



Quad County Regional Transportation Plan Adams, Grant, Kittitas and Lincoln Counties 2007



Quad County

Regional Transportation Plan

Adams, Grant, Kittitas and Lincoln Counties,
Washington

2007

Members

Counties: Adams, Grant, Kittitas and Lincoln

Cities: Almira, Coulee City, Coulee Dam, Creston, Davenport, Electric City, Ellensburg, Ephrata, George, Grand Coulee, Harrington, Krupp, Lind, Mattawa, Moses Lake, Odessa, Othello, Quincy, Reardon, Ritzville, Roslyn, Royal City, Soap Lake, Sprague, Warden, Washtucna, Wilbur and Wilson Creek

Transit Agencies: Grant Transit Authority

Ports: Port of Ephrata, Port of Moses Lake, and Port of Royal Slope

State Agency: Washington State Department of Transportation

Prepared for:

Quad County
Regional Transportation Planning Organization
Adams, Grant, Kittitas and Lincoln Counties,
Washington

Prepared by:



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Introduction

Adams County, Grant County, Kittitas County and Lincoln County in central Washington make up the Quad County Regional Transportation Planning Organization (QUADCO) under the provisions of the 1990 Growth Management Act (SHB 2929). The responsibility of acting as the lead planning agency rotates periodically to each of the four counties. These four counties are included in three regions within the Washington State Department of Transportation (WSDOT): the North Central Region, the South Central Region and the Eastern Region. The four counties included in the QUADCO RTPO study area are shown in Figure 1.

On June 8, 1994 the QUADCO RTPO adopted the initial Regional Transportation Plan. A subsequent Amendment to the Plan was adopted on April 30, 2004.

The QUADCO Board is made up of duly elected officials and staff that represent each jurisdiction within the four county region. They represent regional jurisdictions, ports districts, private business, and the Department of Transportation. These members are supported by staff that are technically proficient in planning or engineering that represent each jurisdiction. Current membership of the RTPO Board is included in Appendix A.

The preparation of this RTP Update involved of the full QUADCO Board, with extensive oversight from a committee comprised of representatives from each county, several cities and WSDOT. Individual public meetings were held as deemed appropriate in each city and county before elected representatives with opportunity for public input. Meetings were also held with the county engineers and other staff and various city representatives and interested parties. Input was also sought from representatives of the three Regions of the Washington State Department of Transportation.

The purpose of this plan is to describe the region's characteristics, identify future improvements to the transportation system;, determine model priorities;, and determine funding sources, funding levels and strategies to correct transportation system deficiencies. This plan relies in part on the Washington Transportation Plan 2007 - 2026 (WTP), primarily the material related to QUADCO. This helps to ensure consistency with the WTP.

This plan is intended to be the foundation of the RTPO Transportation Improvement Program (TIP). The plan recognizes the need to review projects based on smaller sub-regions created by natural transportation barriers, significant yet limited federal improvements and Non GMA and GMA jurisdictional and regulatory differences. The plan accomplishes this task by validating member's current TIP, based on the broader mobility, economic, social, and environmental goals of the citizens and jurisdictions of the region, and by providing an organized review from which transportation project improvements are identified, programmed and built.

The Regional Transportation Plan and the Transportation Improvement Program are designed and created to fulfill requirements of the Growth Management Act (GMA) for both NON-GMA and GMA members, specifically requirements for preparation of a RTPO spelled out in RCW 47.80 and Washington State Department of Transportation RTPO Transportation Planning Guidebook.

Legend

City Pop Growth (1990-2000)

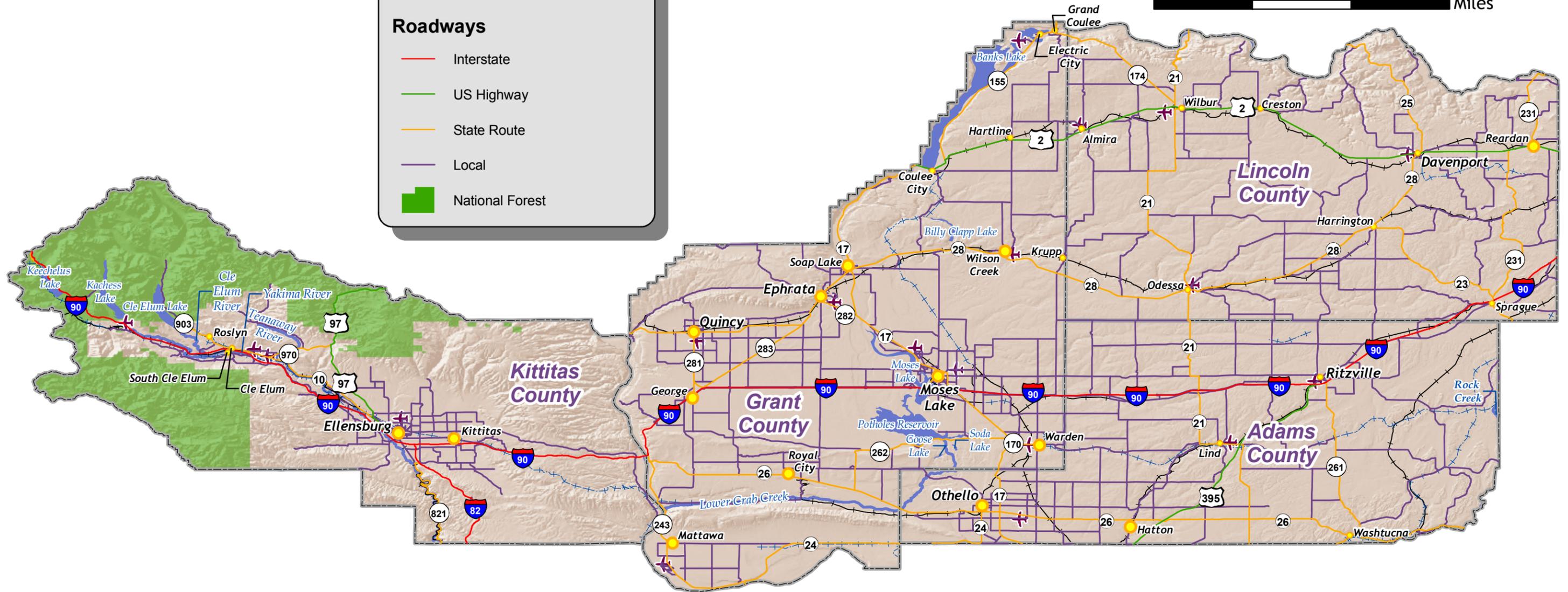
- ≤25%
- ≥25%
- ✈ State System Airports
- - - - Abandoned Railroads
- - - - Railroads

Roadways

- Interstate
- US Highway
- State Route
- Local
- National Forest



0 16 32 48 Miles



**QUAD-CO Regional
Transportation Plan Update**

**QUAD-CO Region
Study Area**

Figure 1

Goals, Policies and Objectives

This section provides a strategy or system of review that each member agency should consider as they develop their local 6-year Transportation Improvement Plan. The intent of this section is to provide for a reasonable level of consistent TIP planning by member agencies for regionally significant transportation infrastructure needs.

The Regional Transportation Strategy for the QUADCO Region is to provide for all modes of transportation that can be developed, maintained and utilized in the most cost effective manner. In this regard the following Regional Transportation Goals and Policies have been created:

GOAL #1: Encourage GMA Counties to document that urban development is in areas where adequate public facilities and services exist or can be provided in an efficient manner.

OBJECTIVE: Select projects in GMA Counties that plan and make provision for public facilities and services, such as transportation, so that they will be available at the same time as the development.

GOAL #2: When appropriate plan for multimodal transportation systems that are based on regional or sub-regional priorities and are coordinated with county and city comprehensive plans.

OBJECTIVE: Select projects that insure that the RTP reflects the link between transportation facilities (roads, buses, trains, paths, waterways and trails), or that utilize more than one mode or which provide more opportunities to choose between modes.

GOAL #3: Encourage economic development throughout the region that is consistent with adopted comprehensive plans, promote economic opportunity for all citizens of the region, especially unemployed and disadvantaged persons, and encourage growth in areas experiencing insufficient economic growth.

OBJECTIVE: Projects should be economically viable. The project must meet the criteria specified for the funding source and must offer a viable solution to a recognized problem in a cost-effective manner.

GOAL #4: Protect the environment and enhance the planning area's high quality of life, including air and water quality, and the availability of water.

OBJECTIVE: Select projects that are consistent with a jurisdictions environmental and/or critical areas standards.

GOAL #5: Encourage involvement of citizens in the planning process and ensure coordination between communities and jurisdiction to reconcile conflicts.

OBJECTIVE: Select projects that demonstrate consistency with locally adopted public review policies.

GOAL #6: Provide access to transportation for all citizens within the four counties.

OBJECTIVE: Select projects that comply with local requirements Title VI of the 1964 Civil Rights Act.

The following section presents the objectives of the Quad County Regional Transportation Plan as originally adopted in 1994, beginning with those of a more general nature and progressing to those dealing with specific modes and issues.

1. General

- a. Support economic growth and vitality.
- b. Ensure that growth and change in the transportation system within and near local jurisdictions are consistent with the regional and local comprehensive and transportation plans for those jurisdictions.
- c. Provide a tool for the communities to use that will guide transportation system development to make it consistent with and supportive of area comprehensive plans.
- d. Ensure consistency with environmental rules and regulations.
- e. Emphasize the movement of goods and people rather than the movement of vehicles.
- f. Wherever possible, preserve existing rail lines and reserve abandoned rail lines through compatible use in accordance with the Washington State Rail Transportation Plan.
- g. Consider the most cost-effective mode or modes of transportation for the overall good of the region.
- h. Apply minimum standards for operating conditions, classification schemes, and performance measures uniformly on the regional system.
- i. Identify and implement strategies to resolve constraints to intermodal connections.
- j. Identify and implement strategies to take advantage of opportunities for new and enhanced intermodal connections and alternative transportation modes.

2. Coordination

- a. Ensure that transportation decisions and improvements crossing county boundaries or affecting more than one county or jurisdictions outside the region are coordinated across all affected counties and jurisdictions.
- b. Coordinate transportation decisions with affected agencies.
- c. Provide for coordination between the state and region on major transportation decisions with regard to all modes.
- d. Ensure that transportation decisions leading to the development of the nonmotorized component of the regional transportation system are coordinated.
- e. Communicate with the private sector to ensure that transportation decisions which have an impact on private facilities are coordinated with the affected industries. These may include:
 - Railroads
 - Elevator and terminal operators
 - Trucking companies
 - Bus companies

- Package express services
- Taxi companies
- Pipelines
- Paratransit contractors
- Airlines

3. System Capacity and Improvement

- a. Focus on minimizing inefficient routing and lowering travel time.
- b. Whenever possible and practical, the improvement of existing facilities in the transportation system rather than provide new facilities, except where new facilities promote alternatives to the Single Occupant Vehicle (SOV) and/or are otherwise demonstrated to have a lower cost and higher benefit.
- c. Encourage major employers, activity centers, and others to establish programs for ridesharing and other transportation demand management systems.
- d. Encourage consolidation of freight facilities wherever feasible and the location of freight facilities adjacent to appropriate existing arterials and transportation hubs.
- e. Improve the safety and capacity of roadways, while retaining aesthetic features on tourist roads.
- f. Focus on supporting and accommodating movement within the region and between the region and its adjacent areas, rather than traffic movements merely passing through the region or movements within limited local areas.

4. Roadway

- a. Guide changes in classification and future reclassification of roadways.
- b. Accommodate the type of user most likely to benefit from improvements to the particular transportation facility.
- c. Match the available funding with the necessary improvements. Typically, the higher classed facilities receive higher priorities.
- d. Ensure consistency of roadway classification when jurisdiction changes between state, county, and municipal control. Segments which change classification solely because they change jurisdiction need to be carefully analyzed as to whether they are properly classified.
- e. Ensure that facilities with a higher level of classification enhance movement through the region while lower level classifications encourage access to and from the transportation facilities within the region.

5. Public Transportation

- a. Maximize mobility for population segments dependent on public transportation such as the disabled and elderly.
- b. Provide a viable alternative to the single occupant vehicle (SOV).
- c. Provide effective intermodal connections between passenger modes.
- d. Raise awareness within the region of the role of public transportation.

6. Land Use

- a. Support urban growth boundaries, urban nodes, residential centers, and employment centers identified in the comprehensive plans of Kittitas and Grant Counties, and the Cities of Ellensburg and Moses Lake. Support planning efforts to deal with growth throughout the QUADCO region, including non-GMA counties, to meet current and future needs.
- b. Address conditions under which access to adjacent land uses is to be enhanced and conversely, conditions under which movement between the regional transportation system and adjacent land uses is to be discouraged.
- c. Identify and encourage preservation of transportation corridors for future rights-of-way.
- d. Implement transportation improvements which enhance the likelihood that improvement of inadequate regional infrastructure, in particular, water, sewer, and other utility systems will occur.

Profile of the QUADCO Region

Physical Features

Existing and proposed land uses are an integral component of transportation planning. The Growth Management Act requires that the transportation element implemented be consistent with the land use element of the local comprehensive plan.

It can be shown that land use and transportation are inter-related and that land use activities largely determine the travel demand.

QUADCO RTPO covers an area of 9,214 square miles of central and eastern Washington. There are three distinct sub regions within the area, each of which has unique characteristics that shape the transportation system into internally dependent local area networks. The backbone or lifeblood of these sub regions are the farm-to-market, or haul road systems, even though they are not necessarily the same in every portion of the region. The condition and accessibility of these roads is vital to regional economic development and require as much attention as major transportation facilities to meet current needs.

- The drylands of Lincoln, Adams, and Grant Counties with their emphasis on grain production, and destination recreation;
- The irrigated areas of Grant County, Adams County Panhandle, and a large part of Kittitas County with their emphasis on perishable products, orchards and the timothy hay industry; and
- The remainder of Kittitas County has a focus on urban, service industries, agricultural industries, timber industries as well as recreational facilities and opportunities.

The success of all these enterprises is highly dependent upon an efficient transportation system that connects state produced commodities with their respective markets.

In general the region includes the higher elevations as well as the eastern ridges and foothills of the Cascade Range. This type of terrain is exclusively found within Kittitas County, mostly to the west of the City of Ellensburg in the areas usually referred to as Upper Kittitas County. Much of the balance of this county (Lower Kittitas) and a sizable portion of western Grant County consist naturally of low hills with scabland vegetation. Similar terrains as well as considerably flatter portions of central and eastern Grant County and western Adams County have been irrigated under the U.S. Bureau of Reclamation's Columbia Basin Project. Portions of lower Kittitas County are also irrigated. Much of the balance of Adams County and almost the entire area of Lincoln County rest in the channeled scablands area with limited irrigation.

Other significant physical features include the Columbia River and its constituent lakes, Drumheller Canyon, Moses Lake and the surrounding Potholes area, the Saddle Mountains, and the Palouse Hills. The Columbia River remains navigable to a point just upriver from the southern boundary of the region. Banks Lake and Lake Roosevelt are two reservoirs of the Columbia River located in the northern portions of the region which feature prominently in their recreational amenities. Moses Lake and its surrounding water bodies located near to the center of the region offer a similar recreational opportunity. The Saddle Mountains trend east/west and separate the area around the town of Mattawa from the balance of Grant County. The Mattawa side of these hills is called the Wahluke Slope with the northern side being referred to as the Royal Slope. Although both the lower Mattawa area and the lower

portion of the Royal Slope area are irrigated, the remainder of the Saddle Mountains area is not. Its economic activity is focused on hunting and wildlife observation. The Palouse Hills are a feature located further to the southeast, encompassing about one quarter of Adams County with this type of terrain. The northern portion of the Palouse Hills includes Sprague Lake and surrounding areas that have recreational amenities.

In Upper Kittitas County evergreen forests have featured prominently in that region's economy. Elsewhere, the natural vegetation is of desert and steppe varieties that are being replaced by irrigated crop agriculture within the Columbia Basin Project area.

Population Trends

The four-county area had a combined population of 134,672 as determined by the 2000 census. This represents almost 2.3 percent of the state population. The 2006 estimate of population in the region is 145,500. It is significant to note that approximately 45% of the regions population is located in unincorporated areas, demonstrating the strong agricultural orientation of the region. Historical population growth is shown in Table 1 for each jurisdiction within the region, including the percentage increase between 1990 and 2000.

Although sparsely populated, the QUADCO region's population is growing fast, up 30 percent from 1990 to 2000. Grant County population is up 36 percent from 1990 to 2000 and was the third fastest growing county in the state. Several communities have had more than 25% growth between the 1990 and 2000 census, these are highlighted in Figure 1. Nine communities in Grant County had high growth rates, including: Ephrata, George, Mattawa, Moses Lake, Quincy, Royal City, Soap Lake, Warden and Wilson Creek. The greatest percentage increase was shown in Mattawa at 177%, this area has been a growing area for orchards. Much of this growth can likely be attributed to the proximity to Moses Lake and the I-90 corridor. Some smaller communities are experiencing large lot residential development. Processing of agricultural and industrial products has grown in recent years and housing prices in these nearby communities to Moses Lake are more affordable. Two Adams County cities, Othello and Hatton, had growth greater than 25%. This may be attributable in part to their proximity to Moses Lake as well, however the City of Othello has a certain critical mass as well and is experiencing growth in processing and manufacturing. Reardan, in Lincoln County, was the only city to experience substantial growth which is likely due to it's close proximity to the City of Spokane. Both Ellensburg and Cle Elum in Kittitas County had growth greater than 25% during the 1990's.

The growth in the QUADCO region is attributed to the fact that a significant portion of employment is in the private sector. As agricultural lands in other parts of the state and nation become less desirable, farming in the QUADCO region, with its abundance of sub-regional farm-to-market roads and major transportation facilities has experienced economic growth over the past several years.

