

Chapter 1

Purpose and Need

South
North

Corridor Study

February 1998

1. PURPOSE AND NEED

This chapter defines the South/North Corridor study area and identifies the policies and challenges that influence the study area and spur consideration of a major transit investment. Within this chapter, the sectors of the Portland/Vancouver metropolitan area that comprise the corridor are described and specific issues related to transportation, land use and other factors pertinent to the selection of transportation alternatives are identified.

1.1 Description of the Study Area

The South/North Corridor is part of the rapidly growing Portland, Oregon/Vancouver, Washington metropolitan region. The metropolitan region, the economic center of an extensive area including southern Washington, much of Oregon and northern Idaho, incorporates the urban portion of three State of Oregon counties – Multnomah, Clackamas and Washington Counties – and one State of Washington county – Clark County. Portland, Oregon is the largest city in the region and is located in its middle. Vancouver, Washington is the largest city in the State of Washington part of the region.

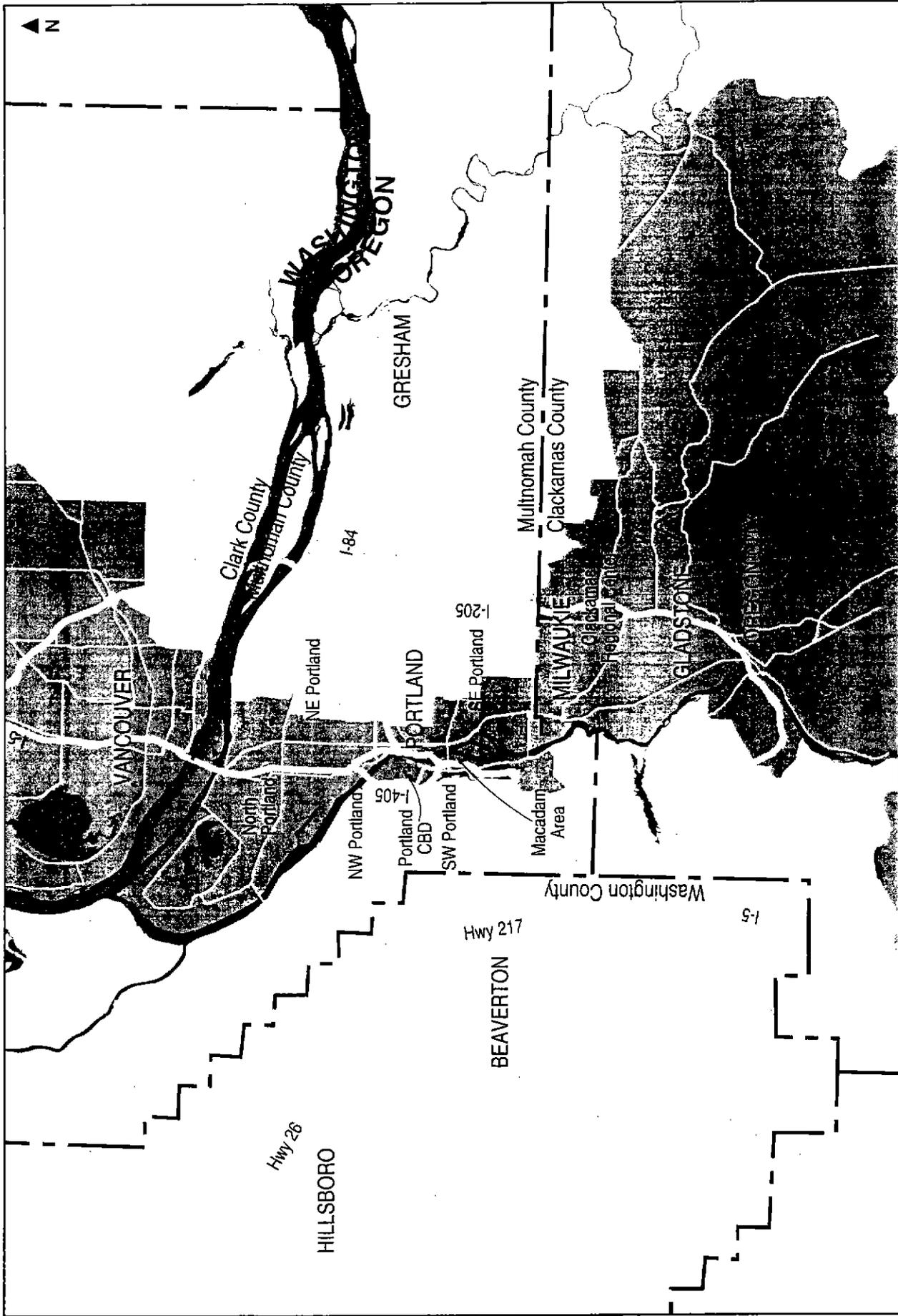
Over the past twenty years, the population of the four-county region has grown by approximately 45 percent, from 1,100,900 residents in 1975 to 1,596,100 residents in 1995. The population trends over this period consisted of three distinctly different cycles. The 1970s was a period of rapid growth with a population growth rate of 2.1 percent per year on average. The early/mid-1980s were marked by a recession with population remaining virtually flat. Population has been growing rapidly since 1988 with about 250,000 net new people have moved to the region over this period.

Since 1980, the rate of employment growth in the Portland/Vancouver region has been almost 40 percent higher than the national average. From 1980 to 1995, employment growth in the Portland/Vancouver region averaged 2.6 percent per year, increasing from 672,800 jobs in 1980 to 995,700 jobs in 1995, while the national average was 1.9 percent. During the late 1980s, the region's job growth ranked as the fourth fastest in the country, with annual job growth peaking at about 35,000 net new jobs per year. Employment growth slowed in the early 1990s, and was particularly sluggish in 1991 during a short national recession. Most recently, the region has again been experiencing strong job growth, with an increase of over 32,000 net new jobs between August 1994 and August 1995, reflecting a 4.0 percent annual growth rate.

