THE TRANSPORTATION SYSTEM ELEMENT

DEVELOPMENT OF THE SYSTEM ELEMENT

The System Element implements the goals and policies by identifying a coordinated multimodal transportation system for air, rail, highways, public transit, waterways and marine transportation, bikeways, pedestrians and pipelines to be developed over the next 20 years. It includes a summary inventory of the system, forecasts of transportation demands, an examination of alternative approaches to system planning, a description of the preferred plan and an implementation strategy.

Inventory of the System

Appendix A of the "Oregon Transportation Plan Technical Report" contains an inventory of the multimodal and modal services in the state. Basic information on the existing facilities and services are contained in the "Statewide Transportation Plan Overview 1988." For OTP planning purposes some of the information contained in the "1988 Overview" was updated in the technical report. Other primary sources of inventory information for the Oregon Transportation Plan include the statewide aviation, bikeway, highway, intercity passenger, port and rail plans; "1993-1998 Six-Year Transportation Improvement Program;" and local and metropolitan transportation, transit and port plans. (See Appendix C for complete list.)

FORECASTS

Transportation trends over the next 20 years were forecast by estimating population and employment increases and the increased use of major types of transportation.

The System Element is built on a statewide base forecast which is allocated to counties and metropolitan areas. Each of the planning alternatives was initially developed and evaluated on this base forecast. However, recognizing that unforeseen changes can have profound impacts on decisions, two contingency forecasts were also developed. These are a super growth forecast, which predicts the impacts of unexpectedly high rates of population growth, and an eco-catastrophe forecast, which predicts the impact of an unforeseen environmental or economic catastrophe that severely constrains future growth and development.

Base Forecasts

ODOT's October 1991 report, "Demographic and Economic Forecasts 1990-2030," projects that population will increase in Oregon at a rate of 1.35 percent per year from 1990 to 2010 and employment will increase at 1.62 percent per year. The 1970-90 Oregon population growth rate was 1.55 per year. In the future, employment growth is expected to exceed the population growth rate by 20 percent because of the West Coast's generally favorable location (climate, natural resources, and access to rapidly growing Pacific Rim economies) and because of a continuing increase in the proportion of the population between ages 15 and 65 until about 2005. (See Appendix A for county projections.)

TABLE 2
U.S. AND OREGON POPULATION AND EMPLOYMENT (1970-2030)
(In Thousands)

	1970	1990	2010	2030	RATE/YR. 1970-1990	RATE/YR. 1990-2010	RATE/YR. 2010-2030
U.S. Population	**211,349**	**245,807**	**282,050**	**297,537**	**0.69%**	**0.92%**	**0.27%**
Ore. Population	2,092	2,847	3,725	3,933	1.55%	1.35%	0.27%
U.S. Employment	**75,957**	**129,229**	**155,776**	**150,776**	**2.44%**	**1.25%**	**-0.16%**
Ore. Employment	709	1,248	1,723	1,664	2.87%	1.62%	-0.17%

U.S. data are for 1973-1988 and 1988-2010 rather than 1970-1990 and 1990-2010. Rates are the compound annual rate of growth. Source: Bureau of Economic Analysis, U.S. Department of Commerce.

Using the population and employment forecasts, planners estimated the amount of travel anticipated through existing plans. These base case forecasts are the result of review and adaption of existing ODOT forecasts included in the "1991 ODOT Highway Plan" and in the "1989 ODOT Aviation Plan," Metro forecasts in the "Regional Transportation Plan: 1989 Update," the Portland Metro forecasts prepared for 2010 since the 1989 Plan, public transit agency forecasts and forecasts by other planning agencies. Table 3 summarizes base case forecasts for travel trends.

TABLE 3

TRANSPORTATION TRENDS BASE CASE FORECASTS*

	1990 Estimate	Growth Rate/Year	2010 Forecast
Highway Total	27 billion vmt**	2.5%	44 billion vmt
Highway Metro	9 billion vmt**	2.9%	16 billion vmt
Transit Total	65 million/yr ***	2.6%	108 million/yr
Transit Metro	55 million/yr	2.9%	97 million/yr
Intercity Bus	0.66 million/yr	1.0%	0.81 million/yr
Amtrak	0.56 million/yr	1.0%	0.68 million/yr
Airplane	3.9 million/yr	5.2%	10.8 million/yr
Truck	1.1 billion vmt	2.5%	1.8 billion vmt
Rail	136 million tons	2.5%	223 million tons
Pipeline	62 million b/yr****	1.0%	76 million b/yr
Ports - Inland	11 million tons	2.5%	18 million tons
Ports - Export	21 million tons	2.5%	34 million tons
Ports-Import	3 million tons	5.0%	8 million tons
Bicycle-Pedestrian	Not available	1.35%	Not available

* Forecasts are base case and do not assume LCDC Rule 12 constraints
** Vehicle miles traveled
*** Million passengers per year
**** Barrels per year

Super Growth

A more rapid rate of population growth in Oregon, such as 2.3 percent per year, would cause severe deficiencies in the capacity of the state's transportation system, particularly in the metropolitan areas. Unless denser residential patterns occur or infill development in the metropolitan areas takes place, new residents would be forced to move to areas outside the urban growth boundaries that are not well served by transportation modes other than the automobile and may not have adequate highway capacity. This would result in longer trips by automobile and the need to widen highways and provide more access to the highway system.

On the other hand, a benefit of this high growth rate would be greater revenues to support transportation enhancements. If land use objectives could be maintained under the super growth forecast,

additional resources that become available could be used to enhance transportation services. Higher densities in urban areas would create demands for more rapid shifts to public transportation options, and environmental and livability objectives would continue to be met.

Eco-Catastrophe

An eco-catastrophe involves environmental and natural resource events that also would affect the state's economy. Economic restrictions could also affect environmental conditions and regulations.

These events could include:

- severe drought
- severe recession
- severe climate changes, such as global warming and ozone depletion
- a prolonged energy crisis

Any of these events would result in changes in demands for the transportation system. Clearly, limitations on personal mobility would result in people making fewer trips and shorter trips, or shifting to other modes for travel. Changes in the manner in which business is conducted, such as reduced demand for Oregon products or reduced output due to environmental considerations, would affect both freight movement and employee travel.

Environmental catastrophes, such as severe drought and acid rain conditions, could dramatically reduce the employment in and quantity and quality of products of the state's forestry, agriculture and fishing industries. An energy crisis, global warming or ozone depletion could result in restriction in the amount of fossil fuel used. If restrictions were made in Oregon, but not in other states, businesses and residents might be encouraged to move to other states. Or if restrictions were made in other states but not in Oregon, greater highway demands might result.

A severe recession, changes in the demand for Oregon exports and new freight equipment requirements (such as ships with deeper draft channel requirements) would influence employment in the state. These kinds of events could lead to a focus on new industries and a relaxing of the number and impact of environmental regulations.

