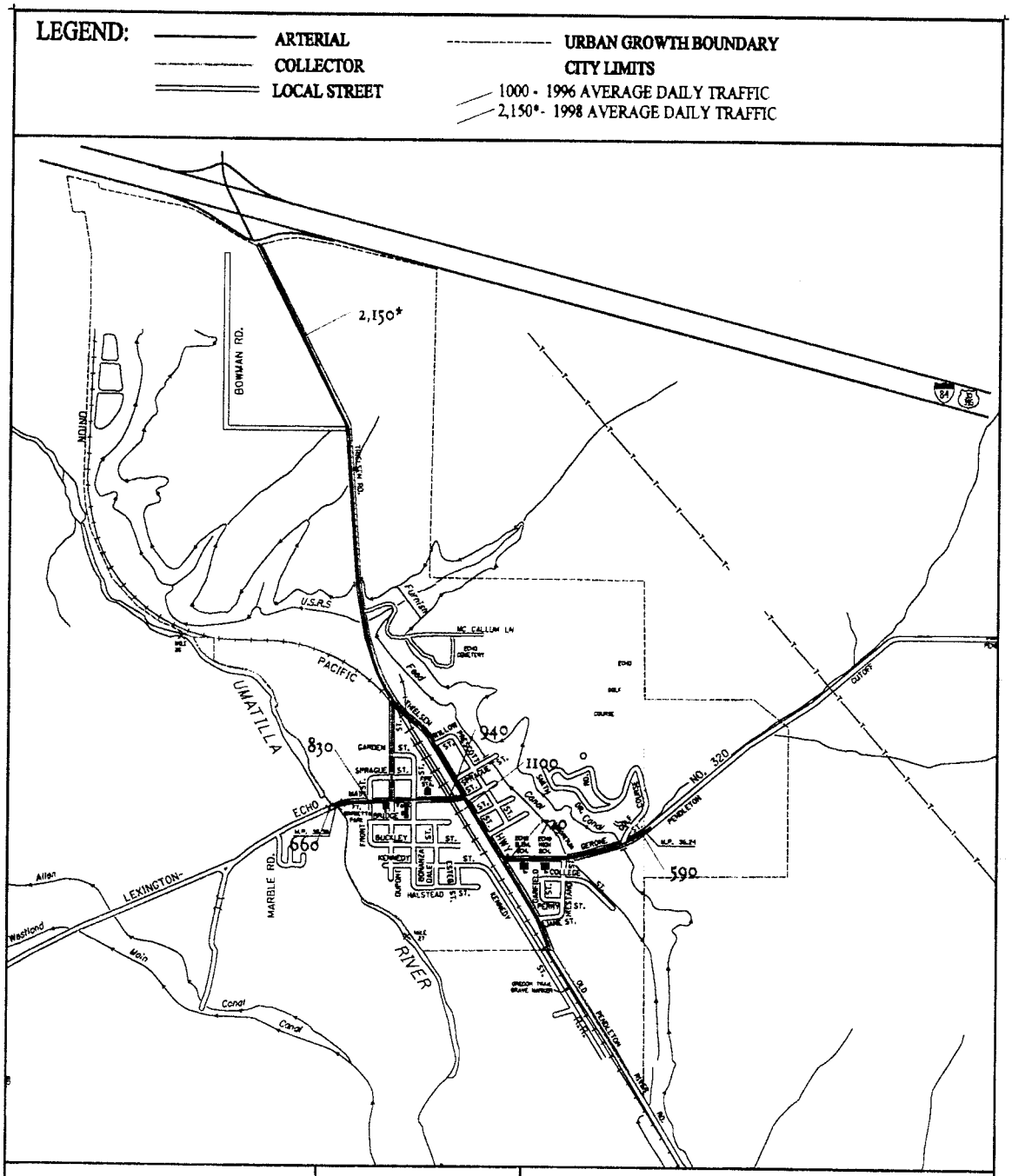
Service Level	Typical Traffic Flow Conditions
A (0.00-0.48)	Relatively free flow of traffic with some stops at signalized or stop sign controlled intersections. Average speeds would be at least 30 miles per hour.
B (0.49-0.59)	Stable traffic flow with slight delays at signalized or stop sign controlled intersections. Average speed would vary between 25 and 30 miles per hour.
C (0.60-0.69) C-D (0.70-0.73)	Stable traffic flow with delays at signalized or stop sign controlled intersections. Delays are greater than at level B but still acceptable to the motorist. The average speeds would vary between 20 and 25 miles per hour.
D (0.74-0.83) D-E (0.84-0.87)	Traffic flow would approach unstable operating conditions. Delays at signalized or stop sign controlled intersections would be tolerable and could include waiting through several signal cycles for some motorists. The average speed would vary between 15 and 20 miles per hour.
E (0.84-0.97) E-F (0.98-0.99)	Traffic flow would be unstable with congestion and intolerable delays to motorists. The average speed would be approximately 10 to 15 miles per hour.
F (>1.00)	Traffic flow would be forced and jammed with stop and go operating conditions and intolerable delays. The average speed would be less than 10 miles per hour.

Source: (1) Transportation Research Board, *Highway Capacity Manual*, Special Report 209. National Research Council, 1985.
(2) ODOT, *SIGCAP Users Manual.* ODOT, 1994.

The 1999 Oregon Highway Plan (OHP) establishes mobility standards for the state highway system[1]. Regional Highways, such as Highway 82, should operate at a maximum volume to capacity ratio of 0.80 where the speed limit is less than 45 mph inside the urban growth boundary. For highways of district importance, such as Highway 350, the roadways should operate at a volume to capacity ratio of 0.85 where the speed limit is less than 45 mph.

Traffic operations were determined at one representative intersection along the Lexington-Echo Highway at Dupont Street using the 1985 Highway Capacity Software for unsignalized intersections. This software is based on the 1985 Highway Capacity Manual, Special Report 209, published by the Transportation Research Board. Since all intersecting streets and driveways are controlled by stop signs in the City, the analysis was performed for an unsignalized intersection. The peak hour traffic on the highway was assumed to be 10 percent of the 24-hour ADT volume and the directional split was assumed to be 60/40. Because side street traffic volumes were unavailable, an assumed volume of 30 vph was used and unsignalized intersection level-of-service calculations were generated for the intersection. The peak hour operations at the intersections are shown in Table 4-2.

[1] *1999 Oregon Highway Plan*, Table 6, MAXIMUM VOLUME TO CAPACITY RATIOS OUTSIDE METRO.



UMCO0001/ECHO4-1.DGN/BJD/11-05-99

TABLE 4-2
SUMMARY OF OPERATIONS AT LEXINGTON-ECHO HIGHWAY AND DUPONT STREET

Intersection Location	Direction	Movement	1996 LOS
Lexington-Echo Highway (E-W) & Dupont Street (N-S)	Northbound	Left, Through, Right	A (<0.48)
	Southbound	Left, Through, Right	A (<0.48)
	Eastbound	Left	A (<0.48)
	Westbound	Right	A (<0.48)

Note: The level of service is shown for all evaluated movements of the unsignalized intersection.

In general, the intersection of the Lexington-Echo Highway (Main Street) and Dupont Street currently operates very well based on the traffic volume assumptions made. Traffic volumes on both roadways are very low. Traffic on the highway, and at the minor street approaches on Dupont Street, flows smoothly at LOS A for all movements, which correlates to maximum volume to capacity ratio of less than .48. Observing the June 1998 p.m. peak hour volumes along Thielsen Road indicates intersection operations are favorable (LOS A or v/c ratio <.48) for all intersecting minor streets along this road.

TRANSPORTATION DEMAND MANAGEMENT MEASURES

In addition to inventorying the transportation facilities in Echo, an inventory was performed of any Transportation Demand Management (TDM) strategies that may currently be in place. TDM strategies are designed to relieve congestion on the street system by spreading peak hour traffic over a longer period of time, encouraging the use of alternative modes of transportation (i.e. sidewalks, bike lanes, public transit), and encouraging the single car driver to ride with others through local carpool programs. Other than the sidewalk and bicycle facilities that exist in Echo, no formal TDM strategies exist in the City.

This following sections briefly describe two elements that may impact future transportation demand management decisions in the City: 1) distribution of departure time to work, and 2) distribution of travel modes.

Alternative Work Schedules

One way to maximize the use of the existing transportation system is to spread peak traffic demand over several hours instead of a single hour. Statistics from the 1990 Census show the spread of departure to work times over a 24-hour period (see Table 4-3). Approximately 27 percent of the total employees (those not working at home) depart for work between 7:00 and 8:00 a.m. Another 39 percent depart in either the hour before or the hour after the peak. Therefore, two-thirds of all morning commute trips occur between 6:00 a.m. and 9:00 a.m.

TABLE 4-3
DEPARTURE TO WORK DISTRIBUTION

	1990 Census	
Departure Time	**Trips**	**Percent**
12:00 a.m. to 4:59 a.m.	6	2.7%
5:00 a.m. to 5:59 a.m.	11	4.9%
6:00 a.m. to 6:59 a.m.	57	25.7%
7:00 a.m. to 7:59 a.m.	60	27.0%
8:00 a.m. to 8:59 a.m.	30	13.5%
9:00 a.m. to 9:59 a.m.	6	2.7%
10:00 a.m. to 10:59 a.m.	9	4.1%
11:00 a.m. to 11:59 a.m.	2	0.9%
12:00 p.m. to 3:59 p.m.	29	13.1%
4:00 p.m. to 11:59 p.m.	12	5.4%
Total	**222**	**100.0%**

Source: US Bureau of Census.

Assuming an average nine-hour workday, the corresponding afternoon peak can be determined for work trips. Using this methodology, the peak work travel hour would occur between 4:00 and 5:00 p.m., which corresponds with the peak hour of activity measured for traffic volumes.

TRAVEL MODE DISTRIBUTION

Although the automobile is the primary mode of travel for most residents in the Echo area, some other modes are used as well. Modal split data is not available for all types of trips. The 1990 Census statistics that were reported for journey to work trips are shown in Table 4-4 and reflect the predominant use of the automobile in this area.

In 1990, 90.6 percent of all trips to work were in a private vehicle (auto, van, or truck). Trips in single-occupancy vehicles made-up 86.7 percent of these trips, and carpooling accounted for 13.3 percent.

The 1990 census data indicated that bicycles were not utilized for transportation. Since the census data do not include trips to school or other non-work activities, overall bicycle usage may be greater. None of the city of Echo roadways included dedicated bicycle lanes; however, there exists a short multi-use asphalt path connecting Thielsen and Buckley Streets. Dedicated bicycle lanes can encourage bicycle commuting, as can other facilities such as bicycle parking, showers, and locker facilities.

Pedestrian activity was also relatively high (6.7 percent of trips to work) in 1990. Statewide, 4.2 percent of trips to work were made on foot. Again, the census data only report trips to work; trips to school or other non-work activities are not included.

TABLE 4-4
JOURNEY TO WORK TRIPS

	1990 Census	
Trip Type	**Trips**	**Percent**
Private Vehicle	203	90.6%
Drove Alone	*176*	*86.7%*
Carpooled	*27*	*13.3%*
Public Transportation	0	0%
Motorcycle	0	0%
Bicycle	0	0%
Walk	15	6.7%
Other	4	1.8%
Work at Home	2	0.9%
Total	**224**	**100.0%**

Source: US Bureau of Census.

ACCIDENT ANALYSIS

The Oregon Department of Transportation (ODOT) collects detailed accident information on an annual basis along the Lexington-Echo Highway within the Echo city limits. The accident information data show overall accident rates for the routes and accident locations. The accident rate for a stretch of roadway is typically calculated as the number of accidents per million vehicle miles traveled along that segment of roadway.

Historic

Table 4-5 shows the accident rates for the Lexington-Echo Highway in Echo as well as the Oregon statewide average for urban non-freeway secondary state highways from January 1, 1994 to December 31, 1996. The accident rate for the Highway during 1996 is nearly 30 percent higher than the statewide average for similar highways, indicating that a safety concern may exist. However, it should be noted that accident rate computations are sensitive to roadway segments with a relatively short length and low average daily traffic (ADT) volumes as in Echo. These characteristics support increased accident rates. No accident rate information was available for 1994 or 1995.

TABLE 4-5
HISTORIC ACCIDENT RATES FOR STATE HIGHWAYS
(ACCIDENTS PER MILLION VEHICLE MILES TRAVELED)

Highway	1996	1995	1994
Lexington-Echo Highway in Echo	3.96	NA	NA
Average for all Urban Non-freeway Secondary State Highways	3.10	3.27	2.79

Source: Oregon Department of Transportation Accident Rate Tables.

Table 4-6 contains detailed accident information on the Lexington-Echo Highway in Echo from January 1, 1994 to December 31, 1996. It shows the number of fatalities and injuries, property damage only accidents, the total number of accidents, and the overall accident frequencies and rates for the segments of these roadways in Echo.

TABLE 4-6
ACCIDENT SUMMARY FOR LEXINGTON-ECHO HIGHWAY
(JANUARY 1, 1994 TO DECEMBER 31, 1996)

Location	Fatalities	Injuries	Property Damage Only	Total Accidents	Accident Frequency (acc/mi/yr)	Accident Rate (acc/mvm)
MP 35.38 to MP 36.24	0	0	1	1	0.39	3.96

Source: Oregon Department of Transportation Accident Summary Database Investigative Report.

During the three-year period, there was a total of one accident within the Echo city limits, which was reported as resulting in property damage only. There were no fatalities or injuries on this roadway segment during the period. The accident occurred during daylight hours under dry pavement conditions. The driver error cited was an improper turning maneuver. There is no evidence to suggest that intersection operations (signals, signing, striping, etc.) were a contributing factor in the accident.

CHAPTER 5: TRAVEL FORECASTS

The traffic volume forecasts for Umatilla County and its municipalities are based on historic growth of the state highway system taking into account historic and projected population growth. Forecasts were only prepared for the state highway system in the county, since the volumes on these roadways are much higher than on any of the county roads.

LAND USE

Land use and population growth plays an important part in projecting future traffic volumes. Population forecasts were developed to help determine future transportation needs since the amount of growth and where it occurs will affect traffic and transportation facilities in the study area. The population analysis presented here is not intended to provide a complete economic forecast or housing analysis, and it should not be used for any purpose other than that for which it was designed.

The population projections for Umatilla County are based on historic growth rates, the original population and employment forecasts made by the State of Oregon Office of Economic Analysis (OEA), and a recent study [1] identifying new economically-driven factors that will result in a higher population total than what was initially projected in the DEA forecast.

Historic and projected population estimates for Umatilla County, Echo, and seven other cities in the county are summarized in Table 5-1. Factors that will affect the future growth rates of the county and incorporated cities include employment opportunities, available land area for development, and community efforts to manage growth.

TABLE 5-1
UMATILLA COUNTY POPULATION TRENDS

	1970[1]	1980[1]	1990[1]	1997[1] Estimate	2020[2] Projected
Umatilla County	44,923	58,855	59,249	65,500	86,650
Incorporated Cities					
Echo	**479**	**624**	**499**	**585**	**660**
Adams	219	240	223	265	310
Athena	872	965	997	1,120	1,360
Helix	152	155	150	190	230
Pilot Rock	1,612	1,630	1,478	1,585	1,650
Stanfield	891	1,568	1,568	1,770	2,490
Ukiah	NA	249	250	240	340
Weston	660	719	606	680	730

Sources:
1) Portland State University Center for Population Research and Census.
2) The population forecast shown for the county has been officially adopted, however there is no official breakdown in population for the incorporated cities in the county. The projected population numbers shown for the eight cities are based on the initial OEA forecast, solely for the purpose of producing travel forecasts for these cities.

[1] *Umatilla County Population Analysis*, December 16, 1998, produced by David Evans and Associates, Inc.

Umatilla County recently worked with the OEA to increase the official population projections for the county. Even though higher estimates have been adopted for the county than were used for the forecasting in this document, the new estimates will not impact travel projections for the TSP. This is because travel forecasts are based primarily on historic traffic levels taking into account population and land use. The difference between the original estimates and new official estimates is not great enough to impact travel projections

A detailed description of existing and future land use projections, including the methodology and data sources used, is contained in the Umatilla County Population Analysis located in Appendix C. This appendix contains both the original estimates of the OEA and the new official estimates for the county.

As mentioned, Umatilla County has adopted new population estimates for the county as a whole. The new estimates have been disaggregated to determine how much growth is likely to occur in each city.

Historic Growth

The population of Umatilla County has grown since the 1970s, with significantly slower growth in the 1980s, reflecting a general slowdown in the state's economy. Helix, Pilot Rock, and Weston actually experienced a net population loss between 1970 and 1990. Echo experienced a considerable fluctuation during the same 20 year period. It grew by 30 percent between 1970 and 1980, but then lost 25 percent of it's population from 1980 to 1990. In contrast, the number of people residing in Stanfield nearly doubled between 1970 and 1980. This population growth may have been fueled by some significant housing developments and the location of several food processing plants in Stanfield during this time.

Estimated at 65,500 in 1997, the population of Umatilla County has grown relatively rapidly since the 1990 Census, with an average annual growth rate of 1.44 percent. Most of the jurisdictions in Umatilla County have grown at a healthy rate, comparable to the annual growth rate of 1.44 percent for the county overall. .

Like many of the other cities in the county, Echo's population is also increasing, which is a reversal of the population losses in the 1980's. Echo has grown at a slightly slower rate than the rest of the county at 1.0 percent per year, since 1990, but is still a positive sign considering its large population losses experienced in the previous decade.

Projected Growth

Umatilla County is expected to experience population gains for the next 20 years. Like much of rural Oregon, the economy of Umatilla County remains largely seasonal, with nearly one-quarter of all employment agriculture-based. Therefore, population increases are difficult to predict, and are not likely to be as stable as the forecasts appear to imply.

The State Office of Economic Analysis prepared long-term population projections by county. Based on these projections, preliminary population forecasts for the jurisdictions of Adams, Athena, Echo, Helix, Pilot Rock, Stanfield, Ukiah, and Weston were developed in five-year increments. (See Umatilla County Population Discussion – Appendix C.)

An *ad hoc* HUES (Hermiston, Umatilla, Echo, and Stanfield) Impact Planning Group was formed in early 1997 to lead cooperative efforts to address growth concerns in western Umatilla County arising from four major employers locating or expanding in the region. The HUES Growth Impact Study, conducted by the Benkendorf Associates Corporation, Hobson Johnson & Associates, and Martin Davis Consulting, quantifies

the impact of the construction and operation of these four facilities. Employment impacts are translated into household and population impacts, and distributed across the four HUES communities, Pendleton, and rural Umatilla County.

Of these four employers (the Two Rivers Correctional Institution, the Umatilla Chemical Agent Disposal Facility, the Union Pacific Railroad Hinkle Locomotive Shop, and the Wal-Mart Distribution Center and Truck Maintenance Facility), only one (the Wal-Mart Distribution Center) had been announced and incorporated in the long-range population and employment forecast prepared by the Office of Economic Analysis. Because the Umatilla County site was selected as the location for the Wal-Mart Distribution Center in 1994, its impacts were already incorporated in the Office of Economic Analysis long-term population and employment forecast. Applying the HUES methodology, DEA subtracted out the impact of the Wal-Mart Distribution Center, in order to identify the population impacts resulting from the three "big four" employers otherwise not accounted for in the OEA forecast. These estimated impacts were then applied to the original population forecasts for Echo..

As mentioned earlier, Umatilla County has concluded work with the OEA to revise the state's official population estimates for the county to account for the impact of the major employers. The new projections are higher than those initially estimated by the OEA, but are not different enough to require any revisions to travel projections.

Overall, Umatilla County is expected to experience healthy rates of population growth, averaging nearly 1.5 percent annually over the planning horizon. The western portion of Umatilla County is expected to grow faster than the rest of Umatilla County, fueled by the four major employers. The addition of these employment opportunities will foster more growth in Echo, which is expected to sustain a 1.0 percent over the planning horizon. This will increase Echo's population by 14 percent to a population of 660 in 2020.

Since the county has not yet allocated adopted population numbers to incorporated cities, preliminary population forecasts for the jurisdictions of Adams, Athena, Echo, Helix, Pilot Rock, Stanfield, Ukiah, and Weston were developed in five-year increments, based on the initial OEA population forecast. This was done only for the purpose of producing the future traffic forecast and should not be used for anything other than the intended purpose.

TRAFFIC VOLUMES

Traffic volume projections for the year 2014 are based on the historic growth trends of highway volumes taking into account current and future land use projections.

Historic

Before projecting future traffic growth, it is important to examine past growth trends on the Echo roadway system. Historic data are only available along the Lexington-Echo Highway in Echo; however, this highway carries far more traffic than any other roads within the City, save for Thielsen Road. The Oregon Department of Transportation (ODOT) collects traffic count data on the state highways (rural and urban sections) every year at the same locations. These counts have been conducted at six locations along the Lexington-Echo Highway in Echo.

Historical growth trends along the Lexington-Echo Highway in and around Echo were established using the average annual daily traffic (AADT) volume information presented in the ODOT Traffic Volume Tables for the years 1976 through 1996. The AADT volumes were obtained for each of these years at selected locations

along the highway. Using a linear regression analysis of the average AADT volumes between 1976 and 1996, an average annual growth rate was determined. Table 5-2 summarizes the historic average growth rate on each of these sections.

TABLE 5-2
HISTORIC TRAFFIC GROWTH RATES ON STATE HIGHWAYS

Highway Section	Average Annual Growth Rate 1976-1996	Total Growth 1976-1996
Lexington-Echo Highway		
Rural section- Lexington to Echo	0.46%	9.7%
Echo- west city limits	0.08%	1.5%
Echo- 0.01 miles west of Thielsen Street	0.94%	20.5%
Echo- 0.01 miles south of Main Street	1.30%	29.4%
Rural section- Echo to I-84	0.44%	9.2%

Source: ODOT 1976-1996 Transportation Volume Tables; information compiled by DEA.

Based on volumes from ODOT's annual count locations over the 20-year period from 1976 to 1996, the average annual growth rate along the Lexington-Echo Highway in Echo has ranged from approximately 0.08 to 1.3 percent per year. On the rural sections of the highway east and west of Echo, traffic has been growing at a rate of nearly 0.5 percent per year. The urban highway sections in Echo generally experienced larger average and total growth over the 20-year period as well as larger net increases in the number of trips.

Traffic growth on Lexington-Echo Highway in Echo averaged 0.68 percent per year over the last 20 years, and averaged 0.76 percent per year since 1990. The average annual growth rate of the population in Echo was approximately 0.2 percent per year of over the last 20 years; however, this rate is somewhat deceiving because Echo lost population between 1980 and 1990, and only recently has population begun to increase again. The population in Echo has been increasing at a rate of 1.0 percent per year since 1990 (an additional five people annually). Typically, the rate of traffic growth exceeds that of population growth, as it did over the past 20 years; however, that has not been the case in Echo since 1990, as the population growth rate has exceeded the traffic growth rate during that time. That may be due to the fact that an increase of only five residents per year represents an average annual growth rate of 1.0 percent in Echo, and does not have a great effect on traffic volumes.

Future Traffic Volumes

Based on the original OEA estimates for the county, the population in Echo is forecast to continue to grow at a rate of 0.5 percent per year over the planning period. This is due primarily to four major employers locating or expanding in the HUES (Hermiston, Umatilla, Echo, and Stanfield) area. It was assumed for this study that a somewhat aggressive traffic growth rate of 1.0 percent per year would be used for the traffic forecasts in Echo. This results in an overall traffic volume increase of nearly 25 percent by the year 2018, when traffic volumes on the Lexington-Echo Highway would reach nearly 1,400 vpd just south of Main Street in Echo. Since no historical traffic volume data is available along Thielsen Road, the annual growth rate of 1.0% expected for the Lexington-Echo Highway was applied, assuming future traffic growth trends along this road are similar. This resulted in a 20-year growth rate of 22.0% along Thielsen Road. The forecast future traffic volumes and expected total growth are shown in Table 5-3.

TABLE 5-3
FORECAST TRAFFIC VOLUMES AND TOTAL GROWTH ON STATE HIGHWAYS

Location	1996 ADT (vehicles/day)	2018 ADT (vehicles/day)	Total Growth 1996-2018
Lexington-Echo Highway			
Echo- 0.01 miles west of Thielsen Street	940	1,170	24.5%
Echo- 0.01 miles south of Main Street	1,110	1,380	24.3%
Echo- east city limits	590	735	24.5%
Thielsen Road			
South of I-84	2,150[1]	2,625	22.0%[2]

Source: ODOT 1976-1996 Transportation Volume Tables; information compiled by DEA.