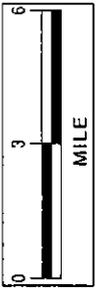
As shown in Figure 1.1-1, the South/North Corridor consists of the Cities of Oregon City, Gladstone and Milwaukie, the Clackamas Regional Center area of unincorporated Clackamas County, a section of southeast Portland, Portland's Central City, a section of north/northeast Portland, the City of Vancouver and other parts of Clark County, Washington.

There are two distinctive features of the South/North Corridor to note: 1) it is a bi-state corridor which engenders a unique set of issues because segments of the corridor are subject to different transportation and land use laws, project revenue options and political institutions; and 2) it radiates south and north from the region's core (hence the name "South/North") where each direction is decidedly different from the other in terms of demographics, travel patterns and development.

Clackamas County is a fast growing sector of the region. Between 1980 and 1994, the number of households in the county increased by about 2.3 percent per year and the number of jobs increased by 4.0 percent per year. Focusing solely on the South/North Corridor, the portion of the corridor in Clackamas County currently contains about 80,600 households, with an expected growth rate of 2.4 percent per year between 1994 and 2015, reaching a total of 132,400 households by 2015. The Clackamas County portion of the



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Corridor

Figure 1.1-1
South/North Corridor



corridor currently contains about 94,600 jobs, with an expected growth rate of 3.0 percent per year, reaching a total of 174,600 jobs by the year 2015. The Clackamas Regional Center, located near the northeast corner of Clackamas County, has been a major development node in recent years and is projected to continue to develop rapidly.

The South/North Corridor encompasses Portland's Central City¹, which includes the Central Business District (CBD). The Central City contains the largest concentration of employment in the region. As of 1994, the Central City contained 138,500 jobs and 11,900 households. Central City jobs are expected to grow by 2.0 percent per year reaching a total of 211,900 jobs by the year 2015. The number of households is expected to grow to 21,900 over the same period.

The South/North Corridor also encompasses the Macadam area of southwest Portland and the inner portions of southeast Portland. Southeast Portland is primarily an older, established residential area. The portion of southeast Portland in the corridor currently contains 14,000 households and is expected to grow at 0.4 percent per year to 15,900 by 2015. The Macadam area consists of a mixed-use, developed neighborhood and prime development sites located just south of downtown Portland. The number of households in the Macadam area is expected to increase from the current 4,300 to 6,300 by 2015, an annual growth rate of 1.9 percent per year, while the existing 15,100 jobs in the Macadam area are expected to grow to 24,600 by 2015, an annual growth rate of 2.3 percent per year.

Between 1980 and 1994, household growth in north/northeast Portland has been flat and the number of jobs has increased by 1.2 percent per year. The portion of the South/North Corridor in north/northeast Portland currently contains about 30,900 households, with a projected growth rate of 1.0 percent per year between 1994 and 2015, reaching a total of 37,700 households in 2015. The north/northeast Portland portion of the corridor contains about 61,300 jobs, with a projected growth rate of 1.2 percent per year, reaching a total of 79,000 jobs by the year 2015. These growth rates reflect north/northeast Portland's status as an established neighborhood with few vacant parcels of developable land and growth that is dependent on in-fill and redevelopment opportunities.

Clark County has been the fastest growing sector of the metropolitan region. Between 1980 and 1994, the number of households in the county increased by 2.9 percent per year and the number of jobs increased by 4.6 percent per year. The portion of Clark County within the South/North Corridor currently contains about 65,300 households, with an expected growth rate of 4.2 percent per year reaching a total of 154,600 households in the year 2015. The Clark County portion of the corridor currently contains about 81,800 jobs with an expected growth rate of 2.8 percent per year between 1994 and 2015, reaching a total of 145,600 jobs. Thus, while job growth will be rapid in Clark County, population will grow even more rapidly, and residents of the Clark County section of the corridor will continue to seek a large portion of their jobs in Oregon.

1.2 Description of the Transportation System Serving the Study Area

The rivers that separate Oregon from Washington and east Portland from west Portland create formidable barriers that dictate the configuration of the road network serving the South/North Corridor. Figure 1.2-1 shows the existing transportation network. SE McLoughlin Boulevard, a major arterial serving the southern portion of the corridor, provides the primary access between Portland, Milwaukie, Gladstone and Oregon City. Highway 224 is the major arterial that connects Milwaukie and SE McLoughlin Boulevard with the

¹ The formal boundaries of the Central City are set forth in Portland's Central City Plan and include the Downtown, North Macadam, River, University, Lloyd, Central Eastside, Lower Albina and Goose Hollow Districts. The data discussed within this section for the Central City are for Districts 1 and 2 of Metro's 34-district zone system that encompass most of the Central City. A detailed description of the Central City is incorporated in Chapter 3 of this DEIS.

Clackamas Regional Center area. The Clackamas Regional Center area is connected to Oregon City via I-205.

Within the metropolitan region there are only two road crossings of the Columbia River: the Interstate Bridge on I-5 and the Glen Jackson Bridge on I-205. I-5 is the major highway serving the northern portion of the corridor. In addition to serving the Clark County-to-Oregon commute, I-5 provides a vital link between freight distribution centers and port facilities that serve both the western United States and markets for trade worldwide. N Interstate Avenue and NE Martin Luther King Boulevard are routes parallel to I-5 and serve as alternate routes for motorists seeking to avoid I-5 traffic and provide local access for portions of north and northeast Portland.

Downtown Portland connects to the highway system in the northern and southern portions of the corridor via a series of bridges over the Willamette River. There are two Interstate Highway System bridges that connect downtown Portland with I-5: the Marquam Bridge and the Fremont Bridge. The Morrison Bridge provides a direct connection to I-5 northbound and to Grand Avenue and Martin Luther King Junior Boulevard, which connect to SE McLoughlin Boulevard (Grand Avenue, Martin Luther King Junior Boulevard and SE McLoughlin Boulevard constitute Highway 99 East). Including the Morrison Bridge, there are six local bridges that can be used to access the eastside road system, providing several connections between SE McLoughlin Boulevard and downtown Portland.