Table 1. Historical Population by Jurisdiction

<u>County/ Municipality</u>	<u>Year of Incorporation or Formation</u>	<u>Decennial Census Data</u>				<u>Estimate 2006</u>	<u>% Change 1990-2000</u>
		<u>1970</u>	<u>1980</u>	<u>1990</u>	<u>2000</u>		
Adams	1883	12,014	13,267	13,603	16,428	17,300	21%
Unincorporated		5,018	6,031	6,466	7,905	8,435	22%
Incorporated		6,996	7,236	7,137	8,523	8,865	19%
Hatton	1907	60	81	71	98	105	38%
Lind	1902	622	567	472	582	565	23%
Othello	1910	4,122	4,522	4,638	5,847	6,205	26%
Ritzville	1890	1,876	1,800	1,725	1,736	1,730	1%
Washtucna	1903	316	266	231	260	260	13%
Grant	1909	41,881	48,522	54,798	74,698	80,600	36%
Unincorporated		15,212	20,568	25,282	35,797	38,455	42%
Incorporated		26,669	27,954	29,516	38,901	42,145	32%
Coulee City	1907	558	510	568	600	600	6%
Coulee Dam <i>part</i>	1959	1,425	1,439	1,127	4	0	-100%
Electric City	1950	651	927	910	922	955	1%
Ephrata	1909	5,255	5,359	5,349	6,808	6,950	27%
George	1961	273	261	324	528	530	63%
Grand Coulee	1935	1,302	1,180	984	897	930	-9%
Hartline	1907	189	165	176	134	135	-24%
Krupp	1911	52	87	53	60	60	13%
Mattawa	1958	180	299	941	2,609	3,330	177%
Moses Lake	1938	10,310	10,629	11,235	14,953	16,830	33%
Quincy	1907	3,237	3,525	3,734	5,044	5,395	35%
Royal City	1962	477	676	1,104	1,823	1,875	65%
Soap Lake	1919	1,064	1,196	1,203	1,733	1,740	44%
Warden	1910	1,254	1,479	1,639	2,544	2,575	55%
Westlake	1957	258	-	-	-	-	-
Wilson Creek	1903	184	222	169	242	240	43%
Kittitas	1883	25,039	24,877	26,725	33,362	37,400	25%
Unincorporated		7,704	9,109	10,418	13,614	15,780	31%
Incorporated		17,335	15,768	16,307	19,748	21,620	21%
Cle Elum	1902	1,725	1,773	1,778	1,755	1,810	-1%
Ellensburg	1883	13,568	11,755	12,360	15,414	17,080	25%
Kittitas	1931	637	853	843	1,105	1,135	31%
Roslyn	1890	1,031	938	869	1,017	1,020	17%
South Cle Elum	1911	374	449	457	457	575	0%

Table 1. (continued)

<u>County/ Municipality</u>	<u>Year of Incorporation or Formation</u>	<u>Decennial Census Data</u>				<i>Estimate</i>	<u>% Change 1990-2000</u>
		<u>1970</u>	<u>1980</u>	<u>1990</u>	<u>2000</u>	<u>2006</u>	
Lincoln	1883	9,572	9,604	8,864	10,184	10,200	15%
Unincorporated		3,932	3,778	3,669	4,520	4,540	23%
Incorporated		5640	5826	5195	5,664	5,660	9%
Almira	1904	376	349	310	302	280	-3%
Creston	1903	325	318	230	232	255	1%
Davenport	1890	1,363	1,550	1,502	1,730	1,745	15%
Harrington	1902	489	507	449	431	420	-4%
Odessa	1902	1,074	1,009	943	957	950	1%
Reardan	1903	389	498	488	608	620	25%
Sprague	1883	550	473	410	490	495	20%
Wilbur	1890	1,074	1,122	863	914	895	6%
Total Counties		88,506	96,270	103,990	134,672	145,500	30%
Unincorporated		31,866	39,486	45,835	61,836	67,210	35%
Incorporated		56,640	56,784	58,155	72,836	78,290	25%

Source: Washington State Office of Financial Management, April 1, 2006

Population forecasts for each county are prepared by the State of Washington. The percentage share of each city's population of the county has been carried into the future to prepare Table 2.

Table 2. Population Forecasts by Jurisdiction

County/ Municipality	<u>Census</u>	<u>Estimate</u>	<u>Forecast</u>			
	2000	2006	2010	2015	2020	2025
Adams	16,428	17,300	19,853	21,489	23,136	24,766
<i>Hatton</i>	98	105	119	129	139	149
<i>Lind</i>	582	565	675	731	787	842
<i>Othello</i>	5,847	6,205	6,750	7,306	7,866	8,420
<i>Ritzville</i>	1,736	1,730	2,581	2,794	3,008	3,220
<i>Washtucna</i>	260	260	397	430	463	495
Grant	74,698	80,600	96,502	104,523	111,029	117,459
<i>Coulee City</i>	600	600	612	663	705	745
<i>Electric City</i>	922	955	941	1,019	1,083	1,145
<i>Ephrata</i>	6,808	6,950	7,863	8,517	9,047	9,571
<i>George</i>	528	530	610	661	702	742
<i>Grand Coulee</i>	897	930	974	1,055	1,120	1,185
<i>Hartline</i>	134	135	137	148	157	166
<i>Krupp</i>	60	60	61	66	70	75
<i>Mattawa</i>	2,609	3,330	4,414	4,781	5,078	5,372
<i>Moses Lake</i>	14,953	16,830	19,581	21,209	22,529	23,834
<i>Quincy</i>	5,044	5,395	5,826	6,310	6,703	7,091
<i>Royal City</i>	1,823	1,875	2,387	2,586	2,747	2,906
<i>Soap Lake</i>	1,733	1,740	2,002	2,168	2,303	2,436
<i>Warden</i>	2,544	2,575	3,128	3,388	3,599	3,807
<i>Wilson Creek</i>	242	240	247	268	284	301
Kittitas	33,362	37,400	0,545	44,806	48,796	52,810
<i>Cle Elum</i>	1,755	1,810	7,704	8,513	9,271	10,034
<i>Ellensburg</i>	15,414	17,080	18,245	20,163	21,958	23,765
<i>Kittitas</i>	1,105	1,135	1,216	1,344	1,464	1,584
<i>Roslyn</i>	1,017	1,020	1,014	1,120	1,220	1,320
<i>South Cle Elum</i>	457	575	811	896	976	1,056
Lincoln	10,184	10,200	10,386	11,004	11,918	12,802
<i>Almira</i>	302	280	308	326	353	380
<i>Creston</i>	232	255	237	251	272	292
<i>Davenport</i>	1,730	1,745	1,764	1,869	2,025	2,175
<i>Harrington</i>	431	420	440	466	504	542
<i>Odessa</i>	957	950	976	1,034	1,120	1,203
<i>Reardan</i>	608	620	620	657	712	764
<i>Sprague</i>	490	495	500	529	573	616
<i>Wilbur</i>	914	895	932	988	1,070	1,149

Source: Population Distribution - Adams County Comp Plan approved Feb, 2005 (used OFM High Series for Pop. Growth)
Grant County Comp Plan approve 1998 (used OFM High Series)
Kittitas County Comp Plan update 2006 (used OFM High Series)
Lincoln County used year 2000 distribution (assumed OFM Intermediate Series based on historic growth)

Economic Activity

Agriculture is the predominant economic activity in the region. The more intense agricultural areas of the region are located within the irrigated lands of the Columbia Basin. Crops include potatoes, various vegetables, and specialty plants and seeds. Some of the more labor-intensive agriculture is within the fruit orchards primarily in southern Grant County. The dry land portion of Adams, Lincoln, and northern Grant County produce less-intensive crops such as wheat and barley. Within the dry land area of the region there are portions that are irrigated by well water, thus producing higher density crops than the true dry land areas. Forestry remains an important primary activity in Upper Kittitas County although it has diminished as a result of market and environmental considerations. Livestock is raised throughout the region and pasture grazing is the principal economic activity in portions of northeastern Kittitas County and the Palouse Hills portion of Adams County. Portions of Kittitas and Lincoln Counties also have well irrigated croplands outside of the Columbia Basin Project.

The total acreage within the region under cultivation for each type of crop varies greatly over time due to normal crop rotation. Thus, it is not possible to present a detailed analysis of the production capabilities of the agricultural portion of the region. The ratio of dry to irrigated farming has implications on the demand for transportation facilities. Generally, an acre of irrigated cropland produces eight to nine times more tonnage than an acre of dry land. An acre of orchards is even more productive than other irrigated land and yields about 20 times more product than an acre of dry land. Although there is not a one-to-one relationship between tonnage produced and subsequently shipped on the regional transportation system, there is enough of a correlation to clearly indicate that shipments associated with the irrigated lands are considerably more frequent and heavier than those from dry lands.

The principal population centers of Ellensburg and Moses Lake also function as significant regional economic activity nodes. Growth in the construction trades is increasing significantly in recent years. In particular, the northern portion of Moses Lake near Grant County Airport and the Wheeler Corridor located toward the east of the city are developing centers for light manufacturing, wholesaling, distribution, and retail trade. The area toward the west of Ellensburg near Bowers Field and the Thorp area have similar characteristics although not as developed as the Moses Lake area. Smaller areas such as Quincy and Othello are primarily centers of activity for agriculture related industries such as food processing and fertilizer manufacturing and distribution. However, substantial growth in the Quincy area is underway due to the interest by multiple companies in the fiber systems technology, and the capacity of major communication lines in the Quincy area. Some of the smaller municipalities such as Royal City, Mattawa, Lind, Ritzville, Harrington, Odessa and Sprague, also provide a base for agricultural related industries, although on a lesser scale.

Because, Ellensburg and Moses Lake are centers for major retail, social, medical, and cultural services, large portions of the region are oriented toward urban centers outside of the four counties. Upper Kittitas County is within the sphere of influence of the Puget Sound metropolitan area. Ellensburg and its vicinity are divided between being focused on Puget Sound and Yakima. Southern Grant County, Wahluke Slope and Adams County Panhandle areas are oriented toward the Tri-Cities. The balance of Adams County and all of Lincoln County are influenced by Spokane. The effect of this extra-regional orientation is that a significant proportion of traffic within the region has either an origin or destination outside the region.

This differs from the more metropolitan regions west of the Cascades where most trips are internal.

Recreation and tourism activities in the area generate a large number of trips that either originate or are destined towards the region's many lakes, rivers and mountains. Based on data from the Interagency Committee for Outdoor Recreation, as many as one-third of those enjoying recreational amenities within the region are from outside. Major activities include skiing, boating, camping, hiking, fishing, and hunting in Upper Kittitas County; winery tours, boating, fishing, swimming, and hiking in the Potholes and Bank Lake areas of Grant County; and fishing, boating, wildlife watching and historical touring in portions of northern Adams County and Lincoln County. Major special events in the region include the Ellensburg Rodeo, the laser light show at Coulee Dam and concerts at the Gorge. For many of the recreation activities found in the eastern regions of the state, the people and traffic are generated from the greater Seattle region and travel I-90 through Ellensburg and rely on the goods and services available in Ellensburg and surrounding region.

Regional Transportation System

The four counties of Adams, Grant, Kittitas and Lincoln that comprise the Quad County Regional Transportation Planning Organization (QUADCO) recognize the importance of a multimodal transportation system for the movement of people and goods. This includes roadway networks for passenger cars, buses and trucks. Bicycle and pedestrian systems, transit services and airports serve needs for the movement of passengers as well as some freight and crop services. Although not situated within the region, barging services provided to the south on the Columbia-Snake River system move a significant amount of freight from the region to worldwide markets. Railroads also meet a significant need and provide linkages to the rest of the state and country to move important agricultural products from the region to outside markets. Each of these modes will be discussed below.

Roadway Network Components

In order to fully understand the magnitude of the task of providing an operable transportation system in each county, it is important to consider the full system of county roadways. There are many miles of county roadways in the region as well as local roads that are operated and maintained by the cities in the region. State highways also provide a critical component of the transportation system in linking the region internally as well as to the rest of the state and nation. Typically roadways are functionally classified within each jurisdiction as to the type of service provided. The table below summarizes the mileage of city streets, county roads and state highways by functional classification.

Table 3. Roadway Functionally Classified Mileage by County

Owner/Functional Classification	Adams	Grant	Kittitas	Lincoln	TOTAL
Cities (all combined)	72.00	280.90	102.26	82.72	537.88
County Roads					
Arterial	-	13.79	1.23	18.96	33.98
Collector	668.97	903.59	308.35	639.48	2,520.39
Local Access	1,109.53	1,609.43	251.99	1,333.81	4,304.76
Total	1,778.50	2,526.81	561.56	1,992.26	6,859.12
State Roads					
Interstate Highways	46.65	54.46	104.65	16.18	221.94
Principal State Highways	114.48	102.27	40.26	59.07	316.08
Minor State Highways	0.94	157.37	-	75.60	233.91
Collector State Highways	85.27	51.04	49.72	141.06	327.09
Total	247.34	365.14	194.63	291.91	1,099.02
COMBINED TOTAL	2,097.84	3,172.85	858.45	2,366.89	8,496.02

Source: County Road Administration Board 2006 Annual Report; 2005 Data from WSDOT Revenue & Expenditures Summary

In some areas of the region there are roadways that have significant grades. There are also many roadways that have frequent significant horizontal alignment changes to follow valleys or hillsides. The challenges that arise from such roadways are not insignificant in that they pose maintenance and safety issues. Each of the counties in the region has stewardship of some roadways that have some or all of the following characteristics: gravel surface, narrow lanes, small or non-existent shoulders, no guardrails, seasonal weight restrictions. The table below was prepared to show the extent of roadway surface type for each county within the region.

Table 4. Roadway Surface Type and Total Mileage of County Roads

System Component	County				Total
	Adams	Grant	Kittitas	Lincoln	
Access Roads	1,109.5	1,609.4	252.0	1,333.8	4,304.7
Arterial Roads	669.0	917.4	309.8	658.4	2,554.6
TOTAL System	1,778.5	2,526.8	561.8	1,992.3	6,859.4

Paved Arterial	545.6	830.9	305.7	378.2	2,060.4
Unpaved Arterial	123.4	86.5	4.1	280.3	494.3
Other Paved	104.8	564.5	187.4	62.2	918.9
Other Gravel	993.6	988.8	46.2	1200.2	3,228.8
Dirt	11.1	56.1	18.3	71.4	156.9
TOTAL System	1778.5	2526.8	561.8	1992.3	6,859.4

Source -- County Road Administration Board 2006 Annual Report;
2005 Certified County Road Log.

Examination of Tables 3 and 4 reveals several important characteristics of each county roadway network:

- Total roadway mileage within the 4 counties of all state and local roads combined is nearly 8,500 centerline miles.
- Combined city roadway mileage makes up approximately 6% of the regions total
- County roadway mileage for the 4 counties combined makes up over 80% of the mileage in the region at over 6,850 centerline miles, with just under 3,000 miles being paved
- Nearly 20% of the county arterial roadways are unpaved, with Lincoln County having the largest percentage at nearly 75%, while Kittitas County has only 1% of arterial roads as gravel.
- Some counties have non arterial roadways that are paved.
- Adams, Grant and Lincoln counties each has well over 900 miles of unpaved roads to maintain, some being arterial roads, that provide access to farms in the county.

Freight and Goods Transportation System

Within the four counties there are over 2000 miles of county roadways included in the statewide Freight and Goods System. A summary of mileage in each county is included in Table 5. Interesting to note in the table is the percentage of adequate roads in each county.

Table 5. Freight and Goods System of County Roads

F&GS Truck Route Class	County			
	Adams	Grant	Kittitas	Lincoln
T-1; > 10 million tons/year	0.000	0.000	0.070	0.000
T-2; 4 - 10 millions tons/year	0.530	10.460	5.376	0.000
T-3; 300,000 - 4 M tons/ year	31.575	273.459	239.785	99.490
T-4; 100,000 - 300,000 tons/year	346.750	263.565	59.255	57.120
T-5; 20,000 tons in 60 days	204.500	310.166	3.980	94.557
TOTAL F&GS Mileage	583.355	857.650	308.466	251.167
Total Adequate	177.019	58.490	203.753	0.250
Percent Adequate 2006	30.3%	6.8%	66.1%	0.1%

SOURCE: County Road Log certified 1/1/2006

Adequacy defined by Cost Responsibility Study - All Weather Roads

Interstate 90, designated as a strategic freight corridor, serves as a major east-west facility for freight movement throughout Central Washington. Interstate 90 a National Scenic Byway, transverses 200 miles through the QUADCO region from the summit of Snoqualmie Pass to the Lincoln County line near Spokane. Interstate 90 serves a portion of the intra-regional needs of transporting factory or field processed agricultural products to market. Congestion on I-90 affects the region's delivery of freight to markets and intermodal connections on the west side of the Cascade Mountains. Wintertime closures can interfere with freight movement vital to some segments of the economy in this agricultural region. North-south strategic freight corridors include: US 97, SR 970, I-82, US 395, SR 17, SR 28/281 between I-90 and Wenatchee and SR 243 from Vernita to Vantage, connecting I-90 to the Tri-Cities area to the south. U Road in Grant County provides for significant amount of traffic north-south parallel to SR 17 to get to the Columbia River. East-west strategic freight corridors include: I-90, US 2, SR 24, SR 26, and SR 28. These highways provide corridors for inter-regional transporting of products passing through the state from destinations as varied as Asia, Mexico, Canada, and the Eastern Seaboard.

The fruit and potato industries centered in QUADCO are particularly significant creators of freight truck traffic. The cities of Moses Lake, Quincy and Othello each generate an average of 100 truck trips per day. More than one-third of truck trips originating in this region are destined for Eastern Washington locations delivering, goods and services, supplies, moving crops to storage, or to processors. The largest percentage of truck trips from QUADCO are headed out of state with everything from unprocessed grains to manufactured food products such as eggs, french fries, hay, lumber, and milk. In the past aerial transport of cattle, fruit, machinery, etc was common and may become a necessity in the future if the bridges across the Columbia River were disabled. Area farmers depend on the many aerial

applicators for the care of their crops. Aerial applicators depend on private and local airports to provide service. In addition to the aerial applicators many recreational users and emergency transporters also depend on the many small rural air ports within the region.