Notes: (1) ADT volume represents June 1998 conditions, as recorded by ODOT.
(2) Total growth of 22.0% is for a 20 year period (1998-2018). Actual growth could be higher with potential development occurring in the area.

HIGHWAY SYSTEM CAPACITY

For the year 2018, unsignalized intersection analyses were performed using the overall growth (24.5 percent) expected on the Lexington-Echo Highway, at the same intersection in Echo for which the existing conditions were analyzed. The analyses indicated that the intersection is expected to exceed ODOT level of service standards over the 20-year forecast period. The results of the unsignalized intersection analyses are shown in Table 5-4. Traffic operations were determined at the intersection using the 1985 Highway Capacity Software for unsignalized intersections. This software is based on the 1985 *Highway Capacity Manual*, Special Report 209, published by the Transportation Research Board.

TABLE 5-4
SUMMARY OF FUTURE OPERATIONS
AT LEXINGTON-ECHO HWY AND DUPONT STREET

Intersection Location	Direction	Movement	1996 LOS (v/c)	2018 LOS (v/c)
Lexington-Echo Hwy (N-S) & Dupont Street (E-W)	Northbound	Left, Through, Right	A (<0.48)	A (<0.48)
	Southbound	Left, Through, Right	A (<0.48)	A (<0.48)
	Eastbound	Left	A (<0.48)	A (<0.48)
	Westbound	Right	A (<0.48)	A (<0.48)

Note: The level of service is shown for all evaluated movements of the unsignalized intersections.

Future traffic projections for Thielsen Road indicate traffic volumes will increase by about 22.0%, reaching an ADT of 2,165 vehicles. Assuming this growth rate is applicable to the p.m. peak hour as well, total traffic during this period is expected to reach 190 vehicles. Two-way traffic of this magnitude will not adversely affect the traffic operations at intersecting minor streets along this road, should minor street traffic volumes remain low. However, potential development along Thielsen Road, south of I-84, could adversely affect traffic operations along this road. The city of Echo should require a traffic impact study for future developments in this area to mitigate any traffic problems that may arise along this road from future development.

Analysis Results

Traffic volumes along the Lexington-Echo Highway at Dupont Street are forecast to increase by nearly 25 percent over the 20-year forecast period. However, all traffic movements at the intersection, and all other intersections along the highway in Echo, are expected to continue to operate at LOS A (<0.48 v/c) throughout the 20-year forecast period.

Future traffic operations along Thielsen Road should remain adequate over the next 20 years. Although, with future development potentially occurring along this road, particularly near the I-84 interchange, transportation issues may arise which should be addressed through a traffic impact study.

CHAPTER 6: IMPROVEMENT OPTIONS ANALYSIS

As required by the Oregon Transportation Planning Rule (TPR), transportation alternatives were formulated and evaluated for the Echo Transportation System Plan (TSP). These potential improvements were developed with the input from the TAC, Management Team, city officials and the public. Each of the transportation system improvements options was developed to address specific deficiencies, access, or safety concerns and attempt to address the concerns specified in the goals and objectives (Chapter 2).

The following list includes all of the potential transportation system improvements considered. Improvement Options 2 through 11 are illustrated in Figure 6-1 and Improvement Option 12 illustrated in Figure 6-2.

1. Revise zoning code to allow and encourage mixed-use development and redevelopment.
2. Construct an integrated multi-use path system along the Feed Canal and Furnish Ditch.
3. Reconstruct sidewalk on south side of Buckley Street between Dale Street and the multi-use path.
4. Upgrade multi-use path between Buckley Street and the Lexington-Echo Highway.
5. Construct a multi-use path along south side of Main Street between Thielsen Street and east-end of existing sidewalk.
6. Establish bike lanes, with signing and striping, along the Lexington-Echo Highway between Main Street and Gerone Street.
7. Establish a pedestrian overpass across the UPRR line.
8. Umatilla County roadway project (Thielsen Road).
9. Construct Multi-Use Path Along West Side of Thielsen Road Between I-84 and the City
10. Construct a multi-use path along north side of Gerone Street between Thielsen Street and Golf Course Road.
11. Umatilla County pathway project (Rieth Road).
12. Establish a roadway maintenance and improvement program including sidewalks.
    - 12A. Pave southeast sections of Jane, Hiestand Street and College Street
    - 12B. Pave sections of Front Street, Buckley Street, and Dale Street
    - 12C. Pave sections of Dupont Street, Halstead Street, and Kennedy Street
    - 12D. Pave east sections of Willow Street, Sprague Street, Main Street, Bridge Street, and Buckley Street
    - 12E. Repave Dupont Street between Thielsen and Bridge
    - 12F. Repave Bridge Street between Front and dead end
    - 12G. Repave Bonanza Street between Garden and Halstead
    - 12H. Repave Kennedy Street between Dupont and RR tracks
    - 12I. Construct or repair sidewalks where needed
13. Implement transportation demand management strategies.

The proposed transportation system improvements evaluated for the Echo TSP include state highway, county, and local road projects. **It should be noted that not all of the transportation improvement options recommended along the county and state systems have identified funding. Therefore, recommended transportation improvements cannot be considered as committed projects, but are subject to the County's and ODOT's abilities to meet these current and future needs financially.**

EVALUATION CRITERIA

The evaluation of the potential transportation improvements in the city of Echo was based on a quantitative analysis of existing and future traffic volumes and a qualitative review of four factors: 1) safety; 2) access; 3) environmental factors, such as air quality, noise, and water quality; and 4) socioeconomic and land use impacts, such as community livability, right-of-way requirements and impacts on adjacent lands.

Another factor considered in the evaluation of the potential transportation improvements was cost. Costs were estimated in 1998 dollars based on preliminary alignments for each potential transportation system improvement.

COUNTY BRIDGE REPLACEMENT PROJECT

Umatilla County Bridge No. 59C703, located on Thielsen Road over Furnish Ditch, has been identified as functionally obsolete in the state bridge inspection survey. This bridge has been marked for replacement within the next 10 to 20 years by the Umatilla County roadway department. The existing bridge length and width is 31 feet and 24 feet, respectively. The estimated cost to remove the existing bridge and replace it with a new bridge with a new deck width of 28 feet is around $53,000. This project will be funded by the county and has been included as an independent project in the street system plan for Umatilla County. Replacement of this bridge has also been included as part of the Umatilla County roadway improvement option to widen Thielsen Road and include bike lanes (Option 9 below).

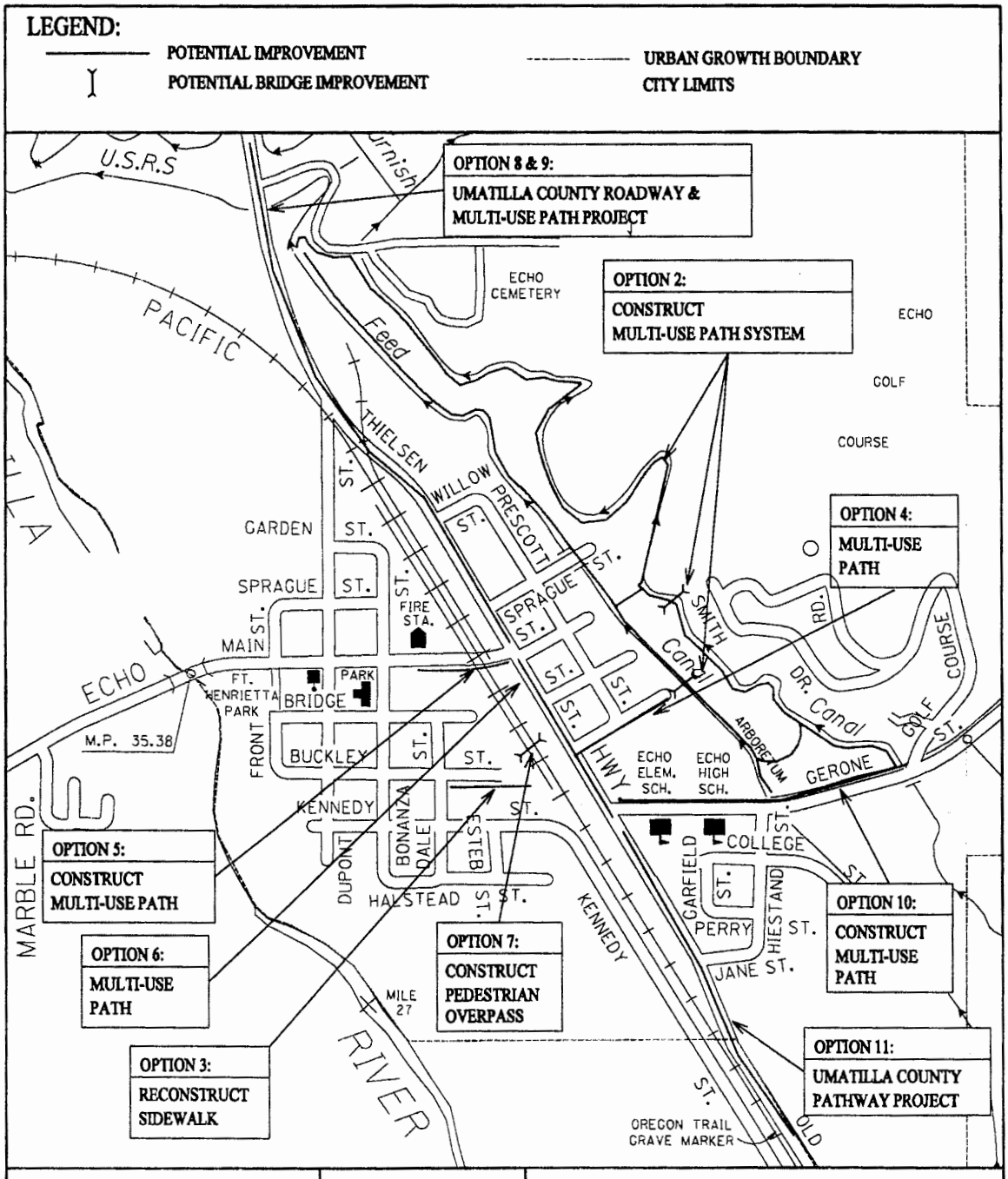
IMPROVEMENT OPTIONS EVALUATION

Through the transportation analysis and input provided from the public involvement program, multiple improvement projects were identified. These options included constructing new and reconstructing existing roadways, bridge replacement, and providing improved pedestrian and bicycle facilities.

Option 1. Revise Zoning Code to Allow and Encourage Mixed–Use Development and Redevelopment

One of the goals of the Oregon TPR is to reduce the reliance on the automobile. One way city jurisdictions can do this is through amendments in zoning and development codes to permit mixed-use developments and increases in density in certain areas. Mixed-use refers to development that contains more than one type of land-use, e.g. residential and commercial. Specific amendments would allow small-scale commercial uses within residential zones or residential uses within commercial zones. Such code amendments can encourage residents to walk and bicycle throughout the community by providing shorter travel distances between land uses.

These code revisions are more effective in medium to large sized cities with populations of 25,000 and over, and in cities such as Echo, they may not be appropriate. Because of Echo's size, the decision of what mode of transportation to use when making a trip inside the City is not influenced by distance. The longest distance between city limit boundaries in Echo is around one mile, a distance short enough to walk, ride a bike, or drive. Distances between different land uses, such as residential and commercial, are even shorter. The city of Echo can also be considered a bedroom community where the bulk of the city's workers commute to other larger cities such as Umatilla, Hermiston, and Pendleton. Because most of these workers travel outside the City in private vehicles, encouraging mixed-use developments or increased densities will not affect their choice of travel mode.



DAVID EVANS AND ASSOCIATES, INC
2828 S.W. CORBETT AVENUE
PORTLAND, OR. 97201-4830 (503) 223-6663

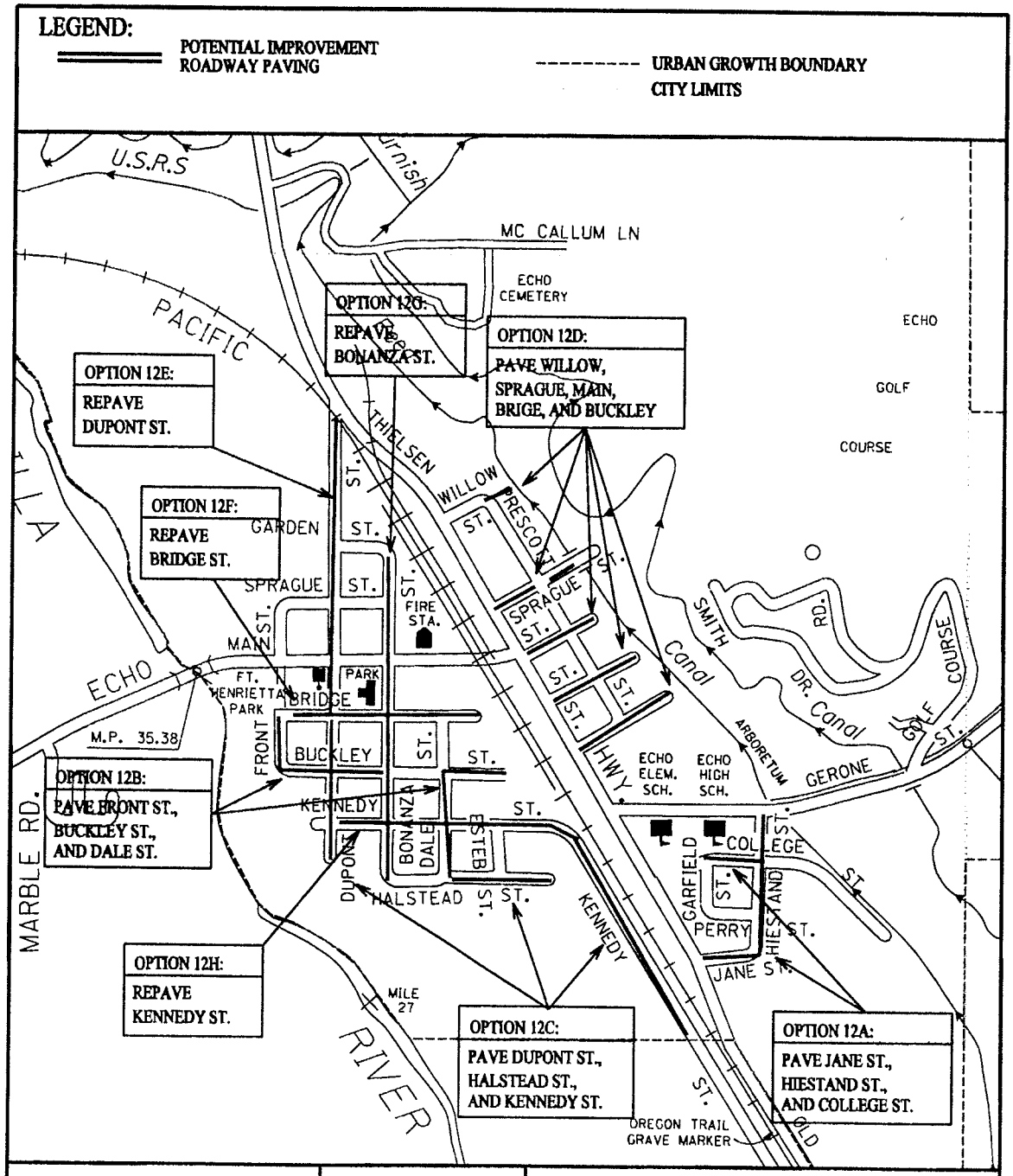
NORTH
(Not to Scale)

FIGURE 6-1

Potential Transportation System Improvements -Echo

City of Echo TSP

UMC00001/ECH06-1.DGN/BJD/07-26-99



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NORTH
(Not to Scale)

FIGURE 6-2

Potential Transportation System Improvements (Option 12)-Echo

City of Echo TSP

UMC00001/ECH06-2.DGN/BJD/10-27-99

No direct costs are associated with making the zoning code amendments.

Revisions to zoning and development codes to allow for increased density are recommended.

Option 2. Construct an Integrated Multi-Use Path System Along the Feed and Furnish Ditches

This project involves the construction of a recreational multi-use pathway system in the area of the Feed and Furnish Ditches in Echo. The orientation of the proposed pathway system is loop shaped as illustrated in Figure 6-1, with the alignment following the east and west sides of the Feed and Furnish Ditches, respectively. There are five potential access points to the looped pathway; 1) at the Echo Cemetery road, 2) Smith Dr., 3) where the Furnish Ditch meets Gerone Street, 4) the Oregon Trail Arboretum, and 5) the end of Buckley Street.

The two access points to Smith Drive and to Buckley Street would also require the construction of pedestrian bridges over the Feed and Furnish Ditches. The bridge crossing over the Furnish Ditch would need to be about 40 feet in length and the bridge crossing over the Feed Ditch, about 30 feet in length.

The open space located between the Feed and Furnish Ditches and the unimproved maintenance roads that follow alongside these ditches create a great opportunity for the City to establish a pathway system here. The proposed pathway provides a scenic walk for recreational, health, wildlife viewing, etc. The pathway system could also provide useful pedestrian connections between the town center, the cemetery, the golf course, the arboretum, and the public schools, with pathway extensions to these areas.

A typical unit cost for a multi-use pathway is around $13 per linear foot, assuming the new pathway will be 8-feet wide and composed of a 4-inch aggregate base and a 2-inch asphalt overlay. With the total length of the new pathway system estimated to be around 9,000 feet, the total paving cost would be around $115,700. With an estimated cost of $8,000 to construct the two pedestrian bridges, the total cost for this project is around $123,700. This estimate does not assume any land acquisition or special engineering problems such as steep grades, retaining walls, and drainage that increase costs.

This option is recommended.

Option 3. Reconstruct Sidewalk on South Side of Buckley Street Between Dale Street and the Multi-Use Path

Currently, the existing sidewalk along the south side of Buckley Street, between Dale Street and the multi-use path east of Buckley Street, is in poor condition and in need of replacement. This project would involve removing the existing sidewalk and reconstructing a new one.

Reconstructing this sidewalk will improve safety for pedestrians and bicyclists, particularly for children who are traveling between the town center and the public schools, and must cross over the railroad tracks. By providing a continuous sidewalk along Buckley Street with a direct connection to the multi-use path crossing over the railroad tracks, more pedestrians would be encouraged to use this facility and stay off the street.

The newly reconstructed sidewalk will be 5-feet wide and 300 feet in length. At an estimated cost of $25 per linear foot of new sidewalk, this project will cost around $7,500.

This option is recommended.

Option 4. Upgrade Multi-Use Path Between Buckley Street and the Lexington-Echo Highway

Currently, the multi-use asphalt path located between the east end of Buckley Street and the Lexington-Echo Highway (Thielsen Street) is in need of replacement, particularly at the railroad crossing, where the asphalt has become warped and chipped from train traffic.

This pathway provides a safe link for pedestrians and bicyclists, particularly for children who are traveling between the town center and the public schools, and must cross over a major rail line. Currently, train activity is high along this rail line with around 21 to 26 trains per day passing through Echo at an average rate of one per hour. The amount of train traffic is also expected to increase by 50 percent in the near future from the expansion of the Hinkle Railyard about 6.5 miles to the northwest near Hermiston.

By reconstructing a new pathway at this location, bicyclists and pedestrians would be encouraged to use this facility, thus, improving their security.

Reconstructing the existing pathway to an 8-foot wide path composed of 4-inches of base aggregate and 2-inches of asphalt would cost around $7,540.

This option is recommended.

Option 5. Construct Multi-Use Path Along South Side of Main Street Between Thielsen Street and East End of Existing Sidewalk

This option was identified to provide an additional crossing over the Union Pacific rail line for pedestrians and bicyclists. It would include the construction of a multi-use path along the south side of Main Street between Thielsen Street and the east end of the existing sidewalk on Main Street.

Construction of this path would improve the safety of pedestrians and bicyclists by separating them from traffic on Main Street and by providing a well defined and attractive crossing point over the Union Pacific rail line.

A typical unit cost for a multi-use pathway is around $13 per linear foot, assuming the new pathway will be 8-feet wide and composed of a 4-inch aggregate base and a 2-inch asphalt overlay. With the total length of the new pathway estimated to be around 440 feet, the total cost for this project would be around $5,720. Potential funding for this project may be provided by the state, since the Lexington-Echo Highway overlaps Main Street.

This option is recommended.

Option 6. Establish Multi-Use Paths, with Signing and Striping, Along the Lexington-Echo Highway Between Main Street and Gerone Street

Currently, the Lexington-Echo Highway (Thielsen Street), between Main Street and Gerone Street, has a street width of 34 feet and is striped for 2 lanes of traffic with 4-foot wide shoulders defined by fog line striping. The city of Echo has identified the existing paved shoulders as bikeways, but the local residents along the north side have been using this area for on-street parking.

This project would include restricting on-street parking on this section of highway and designating the 4-foot paved shoulders as bike lanes through effective signing and striping measures. Some effective

measures include installing "bike lane" signs ($100 each), a stencil in the shape of a bicycle painted on the highway shoulder ($30 each), and restriping the shoulder with an 8-inch wide stripe ($0.40/linear foot). The City has also discussed some type of concrete divider between the road and bike line rather than just a stripe, although that is not part of this cost estimate.

If the City chooses to utilize all three signing and striping measures, an effective configuration would include installing two signs, two stencil symbols, and striping along both sides of the highway at an estimated cost of around $1,000. Potential funding for this project may be provided by the state, since the project is along the Lexington-Echo Highway.

This option is recommended.

Option 7. Establish a Pedestrian Overpass Across the UPRR Line

Residents in the city of Echo are concerned with the freight train activity along the UPRR rail line, which passes through the heart of the City. Complaints from citizens range from perceived safety hazards for pedestrians, particularly children, who cross the rail line, to trains blocking roadway crossings for extended periods of time.

One potential solution the City has expressed an interest in is the construction of a pedestrian overpass across the rail line. Residents feel this would mitigate any pedestrian safety hazards that may exist.

A review of several factors such as project cost, right-of-way acquisition, and probable use indicate that a pedestrian overpass may not be a realistic solution. From discussions with ODOT officials, the average cost to construct a pedestrian overpass is around $500,000. This cost is high due to factors such as meeting minimum height requirements for the overpass and complying with the American Disabilities Act for handicapped people, which would require wheelchair accessible ramps to be constructed at both ends of the overpass. Assuming a minimum height requirement of 30 feet for an overpass and handicap ramps designed with a 1:12 grade, with landings at several locations, total ramp lengths at each end of the overpass would be about 400 feet.

The above cost for a pedestrian overpass does not include right-of-way acquisition. With the amount of ROW needed to construct an overpass, the total cost of this project could be much higher.

Addressing the issue of probable use, pedestrian overpasses have been known to be effective only when there is a separation of grade or obstruction that forces pedestrians to use the overpass. In Echo, the three designated crossing points at Dupont St. and Main St. and the path crossing east of Buckley St. are at-grade. The only obstruction to crossing at these points would be a passing train, which, given the amount of train traffic passing through the City, only happens about once or twice an hour, at most. At all other times when trains are not present, pedestrians will most likely cross at-grade with the railroad tracks, regardless of an overpass.

One way to force pedestrians to use an overpass is to install a permanent obstruction such as fencing or walls. However, pedestrians cannot be prevented from crossing at the Dupont St. and Main St. crossings. Therefore, this option may not be effective.

Because of the large expense to construct such a facility and the uncertainty of utilization by pedestrians, a pedestrian overpass is not recommended. Other options the City should consider to improve pedestrian safety are programs to educate local residents on safety when crossing the railroad tracks, or provide effective hazard controls at existing or new pedestrian crossings, i.e., warning signs, flashing lights, fencing.

Options 5 and 6 above are projects identified to improve pedestrian crossings over the rail line and are recommended.