ALTERNATIVE APPROACHES

In the process of determining the preferred level of service to carry out the Transportation Plan's goals and policies, the OTP Steering

Committee examined four investment approaches to managing and improving Oregon's transportation system to the year 2012:

1. **Funding Decline** — A plan which continues current funding levels without adjustments for inflation or new programs.

2. **Continuation of Existing Programs** — A plan which maintains current programs and increases revenues and expenditures to account for inflation.

3. **Continuation of Existing Programs with Modal Shifts** — A plan which increases revenue to account for inflation, but shifts additional resources to non-highway modes.

4. **Livability Approach** — A plan which attempts to maximize the impacts of transportation investments and programs on both livability and economic development to achieve the OTP goals, Oregon Benchmarks and the Goal 12 Transportation Rule.

The four approaches result in different kinds and levels of economic development and livability. The first two approaches are proposals against which the preferred alternative may be evaluated. However, they also have some value in themselves because they provide a basis for development of contingencies if the preferred alternative cannot be fully implemented.

Maps 1 - 3 (pages 10 to 16) are not comprehensive but only illustrative of the alternatives described below. They show only the major features of the statewide transportation system. They illustrate the most notable changes planned in each alternative and many of the improvements needed to meet minimum levels of services in the Preferred Plan. The OTP includes system improvements not mapped.

Funding Decline

Under this approach, the only expenditures are those needed to preserve the existing infrastructure and maintain, but not expand, current services.

This approach has reduced expenditures in comparison to Continuation of Existing Programs because real dollar expenditures on transportation are assumed to decline with inflation. Transportation modes not now receiving public funding would not receive public funding in the future.

This alternative does not contribute to improved air quality or improved availability of public transit, bicycle paths and pedestrian walkways. Land uses can be controlled and development channeled although no supporting transportation investments, such as public transit, would be financially feasible. Increases in congestion, declines in infrastructure investment, declines in levels of service and increases in operating costs would negatively affect economic growth.

Public transportation service levels could not be expanded beyond current commitments. Amtrak ridership should grow with population, although no new services could be added. Air travel would likely grow with population. Intercity bus services would probably continue to decline in both ridership and services.

Highway conditions would not deteriorate, but congestion would increase. No initiatives would be possible for improved intermodal facilities for passengers or freight.

Continuation of Existing Programs

This alternative plan (Map 1) provides for a continuation of the state and regional transportation programs anticipated through 1995 through the entire 20-year period to 2012. Many planned projects at the state and regional levels require additional funding if the programs are to be carried out. Current revenue sources are assumed to be adjusted for inflation so the buying power of the revenue sources does not change. For sources such as gasoline taxes and weight-distance taxes, rates of taxation would have to be periodically adjusted in order to keep pace with inflation.

Highway pavement conditions would continue to improve slightly, but levels of congestion would increase. Intercity rail ridership should grow with population, while intercity bus ridership would decline as intercity bus services continue to be eliminated (most corridors had only one or two trips per day in 1991). Ridership on urban transit and specialized elderly and handicapped services should grow about the same as highway travel. Air travel would grow more rapidly than other modes.

Continuation of Existing Programs with Modal Shifts

This alternative (Map 2 with none of the highway-related improvements shown on the map) holds highway expenditures at the level of the Funding Decline and implements all the other programs for other modes that are included in the Livability Approach. Current revenue sources are assumed to be adjusted for inflation or new funding sources found, and all new net revenues go to alternative (non-highway) modes. Government expenditures are slightly higher for this alternative than for the Continuation of Existing Programs alternative. The major funding shift under this alternative would result in highway conditions and service levels being about the same as with the Funding Decline alternative.

Within urban areas, this alternative would apply the pricing, transit and land use policies of the Livability Approach. Highway levels of service would be worse than with the Livability Approach since the same vehicle miles of travel would occur on a road system in much poorer condition and with less capacity. Transit ridership would be the same as for the Livability Approach, but bus services and bus rid-

ers would also suffer from slower travel times and poor road conditions.

Livability Approach

Under this alternative plan (Map 2), transportation investments and programs would be oriented to the economic and livability goals of the OTP Policy Element, the LCDC Transportation Rule and the Oregon Benchmarks. This option is a consolidation of two options, one which maximizes economic development and one which maximizes land use and environmental benefits. These were combined because they cannot be approached separately.

This alternative depends heavily on the concept of minimum levels of service within each transportation mode to assure appropriate transportation alternatives to all areas of the state. Development of this alternative is described in detail in the Preferred Plan section.

EVALUATION OF THE ALTERNATIVES

Table 4 compares the four alternatives based on 13 criteria:

- Highway VMT
- Transit trips
- Telecommuting trips
- Private cost per year
- Public cost per year
- Total cost per year
- Economic efficiency
- Economic development
- Environment
- Land use
- Alternative modes and technologies
- Consistency with Oregon policies
- Safety

Table 4 clearly indicates that the Livability alternative is best on virtually all criteria. It provides positive benefits in terms of economic development and efficiency as well as the environment, land use and safety. Highway vehicle miles of travel (VMT) would increase the least under the Livability alternative because of the implementation of the LCDC Transportation Rule.

This alternative, like the Modal Shift alternative, will meet the 10 percent per capita reduction of VMT in the metropolitan areas required by the Transportation Planning Rule. If current trends in VMT growth were to continue over the next 20 years, ODOT forecasts that a 21 percent reduction in VMT per capita would actually be required to

meet the rule in metropolitan areas. The amount necessary to achieve the reduction would come from changes in present transportation trends and programs. To achieve the 21 percent reduction, the Livability and Modal Shift alternatives are based on the estimate that in 2015 transit would account for an additional 5 percent VMT per capita, land use changes/bicycling/walking for 5 percent per capita, telecommuting for 1.25 percent VMT per capita, and congestion pricing and fees for 10-11 percent VMT per capita reduction. The level of congestion pricing fees necessary to meet the rule is estimated to be in excess of $1,200 (1992 dollars) per year per vehicle or the equivalent of 15 cents per mile.

The total cost to the public of operating and using the transportation system is a very important factor in selecting the Preferred Plan. Traditionally, the public costs for providing the system have been the primary issue. But public costs amount to only 5 percent of the total cost of using the transportation system. Much more important are the private costs to the user including vehicle ownership, value of travel time, fees and fares. The provision of a poor quality transportation system will significantly raise the total costs to the users because of the value of time lost in increased congestion and the increased vehicle ownership and operation costs.

Examination of the modal expenditures for alternative plans shows that all except the Preferred Plan have inadequate funding. There is no desirable alternative level of transportation funding that will provide reasonable mobility or lower total travel costs other than the Preferred Plan. It is the overall level of investment and supportive policies which will be the prime determinant of the performance of the alternatives.