Its important to note that dramatic changes such as an increase in fuel prices could result in a decline in truck traffic along the principal through corridors of the region with a corresponding increase along local arterials and collectors serving the existing rail stations within and adjacent to the region. Like wise it is expected that environmental considerations related to salmon will result in the ongoing seasonal draw downs of the Columbia River being mandated. Any such action will hinder navigation and thus have a significant impact on dryland grain from the Quad County region presently destined for Columbia and Snake River ports. Both of these issues are likely to result in shifting local traffic patterns to local rail ports and some of this traffic will be directed onto the US- 395 corridor toward ether the Pasco barge terminal or via the same corridor directly to down river and coastal ports such as Portland.

Types of freight moved by rail include grain, intermodal trailers, containers, lumber and various agriculture products.

Bridges

Several bridges on the county roadway system have been constructed in order serve a vital role to make important connections between areas of the county and to provide a complete roadway system that accesses farms and cities throughout the region. These bridges must be maintained as well. Table 6 summarizes the number of bridges by county.

Table 6. Bridge Data By County by Year

Adams County							Grant County					
Year	County Owned Bridges	Bridges Posted or May Consider Posting		Bridges with Posting Not Required		Deficient Bridges *	County Owned Bridges	Bridges Posted or May Consider Posting		Bridges with Posting Not Required		Deficient Bridges*
		FAR	NFAR	FAR	NFAR			FAR	NFAR	FAR	NFAR	
1999	124	8	33	27	56	8	181	6	36	41	98	26
2000	124	3	16	32	73	15	182	2	22	45	113	26
2001	123	2	15	34	72	17	185	3	21	45	114	26
2002	124	1	19	35	69	22	184	3	17	45	119	25
2003	124	2	18	34	70	24	184	3	15	45	121	26
2004	124	1	18	35	70	27	187	3	8	45	131	21
2005	123	1	14	36	72	26	187	3	12	45	127	21
2006	123	1	13	36	73	26	189	2	7	46	131	17

Table 6. (continued)

Year	Kittitas County						Lincoln County					
	County Owned Bridges	Bridges Posted or May Consider Posting		Bridges with Posting Not Required		Deficient Bridges *	County Owned Bridges	Bridges Posted or May Consider Posting		Bridges with Posting Not Required		Deficient Bridges*
		FAR	NFAR	FAR	NFAR			FAR	NFAR	FAR	NFAR	
1999	106	8	23	13	62	11	123	6	29	22	66	11
2000	106	8	18	18	62	13	124	1	16	30	77	13
2001	106	8	18	18	62	9	125	0	15	31	79	15
2002	106	8	18	18	62	12	125	0	15	31	79	18
2003	114	7	17	20	70	9	125	0	15	31	79	18
2004	110	5	15	22	68	6	125	0	13	31	81	17
2005	110	5	15	22	68	6	125	0	12	31	82	16
2006	114	5	15	26	68	5	125	0	10	31	84	14

Source: CRAB Annual Reports

Bridges 20 Feet or Greater in Length

* FAR = Federal Aid

** NFAR = Non-Federal Aid

*** Deficient Bridges are listed as Structurally Deficient or Functionally Obsolete

Examination of the table shows that each county has over 100 bridges to maintain, with Grant County having the most with 189. Overall, progress has been made in recent years to reduce the number of bridges requiring posting and also reducing the number of deficient bridges overall. However, year to year comparisons show many instances where the number of bridges requiring posting was reduced but the number of deficient bridges increased. This is illustrative of an aging infrastructure. Adams County Public Works department indicates that there are a number of structures that cross canals that have been in place for over 50 years. Many of these have served their useful life and will need replacing in the near future. This information is borne out in the table.

Also significant in the maintaining of the roadway system is the number of structures less than 20 feet in length. The replacement of these structures does not have a designated funding source and can expend a significant portion of county maintenance funds. Data obtained from County Engineers indicates the magnitude of these structures that must be maintained and is shown in Table 7. It is certain that cities also have to maintain these structures as well, however data is not as readily accessible.

Table 7. Small Structures by County

	<u>Adams</u>	<u>Grant</u>	<u>Kittitas</u>	<u>Lincoln</u>	<u>TOTAL</u>
Number of Small Structures < 20 ft	161	23	155	80	419

Roadways of regional significance have been identified. Within each county roadways were considered that fit the definition of “regional” taken from RCW 47.80.030.

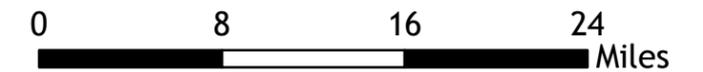
- (i) Crosses member county lines;
- (ii) Is or will be used by a significant number of people who live or work outside the county in which the facility, service, or project is located;
- (iii) Significant impacts are expected to be felt in more than one county;
- (iv) Potentially adverse impacts of the facility, service, program, or project can be better avoided or mitigated through adherence to regional policies;
- (v) Transportation needs addressed by a project have been identified by the regional transportation planning process and the remedy is deemed to have regional significance; and
- (vi) Provides for system continuity;

By definition all state highways are considered to have regional significance. Since many roads are used to haul grain and other produce to market outside the region all roads on the Freight and Goods System are also considered to be of regional significance. Other functionally classified roads provide access to recreational facilities in the region that attract visitors statewide as well. All railroads, airports, transit systems and non-motorized facilities are considered to be regionally significant as well. Regionally significant roads and other transportation system components discussed below are shown for each county in Figures 2 - 5. The Goods and Freight Systems Roadways and the classifications are shown in Figure 6.

River Transportation

The Columbia - Snake River system serves an important function for the QUADCO region as it provides the means to transport significant amounts of grain and other commodities that are produced in the region. Columbia River system provides links to port districts from Grant County in the north to the Port of Lewiston to the east, and also provides access to the Pacific Ocean via the Port of Pasco to the south. This system constitutes about 465 river miles from the mouth of the Columbia River. The ability to provide barge service to central Washington is critical in maintaining multi-modal competitiveness and in providing locally produced agricultural products to world-wide markets.

The Columbia River forms the border between Grant and Kittitas counties as well as the northern border of Grant and Lincoln counties. It is a significant body of water that provides many recreational opportunities throughout much of the region with State Parks and many regional and local parks as well. Moses Lake and the surrounding Potholes also are an attraction to many within the region as well as throughout the state.



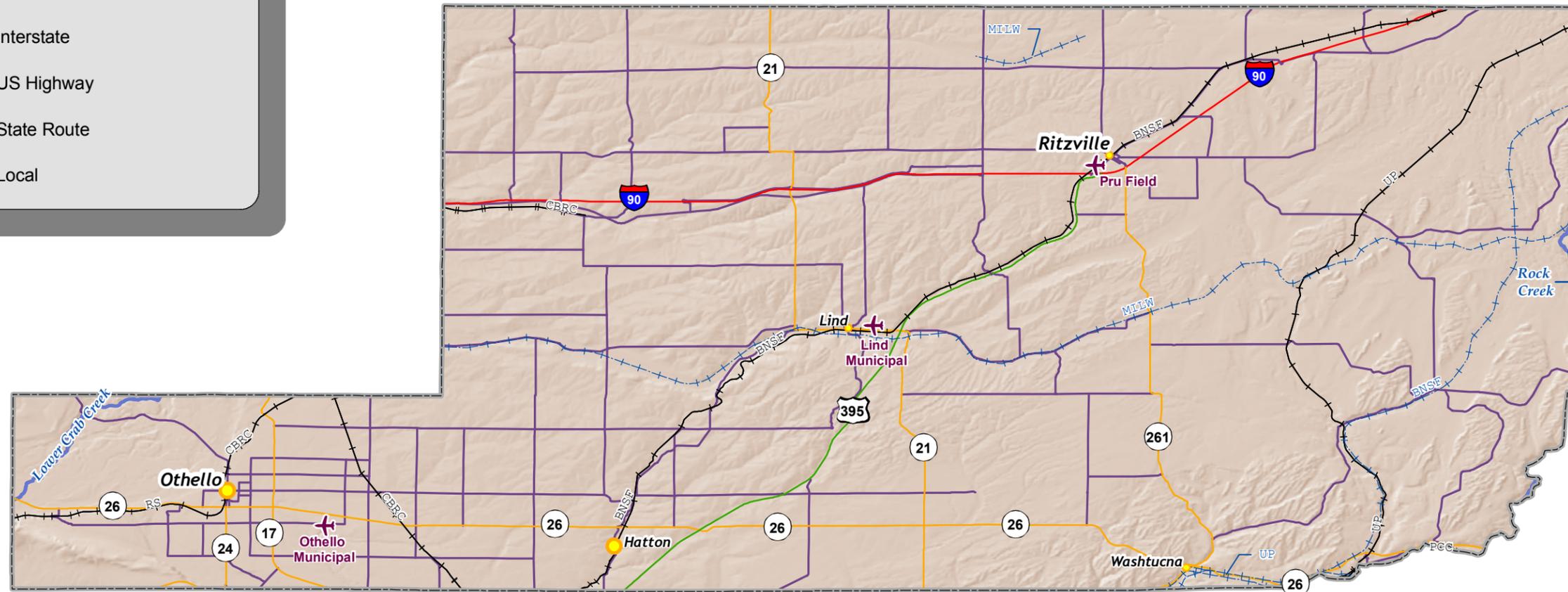
Legend

- State System Airports
- City Pop Growth (1990-2000)**
- <=25%
- >=25%
- Abandoned Railroad
- Railroad

Roadways

By Type

- Interstate
- US Highway
- State Route
- Local



**QUAD-CO Regional
Transportation Plan Update**

**Regional Transportation
Facilities
Adams County**

Figure 2

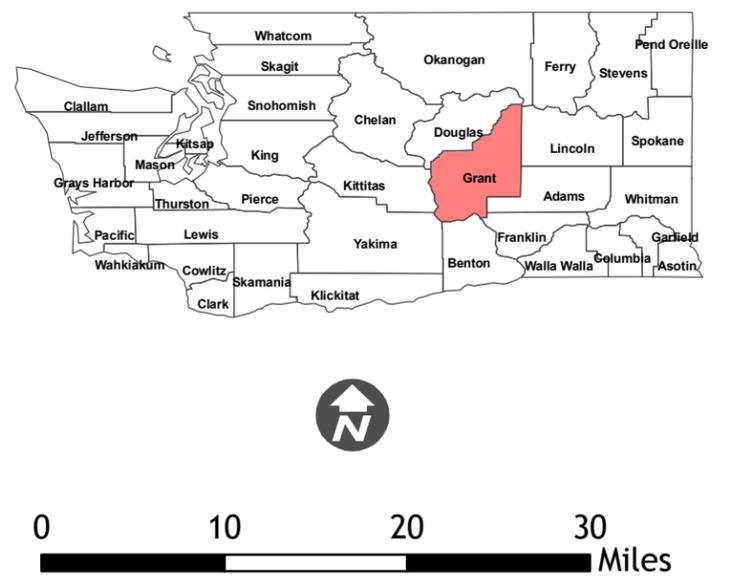
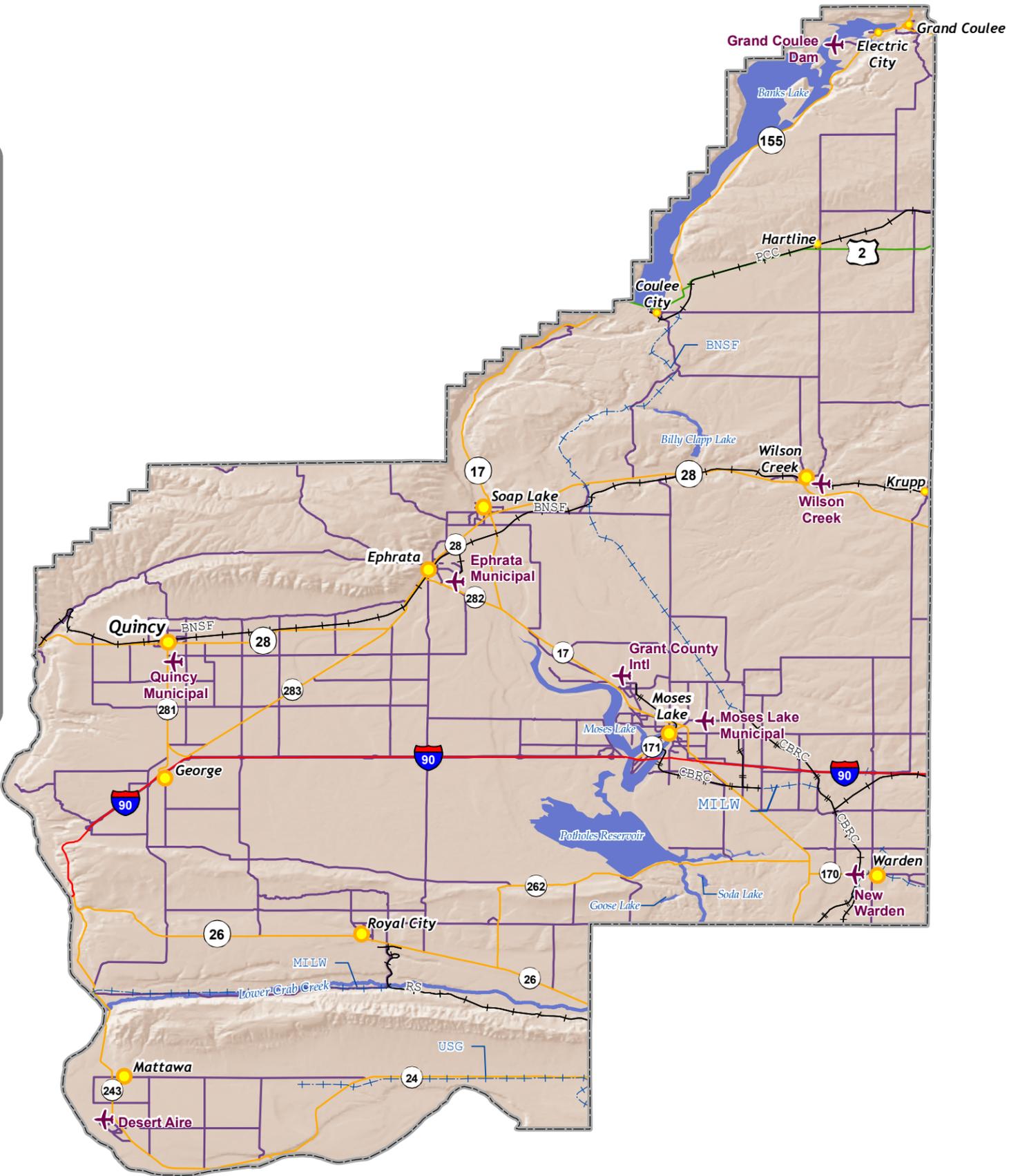
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- State System Airports
- City Pop Growth (1990-2000)**
- <=25%
- >=25%
- Abandoned Railroad
- Railroad

Roadways

By Type

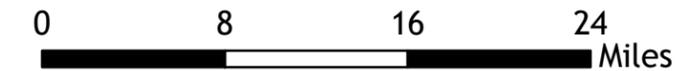
- Interstate
- US Highway
- State Route
- Local



**QUAD-CO Regional
Transportation Plan Update**

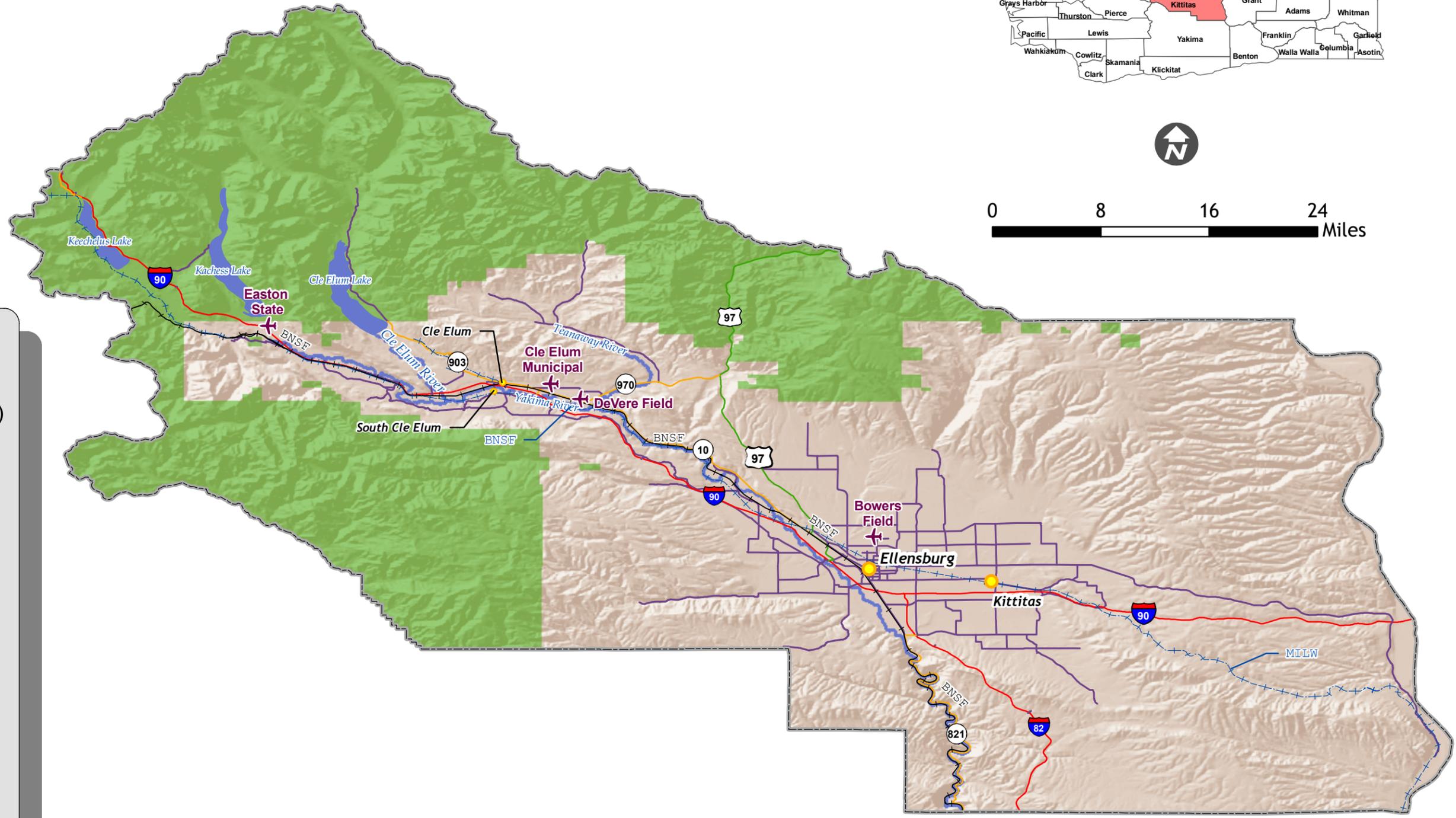
**Regional Transportation
Facilities
Grant County**