There are two separate public transit operators serving the Portland/Vancouver metropolitan region. The Tri-County Metropolitan Transportation District (Tri-Met) serves the Oregon portion of the region and the Clark County Public Transportation Benefit Area Authority (C-TRAN) serves Clark County. An agreement between the Tri-Met and C-TRAN establishes Tri-Met bus lines to Vancouver and C-TRAN bus lines to Portland.

Tri-Met provides an extensive bus network throughout the Oregon portion of the region. Tri-Met also currently provides light rail service (MAX) between Gresham and downtown Portland. Beginning in 1998, a Westside MAX line will provide light rail service between Hillsboro, Beaverton and downtown Portland. Tri-Met also provides special transit services for the elderly and disabled. C-TRAN provides bus service and special transit services throughout Clark County. There are no light rail lines currently operating in Clark County.

Tri-Met provides bus service to the southern portion of the corridor, operating several trunk routes on SE McLoughlin Boulevard, connecting the Portland CBD with the Clackamas Regional Center, downtown Milwaukie and Oregon City. Bus service in the northern portion of the corridor is provided by Tri-Met and C-TRAN. The services these two systems provide are quite different. The C-TRAN system provides mostly local service in Clark County and express service into downtown Portland and to the Gateway Transit Center, which is located along the existing Eastside MAX line. C-TRAN's service area includes all of Clark County, and in many areas, because coverage is limited, park-and-ride lots provide a significant amount of the access to the system. In contrast, Tri-Met's routes in the northern portion of the corridor are all local in nature (no express bus service) and are accessed primarily by walk-ons.

There are currently about 78,400 transit riders per day on buses within the South/North Corridor (see Table 4.1-9). This travel market is addressed by the transit alternatives studied in this DEIS.

1.3 Policies and Plans Influencing the Study Area

As explained below, the need to consider light rail transit options in the South/North Corridor was identified through a series of system and corridor studies of transportation problems, growth in the corridor and the

growing dependence of the land use and economic development goals of the bi-state region on the implementation of a regional high capacity transit system.

1.3.1 Transportation Plans and Issues

Regional transportation planning has shifted from an emphasis on accommodating automobiles to a broader approach aimed at maximizing the efficient use of land and the transportation system. In 1973, a Governor's Task Force was formed to clarify the transportation policy of the Oregon portion of the region. At its conclusion, the Task Force decided to assign most of the new commuter growth caused by development to transit.

The shift in regional transportation planning priorities was cemented in 1976, when the U.S. Department of Transportation formally approved the withdrawal of the proposed Mt. Hood Freeway from the Interstate System. This action was followed in 1979 by the withdrawal of the I-505 Freeway in northwest Portland from the Federal Interstate System. These actions initially made approximately \$200 million and ultimately approximately \$500 million available to the urban portion of the Portland/Vancouver SMSA for substitute transportation projects. Shortly after the Mt. Hood Freeway withdrawal, the Governor of Oregon requested that the Columbia Region Association of Governments (CRAG), which was composed of local elected officials from the Oregon and Washington portions of the region, assist in allocating the funds and that priority for the use of the funds be given to "Regional Transit Corridor Projects."

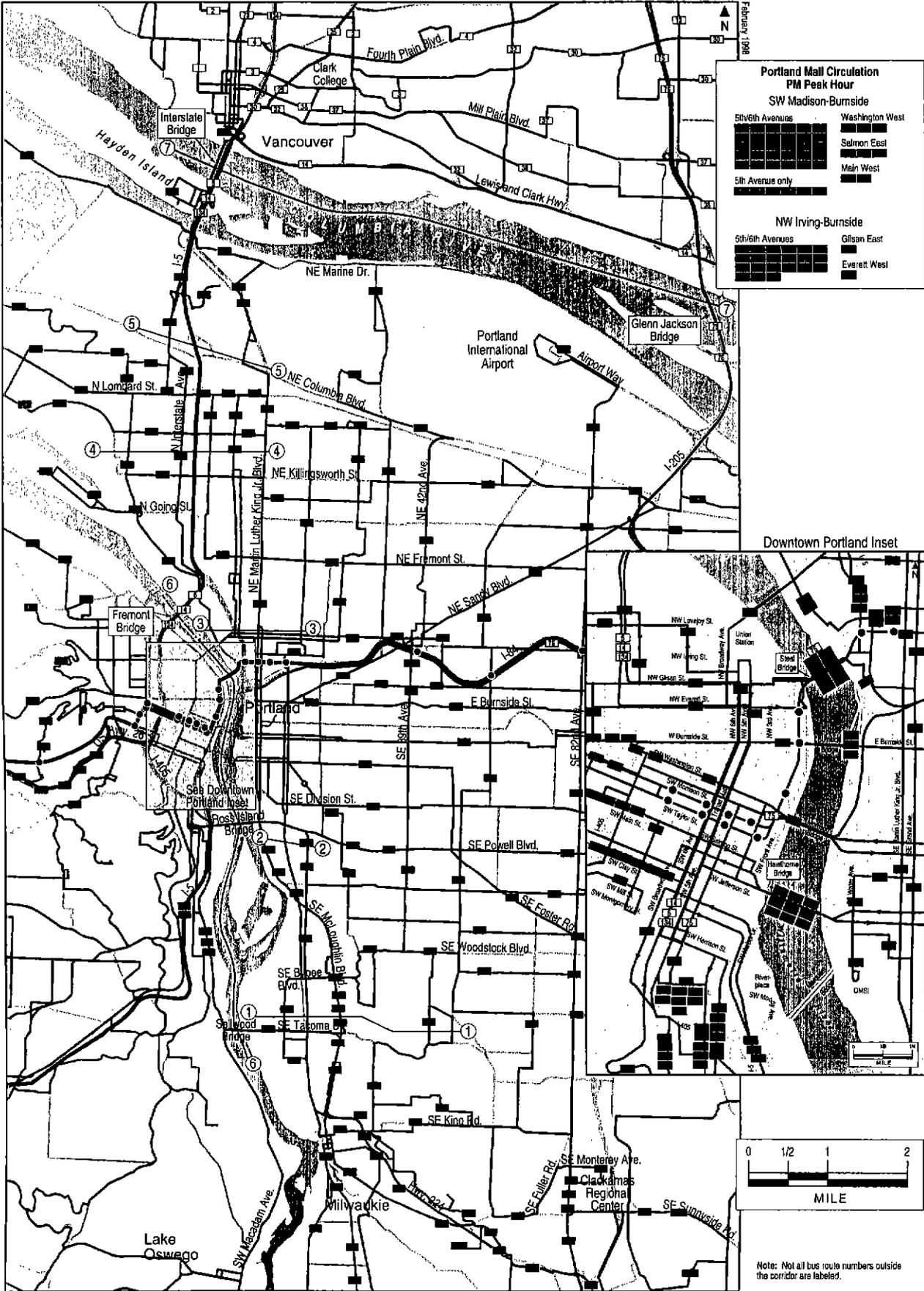
This action symbolized the regional policy that new major radial highway capacity would no longer be constructed in the region. Instead, future capacity and maintenance of level of service on major radial corridors would be primarily dependent on high capacity transit. Highway improvements would be employed primarily to fix bottlenecks, balance the system and respond to safety and weave problems.