To address the City's concern with traffic delays created by trains slowing or stopping along the rail line through town, several options are possible. One option wood be to construct an underpass or overpass along Main St. to allow for unrestricted traffic flow across the rail line. The average cost for an underpass is around $1 to $2 million depending on the ease of soil excavation and flooding issues. Construction of an overpass would cost around $1 million. Both the underpass and overpass options are high cost solutions and with a population size of 640 residents in Echo, they may not be feasible to construct. Another option the City should consider would be to coordinate a plan with the UPRR to make sure trains do not stop in the City or they do not block existing street crossings. A plan such as this is crucial, especially when considering the need for emergency vehicles to have unrestricted flow at street crossings.

Option 8. Umatilla County Roadway Project (Thielsen Road)

Thielsen Road, or commonly referred to as "The Echo Access Road", provides a direct connection between the city of Echo and the nearby interchange of two major thoroughfares to the north; I-84 and US Highway 395. Traffic volumes along this road are the highest within the city UGB. South of the I-84 interchange, the ADT volume along this road reached 2,150 vehicles in June 1998, with a two-way p.m. peak hour volume of 155 vehicles.

Thielsen Road (including Thielsen Street in the City) is owned and maintained by the county. Between the I-84 interchange and Main Street in Echo (a distance of around 9,000 feet or 1.70 miles), the current right-of-way is 40 feet. It is a narrow two-lane roadway with a paved street width of 22- to 24 feet.

Residents in the city of Echo feel this roadway is too narrow and that this poses as a safety problem for drivers, bicyclists, and pedestrians, as well as a development issue, particularly near the I-84 interchange. In addition to existing traffic on Thielson Road, additional pressure from Echo Heights, a new housing development consisting of 42 one acre lots will use the road as its primary access to Echo. The, City would like the county to upgrade Thielsen Road to include wider travel lanes and paved shoulders to be signed for bicycle use to improve driver and bicycle safety. The City has expressed that Thielsen Road is a popular bike route for local bicyclists. The City also feels that widening Thielsen Road would provide better access to the open land between the City and I-84 and would encourage businesses to locate here. Currently, there is a 200 acre site adjacent to I-84 designated for Tourist Commercial and Light Industrial that would need access to this road.

In most situations, a county roadway improvement such as this, when located within a city UGB, would include upgrading the road to urban design standards. However, because of the small size of Echo and the low traffic volumes present along this road, the City has agreed to allow the county to widen Thielsen road to rural design standards.

It is, therefore, proposed that Thielsen Road be widened and repaved to a width of 36 feet; allowing for two 12-foot travel lanes and 6-foot wide paved shoulders on both sides of the road. Although the paved shoulders will be shared by both bicyclists and pedestrians, proper signing and pavement stencils should be installed designating bike usage. The proposed shoulder width of 6 feet is consistent with the *1995 Oregon Bicycle and Pedestrian Plan,* for a shoulder bikeway. The proposed street width is also consistent with the recommended rural street design standards for county roads as identified in the Umatilla County TSP (Chapter 7).

The proposed street width of 36 feet falls within the available right-of-way, however, future development along Thielsen Road may require expansion of the proposed facility in specific areas. Therefore, it is also recommended that the county secure additional right-of-way. The minimum right-of-way requirement for a designated city arterial street, such as Thielsen Road, is 80 feet

In addition to widening the roadway, two bridges will need to be replaced. Currently, County Bridge No. 59C703, over the Furnish Ditch, and County Bridge No. 59C704, over the Feed Canal, have deck widths of only 24.0 feet and 24.7 feet, respectively. The new bridges will need deck widths of around 40 feet to allow for two 12-foot travel lanes, 5-foot bike lanes, and a sidewalk along one side of the bridge (as required by the county). It should be noted that County Bridge No. 59C703, over the Furnish Ditch, has been identified as being functionally obsolete, and has been targeted for replacement in the Umatilla County TSP, as an independent project. If the county decides to replace this bridge first, design of the replacement bridge should consider the street width requirements of this project.

This project also creates a great opportunity to provide continuous bicycle and pedestrian routes between Echo and the city of Stanfield, just north of I-84. The Stanfield TSP outlines a project to add multi-use paths along both sides of US 395, ending at the north side of the US 395/I-84 interchange. To provide a direct connection to these paths from the proposed paved shoulders along Thielsen Road, improvements are necessary along the I-84 overpass. Currently, the overpass has 6-foot wide shoulders, two 13.5-toot travel lanes, and a single 13-foot left turn pocket serving northbound traffic at the westbound on/off ramps and southbound traffic at the eastbound on/off ramps. For pedestrians and bicyclists to travel safely over the I-84 overpass, 6-foot wide raised sidewalks are proposed. Also proposed is the installation of new guardrails along the overpass. These improvements will provide the necessary protections on the overpass for bicyclists and pedestrians to travel separate from traffic.

The estimated cost for the roadway widening portion of this project is around $324,000. This assumes a cost of $36 per linear foot of roadway to construct 6-foot shoulders on both sides of the road. The cost for acquiring 40 feet of additional right-of-way is estimated at $360,000, at a unit cost of $1 per square foot. The estimated cost to remove and replace the two bridges along Thielsen Road is $73,100 and $144,200, each. The costs associated with improvements to the I-84 overpass include $40,000 to install 6-foot sidewalks along both sides of the road for a distance of approximately 800 feet. The estimated cost to install guardrail protection along both sides of the overpass for a distance of about 500 feet is $1,000,000. This is based on a unit cost taken from a similar ODOT project. The combined cost for both the Thielsen Road and overpass improvements is $1,941,300.

Funding for improvements to Thielsen Road should be provided mainly by the county, since it is owned and maintained by the county. The state should provide for the necessary improvements to the I-84 overpass. The city of Echo has applied to ODOT to have Thielsen Road and Rieth Road be classified as the Umatilla County Scenic Road #1, which may enable projects like this to receive federal or state funding.

At this time, the city of Echo is encouraging businesses to locate on the developable parcels of land just south of the interchange. If development does occur before this project is implemented, the City should hold private developers responsible for constructing Thielsen Road to a more urban standard. This would include conforming to the adopted street design standard for an arterial street, which includes bicycle lanes.

This option is recommended as it will improve bicycle and pedestrian safety along this road and will provide direct connections to the multi-use paths proposed along US 395 in Stanfield as outlined in the Stanfield TSP. This project is also supported by the Umatilla County TSP and US 395 North Corridor Plan.

Option 9. Construct Multi-Use Path Along West Side of Thielsen Road Between I-84 and the City

The City is pursuing the possibility of creating a multi-use bike path that follows the natural topography in the area, which in some cases detours from the existing roadbed. The City has developed preliminary costs and engineering drawings for the project. These improvements would reduce the proposed increase in Option 8 shoulder width from six feet to four feet. This would make room for the multi-use path when it shares the same roadbed. The cost for this project is estimated to be $1,000,000.

Discussions with City staff indicate that this is the preferred option to widening Thielsen Road for bicycles and pedestrians. They have discussed this with both ODOT and the County and have gained support for the project, although there is currently not a designated funding source.

Echo should continue to work with ODOT and Umatilla County to develop a more refined plan and cost estimates for the multi-use path.

Option 10. Construct Multi-Use Path Along North Side of Gerone Street Between Thielsen Street and Golf Course Road

This project would include construction of a multi-use path along the north side of Gerone Street (Lexington-Echo Highway), between Thielsen Street and Golf Course Road, for a distance of 1,500 feet. The purpose of this project is to provide safe connections for bicyclists and pedestrians traveling to and from the proposed multi-use path system (Option 3) at the Arboretum and Furnish Ditch access points, Golf Course Road, and the city schools.

Currently, Gerone Street is a narrow two-lane roadway with a paved street width of around 22 feet, between Thielsen Street and Golf Course Road. There is a short sidewalk on the south side of the road extending from Thielsen Street to the elementary school, and a crosswalk across Gerone in front of the school.

Establishing a multi-use path on the north side of Gerone Street would include adding an 8-foot wide paved shoulder to the roadway, with proper striping to define the pathway. An 8-foot wide path would allow for two-way bike and pedestrian travel.

The estimated cost to construct an 8-foot wide shoulder with striping is $72,000. This assumes a cost of $48/linear foot for a paved shoulder constructed according to highway standards with 8-inch wide striping.

Some or all of the funding for this project may be provided by the state, since the project is along the Lexington-Echo Highway.

This option is recommended.

Option 11. Umatilla County Pathway Project (Rieth Road)

This project would include construction of a multi-use path along the east-side of Rieth Road, between Gerone Street and The Oregon Trail Grave Marker, for a distance of 2,200 feet. City of Echo residents feel this pathway is necessary as it will provide an alternative means of visiting the Oregon Trail Grave Marker, other than by automobile. The Oregon Trail Grave Marker is part of the many Oregon Trail sites in Echo. Providing alternative access to the sites in the area, such as the proposed path, may increase tourism in the area, thus enhancing the community economy. Eventually, the City would like to see this extended all the way to Pendleton.

Establishing a multi-use path on the eastside of Rieth Road would include adding an 8-foot wide paved shoulder to the roadway, with proper striping to define the pathway. An 8-foot wide path would allow for two-way bike and pedestrian travel.

The estimated cost to construct an 8-foot wide shoulder with striping is $105,600. This assumes a cost of $48/linear foot for a paved shoulder constructed according to highway standards with 8-inch wide striping.

Funding for this project may be provided by the county, since the project is along a county owned road. This project has been also identified in the Umatilla County TSP, since Rieth Road is county owned and maintained. The city of Echo has applied to ODOT to have Thielsen Road and Rieth Road be classified as the Umatilla County Scenic Road #1, which may enable projects like this to receive federal or state funding.

This option is recommended.

Option 12. Establish a Roadway Maintenance and Improvement Program

Many of the streets in Echo are substandard and are in need of paving or repaving. In response to this need, city officials have developed a ten-year roadway maintenance and improvement plan to upgrade city streets. At this time, the plan includes a prioritized list of ten projects. The following table describes the location of these projects along with the estimated time of completion and total cost.

TABLE 6-1
ROAD MAINTENANCE AND IMPROVEMENT PROGRAM
PROJECT LIST

Project No.	Description/Location	Year Complete	Total Cost
12A.	Pave southeast sections of Jane, Hiestand St., and College St.	2000	$15,000
12B.	Pave sections of Front St., Buckley St., and Dale St.	2000	$15,000
12C.	Pave sections of Dupont St., Halstead St., and Kennedy St.	2001	$20,000
12D	Pave east sections of Willow St., Sprague St., Main St., Bridge St., and Buckley St.	2003	$20,000
12E	Repave Dupont St. between Thielsen and Bridge	2004-2009	$25,000
12F	Repave Bridge St. between Front and dead end	2004-2009	$25,000
12G	Repave Bonanza St. between Garden and Halstead	2004-2009	$25,000
12H	Repave Kennedy St. between Dupont and RR tracks	2004-2009	$25,000
12I	Construct, repair, or replace sidewalks within City limits	2004-2009	$658,000
Total			**$828,800**

The cost estimates for each project identified above were performed by city officials and assume a total pavement width of 22 to 24 feet, which is wide enough for two-lanes of travel.

Funding for these roadway projects will be provided by the City as funds become available.

Paving or repaving the city streets will improve the aesthetics of the local street system and community livability for the residents who reside on these streets. For these reasons, all street paving projects are

recommended. However, it is also recommended that each of these projects include the addition of a pedestrian facility in correspondence with the recommended street design standards for a local street.

Option 13. Implement Transportation Demand Management Strategies

Transportation demand management (TDM) strategies change the demand on the transportation system by providing facilities for modes of transportation other than single occupant passenger vehicles, implementing carpooling programs, altering work shift schedules, and applying other transportation measures within the community. The TPR recommends that cities evaluate TDM measures as part of their TSPs.

TDM strategies are most effective in large, urban cities; however, some strategies can still be useful in small cities such as Echo. For example, staggering work shift schedules at local businesses may not be appropriate in Echo since there are no large employers in the area. However, provisions for alternative modes of transportation, such as sidewalks and bike lanes, and implementing a countywide carpooling program can be beneficial for residents of the City.

Echo can implement TDM strategies by requiring all future street improvement projects to include the addition of some sort of pedestrian facility, such as new sidewalks or walkways, which will effectively separate pedestrians from motorized traffic. All new street improvement projects should also consider bicycle lanes as well.

Implementing a local carpool program that only serves Echo would not be effective due to the City's geographical size and people living and working in different locations. However, a countywide carpool program is feasible. Residents who live in Echo and residents who live in other cities and rural areas should be encouraged to carpool with a fellow coworker or someone who works in the same area.

Although the primary goal of these measures is to reduce the number of vehicle trips made within the City, especially during peak periods, street capacity for automobiles and trucks is generally not an issue in Echo. At the same time, providing adequate facilities for pedestrians and bicyclists increases the livability of a city, and improves traffic and pedestrian safety. With more emphasis on walking or biking in the City, conditions such as air quality and noise levels would be improved as well. Therefore, this option is recommended.

Costs associated with implementing TDM strategies were not determined.

SUMMARY

Table 6-2 summarizes the recommendations of the street system modal plan based on the evaluation process described in this chapter. Chapter 7 discusses how these improvement options fit into the modal plans for the Echo area.

TABLE 6-2
TRANSPORTATION IMPROVEMENT OPTIONS: RECOMMENDATION SUMMARY

Option	Recommendation
1. Revise zoning code to allow and encourage mixed-use development and redevelopment.	• Implement
2. Construct an integrated multi-use path system along the Feed and Furnish Ditches.	• Implement
3. Reconstruct sidewalk on south side of Buckley St. between Dale St. and the multi-use path.	• Implement
4. Upgrade multi-use path between Buckley St. and the Lexington-Echo Highway.	• Implement
5. Construct a multi-use path along south side of Main St. between Thielsen St. and east end of existing sidewalk.	• Implement
6. Establish bike lanes, with signing and striping, along the Lexington-Echo Highway between Main St. and Gerone St.	• Implement
7. Establish a pedestrian overpass across the UPRR line.	• Do not implement
8. Umatilla County roadway project (Thielsen Road).	• Implement (County and ODOT have jurisdiction)
9. Construct Multi-Use Path along the west side of Thielsen Road between the City limits and I-84	• Continue to work with ODOT and the County to develop a plan
10. Construct multi-use path along north side of Gerone Street between Thielsen Street and Golf Course Road.	• Implement (ODOT has jurisdiction)
11. Umatilla County pathway project (Rieth Road).	• Implement (County has jurisdiction)
12. Establish a roadway maintenance and improvement program.	• Implement
13. Implement transportation demand management strategies.	• Implement

CHAPTER 7: TRANSPORTATION SYSTEM PLAN

The purpose of this chapter is to provide detailed operational plans for each of the transportation systems within the community. The Echo Transportation System Plan (TSP) covers all the transportation modes that exist and are interconnected throughout the urban area. Components of the TSP include street classification standards, access management recommendations, transportation demand management measures, modal plans, and a system plan implementation program.

STREET DESIGN STANDARDS

Street design standards ensure the design of a roadway supports its intended function. The function is determined by operational characteristics such as traffic volume, operating speed, safety, and capacity. Street standards institute design parameters necessary to provide a community with roadways that are relatively safe, aesthetic, and easy to administer when new roadways are planned or constructed. They are based on experience, and policies and publications of the profession.

Existing Street Standards

The city of Echo has no designated street design standards. There are also no standards for bike or pedestrian facilities.

Recommended Street Standards

The development of the Echo TSP provides the City with an opportunity to review and revise street design standards to more closely fit with the functional street classification, and the goals and objectives of the TSP. The recommended street standards for all types of functional classification systems are shown graphically in Figure 7-1 through Figure 7-3, and are summarized in Table 7-1. Further discussion of each type of street standard follows below.

Since the Echo TSP includes all land within the Urban Growth Boundary (UGB), the recommended street standards should be applied in the outlying areas outside the city limits as well as within the UGB. Although these outlying areas may presently have a rural appearance, these lands will ultimately be part of the urban area. Retrofitting rural streets in these areas, as well as all rural streets within the city limits to urban standards in the future is expensive and controversial; it is more efficient to build them to an acceptable urban standard.

TABLE 7-1
RECOMMENDED STREET DESIGN STANDARDS

Classification	Pavement Width	Right-of-way Width	Min. Posted Speed
Residential – Option 1	20 ft.	44-48ft.	15-25 mph
Residential – Option 2	23-24 ft.	47-52 ft.	15-25 mph
Residential – Option 3	25-28 ft.	49-56 ft.	15-25 mph
Alley	10-12 ft.	16-20 ft.	10 mph
Collector	32-34 ft.	60-66 ft.	25-35 mph
Arterial	50-52 ft.	74-80 ft.	25-45 mph

Sidewalks shall be provided on arterial streets and should be included on all urban streets as an important component of the pedestrian system, unless the costs of sidewalks are excessively disproportionate to the need or probable use. Ideally, sidewalks should be buffered from the street by a planting strip to eliminate obstructions in the walkway, provide a more pleasing design, and provide a buffer from traffic. When sidewalks are located directly adjacent to the curb, they can include such impediments as mailboxes, street light, and sign poles, which reduce the effective width of the walk. To maintain a safe and convenient walkway for at least two adults, a 5 foot sidewalk should be used in residential areas.

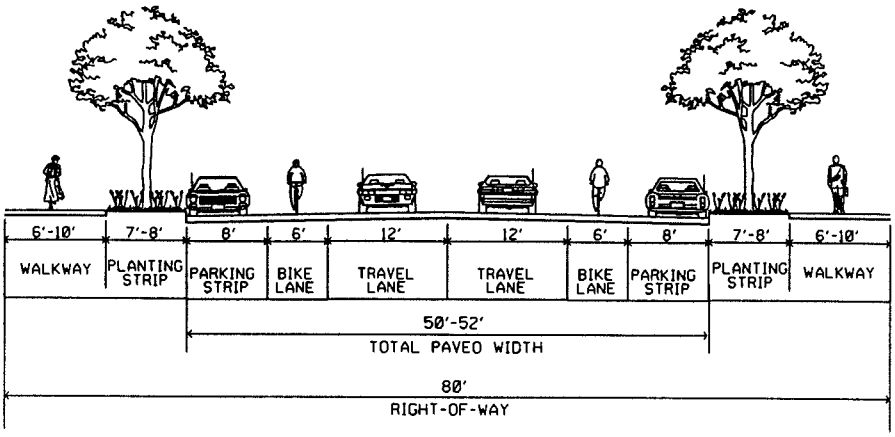
Residential Streets

The design of a residential street affects its traffic operation, safety, and livability. The residential street should be designed to enhance the livability of the neighborhood while accommodating less than 1,200 vehicles per day. Design speeds should be 15 to 25 mph. When traffic volumes exceed approximately 1,000 to 1,200 vehicles per day, the residents on that street will perceive the traffic as a noise and safety problem. To maintain neighborhoods, local residential streets should be designed to encourage low speed travel and to discourage through traffic. Narrower streets discourage speeding and through traffic as well as improve neighborhood aesthetics. They also reduce right-of-way needs, construction costs, stormwater run-off, and the need to clear vegetation.

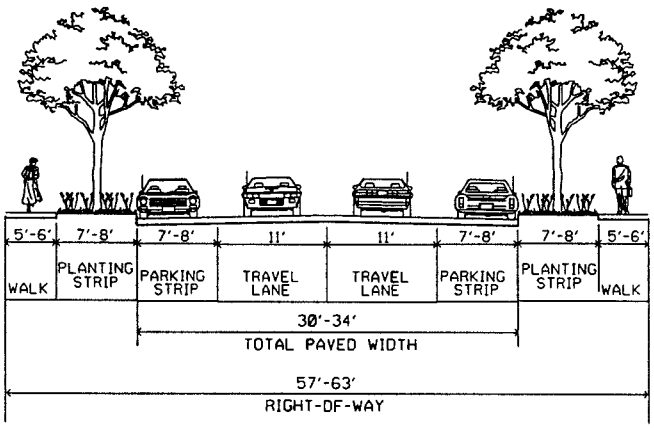
Three recommended street standard options are provided for residential streets, as shown in Figure 7-1. Each option provides a minimum of 20 feet of pavement and provides varying degrees of on-street parking. The City should choose one of these options for each residential street based on the existing right-of-way and neighborhood character.

Option 1

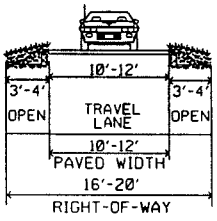
This first option for a local residential street is a 20 foot paved roadway surface within a 44 to 48 foot right-of-way. This standard will accommodate passage of one lane of moving traffic in each direction. Five to six foot sidewalks and seven to eight foot planting strips should be provided on each side of the roadway. The planting strips may be graded to accommodate parking in appropriate locations.



Arterial Roads



Collector Roads



Alley

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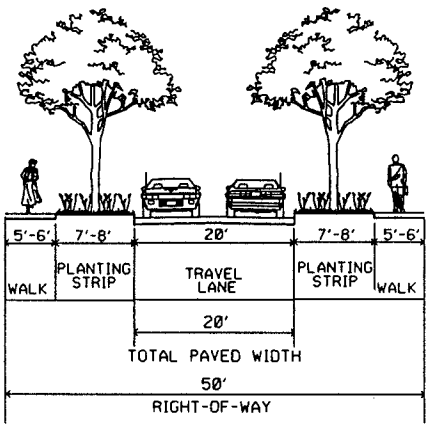
(Not to Scale)

FIGURE 7-1

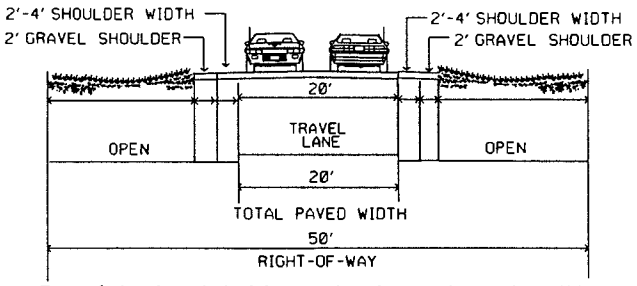
Rural Street Standards Local, Minor Collector and Major Collector Roadways

City of Echo TSP

UMCO0001/Echo/Echo7-1-4.dgn/SWH/2-26-01



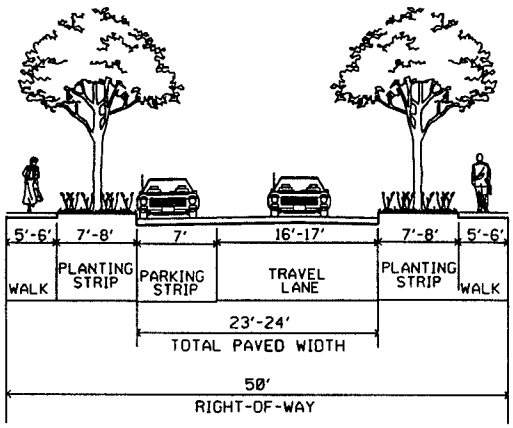
Local Option 1



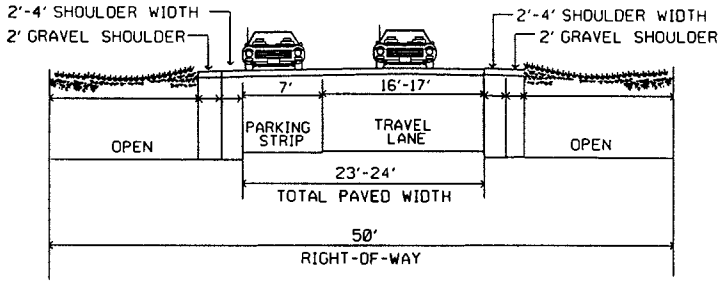
Local Option 1 (without planting strip and walk)

DAVID EVANS AND ASSOCIATES, INC. 2828 S.W. CORBETT AVENUE PORTLAND, OR. 97201-4830 (503) 223-6663	(Not to Scale)	FIGURE 7-2 Rural Street Standards Local, Minor Collector and Major Collector Roadways City of Echo TSP

UMCO0001/Echo/Echo7-1-4.dgn/SWH/2-26-01



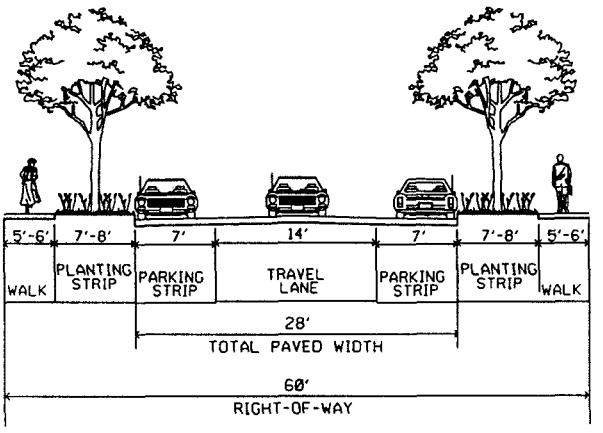
Local Option 2



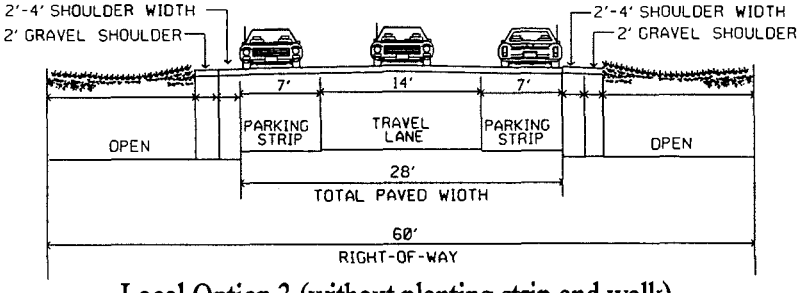
Local Option 2 (without planting strip and walk)

DAVID EVANS AND ASSOCIATES, INC. 2828 S.W. CORBETT AVENUE PORTLAND, OR. 97201-4830 (503) 223-6663	(Not to Scale)	FIGURE 7-3 Rural Street Standards Local, Minor Collector and Major Collector Roadways City of Echo TSP

UMCO0001/Echo/Ech07-1-4.dgn/SWH/2-26-01



Local Option 3



Local Option 3 (without planting strip and walk)

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2828 S.W. CORBETT AVENUE
PORTLAND, OR. 97201-4830 (503) 223-6663

(Not to Scale)

FIGURE 7-4

Rural Street Standards
Local, Minor Collector and
Major Collector Roadways

City of Echo TSP

Option 2

This option provides a 23 to 24 foot paved roadway surface within a 47 to 52 foot right-of-way. This standard will accommodate passage of one lane of moving traffic in each direction, with an eight foot paved parking strip on one side. Five to six foot sidewalks and seven to eight foot planting strips should be provided on each side of the roadway.