Figure 3



Legend

- State System Airports
- City Pop Growth (1990-2000)**
 - <=25%
 - >=25%
- Abandoned Railroad
- Railroad
- Roadways**
- By Type**
 - Interstate
 - US Highway
 - State Route
 - Local
 - National Forest



**QUAD-CO Regional
Transportation Plan Update**

**Regional Transportation
Facilities
Kittitas County**

Figure 4

Legend

-  Ferry Terminals
-  State System Airports

City Pop Growth (1990-2000)

-  <=25%
-  >=25%

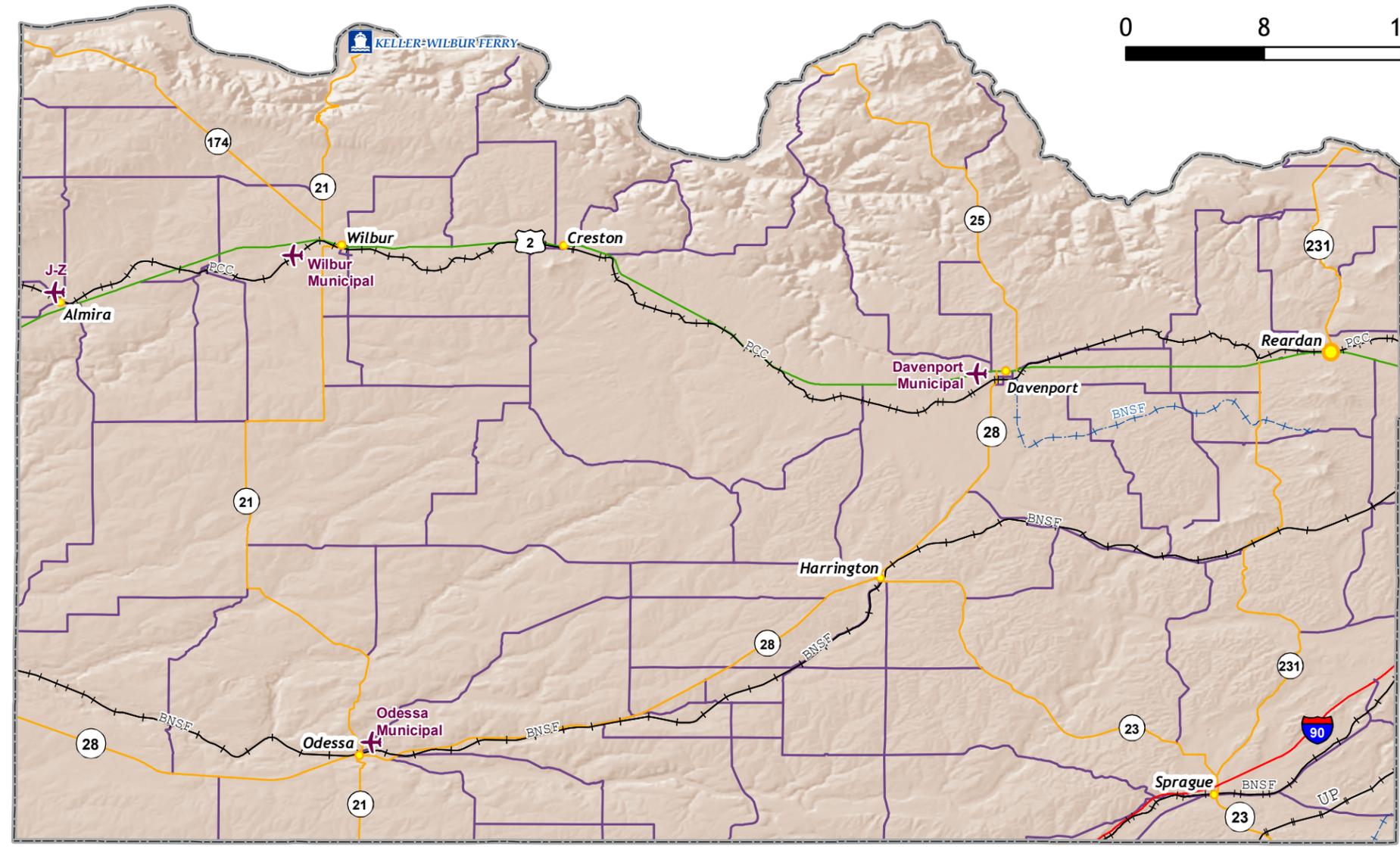
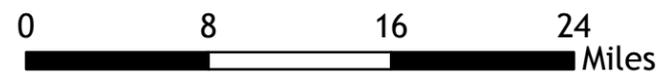
Railroads

-  Railroads
-  Abandoned Railroad

Roadways

By Type

-  Interstate
-  US Highway
-  State Route
-  Local



**QUAD-CO Regional
Transportation Plan Update**

**Regional Transportation
Facilities
Lincoln County**

Figure 5

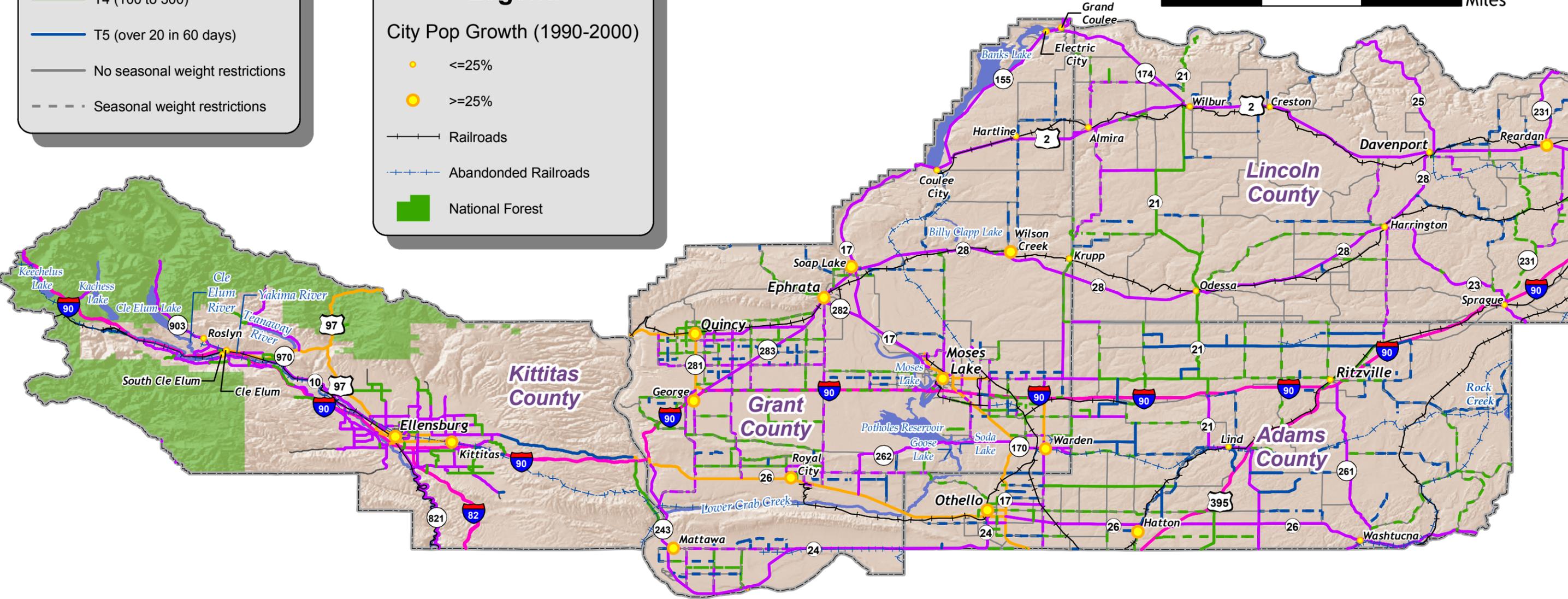
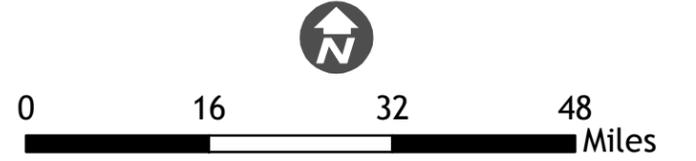
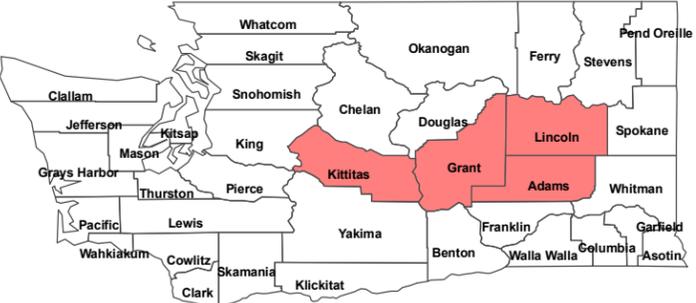
**Tonage Class
T1 - T5
Tons Annual
(in thousands)**

- T1 (over 10,000)
- T2 (4,000 to 10,000)
- T3 (300 to 10,000)
- T4 (100 to 300)
- T5 (over 20 in 60 days)
- No seasonal weight restrictions
- - - Seasonal weight restrictions

Legend

City Pop Growth (1990-2000)

- <=25%
- >=25%
- Railroads
- - - Abandoned Railroads
- National Forest



**QUAD-CO Regional
Transportation Plan Update**

**Freight and Goods
System Roadway
Network**

Figure 6

Railroads

In 2002, there were 497 miles of trackage within the region owned by four freight rail companies:

- The Burlington Northern Santa Fe provides mainline service east-west from the east coast to Seattle through Spokane. Within QUADCO it passes through Lincoln and Grant counties. BNSF also provides service to Portland, Oregon via the Tri-Cities passing through Lincoln and Adams Counties.
- The Union Pacific also provides mainline service to Portland primarily passing through Adams County and The Tri-Cities.
- Columbia Basin Railway provides short-line service to the Moses Lake area as well as Othello with a connection to the BNSF mainline between Spokane and the Tri-Cities.
- Palouse River Coulee City Line traverses the northern portion of Lincoln County as far west as Coulee City with a connection to the BNSF mainline near Spokane

Although in the past other railroads served the region, abandonment of rail lines is critical issue in central Washington. For example, the Royal Slope Railroad 26-mile line between Royal City and Othello is not currently in operation. The Washington State Department of Transportation is in the process of purchasing the Palouse River and Coulee City Railroad in order to maintain this as a viable short line in the region. Many other rail lines have been abandoned over time as shown in Figure 7 along with active rail lines.

A major positive attribute of rail in the QUADCO Region has been the “Grain Train”. This program started in Washington State in 1994 in Walla Walla County to help farmers get grain to market. Local Port Districts worked with the state of Washington and the federal government to purchase grain hopper cars which are now locally owned. The program has expanded to Moses Lake in 2000. These Grain Trains help to prevent damage to highways by reducing the number of heavy trucks carrying grain to deep water ports for more than 2,500 cooperative members/farmers.

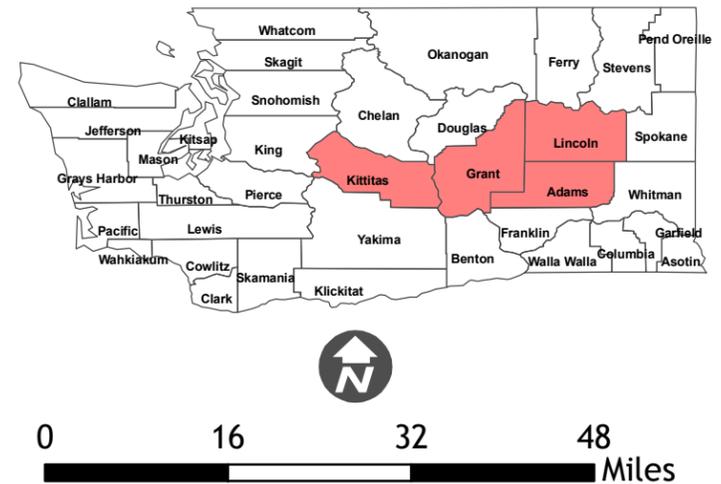
Airports

There are 139 public-use airports in the state of Washington, with 19 of them serving the QUADCO region, the second highest number of airports of any region in the state. These airports serve an important function of the overall regional transportation system. Figure 8 depicts the airport locations. QUADCO airports serve a variety of general aviation functions including personal and business travel, air ambulance access, flight training, aircraft testing, agricultural spraying, recreational flying, and other uses. Scheduled commercial air service is not provided at any of the airports and air freight does not make up a significant portion of the traffic.

Of the 19 airports in the Quad County region 10 are included in the FAA’s National Plan of Integrated Airport Systems (NPIAS). The National Plan of Integrated Airport Systems (NPIAS) identifies more than 3,300 airports that are significant to national air transportation and thus eligible to receive Federal grants under the Airport Improvement Program (AIP). The remaining 9 non-NPIAS airports are not eligible to receive Federal grants and must fund planning and improvement projects locally. Funding assistance can also be obtained from the State, when

Railroad System Key

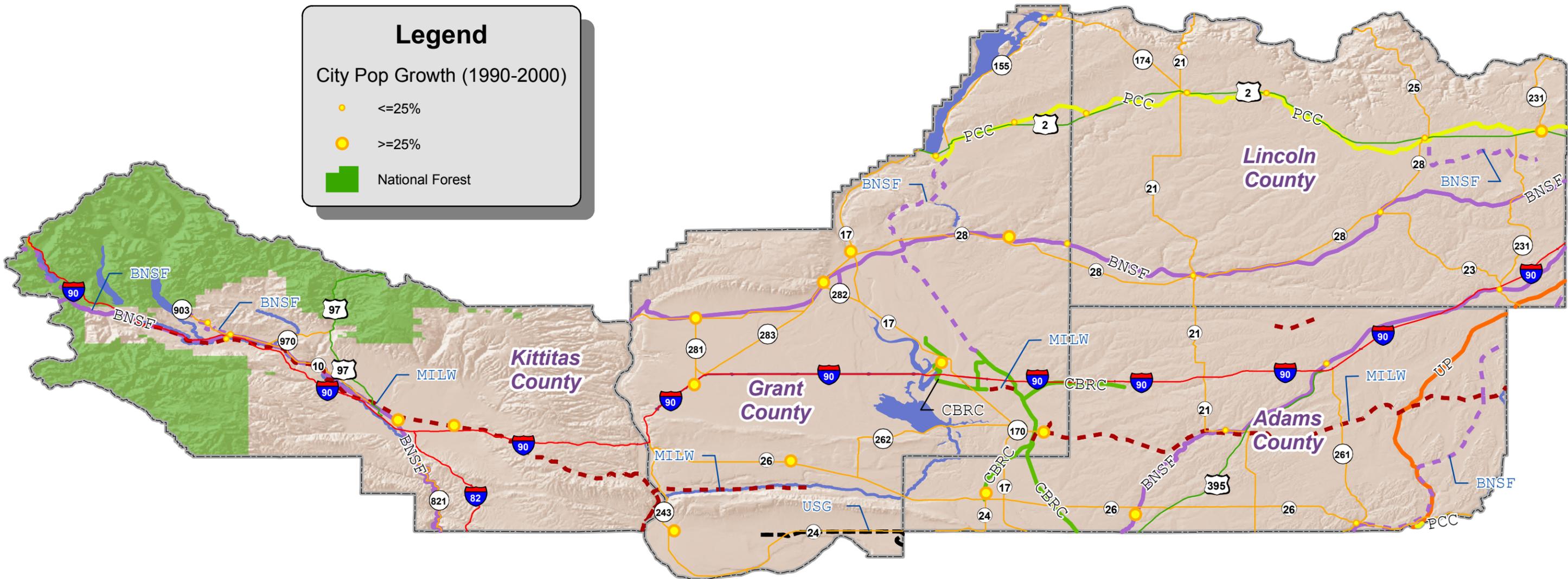
Railroads		Abandoned Railroads	
	BNSF = Burlington Northern & Santa Fe		BNSF = Burlington Northern & Santa Fe
	CBRC = Columbia Basin Railroad Company		MILW = Chicago, Milwaukee, St. Paul & Pacific
	PCC = Palouse River & Coulee City		USG = US Government
	UP = Union Pacific		

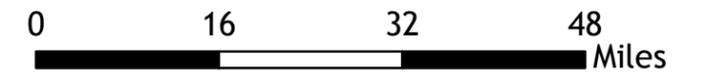


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City Pop Growth (1990-2000)