Considering both public and private transportation costs, the Preferred Plan will save Oregon about $1 billion per year as compared to additional funding requirements of $600 million (See Appendix D for more cost detail).

TABLE 4
SUMMARY EVALUATION OF POTENTIAL ALTERNATIVE APPROACHES

		2012 Alternatives				
Criteria	1990	Funding Decline	Continue	Continue With Modal Shift	Livability Approach	Best Plan
Patronage						
Hwy. VMT*						
Urban	13,100	25,100	25,100	19,800***	19,800***	
Rural	13,900	19,300	19,300	19,300	19,300	
Total	27,000	44,400	44,400	39,100	39,100	Shift/Livability
Transit Trips*						
Urban	64.7	109	108	212	212	Shift/Livability
Intercity	1.2	1.4	1.6	3.0	3.0	Shift/Livability
Telecommute Trips*	11.1	38.2	39.4	74.9	74.9	Shift/Livability
Cost Per Year**						
Private	$18.8	$33.4	$32.6	$33.1	$31.6	Livability
Public	$1.2	$1.1	$1.2	$1.3	$1.8	Funding Decline
Funding Levels*						
Highways*****		$18,000	$19,500	$18,000	$26,300	
Rail Pass./Freight		N/A	N/A	$840	$840	
Marine-Ports		N/A	N/A	$135	$135	
Aviation/Commercial		N/A	N/A	$34	$34	
Intercity Bus		N/A	N/A	$120	$120	
Transit		$2,300	$3,700	$7,800	$7,800	
Total		$21,000	$23,200	$27,000	$35,200	
Alternative Plan Assumptions						
Funding		Declines w/inflation	Level w/inflation	Mixed	All modes- Increase	
Urban Growth Boundaries		Success	Success	Success	Success	
Goal 12 - VMT		No	No	Success	Success	
New Programs		None	None	Minus highway plus others	Those with positive return	
Levels of Service -all modes		Major Decline	Modest Decline	Major Decline Hwy. Stable or Better-others	Stable or Better	
Technology/Innovation						
Traffic System Management		Low cost TSM key freight corridors	TSM in key corridors	Low Cost TSM in freight corridors	Major TSM in freight and other corridors	
Pricing				Peak period pricing	Peak period pricing	
Transit System Management				Real time passenger information	Real time passenger information	
Intermodal Facilities				Major public/ private investment	Major public/ private investment	
High speed ground			Cooperative development	Leadership in development	Leadership in development	
Other Criteria						
Economic Efficiency		Worse than 1990	Same as 1990	Worse than 1990	Better Than 1990	Livability
Economic Development		Worse than 1990	Same as 1990	Worse than 1990	Better Than 1990	Livability
Environment		Negative	Negative	Negative	Positive	Livability
Land Use		Neutral	Neutral	Positive	Positive	Shift/Livability
Alternative Modes/ Technologies		Neutral	Neutral	Positive	Positive	Shift/Livability
Consistent w/Oregon Policies		Not	Not	Not	Yes	Livability
Safety		Worse than 1990	Same as 1990	Worse Than 1990	Better Than 1990	Livability
SUMMARY		Worse than 1990	Same as 1990	Mixed	Better Than 1990	Livability

* Millions. Figures are rounded.
** Billions
***This represents a 10 percent VMT per capita reduction from projected 1995 levels as required in the Transportation Planning Rule
****November 1992 draft of the Oregon Roads Finance Study
N/A= Not available or minimal amounts

DESCRIPTION OF THE PREFERRED PLAN

The Livability Approach, or the Preferred Plan, is comprehensive in its approach. It describes service levels for transportation modes, land use coordination needs, jurisdictional responsibilities, and pricing and investment strategies.

It identifies a multimodal system including air, rail, auto, truck, bus, bicycle, pedestrian and marine transportation, telecommunications and pipelines to be implemented within the next 20 years. It establishes minimum levels of service to be achieved by each of these transportation modes and identifies other major improvements needed beyond the minimum levels.

The Preferred Plan relies on transportation system and facility management processes, including demand management and transportation pricing that reflects usage. It also depends on land use policies to carry out transportation plan goals. It meets the objectives and carries out the requirements of the LCDC Transportation Planning Rule.

To help define the responsibilities of state, regional and local jurisdictions, the plan identifies transportation corridors and facilities which serve statewide and interstate functions, and it sets transportation planning and performance guidelines for local, regional and state implementation of the plan. Finally, it describes the financial investments needed to implement the plan.

ASSUMPTIONS

The Preferred Plan incorporates certain fundamental assumptions about the future. While the plan is not totally dependent on these assumptions for its implementation, and while it would be a valid approach to transportation planning even without these assumptions, the effectiveness of the plan would be limited if these assumptions were not realized.

1. Regional and local governments will continue to contain development within established urban growth boundaries.

2. Urban areas will use compact and mixed use development patterns to enhance livability and preserve open space. These patterns will also support transit and other alternatives to the automobile.

3. The transportation system will achieve the transportation-related economic and livability standards of the Oregon Benchmarks, but not the Urban Mobility Benchmark.

4. State, regional and local governments will cooperate to achieve the vehicle miles traveled reduction standard in the LCDC Transportation Rule.

5. In rural areas automobiles will continue to be the dominant transportation alternative available for most purposes although transit, intercity bus and rail options will grow.

6. Telecommunications will develop substantially because of costs to motor vehicles. It will provide a significant alternative to making transportation trips.

7. The price for transportation services can reflect full costs and lead to expanded use of alternatives to the single occupant vehicle.

8. Most transportation services, other than public transit, will be provided by the private sector.

9. If the Preferred Plan cannot be implemented in its entirety, land use and system management strategies will still be implemented to the fullest extent possible.

MINIMUM LEVELS OF SERVICE

Minimum levels of service standards describe the performance for each mode that must be achieved in order to meet the goals of the Oregon Transportation Plan and carry out the policies for balance and accessibility. Achievement of these minimum levels of service would accomplish the following:

1. Interconnect the various passenger and freight modes to allow travelers and shippers to move between modes and take advantage of the benefits of each.

2. Connect the various areas of the state by linking each community to the nearest Oregon city with a larger population and economy and by connecting areas outside of the Willamette Valley to the Valley and to economic centers beyond state borders.

3. Connect passengers and freight from all areas of the state to the national and international transportation system.

4. Provide alternatives to private passenger cars in each local area and region of the state.

The minimum levels of service provide performance objectives to apply to the state, regional and local transportation systems. These performance objectives apply to overall system performance, intermodal facilities, and modal facilities and systems. They describe the system that is expected to be in place within the next 20 years.

Statewide Intercity Passenger Services

Specialized transportation services, airport and intercity common carrier services must be planned as an integrated system to provide accessibility between communities. Minimum levels of service for intercity passenger services are defined in terms of required minimum connectivity between various parts of the state.