Option 3

A third option for a residential street provides a 28 foot paved roadway within a 49 to 56 foot right-of-way. This standard will accommodate passage of one lane of moving traffic, with paved parking present along both sides of the road. Five to six foot sidewalks should be provided on both sides of the roadway in addition to seven to eight foot planting strips.

Alleys

Alleys can be a useful way to diminish street width by providing rear access and parking to residential, commercial, and industrial areas. Including alleys in a residential subdivision allows homes to be placed closer to the street and eliminates the need for garages to be the dominant architectural feature. This pattern, once common, has been recently revived as a way to build better neighborhoods. In addition, alleys can be useful in commercial and industrial areas, allowing access by delivery trucks off the main streets. Alleys should be encouraged in the urban area of Echo. Alleys should be 10 to 12 feet wide, with a 16 to 20 foot right-of-way (see Figure 7-1).

Cul-de-Sac Streets

Cul-de-sac, or "dead-end" residential streets are intended to serve only the adjacent land in residential neighborhoods. These streets should be short (less than 400 feet long) and serve a maximum of 20 single-family houses. Because the streets are short and the traffic volumes relatively low, the street width can be narrower than a standard residential street, allowing for the passage of two lanes of traffic when no vehicles are parked at the curb and one lane of traffic when vehicles are parked at the curb.

Because cul-de-sac streets limit street and neighborhood connectivity, they should only be used where topographical or other environmental constraints prevent street connections. Where cul-de-sacs must be used, pedestrian and bicycle connections to adjacent cul-de-sacs or through-streets should be included.

Collector Streets

Collectors are intended to carry between 1,200 and 10,000 vehicles per day, including limited through-traffic, at a design speed of 25 to 35 mph. A collector can serve residential, commercial, industrial, or mixed land uses. Collectors are primarily intended to serve local access needs of residential neighborhoods by connecting local streets to arterials. Bike lanes are typically not needed in smaller cities like Echo due to slower traffic speeds and low traffic volumes. The recommended street standard provided for collectors, is shown in Figure 7.2. This recommended standard provides one lane of moving traffic in each direction plus parking on both sides and can also be striped to

provide two travel lanes plus left-turn lanes at intersections or driveways by removing parking for short distances. Five to six-foot sidewalks should be provided on each side of the roadway. A planting strip has been included with a width of seven to eight feet, which may be used as parking.

Arterial Streets

Arterial Streets form the primary roadway network within and through a region. They provide a continuous roadway system that distributes traffic between different neighborhoods and districts. Generally, arterial streets are high capacity roadways that carry high traffic volumes with minimal localized activity. Design speeds should be between 25 and 45 mph (see Figure 7-3). The recommended design standard for arterial streets provides a 50-52-foot paved surface within an 74-foot to 80-foot right-of-way to allow for two 12-foot travel lanes, two six-foot bike lanes, and two seven to eight-foot parking lanes. The bike lanes should be striped between the parking lane and the travel lane.

Bike Lanes

In cases where a bikeway is proposed within the street right-of-way, 5- to 6-feet of roadway pavement should be striped on each side of the street and reserved for bike lanes. The striping should be done in conformance with the *State Bicycle and Pedestrian Plan* (1995). In cases where curb parking will exist with a bike lane, the bike lane will be located between the parking and travel lanes. In some situations, curb parking may have to be removed to permit a bike lane.

Bikeways should be added when a new street is built or improvements are made to existing streets.

On arterial and collector streets that are not scheduled to be improved as part of the street system plan, bike lanes may be added to the existing roadway to encourage cycling, or when forecast traffic volumes exceed 2,500 to 3,000 vehicles per day. The striping of bike lanes on streets that lead directly to schools should be high priority.

Sidewalks

A complete pedestrian system should be implemented in the urban portion of Echo. Every urban street should have sidewalks on both sides of the roadway as shown on the cross sections in Figure 7-1 through Figure 7-3. Sidewalks on residential streets should be at least 5-feet wide. In addition, pedestrian and bicycle connections should be provided between any cul-de-sac or other dead-end streets.

Another essential component of the sidewalk system is street crossings. Intersections must be designed to provide safe and comfortable crossing opportunities. Tools to accomplish this includes crosswalks, signal timing (to ensure adequate crossing time) when traffic signals are present, and other enhancements such as curb extensions, which are used to decrease pedestrian crossing distance and act as traffic calming measures.

Curb Parking Restrictions

Curb parking should be prohibited at least 15 feet from the end of an intersection curb return to provide adequate sight distance at street crossings.

Street Connectivity

Street connectivity is important because a well-connected street system provides more capacity and better traffic circulation than a disconnected one. Developing a grid system of relatively short blocks can minimize excessive volumes of motor vehicles along roads by providing a series of equally attractive or restrictive travel options. Short block sizes also benefit pedestrians and bicyclists by shortening travel distances and making travel more convenient. The average block size within the City's grid system is around 275 feet square, which is an ideal block size. To ensure that this pattern of development continues into the future, a maximum block perimeter of 1,200 feet is recommended. This feature is critical to Echo's continued livability.

ACCESS MANAGEMENT

Access management is an important tool for maintaining a transportation system. Too many access points along arterial streets lead to an increased number of potential conflict points between vehicles entering and exiting driveways, and through vehicles on the arterial streets. This leads not only to increased vehicle delay and deterioration in the level of service on the arterial, but also a reduction in safety. Research has shown a direct correlation between the number of access points and collision rates. Experience throughout the United States has also shown that a well-developed access plan for a street system can minimize local cost for additional capacity and/or access improvements along unmanaged roadways. Therefore, it is essential that all levels of government maintain the efficiency of existing arterial streets through better access management.

The Transportation Planning Rule (TPR) defines access management as measures regulating access to streets, roads and highways from public roads and private driveways and requires that new connections to arterials and state highways be consistent with designated access management categories. As the city of Echo continues to develop, the arterial/collector/local street system will become more heavily used and relied upon for a variety of travel needs. As such, it will become increasingly important to manage access on the existing and future arterial/collector street system as new development occurs.

One objective of the Echo TSP is to develop an access management policy that maintains and enhances the integrity (capacity, safety, and level-of-service) of the city's streets. Too many access points along a street can contribute to a deterioration of its safety, and on some streets, can interfere with efficient traffic flow.

Access Management Techniques

The number of access points to an arterial can be restricted through the following techniques:

- Restrictions on spacing between access points (driveways) based on the type of development and the speed along the arterial.

- Sharing of access points between adjacent properties.
- Providing access via collector or local streets where possible.
- Constructing frontage roads to separate local traffic from through-traffic.
- Providing service drives to prevent spillover of vehicle queues onto the adjoining roadways.
- Providing acceleration, deceleration, and right-turn only lanes.
- Offsetting driveways to produce T-intersections to minimize the number of conflict points between traffic using the driveways and through traffic.
- Installing median barriers to control conflicts associated with left-turn movements.
- Installing barriers to the property along the arterial to restrict access width to a minimum.

Recommended Access Management Standards

Access management is hierarchical, ranging from complete access control on freeways to increasing use of streets for access purposes, to including parking and loading at the local and minor collector level. Table 7-2 describes recommended general access management guidelines by roadway functional classification.

TABLE 7-2
RECOMMENDED ACCESS MANAGEMENT STANDARDS

Functional Classification	Intersections			
	Public Road		Private Drive[2]	
	Type[1]	Spacing	Type	Spacing
Arterial				
Lexington-Echo Highway[3]	See Access Management Spacing Standards, Appendix C of the 1999 Oregon Highway Plan			
Other Arterials Within UGB[(4]	at-grade	500 ft.	L/R Turns	150 ft.
Collector[5]				
Dupont StreetBonanza Street Rieth Road	at-grade	250 ft.	L/R Turns	100 ft.
Residential Street	at-grade	250 ft.	L/R Turns	Access to Each Lot
Alley (Urban)	at-grade	100 ft.	L/R Turns	Access to Each Lot

Notes:
(1) For most roadways, at-grade crossings are appropriate.
(2) Allowed moves and spacing requirements may be more restrictive than those shown to optimize capacity and safety. Also, see section below on "Access Control Rights" along state highways.
(3) See section on Special Transportation Area below.
(4) These distances may be superceded by the Interchange Access Standards, providing the distances are greater than the distances listed in the above table. See section on Interchange Access Standards below.
(5) Some sections of these roads are designated as residential streets, where the residential access management standard applies.

Application

The access management standards above apply mainly to new development accesses. They are not intended to eliminate existing intersections or driveways. It is important to note, however, that existing developments and legal accesses on the transportation network will not be affected by the recommended access management techniques until either a land use action is proposed, a safety or capacity deficiency is identified that requires specific mitigation, a specific access management strategy/plan is developed, existing properties along the highway are redeveloped, or a major construction project is initiated on the street.

To summarize, access management strategies consist of managing the number of access points and providing traffic and facility improvements. The solution is a balanced, comprehensive system that provides reasonable access while maintaining the safety and efficiency of traffic movement.

Access Management on State Highways

Access management is important to promoting safe and efficient travel for both local and long distance users along the Lexington-Echo Highway in Echo. The *1999 Oregon Highway Plan* (OHP) specifies access management spacing standards and policies for state facilities.

Although the City of Echo may designate state highways as arterial roadways within their transportation system, access management for these facilities follows the Access Spacing Standards of the 1999 *Oregon Highway Plan*. This section of the TSP describes the state highway access management objectives and the specific highway segment where special access spacing standards apply.

General Access Spacing Standards

The Lexington-Echo Highway through the City of Echo is classified as a District Highway in the 1999 Oregon Highway Plan. The primary function of District Highways is to provide connections and links to inter-community movements. They also serve local access and traffic. In urban areas the access management objective is to provide the highest and safest performance operation consistent with the identified function of the roadway. Access management for district urban highways recognizes the balanced demands of traffic movement and access needs. To assist in implementing state access management standards and policies, the 1999 Oregon Highway Plan also recognizes that state highways serve as main streets of many communities, such as downtown Echo. Shorter block lengths and a well-developed grid system are important to a downtown area, along with convenient and safe pedestrian facilities. In general, downtown commercial arterial streets typically have blocks 200 to 400 feet long, driveway access sometimes as close as 100-foot intervals and occasionally, signals may be spaced as close as every 400 feet. The streets in downtown areas must have sidewalks and crosswalks, along with on-street parking. The need to maintain these typical downtown characteristics must be carefully considered along with the need to maintain the safe and efficient movement of through traffic. The Oregon Highway Plan recognizes the main street function through the designation of Special Transportation Areas (STAs).

Special Transportation Area

A Special Transportation Area (STA) is a designation that may be applied to a state highway, when a downtown, business district or community center straddles the state highway within a community's urban growth boundary. STAs can include central business districts but they do not apply to whole cities or strip development areas along individual highway corridors.

The primary objective of an STA is to provide access to community activities, businesses and residences, and to accommodate pedestrian, and bicycle movements along and across the highway in a compact central business district. A STA designation will allow reduced mobility standards, accommodate existing public street spacing and compact development patterns, and enhance opportunities to provide improvements for pedestrians and bicyclists in the downtown area. Inclusion in a STA allows for redevelopment with the exception to the proposed access management standards.

Access management in STAs corresponds to the existing city block for public road connections and discourages private driveways. However, where driveways are allowed and land use patterns permit, the minimum spacing for driveways is 175 feet or mid-block if the current city block spacing is less than 350 feet. In addition, the need for local access outweighs the consideration of maintaining highway mobility within a STA. In Echo, the area along the Lexington-Echo Highway between Front Street (35.47) and Bonanza Street (35.57) exemplifies the design features of a historic downtown. Within this three-block segment, buildings are spaced close together, parking is on street, and the posted speed limit is 25 mph. The compact development pattern qualifies this area for a STA highway segment designation.

Special Transportation Area Management Plan

The Echo STA is located on the portion of the Lexington-Echo Highway No. 320 routed on Main Street between the intersections of Front Street (milepoint 35.47), and Bonanza Street (milepoint 35.57) and which is located completely within the urban growth boundary and city limits of the City of Echo.

The primary objective of the Echo STA is to provide access to community activities, businesses and residences, and to accommodate pedestrian, and bicycle movements along and across the highway in the city's central business district.

The designation of a STA in Echo is intended to accommodate the existing public street spacing and compact development pattern. Specific access management conditions for the Echo STA on the Lexington-Echo Highway include:

a) Minimum spacing for public road connections at the current city block spacing of 250 feet.

b) Public road connections are preferred over private driveways. Private driveways are discouraged in an STA.

c) Where land use patterns permit, ODOT will work with the City and property owners to identify appropriate access to adjacent property owners within the STA.

d) Where a right to access exists, access will be allowed to property at less than the designated spacing standard only if the property does not have reasonable alternative. If possible, other options should be considered, such as joint access.

e) Where a right to access exists, the number of driveways to a single property shall be limited to one. ODOT will work with the City and property owners if additional driveways are necessary to accommodate and service the traffic to the property, and will not interfere with driver expectancy and the safety of through traffic on the highway.

f) Driveways shall be located where they do not create undue interference or hazard to the free movement of normal highway or pedestrian traffic. Locations in areas of restricted sight distance or at points that interfere with the placement and proper functioning of traffic control signs, lighting or other devices that affect traffic operation will not be permitted.

g) If a property is landlocked (no reasonable alternative exists) because a driveway cannot be safely constructed and operated and all other alternatives have been explored and rejected, ODOT might be required to purchase the property. However, if a hardship is self-inflicted, such as by partitioning or subdividing a property, ODOT has no responsibility for purchasing the property.

Today, traffic on the state highway within the STA operates at LOS A, which correlates to maximum volume to capacity ratio of < 0.48. Increase in traffic volumes over the 20 year projection period within the STA will not impact the level-of-service (LOS) or meet the maximum volume to capacity ratio of 0.85 for the Lexington-Echo Highway within city's urban growth boundary.

To maintain highway mobility through a STA in Echo, land use development decisions (within the urban growth boundary) shall not cause traffic flow to exceed a volume to capacity ratio of 0.85. The posted speed limit in the STA is currently and will remain at 25 miles per hour as allowed by state statute in a business district. Diagonal curb parking is permitted in the STA, at this time, provided minimum sight distance requirements are met for all public road connections and private driveways. Parking in this area is adequate at this time.

The designation of a STA in Echo further identifies the need to accommodate pedestrian, and bicycle movements along and across the highway in the compact central business district. Currently, the urban arterial standard within the STA consists of a 80-foot right-of-way with a paved width of 64 feet that includes two 12-foot travel lanes, and diagonal parking on each side of the road. The pavement width allows for a shared roadway for bicycles. The standard includes an 8- foot concrete sidewalk on each side of the road. There are no bicycle and pedestrian improvements identified in this area, at this time.

Another essential component to accommodate pedestrians in a STA is street crossings. There are no specific crosswalk enhancements or safety improvements recommended within the STA at this time. Future improvements and modifications to the highway within the STA and within the curb line will be made in accordance with the Oregon Highway Design Manual and with ODOT approval.

Existing maintenance and operational strategies along the Lexington-Echo Highway will be employed within the STA, consistent with Oregon Revised Statute 373.020, as follows:

> ODOT shall be responsible for the ongoing maintenance of: a) the roadway surface between curbs, or if no regular established curb, to that portion of right-of-way utilized for highway purposes b) painting centerline stripe, c) designated school crosswalk delineation, directional and regulatory

those signs described as the City's responsibility and d) plowing snow one blade-width of centerline stripe provided there are no conflicts with utilities.

City shall be responsible for the on going maintenance of: a) storm sewer system, b) sidewalks, c) landscaping, d) luminaries, e) U-turn signs, parking signs, and street name signs, f) painting parking-stripes and other pavement delineation not described as ODOT's responsibility, and g) snow removal from parking strip.

Future improvements and modifications to the highway within the STA will include maintenance and operational strategies with ODOT and City approval.

Interchange Access Standards

The access spacing standards for interchanges with two-lane crossroads, such as the interchange of Thielsen Road with I-84, are listed below in Table 7-3 and shown graphically in Figure 7-5. It should be noted that the interchange access management standards displayed in the table supercede the general access management standards unless the latter standards are greater.

TABLE 7-3
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 mile	750 ft	1320 ft	750 ft
	Urban	1 mile	1320 ft	1320 ft	990 ft
	Rural	2 mile	1320 ft	1320 ft	1320 ft

Notes:

1) These distances may be superceded 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.

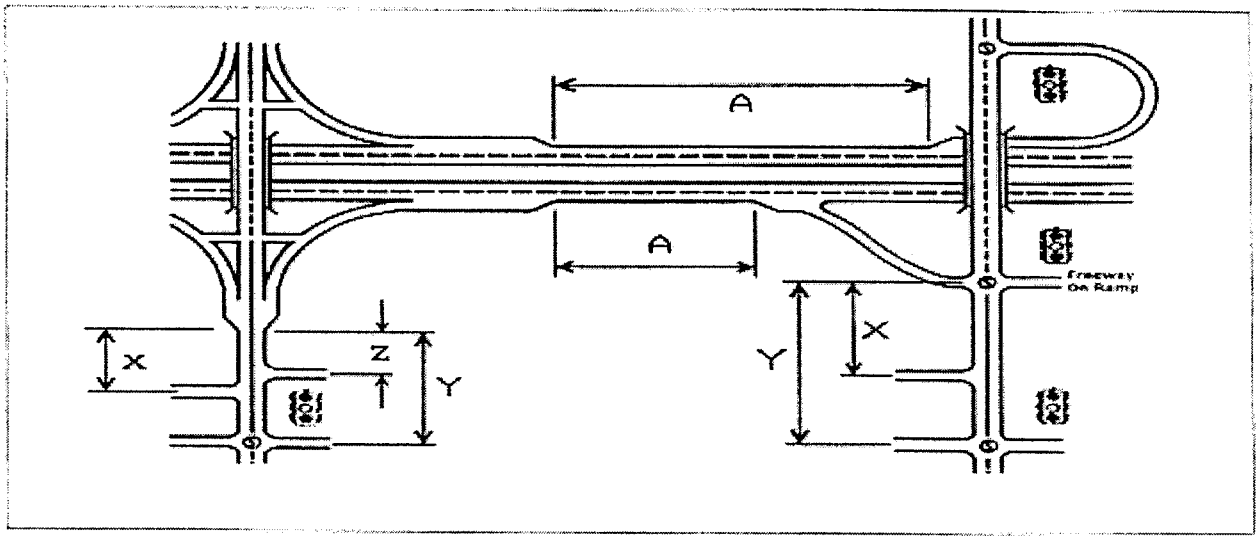
A = Distance between the start and end of tapers along freeway between adjacent interchanges

X = Distance to the first approach on the right side of the two-lane crossroad; right in/ right out only

Y = Distance to first major intersection on the two-lane crossroad; no left turns allowed within this roadway section

Z = Distance between the last right in/ right out approach to the two-lane crossroad and the start of the taper for the on-ramp to the freeway

FIGURE 7-5
MINIMUM SPACING STANDARDS APPLICABLE TO FREEWAY INTERCHANGES
WITH TWO-LANE CROSSROADS



These standards are consistent with 1999 Oregon Highway Plan, Access Management Standards for Interchanges, and the US 395 Corridor Plan recommendation for a Interchange Management Area identified in the vicinity of the I-84/US 395 North interchange, approximately 1,320 feet north and south of the interchange. The purpose of this area is to preserve the function of the interchange to provide safe and efficient operations between connecting roadways and to minimize the need for major improvements of existing interchanges.

MODAL PLANS

The Echo modal plans have been formulated using information collected and analyzed through a physical inventory, forecasts, goals and objectives, and input from area residents. The plans consider transportation system needs for Echo during the next 20 years assuming the growth projections discussed in Chapter 5. All transportation system needs identified in this section have been assigned a project number in consecutive order, beginning with the projects identified in the street system plan. The timing of these projects will be guided by the changes in land use patterns, growth of the population in future years, and available funds. Specific projects and improvement schedules may need to be adjusted depending on when and where growth occurs in Echo.

Street System Plan

The street system plan recommends any changes necessary to the current street classification system and outlines a series of improvements that are recommended for construction within the city of Echo during the next 20 years. These options have been discussed in Chapter 6 (Improvement Options Analysis). Projects that make up the proposed street system plan are summarized in Table 7-3.

Street System Functional Classification

Street system functional classifications relate the design of a roadway to its function. The function is determined by operational characteristics such as travel demand, street capacity, and the operating speed of the roadway. DEA classified all streets within the Urban Growth Boundary as either arterial, collector, or local streets. A review of the existing street system inventory, the recommended street design standards, and all new projects recommended in the street system plan indicates no changes are necessary at this time to the existing roadway functional classification. Therefore, the existing street classification will be maintained as shown in Figure 3-1 and described as follows:

- Lexington-Echo Highway (Main Street, Thielsen Street, and Gerone Street within city limits) – classified as an arterial roadway, it is a District Highway, it carries some of the highest traffic volumes past the City, and it is the primary route to other cities in the county and state.
- Thielsen Road (I-84 to Lexington-Echo Highway) – classified as an arterial street, as its function is to connect the local neighborhoods in Echo and the Lexington-Echo Highway with I-84 and OR 395 to the north.
- Rieth Road (Lexington-Echo Highway to south UGB) – classified as a collector street, as its function is to connect local neighborhoods and traffic originating from south of town with the Lexington-Echo Highway.
- Dupont Street (Thielsen Street to Lexington-Echo Highway/Main Street) – classified as a collector street, as its function is to connect local neighborhoods with the Lexington-Echo Highway and Thielsen Street heading to I-84.
- Bonanza Street (Halstead Street to Garden Street) – classified as a collector street, it collects traffic from local streets to the south of the Lexington-Echo Highway.
- All other roads – classified as local streets.

Street Improvement Projects

Table 7-3 presents street and bridge improvement projects within the urban area that compose the street system plan. Prioritization of these projects is at the discretion of the city, state, and/or county depending upon jurisdiction over the project.