There were also secondary implications. The decision to prioritize major regional transit corridors meant that: 1) the rest of the transportation system would be sized and designed on that basis; 2) the pattern and type of development in the Portland region would be dependent on high capacity transit; and 3) the comprehensive plans of the counties and cities in the region would be based on that policy. In retrospect, this policy fundamentally affected almost every major planning and development decision in the region over the past two decades.

Since the withdrawal of the Mt. Hood Freeway, there has been a series of major transportation analyses and policies implementing the basic policy shift. In 1978, the CRAG adopted the *Regional Transportation Corridor Improvement Strategy*, which established the priority for transitways in the major radial corridors in the region.

In 1982, Metro adopted its first *Regional Transportation Plan*. Regarding the major radial corridors in the region, including what is now known as the South/North Corridor, this plan concluded that "... adding significant highway capacity to existing major routes...would violate two established regional policies ... adequate transportation capacity to meet growth in travel demand in the radial corridors must be provided by selective highway improvements to remove bottlenecks and "balance" the capacity of the overall highway system together with a major expansion in transit...." It also determined that a phased approach to implementing the third priority transitway (after the Banfield and Westside light rail transit projects) be undertaken.

In 1980, the *Southern Corridor Improvement Strategy* prepared by Metro concluded by identifying short-term improvements to be made to several traffic bottlenecks along SE McLoughlin Boulevard and a long-term commitment to expand the transit service and rideshare programs in the corridor. In 1986, Metro completed a Phase I study of transitway alternatives in the region. This system-level planning effort consisted of several



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Figure 1.2-1
**1994 South/North Corridor
 Road and Transit Network**

- Tri-Met Bus Route
- Tri-Met Route Number
- C-TRAN Bus Route
- C-TRAN Route Number
- Eastside MAX & Station
- Westside MAX & Station (Open Fall 1998)
- Road Network
- ⊙ Auto Volume Cutoff Locations

elements, including the Milwaukie Corridor Study, the I-205 Corridor Study and the Bi-State Light Rail Study. These Phase I studies recommended that Phase II studies of light rail be undertaken in the I-5, SE McLoughlin and I-205 corridors.

Between 1977 and 1988, there were several Washington State Legislative studies and bi-state studies that concluded that a third bridge was not a viable solution for the I-5 Corridor's transportation problems and that regional transitway alternatives should be examined.

With the start of construction of the Westside light rail extension in 1991, the east/west spine of the regional system was established, and there was the need to determine whether a south/north transit spine was needed, and if so, what set of mode and alignments would comprise that spine. In 1993, the Metro Council and the C-TRAN Board of Directors determined that light rail options for the Milwaukie Corridor and I-5 North Corridor should be examined as an integrated South/North Corridor. A Major Investment Study was completed in 1995, which selected light rail as the preferred alternative for the corridor for purposes of preparing this DEIS.

1.3.2 Land Use Policies in Oregon

In 1974, the Oregon Legislature enacted statewide Land Conservation and Development goals and required cities and counties to adopt enforceable comprehensive plans that implement the State goals. To comply with the statewide urbanization goal, in 1976 CRAG adopted a regional urban growth boundary (UGB) that defined the area in which urban development and investment could occur in the Oregon portion of the metropolitan region. State law requires that the UGB contain sufficient land to accommodate growth for twenty years. State law also requires county governments to prohibit or sharply restrict the type and density of development allowed outside the UGB.

Local comprehensive plans were required to make adequate provision for the urban services required for the development envisioned inside the UGB while complying with other statewide goals. These plans were developed on the basis of the transportation policies first set in 1976 and have been refined since. As a result, land use designations, patterns and policies in Clackamas County and the cities of Portland and Milwaukie have been established on the basis of a high capacity transit in the South/North Corridor. In addition, water, sewer, transportation and other infrastructure plans in these jurisdictions have been prepared based on these plans and to support such development.

In 1991, the Land Conservation and Development Commission (LCDC) promulgated the Transportation Planning Rule (TPR), which requires cities and counties to, among other things: 1) consider changes to land use densities and designs as a way to meet transportation needs; 2) adopt changes to their subdivision and development ordinances to encourage more transit and pedestrian friendly development and street patterns; and 3) amend their comprehensive plans to allow transit-oriented developments along transit routes.

The TPR also requires that Metro plan for a reduction in vehicle miles traveled per capita. The targets are for a three-step reduction over thirty years: no increase over ten years, a ten percent reduction over twenty years and a 20 percent reduction over thirty years. The effect of the rule is that it will tie land use, development and transit even closer together.