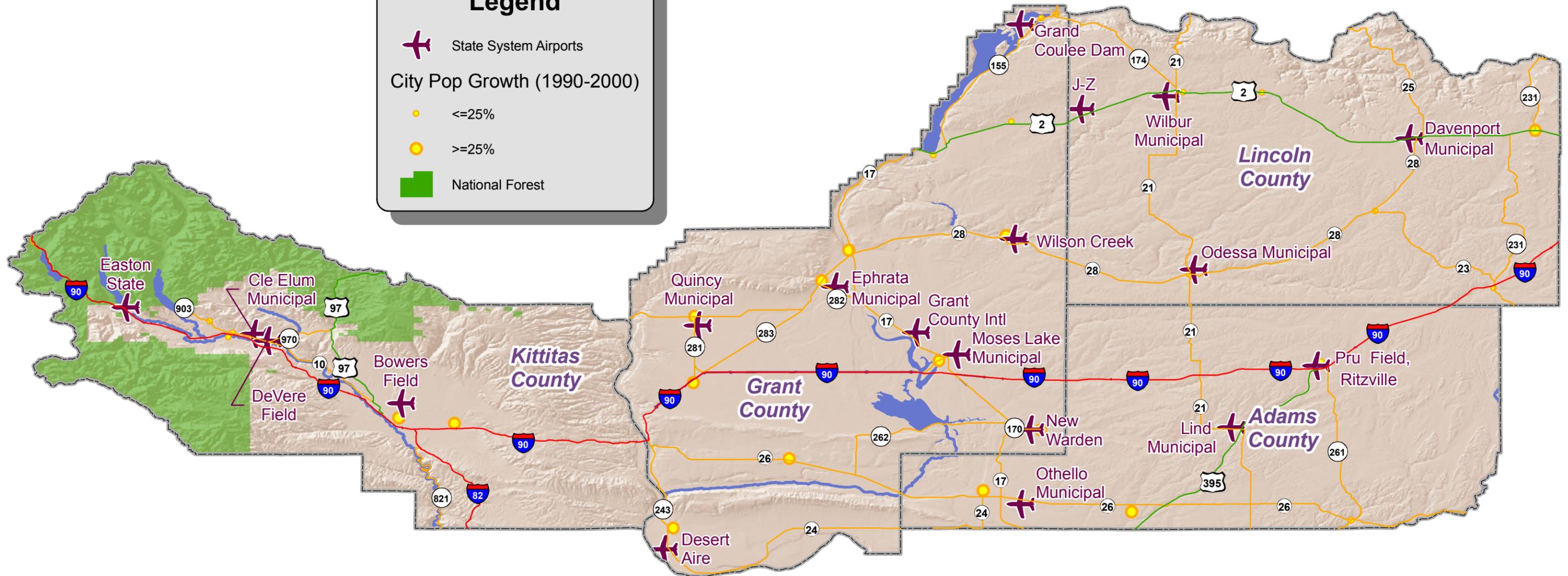
-  ≤25%
-  ≥25%
-  National Forest





Legend

-  State System Airports
- City Pop Growth (1990-2000)**
-  <=25%
-  >=25%
-  National Forest



available, through the Washington State Department of Transportation's Local Airport Aid Grant Program.

A summary of basic airport information is listed in Table 8 below. More detailed information regarding each runway at the airports within the region is included in Appendix B. Most of the airports in the Quad County region have performed recent master plan or airport layout plan (ALP) updates. These documents serve as an official inventory of existing airport facilities and provide planning guidance for future airport development. An ALP is required for an airport to receive FAA grant assistance. According to available information, the airports in need of ALP updates are Easton State, J-Z, Lind Municipal, Moses Lake Municipal, New Warden Municipal, and Quincy Municipal. The estimated total number of aircraft based at each airport and the total annual airport operations are also shown in Table 8. Airport operations consist of the number of take-offs and landings at an airport. The definition of one operation is either a take-off or landing. Operations are grouped into two types of operations: local and itinerant.

- (1) Local operations mean operations performed by aircraft that:
 - (i) Operate in the local traffic pattern or within sight of the airport;
 - (ii) Are known to be departing for, or arriving from flight in local practice areas located within a 20-mile radius of the airport; or
 - (iii) Execute simulated instrument approaches or low passes at the airport.
- (2) Itinerant operations mean all aircraft operations other than local operations.

The total annual operations for the QUADCO airports are estimated to be nearly 343,000. For perspective, this total is roughly equivalent to the total annual operations reported for Seattle-Tacoma International Airport (342,000), a major commercial airport. A breakdown of the types of air traffic seen at the QUADCO airports is shown in Table 9.

Currently there is no scheduled air transportation service to any of the QUADCO airports. Until recently, scheduled service was available through Moses Lake's Grant County International Airport. Service was subsidized by the Essential Air Service Program (EAS), a federal program designed to maintain a minimal level of scheduled air service to communities which otherwise would not be profitable. However, the subsidy for Grant County International Airport was terminated in August 2006 and scheduled service was discontinued on September 1, 2006. Therefore, the 10% commuter traffic reported for Grant County International Airport is not currently accurate but may be again if the Port of Moses Lake is successful in attracting another airline to serve the airport.

Limited air taxi services are reported at three QUADCO airports: Grant County International, Bowers Field, and De Vere Field. Air taxi services are not expected to increase significantly in the near term.

All data reported in Tables 8 and 9 was obtained from current FAA Airport Master Records (Form 5010). Whenever possible, the data was verified during telephone conversations with airport managers and sponsors.

Table 8. Airport Details Summary

Airport	Owner	NPIAS Airport	2005 Annual Operations	Local Based Aircraft (see Note 1)	Latest ALP
Bowers Field	Kittitas County	Yes	60,445	49	2004
Cle Elum Municipal	City of Cle Elum	Yes	5,500	4	2007
Davenport	City of Davenport	Yes	7,000	16	2007
De Vere Field	James De Vere	No	3,245	5	
Desert Aire	Desert Aire Owner's Assoc.	No	2,750	11	2006
Easton State	WSDOT Aviation	No	<300	0	
Ephrata Municipal	Grant Co. Port District No. 9	Yes	135,140	26	2004
Grand Coulee Dam	Grant Co. Port District No. 7	Yes	13,000	7	2006
Grant County	Port of Moses Lake	Yes	102,479	95	2005
J-Z	Town of Almira	No	20	0	
Lind Municipal	City of Lind	No	8,000	2	
Moses Lake Municipal	City of Moses Lake	No	21,500	41	
New Warden Municipal	City of Warden	No	4,300	3	1995
Odessa Municipal	City of Odessa	Yes	9,000	10	2006
Othello Municipal	Port of Othello	Yes	30,000	22	2006
Pru Field	City of Ritzville	Yes	6,200	5	2003
Quincy Municipal	City of Quincy	No	3,800	6	
Wilbur Municipal	City of Wilbur	Yes	9,300	14	2006
Wilson Creek	Town of Wilson Creek	No	140	1	2006
Totals:			342,879	264	

1. Based Aircraft Counts are Based on Current FAA Form 5010 Data.

Northwest MedStar provides frequent air ambulance service to nine QUADCO Airports shown in Table 10, although all airports in the region can be used as pickup points. This on-demand service provides a vital link between local medical facilities and more capable medical centers in Seattle, Spokane, and the Tri-Cities. A representative from Northwest MedStar expressed an interest in having Automated Weather Observation System (AWOS) equipment installed at the airports they frequent. These systems provide real-time local weather critical to the safety of their short-notice landing and takeoff operations.

Table 9. Airport Operations Summary

Airport	2005 Annual Operations	Operations Breakdown (see Note 1)					
		Military (%)	Air Taxi (%)	Commuter (%)	Local General Aviation (%)	Itinerant General Aviation (%)	Total General Aviation (%)
Bowers Field	60,445	1	3		54	42	100
Cle Elum Municipal	5,500				36	64	100
Davenport	7,000				71	29	100
De Vere Field	3,245	1.5	1.5		77	20	100
Desert Aire	2,750				9	91	100
Easton State	<300					100	100
Ephrata Municipal	135,140				72	28	100
Grand Coulee Dam	13,000				38	62	100
Grant County	102,479	30	5	10 (see Note 2)	22	33	90
J-Z	20				100		100
Lind Municipal	8,000				88	12	100
Moses Lake Municipal	21,500				23	77	100
New Warden Municipal	4,300				77	23	100
Odessa Municipal	9,000				66	34	100
Othello Municipal	30,000				83	17	100
Pru Field	6,200				21	79	100
Quincy Municipal	3,800				18	82	100
Wilbur Municipal	9,300				57	43	100
Wilson Creek	140				21	79	100

1. Aircraft Operations are Based on Current FAA Form 5010 Data.

2. Scheduled service to Grant County was discontinued on 9-1-06

Table 10. Airports With Frequent Air Ambulance Use

- Bowers Field	- Odessa
- Davenport	- Othello
- Ephrata	- Pru Field
- Grand Coulee	- Quincy
- Grant County	-

One airport, Easton State Airport, is open only during summer months. However, it is considered by the State to be a critical asset used as a stopover for flights transiting nearby mountain passes. The airport also serves as a base for search-and-rescue and firefighting operations.

Airport Capital Improvement Project Needs

Airport Capital Improvement Project (CIP) needs were developed for the QUADCO airports over a ten-year planning period, 2007 to 2016. These projects were divided into two 5-year phases to match the data commonly found in airport master plans. Table 11 depicts an estimate of the CIP needs for the QUADCO airports.

Table 11. Airport Capital Improvement Program

Phase I: Program Years 2007-2011					
Airport	Total	Federal	State	Local	Projects
Bowers Field	\$300,000	\$285,000	\$7,500	\$7,500	Taxilane and Apron Reconstruction
Cle Elum Municipal	\$600,000	\$332,500	\$8,750	\$258,750	Construct Hangars, Runway Reconstruction
Davenport	\$150,000	\$142,500	\$3,750	\$3,750	Runway Safety Area Clearance, Land Acquisition for Runway Extension
De Vere Field	\$ 50,000	-	-	\$50,000	Pavement Maintenance
Desert Aire	\$938,300	-	\$598,845	\$339,455	Construct Taxiway, Extend Parallel Taxiway, Relocate Runway, Rehab. Runway Lighting, Nav aids, Apron Construction, Runway Rehabilitation
Easton State	\$100,000	-	\$100,000	-	Master Plan, Pavement Maintenance
Ephrata Municipal	\$150,000	\$142,500	\$3,750	\$3,750	Pavement Maintenance/Rehabilitation
Grand Coulee Dam	\$500,000	-	-	\$500,000	Fuel System, Hangars
Grant County	\$13,419,976	\$12,749,350	\$335,313	\$335,313	Taxiway Reconstruction, Pavement Maintenance
J-Z	-	-	-	-	None
Lind Municipal	\$150,000	-	-	\$150,000	Runway Lighting, Utilities
Moses Lake Municipal	\$100,000	-	-	\$100,000	Master Plan, Pavement Maintenance
New Warden Municipal	\$200,000	-	-	\$200,000	Master Plan, Runway Rehabilitation, Nav aids
Odessa Municipal	\$150,000	\$142,500	\$3,750	\$3,750	Pavement Maintenance
Othello Municipal	\$5,667,000	\$5,383,650	\$141,675	\$141,675	Pavement Maintenance, Runway Relocation, Taxiway Overlay
Pru Field	\$300,000	\$285,000	7,500	\$7,500	Widen/Rehabilitate Runway, Approach Clearing
Quincy Municipal	\$ 50,000	-	-	\$50,000	Pavement Maintenance
Wilbur Municipal	\$1,203,100	\$983,725	\$109,688	\$109,688	Land Acquisition, Pavement Maintenance, Widen/Extend Runway
Wilson Creek	\$130,494	-	\$101,854	\$28,640	Planning, Runway Overlay, Safety Area Imp., Taxiway Design
Total Needs 2007-2011:	\$24,158,870	\$20,446,725	1,422,375	\$ 2,289,771	

Denotes NPIAS Airport

Table 11. (Continued)

Phase II: Program Years 2012-2016					
Airport	Total	Federal	State	Local	Projects
Bowers Field	\$150,000	\$142,500	\$3,750	\$3,750	Pavement Maintenance
Cle Elum Municipal	\$650,000	\$332,500	\$8,750	\$308,750	Terminal Building, Taxiway Construction, Fencing
Davenport	\$1,000,000	\$950,000	\$25,000	\$25,000	Runway Extension, Pavement Maintenance
De Vere Field	\$50,000	-	-	\$50,000	Pavement Maintenance
Desert Aire	\$672,000	-	\$178,400	\$493,600	T-hangars, Aircraft Parking, Fuel System, Terminal Building, Pavement Maintenance
Easton State	\$50,000	-	\$50,000	-	Pavement Maintenance
Ephrata Municipal	\$150,000	\$142,500	\$3,750	\$3,750	Pavement Maintenance
Grand Coulee Dam	\$350,000	\$332,500	\$8,750	\$8,750	Parallel Taxiway, Aircraft Parking Apron
Grant County	\$11,578,000	\$10,999,100	\$289,450	\$289,450	Pavement Maintenance, Electrical System Upgrades, Runway 4 ILS
J-Z	-	-	-	-	None
Lind Municipal	\$50,000	-	-	\$50,000	Pavement Maintenance
Moses Lake Municipal	\$50,000	-	-	\$50,000	Pavement Maintenance
New Warden Municipal	\$50,000	-	-	\$50,000	Pavement Maintenance
Odessa Municipal	\$150,000	\$142,500	\$3,750	\$3,750	Pavement Maintenance
Othello Municipal	\$389,000	\$355,300	\$9,350	\$24,350	Taxiway Rehabilitation, Tie-Downs
Pru Field	\$150,000	\$142,500	\$3,750	\$3,750	Pavement Maintenance
Quincy Municipal	\$50,000	-	-	\$50,000	Pavement Maintenance
Wilbur Municipal	\$1,043,000	\$922,450	\$60,275	\$60,275	Pavement Maintenance, Industrial Land Acq., Nav aids, Utilities, Maint. Equipment
Wilson Creek	\$565,850	-	\$181,058	\$384,792	Construct Taxiway, Terminal Building, Maintenance, Access Road
Total Needs 2012-2016:	17,147,850	14,461,850	\$826,033	\$1,859,967	
Denotes NPIAS Airport					

Data for the CIP estimate was derived from airport master plans whenever possible. The information was also verified during conversations with airport representatives. When CIP data was not available, or was incomplete, an estimate of airport projects was made based on similar airports and an understanding of likely airport needs. Airport pavements benefit greatly from routine maintenance. A crack seal applied every 3 to 5 years, and a slurry or other rehabilitation process applied every 5 to 7 years, can greatly extend the life of airport pavements. This maintenance cycle was assumed on airports for which CIP data was not available.

A conversation with a representative of J-Z Airport indicated no projects were planned in the near future. The airport sees little traffic (less than 20 reported annual operations) and the turf runway requires relatively little maintenance.

Funding Sources

Funding improvement projects is a challenge common to most of the airports in the Quad County region. Projects that are FAA eligible are supported by shared funding, where 95 percent of the total cost is covered by an FAA grant and 5 percent is covered by the Airport. NPIAS airports receive approximately \$150,000 per year in Non-Primary Entitlement funds from the FAA, dependent upon Congress's yearly reauthorization. Though projects are FAA eligible, this does not ensure that funds will be available or granted to the project by the FAA. The Washington State Department of Transportation Aviation Division can also provide airport grants. These grants are dependent upon available funding and are not guaranteed. In the instance that grants from the FAA and the State fund a project, 95 percent of the project cost is covered by the FAA grant, 2.5 percent of the cost is covered by the State and 2.5 percent is covered by the Airport. Costs for projects that are not eligible for FAA or state funding are applied to developers (as applicable) or to the airport. Though obtaining the local matching funds can still be a challenge, the grant funding allows most of the NPIAS airports to undertake projects beyond routine maintenance, such as improving and expanding facilities and promoting airport growth. Projects that are not eligible for FAA funding include hangar construction and rehabilitation, private hangar and building development, industrial property acquisition, and utility extensions for development.

Non-Motorized Modes

Separate off-road facilities for pedestrian and bicycle use are sparse throughout the region and is limited to points within city limits and in the immediate vicinity of larger urban areas of Moses Lake and Ellensburg. These two cities have higher population densities and a system of sidewalks and bike paths that serves these needs. Trails and Non-Motorized Plans for the Cities of Moses Lake and Ellensburg are included in Appendix C.

In many of the communities sidewalks are the only type of facility for non-motorized transportation. Efforts to increase the quality and quantity of sidewalks have been made in recent years, particularly with the Surface Transportation Program - Enhancement funds made available by the federal government. For example these funds are currently being used by the Town of Wilson Creek to construct a one mile trail that will connect their park with other sidewalks to complete a 2 mile loop serving the Town.

The City of Ellensburg has a substantial amount of foot traffic and bicycle traffic due to the Central Washington University population. In order to improve their pedestrian and bicycle system the City of Ellensburg published a "Non-Motorized Transportation System Plan", in 1997, which identifies pedestrian and bicycle deficiencies as well as a series of recommendations. This City is continually making improvement based on the plans recommendations.

The John Wayne Pioneer Trail is a state managed regional recreational facility within Kittitas County. This trail is 110 miles in length extending from Cedar Falls near North Bend to the Columbia River before Beverly Bridge and attracts 166,000 visitors each year. Within Kittitas County There are 10 locations along the trail that allow visitors to connect to the trail. The City of Ellensburg is continually working on closing the gap in its portion of the trail between the east and west edges of the City. When completed this trail would link up

with the City's pedestrian-bicycle trail which runs through the Central Washington University campus.

Coal Mines Trail is a multi use recreational trail located along a 100-foot railroad right-of-way from Cle Elum through Roslyn to Ronald. This trail accommodates walking, hiking, jogging, bicycling, horseback riding and horse-drawn wagons. One objective is to connect the trail through South Cle Elum to the John Wayne Pioneer Trail.