Intercity multimodal passenger minimum levels of service

- Hourly intercity passenger services should be available to major cities along I-5 in the Willamette Valley.
- Market areas over 50,000 in population and over 70 miles from Portland should have at least three minimum round trip connections to Portland available per day via intercity passenger modes (e.g., Astoria, Newport, Eugene, Coos Bay/North Bend, Bend/Redmond, Medford, Roseburg, Klamath Falls, Pendleton, Corvallis/Albany).
- East-west and north-south connections to places outside the state should be provided based on travel density in Oregon's interstate corridors.
- Local public transit services and elderly and disadvantaged service providers should regularly connect with intercity passenger services.
- Intercity passenger terminals should be subject to public control in order to assure open access to all intercity carriers (in all of the state, but especially at main transfer locations including Portland, Salem, Albany/Corvallis, Eugene, Medford, Bend/Redmond).
- To the extent possible, direct interconnections should be available between intercity bus, air, rail, airport limousine services, and local transit services (e.g., Portland, Salem, Eugene, Coos Bay/North Bend, Medford, Klamath Falls, Bend/Redmond, Pendleton, Corvallis/Albany).
- Services shall be provided in compliance with the Americans with Disabilities Act (ADA) requirements for all modes and transfer facilities.

Local transit, intercity buses and trains form an intermodal passenger hub in the City of Portland's Union Station area.

Intercity bus minimum levels of services

- Intercity passenger service should be available for an incorporated city or groups of cities within five miles of one another having a combined population of over 2,500, and located 20 miles or more from the nearest Oregon city with a larger population and economy. Services should allow a round trip to be made within a day (e.g., Astoria-Portland, Tillamook-Portland, Newport-Corvallis, Brookings-Coos Bay, Lakeview-Klamath Falls, Burns-Bend, John Day/Canyon City-Bend, Enterprise/Joseph-La Grande).

- Local transit and elderly and disadvantaged services should be coordinated with intercity bus services.

- Bus passenger terminals should be publicly controlled to ensure all carriers have access to the terminals under open access terms (e.g., Portland, Salem, Eugene, Coos Bay/North Bend, Medford, Klamath Falls, Bend/Redmond, Pendleton, Albany/Corvallis).

Intercity rail passenger minimum levels of services

The Oregon Rail Passenger Policy and Plan identifies a set of staged improvements for rail passenger service in the state. The rail mode has a particularly viable role in the Willamette Valley as a part of a regional system linking Eugene, Portland, Tacoma, Seattle, and Vancouver, B.C. The Rail Plan also addresses potential opportunities for rail passenger development in other parts of the state.

- The regional rail service should offer frequent schedules, through trains, extensive feeder bus networks with convenient connections, and an aggressive marketing and passenger amenities program to stimulate changes in transportation preferences and a per capita reduction in highway travel.

- Intercity rail service through Oregon should provide reliable on-time arrivals within fifteen minutes of published schedules.

- The existing Seattle to Portland Mt. Rainier train should be extended south to Eugene as a cost-effective first step in creating a Seattle - Portland - Eugene passenger rail corridor. This extension can be implemented quickly with minimum capital investment. Premium hourly intercity bus service between Eugene and Portland should be inaugurated to complement the train. This would provide the needed frequencies to attract riders in sufficient numbers to justify the operation. As traffic volumes increase, more trains should be added.

- Higher speed (110 to 125 mph) intercity rail passenger services should be developed within Oregon as need is demonstrated and technologies and financial support permit.

- Incremental physical improvements to existing mainline railroad tracks should be used to increase passenger speeds up to 110-125 mph where there is the potential for high rider volumes.

- Oregon should cooperate with adjacent states to assure concurrence and cooperation when developing rail projects tied to the regional network.

- Intercity bus lines and local transit services should be coordinated with intercity rail services to provide for timely and convenient connections (e.g., Portland, Salem, Corvallis/

Albany, Eugene, Coos Bay/North Bend, Medford, Bend/Redmond, Klamath Falls).

Intercity air service minimum levels of services

The minimum level of service for commercial airports has been defined as the availability of an airport with commercial service where the population is greater than 50,000 and the distance to the nearest other commercial air service is greater than 70 miles. This standard has generally been met within the state, but leaves some more sparsely populated areas without commercial air service. These areas should have access to air taxi services.

- Air service connections between Portland, or other West Coast hubs, and other areas of Oregon should be provided whenever commercially viable (three round trip planes per day of 19 passengers as a minimum measure of commercial viability) or whenever intercity air connections are more economic than providing operating assistance to other modes (e.g., Astoria, Eugene, Newport, Coos Bay/North Bend, Roseburg, Bend/Redmond, Medford, Klamath Falls, Pendleton).

- Basic commercial air service should be available to isolated urban areas. These areas are isolated because of topographic constraints, severe weather conditions and distance from Portland. The areas which must have airport service are areas with a population of more than 25,000, a central urban area of more than 15,000, and a location more than 50 miles from other commercial air services and more than 100 miles from a metropolitan area (e.g., La Grande/Baker City).

Statewide Freight Service

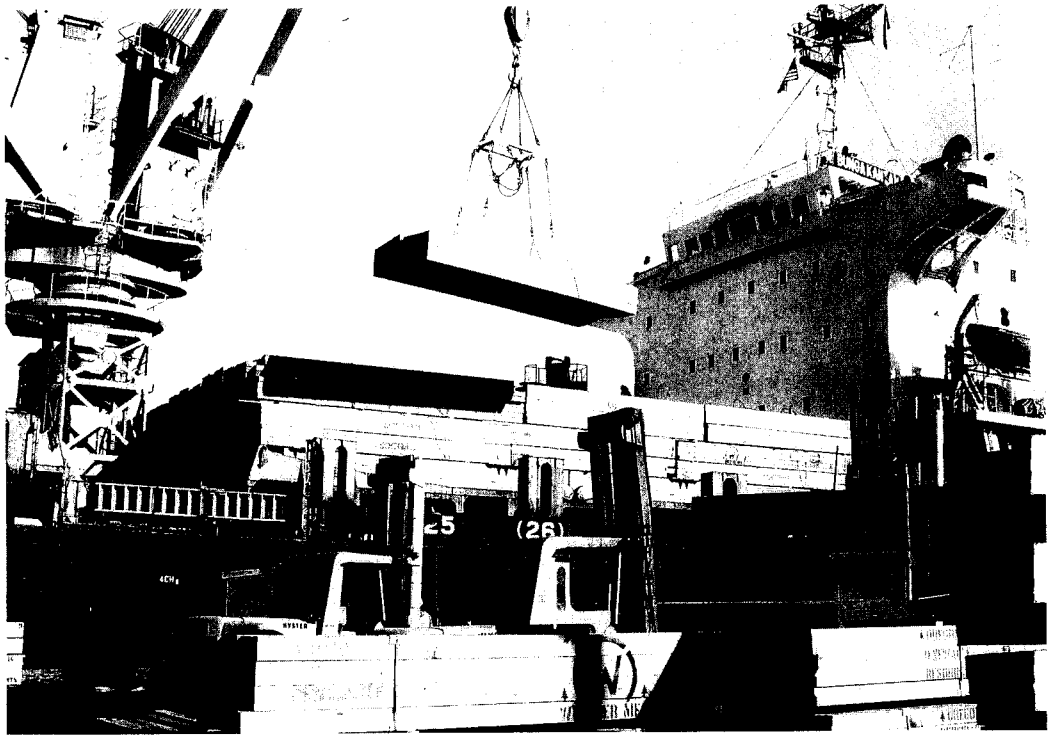
Intermodal freight and port minimum levels of services

Major intermodal hub facilities serve as transfer points from or to truck, air, rail, and marine transportation and should be identified and supported as a method for improving Oregon's access to national and international markets. Marine ports and airports by nature are intermodal hubs.