It should be noted that the inclusion of a project in the TSP does not constitute a commitment by ODOT or the county that either agency will participate in the funding of the project. ODOT's participation will be determined via the biennial updates of the multi-year STIP process, and the construction of any project is contingent upon the availability of future revenues. The county's participation will be according to project prioritization as indicated in the Capital Improvement Plan, and contingent upon available funding.

TABLE 7-3
RECOMMENDED STREET SYSTEM PROJECTS

Project Number	Location/Description	Cost
12A	Pave southeast sections of Jane, Hiestand St., and College St.	$15,000
12B.	Pave sections of Front St., Buckley St., and Dale St.	$15,000
12C.	Pave sections of Dupont St., Halstead St., and Kennedy St.	$20,000
12D	Pave east sections of Willow St., Sprague St., Main St., Bridge St., and Buckley St.	$20,000
12E	Repave Dupont St. between Thielsen and Bridge	$25,000
12F	Repave Bridge St. between Front and dead end	$25,000
12G	Repave Bonanza St. between Garden and Halstead	$25,000
12H	Repave Kennedy St. between Dupont and RR tracks	$25,000
12I	Construct, repair, or replace sidewalks within City limits	$658,000
Total		$858,000

Pedestrian System Plan

A complete interconnected pedestrian system should be implemented in the City when feasible. A sidewalk inventory revealed that sidewalks are present mainly in the downtown core of the City. Most of the remaining streets outside this area lack a pedestrian walkway. Every paved street should have sidewalks on both sides of the roadway, to meet the recommended street standard, except in extenuating circumstances. Continuous pedestrian access on walkways should be provided between businesses, parks, and adjacent neighborhoods. (Ordinances specifying these requirements are included in Chapter 9.)

Because of the small size of Echo and the limited public resources available for transportation system improvements, sidewalk construction on a large scale may not be feasible. However, the City should require sidewalks to be constructed as part of any major roadway improvements, or as adjacent land is developed.

The primary goal of establishing a pedestrian system is to improve pedestrian safety; however, an effective sidewalk system has several qualitative benefits as well. Providing adequate pedestrian facilities increases the livability of a city. When pedestrians can walk on a sidewalk, separated from vehicular street traffic, it makes the walking experience more enjoyable and may encourage walking, rather than driving, for short trips. Sidewalks enliven a downtown and encourage leisurely strolling and window shopping in commercial areas. This "main street" effect improves business for downtown merchants and provides opportunities for friendly interaction among residents. It may also have an appeal to tourists as an inviting place to stop and walk around.

The cost to construct a concrete sidewalk facility is approximately $25 per linear foot. This assumes a sidewalk width of 5 feet with curbing. The cost estimate also assumes the sidewalks are composed of 4- inches of concrete and 6-inches of aggregate. As an alternative, asphalt walkways could be provided instead of a concrete sidewalk at a lower initial cost. Construction costs for this type of

facility are typically about 40 percent of the costs for concrete sidewalks; however, maintenance, such as sealing and resurfacing the asphalt, must occur more frequently.

All new sidewalk construction in the City should include curb cuts for wheelchairs at every street corner to comply with the Americans with Disabilities Act (ADA). The addition of crosswalks should also be considered at all major intersections. As improvements are made to the existing street system, projects involving the construction of new sidewalks may require implementation of on-street parking in place of parking on grass or gravel shoulders.

In Chapter 6, a total of six options were recommended to provide new or improved pedestrian facilities. Although some of these improvements will also benefit bicyclists, they have been included here in the Pedestrian System Plan. Table 7-4 presents these projects along with their estimated cost.

TABLE 7-4
RECOMMENDED PEDESTRIAN PROJECTS

Project Number	Location/Description	Cost
9	Construct multi-use path along Thielsen Road between I-84 and the city limits	TBD
4	Upgrade multi-use path between Buckley Street and the Lexington-Echo Highway.	$7,540
5	Construct sidewalks along south side of Main Street between Thielsen Street and east end of existing sidewalk.	$5,720
3	Reconstruct sidewalk on south side of Buckley Street between Dale Street and the multi-use path.	$7,500
2	Construct an integrated multi-use path system along the Feed and Furnish Ditches.	$123,700
10	Construct multi-use path along north side of Gerone Street between Thielsen Street and Golf Course Road.	$72,000
11	Umatilla County pathway project (Rieth Road).	$105,600
Total		**$322,060**

Bicycle System Plan

On the collector and local streets in Echo, bicyclists share normal vehicle lanes with motorists. Due to low travel speeds and traffic volumes observed in the City, shared usage of the roadway between bicyclists and automobiles is appropriate.

At the present time, conditions along the Lexington-Echo Highway and where the highway becomes Main Street, Thielsen Street, and Gerone Street through Echo, allow bicyclists to safely share the roadway with auto traffic. The posted speed limit along the highway is 25 mph and traffic volumes are low at around 660-1,100 vehicles per day (vpd). With traffic volumes expected to reach only 1,380 vpd by the year 2018, an exclusive bikeway facility along the highway is not critical.

In Chapter 6 of this plan, a bicycle-specific improvement option along the Lexington-Echo Highway was identified as a need by the City and was recommended. This project has been adopted into the

Bicycle System Plan as Project No. 6 and includes establishing bike lanes, with signing and striping, along the Lexington-Echo Highway (Thielsen Street), between Main Street and Gerone Street. This project is inexpensive at a cost of $1,000, and would be easy to implement.

The improvement option recommended in Chapter 6 for widening Thielsen Road and establishing designated bikeways along the paved shoulders has also been adopted into the Bicycle System Plan as Project No. 8 This project has also been included in the Umatilla County TSP. The total cost for this project is estimated at $1,941,300.

Bicycle parking is lacking in Echo. Bike racks should be installed in front of downtown businesses and all public facilities (post office and parks). Typical rack designs cost approximately $50 per bike plus installation. An annual budget of approximately $1,500 to $2,000 should be established so that Echo can begin to place racks where needs are identified and to respond to requests for racks at specific locations. Bicycle parking requirements are further addressed in Chapter 9 (Policies and Ordinances).

Transportation Demand Management Plan

Through transportation demand management (TDM), peak travel demands can be reduced or spread over time to more efficiently use the existing transportation system, rather than building new or wider roadways. Techniques that have been successful and could be initiated to help alleviate some traffic congestion include carpooling and vanpooling, alternative work schedules, bicycle and pedestrian facilities, and programs focused on high density employment areas.

In Echo, because traffic volumes are low, capacity of the local street system is not an issue. Therefore, implementing TDM strategies may not be practical in most cases. However, the sidewalk and bicycle improvements recommended earlier in this chapter are also considered TDM strategies. By providing these facilities, the city of Echo is encouraging people to travel by modes other than the automobile.

Because intercity commuting is a factor in Umatilla County, residents who live in Echo and work in other cities should be encouraged to carpool with a coworker or someone who works in the same area. Implementing a local carpool program in Echo alone is not practical because of the City's small size; however, a county-wide carpool program is feasible. The city of Echo should support state and county carpooling and vanpooling programs that could further boost carpooling ridership.

As part of the US 395 North Corridor Plan currently being conducted by Kittelson and Associates, Inc., the development of a Transportation Management Association (TMH) is recommended. The TMA would consist of representatives from businesses along the US 395 corridor, from I-84 to US 730. The purpose of this association is to increase public involvement to improve mobility through the corridor by identifying, evaluating and ultimately implementing TDM strategies.

Development of a TMA is encouraged as the cities of Echo, Stanfield, Hermiston and Umatilla, which lie along this corridor, strive to find alternative means of travel other than the automobile.

No costs have been estimated for the TDM plan. Grants may be available to set up programs; other aspects of transportation demand management can be encouraged through ordinances and policy.

Public Transportation Plan

As described in Chapter 3, the only intercity bus service in Umatilla County is provided by Greyhound bus lines that provides service along I-84, US 395, and OR 11 within Umatilla County. Greyhound has terminals located in Hermiston and Pendleton that connect these cities to each other and major population centers outside of the county. The Hermiston terminal has two departures heading southeast (with stops in Pendleton, La Grande, Boise, and Salt Lake City); three buses running west to Portland; and two buses heading north on US 395 to Pasco and Spokane daily. The Pendleton terminal has three departures southeast (with stops in La Grande, Boise and Salt Lake City); three departures west to Portland; and two departures north to Seattle via Walla Walla, Pasco, and Spokane daily.

Because of the small size of Echo, ridership demand is not high enough for Greyhound bus lines to feasibly provide service to the City.

Although Pendleton, Hermiston, Pilot Rock, and the Umatilla Indian Reservation have dial-a-ride type service available for the transportation disadvantaged, it is not available in Echo at this time. Dial-a-ride service is defined as door-to-door service initiated by a user's request for transportation service from his/her origin to specific locations on an immediate or advance reservation basis. These services are provided by the Pendleton Senior Center in Pendleton, the Confederated Tribes of the Umatilla Indian Reservation on the Umatilla Indian Reservation, the Hermiston Senior Center in Hermiston, and the Pilot Rock Lions Club in Pilot Rock. A similar kind of service could be appropriate for Echo.

Echo has no local fixed-route transit service at this time. The small size and low traffic volumes on city streets indicate that mass transit is not necessary or economically feasible at this time. The Transportation Planning Rule exempts cities with a population of less than 25,000 from developing a transit system plan or a transit feasibility study as part of their TSPs.

Rail Service Plan

Although a major rail line passes through the heart of Echo, no direct passenger or freight rail service is provided in the City. Until recently, Amtrak service was available in Hermiston and Pendleton along the rail line that follows the I-84 corridor from Portland to Boise, Idaho and points east. Amtrak is currently experiencing a funding crisis. As a result, passenger service between Portland and Denver, including service to cities within Umatilla County, was discontinued in May 1997. This line now serves only freight traffic.

The nearest freight service to Echo is south of Hermiston at the Hinkle Yards. Service is provided along a major freight line owned and operated by Union Pacific Railroad, a Class I line-haul freight railroad. In addition, there is a switch line out of Pendleton that hauls freight from Pilot Rock two to three days per week.

There is a siding along the rail line through Echo, owned and maintained by the Union Pacific Railroad. This siding is only used for trains to pass and the City believes there is potential to further develop this area. Any future development in this area on the City's part, would require acquiring the necessary right-of-way. It is unclear whether or not the UPRR would be willing to give up this right-of-way.

Air Service Plan

Echo does not have its own air service within the City; however, there are other airport facilities nearby. Hermiston Municipal Airport is located in Hermiston, approximately seven miles north of Echo, and provides chartered flights. Eastern Oregon Regional Airport is located in Pendleton, approximately 20 miles east of Echo, and provides commercial air service. Other small nearby airports in the county include: the West Flying Service Field about 8 miles southwest of Echo, Barrett Field northwest of Athena, the Pea Growers' Field south of Athena, and Curtis Airfield northwest of Pendleton. These airports are small, private, uncontrolled airstrips mainly used for crop dusting operations.

Pipeline Service

There are currently no pipelines serving Echo. However, there is an oil line within four miles of the City, just north of Stanfield.

Water Transportation

Echo has no water transportation services.

TRANSPORTATION SYSTEM PLAN IMPLEMENTATION PROGRAM

Implementation of the Echo TSP will require changes both to the city Comprehensive Plan and the zoning code and preparation of a 20-year Capital Improvement Plan (CIP). These actions will enable Echo to address both existing and emerging transportation issues throughout the urban area in a timely and cost effective manner.

One part of the implementation program is the formulation of a 20-year CIP. The purpose of the CIP is to detail what transportation system improvements will be needed as Echo grows and provide a process to fund and schedule the identified transportation system improvements. It is expected that the Transportation System Plan Capital Improvement Plan can be integrated into the existing city and county CIP and the ODOT STIP. This integration is important since the TSP proposes that city, county, and state governmental agencies fund all or some of the transportation improvement projects.

Model policy and ordinance language that conforms with the requirements of the Transportation Planning Rule is included in Chapter 9. The proposed ordinance amendments will require approval by the Echo City Council and those that affect the unincorporated urban area will also require approval by the Umatilla Board of County Commissioners.

20-Year Capital Improvement Program

Table 7-5 summarizes the CIP and provides cost information. The cost estimates for all the projects listed in the CIP were prepared on the basis of 1998 dollars. These costs include design, construction, and some contingency costs. They are preliminary estimates and generally do not include right-of-way acquisition, water or sewer facilities, or adding or relocating public utilities. The following schedule is not a prioritized list and scheduled implementation of these projects is at the discretion of the city and/or county, depending upon jurisdiction over the projects.

Echo has identified a total of 18 projects in its CIP with a cost of $3,092,360.

TABLE 7-5
CAPITAL IMPROVEMENT PROGRAM

Project No.	Location/Description	Costs ($ x 1,000) City	County	State	Private	Total
1.	Pave southeast sections of Jane, Hiestand St., and College St.	$15.0				$15.0
2.	Pave sections of Front St., Buckley St., and Dale St.	$15.0				$15.0
3.	Pave sections of Dupont St., Halstead St., and Kennedy St.	$20.0				$20.0
11.	Upgrade multi-use path between Buckley St. and the Lexington-Echo Highway.	$7.54(1)				$7.54
17.	Establish bike lanes, with signing and striping, along the Lexington-Echo Hwy., between Main St. and Gerone St.			$1.0		$1.0
4.	Pave east sections of Willow St., Sprague St., Main St., Bridge St., and Buckley St.	$20.0				$20.0
18.	Umatilla County Roadway Project (Thielsen Road)	$90.1(1)	$811.2	$1,040.0		$1,941.3
12.	Construct a multi-use path along south side of Main Street between Thielsen Street and east end of existing sidewalk.	$5.72(1)				$5.72
13.	Reconstruct sidewalk on south side of Buckley Street between Dale Street and the multi-use path.	$7.5(1)				$7.5
14.	Construct an integrated multi-use path system along the Feed and Furnish Ditches.	$123.7(1)				$123.7
5.	Repave Dupont St. between Thielsen and Bridge	$25.0				$25.0
6.	Repave Bridge St. between Front and dead end	$25.0				$25.0
7.	Repave Bonanza St. between Garden and Halstead	$25.0				$25.0
8.	Repave Kennedy St. between Dupont and RR tracks	$25.0				$25.0
9.	Construct, repair, or replace sidewalks within the city limits	$658.0				$658.0
10.	Construct a multi-use path along Thielsen Road between I-84 and the city limits (2)					TBD
15.	Construct multi-use path along north side of Gerone Street between Thielsen Street and Golf Course Road.	$72.0(1)				$72.0
16.	Umatilla County Pathway Project (Rieth Road)		$105.6			$105.6
Total		**$1,134.56**	**$916.8**	**$1,041.0**		**$3,092.36**

Note: Costs are expressed in terms of 1998 Dollars.

(1) – City may secure federal funding from the TEA 21 Enhancement Program through ODOT.

(2) This project may affect the overall roadway improvements for Theilsen Road listed in Project No. 18. There has been no designated funding for a multi use path along Thielsen Road.

CHAPTER 8: FUNDING OPTIONS AND FINANCIAL PLAN

The Transportation Planning Rule requires Transportation System Plans to evaluate the funding environment for recommended improvements. This evaluation must include a listing of all recommended improvements, estimated costs to implement those improvements, a review of potential funding mechanisms, and an analysis of existing sources' ability to fund proposed transportation improvement projects. Echo's TSP identifies over $2.46 million in 17 specific projects over the next 20 years. This section of the TSP provides an overview of Echo's revenue outlook and a review of some funding and financing options that may be available to the city of Echo to fund the improvements.

Pressures from increasing growth throughout much of Oregon have created an environment of estimated improvements that remain unfunded. Echo will need to work with Umatilla County and ODOT to finance the potential new transportation projects over the 20-year planning horizon. The actual timing of these projects will be determined by the rate of population and employment growth actually experienced by the community. This TSP assumes Echo will grow at a rate comparable to past growth, consistent with the county-wide growth forecast. If population growth exceeds this rate, the improvements may need to be accelerated. Slower than expected growth will relax the improvement schedule.

HISTORICAL STREET IMPROVEMENT FUNDING SOURCES

In Oregon, state, county, and city jurisdictions work together to coordinate transportation improvements. Table 8-1 shows the distribution of road revenues for the different levels of government within the state by jurisdiction level. Although these numbers were collected and tallied in 1991, ODOT estimates that these figures accurately represent the current revenue structure for transportation-related needs.

TABLE 8-1
SOURCES OF ROAD REVENUES BY JURISDICTION LEVEL

	Jurisdiction Level			All
Revenue Source	State	County	City	Funds
State Road Trust	58%	38%	41%	48%
Local	0%	22%	55%	17%
Federal Road	34%	40%	4%	30%
Other	9%	0%	0%	4%
Total	100%	100%	100%	100%

Source: ODOT 1993 Oregon Road Finance Study.

At the state level, nearly half (48 percent in Fiscal Year 1991) of all road-related revenues are attributable to the state highway fund (state road trust), whose sources of revenue include fuel taxes, weight-mile taxes on trucks, and vehicle registration fees. As shown in the table, the state road trust is a considerable source of revenue for all levels of government. Federal sources (generally the federal highway trust account and federal forest revenues) comprise another 30 percent of all road-related revenue. The remaining sources of road-related revenues are generated locally, including property taxes, LIDs, bonds, traffic impact fees, road user taxes, general fund transfers, receipts from other local governments, and other sources.

As a state, Oregon generates 94 percent of its highway revenues from user fees, compared to an average of 78 percent among all states. This fee system, including fuel taxes, weight distance charges, and registration fees, is regarded as equitable because it places the greatest financial burden upon those who create the greatest need for road maintenance and improvements. Unlike many states that have indexed user fees to

inflation, Oregon has static road-revenue sources. For example, rather than assessing fuel taxes as a ***percentage*** of price per gallon, Oregon's fuel tax is a fixed amount (currently 24 cents) per gallon.

Transportation Funding in Umatilla County

Historically, sources of road revenues for Umatilla County have included federal grants, state revenues, intergovernmental transfers, interest from the working fund balance, and other sources. Transportation revenues and expenditures for Umatilla County are shown in Table 8-2 and Table 8-3.

TABLE 8-2
UMATILLA COUNTY TRANSPORTATION-RELATED REVENUES

	1992-1993 Actual	1993-1994 Actual	1994-1995 Actual	1995-1996 Actual	1996-1997 Budget	1997-1998 Budget
Beginning Balance	$1,187,957	$992,044	$903,997	$1,762,230	$1,600,000	$1,300,000
DMV License & Gas Tax Fees	$2,956,777	$3,145,649	$3,258,762	$3,356,616	$3,400,000	$3,400,000
Misc. State Receipts			$635,655	$222,990	$209,000	$219,000
National Forest Rental	$1,061,341	$589,248	$534,150	$189,902	$180,000	$180,000
Mineral Leasing 75%				$125		
Misc. Federal Receipts	$1,968	$1,670	$1,208	$77,681		
Interest on Invested Funds	$72,834	$38,672	$77,885	$92,220	$75,000	$75,000
Refunds & Reimbursements		$75		$338		
Sale of Public Lands	$20,144	$14,363	$5,443	$102	$15,000	$5,000
Rentals/Sale of Supplies	$15,318	$16,565	$51,748	$74,498	$45,000	$27,000
BLM Maintenance Agreement		$2,000				
Misc. Receipts-Local	$26,662	$102,916	$143,691	$48,997		
Service Center	$46,996	$55,961	$53,361	$61,189	$58,500	$64,000
Rural Address fund					$30,000	
	$5,389,996	$4,959,163	$5,665,900	$5,886,887	$5,612,500	$5,270,000

Source: Umatilla County.

As shown in Table 8-2, revenues remained relatively stable (between a low of just under $5 million in 1993-1994 to a high of nearly $5.9 million in 1995-1996). Approximately $3 million of the annual revenues come from the state highway fund, rising slightly from $3 million in 1992-1993 to an estimated $3.4 million in 1996-1997. A declining amount has come from federal apportionment (mostly federal forest receipts). Twenty-five percent of federal forest revenue (the 25-percent fund) is returned to the counties based on their share of the total acreage of federal forests. Westside national forests in Oregon and Washington are subject to the Spotted Owl Guarantee, which limits the decline of revenues from these forests to three percent annually. Oregon forests under the Owl Guarantee include the Deschutes, Mt. Hood, Rogue River, Siskiyou, Siuslaw, Umpqua, and Willamette National Forests. Forest revenues distributed to Umatilla County are from the Umatilla and Whitman forests, not subject to the Owl Guarantee and, therefore, are more difficult to predict. With a healthy working capital balance, the county has also been able to generate between $40,000 and $90,000 annually in interest on its invested funds.

TABLE 8-3
UMATILLA COUNTY TRANSPORTATION-RELATED EXPENDITURES

	1992-1993 Actual	1993-1994 Actual	1994-1995 Actual	1995-1996 Actual	1996-1997 Budget	1997-1998 Budget
Personal Services	$1,908,211	$1,878,969	$1,956,968	$2,077,603	$2,260,676	$2,304,704
Materials and Services	$1,897,273	$1,961,106	$1,564,591	$1,735,853	$2,131,925	$1,972,800
Capital Outlay	$601,846	$225,074	$385,176	$404,357	$400,000	$400,000
Contingency					$568,840	$334,224
Transfer to Road Improvement Fund					$11,555	
Transfer to General Fund						$58,272
	4,407,330	$4,065,149	$3,906,735	$4,217,813	$5,372,996	$5,070,000

Source: Umatilla County.

As shown in Table 8-3, Umatilla County has spent between $225,000 and $600,000 annually in capital improvements. The county also transfers money to a road improvement fund for larger-scale capital improvements. The bulk of expenditures in the road fund are for personal services and materials and services relating to maintenance.

In addition to the road department fund, Umatilla County has a separate bicycle path fund. Its revenues and expenditure history are shown below in Table 8-4. Like the road fund, the bicycle path fund is developing a health working capital balance, supporting additional interest income, thereby reducing its dependence on the gas taxes collected through the state highway fund.

TABLE 8-4
UMATILLA COUNTY BICYCLE PATH FUND REVENUES AND EXPENDITURES

	1994-1995 Actual	1995-1996 Actual	1996-1997 Budget	1997-1998 Budget
Beginning Fund Balance	$230,059	$260,652	$299,775	$349,775
Resources				
DMV License & Gas Tax Fees	$32,917	$32,946	$34,000	$34,000
Interest	$13,073	$16,251	$16,000	$18,000
	$45,989	$49,197	$50,000	$52,000
Expenditures				
Materials & Services	$15,396		$150,000	$100,000
Capital Outlay				
	$15,396	$-	$150,000	$100,000

Source: Umatilla County.

Historical Revenues and Expenditures in the City of Echo

Revenues and expenditures for the city of Echo's street fund are shown in Table 8-5 and Table 8-6. Sources of revenues available for street operations and maintenance include the state highway fund, interest from the working capital balance, and grants for specific projects.

TABLE 8-5
CITY OF ECHO STREET FUND REVENUES

	1994-1995	1995-1996	1996-1997	1997-1998
Cash on Hand	$32,482	$13,196	$3,500	$9,500
Interest	$543	$308	$250	$250
Misc. Revenue	$19	$20	$50	$50
State Hwy Fund	$23,490	$23,948	$23,000	$24,800
Small City Grant	$12,500	$-	$25,000	$25,000
	$36,552	$24,276	$48,300	$50,100

Source: The City of Echo

As shown in Table 8-5, funds from the state highway fund provide a large proportion (over 90 percent excluding grant funds) of the revenues available to the city of Echo's street fund. The city of Echo has benefited from several recent grants from the Small Cities Allocation (SCA) Grant Program. The 1996-97 and 1997-98 proposed budgets anticipate the benefit of a $25,000 SCA grant.

TABLE 8-6
CITY OF ECHO STREET FUND EXPENDITURES

	1994-1995	1995-1996	1996-1997	1997-1998
Personal Services	$9,449	$9,130	$8,915	$8,915
Materials and Services	$19,389	$19,040	$17,885	$25,685
Capital Outlay	$25,000	$-	$25,000	$25,000
Transfers	$2,000	$2,000		
	$55,838	$30,170	$51,800	$59,600

Source: City of Echo

Most of the street fund expenditures are for maintenance, with spending disaggregated to the following categories: personal services, materials and equipment, capital outlay and transfers. The largest categories have historically been personal services and materials and equipment. The capital outlay expenditures have been limited to the amounts available from grant funds. The street fund has also transferred $2,000 annually for the last two years; payment for the purchase of a roadside mower. In order to ensure conservative estimates, this analysis does assume grant funding will necessarily be available in future years, as shown in the 1996-97 and 1997-98. Instead, this analysis assumes that the amount available for transfers is equivalent to the amount available for new capital expenditures.