In 1992, Metro district voters approved a new charter for Metro, which expanded Metro's land use authority. The charter directs Metro to prepare and adopt a "Future Vision" for the region, covering a period of 50 years and addressing "preservation of regional land and natural resources" and "how and where to accommodate the population growth." The charter further directs Metro to adopt ordinances that would require local comprehensive plans and zoning regulations to comply with the regional framework plan.

Metro responded to the charter requirements by developing the Region 2040 Growth Concept and its implementing document, the *Region 2040 Framework Plan*. This plan establishes the urban growth boundary for the next 20 years and the pattern and densities for development within the boundary to the year 2040. The plan is designed to absorb an additional 720,000 residents into the Oregon portion of the metropolitan region by the year 2040 with as little expansion of the existing UGB as possible.

The *Region 2040 Framework Plan* designates the Central City of Portland as the high density employment hub of the Portland metropolitan region. The role of downtown Portland as the finance, cultural, tourism, retail and commerce center for the region is reinforced by the plan. The plan designates "Regional Centers" as mixed-use areas consisting of compact employment and residential developments that are served by high-quality transit services and "Town Centers," which are similar to Regional Centers but slightly less dense. Within the South/North Corridor, the area around the Clackamas Town Center and the central areas of Milwaukie and Oregon City are designated as Regional Centers.

The plan also designates "Station Communities," which are mixed use areas surrounding light rail stations wherein development is predominantly oriented toward transit riders and pedestrians. The *Framework Plan* seeks to encourage intensification of land uses in Regional and Town Centers and Station Communities and, to a lesser extent, along "Transit Corridors" and "Main Streets." The *Region 2040 Growth Concept* that is included within the *Framework Plan* is illustrated in Figure 3.1-1. The *2040 Growth Concept* is predicated on the implementation of a south/north transit spine that creates the opportunity for the Transit Corridor, Station Community and Town Center areas. The South/North Corridor alternatives studied in this DEIS are aimed at creating the transit spine needed to implement the *Region 2040 Framework Plan*. The plan will be amended to incorporate the alternative selected as a result of this DEIS.

1.3.3 Land Use Policies in Clark County

In 1990, the Washington State legislature passed the Growth Management Act, which requires Clark County and the City of Vancouver, among others, to prepare and adopt comprehensive plans. Each comprehensive plan must designate the urban growth area which, similar to Oregon, must include sufficient land area and densities to permit the amount of growth projected for that area.

Clark County, the City of Vancouver, Southwest Washington Regional Transportation Council (RTC) and C-TRAN are currently involved in efforts to respond to the Growth Management Act. A product of these efforts is the *Community Framework Plan*, which serves as the guide for preparing the detailed comprehensive plans of Clark County and its cities. The framework plan concentrates growth in urban centers in the county, each center being separate and distinct from the others. To accomplish this goal, development must occur at a higher average density than currently exists.

The fundamental transportation policy set forth in the *Community Framework Plan* is to reduce reliance on the single-occupant vehicle. The transportation element also establishes specific "level of service" standards for arterials and transit routes. After adoption of the comprehensive plan, Clark County and Vancouver must adopt and enforce ordinances that prohibit the approval of proposed developments that would cause levels of service to fall below the adopted standards *unless* transportation improvements or strategies to accommodate those impacts were made *concurrent* with the development.

In addition, the transportation element of the *Community Framework Plan* includes a multi-year financing plan that serves as the basis for the six-year financing element of the capital facilities plan. This plan must include a requirement to determine, if probable funding falls short of that which is specified in the multi-year financing plan, how additional funds will be raised or how land use assumptions will be reassessed to ensure level of service standards are met.

The State of Washington's Commute Trip Reduction Law, enacted in 1991, establishes goals for reducing the amount of vehicle miles traveled for commute trips by employees of affected employers. As a result, Clark County and Vancouver adopted a commute trip reduction plan and ordinance that includes: 1) goals for reductions in the proportion of single-occupancy vehicle commute trips and the vehicle miles traveled for commute trips per employee; and 2) requirements for major public and private employers to implement commute trip reduction programs for employees.

After the adoption of the commute trip reduction plan, each major employer within Clark County must develop a commute trip reduction program consistent with the city or county (depending on the location of the business) plan and submit it to that jurisdiction for review. If the plan is unacceptable to the jurisdiction, then the jurisdiction can require the employer to make necessary changes. Clark County and the City of Vancouver may impose civil penalties for employers who fail to implement an acceptable trip reduction program.

1.4 Transportation-Related Problems in the Corridor

Topographic features, suburbanization, a deficient road network and economic conditions fostering growth in Clackamas and Clark Counties have combined to make congested traffic conditions typical of daily travel to, from and within the South/North Corridor. In the future, traffic problems in the corridor will worsen as a result of projected growth.

1.4.1 Traffic Trends and Highway Network Conditions

Over the past two decades, growth in traffic volumes on the South/North Corridor's regional roadways has increased significantly. Table 1.4-1 summarizes the historic growth in traffic volumes on SE McLoughlin Boulevard, the primary highway connecting activity centers in the southern portion of the corridor with the Portland CBD. Growth in traffic volumes on SE McLoughlin Boulevard from 1971 to 1995 has ranged from 21 percent at SE 17th Avenue to 60 percent at Highway 224 and 59 percent at I-205.

**Table 1.4-1
Historic Growth in SE McLoughlin Boulevard Traffic Volumes**

SE McLoughlin Boulevard at:	1971 ADT ¹	1995 ADT ¹	% Change
SE 17 th Avenue	37,200	45,000	21%
Highway 224	30,300	48,600	60%
I-205	22,200	35,300	59%

Source: Metro, 1997.

¹ ADT = Average Daily Traffic Volumes

The first bridge span across the Columbia River in the vicinity of the current I-5 opened in 1917, with its twin structure being completed in 1958 as part of the construction of I-5. The Glenn Jackson Bridge was built and opened to traffic in 1983, providing a second connection between the Oregon and Washington portions of the region along the I-205 circumferential freeway. At about the same time the Glenn Jackson Bridge was opened, sections of I-5 were improved to address bottlenecks.