- Connections to deep draft port facilities should be available under open access terms to all major railroads and trucking lines in the nearby vicinity of maritime port terminals where feasible (e.g., Astoria, Portland, Coos Bay, Newport).

- To the extent possible, major intermodal rail/truck facilities should exist on rail mainlines with a service area of 150 miles (e.g., Portland, Eugene, Klamath Falls, Umatilla/Boardman, Ontario). Intermodal reload facilities are to be encouraged at other locations as the market demands (e.g., Medford, Bend/Redmond, Salem, Baker City/La Grande, coastal ports).

Major port facilities are important to maintaining Oregon's international trade. Photo: Martin Callery, Port of Coos Bay



- Ports and port systems handling substantial quantities of international and national freight (more than 3,000,000 tons) should have multimodal connections, be able to operate in the international marketplace and have access to rail freight service (e.g., the lower Columbia River, Coos Bay).

- Sufficient port facilities and channels should exist to support international and interstate shipping.

- Sufficient port capacity including waterside and landside facilities to provide safe access to open seas for commercial fishing, recreation and commerce should be available.

Highway freight minimum levels of services

Highway levels of service standards are defined in the Oregon Highway Plan for peak hours (see Appendix F). In addition to peak hour level of service, standards are proposed to allow the movement of traffic on highways of statewide function.

- Highway freight accessing intermodal truck/rail terminals or moving within Oregon should experience level of service C or better on Oregon highways during off-peak periods (e.g., Portland, Eugene, Medford, Klamath Falls, Umatilla/ Boardman).

- Highways which are not Access Oregon Highways and which have a high percentage of trucks, provide regional freight access, and handle long-distance traffic to out-of-state destinations should be designated as primary freight corridors

and incorporated into corridor plans and projects (e.g., U.S. 97 Madras to Biggs, U.S. 20 Bend to Ontario, Hwy. 62/140 Medford to Klamath Falls).

Rail freight minimum levels of service

- Branch rail lines within Oregon should be maintained to allow a minimum speed of operation of 25 miles per hour whenever upgrading can be achieved with a favorable benefit-cost ratio.

- Rail mainlines within Oregon should provide convenient ramp, terminal and reload facilities for transfers from truck to rail for long haul movement of freight. High quality highway access should be provided to these sites (mainlines, Oregon Trunk, Siskiyou branch).

- Priority rights of way should be preserved for potential public use or ownership when abandonment proceedings are initiated (e.g., corridors where there are future alternative uses, especially near expanding urban areas).

- Reload facilities should be encouraged and, if warranted, supported where they provide the most cost efficient and environmentally effective response to branchline abandonment.

- Open access should be provided to and from all reload facilities and to major ports (lower Columbia River, Portland, Eugene, Medford, Klamath Falls, Umatilla/Boardman, Salem, Bend/Redmond, Baker City/La Grande, coastal ports).

Pipeline/natural gas minimum levels of service

- In order to make alternative fuel widely available to the transportation user and to support regional economic development opportunities, adequate natural gas should be available every 100 to 150 miles on major interstate/statewide transportation corridors throughout the state when economically feasible (e.g., Tillamook, Coos Bay/North Bend).

Interstate and Statewide Highways

- Minimum levels of service and minimum tolerable conditions for state highways are included in the Oregon Highway Plan.*

- Intelligent Vehicle Highway Systems (IVHS) should be established on I-5, I-84 and within metropolitan areas to increase system capacity, improve motorist information and improve travel efficiency on interstate, statewide, regional and local highways.

- Highway system management techniques such as access management, transportation demand management (TDM) and congestion pricing shall have a substantial role in enabling the metropolitan areas to meet the LCDC Goal 12 Transportation Rule for reduction of per capita vehicle miles of travel.

- A comprehensive statewide program to identify and manage a system of scenic transportation corridors should be established.

**These minimum levels of service will be revised in an updated statewide Highway Plan. Of particular concern is the relationship of high levels of highway service to the development of transit alternatives.*

Regional/Local Services

Bicycle and pedestrian minimum levels of service

The Oregon Bicycle Plan establishes principles for bikeway development in urban and rural areas.

- Bicycle and pedestrian networks should be developed and promoted in all urban areas to provide safe, direct and convenient access to all major employment, shopping, educational and recreational destinations in a manner that would double person trips by bicycle and walking.

- Secure and convenient bicycle storage available to the public should be provided at all major employment and shopping centers, park and ride lots, passenger terminals and recreation destinations.

- Statewide and regional bicycle systems should be integrated with other transportation systems in urban and rural areas to accommodate commuting and other trips by bicycle. Safe, direct and continuous bikeways free of unnecessary delays should be provided along all urban arterial and major collector routes. Paved shoulders should be provided on highways in rural areas.

Urban transit system minimum levels of service for Metropolitan Planning Organization (MPO) areas of over one million population (Portland)**

- Urban transit services should be increased to assure that transit has a substantial role in enabling metropolitan areas to meet LCDC Goal 12 Transportation Rule requirements for reduction of per capita vehicle miles of travel.

- Urban transit services should be provided in all parts of the urbanized area.

- High capacity transit services with separate rights-of-way or priority treatments for transit vehicles should be provided in all interstate corridors and other highway corridors of statewide function in which level of service E or worse is experienced or anticipated.

- Service frequencies for all routes should be no less frequent than one-half hour at peak periods.

- Service should be provided at no less than one hour frequencies for off-peak services on all routes, or a guaranteed ride home program should be available and publicized.

- Park and Ride facilities along major rail or busway corridors should be provided to meet reasonable peak and off-peak demand for such facilities.

- Urban transit services should provide regular, convenient connections to all intercity passenger modes and terminals.

- Service levels provided to transit-oriented developments should be sufficient to achieve the transit-related usage goals of the development.