Given the relatively light traffic volumes on many of the roadways in the region, bicycle travel is considered a relatively safe activity. The Washington State Department of Transportation also produces a State Bicycle Map that indicates the average daily traffic on all state highways and also shows which state highways have shoulders less than two feet in width. Bicyclists wishing to travel in the area are encouraged to consult this state map

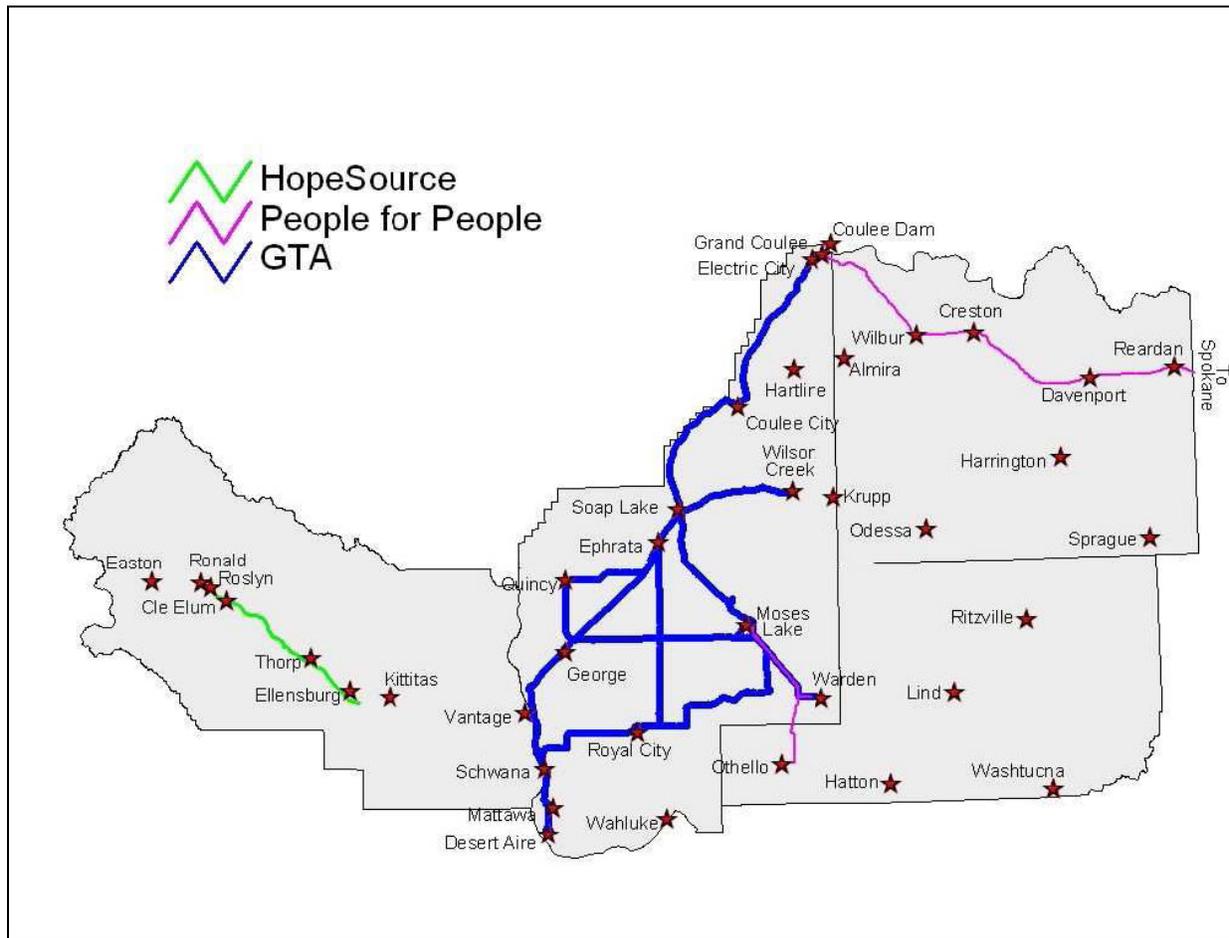
Transit

In 2006 the "Coordinated Public Transit Plan - Human Services Transportation Plan" for the QUADCO region was updated. It is adopted as part of this RTP by reference and is summarized here. Several types of profit in non-profit organizations provide transit service for the QUADCO region. Among these organizations several services are available including fixed routes, deviated routes, paratransit, park and ride, van pool, dial-a-ride and medical services. The majority of the non-profit services are provided through grant from the Washington State Department of Transportation (WSDOT). Figure 9 illustrates areas served by transit routes within the QUADCO Region.

The region is served by Northwest Trailways, a private provider that runs daily providing intercity fixed route between Moses Lake, Ephrata, Quincy, Wenatchee, and Ellensburg. This service provides a connection to Greyhound Bus Line at Moses Lake and Ellensburg. Other regional services include Amtrak which provides passenger rail service from Ephrata. Also the Airporter Shuttle provides bus service from Ellensburg to the Seattle Amtrak Station and SeaTac Airport.

Grant County has the only Public Transit Benefit Area in the four-county region. The Grant Transit Authority (GTA) provides fixed, deviate routes and paratransit services. GTA has a fleet of 17 Coaches, two mini-buses, and five vans available for van pooling. GTA has approximately 180,000 boarding's per year between all of its services and continues to strive to accommodate the community needs. GTA has been able to provide special needs transportation with grant funding from WSDOT that expires in June, 2007. Park and Ride lots are also provided by the WSDOT for GTA. Currently Grant County has one lot in George and three in Moses Lake.

Figure 9. Transit Service in the QUADCO Region



People For People provides paratransit services in Grant, Lincoln and Adams Counties to special needs population as well as a free intercity bus routes in Lincoln and Adams counties for the general public. One route connects Coulee Dam, Grand Coulee, Wilbur, Creston, Davenport, Reardan and Spokane in Lincoln County while the second route connects Moses Lake, Warden and Othello in Grant and Adams counties. People For People provides approximately 40,000 rides annually. People For People operates with 22 ADA accessible mini-buses a 24 passenger coach and one ADA accessible mini-van. Eight more mini-buses and two more mini-vans have recently been purchased in order to meet the needs of the community. This service is provided by a grant from the WSDOT for special needs individuals and the general public. This funding expires in June, 2007.

HopeSource also provides a transit service in the four-county region for Kittitas County. HopeSource provides both dial-a-ride and deviated service connecting Ronald, Roslyn, Cle Elum and Ellensburg as well as a fixed route service to Central Washington University students in Ellensburg. The annual ridership of HopeSource is 25,000. This service is funded by the WSDOT that will expire in June, 2007.

Other agencies that provide transportation services include DSHS, Head Start, Columbia Basin Health Association, MedStar, Special Mobility Services, Volunteer Chore Services, Elmview, Central Washington Mental Health, Aging and Adult Care of Central Washington,

Developmental Disabilities, and Division of Vocational Rehabilitation. Department of Social and Health Services with the Medical Assistance Administration provide transportation, but it is only for Medicaid eligible clients with an approved medical service.

In 2006 the Four County Community Transportation Planning Team prepared a “Coordinated Community Transit - Human Services Transportation Plan” for QUADCO. As part of this plan a list of prioritized projects were developed in order to be incorporated into the QUADCO Transportation Plan. A list of prioritized transit projects is included in Appendix D.

As part of developing the transit plan, the Four County Community Public Transportation Planning Team conducted several public meetings and surveys in order to identify the needs of the community. As a result, five areas of transit were identified as lacking transportation.

1. **Older adults** lack transportation for health care, social services, nutrition, shopping, banking, social events, religious services, and visitations with friends or family in health care facilities.
2. **Persons with disabilities** lack access to employment, health care, social services recreations and social events.
3. **Low-income individuals** lack access to social services, health care, job search, education, and training opportunities. The working poor lack transportation for employment, shift-work, and taking children to child care.
4. **Youth** lack transportation for after-school activities, summer activities, recreation, child care, alternative schools, and post-secondary education.
5. **Accessible transportation services** is lacking for vulnerable populations to use existing services.

In order to meet the need of the community the Four County Community Transportation Planning Team reviewed the needs assessment and developed the priorities to achieve coordinated, effective, and cost efficient transportation that meets priorities of the special needs population. The following goals and objectives were developed to provide the framework for developing transportation strategies and projects in Kittitas, Lincoln, Grant, and Adams counties.

Provide access to transportation that strengthens communities and promotes self-sufficiency and general welfare of special needs populations.

1. *Increase transportation services to the special needs populations.*
2. *Promote safe and accessible transportation services for special needs populations by educating and advocating specific benefits to the consumers.*
3. *Accommodate consumer needs by linking and coordinating transportation and human services for efficient utilization of resources.*

Performance Standards

The level of service (LOS) standards establish a gauge for evaluating the relative performance of existing systems and planning for future systems to meet current and future needs. Level of service is defined in the Highway Capacity Manual as a qualitative measure describing operational conditions within the traffic stream or on the transit system, and the perception by motorists and/or passengers. A “level of service” generally describes these conditions in terms of such factors as speed and travel times, freedom to maneuver, traffic interruptions, comfort and convenience, and safety.

Consistent with state level of service standards, the QUADCO establishes Level of Service “C” as the standard for all rural facilities and LOS “D” for all urban facilities included in the regional roadway network.

Cities and Counties throughout the region also use national standards published by the American Association of State Highway and Transportation Officials as well as the Local Agency Guidelines established by the Washington State Department of Transportation. These standards cover a wide variety of construction and operational standards.

QUADCO Region's Key Issues

The region has its own unique need for the movement of freight and people for economic reasons, medical, recreational, and other social needs. There are several internal and external factors and key issues that affect the ability of the multimodal system to efficiently serve the economic and social needs of the region.

As evidence that the region truly has important transportation issues, a group called TRANSCO was formed in 2006. The group is comprised of public and private entities including WSDOT, BNSF, cities, counties, and many private businesses primarily around the Moses Lake area to identify common transportation issues to the sub-region. Their stated mission is to: "Identify, prioritize, fund and build key transportation projects that contribute to the economic vitality and quality of life of our area." The group has identified specific projects and needs with respect to Trails, Rails, Roads and Runways. An informational brochure is included in the Appendix E.

The economic viability of the Columbia River as a transportation system is being challenged and railroads are continuing their abandonment of rail lines. Both of these systems are critical in moving freight through the region. The trucking industry is much more efficient now than it has been in the last three decades, but the road infrastructure is not adequate in many areas to support the increased axle weights and year-round use of the road. Also, the geometrics of some roadways do not provide the appropriate widths for trucks to safely operate.

Outlined in this Chapter of the RTP is a discussion of the key transportation issues with respect to providing a multi-modal transportation system to serve the QUADCO Region. The following Chapter describes the Statewide Issues identified through development of the Washington Transportation Plan 2007 - 2026 (WTP) and the correlation between the regional issues and the statewide issues.

Maintenance and Preservation

Over the next 20 years maintenance of existing roadways and bridges will be vital to the region. These roadways connect communities throughout the region and to the rest of the state and provide important means to carry agricultural products from fields to highways, rail service as well as inland water ports. As important as rail and barge transport modes are to the region for providing competition between freight hauling modes, without well maintained roadways, access to these other modes would not exist.

The number of roadway miles and bridges was documented earlier in the RTP. Several roadways will need reconstruction work and many bridges will need to be replaced. Replacement of bridges fill an important role in maintaining the viability of roadways that provide important connections to major highways and other routes that connect fields to freight hauling facilities. Funding for maintenance of roadways and bridges will far exceed all other expenditures for transportation facilities in the region in order to ensure that the transportation system is effective.

Timing of maintenance and preservations investments is important to achieve the lowest life-cycle costs. This issue and the cost to preserve the City and County roadway

infrastructure (which makes up over 85% of the roadway mileage in the region) is discussed in more detail in a subsequent chapter.

Roads

Several types of road surfaces exist with each providing unique functional benefits and costs. Cities and Counties must maintain all of their roadways, not just those that are part of the Freight and Goods System or those that are functionally classified. The traveling public demands maintenance of all roads. Rising construction material costs have required increasingly strategic approaches to selecting the most cost effective surface type. A new line of thinking that is becoming common practice is to apply the most cost effective surface treatment at the time of resurfacing. The 2007 WTP reported that 16% of city roadways have poor or very poor pavement condition. This percentage will continue to grow as current funding levels remain constant.

As identified earlier in Table 4, 56% of the roadways in the QUADCO Region are gravel or unpaved. Among these roadways 13% are considered arterial roadways. Most of these gravel and unpaved roads do not meet current design standards and are considered deficient roadways due to the surface type and/or width. The need to improve these roadways, especially the unpaved arterials, should be considered a high priority. This issue will be discussed in more detail in a later chapter.

Bridges

Aging bridges represent a growing problem that must be monitored closely, most bridges have served transportation needs far longer than builders anticipated. As discussed earlier in the Regional Transportation System chapter, there are over 60 bridges that are deficient in the region.

Small Structures

Maintenance and preservation of small structures is also an issue. Bridge structures larger than 20 feet in length are eligible for federal-aid, however those structures less than 20 feet do not have a dedicated funding source and are maintained. As identified on a statewide basis in the WTP, recent culvert failures highlight the need for an inventory and condition survey to help determine the level of future investment necessary to prevent roadways from collapsing. There are 419 small structures in the QUADCO region.

Irrigation systems in large portions of the QUADCO region provide the life-blood to sustain the agricultural productivity that the region is known for. These irrigation ditches cause challenges in at least two ways:

- Roadways that need to cross these canals often require small structures to be built. Many of these small structures have been in place for over 50 years when the Columbia Basin Project was developed and have served their useful life.
- Irrigation run-off from fields collects adjacent to roadways which causes additional maintenance costs and deterioration in the sub-base of the roadway.

Safety

The issue of safety is considered a high priority for both the QUADCO Region and the Washington State Department of Transportation. Traffic safety is both a local, regional and statewide issue which requires the collaboration of law enforcement and transportation

agencies at each level. As identified in the 2007 WTP (pg 17) “significant emphasis is placed on roadway design at all jurisdictional levels statewide, resulting in projects that reduce fatalities and disabling injuries caused by collision. Emphasis is also placed on improving regulation, increasing interagency collaboration, and promoting ongoing research aimed at finding ways to make our transportation system safer.” Safety issues are discussed in more detail in a subsequent chapter of the RTP as well. Table 12 shows the number of accidents that have occurred in the QUADCO region from 2003 - 2006.

High Risk Safety Corridors

Due to the topography of the region and the age of some of the roadways, some segments or corridors have narrow travel lanes and shoulders, poor sight distance and alignments. Among these roadway segments and corridors which have a high accident rates the following issues from the WTP (pg. 19) should be considered when making improvements to these roadways.

Roadway safety projects may focus on the following types of improvements:

- Reducing head-on and across-median crashes
- Improving design and operation of highway intersections
- Recurring congestion related crashes
- Reducing bicycle and pedestrian crashes
- Reducing speed limits to fit changing uses and conditions impacting the roadway.

Roadside factors are also considered in roadway design. An ideal highway has roadsides and median areas that are flat and unobstructed by hazards. Hazards such as side slopes, fixed objects, and water present varying degrees of danger to the vehicle and its occupants.

There are several intersections in the region that have poor sight distances and adverse approach angles making it difficult for trucks to turn onto main highways safely. Due to the increasing amount of truck traffic on these roadways this issue will continue to be a concern to the region. In many cases irrigation systems adjacent to roadways cause sight distance problems because the embankments for the canals are higher than the roadway.

Access Management

The Washington State Department of Transportation controls access to all Washington State Highways in order to preserve the safety and efficiency of these highways as well as to preserve the public investment. The WTP explains the benefits of access management: “As connections to state routes increase, the collision rate also rises. By actively regulating, consolidating, relocating and eliminating connections, roadway safety increases. Access management enhances economic vitality, the movement of freight and goods, and the movement of people.” (WTP pg 17) Access Management is a tool being used nationwide to preserve the capacity, functionality and investment as well as improve the safety of roadways.

Access Management does pose some challenges for local jurisdictions in providing access to areas zoned for development near state highways. In many instances frontage roads along state highways where access rights have been purchased would facilitate traffic operations and safety in areas zoned for development. Some jurisdictions are experiencing higher traffic volumes on local roadways as a result of not having access to state facilities. Challenges in retrofitting county and city roadways where access is not provided and no frontage roads were put in places is also an issue.

Table 12. Accident Summary

	2003		2004		2005		2006		Total	
	Collision	Fatality								
Adams										
Combined Cities	79	-	64	-	86	-	99	-	328	-
County Road	91	-	96	1	88	5	73	2	348	8
State Road	236	11	224	3	263	7	212	1	935	22
Total	406	11	384	4	437	12	384	3	1,611	30
Grant										
Combined Cities	344	2	380	-	449	1	444	1	1,617	4
County Road	336	12	316	5	365	7	298	12	1,315	36
State Road	623	11	503	10	576	10	600	7	2,302	38
Total	1,303	25	1,199	15	1,390	18	1,342	20	5,234	78
Kittitas										
Combined Cities	279	1	317	-	326	2	315	1	1,237	4
County Road	138	4	132	3	177	3	154	-	601	10
State Road	689	8	701	9	849	8	860	11	3,099	36
Total	1,106	13	1,150	12	1,352	13	1,329	12	4,937	50
Lincoln										
Combined Cities	14	-	12	-	12	-	13	-	51	-
County Road	37	1	34	-	43	1	30	-	144	2
State Road	155	-	152	1	149	3	162	3	618	7
Total	206	1	198	1	204	4	205	3	813	9

Source: WSDOT Collision and Data Analysis Branch

Freight and Goods System

The movement of freight and goods is a vital component to the economy of the region and state. The WTP recorded that freight volumes are rising twice as fast as Washington State's overall population and traffic growth (pg 24). As an agricultural based region, the freight and goods system is used to transport produce off of the farms to markets via roadways, rail and ports. It should be noted that Lincoln County has recently studied the Freight and Goods System of roads with the results to be published later in 2007.