The I-5 improvements, together with the second bridge crossing, were expected to provide sufficient capacity to achieve desired levels of service in the northern portion of the corridor well beyond the year 2000. However, traffic in the northern portion of the corridor has been growing at such a high rate that traffic volumes on I-5 are already exceeding levels prior to the opening of the Glenn Jackson Bridge (see Table 1.4-2).

**Table 1.4-2
Average Weekday Vehicle Crossings of the Columbia
River, 1970 to 1995**

Year	I-5	I-205	Total	Five-Year Growth
1970	69,150	N/A	69,150	N/A
1975	87,230	N/A	87,230	26%
1980	108,620	N/A	108,620	25%
1985	92,300	52,570	144,870	33%
1990	94,570	88,610	183,180	26%
1995	111,700	103,300	215,000	17%

Source: Metro, 1997.

Growth in traffic within the South/North Corridor is forecast to continue over the next two decades. Table 1.4-3 summarizes forecast population and employment growth in the corridor, which will produce a 30 percent increase in vehicle miles of travel (VMT) in the southern portion of the corridor by the year 2015. This VMT growth is projected to lead to a three-fold increase in the miles of major roads in the southern portion of the corridor that are congested (i.e., have volumes that are in excess of 90 percent of the design capacity of the roadway).

**Table 1.4-3
P.M. Peak Hour Summary Statistics for Major Roads in Southern Corridor by Sub-Area,
1994 and 2015¹**

Sub-Area ²	Vehicle Miles Traveled		Vehicle Hours of Delay		Road Miles with V/C ³ > 0.90	
	1994	2015	1994	2015	1994	2015
Southeast Portland (7)	18,000	22,400	83	378	2.5	5.1
Milwaukie (8)	17,300	22,200	96	338	2.8	5.5
Sunnyside (9)	49,200	66,700	50	641	1.9	10.8
Gladstone (10)	33,600	43,700	13	358	0.0	6.2
Oregon City (14)	36,000	51,000	58	720	2.2	10.2
Macadam (6)	45,300	53,300	80	480	4.2	6.1
South/North Corridor Total	199,400	259,300	380	2,915	13.6	43.9
Regional Total	1,617,400	2,328,800	2,181	17,442	85.0	292.0

Source: Metro travel forecasts, 1997.

¹ Based on the No-Build Alternative; see Section 2.3.1 of this DEIS for a definition of the roadway improvements that would be made with the No-Build Alternative.

² Number in parenthesis is a Metro sub-district number (see the *South/North Transit Impacts and Travel Demand Forecasting Results Report* (Metro: February 1998) for a map illustrating the sub-districts.

³ V/C = ratio of vehicle volume to capacity.

As a result of this deterioration of road service levels, corridor drivers will experience an eight-fold increase in the number of hours they sit in delayed traffic. The worst decline in auto-travel quality is projected to occur in the Clackamas Regional Center area with a five-fold increase in over-capacity roadways and a thirteen-fold increase in vehicle hours of delay (i.e., added time spent on roadway segments with a V/C ratio

greater than 0.9). Tables 1.4-4 and 1.4-5 show that by the year 2015, traffic on SE McLoughlin Boulevard and its parallel arterials will be at or over capacity for all or virtually all of their lengths within the corridor.

**Table 1.4-4
P.M. Peak Hour Conditions on McLoughlin Corridor
Southbound – Year 2015¹**

Location² (Southbound Direction)	Volume³	V/C⁴ Ratio
Grand Avenue near Powell Blvd. (E-20)	5,400	1.20
McLoughlin Blvd. near Sellwood (E-21)	4,100	1.13
McLoughlin Blvd. south of Milwaukie CBD (E-23)	2,800	1.58
McLoughlin Blvd. south of Concord Road (E-26)	2,100	1.00
McLoughlin Blvd. at Clackamas River (E-27)	2,800	1.34

Source: Metro travel forecasts, 1997.

¹ Based on the No-Build Alternative; see Section 2.3.1 of this DEIS for a definition of the roadway improvements that would be made with the No-Build Alternative.

² Letter/Number designation in parenthesis is a Metro cutline number.

³ Vehicles per hour.

⁴ V/C = ratio of vehicle volume to capacity.

**Table 1.4-5
P.M. Peak Hour Conditions on Arterials Paralleling
SE McLoughlin Boulevard Southbound – Year 2015¹**

Location² (Southbound Direction)	Facility	Volume³	V/C⁴ Ratio
Near SE Powell Blvd. (E-20)	SE Milwaukie Avenue	700	0.99
Near Sellwood (E-21)	I-205	6,200	0.94
	SE Johnson Creek Blvd.	1,000	1.13
	SE 82 nd Avenue	1,500	0.86
Southeast of Milwaukie CBD (E-23)	Hwy. 224	2,300	1.10
Near Clackamas River (E-27)	I-205	7,300	1.04

Source: Metro travel forecasts, 1997.

¹ Based on the No-Build Alternative; see Section 2.3.1 of this DEIS for a definition of the roadway improvements that would be made with the No-Build Alternative.

² Letter/Number designation in parenthesis is a Metro cutline number.

³ Vehicles per hour.

⁴ V/C = ratio of vehicle volume to capacity.

Table 1.4-6 shows that the population and employment growth in the corridor will produce a 60 percent increase in VMT in the northern portion of the corridor by the year 2015. This growth in VMT will lead to over a four-fold increase in the road miles in the corridor, which are currently at inadequate service levels, and almost a nine-fold increase in the amount of hours drivers in the northern portion of the corridor must sit in traffic.

Tables 1.4-7 and 1.4-8 show that by the year 2015, traffic on I-5 and its parallel arterials will be at or over capacity for virtually their entire lengths in the northern portion of the corridor.