- Urban areas of 2,500 population or more within 20 miles of the metropolitan central city should have at least peak hour transit service to the metropolitan area (e.g., Newberg, Scappoose).

Urban transit minimum levels of service in MPO areas of less than one million population (Salem, Corvallis/Albany, Eugene, Medford)**

- Urban transit services should be increased to assure that transit has a substantial role in enabling metropolitan areas to meet LCDC Goal 12 Transportation Rule requirements for reduction of per capita vehicle miles of travel.

- Urban transit services should be provided in all parts of the urbanized area.

- High quality transit services should be provided in all interstate corridors and other highway corridors of statewide function in which level of service E or worse is experienced or anticipated.

- Service frequencies for all routes should be no less frequent than one-half hour at peak periods.

- Service should be provided for off-peak mid-day services on all routes, or a guaranteed ride home program should be available and publicized.

- Park and Ride facilities along major rail or busway corridors should be provided to meet reasonable peak and off-peak demand for such facilities.

- Urban transit services should provide convenient connections to all intercity passenger modes and terminals.

- Urban areas of 2,500 population or more within 20 miles of the metropolitan central city should have at least peak hour transit service to the metropolitan area (e.g., Cottage Grove, Lebanon, Mt. Angel, Silverton, Dallas, Monmouth, Stayton).

Urban transit minimum levels of services for urban areas of over 25,000 persons (e.g., McMinnville, Coos Bay/North Bend, Grants Pass, Bend/ Redmond, Klamath Falls)**

- Urban transit services should be available to the general public to provide a modal alternative to automobile travel.

***These minimum levels of service will be revised in a future statewide transit plan.*

Regional and local highways and streets

Minimum levels of service and minimum tolerable conditions for local city and county roads are included in the Oregon Roads Finance Study. The minimum levels of service and minimum tolerable conditions vary based upon functional class, terrain and traffic volume.

ADDITIONAL PROJECTS INCLUDED IN THE PREFERRED PLAN

Three additional improvements that would be necessary to achieve the plan go beyond the minimum levels listed above. (See Maps 2 and 3.)

1. Deepening the Columbia and Coos Bay channels

These projects will be necessary to preserve the competitiveness of Oregon ports for international transportation. The Corps of Engineers is undertaking a feasibility study to deepen the

Completion of the light rail lines is important to reduce congestion in the Portland metro area.

Columbia channel to 43 feet and has completed a feasibility study to deepen the Coos Bay channel to 36 feet.

2. Implementation of Intelligent Vehicle Highway Systems (IVHS)

IVHS systems allow vehicles to exchange information about the road system and have the potential to enhance the efficiency and safety of highways by giving drivers information necessary to select routes. They control vehicle operations in such a way as to maximize use of facilities while minimizing congestion. This capability will be particularly valuable on the interstate highways and in metropolitan areas. In metropolitan areas IVHS will also be critical to implementation of management and pricing strategies discussed below. IVHS is now in its infancy in terms of application but should be implemented during the next 20 years.

3. Expanding urban transit in metropolitan areas

The level of service prescribed for metropolitan areas in the Minimum Levels of Service is that required to meet the accessibility and balance goals in the OTP for individual travelers. However, this level will not be sufficient to reduce the per capita VMT necessary to meet the LCDC Transportation Goal Rule. To meet that rule, this plan also envisions significant additional investments in metropolitan transit service, including construction of the light rail routes in the Portland metropolitan area that are identified in the 1992 Tri-Met Strategic Plan.

LONG-RANGE TRANSPORTATION POSSIBILITIES

Five improvements are being considered which are not in the Preferred (20-year) Plan. They are long-range possibilities which need further study and development. These are illustrated on Map 4 and include:

1. High speed rail

The Oregon Rail Passenger Policy and Plan is considering the potential for high-speed rail service in the Willamette Valley. The establishment of this service will depend on the potential for adequate ridership levels and ties north to Seattle and possibly to Vancouver, B.C. Establishment would be the next phase beyond improvements to Amtrak to 125 mph and should be considered for its potential as a long-range tradeoff to major capacity additions to I-5 and to expanded commercial airport development.

2. Willamette Valley/ Columbia Gorge interurban rail service

An interurban rail service is being investigated in the Willamette Valley and in the Columbia Gorge as a way of serving commuter travel needs. With adequate ridership, such service could support community development and possibly reduce needs for highway improvement. It should be examined further in the context of land use and transportation options for the areas.

3. Klamath Falls intermodal freight airport hub

Because of topography, climate and compatible land use, the Klamath Falls area has an opportunity for an intermodal freight airport. This facility could become a reality as the market develops for a major West Coast air freight center to relieve congestion at Los Angeles, Seattle and Vancouver, B.C.

4. New international airport in the Willamette Valley

Beyond 2012, a new international airport in the Willamette Valley could be needed if Portland International Airport reaches capacity. A new airport would enable Oregon to have an international hub that would provide major economic development opportunities, especially if other international airports in the Pacific Northwest also reach capacity. The airport should be directly connected to urban areas by intercity transit or rail passenger

networks. Oregon's land use system could be a major advantage in locating and preserving such a facility.

5. Rogue Valley rail services

Passenger rail service from Eugene south to the Rogue Valley and California should receive further consideration, especially as improved technologies are developed that make such an extension more feasible. As a precursor to this broader system improvement, the viability of establishing passenger service on the Siskiyou line to connect the Rogue Valley with rail service in Weed, California should be explored. The potential for establishing intercity rail service within the Rogue Valley should also be fully explored and contrasted with the advantages and disadvantages of serving commuter demands with other travel modes.