Transportation Revenue Outlook in the City of Echo

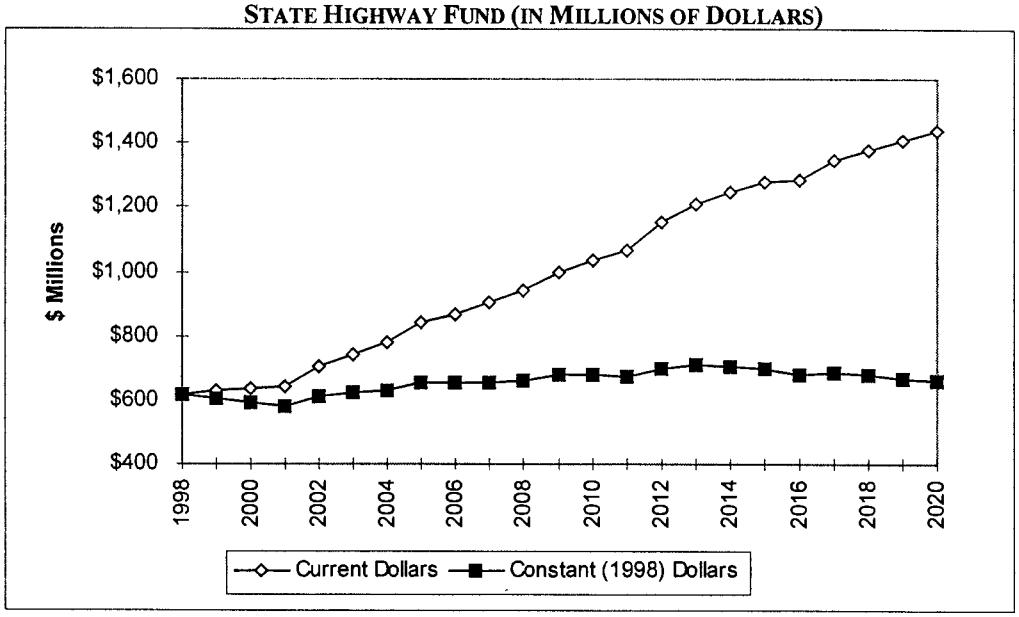
ODOT's policy section recommends certain assumptions in the preparation of transportation plans. In its *Financial Assumptions* document prepared in May 1998, ODOT projected the revenue of the state highway fund through year 2020. The estimates are based on not only the political climate, but also the economic structure and conditions, population and demographics, and patterns of land use. The latter is particularly important for state-imposed fees because of the goals in place under Oregon's Transportation Planning Rule (TPR) requiring a 10-percent reduction in per-capita vehicle miles of travel (VMT) in Metropolitan Planning Organizations (MPO) areas by year 2015, and a 20-percent reduction by year 2025. This requirement will affect the 20-year revenue forecast from the fuel tax. ODOT recommends the following assumptions:

- Fuel tax increases of one cent per gallon per year (beginning in year 2002), with an additional one cent per gallon every fourth year;

- Vehicle registration fees would be increased by $10 per year in 2002, and by $15 per year in year 2012;
- Revenues will fall halfway between the revenue-level generated without TPR and the revenue level if TPR goals were fully met;
- Revenues will be shared among the state, counties, and cities on a "50-30-20 percent" basis rather than the previous "60.05-24.38-15.17 percent" basis; and
- Inflation occurs at an average annual rate of 3.6 percent (as assumed by ODOT).

Figure 8-1 shows the forecast in both current-dollar and inflation-deflated constant (1998) dollars. As highlighted by the constant-dollar data, the highway fund is expected to grow slower than inflation early in the planning horizon until fuel-tax and vehicle-registration fee increases occur in year 2002, increasing to a rate somewhat faster than inflation through year 2015, continuing a slight decline through the remainder of the planning horizon.

FIGURE 8-1
STATE HIGHWAY FUND (IN MILLIONS OF DOLLARS)



Source: ODOT Financial Assumptions.

As the state highway fund is expected to remain a significant source of funding for Echo, the City is highly susceptible to changes in the state highway fund. As discussed earlier, funds from the state highway fund provide a large proportion (over 90 percent excluding grant funds) of the revenues available to the city of Echo's street fund.

In order to analyze the City's ability to fund the recommended improvements from current sources, DEA applied the following assumptions:

- ODOT state highway fund assumptions as outlined above;
- The state highway fund will continue to account for the majority of the City's street fund;

- Interest and other local sources continue to provide stable revenue streams; and

- The proportion of revenues available for capital expenditures for street improvements will remain a stable, but small, proportion of the state tax resources.

Applying these assumptions to the estimated level of the state highway fund resources, as recommended by ODOT, resources available to the Echo for all operations, maintenance, and capital outlay purposes are estimated at approximately $22,000 to $27,000 annually (in current 1998 dollars), as shown in Table 8-7.

TABLE 8-7
ESTIMATED RESOURCES AVAILABLE TO CITY OF ECHO FROM STATE HIGHWAY FUND, 1998 DOLLARS

Year	Total Estimated Resources from State Highway Fund	Estimated Funds Available for Capital Outlay[1]
1999	$23,300	$14,300
2000	$22,800	$14,300
2001	$22,300	$14,200
2002	$23,600	$14,300
2003	$23,900	$14,300
2004	$24,300	$14,400
2005	$25,300	$14,400
2006	$25,100	$14,400
2007	$25,300	$14,400
2008	$25,300	$14,400
2009	$26,100	$14,500
2010	$26,100	$14,500
2011	$26,000	$14,500
2012	$27,000	$14,500
2013	$27,400	$14,500
2014	$27,200	$14,500
2015	$26,900	$14,500
2016	$26,200	$14,500
2017	$26,400	$14,500
2018	$26,100	$14,500
2019	$25,800	$14,400
2020	$25,400	$14,400

(1) The estimated lands for capital outlay also include $13,000 per year for maintenance services such as repaving existing roads. This figure was included since this plan incorporates roadway maintenance and improvement projects.

The amount actually received from the state highway fund will depend on a number of factors, including:

- the actual revenue generated by state gasoline taxes, vehicle registration fees, and other sources; and

- the population growth in Echo (since the distribution of state highway funds is based on an allocation formula which includes population).

Based on the amount of resources historically available to fund capital improvements this analysis suggests that the city of Echo will have between $14,200 and $14,500 available annually for capital improvements.

REVENUE SOURCES

In order to finance the recommended transportation system improvements requiring expenditure of capital resources, it will be important to consider a range of funding sources. Although the property tax has traditionally served as the primary revenue source for local governments, property tax revenue goes into general fund operations, and is typically not available for road improvements or maintenance. Despite this limitation, the use of alternative revenue funding has been a trend throughout Oregon as the full implementation of Measures 5 and 47 have significantly reduced property tax revenues (see below). The alternative revenue sources described in this section may not all be appropriate in Echo; however, this overview is being provided to illustrate the range of options currently available to finance transportation improvements during the next 20 years.

Property Taxes

Property taxes have historically been the primary revenue source for local governments. However, property tax revenue goes into general fund operations, and is not typically available for road improvements or maintenance. The dependence of local governments on this revenue source is due, in large part, to the fact that property taxes are easy to implement and enforce. Property taxes are based on real property (i.e., land and buildings) that has a predictable value and appreciation to base taxes upon. This is as opposed to income or sales taxes, which can fluctuate with economic trends or unforeseen events.

Property taxes can be levied through: 1) tax base levies, 2) serial levies, and 3) bond levies. The most common method uses tax base levies, which do not expire and are allowed to increase by six percent per annum. Serial levies are limited by amounts and times they can be imposed. Bond levies are for specific projects and are limited by time based on the debt load of the local government or the project.

The historic dependence on property taxes is changing with the passage of Ballot Measure 5 in the early 1990s. Ballot Measure 5 limits the property tax rate for purposes other than payment of certain voter-approved general obligation indebtedness. Under full implementation, the tax rate for all local taxing authorities is limited to $15 per $1,000 of assessed valuation. As a group, all non-school taxing authorities are limited to $10 per $1,000 of assessed valuation. All tax base, serial, and special levies are subject to the tax rate limitation. Ballot Measure 5 requires that all non-school taxing districts' property tax rate be reduced if together they exceed $10 per $1,000 per assessed valuation by the county. If the non-debt tax rate exceeds the constitutional limit of $10 per $1,000 of assessed valuation, then all of the taxing districts' tax rates are reduced on a proportional basis. The proportional reduction in the tax rate is commonly referred to as compression of the tax rate.

Measure 47, an initiative petition, was passed by Oregon voters in November 1996. It is a constitutional amendment that reduces and limits property taxes and limits local revenues and replacement fees. The measure limits 1997-98 property taxes to the lesser of the 1995-96 tax minus 10 percent, or the 1994-95 tax. It limits future annual property tax increases to three percent, with exceptions. Local governments' lost revenue may be replaced only with state income tax, unless voters approve replacement fees or charges. Tax levy approvals in certain elections require 50 percent voter participation.

The state legislature created Measure 50, which retains the tax relief of Measure 47 but clarifies some legal issues. This revised tax measure was approved by voters in May 1997.

The League of Oregon Cities (LOC) estimated that direct revenue losses to local governments, including school districts, will total $467 million in fiscal year 1998, $553 million in 1999, and increase thereafter. The actual revenue losses to local governments will depend on actions of the Oregon Legislature. LOC also estimates that

the state will have revenue gains of $23 million in 1998, $27 million in 1999, and increase thereafter because of increased personal and corporate tax receipts due to lower property tax deduction.

Measure 50 adds another layer of restrictions to those which govern the adoption of tax bases and levies outside the tax base, as well as Measure 5's tax rate limits for schools and non-schools and tax rate exceptions for voter approved debt. Each new levy and the imposition of a property tax must be tested against a longer series of criteria before the collectible tax amount on a parcel of property can be determined.

System Development Charges

System Development Charges (SDCs) are becoming increasingly popular in funding public works infrastructure needed for new local development. Generally, the objective of systems development charges is to allocate portions of the costs associated with capital improvements upon the developments, which increase demand on transportation, sewer or other infrastructure systems.

Local governments have the legal authority to charge property owners and/or developers fees for improving the local public works infrastructure based on projected demand resulting from their development. The charges are most often targeted towards improving community water, sewer, or transportation systems. Cities and counties must have specific infrastructure plans in place that comply with state guidelines in order to collect SDCs.

SDCs are collected when new building permits are issued. Transportation SDCs are based on trip generation of the proposed development. Residential calculations would be based on the assumption that a typical household will generate a given number of vehicle trips per day. Nonresidential use calculations are based on employee ratios for the type of business or industrial uses. The SDC revenues would help fund the construction of transportation facilities necessitated by new development.

State Highway Fund

Gas tax revenues received from the state of Oregon are used by all counties and cities to fund road and road construction and maintenance. In Oregon, the state collects gas taxes, vehicle registration fees, overweight/overheight fines and weight/mile taxes and returns a portion of the revenues to cities and counties through an allocation formula. Like other Oregon cities, the city of Echo uses its state gas tax allocation to fund street construction and maintenance.

Local Gas Taxes

The Oregon Constitution permits counties and incorporated cities to levy additional local gas taxes with the stipulation that the moneys generated from the taxes will be dedicated to road-related improvements and maintenance within the jurisdiction. At present, only a few local governments (including the cities of Woodburn and The Dalles and Multnomah and Washington counties) levy a local gas tax, although currently there are no gas stations within the city limits. If a gas station opens in the future, it will most likely be a truck stop at the I-84 interchange. If a gas station does open, The City of Echo may consider implementing a local gas tax as a way to generate additional road improvement funds. However, with relatively few jurisdictions exercising this tax, an increase in the cost differential between gas purchased in Echo and gas purchased in neighboring communities may encourage drivers to seek less expensive fuel elsewhere. Any action will need to be supported by careful analysis to minimize the unintended consequences of such an action.

Vehicle Registration Fees

The Oregon vehicle registration fee is allocated to the state, counties and cities for road funding. Oregon counties are granted authority to impose a vehicle registration fee covering the entire county. The Oregon Revised Statutes would allow Umatilla County to impose a biannual registration fee for all passenger cars licensed within the county. Although both counties and special districts have this legal authority, vehicle registration fees have not been imposed by local jurisdictions. In order for a local vehicle registration fee program to be viable in Umatilla County, all the incorporated cities and the county would need to formulate an agreement which would detail how the fees would be spent on future road construction and maintenance.

Local Improvement Districts

The Oregon Revised Statutes allow local governments to form Local Improvement Districts (LIDs) to construct public improvements. LIDs are most often used by cities to construct localized projects such as streets, sidewalks or bikeways. The statutes allow formation of a district by either the city government or property owners. Cities that use LIDs are required to have a local LID ordinance that provides a process for district formation and payback provisions. Through the LID process, the cost of local improvements are generally spread out among a group of property owners within a specified area. The cost can be allocated based on property frontage or other methods such as traffic trip generation. The types of allocation methods are only limited by the Local Improvement Ordinance. The cost of LID participation is considered an assessment against the property that is a lien equivalent to a tax lien. Individual property owners typically have the option of paying the assessment in cash or applying for assessment financing through the City. Since the passage of Ballot Measure 5, cities have most often funded local improvement districts through the sale of special assessment bonds.

GRANTS AND LOANS

There are a variety of grant and loan programs available, most with specific requirements relating to economic development or specific transportation issues, rather than for the general construction of new streets. Many programs require a match from the local jurisdiction as a condition of approval. Because grant and loan programs are subject to change and statewide competition, they should not be considered a secure long-term funding source. Most of the programs available for transportation projects are funded and administered through ODOT and/or the Oregon Economic Development Department (OEDD). Some programs that may be appropriate for the city of Echo are described below. The primary contact for information on the following programs is ODOT Region 5, which can be reached at (541) 963-3177.

Bike-Pedestrian Grants

By law (ORS 366.514), all road, street or highway construction or reconstruction projects must include facilities for pedestrians and bicyclists, with some exceptions. ODOT's Bike and Pedestrian Program administers two programs to assist in the development of walking and bicycling improvements: local grants, and Small-Scale Urban Projects. Cities and counties with projects on local streets are eligible for local grant funds. An 80 percent state/20 percent local match ratio is required. Eligible projects include curb extensions, pedestrian crossings and intersection improvements, shoulder widening and restriping for bike lanes. Projects on urban state highways with little or no right of way taking and few environmental impacts are eligible for Small-Scale Urban Project Funds. Both programs are limited to projects costing up to $100,000. Projects that cost more than $100,000, require the acquisition of ROW, or have environmental impacts should be submitted to ODOT for inclusion in the STIP.

Access Management

The Access Management Program sets aside approximately $500,000 a year to address access management issues. One primary component of this program is an evaluation of existing approach roads to state highways. These funds are not committed to specific projects, and priorities and projects are established by an evaluation process.

Enhancement Program

This federally-funded program earmarks $8 million annually for projects in Oregon. Projects must demonstrate a link to the intermodal transportation system, compatibility with approved plans, and local financial support. A 10.27 percent local match is required for eligibility. Each proposed project is evaluated against all other proposed projects in its region. Within the five Oregon regions, the funds are distributed on a formula based on population, vehicle miles traveled, number of vehicles registered and other transportation-related criteria. The solicitation for applications was mailed to cities and counties the last week of October 1998. Local jurisdictions have until January 1999 to complete and file their applications for funding available during the 2000-2003 fiscal years that begin October 1999.

Highway Bridge Rehabilitation or Replacement Program

The Highway Bridge Rehabilitation or Replacement Program (HBRR) provides federal funding for the replacement and rehabilitation of bridges of all functional classifications. A portion of the HBRR funding is allocated for the improvement of bridges under local jurisdiction. A quantitative ranking system is applied to the proposed projects based on sufficiency rating, cost factor, and load capacity. They are ranked against other projects statewide, and require state and local matches of 10 percent each. It includes the Local Bridge Inspection Program and the Bridge Load Rating Program.

Transportation Safety Grant Program

Managed by ODOT's Transportation Safety Section (TSS), this program's objective is to reduce the number of transportation-related accidents and fatalities by coordination a number of statewide programs. These funds are intended to be used as seed money, funding a program for three years. Eligible programs include programs in impaired driving, occupant protection, youth, pedestrian, speed, enforcement, bicycle and motorcycle safety. Every year, TSS produces a Highway Safety Plan that identifies the major safety programs, suggests countermeasures to existing safety problems, and lists successful projects selected for funding, rather than granting funds through an application process.

Federal Transit Administration (FTA) Section 5311-Non-urbanized Area Formula Program

Section 5311 is a federally sponsored program for general public transit services in small urban and rural areas. It supports both capital and operation needs. The ODOT Public Transit Division distributes these funds. In FY00, the cities of Pendleton and Milton-Freewater received these funds to support transportation programs for the general public. The city of Echo would be eligible for these funds if it implemented intercity service or intracity services open to the general public. The recipient of these funds must provide matching funds of up to 50 percent for operating uses and up to 20 percent for capital expenses.

Section 5311(f) – Part of 5311 funds is allocated to intercity services. Intercity transit services connect communities to rail, bus and air hubs. These funds can be used for both capital and operating expenses. Local revenues must match these funds. Match requirements are the same as those for 5311 funds.

Surface Transportation Program (STP) Funds

TEA-21, the Federal Transportation Efficiency Act for the 21st Century, which funds programs for highways and transit, permits surface transportation program funding flexibility between modes. This gives the state more latitude in selecting the modal alternatives that would best address local congestion problems. STP funds are generally limited to capital projects with a few exceptions. In non-urbanized areas ODOT has the responsibility of allocating these funds. In Echo, ODOT Region 5 makes funding decisions with public input.

Department of Labor Welfare-to-Work Program

The US Department of Labor provides grants to communities to give transitional assistance to move welfare recipients into unsubsidized employment. One of the areas applicants are encouraged to consider is the development of responsive transportation systems to move people to work or to career training. These grants must serve at least 100 welfare recipients. The Department of Labor expects the grants to range from one million to five million dollars over a period of three years. Applications must be a coordinated effort between transportation providers and Oregon Adult and Family Services. The funding can be used for capital and operating expenses and will cover up to 50 percent of the cost of a program.

ODOT has submitted a grant application for funding for Oregon programs. ODOT identified the Bend/Redmond area as the first demonstration program. Other areas of the state may be eligible after that. To be eligible for this funding, it is essential that communities bring together local ODOT staff, transit providers and AFS staff to begin the coordination process.

FTA Section 5310 Discretionary Grants

This program funds vehicles and other capital projects for programs that serve elderly and disabled people. In FY99 the city of Pendleton received $36,000 to purchase a new vehicle.

Special Transportation Fund

The Special Transportation Fund (STF) awards funds to maintain, develop, and improve transportation services for people with disabilities and people over 60 years of age. Financed by a two-cent tax on each pack of cigarettes sold in the state, the annual distribution is approximately $5 million. Three-quarters of these funds are distributed on a per-capita formula to mass transit districts, transportation districts, where such districts do not exist, and counties. The remaining funds are distributed on a discretionary basis.

County Allotment Program

The County Allotment Program distributes funds to counties on an annual basis; the funds distributed in this program are in addition to the regular disbursement of state highway fund resources. The program determines the amount of total revenue available for roads in each county and the number of road miles (but not lane miles) of collectors and arterials under each county's jurisdiction. Using these two benchmarks, a "resource-per-

equivalent" ratio is calculated for each county. Resources from the $750,000 program are provided to the county with the lowest resource-per-equivalent road-mile ratio until they are funded to the level of the next-lowest county. The next-lowest county is then provided resources until they are funded to the level of the third-lowest county, and so on, until the fund is exhausted.

Immediate Opportunity Grant Program

The Oregon Economic Development Department (OEDD) and ODOT collaborate to administer a grant program designed to assist local and regional economic development efforts. The program is funded to a level of approximately $7 million per year through state gas tax revenues. The following are primary factors in determining eligible projects:

- Improvement of public roads.
- Inclusion of an economic development-related project of regional significance.
- Creation or retention of primary employment.
- Ability to provide local funds (50/50) to match grant.
- Improvement to the quality of the community.

The maximum amount of any grant under the program is $500,000. Local governments that have received grants under the program include Washington County, Multnomah County, Douglas County, the city of Hermiston, port of St. Helens, and the city of Newport.

Oregon Special Public Works Fund

The Special Public Works Fund (SPWF) program was created by the 1995 State Legislature as one of several programs for the distribution of funds from the Oregon Lottery to economic development projects in communities throughout the state. The program provides grant and loan assistance to eligible municipalities primarily for the construction of public infrastructure which support commercial and industrial development that 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. SPWF awards can be used for improvement, expansion, and new construction of public sewage treatment plants, water supply works, public roads, and transportation facilities.

While SPWF program assistance is provided in the form of both loans and grants, the program emphasizes loans in order to assure that funds will return to the state over time for reinvestment in local economic development infrastructure projects. Jurisdictions that have received SPWF funding for projects that include some type of transportation-related improvement include the cities of Baker City, Bend, Cornelius, Forest Grove, Madras, Portland, Redmond, Reedsport, Toledo, Wilsonville, Woodburn, and Douglas County.

Oregon Transportation Infrastructure Bank

The Oregon Transportation Infrastructure Bank (OTIB) program is a revolving loan fund administered by ODOT to provide loans to local jurisdictions (including cities, counties, special districts, transit districts, tribal governments, ports, and state agencies). Eligible projects include construction of federal-aid highways,

bridges, roads, streets, bikeways, pedestrian accesses, and right of way costs. Capital Outlays such as buses, light-rail cars and lines, maintenance years and passenger facilities are also eligible.

ODOT FUNDING OPTIONS

The state of Oregon provides funding for all highway related transportation projects through the Statewide Transportation Improvement Program (STIP) administered by the Oregon Department of Transportation. The STIP outlines the schedule for ODOT projects throughout the state. The STIP, which identifies projects for a three-year funding cycle, is updated on an annual basis. Starting with the 2000 budget year, ODOT will then identify projects for a four-year funding cycle. In developing this funding program, ODOT must verify that the identified projects comply with the Oregon Transportation Plan (OTP), ODOT Modal Plans, Corridor Plans, local Comprehensive Plans, and TEA-21 planning requirements. The STIP must fulfill federal planning requirements for a staged, multi-year, statewide, intermodal program of transportation projects. Specific transportation projects are prioritized based on federal planning requirements and the different state plans. ODOT consults with local jurisdictions before highway related projects are added to the STIP.

The highway-related projects identified in Echo's TSP will be considered for future inclusion on the STIP. The timing of including specific projects will be determined by ODOT based on an analysis of all the project needs within Region 5. The city of Echo, Umatilla County, and ODOT will need to communicate on an annual basis to review the status of the STIP and the prioritization of individual projects within the project area. Ongoing communication will be important for the city, county, and ODOT to coordinate the construction of both local and state transportation projects.

ODOT also has the option of making some highway improvements as part of their ongoing highway maintenance program. Types of road construction projects that can be included within the ODOT maintenance programs are intersection realignments, additional turn lanes, and striping for bike lanes. Maintenance related construction projects are usually done by ODOT field crews using state equipment. The maintenance crews do not have the staff or specialized road equipment needed for large construction projects.

An ODOT funding technique that will likely have future application to Echo's TSP is the use of state and federal transportation dollars for off-system improvements. Until the passage and implementation of ISTEA, state and federal funds were limited to transportation improvements within highway corridors. ODOT now has the authority and ability to fund transportation projects that are located outside the boundaries of the highway corridors. The criteria for determining what off-system improvements can be funded has not yet been clearly established. It is expected that this new funding technique will be used to finance local system improvements that reduce traffic on state highways or reduce the number of access points for future development along state highways.

FINANCING TOOLS

In addition to funding options, the recommended improvements listed in this plan may benefit from a variety of financing options. Although often used interchangeably, the words financing and funding are not the same. Funding is the actual generation of revenue by which a jurisdiction pays for improvements, some examples include the sources discussed above: property taxes, SDCs, fuel taxes, vehicle registration fees, LIDs, and various grant programs. In contrast, financing refers to the collecting of funds through debt obligations.