**Table 1.4-6
P.M. Peak Hour Summary Statistics for Major Roads in Northern Corridor
by Sub-Area – Existing and Year 2015¹**

Sub-Area ²	Vehicle Miles Traveled		Vehicle Hours of Delay		Road Miles with V/C ³ > 0.90	
	1994	2015	1994	2015	1994	2015
North Vancouver (28,34)	107,600	172,300	15	220	1.3	11.3
West Vancouver (27)	26,900	44,500	32	295	1.3	7.4
Central Vancouver (26,31)	58,400	89,200	84	858	1.2	7.3
East Vancouver (29,30)	54,700	105,400	37	337	4.0	13.3
Rivergate (4,5)	41,000	60,100	199	1,416	2.5	6.4
North/Northeast Portland (3)	39,400	51,600	26	343	1.4	3.4
South/North Corridor Total	328,000	523,100	393	3,469	11.7	49.1
Regional Total	1,617,400	2,628,800	2,181	17,442	85.0	292.0

Source: Metro travel forecasts, 1997.

¹ Based on the No-Build Alternative; see Section 2.3.1 of this DEIS for a definition of the roadway improvements that would be made with the No-Build Alternative.

² Number in parenthesis is a Metro sub-district number (see the *South/North Transit Impacts and Travel Demand Forecasting Results Report* (Metro: February 1998) for a map illustrating the sub-districts).

³ V/C = ratio of volume to capacity.

**Table 1.4-7
P.M. Peak Hour Conditions on I-5 Northbound in
Northern Corridor – Year 2015¹**

Location ² (Northbound Direction)	Volume	V/C ³ Ratio
North of NE Broadway Street (E-17)	5,300	0.85
South of N Alberta Street (E-16)	5,400	1.03
N Marine Drive (E-15)	4,100	1.13
I-5 Bridge (R-5)	8,700	1.52
South of 4 th Plain (C-1)	6,100	0.84
South of SR 500 (C-2)	5,800	0.97
South of NE 78 th Avenue (C-3)	5,500	0.91

Source: Metro travel forecasts, 1997.

¹ Based on the No-Build Alternative; see Section 2.3.1 of this DEIS for a definition of the roadway improvements that would be made with the No-Build Alternative.

² Letter/Number designation in parenthesis is a Metro Outline Number.

³ V/C = ratio of vehicle volume to capacity.

1.4.2 Transit System Conditions

Tri-Met operates several trunk routes on SE McLoughlin Boulevard between Oregon City and the Portland CBD. As previously mentioned, traffic congestion on the facility has worsened in the past ten years, resulting, in part, in slower transit travel speeds on SE McLoughlin Boulevard. There are portions of SE McLoughlin Boulevard through Milwaukie in which peak-hour transit speeds are running as low as 11 miles per hour, which is relatively slow for limited-stop service on a regional highway. As a result, transit travel times between Oregon City and the Portland CBD have increased by five minutes in recent years. A

deterioration in transit travel times means that Tri-Met must increase service hours, operating costs and the size of the bus fleet in order to maintain a constant level of service, resulting in a loss of operating efficiency.

**Table 1.4-8
P.M. Peak Hour Conditions on Arterials Paralleling I-5
Northbound – Year 2015¹**

Location ² (Northbound Direction)	Facility	Volume	V/C ³ Ratio
South of N Alberta Street (E-16)	NE ML King Jr. Blvd.	1,700	0.92
N Marine Drive (E-15)	N Interstate Blvd.	1,800	0.98
	NE ML King Jr. Blvd.	1,700	0.93
	N Vancouver Street	900	1.28
Columbia River	I-205 Bridge	8,800	1.00
South of 4 th Plain (C-1)	Ft. Vancouver Way	1,300	0.85
South of SR 500 (C-2)	Main Street	2,000	1.18
South of NE 78 th Avenue (C-3)	Ft. Vancouver Way	1,300	0.85

Source: Metro, 1997.

¹ Based on the No-Build Alternative; see Section 2.3.1 of this DEIS for a definition of the roadway improvements that would be made with the No-Build Alternative.

² Letter/Number designation in parenthesis is a Metro outline number.

³ V/C = ratio of volume to capacity.

If improvements are not made to the transportation network in the corridor, these conditions will worsen over time. For example, Table 1.4-9 illustrates that under the No-Build Alternative, transit travel times from downtown Portland to the Milwaukie CBD and the Clackamas Regional Center are projected to increase by 17 percent and 20 percent, respectively, by the year 2015.

**Table 1.4-9
Current and 2015 Bus Travel Times¹ between Downtown Portland and
Select Locations in the South/North Corridor**

Location	1994	2015 ²	% Change
Clackamas Regional Center	35	42	20%
Milwaukie Regional Center	24	28	17%
N Lombard Street (North Portland)	22	27	23%
Downtown Vancouver	24	40	67%

Source: Metro, 1997.

¹ In-vehicle time, in minutes during the p.m. peak hour in the peak direction.

² Based upon the No-Build (All-Bus) Alternative.

As congestion causes travel times to worsen, schedule reliability will also degrade. Timed-transfer operations are particularly sensitive to trunk line reliability. As a result, the operations of the Milwaukie Transit Center and the Oregon City Transit Center are projected to become less reliable over time.

Current bus service in the northern portion of the corridor is also marked by poor travel times. For the most part, the express buses between Clark County and Portland currently run at speeds as low as 12 miles per hour as they cross the I-5 Bridge in the peak hour. Average peak-hour speeds on several other segments of

I-5 are currently about 20 miles per hour and in no segment do they regularly achieve 30 miles per hour in the peak hour – quite poor for service that is on a freeway and has very few or no stops along the route. As a result, the operations of the timed-transfer connections in the Vancouver CBD have become less reliable. In addition, Tri-Met service in the northern portion of the corridor exhibits peak-hour speeds in the ten to 15 mile per hour range. Tri-Met's *Five Year Transit Development Plan* (Tri-Met: November, 1993) identifies the northern portion of the corridor as having the second worst transit to auto travel time ratio anywhere in its district.

Future traffic congestion in the northern portion of the corridor will significantly degrade transit travel times. For example, as illustrated in Table 1.4-9, the peak-hour transit travel time between downtown Vancouver and downtown Portland is projected to increase by 67 percent by the year 2015. Similarly, the peak-hour transit travel times between N Lombard Street in north Portland and downtown Portland are projected to increase by 23 percent.