SYSTEM MANAGEMENT AND PRICING

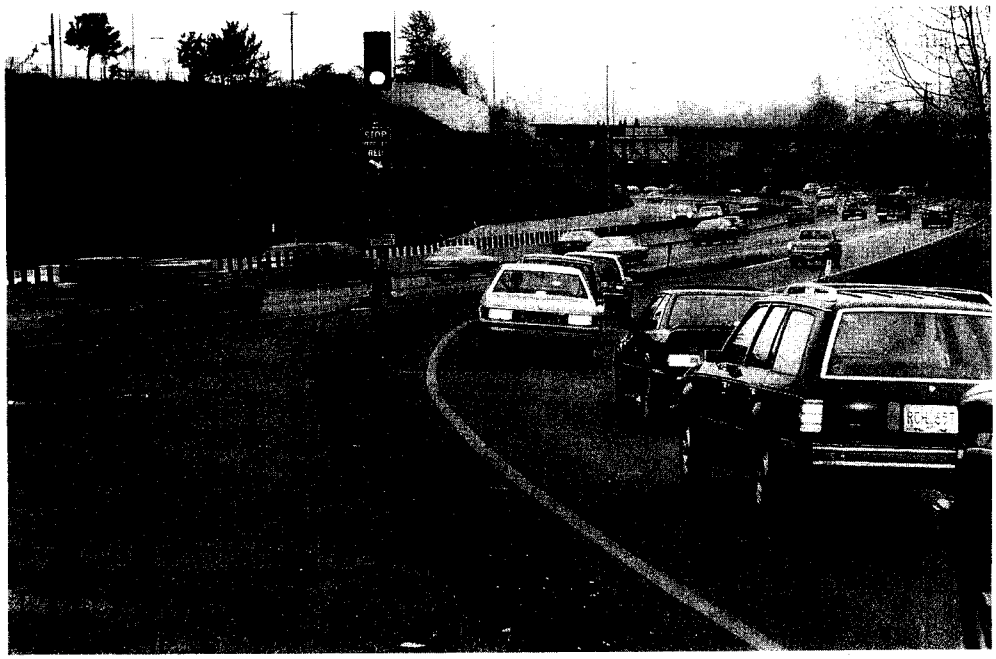
Maintenance and Operation

Maintaining and operating existing facilities and services are fundamental to Oregon's future transportation system. Highways, roads and streets must be preserved and improved to provide the basic infrastructure for movements by automobile, truck, public transit, intercity bus, bicycle and pedestrian. Rail, air, waterway and pipeline facilities must also be maintained as needed for the economic transport of freight and passengers.

Demand Management

One of the basic concepts in the OTP is that managing the transportation system may be just as important as constructing and oper-

Ramp metering improves highway capacity by regulating the flow of traffic.



ating it. For example, demand management in the form of metered freeway ramps has already improved operation of freeways in the Portland metropolitan area. Installation of IVHS within interstate highways will have a significant role in increasing existing highway capacities.

Pricing

The Preferred Plan creates incentives to choose the more efficient and environmentally responsible modes of transportation by using fees and managing the transportation system to encourage these choices. A rational pricing strategy for transportation services, including use of the highway system, will be developed to encourage patterns of travel and land use which are consistent with livability goals.

In the short term, a rational pricing strategy may involve incremental increases to Oregon's current highway and other user fees such as parking fees and charges for environmental costs such as vehicle emissions. Such a strategy should lead to higher fees for use of more congested highways and other facilities, particularly during peak periods—an approach known as congestion pricing. To have the desired effect of reducing travel, the user should directly feel these fees and pay out-of-pocket as much as possible. Revenues from such a pricing program should be applied to infrastructure preservation and alternative transportation improvements which foster economic growth and are consistent with the livability goals.

User fees are useful in managing the transportation system and are essential to the achievement of the LCDC Transportation Rule. That rule calls for a 20 percent per capita reduction in VMT in metropolitan areas over the next 30 years. Studies of transportation demand indicate that this cannot be achieved with public transportation and land use changes alone, but must be accompanied by some combination of peak period tolls on roads and parking charges.

To be effective in reducing VMT, the level of fees would have to be substantial. Estimates by consultants place the level of fees at in excess of $1,200 (1992 dollars) in new fees per vehicle annually or $.15 per mile in metro areas. (See Technical Report, Appendix B.) Half of the increase could come from mileage congestion fees, and the remainder from employee parking and non-work parking charges. These fees could be phased in during the 20-year planning periods.

Policy Choices

The methods for achieving the VMT per capita reduction required by the LCDC Transportation Rule have yet to be chosen in each metropolitan planning area. These will likely include a combination of system maintenance, demand management, pricing and land use changes.

LAND USE COORDINATION

Full implementation of this plan requires close coordination between land use policy and transportation management and investments. The plan makes three fundamental assumptions with respect to land use policy. First, urban growth boundaries will be maintained in substantially their present positions for the next 20 years. If boundaries do not hold, then public transportation and other alternatives to the single occupant automobile cannot be effective in serving the sprawling low density developments that will likely result. Additional highway investments will be required to serve those living in areas that are outside existing urban growth boundaries, creating increased auto dependency in opposition to livability goals.

Second, the plan calls for transportation investments that support the development of mixed use, pedestrian friendly neighborhoods and commercial districts and high density development within walking distance to transit to reduce demands for automobile trips and increase the ability to provide effective transit services.

Third, the plan assumes that local land use plans can be effective in minimizing conflicts between transportation facilities and other development. Otherwise, major transportation systems, such as urban arterial highways, will not function at the projected levels of service and will require additional investment in capacity or mitigation of conflicts with residential and commercial developments.

Coordination of land use and transportation is a major goal of the LCDC Transportation Rule and is included in the transportation planning and performance guidelines section of the plan.

CORRIDORS, FACILITIES AND SYSTEMS SERVING STATEWIDE AND INTERSTATE FUNCTIONS

The responsibility of different levels of government for transportation facilities and services within Oregon will differ by the type of function the service or facility performs. As a step toward establishing governmental responsibilities, transportation corridors, facilities and systems must be defined according to their functions.

The transportation system of statewide function is determined by the importance of particular elements of the system in terms of

- connecting major cities or urban areas within or outside Oregon;
- volumes of passengers and freight;

- contribution to important environmental, land use and development goals;
- accessibility provided to regions of the state, other states and nations.

The corridors, facilities and systems of interstate and statewide function form the backbone of Oregon's transportation system. They provide the framework for identifying state government concerns and responsibilities for the implementation of the Oregon Transportation Plan. While these transportation features are not necessarily owned and operated by the state, the state does have a special interest in their preservation because of their importance to the entire transportation system. Therefore, protection and development of these corridors, facilities and systems will be included in planning and performance criteria for state modal plans, and regional and local transportation plans. (See Planning and Performance Guidelines, p. 116.)

Corridors serving statewide functions are defined as broad bands through which various modal links provide important connections for passenger or freight services. **Facilities** of statewide function are individual modal or multimodal terminals which, even by themselves, are of a sufficient level of importance to be of statewide function. **Systems** of statewide function are collections of links, services or terminals, which taken as a whole, are of statewide function even though individual corridors, facilities or services which make up the systems are not of statewide function.

Multimodal Corridors

The multimodal corridors of statewide function, which currently move people and goods by several modes, include the east-west I-84 Columbia River corridor, the north-south I-5 corridor from California to Washington, the north-south corridor east of the Cascades including U.S. 97 and 197 from California to Washington, Access Oregon Highways and Highways of National Significance (NHS) corridors. Although some of these corridors are served only by highways today, they should be analyzed as multimodal corridors in further planning and project development.