There are a number of debt financing options available to the city of Echo. The use of debt to finance capital improvements must be balanced with the ability to make future debt service payments and to deal with the impact on its overall debt capacity and underlying credit rating. Again, debt financing should be viewed not as a source of funding, but as a time shifting of funds. The use of debt to finance these transportation-system improvements is appropriate since the benefits from the transportation improvements will extend over the period of years. If such improvements were to be tax financed immediately, a large short-term increase in the tax rate would be required. By utilizing debt financing, local governments are essentially spreading the burden of the costs of these improvements to more of the people who are likely to benefit from the improvements and lowering immediate payments.

General Obligation Bonds

General obligation (GO) bonds are voter-approved bond issues, which represent the least expensive borrowing mechanism available to municipalities. GO bonds are typically supported by a separate property tax levy specifically approved for the purposes of retiring debt. The levy does not terminate until all debt is paid off. The property tax levy is distributed equally throughout the taxing jurisdiction according to assessed value of property. GO debts typically are used to make public improvement projects that will benefit the entire community.

State statutes require that the GO indebtedness of a city not exceed three percent of the real market value of all taxable property in the city. Since GO bonds would be issued subsequent to voter approval, they would not be restricted to the limitations set forth in Ballot Measures 5, 47, and 50. Although new bonds must be specifically voter approved, Measure 47 and 50 provisions are not applicable to outstanding bonds, unissued voter-approved bonds, or refunding bonds.

Limited Tax Bonds

Limited tax general obligation (LTGO) bonds are similar to general obligation bonds in that they represent an obligation of the municipality. However, a municipality's obligation is limited to its current revenue sources and is not secured by the public entity's ability to raise taxes. As a result, LTGO bonds do not require voter approval. However, since the LTGO bonds are not secured by the full taxing power of the issuer, the limited tax bond represents a higher borrowing cost than GO bonds. The municipality must pledge to levy the maximum amount under constitutional and statutory limits, but not the unlimited taxing authority pledged with GO bonds. Because LTGO bonds are not voter approved, they are subject to the limitations of Ballot Measures 5, 47, and 50.

Bancroft Bonds

Under Oregon Statute, municipalities are allowed to issue Bancroft bonds, which pledge the City's full faith and credit to assessment bonds. As a result, the bonds become general obligations of the City but are paid with assessments. Historically, these bonds provided a city with the ability to pledge its full faith and credit in order to obtain a lower borrowing cost without requiring voter approval. However, since Bancroft bonds are not voter approved, taxes levied to pay debt service on them are subject to the limitations of Ballot Measures 5, 47, and 50. As a result, since 1991, Bancroft bonds have not been used by municipalities that were required to compress their tax rates.

FUNDING REQUIREMENTS

Echo's TSP identifies both capital improvements and strategic efforts recommended during the next 20 years to address safety and access problems and to expand the transportation system to support a growing population and economy. The TSP identifies 17 projects, totaling an estimated $2,464,360. The projects that will provide bicycle and pedestrian connections to Stanfield along Thielsen Road and establish bike lanes along the Lexington-Echo Highway between Main Street and Gerone Street have identified state funding. Two projects are also identified for partial or complete county funding. It is estimated that the county will provide 42% support for the Thielsen Road project and 100% support for the Rieth Road pathway project. The remaining balance of the projects are within the city's jurisdiction and will require the City to take the financial lead.

Estimated costs by project are shown in Table 8-8.

TABLE 8-8
RECOMMENDED PROJECTS AND FINANCIAL RESPONSIBILITY

Project No.	Location/Description	Costs ($ x 1,000) City	County	State	Private	Total
1.	Pave southeast sections of Jane, Hiestand St., and College St.	$15.0				$15.0
2.	Pave sections of Front St., Buckley St., and Dale St.	$15.0				$15.0
3.	Pave sections of Dupont St., Halstead St., and Kennedy St.	$20.0				$20.0
11.	Upgrade multi-use path between Buckley St. and the Lexington-Echo Highway.	$7.54[1]				$7.54
17.	Establish bike lanes, with signing and striping, along the Lexington-Echo Hwy., between Main St. and Gerone St.			$1.0		$1.0
4.	Pave east sections of Willow St., Sprague St., Main St., Bridge St., and Buckley St.	$20.0				$20.0
18.	Umatilla County Roadway Project (Thielsen Road)	$90.1[1]	$811.2	$1,040.0		$1,941.3
12.	Construct a multi-use path along south side of Main Street between Thielsen Street and east end of existing sidewalk.	$5.72[1]				$5.72
13.	Reconstruct sidewalk on south side of Buckley Street between Dale Street and the multi-use path.	$7.5[1]				$7.5
14.	Construct an integrated multi-use path system along the Feed and Furnish Ditches.	$123.7[1]				$123.7
5.	Repave Dupont St. between Thielsen and Bridge	$25.0				$25.0
6.	Repave Bridge St. between Front and dead end	$25.0				$25.0
7.	Repave Bonanza St. between Garden and Halstead	$25.0				$25.0
8.	Repave Kennedy St. between Dupont and RR tracks	$25.0				$25.0
9.	Construct, or repair, or replace sidewalks within city limits	$658.0				$658.0
10.	Construct a multi-use path along Thielsen Road between I-84 and the city limits [2]					$TBA
15.	Construct multi-use path along north side of Gerone Street between Thielsen Street and Golf Course Road.	$72.0[1]				$72.0
16.	Umatilla County Pathway Project (Rieth Road)		$105.6			$105.6
Total		**$1,134.56**	**$916.8**	**$1,041.0**		**$3,092.36**

Note:

(1) City may secure federal funding from the TEA-21 Enhancement Program through ODOT.

(2) This project may affect the overall roadway improvements for Theilsen Road list in Project No. 18. There has been no designated funding for a multi use path along Thielsen Road.

The city of Echo is expected to be able to fund projects of up to approximately $317,200 over the 20-year planning horizon. Given the existing cost estimates, the resources available as estimated in Table 8-6, and financial partners currently identified, Echo is expected to experience a funding deficit of over $222,360 over the 20-year planning period.

TABLE 8-9
ESTIMATED CAPITAL FUNDING BALANCE

	Amount
Capital Available from Existing Revenue Sources	$317,200
Capital Needed to Fund Projects Identified as City-Funded Projects	$1,134,560
Surplus (Deficit)	($817,360)

Some of these projects may, however, be eligible for alternative funding sources. For example, the City is expected to secure federal funding from the TEA-21 Enhancement Program administered by ODOT. In addition, several of the projects serve to enhance the pedestrian connectivity of the City, making them potentially eligible for bike and pedestrian funding. These projects include the multi-use path between Buckley Street and the Lexington-Echo Highway, the Umatilla County Roadway Project (Thielsen Road) which includes shoulder bikeways along Thielsen Road, the multi-use path along the south side of Main Street, reconstruction of the sidewalk on the south side of Buckley Street, the construction of an integrated multi-use path system along the Feed and Furnish Ditches, and the construction of a multi-use path along Gerone Street. Estimated to total nearly $306,560, grant funds for these projects would allow Echo to implement these projects within the 20-year planning horizon. Additionally, some of the projects may be necessitated by new development, thereby making them eligible for SDC funding. Additional analysis would be required to evaluate the feasibility of this funding option.

CHAPTER 9: RECOMMENDED POLICIES AND ORDINANCES

In 1991, the Oregon Transportation Planning Rule was adopted to implement State Planning Goal 12 Transportation (amended in May and September 1995). The Transportation Planning Rule requires counties and cities to complete a Transportation System Plan (TSP) that includes policies and ordinances to implement that plan. The city of Echo's Land Use Plan was adopted in 1979. Based on content, the Transportation discussion in the Land Use Plan has not been significantly updated since the implementation of the Transportation Planning Rule. The city's zoning ordinance also needs updating to meet the requirements of the Transportation Planning Rule and this TSP.

ELEMENTS REQUIRED BY THE TRANSPORTATION PLANNING RULE

The applicable portion of the Transportation Planning Rule is found in Section 660-12-045: *Implementation of the Transportation System Plan.* In summary, the Transportation Planning Rule requires that local governments revise their land use regulations to implement the Transportation System Plan in the following manner:

- *Amend land use regulations to reflect and implement the Transportation System Plan.*

- *Clearly identify which transportation facilities, services, and improvements are allowed outright, and which will be conditionally permitted or permitted through other procedures.*

- *Adopt land use or subdivision ordinance measures, consistent with applicable federal and state requirements, to protect transportation facilities, corridors and sites for their identified functions, that include the following topics:*

  ⇒ *access management and control;*
  ⇒ *protection of public use airports;*
  ⇒ *coordinated review of land use decisions potentially affecting transportation facilities;*
  ⇒ *conditions to minimize development impacts to transportation facilities;*
  ⇒ *regulations to provide notice to public agencies providing transportation facilities and services of land use applications that potentially affect transportation facilities; and*
  ⇒ *regulations assuring that amendments to land use applications, densities, and design standards are consistent with the Transportation System Plan.*

- *Adopt land use or subdivision regulations for urban areas and rural communities to provide safe and convenient pedestrian and bicycle circulation and bicycle parking, and to ensure that new development provides on-site streets and accessways that provide reasonably direct routes for pedestrian and bicycle travel.*

- *Establish street standards that minimize pavement width and total right-of-way.*

These elements are discussed in the following sections, where they are grouped by similarity in terms of appropriate policy and ordinance.

APPROVAL PROCESSES FOR TRANSPORTATION FACILITIES

Section 660-12-045(1) of the Transportation Planning Rule requires that cities and counties amend their land use regulations to conform with the jurisdiction's adopted Transportation System Plan. This section of the Transportation Planning Rule is intended to clarify the approval process for transportation-related projects.

Recommended Policies for Approval Process

Policies should clarify the approval process for different types of projects. The following policies are recommended to be adopted in the Echo Transportation System Plan:

- *The Transportation System Plan is an element of the city of Echo Comprehensive Plan. It identifies the general location of transportation improvements. Changes in the specific alignment of proposed public road and highway projects that shall be permitted without plan amendment if the new alignment falls within a transportation corridor identified in the Transportation System Plan.*

- *Operation, maintenance, repair, and preservation of existing transportation facilities shall be allowed without land use review, except where specifically regulated.*

- *Dedication of right-of-way, authorization of construction, and the construction of facilities and improvements for projects authorized in the Transportation System Plan, the classification of the roadway and approved road standards shall be allowed without land use review.*

- *For state projects that require an Environmental Impact Statement (EIS) or Environmental Assessment (EA), the draft EIS or EA shall serve as the documentation for local land use review, if local review is required.*

Recommended Ordinances for Approval Process

Projects that are specifically identified in the Transportation System Plan and for which the jurisdiction has made all the required land use and goal compliance findings are permitted outright, subject only to the standards established by the Plan.

However, a city may not allow outright an improvement that is included in the Transportation System Plan but for which no site-specific decisions have been made. Therefore, it is recommended that small jurisdictions review these transportation projects within the Urban Growth Boundary as regulated land use actions, using conditional use process. This following process is recommended for inclusion in as a new section within the Zoning Ordinance, as Section 9-15.

9.15 Standards for Transportation Improvements

*9.15.1 **Uses Permitted Outright. Except where otherwise specifically regulated by this ordinance, the following improvements are permitted outright:***

A. Normal operation, maintenance, repair, and preservation activities of existing transportation facilities.

B. Installation of culverts, pathways, medians, fencing, guardrails, lighting, and similar types of improvements within the existing right-of-way.

C. *Projects specifically identified in the Transportation System Plan as not requiring further land use regulation.*

D. *Landscaping as part of a transportation facility.*

E. *Emergency measures necessary for the safety and protection of property.*

F. *Acquisition of right-of-way for public roads, highways, and other transportation improvements designated in the Transportation System Plan except for those that are located in exclusive farm use or forest zones.*

G. *Construction of a street or road as part of an approved subdivision or land partition that is consistent with the applicable land division ordinance.*

9.15.2 Conditional Uses Permitted

A. *Construction, reconstruction, or widening of highways, roads, bridges or other transportation projects that are: (1) not improvements designated in the Transportation System Plan or (2) not designed and constructed as part of a subdivision or planned development subject to site plan and/or conditional use review, shall comply with the Transportation System Plan and applicable standards, and shall address the following criteria. For state projects that require an Environmental Impact Statement (EIS) or Environmental Assessment, (EA) the draft EIS or EA shall be reviewed and used as the basis of findings for compliance with the following criteria:*

1. *The project is designed to be compatible with existing land use and social patterns, including noise generation, safety, and zoning.*

2. *The project is designed to minimize avoidable environmental impacts to identified wetlands, wildlife habitat, air and water quality, cultural resources, and scenic qualities.*

3. *The project preserves or improves the safety and function of the facility through access management, traffic calming, or other design features.*

4. *The project includes provision for bicycle and pedestrian circulation as consistent with the Comprehensive Plan and other requirements of this ordinance.*

B. *Construction of rest areas, weigh stations, temporary storage, and processing sites. (Counties only).*

C. *If review under this section indicates that the use or activity is inconsistent with the Transportation System Plan, the procedure for a plan amendment shall be undertaken prior to or in conjunction with the conditional permit review.*

9.15.3 Time Limitation on Transportation-Related Conditional Use Permits

A. *Authorization of a conditional use shall be void after a period specified by the City as reasonable and necessary based on season, right-of-way acquisition, and other pertinent factors. This period shall not exceed three years.*

PROTECTING EXISTING AND FUTURE OPERATION OF FACILITIES

Section 60-12-045(2) of the Transportation Planning Rule requires that jurisdictions protect future operation of transportation corridors. For example, an important arterial for through-traffic should be protected in order to meet the community's identified needs. In addition, the proposed function of a future roadway must be protected from incompatible land uses.

Other future transportation facilities that the city of Echo may wish to protect include the space and building orientation necessary to support future transit, and right-of-ways or other easements for accessways, paths, and trails. Policies are suggested below that will demonstrate the desire of the community to protect these transportation facilities.

Protection of existing and planned transportation systems can be provided by ongoing coordination with other relevant agencies, adhering to the road standards, and to the access management policies and ordinances suggested below.

Recommended Policies for Protection of Transportation Facilities

- *The ctiy of Echo shall protect the function of existing and planned roadways as identified in the Transportation System Plan.*
- *The city of Echo shall include a consideration of a proposal's impact on existing or planned transportation facilities in all land use decisions.*
- *The city of Echo shall protect the function of existing or planned roadways or roadway corridors through the application of appropriate land use regulations.*
- *The city of Echo shall consider the potential to establish or maintain accessways, paths, or trails prior to the vacation of any public easement or right-of-way.*
- *The city of Echo shall preserve right-of-way for planned transportation facilities through exactions, voluntary dedication, or setbacks.*

Recommended Access Control Ordinances

Appropriate portions of the following provisions should be adopted as a new section of the Zoning Ordinance to provide access management.

Section 9.16 ACCESS MANAGEMENT.

A. General

The intent of this ordinance is to manage access to land development to preserve the transportation system in terms of safety, capacity, and function. This ordinance shall apply to all arterials and collectors within the city of Echo and to all properties that abut these roadways. This ordinance is adopted to implement the access management policies of the city of Echo as set forth in the Transportation System Plan.

B. Corner Clearance

1. Corner clearance for connections shall meet or exceed the minimum connection spacing requirements for that roadway.

2. Where no other alternatives exist, the City may allow construction of an access connection along the property line farthest from the intersection. In such cases, directional connections (i.e., right-in/out, right-in only, or right-out only) may be required.

C. Joint and Cross Access

1. Adjacent commercial or office properties classified as major traffic generators (i.e,. shopping plazas, office parks), shall provide a cross-access drive and pedestrian access to allow circulation between sites.

2. A system of joint use driveways and cross access easements shall be established wherever feasible and shall incorporate the following:

a) A continuous service drive or cross-access corridor extending the entire length of each block served shall have driveway separation consistent with the access management classification system and standards;

b) A design speed of 10 mph and a maximum width of 20 feet to accommodate two-way travel aisles designated to accommodate automobiles, service vehicles, and loading vehicles;

c) Stub-outs and other design features to make it visually obvious that the abutting properties may be tied-in to provide cross-access via a service drive;

d) A unified access and circulation system plan for coordinated or shared parking areas is encouraged.

3. Shared parking areas shall be permitted and a reduction in required parking spaces if peak demands do not occur at the same time periods.

4. Pursuant to this section, property owners shall:

a) Record an easement with the deed allowing cross-access to and from other properties served by the joint-use driveways and cross-access or service drive;

b) Record an agreement with the deed that remaining access rights along the roadway will be dedicated to the City and pre-existing driveways will be closed and eliminated after construction of the joint-use driveway;

c) Record a joint maintenance agreement with the deed defining maintenance responsibilities of property owners.

5. The City may reduce required separation distance of access points where they prove impractical, provided all of the following requirements are met:

a) *Joint-access driveways and cross-access easements are provided in accordance with this section.*

b) *The site plan incorporates a unified access and circulation system in accordance with this section.*

c) *The property owner enters into a written agreement with the City, recorded with the deed, that pre-existing connections on the site will be closed and eliminated after construction of each side of the joint-use driveway.*

6. *The City may modify or waive the requirements of this section where the characteristics or layout of abutting properties would make a development of a unified or shared access and circulation system impractical.*

D. *Access Connection and Driveway Design*

1. *Driveways shall meet the following standards:*

a) *If the driveway is a one-way in or one-way out drive, then the driveway shall be a minimum width of 10 feet and a maximum width of 12 feet, and shall have appropriate signage designating the driveway as a one-way connection.*

b) *For two-way access, each lane shall have a minimum width of 10 feet and a maximum width of 12 feet.*

2. *Driveway approaches must be designed and located to provide an exiting vehicle with an unobstructed view. Construction of driveways along acceleration or deceleration lanes and tapers shall be avoided due to the potential for vehicular weaving conflicts.*

3. *The length of driveways shall be designed in accordance with the anticipated storage length for entering and exiting vehicles to prevent vehicles from backing into the flow of traffic on the public street or causing unsafe conflicts with on-site circulation.*

E. *Nonconforming Access Features*

1. *Legal access connections in place as of (date of adoption) that do not conform with the standards herein are considered nonconforming features and shall be brought into compliance with applicable standards under the following conditions:*

a) *When new access connection permits are requested; or*

b) *Change in use or enlargements or improvements that will increase trip generation.*

F. *Reverse Frontage*

1. *Lots that front on more than one street shall be required to locate motor vehicle accesses on the street with the lower functional classification.*

2. *When a residential subdivision is proposed that would abut an arterial, it shall be designed to provide through-lots along the arterial with access from a frontage road or interior local road. Access rights of these lots to the arterial shall be dedicated to the city of Echo and recorded with*

the deed. A berm or buffer yard may be required at the rear of through-lots to buffer residences from traffic on the arterial. The berm or buffer yard shall not be located with the public right-of-way.

G. *Flag Lot Standards*

1. *Flag lots shall not be permitted when the result would be to increase the number of properties requiring direct and individual access connections to the State Highway System or other arterials.*

2. *Flag lots may be permitted for residential development when necessary to achieve planning objectives, such as reducing direct access to roadways, providing internal platted lots with access to a residential street, or preserving natural or historic resources, under the following conditions:*

   a) *Flag lot driveways shall be separated by at least twice the minimum frontage requirement of that zoning district.*

   b) *The flag driveway shall have a minimum width of 10 feet and maximum width of 20 feet.*

   c) *In no instance shall flag lots constitute more than 10 percent of the total number of building sites in a recorded or unrecorded plat, or three lots or more, whichever is greater.*

   d) *The lot area occupied by the flag driveway shall not be counted as part of the required minimum lot area of that zoning district.*

   e) *No more than one flag lot shall be permitted per private right-of-way or access easement.*

H. *Lot Width-to-Depth Ratios*

1. *To provide for proper site design and prevent the creation of irregularly shaped parcels, the depth of any lot or parcel shall not exceed three times its width (or four times its width in rural areas) unless there is a topographical or environmental constraint or an existing man-made feature.*

I. *Shared Access*

1. *Subdivisions with frontage on the state highway system shall be designed to have shared access points to and from the highway. Normally a maximum of two accesses shall be allowed regardless of the number of lots or businesses served. If access off secondary street is possible, then access should not be allowed onto the state highway. If access off secondary street becomes available, then conversion to that access is encouraged, along with closing the state highway access.*

J. *Connectivity*

1. *The street system of proposed subdivisions shall be designed to connect with existing, proposed, and planned streets outside of the subdivision, as provided in this section. To ensure continuation of the existing street grid and a pedestrian-friendly scale of the city blocks, block lengths in excess of 300 feet and block perimeters in excess of 1200 feet are prohibited.*

2. *Wherever a proposed development abuts unplatted land or a future development phase of the same development, street stubs shall be provided to provide access to abutting properties or to logically extend the street system into the surrounding area. All street stubs shall be provided with a temporary turn-around unless specifically exempted by the Public Works Director, and the*

restoration and extension of the street shall be the responsibility of any future developer of the abutting land.

3. *Minor collector and local residential access streets shall connect with surrounding streets to permit the convenient movement of traffic between residential neighborhoods or facilitate emergency access and evacuation. Connections shall be designed to avoid or minimize through-traffic on local streets. Appropriate design and traffic control such as four-way stops and traffic calming measures are the preferred means of discouraging through traffic.*

K. *Variances to Access Management Standards*

1. *The granting of the variance shall meet the purpose and intent of these regulations and shall not be considered until every feasible option for meeting access standards is explored.*

2. *Applicants for a variance from these standards must provide proof of unique or special conditions that make strict application of the provisions impractical. Applicants shall include proof that:*

   a) *Indirect or restricted access cannot be obtained;*

   b) *No engineering or construction solutions can be applied to mitigate the condition; and*

   c) *No alternative access is available from a street with a lower functional classification than the primary roadway.*

3. *No variance shall be granted where such hardship is self-created.*

PROCESS FOR COORDINATED REVIEW OF LAND USE DECISIONS

A lack of coordination between state and local decision processes can result in costly delays and changes in public road and highway projects, as well as some maintenance and operation activities. Section 660-12-045(2)(d) of the Transportation Planning Rule requires that jurisdictions develop a process for the coordinated review of land use decisions affecting transportation facilities. The following recommended policies will establish coordinated review. These policies should be included

Recommended Policies for Coordinated Review

- *The city of Echo shall coordinate with the Oregon Department of Transportation (ODOT) to implement the highway improvements listed in the Statewide Transportation Improvement Program (STIP) that are consistent with the Transportation System Plan and city Comprehensive Plan.*

- *The city of Echo shall provide notice to ODOT of land use applications and development permits for properties that have frontage or access onto Highway 207, I-84, or US 395.*

- *The city of Echo shall consider the findings of ODOT's draft Environmental Impact Statements and Environmental Assessments as integral parts of the land use decision-making procedures. Other actions required, such as a goal exception or plan amendment, will be combined with review of the draft EA or EIS and land use approval process.*

Recommended Process for Applying Conditions to Development Proposals

Section 660-12-045(2)(e) of the Transportation Planning Rule requires that jurisdictions develop a process to apply conditions to development proposals in order to minimize impacts on transportation facilities.

The site plan review process is a useful tool for a small jurisdiction. The city of Echo may want to implement a site plan review process that includes a requirement to provide data on the potential traffic impacts of a project through a traffic impact study or, at the minimum, an estimation of the number of trips expected to be generated. This Site Plan review process could be included in the Zoning Ordinance. Recommended language to be included under Site Plan Criteria is as follows:

- *The proposed use shall not impose an undue burden on the public transportation system. For developments that are likely to generate more than 400 average daily motor vehicle trips (ADTs), the applicant shall provide adequate information, such as a traffic impact study or traffic counts, to demonstrate the level of impact to the surrounding street system. The developer shall be required to mitigate impacts attributable to the project.*

- *The determination of impact or effect and the scope of the impact study should be coordinated with the provider of the affected transportation facility.*

If the city of Echo decides to implement a Site Plan review process, conditions such as the following may be included in the ordinance, to be applied in the event that a proposed project is demonstrated to have potentially adverse effects on the transportation system. These are additional to the conditions imposed by the recommended Access Management Ordinance included previously.