All Weather Roads

The need to upgrade the freight and goods system roads to all weather road standards continues to increase as the market demand for on-time delivery of goods increases. An existing chokepoint in the regions transportation system is the yearly closure of many County roads to loaded truck traffic. Seasonal "load limits" or "closures" are commonly applied to the system around the second or third week in January and last until the end of March or longer. The load limits effectively shut down the truck traffic to any load greater than an empty semi-truck or tractor-trailer arrangement. Without the application of load limits on the roads, they would be irreparably damaged. The extent of the Freight and Goods System that is impacted by season weight restrictions is shown in Figure 6.

Road closures represent a major impediment to the transport of agricultural products to destinations out of the area. Although much of the area has widespread "home storage" or local grain storage facilities, this represents a major negative impact on the local economy.

The problem also extends beyond the agricultural market, to local industries. Supplies and shipment of finished goods is limited by the inadequate roadway system.

Local shipping of grains and other products would positively impact the local economy if funding could be secured to reconstruct roadways to “all-weather” travel by loaded trucks.

As the market demand for on-time delivery of goods increases there will also be a higher demand for better connectivity between the counties. This will allow for better connection from significant roadways and distribution areas to the local cities.

Changing Agricultural Base

Also, the agricultural base and practices continue to change for QUADCO region. In Different types of commodities are being produced further to the north in Grant County as well as Douglas County north of the region. Hay and potatoes are being produced and in some cases are being stored in facilities situated on roadways which do not meet the all-weather standards. Therefore these areas are not able to distribute goods during seasonal road closures. Also the development of Cold Storage plants throughout the region allows fruit producers to ship their products year round. This is creating another demand on the wintertime road closures.

I-90 near Snoqualmie Pass

I-90 is well documented to experience severe congestion. It is of a statewide issue identified in the WTP that “Eastern Washington agricultural growers and processors all cite severe winter weather closures on I-90 at Snoqualmie Pass as Eastern Washington’s top freight priority.” (pg. 26) With I-90 as the backbone and the primary east-west roadway facility in the QUADCO region, many products move north-south to I-90, then move west to the Seattle area and the ports of Seattle and Tacoma for worldwide distribution. When I-90 is closed due to weather conditions, or is severely congested due to heavy traffic, then freight from the region can not reach it’s destination in a timely manner. Many perishable items are shipped to west-side ports and if congestion causes delays products can be lost.

North-South Freight Corridor Needs

Several entities within the QUADCO region identified the need for improvements to north-south transportation facilities. Specifically, the need for a 4-lane north-south facility that connects Grant County (and points to the north) to the Columbia River ports to the south is needed. The WTP indicates that approximately 85% of all Eastern Washington wheat is shipped to Asia through Columbia River ports, but farmers struggle to get products through the state’s freight system.” (pg. 25) A WSU study indicated that the growth in north-south travel has moved more towards the center of the state. An important component of this future corridor is to secure or reserve right-of-way before opportunities are lost in order to avoid what has happened in other corridors throughout the state and nation where options are no longer available or very costly. A likely candidate for this is SR 17 which has been discussed for widening for a number of years. SR 17 is on the National Highway System between US 395 south of the region and I-90 near Moses Lake. Improvements to this corridor have been made for safety purposes, and some widening is occurring through the Moses Lake area, with the 4-lane widening to the north towards Ephrata recently being approved. This issue would continue to address a high accident corridor and, next to pavement maintenance/preservation, and the importance of I-90 would likely top all other key issues in it’s importance to the region.

Columbia River Basin Expansion

The United States Bureau of Reclamation is evaluating the possibility of expanding the Columbia River Basin project to utilize the natural flow of Crab Creek in Grant County. This could potentially open up an additional 200,000 acres for agricultural development in Adams and Grant Counties to irrigation. The roadway and freight needs caused by this additional production would be significant.

Sub-Standard roadways

Many roadways within the region are currently sub-standard to current design standards for the region. The need to improve these roadways is constantly increasing as the need for freight and agricultural product in the region increases. Some of the roadways within the region have been built at a time when standards were lower and have not been improved or upgraded to the current roadway standard since their initial construction. Due to the rural nature of the region and the agricultural background these roadways were typically designed for a lower volume of traffic. Many of the roads are gravel roads with narrow travel lanes.

Another issue facing some of the faster growing cities includes sub-standard roads which are being annexed into the cities. As these roads become annexed into the city they become reclassified and subject to the city standards. One issue facing the cities is that they are not able to improve all of the annexed streets to a city standard; therefore their percentage of sub-standard roads keeps increasing as growth continues to occur in the region.

Funding

Funding for transportation improvements is a huge issue throughout the region, state and nation. As mentioned in the Maintenance section above, timing of improvements is important to achieve the lowest life-cycle costs for maintenance. If maintenance activities are deferred, then what could have been a relatively low cost activity becomes a much higher cost preservation need or in some cases a need for reconstruction. Although there have been increases in the Washington State gas tax in recent years, these increases have not kept up with inflation and the increased costs associated with roadway maintenance, preservation and construction efforts.

Local Funds

A recurring theme throughout the region's cities was that there is no dedicated funding source for roadway maintenance and preservation similar to the County Arterial Roadway Preservation Program (CAPP) administered by the County Road Administration Board (CRAB). Cities can not treat roads as a utility and collect fees for such. Cities are not forced to use gas tax distributions on roadway maintenance and preservation, thus roadway improvements must compete locally for general funds that cover many other needs such as law enforcement, schools, human services, parks, etc. As a result, maintenance activities often are postponed because other more visible city projects are given priority. Another big issue with the smaller towns in the QUADCO region is the fact that they do not have a large retail base. Much of their shopping is done in the larger regional marketplaces. As such, their town budgets are small and elected officials must make very difficult decisions in providing services for their communities.

Federal Funds

Another common funding issue is that federal funding sources that help City and County projects are increasingly difficult to obtain and use for a number of reasons:

- Reductions in some programs, especially the Surface Transportation Program
- Some programs, such as Bridge Replacement and Safety, call for and select projects infrequently. Projects may be programmed for much of the entire life of the Federal Legislation nearly to the amount of the authorized limitations.
- Statewide competitiveness often make it more difficult for rural types of jobs to score well against roadways in urban areas that carry more vehicles. This does not diminish the fact that rural roadway serve a vital role in the state economy of carrying agricultural products to the worldwide market.
- Continually increasing administrative requirements make federal funds very difficult and costly to use.

Railroads

Abandonment of Short-line rail service

In the 1950s Washington had approximately 5,000 miles of railroad; today that number is down to around 3,100. Over time, the larger carriers have pared their systems of lines with low traffic densities to reduce their costs. Once spun off by the larger railroads, the lines are run by public or private entities.

More than half of the state's rail system has traffic with densities less than five million gross ton-miles per mile. These lines are known as short-line or branch railroads. Short-line railroads often find themselves in a vicious cycle as described in the [Washington State Freight Rail Plan](#), pp. 2-15. They often do not generate enough revenue for appropriate track maintenance. Accumulated deferral of these expenditures leads to a gradual deterioration of the track, ties, and base. These lead, in turn, to reduced train speeds and inefficient operations. As costs of operation escalate, service deteriorates, shippers convert to other modes, deferred maintenance costs rise to a staggering total, and the line ends up in trouble, possibly abandoned.

These lines are important because they handle local traffic that, if not moved by the railroads, would either move by truck over state and local roads, or would cease to move. When the latter happens, it can cause businesses to close or relocate. These lines also provide a relatively inexpensive option for moving goods. In addition, when lines are lost, they often have a negative impact on an area's ability to attract new businesses and industry. (Source: WSDOT Rail website.)

There are many benefits to providing rail service to agricultural producing areas of the State of Washington, especially the QUADCO region. Many of these are documented in the Grain Train experience, included in Appendix F, and summarized below:

- Shipping by rail is cheaper than by truck
- Rail reduces the number of trucks on the roadway system which reduces congestion and fuel consumption and improves air quality
- Transporting heavy products by rail reduces highway repair and maintenance costs
- Short line railroads move local traffic that might cease to move or cause businesses to relocate

A detailed study of Eastern Washington Grain-Hauling Short Line Railroads was performed for WSDOT in 2003 to analyze the economic viability of the Palouse Coulee City (PCC) railroad and to value the public benefits of preserving the PCC system. The study determined that,

in private ownership, the system is not self sustaining and is highly susceptible to abandonment. Among other things, the study found that preserving this rail system keeps more than 29,000 heavy truckloads per year off state and county roadways, and that over the long-term the annualized net public benefits of avoided highway truck damage are \$4.16 million. Other benefits of the rail line include \$6.4 million of wages and benefits in affected rail dependent industries that could be lost and \$11.1 million WSDOT supports the placing of this rail line in public ownership. The Executive Summary of the Study is included in Appendix G.

As part of the State of Washington's interest in maintaining and improving economic viability, the State Legislature appropriated \$7.35 million in funds for WSDOT to acquire and rehabilitate the Palouse and Coulee City Railroad (PCC). These nearly 400 miles of rail line provide most of the local rail service for rural eastern Washington.

Maintaining the viability of short-line railroads and minimizing the future abandonment of additional railroads is a very important issue to the QUADCO region. Rail transport is more economical than trucking and also provides alternative shipping methods to barging which keeps the transportation system healthy by providing shippers competitive alternatives for the movement of freight. If barging on the Columbia River is reduced for any reason, rail transport will become increasingly important to the region.

According the WTP (pg 15) short line rail tracks are owned by private operators and are facing large rehabilitation needs. As the need for improvements to these rail lines increase the cost for improvement becomes too much for the owner to maintain the track and forces them to abandon the rail line. The national standard of track maintenance is \$6,000 to \$8,000 per mile per year and will require ongoing capital and possibly operational assistance. These rail lines serve as a valuable transportation resources that should be preserved.

Rail Bottlenecks

The WTP indicates that BNSF line over Stevens Pass is constrained through the QUADCO region and congested west of Wenatchee with 23 trains per day and a sustainable capacity of 28 trains. The amount of international consumer goods moving through the ports of Seattle and Tacoma is estimated to triple by 2025. It is anticipated that by year 2026 the average trains per day will be 46. (see WTP pg 25). Most of these containers are shipped through the state to/from the Midwest via rail, but there is not enough east-west rail capacity to handle a three fold increase in volume. A map of Railroad Mainlines, average train counts and capacities is included in the Appendix H.

A new innovation in multimodal container shipping allows trains to carry two containers on top of each other. Although due to the clearance need for double stack containers, this option is limited to the Stevens Pass tunnel under the cascades, Stampede Pass restricts double stack containers. Also another bottle neck for rail is the need to construct grade separated intersections throughout urban areas. As the population throughout the state and region continues to increase rapidly, areas will become more urbanized creating an increase in traffic at grade intersections therefore increasing the demand to construct a grade separated intersections.

Unit trains

Rail volumes along the Washington State main rail lines have increased substantially in the recent years causing a strain on the capacity of the primary routes. Due to this demand the market is changing to a "hook and haul" system and eliminating the short haul connections

and distribution from the main line and relying on truck and short liens to provide these services through transload facilities. (See WTP pg 28.)

This new unit train system requires fifty or more cars to be hooked on the main line train before it will stop. Since most small company elevators are not going to be able to put together enough cars to make a unit train. It is viable for the regions to utilize the transload facilities within the region by improving the short haul rail lines to and from these facilities and by improving the roadway between these facilities.

Moses Lake Rail Service

In an effort to support economic development, the City of Moses Lake and the Washington State Department of Transportation are investigating the possibility to improve rail service to industrial areas northeast of the City. By building a more direct line from the Wheeler area (east of the City) to the Airport (northwest of the City), industrial areas in between could be better served. This would also provide the opportunity to use portions of the existing circuitous rail route through downtown Moses Lake for other purposes. The feasibility study has been completed. There are 5 segments or phases and WSDOT's study indicates that the cost to construct these segments will range from \$1.8 million to \$70 million. Environmental documents are being prepared, however additional funding will be required to build any of the segments.

Vitality and Importance of the Snake River

A major factor that may impact the multimodal system is the Endangered Species Act that may require the breaching of dams or a drawdown of river levels on the lower Snake River thereby significantly reducing barge service eastern Washington. Because of said Act, the Sockeye and Chinook Salmon have been declared endangered species in the Snake/Columbia River system. The above prospective will cause significantly more truck traffic moving on roads not adequate for such weights and volumes, and mixing with automobiles and busses to an extent that has not been experienced before. Not insignificant is the contribution that these dams make to the production of electricity for the western United States that would be impacted by the breaching of dams.

Many studies have been performed in recent years by WSDOT, the Eastern Washington Intermodal Transportation Study (EWITS) at Washington State University, the Army Corp of Engineers and others regarding a drawdown of the Snake River. Studies have included issues such as the following:

- Potential impacts to Sockeye and Chinook Salmon migrations
- Other methods to improve salmon passage at the dams
- Impacts of a river drawdown on the transportation of grains
- Impacts of a river drawdown on energy consumption and Environmental Emissions
- Impacts on roadway networks due to greater trucking needs.

Regardless of the ultimate outcome of the Endangered Species Act on the Columbia and Snake Rivers, transport on the river has been affected by silting. The flow of silt and debris down the free flowing portions of Snake and Clearwater Rivers above Lewiston, Idaho over several years has begun to leave its mark. Much of this silt has built up behind the Lower Granite Dam and has reduced the depth of the river, thus reducing the depth at which barges can travel and limiting the amount of cargo that can be taken on board. Many barges

are leaving the Ports of Lewiston, Clarkston and Wilma at half capacity. It is important to the future of barge transport on the Snake River that dredging be considered in order to restore the river depth to original levels and improve the efficiency of barge transport.

Even with the importance of the grain train discussed above, the importance of the Snake River to the region and the ability to barge significant amounts of grain from the region to national and international markets is summarized in the following facts and comparisons outlined below.

- 1 barge = 37.5 hopper rail cars
- 1 barge = 150 25-ton semi-trucks
- transport by barge uses less fuel/ton-mile (514) than either rail (202) or truck (59)
- If trucks were used to ship the 156,900 tons of wheat that the first two grain trains have carried to Columbia River and Puget Sound ports, it would have added 4,482 heavy truck loads to Washington State highways.
- By comparison, if barge traffic were halted it would take an additional 120,000 rail cars, or more than 700,000 semi-trucks annually to carry the cargo now being moved by barge on the Columbia-Snake river system

Policy makers and others in the region need to continue to stress the importance of the Columbia/Snake River system to the economic viability of the region and the multimodal transportation system. The QUADCO region is opposed to the removal of the Dams on the Snake River.

Stormwater

Recent regulatory changes and philosophies, including State Stormwater Management Guidance and EPA Phase II requirements have placed a much higher emphasis on how cities and counties manage stormwater associated with transportation system elements. This increased effort has applied to both regular maintenance and construction activities. With the changes have come increased costs in implementing our maintenance and construction programs, however little or no additional transportation funding has been made available to address the situation. This in turn has resulted in further dilution of the existing funding. It is essential that additional funding be identified that is directly tied to the transportation system to provide for planning and executing stormwater management activities. These new requirements create the need in many cases for additional public right-of-way.

Airports

Airports are part of the Washington State multi-modal transportation system and serve as an essential public facility. There are four key issues with respect to air transportation services provided in the Region.

Commercial Air Service

In the past the region enjoyed scheduled passenger service through Moses Lake's Grant County International Airport. Service was subsidized by the Essential Air Service Program (EAS), a federal program designed to maintain a minimal level of scheduled air service to communities which otherwise would not be profitable. However, the subsidy for Grant County International Airport was terminated in August 2006 and scheduled service was discontinued on September 1,

2006. For residents of the QUADCO region to access commercial passenger service various options exist with differing levels of desirability depending on their origin within the region: SEATAC airport in Seattle, or Yakima for Kittitas County; or, for Grant and Adams Counties, either the Tri-Cities airport in Pasco to the south or the Spokane Airport to the east would be the likely candidates. For Lincoln county service would most likely be out of the Spokane Airport.

Maintenance and Preservation of Runways

Ongoing maintenance and preservation activities for the regions runways and taxiways is another key issue. WSDOT completed a pavement condition evaluation for all airports statewide. As discussed earlier, there are nearly \$41 million of pavement and safety needs anticipated at the regions airports over the next 10 years.

Compatible Land Uses

The Washington State legislature has enacted legislation that requires cities and counties to develop regulations to protect airports from the siting of incompatible land uses adjacent to airports. Reasons for incompatibility include public safety, noise concerns, heights of structures, uses that attract wildlife, and generation of obstructions to visibility such as smoke or dust. Incompatible land uses can include residential, commercial and educational and other land uses that put pressure on airports to relocate. While the QUADCO Region is predominately a rural, agricultural region, many of the airports are increasingly surrounded by land uses that are not compatible with airports. According to the Washington State Long Term Air Transportation Study (LATS), only 41% of Washington airports are currently zoned appropriately to limit incompatible land use. Additionally, the LATS indicates that only 40% of Washington airports are protected by height hazard zoning. The QUADCO Region airports are in much better shape, in terms of adequate zoning, with 14 of the 19 airports zoned appropriately. In addition, one airport, Wilson Creek Airport, is in the process of obtaining an airport overlay zone. This results in 79% of the QUADCO airports being covered by appropriate zoning that limits height hazards and incompatible land uses. The airports that do not appear to be covered by adequate zoning restrictions are Cle Elum Municipal, DeVere Field, Easton State, and Lind Municipal.

It is recommended that all airport sponsors include their airport in local zoning and comprehensive plan documents. Those airports currently covered by such documents should review their airport needs and ensure the regulations are adequate.

Airport Layout Plans

Twelve of the 19 airports have completed Airport Layout Plans (ALP) in the past 5 years. One airport has an ALP that is over 10 years old and the other 6 airports do not have ALPs. These documents help to identify airport needs with respect facility requirements determined by the number and types of planes using the airport and often examine nearby land uses. Those airports that have not developed ALPs should develop them to identify future needs and potential future nearby incompatible land uses and to be eligible for potential state funding for improvements.