1.4.3 Air Quality Conditions

The Portland/Vancouver area was redesignated to attainment for ozone in April 1997, and was redesignated to attainment for carbon monoxide (CO) in October 1997. These improvements in air quality have been due in large part to the effectiveness of pollution control strategies over the last 20 years for all major categories of ozone and CO sources, particularly motor vehicles and industry. Included in the redesignation to attainment are 10-year maintenance plans to address population and transportation growth in the upcoming years in order to protect public health and avoid future air quality violations. The maintenance plans also contain additional strategies for controlling volatile organic compounds (VOCs) and CO emissions, remove more stringent industrial control and emission offset requirements and protect against Clean Air Act sanctions on Federal transportation funds.

These maintenance plan strategies include Federal, State and local emission control programs for four major source categories: on-road vehicles, non-road vehicles, area sources and industry. Included in these strategies are improved vehicle emissions testing and expansion of the inspection boundary to increase the number of vehicles tested. The majority of these strategies will become effective in 1999.

Transit expansion is also a critical component of the maintenance plan. Transit expansion, including the associated implementation of transit-supportive land uses, is expected to yield almost 20 percent of the required reduction in VOCs and almost 30 percent of the required reduction in nitrogen oxides.

Without a maintenance plan approved by the Environmental Protection Agency (EPA), all new industries and businesses that emit CO, VOCs or nitrogen oxides must use the "lowest achievable emission rate" control technology to meet Federal requirements, which tend to cost about \$25,000 per ton of emission reduction. With an approved maintenance plan, new business and industries are allowed to use "best available control technology" to meet Federal requirements. Since these methods tend to cost about \$5,000 per ton of emission reduction, the existence of an approved maintenance plan reduces the air quality-related costs of new industry and business by roughly \$20,000 per ton of emission. These savings are not achievable without the transit expansions anticipated in the maintenance plan.

1.4.4 Land Use Conditions

Over the past two decades, there has been a continuous progression of regional and local policy and investment decisions, in both the Oregon and Washington portions of the region, aimed at establishing growth corridors and activity centers that are supported by high capacity transit. In 1976, the Oregon portion of the region established high capacity transit corridors as the spine of the regional transportation system.

Since that time, almost \$2 billion in transportation improvements have been sited, sized and designed based on this policy.

Since 1976, all applicable local and regional land use policies in the Oregon portion of the region (including the comprehensive plans of Clackamas County and the cities of Oregon City, Milwaukie and Portland, Metro's Urban Growth Boundary, Metro's *Regional Urban Growth Goals and Objectives* and the *Regional Transportation Plan*) have been formulated on the basis of high capacity transit in regional corridors. As a result, for over two decades, land use designations, zoning patterns and water, sewer and other infrastructure investments, in each of these jurisdictions, have been located and sized on the basis of high capacity transit corridors.

The Growth Management Act and the Commute Trip Reduction Act recently enacted in Washington require the preparation of comprehensive plans and transportation demand management strategies in Clark County and the City of Vancouver. In response to the State goals, the *Community Framework Plan* and enacted Trip Reduction ordinance are based on a reduced reliance on single-occupant vehicles and the implementation of a high capacity transit strategy. As a result, local and regional land use policies in Clark County, including the detailed county and city comprehensive plans and the Regional Transportation Plan will be formulated on the basis of transit expansion.

Thus, if the region's high capacity transit plan is not achieved, the economic vision, livability and development goals and land use plans for the region would have to be revised. As more and more public and private investment is made based on these regional transportation objectives and plans, it will become increasingly difficult, if not impossible, to turn back on the plan. Given the linkage in the region between land use, economic development and transit, as well as the growing public and private investment in support of these policies, it is essential to consider light rail transit options in the South/North Corridor.

1.4.5 Financial Efficiency

Financial efficiency has been one of Tri-Met's goals over its three-decade existence. During the 1990s, fiscal efficiency has increased as a priority as Oregonians expressed their concerns about taxation and governmental efficiency by passing major tax limitation measures in 1990, 1996 and 1997. During this same period, the Americans with Disabilities Act (ADA) required Tri-Met to expand its special needs transit service, and the Region 2040 Plan and the large population and employment growth in Washington and Clackamas Counties compelled Tri-Met to increase suburban bus service. By their nature, both of these services exhibit relatively high operating costs per rider. Thus, during a period of particular sensitivity to governmental efficiency, there are strong demands on the bus system that tend to lower its operating efficiency.

Looking forward, special needs transit service will continue to be the fastest growing component of Tri-Met's service over the next several years and Region 2040 will require increased suburban transit service over the long term. Thus, the region must undertake a strategy to counteract the existing trend or face continuing increases in the cost per ride on its transit system. Elements of the strategy undertaken by Tri-Met to improve its operating efficiencies include: endorsing major new regulations requiring transit-supportive land use patterns; a more aggressive fare increase policy; and improving the operating efficiencies along major regional trunklines through the implementation of high capacity transit solutions, such as light rail.

1.5 Project Goal and Objectives

The Goal and Objectives established for the South/North Project derive from the purpose and need analysis summarized above. The Goal of the project is:

To implement a major transit program in the South/North Corridor that maintains livability in the metropolitan region, supports bi-state land use goals, optimizes the transportation system, is environmentally sensitive, reflects community values and is fiscally responsive.

The Objectives of the South/North Light Rail Project are to:

1. Provide high quality transit service in the corridor.
2. Ensure effective transit system operations in the corridor.
3. Maximize the ability of the transit system to accommodate future growth in travel demand in the corridor.
4. Minimize traffic congestion and traffic infiltration through neighborhoods in the corridor.
5. Promote desired land use patterns and developments in the corridor.
6. Provide for a fiscally stable and financially efficient transit system.
7. Maximize the efficiency and environmental sensitivity of the engineering design of the proposed project.

This DEIS evaluates alternative ways to create a south/north transit spine to achieve these objectives.