- *Dedication of land for streets, transit facilities, sidewalks, bikeways, paths, or accessways shall be required where the existing transportation system will be impacted by or is inadequate to handle the additional burden caused by the proposed use.*

- *Improvements such as paving, curbing, installation or contribution to traffic signals, construction of sidewalks, bikeways, accessways, paths, or streets that serve the proposed use where the existing transportation system may be burdened by the proposed use.*

Recommended Regulations to Provide Notice to Public Agencies

Review of land use actions is typically initiated by a notice. This process is usually defined by a procedures ordinance or noticing policy. This Ordinance or Policy should be amended to provide for Notice to ODOT regarding any land use action on or adjacent to OR 207, or I-84. Similarly, all actions by the City potentially affecting a county road should provide notice to Umatilla County.

Information that should be conveyed to reviewers includes:

- *Project location.*

- *Proposed land use action.*

- *Location of project access point(s).*

Additional information to be supplied upon request (provided the information is available) includes a site plan showing the following:

- *Distances to neighboring constructed access points, median openings, traffic signals, intersections, and other transportation features on both sides of the property;*
- *Number and direction of lanes to be constructed on the driveway, plus striping plans;*
- *All planned transportation features (lanes, signals, bikeways, walkways, crosswalks, etc.);*
- *Trip generation data or appropriate traffic studies;*
- *Parking and internal circulation plans for vehicles and pedestrians;*
- *Plat map showing property lines, right-of-way, and ownership of abutting properties;*
- *A detailed description of any requested variance; and*
- *If airport-related, proximity to nearest runway.*

Recommended Regulations to Assure that Amendments are Consistent with the Transportation System Plan

Section 660-12-045(2)(g) of the Transportation Planning Rule requires that jurisdictions develop regulations to assure that all development proposals, plan amendments, or zone changes conform with the Transportation System Plan. This requirement can be addressed by adding a policy to the Comprehensive Plan, as follows:

- *All development proposals, plan amendments, or zone changes shall conform with the adopted Transportation System Plan.*

Within the zoning ordinance, development proposals can be addressed through site plan review, discussed above. Zone changes and plan amendments can be partially addressed by the following language:

- *The applicant must show that the proposed change conforms with the Comprehensive Plan.*

The following statements should be added to the local ordinance and policy language governing zone changes and plan amendments:

A. *A plan or land use regulation amendment significantly affects a transportation facility if it:*

   1. *Changes the functional classification of an existing or planned transportation facility;*
   2. *Changes standards implementing a functional classification system;*
   3. *Allows types or levels of land use that would result in levels of travel or access that are inconsistent with the functional classification of a transportation facility; or*
   4. *Would reduce the level of service of the facility below the minimum acceptable level identified in the Transportation System Plan.*

B. *Amendments to the Comprehensive Plan and land use regulations which significantly affect a transportation facility shall assure that allowed land uses are consistent with the function, capacity,*

and level of service of the facility identified in the Transportation System Plan. This shall be accomplished by one of the following:

1. *Limiting allowed land uses to be consistent with the planned function of the transportation facility;*

2. *Amending the Transportation System Plan to ensure that existing, improved, or new transportation facilities are adequate to support the proposed land uses consistent with the requirement of the Transportation Planning Rule; or*

3. *Altering land use designations, densities, or design requirements to reduce demand for automobile travel and meet travel needs through other modes.*

SAFE AND CONVENIENT PEDESTRIAN AND BICYCLE CIRCULATION

Bicycling and walking are often the most appropriate mode for short trips. Especially in small cities where the downtown area is compact, walking and bicycling can replace short auto trips, reducing the need for construction and maintenance of new roads. However, the lack of safe and convenient bikeways and walkways can be a strong discouragement to use these mode choices. The Transportation Planning Rule (660-12-045(3)) requires that urban areas and rural communities plan for bicycling and walking as part of the overall transportation system. The following ordinance language may be considered to assure a functional network of bicycle and pedestrian access throughout the community.

Recommended Ordinances for Bicycle and Pedestrian Circulation and Access

Sections 660-12-045(3)(b), (c), and (d) of the Transportation Planning Rule deals with providing facilities for safe and convenient pedestrian and bicycle circulation and access, both within new residential and commercial development, and on public streets. In order for walking and bicycling to be viable forms of transportation, especially in smaller cities where they can constitute a significant portion of local trips, the proper facilities must be supplied. In addition, certain development design patterns, such as orienting commercial uses to the street and placing parking behind the building, make a commercial district more accessible to non-motorized transportation and to existing or future transit.

The Transportation Planning Rule specifies that, at a minimum, sidewalks and bikeways be provided along arterials and collectors in urban areas. Separate bicycle and pedestrian facilities should be provided where they would safely minimize trips distances by providing a "short cut." Small cities should enhance existing ordinances by including the following recommended additions and recommendations. The recommendations should be placed within the appropriate section of the zoning ordinance:

Definitions:

A. *Accessway. A walkway that provides pedestrian and 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 that provides convenient access for pedestrians.*

B. Bicycle. A vehicle designed to operate on the ground on wheels, propelled solely by human power, upon which any person or persons may ride, and with two tandem wheels at least 14 inches in diameter. An adult tricycle is considered a bicycle.

C. Bicycle Facilities. A general term denoting improvements and provisions made to accommodate or encourage bicycling, including parking facilities and all bikeways.

D. Bikeway. Any road, path, or way that is some manner specifically open to bicycle travel, regardless of whether such facilities are designated for the exclusive use of bicycles or are shared with other transportation modes. (These are further defined in the Echo Bicycle and Pedestrian Plan).

E. Pedestrian Facilities (also Walkway). A general term denoting improvements and provisions made to accommodate or encourage walking, including sidewalks, accessways, crosswalks, ramps, paths, and trails.

F. Neighborhood Activity Center. An attractor or destination for residents of surrounding residential areas. Includes, but is not limited to existing or planned schools, parks, shopping areas, transit stops, employment areas.

G. Reasonably direct. 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.

H. Safe and convenient. Bicycle and pedestrian routes that are:

1. Reasonably free from hazards, and

2. Provides a reasonably direct route of travel between destinations, considering that the optimum travel distance is one-half mile for pedestrians and three miles for bicyclists.

I. Walkway. A hard-surfaced area intended and suitable for pedestrians, including sidewalks and the surfaced portions of accessways.

If the city of Echo decides to implement a Site Plan review process, it should include a requirement to show the design and location of bicycle parking and bicycle and pedestrian circulation elements such as accessways and walkways. It is recommended that the following language be added to the land use regulations:

A. Bicycle Parking. The development shall include the number and type of bicycle parking facilities required in the Off-Street Parking and Loading section of this Title. The location and design of bicycle parking facilities shall be indicated on the site plan.

B. Pedestrian Access and Circulation.

1. Internal pedestrian circulation shall be provided in new commercial, office, and multi-family residential developments through the clustering of buildings, construction of hard surface walkways, landscaping, accessways, or similar techniques.

C. Commercial Development Standards.

1. New commercial buildings, particularly retail shopping and offices, shall be oriented to the street, near or at the setback line. A main entrance shall be oriented to the street. For lots with more than two front yards, the building(s) shall be oriented to the two busiest streets.

2. Off-street motor vehicle parking for new commercial developments shall be located at the side or behind the building(s).

D. All site plans (industrial and commercial) shall clearly show how the site's internal pedestrian and bicycle facilities connect with external existing or planned facilities or systems.

The city subdivision ordinances should reflect the intent of the Transportation Planning Rule by adding the following provision to development requirements.

- *Approval of Subdivision Tentative Plans and Final Plats. Information required shall include the location and design of all proposed pedestrian and bicycle facilities, including accessways.*

The small jurisdiction Subdivision Ordinance should incorporate the following language into the existing requirements for cul-de-sac design.

A. Cul-de-Sacs and Accessways.

1. Cul-de-sacs or permanent dead-end streets may be used as part of a development plan; however, through-streets are encouraged except where topographical, environmental, or existing adjacent land use constraints make connecting streets unfeasible. Cul-de-sac lengths in excess of 300 feet are prohibited. Where cul-de-sacs are planned, accessways shall be provided connecting the ends of cul-de-sacs to each other, to other streets, or to neighborhood activity centers.

2. Accessways for pedestrians and bicyclists shall be 10 feet wide and located within a 20-foot-wide right-of-way or easement. If the streets within the subdivision are lighted, the accessways shall also be lighted. Stairs or switchback paths may be used where grades are steep.

3. Accessways for pedestrians and bicyclists shall be provided at mid-block where the block is longer than 600 feet.

4. The Hearings Body may determine, based upon evidence in the record, that an accessway is impracticable. Such evidence may include but is not limited to:

a) Physical or topographic conditions make an accessway connection impractical. Such conditions include but are not limited to extremely steep slopes, wetlands, or other bodies of water where a connection cannot reasonable be provided.

b) Buildings or other existing development on adjacent lands physically preclude a connection now or in the future.

c) Where accessways would violate provisions of leases, easements, covenants, restrictions, or other agreements existing as of the date these amendments are adopted that preclude a required accessway connection.

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APPENDIX A

Echo Plans

ECHO PLANS

Comprehensive Plan (1979)

The Echo Comprehensive Plan was adopted in 1979 and is due for a periodic review in 1998. The plan provides a statement of the City's goals and policies for guiding the future growth and development of the City. Two of the City's 13 goals strongly impact the development of the Transportation System Plan, Transportation and Public Facilities and Services. The City's Transportation Goal is, "To provide and encourage a safe, convenient and economic transportation system." Four policies are listed to implement this goal. They include repaving City streets and providing curbs and sidewalks as resources are available; encouraging the Union Pacific Railroad to landscape its right-of-way through the City; to encourage Umatilla County to improved County Road Number 1300 (Thielsen Street) between the City and the I-84 Freeway interchange and to plan for adequate access to adjacent property; and to work with Umatilla County to develop joint policies concerning local roads and streets within the urban growth boundary.

The City's overall goal for public facilities and services is, "To plan and develop a timely, orderly, and efficient arrangement of public facilities and services to serve as a framework for urban development." Applicable policies include: J)4. To develop, maintain, update, and expand police and fire services, streets and sidewalks..., J)10. To identify approximate location of future streets, water tank sites, and other public facilities; and J)11. to require necessary on-site public facilities to be provided in new subdivisions including...streets.

The Echo Comprehensive Plan Technical Report gives a good economic and social history of the City, but is highly outdated regarding current economic and land use conditions. The population projections exemplify this problem. In 1977, the Technical Report population projections for 1995 were 2,514 to 4,064 people. In reality, Echo's population was 530 in 1995.

APPENDIX B

1997 Major Streets Inventory

1997 MAJOR STREETS INVENTORY

Echo Transportation System plan

Roadway Segment Location	Jurisdiction	Level of Importance	Speed Limit (mph)	Street Width (feet)	No. of Travel Lanes	Passing Lanes (direction)	Shoulders Width (feet)	Shoulders Side	Shoulders Paving	On-Street Parking	Curbs	Sidewalks	Bikeway	1997 Pavement Condition*
Arterials														
Lexington-Echo Hwy														
West city limits (MP 35.38) to Front Street	State	Regional	25	36	2	No	No	NA	NA	No	No	No	No	Fair
Front Street to Theilsen Street	State	Regional	25	63	2	No	No	NA	NA	Yes	Both Sides	Both Sides	No	Fair
Main Street to Gerone Street (as Thielsen St.)	State	Regional	25	34	2	No	No	NA	NA	No	No	No	No	Fair
Gerone Street to East UGB Limits	State	Regional	25	22	2	No	No	NA	NA	No	No	By elementary school only	No	Fair
Collectors (current functioning)														
County Road No. 1300 (Theilsen Rd)														
North UGB Limits to Main Street	County	NA	25	22	2	No	No	NA	NA	No	No	No	No	Fair
Dupont Street														
Lexington-Echo Hwy to Sprague Street	City	NA	25	20	2	No	No	NA	NA	No	No	Both Sides	No	Fair
Sprague Street to Garden Street	City	NA	25	20	2	No	No	NA	NA	No	No	East side	No	Fair
Garden Street to Thielsen Street	City	NA	25	20	2	No	No	NA	NA	No	No	No	No	Fair

* Pavement condition information for arterials is from the 1997 ODOT Pavement Condition Report. Condition information for collectors is based on field survey conducted by DEA in November 1997.

Umatilla County Population Discussion

METHODOLOGY AND DATA SOURCES

Population estimates and projections were developed from historical data, official annual estimates, official long-range forecasts, and an impact analysis of four major employers entering or expanding in western Umatilla County. Historical data are compiled as reported by the Census Bureau. Portland State University's Center for Population Research and Census developed annual population estimates for cities and counties for the purpose of allocating certain state tax revenues to cities and counties. The State of Oregon Office of Economic Analysis (OEA) provided long-term (through year 2040) state population forecasts, disaggregated by county, for state planning purposes.

The Office of Economic Analysis used business-cycle trends (as reflected by the Employment Department's employment forecasts) as the primary driver of population and employment for the short term. For the long term, the forecasts shift to a population-driven model, which emphasizes demographics of the resident population, including age and gender of the population, with assumptions regarding life expectancy, fertility rate, and immigration. DEA used a methodology based on OEA's county-distribution methodology in developing population and employment forecasts for each of the cities in Umatilla County. DEA calculated a weighted average growth rate for each jurisdiction (weighting recent growth more heavily than past growth) and combined this average growth rate with the projected county-wide growth rate. This methodology assumes convergence of growth rates because of the physical constraints of any area to sustain growth rates beyond the state or county average for long periods of time. These constraints include availability of land and housing, congestion, and other infrastructure limitations.

These preliminary forecasts were used as a basis for discussion with individuals who have local knowledge and expertise. The projections were then revised based on local input and analysis. One element that had a significant impact on the population analysis was the HUES (Hermiston, Umatilla, Echo, and Stanfield) Growth Impact Study, conducted by the Benkendorf Associates Corporation, Hobson Johnson & Associates, and Martin Davis Consulting, which quantifies the impact of the construction and operation of four major employers.

As required by state policy, this forecast is consistent with the State of Oregon Office of Economic Analysis forecast at the end of the 20-year planning period. Because of the impact of the four large employers, however, the growth of Umatilla County will occur faster in the beginning of the planning horizon, slowing to compensate near the end of the planning period.

These population and employment forecasts were developed to determine future transportation needs. The amount of growth, and where it occurs, will affect traffic and transportation facilities in the study area. This report is not intended to provide a

complete economic forecast or housing analysis, and it should not be used for any purpose other than that for which it was designed.

CURRENT POPULATION AND EMPLOYMENT LEVEL

Estimated at 65,500 in 1997, the population of Umatilla County has grown relatively rapidly since the 1990 Census, with an average annual growth rate of over one-and-one-half percent. The following table shows the estimated change in population for Umatilla County and the jurisdictions of Adams, Athena, Echo, Helix, Pilot Rock, Stanfield, Ukiah, and Weston for 1990 and 1996.

Umatilla County Population Level
1990 and 1996

			1990-1997 Change	
	1990	1997	Number	CAARG*
Umatilla County	59,249	65,500	6,251	1.4%
Adams	223	265	42	2.5%
Athena	997	1,120	123	1.7%
Echo	499	585	86	2.3%
Helix	150	190	40	3.4%
Pilot Rock	1,478	1,585	107	1.0%
Stanfield	1,568	1,770	202	1.7%
Ukiah	250	240	-10	-0.6%
Weston	606	680	74	1.6%

** Compound Average Annual Rate of Growth*

Source: Portland State University Center for Population Research and Census.

Most of the jurisdictions in Umatilla County have grown at a healthy rate, comparable to the annual growth rate of 1.4 percent for the county overall. The smaller jurisdictions of Adams and Helix have grown at a slightly faster rate, starting from the smaller population bases of 223 (Adams) and 150 (Helix) in 1990.

Populations with Specific Transportation Needs

Certain populations have been identified as having more intensive transportation needs than the general population. These populations include people under the legal driving age, those under the poverty level, and those with mobility limitations.

As stated above, Portland State University's Center for Population and Census estimates the Umatilla County's population as 65,500 in 1997. The Center further estimates that 18,623 of these people, or about 28 percent of the population, is under the age of 18 and that 5,505 are under age 5. Because the purpose of this analysis is to determine the number of people with specific transportation needs, DEA used PSU's age disaggregation to estimate that 16,617 people are under 16, the legal driving age in Umatilla County.

According to the 1990 Census, 16.5 percent of the 57,046 persons living in Umatilla County (for whom poverty status is determined) were below poverty level. Poverty statistics are based on a threshold of nutritionally-adequate food plans by the Department of Agriculture for the specific size of the family unit in question. The distribution of the population below poverty level shows that a larger proportion of younger persons than older populations are affected by this indicator, as shown in the following table.

Poverty Status
Umatilla County--1990 Census

	Below Poverty Level				
	Male	Female	Total Below Poverty Level	Total* Population	Percent of Total Population Below Poverty
11 and under	1,408	1,175	2,583	10,929	23.6%
12 to 17	481	517	998	5,223	19.1%
18 and over	2,300	3,538	5,838	40,894	14.3%
Total	4,189	5,230	9,419	57,046	16.5%

** For whom poverty status is determined.*

Source: U.S. Census Bureau.

The Census Bureau reports that 3.3 percent of the population 16 and older had a mobility limitation in 1990. Persons were identified as having a mobility limitation if they had a health condition (physical and/or mental) that lasted for six or more months and which made it difficult to go outside the home alone. A temporary health problem, such as a broken bone that was expected to heal normally, was not considered a health condition.

Using the proportion of the population with mobility limitations and below the poverty level[1] in 1990, DEA estimated the number of people with specific transportation needs in 1996. The following table shows that an estimated 34.8 percent of the population may have specific transportation needs. (There is likely to be some overlap between the 3.3 percent of the population with mobility limitations and the 14.5 percent below the poverty level; therefore, the sum of the figures may overstate the proportion of the population with specific transportation needs.)

[1] DEA used the Census Bureau's age disaggregation to estimate that 10.7 percent of the population over the age of 16 was under the poverty level in 1990.

Estimated Population with Specific Transportation Needs
1996, Umatilla County

	Percent of Total Population	Estimated Number
Persons between the ages of 5 and 15	17.0%	11,115
Persons 16 and older under Poverty Level	14.5%	9,480
Persons 16 and older with Mobility Limitation	3.3%	2,130
Total Specific Transportation Needs Population	34.8%	22,725

Source: U.S. Census Bureau.

Planning for the overall transportation system will need to consider the special needs of these populations.

HISTORICAL GROWTH

The population of Umatilla County has grown since the 1970s, with significantly slower growth in the 1980s, reflecting a general slowdown in the state's economy. Helix, Pilot Rock, and Weston actually experienced a net population loss between 1970 and 1990. The following table shows the population trend for Adams, Athena, Echo, Helix, Pilot Rock, Stanfield, Ukiah, and Weston, and Umatilla County as a whole.

Umatilla County Historical Population Trend

							1970-1990 Change	
	1970	1980	1985	1990	1995	1997	Number	CAARG*
Umatilla County	44,923	58,855	60,000	59,249	65,200	65,500	14,326	1.4%
Adams	219	240	245	223	260	265	4	0.1%
Athena	872	965	955	997	1,080	1,120	125	0.7%
Echo	479	624	605	499	530	585	20	0.2%
Helix	152	155	155	150	170	190	(2)	(0.1%)
Pilot Rock	1,612	1,630	1,630	1,478	1,560	1,585	(134)	(0.4%)
Stanfield	891	1,568	1,660	1,568	1,700	1,770	677	2.9%
Ukiah	N.A.	249	230	250	270	240	N/A	N/A
Weston	660	719	730	606	655	680	(54)	(0.4%)

** Compound Average Annual Rate of Growth*
Ukiah was incorporated in July 1972.
Source: Portland State University Center for Population Research and Census.

The number of people residing in Stanfield nearly doubled between 1970 and 1980. This population growth may have been fueled by some significant housing developments and the location of several food processing plants in Stanfield during this time.

POPULATION AND EMPLOYMENT FORECASTS

Umatilla County is expected to experience population gains for the next 20 years. Like much of rural Oregon, the economy of Umatilla County remains largely seasonal, with nearly one-quarter of all employment agriculture-based. Therefore, population increases are difficult to predict, and are not likely to be as stable as the forecasts appear to imply.

The State Office of Economic Analysis prepared long-term population projections by county. Based on these projections and the methodology described above, preliminary population forecasts for the jurisdictions of Adams, Athena, Echo, Helix, Pilot Rock, Stanfield, Ukiah, and Weston were developed in five-year increments.

An ad-hoc HUES (Hermiston, Umatilla, Echo, and Stanfield) Impact Planning Group was formed in early 1997 to lead cooperative efforts to address growth concerns in western Umatilla County arising from four major employers locating or expanding in the region. The HUES Growth Impact Study, conducted by the Benkendorf Associates Corporation, Hobson Johnson & Associates, and Martin Davis Consulting, quantifies the impact of the construction and operation of these four facilities. Employment impacts are translated into household and population impacts, and disaggregated across the four HUES communities, Pendleton, and rural Umatilla County.

Of these four employers (the Two Rivers Correctional Institution, the Umatilla Chemical Agent Disposal Facility, the Union Pacific Railroad Hinkle Locomotive Shop, and the Wal-Mart Distribution Center and Truck Maintenance Facility), only one (the Wal-Mart Distribution Center) had been announced and incorporated in the long-range population and employment forecast prepared by the Office of Economic Analysis. Because the Umatilla County site was selected as the location for the Wal-Mart Distribution Center in 1994, its impacts were already incorporated in the Office of Economic Analysis long-term population and employment forecast. Applying the HUES methodology, DEA, Inc. subtracted out the impact of the Wal-Mart Distribution Center, in order to identify the population impacts resulting from the three "big four" employers otherwise not accounted for in the OEA forecast.

HUES Population Impacts by Community
HUES Study "Scenario One" Less Wal-Mart Distribution Center

	Base Population	Population Impact		
	1996	2000	2005	2007
Hermiston	11,050	1,681	2,354	1,412
Umatilla	3,310	503	705	423
Echo*	530	81	113	68
Stanfield	1,755	267	374	224
HUES communities subtotal		2,531	3,545	2,128
Pendleton		223	313	188
Rural Umatilla County		223	313	188
Total Population Impact		2,978	4,171	2,503

* *The HUES study estimates Echo's base population using utility hook-up data and a 2.5 average household size. However, this methodology yields a base-year estimate inconsistent with the "official" state estimate. As required by state policy, the Transportation System Plan uses the official state estimate as the base population. As appropriate, the TSP uses utility hook-up data as the base number of households.*

Source: HUES Growth Impact Study and David Evans and Associates, Inc.

These estimated impacts were then applied to the original population forecast for Echo and Stanfield by the mathematical model. The resulting population forecast is shown in five-year increments in the table below.

Umatilla County Population Forecast

	1995	2000	2005	2010	2015	2017	1995-2000 CAARG	1995-2017 CAARG
Umatilla County	65,200	72,800	77,000	78,300	79,500	80,073	2.2%	0.9%
Adams	260	270	280	290	300	310	0.7%	0.8%
Athena	1,080	1,160	1,210	1,270	1,330	1,360	1.4%	1.1%
Echo	530	610	640	650	660	660	2.9%	1.0%
Helix	170	190	210	220	230	230	2.7%	1.4%
Pilot Rock	1,560	1,580	1,600	1,610	1,640	1,650	0.3%	0.3%
Stanfield	1,700	2,020	2,130	2,290	2,430	2,490	3.5%	1.8%
Ukiah	270	290	310	320	340	340	1.6%	1.1%
Weston	655	690	700	710	720	730	1.0%	0.5%

Source: 1995 estimates developed by Portland State University Center for Population Research and Census; long-term County forecasts developed by State of Oregon Office of Economic Analysis; and Jurisdiction forecasts and intermediate County forecasts developed by David Evans and Associates, Inc.

Overall, Umatilla County is expected to experience healthy rates of population growth, averaging nearly one percent annually over the planning horizon. As shown in the table, the western portion of Umatilla County is expected to grow faster than the rest of Umatilla County, fueled by the four major employers. Of all jurisdictions included in this analysis, Stanfield is expected to grow the fastest, at an annual average of 3.5 percent at the beginning of the planning horizon, slowing somewhat, but still achieving a very rapid average annual rate of 1.8 percent for the 20-year planning period.