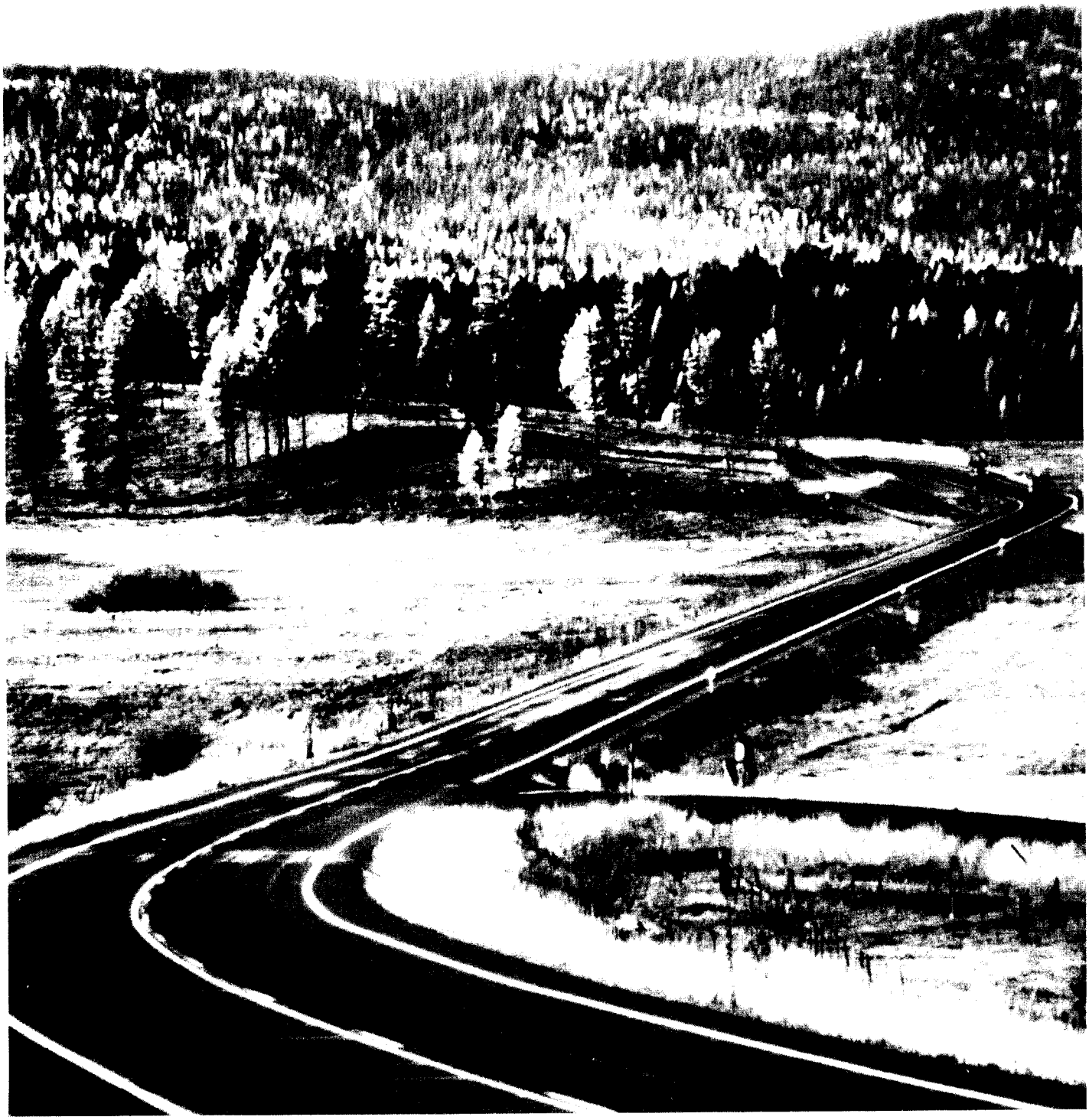
Highway Corridors and Systems

Highways connect Oregon with other states and places within the state. They provide for the movement of people and goods around the state. Highways of interstate and statewide levels of importance were identified in the 1991 Oregon Highway Plan. The highways identified as the interstate system, Highways of National Significance (NHS), Access Oregon Highways and statewide highways in the Highway Plan are considered of statewide function. However, the

federal Intermodal Surface Transportation Efficiency Act requires reevaluation of these highway classifications.

Other state highways not classified as a statewide function are of importance to the state in terms of their conditions, levels of service and access management. The Oregon Transportation Plan incorporates the minimum levels of service, minimum tolerable conditions and access management policies presented in the Oregon Highway Plan. (See Appendix F for minimum levels of service.)

The level of service and condition of major county and city street systems, including arterial and collector systems, taken as a whole are of statewide function.



The Whitney Tipton Highway (State Route 7) serves regional needs in rural eastern Oregon. Photo: John Preston

Urban and Intercity Passenger Corridors and Systems

Each of the metropolitan transit district systems, transit systems serving communities over 25,000 population, connecting providers and paratransit services, taken as a whole, is of statewide function.

The Amtrak services through Oregon are a statewide function. Future intercity rail service in Oregon will be a statewide function.

Each of Oregon's commercial air carrier service airports is a statewide function. Although the individual general aviation airports are not of statewide function, the performance of, and condition of, the system of general aviation airports in the state as a whole is a statewide function.

All intercity bus lines connecting places of 25,000 or more are a statewide function, and the system taken as a whole is a statewide function. In addition, intercity bus lines connecting places of 2,500 or more, which are 20 miles or more from intercity passenger services, are also a statewide function. The system of intercity services, including specialized van services for the elderly and disadvantaged, as a whole is a statewide function.

Intercity passenger terminals serving as major connecting points for an individual mode or for intermodal connections taken as a whole are a statewide function.

The statewide bicycle route system is, as a whole, a statewide function.

Freight Systems and Services

Highways play a critical role for intermodal transfers, long distance, regional and local freight distribution.The highways classified as interstate and statewide levels of service in the 1991 Oregon Highway Plan are considered a statewide function.

Waterways are also important carriers of interstate and international freight. The lower Columbia River ports, the Columbia/Snake River system, and deep draft coastal ports are considered a statewide function. The intermodal connections to those ports, including connections between ocean going vessels, barges, railroads and trucks are a statewide function. Other marine ports which provide statewide, interstate or international transportation services are considered as a whole to be a statewide function.

Key locations around Oregon should be selected to act as major intermodal transfer locations. These major non-marine intermodal transfer facilities are a statewide function.

The mainline rail lines through Oregon (the Burlington Northern, Southern Pacific, and Union Pacific), connecting lines (Oregon Trunk

and Siskiyou branch), and rail access to statewide function marine facilities (lower Columbia River and Coos Bay) are each a statewide function. Although individual rail branch lines are not a statewide function, the services provided by branch lines as a whole are a statewide function; the state has an interest in assuring the connections served by rail branchlines continue to be served without adverse environmental consequences.

The major oil and natural gas pipelines traversing Oregon are a statewide function.

Regional and Local Corridors and Facilities

Corridors, facilities and systems which are not a statewide or interstate function are primarily the concern and responsibility of regional and local governments and are highly important to the achievement of regional and local transportation objectives. Therefore, the state of Oregon is also interested in the achievement of performance objectives for transportation facilities and services of regional and local function.