Small Town Roadway Connections

As regional issues were discussed with representatives from member jurisdictions two issues with respect to city connections within the region were discussed.

Connections to State Highways

Many of the small towns in the region rely heavily on their connections to nearby state highways. Challenges at the intersections of local roads with state highways are often problematic due to sight distances, lack of turn lanes, substandard turn radii for trucks and in some cases height clearances for trucks. One example of this is in the City of Othello at the Broadway Avenue intersection at SR 26. Partial funding has been obtained to address the issue but the project may fall by the wayside due to lack of full funding.

Connections to County Roads

A second issue for city streets is the amount of truck traffic that occurs entering the cities on county roads crossing jurisdictional boundaries from farms outside of town while on their way to state highway facilities. Often these city streets are not built to withstand the heavy vehicles nor are they of sufficient width to meet standards for truck traffic.

Non-Motorized Facilities

The used of and need for non-motorized facilities is an emerging issues in the QUADCO region. Many smaller communities are demonstrating a need for bicycle and pedestrian facilities to serve their populations. In Grant County alone, 4 different annual bicycling events have begun in the last 6 years.

Transit

Providing for the transit dependant in the region is a growing need as well. A summary of the recently prepared Coordinated Public Transit Plan - Human Services Transportation Plan was provided earlier. Several needs and priorities were discussed. Five areas of transit were identified as lacking transportation and are reiterated here.

1. **Older adults** lack transportation for health care, social services, nutrition, shopping, banking, social events, religious services, and visitations with friends or family in health care facilities.
2. **Persons with disabilities** lack access to employment, health care, social services recreations and social events.
3. **Low-income individuals** lack access to social services, health care, job search, education, and training opportunities. The working poor lack transportation for employment, shift-work, and taking children to child care.
4. **Youth** lack transportation for after-school activities, summer activities, recreation, child care, alternative schools, and post-secondary education.
5. **Accessible transportation services** is lacking for vulnerable populations to use existing services.

Growth

Kittitas County

Although the QUADCO region is known best for agricultural production, there are areas within the region that are experiencing challenges due to population growth. Kittitas County is not far removed from the Seattle Metropolitan area and has many visitors in the mountainous areas in the northern and western portions of the County. In some cases county roadways in the mountains that provide access to snowmobile trails are being clogged by vacationers parking along side the road.

Suncadia resort near Roslyn is developing 6,000 to 8,000 acres with three 18 hole golf courses, 40 miles of trails and approximately 3,000 second home units and home sites. Such development will surely strain the existing roadway facilities in that portion of the region.

The City of Ellensburg, with Central Washington State University, is growing and has need for a third interchange with I-90. Growth has been seen in recent years of those who live in Ellensburg and commute to the Seattle area. As such, demand for additional developable lands is being considered and the City council is investigating ways to improve access to adequately zoned property near the west interchange of I-90 which would also need an additional railroad crossing to access the remainder of the City.

Moses Lake Area

The City of Moses Lake has the largest population in the region and is centrally located as well. It is experiencing population and employment growth and is well situated on the I-90 corridor to accommodate growth in agricultural and industrial processing. In addition to the railway modifications being sought as discussed above, other major transportation improvements would facilitate growth in this portion of the region. Two primary candidates are:

- A connection from I-90 to SR 17 west of Moses Lake would serve growth on that side of the lake as well as provide alternate routes to the north and relieve congestion on SR 17 through Moses Lake.
- An additional bridge over Moses Lake would improve access between the southeast and northwest portions of the City. Currently there is one state highway and one local road that cross the lake, thus causing both facilities to operate under congested conditions many hours of the day.

The importance of SR 17 to the region should also be reiterated. As discussed in the Freight and Goods System section earlier, the need for a 4-lane north-south roadway east of the Cascade Mountains is growing. Identifying and reserving needed right-of-way should be pursued before opportunities are lost. Such a 4-lane facility would not only serve growing freight needs but would serve significant general travel needs as well, and alleviate growing congestion in the Moses Lake area.

Quincy Area

The Quincy area is experiencing the beginning of a new era for the City. Primarily due to the presence of major high speed communication fiber optics facilities nearby, major data centers by Yahoo, Microsoft, Intel and Intuit are all in various stages of construction of millions of square feet, and hiring workers. Population and employment forecasts shown earlier are not likely to reflect the anticipated growth in population due to the growth in the tech sector demonstrated by the groundbreaking of several facilities in Quincy. These additional employees will need services and spur growth of school needs, shopping and other services. All of this growth will place demands on the roadway network in the area. An estimated 1400 new homes are anticipated in the next few years. The City recently expanded the Urban Growth Area which to more than double the size of the City.

Correlation of Region's Key Issues with Statewide Issues

Washington Transportation Plan

The Washington Transportation Plan (WTP) 2007-2026 was adopted by the Washington State Transportation Commission in November of 2006. The purpose of this plan is to serve as a guide to provide strategies which will guide decisions and investment needed to develop Washington's transportation system for the future. The WTP was divided into two phases; the first phase collected data on the transportation system and documented existing conditions. This data was used to develop nine Key Statewide Issues which systematically assess the state's needs. The Statewide Key Issues are further summarized below:

- **System Preservation** - focus is on taking care of the existing transportation system - all modes - and doing it in a cost effective way, managing our assets with a "fix it first" attitude before it needs to be replaced.

Fundamental Issue - What will it take to make sure that the elements of the transportation system that we take for granted today will still be in place when we need them in two, six or twenty years?

- **Safety** - focus is on design features such as turn lanes, rumble strips, improved shoulders and roadsides for rural roads, maintenance activities like snow removal. Bike and pedestrian facilities can reduce the number of those types of accidents.

Fundamental Issue - How do we make transportation systems and facilities throughout the state safer for their users?

- **Transportation Access** - focus is on transportation for those who physically or financially can not provide for themselves. Strategies and issues revolve primarily around transit.

Fundamental Issue - Where basic transportation services are indispensable for all citizens' social engagement, how is a "safety net" for transportation needs to be provided every citizen in every community?

- **System Efficiencies** - focus is on getting the most out of our existing transportation investments through operational strategies, from basic maintenance activities to sophisticated technologies. Also includes park-and-rides for transit.

Fundamental Issue - How can we best work toward optimizing how efficiently we derive the benefits of our current transportation system facilities and those we are able to create in the future?

- **Bottlenecks and Chokepoints** - focus is on providing select capacity improvements that will help to get the most out of the transportation system in areas that are congested.

Fundamental Issue - What opportunities for investment in new facility and system assets can help address system chokepoints and bottlenecks, the most effective near-term solution through expanding capacity to move people and goods in shorter times and more reliable times?

- **Moving Freight** - for all modes of transportation this issues is critical to the Washington economy. Washington is a gateway for international markets. The importance of trucking, rail and waterways is emphasized.

Fundamental Issue - How are the special needs of freight movement to be incorporated into the state's transportation plan?

- **Strong Economy and Good Jobs** - Targeted transportation economic development projects should focus on retaining existing jobs or probably new jobs to help ensure success. WSDOT also indicates that the discussion for this issue is closely related to the discussions about Moving Freight and Bottlenecks and Chokepoints. Improving safety, reducing delay and lowering operating costs are basic user benefits.

Fundamental Issue - What investments in new facility and system assets can help support the state's economic vitality and strengthen the job picture?

- **Health and the Environment** - focus is on the impact that transportation systems have air quality, water quality, noise, etc. that influence human health and species protection. Such things as emissions, stormwater runoff, limiting vehicle miles traveled, etc. are included.

Fundamental Issue - How can transportation investments be developed, implemented and used in ways that at the same time enhance our citizens' transportation goals and our citizens' goals for healthy communities and a well-protected environment?

- **Building Future Visions** - this issue takes a longer look at transportation issues and facilities, even though funding levels are limited. Where are future facilities and what technologies are needed in order to address needs.

Fundamental Issue - What are the visions of transportation system futures - shared and unshared - that should shape today's transportation planning to help create pathways to the future?

More detailed research was conducted to better understand the WTP process and the statewide issues as identified through that process. Much effort has been expended by many state employees and others to reach out to understand the transportation issues and challenges facing the state of Washington. Three particularly pertinent documents with respect to the statewide issues and Washington's counties are included in the Appendix I:

- Summary of Statewide Key Issue Papers
- Interim Briefing to the Transportation Commission 4/22/2004
- Local Roadways: The County System 10/19/2004

Important things that WSDOT heard across the state (as summarized in the Briefing to the Transportation Commission, page 16 of Appendix I) indicates the following:

- County road levy and the current share of the gas tax cannot meet current funding needs.

- Most rural counties do not have an adequate tax base to fund general government needs let alone local transportation improvements.
- Local options cannot generate enough funds to provide for construction maintenance and preservation programs.
- Recent statewide initiatives have repealed local transportation funding tools.

The Washington Association of Counties also presented to the Transportation Commission a summary of issues, including (see page 13, 18 of Appendix I):

- The current state funding programs through WSDOT, TIB and CRAB are not keeping up with the need.
- Counties are trying to balance competing needs between safety, preservation and maintenance and falling short on all three.
- Additional funding should be flexible enough to allow local elected's and professional staff to manage diverse demands.

The second phase of the WTP, involved identifying and prioritizing specific program investments and developing the plan update. As part of this phase, the Transportation Commission evaluated the nine key issues described above and developed “Five Investment Guidelines” which were used to select investment targets. The Five Investment Guidelines are described as follows:

1. **Preservation** - preserve and extend prior investments in existing transportation facilities and the services they provide to people and commerce;
2. **Safety** - target construction projects, enforcement and education to save lives, reduce injuries, and protect property;
3. **Economic Vitality** - *Strong Economy and Good Jobs, Moving Freight*: improve freight movement and support economic sectors that rely on the transportation system, such as agricultural, tourism and manufacturing;
4. **Mobility** - *Transportation Access, System Efficiencies, Bottlenecks and Chokepoints, Building Future Visions*: facilitate movement of people and goods to contribute to a strong economy and a better quality of life for our citizens;
5. **Environmental quality and health** - *Health and the Environment*: bring benefits to the environment and to our citizens' health by improving the existing transportation infrastructure.

Since there are several high-priority unfunded system needs state wide, the purpose of these five investment guidelines is to set overall priorities and form a basis of the WTP. In order to determine the most beneficial investment, the Commission prioritized them by the highest priorities.

Explanation of Regional Issues to Statewide Issues Correlation

Although regional issues facing the QUADCO Region discussed above in some cases are unique to this region, they correspond well with the nine broad statewide issues that have been identified through the WSDOT Statewide Transportation Plan. Table 13 on the following page has been prepared to show the relationship of regional issues to the five investment guidelines used by the Transportation Commission in the development of policies and approaches addressing statewide transportation needs.

Certainly there are other correlations between regional and statewide issues that can be made, or that may become more evident as time passes or more detailed studies are performed. However, for the purposes of this document, those relationships that appeared to be the strongest have been identified.

Table 13. Correlation of Regional Key Issues to Statewide Issues

Regional Key Issue	Five Prioritized Investment Guidelines								
	1. System Preservation	2. Safety	3. Economic Vitality			4. Mobility			5. Environmental Quality
	System Preservation	Safety	Moving Freight	Strong Economy and Good Jobs	Transportation Access	System Efficiencies	Bottlenecks and Chokepoints	Building Future Visions	Health and the Environment
Maintenance and Preservation	√	√	√	√		√			√
Safety	√	√	√	√		√			√
Freight and Goods System	√	√	√	√		√	√	√	√
Sub-Standard Roadways	√	√	√	√		√		√	√
Funding	√		√	√		√	√	√	
Railroads	√		√	√		√	√	√	√
Vitality and Importance of Snake River	√		√	√		√	√	√	√
Stormwater	√	√							√
Airports/Air service			√	√	√			√	
Small Town Roadway Connections	√	√	√	√	√	√	√	√	√
Non -Motorized Facilities		√		√	√	√		√	√
Transit	√	√		√	√	√		√	√
Growth	√		√	√				√	√

Pavement Maintenance/Preservation

As described earlier in the Key Issues section, taking care of existing transportation facilities is a most important task. Preserving the investment already made in the regional transportation system is vital. If pavement preservation activities are postponed, a significantly higher cost could accrue. As such, a more detailed analysis of the pavement maintenance and pavement preservation efforts of the counties was undertaken. It was challenging because of the constraints of the data available, and the fact that each jurisdiction reports expenditures differently. It has reaffirmed that the charge to maintain and preserve the county roadway network is demanding -- each county faces distinct challenges because the needs are different and the roadway networks are put together differently. This section will endeavor to identify the difficult task that public works departments have of providing a serviceable roadway network within a limited budget for those rural county roadways serving diverse needs.

Pavement Management

Those responsible for determining appropriate allocation of public funds to various programs and projects have a difficult job indeed. With limited funding they must determine the amount of funds to distribute to numerous worthwhile endeavors such as schools, law enforcement, human services, transportation and other public works activities, and other public functions that ensure the health and general welfare of the populace. Data available from the Washington State Auditors office indicates that on average Counties in Washington State spend approximately 17% of their funding on Transportation Transit and Maintenance and Operations with an additional 7% on Transportation Capital; approximately 25% goes towards Law and Justice while approximately 16% is dedicated to general government and 12% to Health and Human Services.

Likewise, Public Works departments have similar challenges on a more focused agenda to balance budgets with needs. Data from the WSDOT Road and Street Report indicates that on average state wide county transportation expenditures are approximately 36% for maintenance, with 40% on construction activities, 14% on administration, 4% on traffic policing, 2% on debt service and 4% on other activities.

Many different activities compete for the same funding sources. Knowledgeable professionals make the best decisions they can with available information. Sometimes emergencies arise created by natural events that require adjustments to previously planned programs for addressing public works needs and projects.

In order to make the best decisions possible for the maintenance and preservation of a roadway network, it can not be overemphasized the importance of a Pavement Management System (PMS). A PMS may be very complex with sophisticated computer models, or may be done primarily by hand. All four counties currently use a PMS following the County Road Administration Board requirements. Pavement and roadway condition data are essential to make the best use of available funds. A PMS empowers the governing agency with a systematic approach to performing budget analysis and deciding what repair strategies are most appropriate for which roadways in order to efficiently use available funds.

A PMS typically entails 5 steps that are repeated as necessary every two to three years:

- Mapping (GIS) Road Network
- Pavement Condition Inventory
- Identify Maintenance & Repair Needs
- Analyze repair strategies and establish annual funding levels
- Implement annual program.

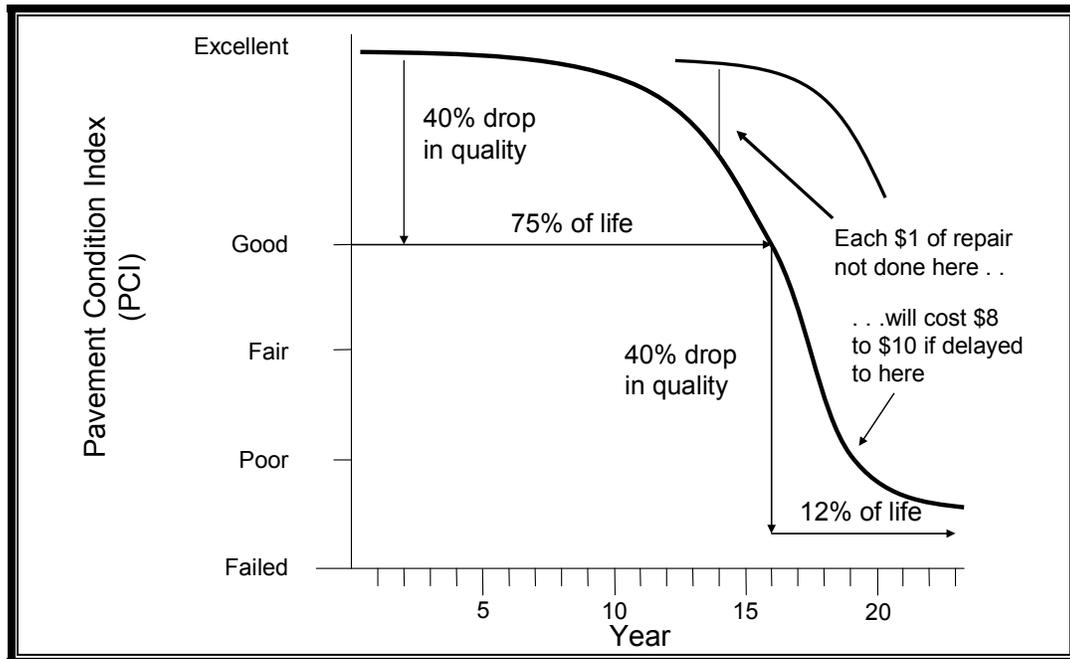
A systematic procedure should be used each cycle to collect pavement condition inventory information. This provides an up-to-date inventory for better decision making and allows pavement performance to be tracked over time. Several different types of pavement distress can occur, each with different types of potential repair strategies. Often a computer program is used to determine the remaining service life (RSL) for each roadway segment based on the governing distress (the distress that results in the lowest RSL). The RSL represents the years remaining until complete failure of the roadway surfacing. Complete failure occurs when a road segment has an RSL value of 0 and reconstruction of the road section (pavement, base, etc.) is required since the road segment has deteriorated to a point that other repair strategies would not be beneficial. The road is passable, but the surface is possibly turning to gravel, extreme fatigue is visible, sections of pavement may be detached or appear to be islands on the base material.

By evaluating the RSL distribution for the road network, allocation of funds to the appropriate repair strategies can begin. It is important that the repair strategy is focused on the goal of maintaining an average system RSL of 10-12 years which represents a level that can be reasonably sustained.

The goal of the analysis is to determine the best distribution of funds, among the available repair strategies, that should be completed each year to produce an average system RSL of 10 to 12 years at the least cost. Failure to maintain pavement at the necessary levels results in a decrease in the RSL and a correspondingly greater future cost to increase the average RSL to the desired level. Figure 10 emphasizes the importance of routine roadway maintenance activities prior to severe deterioration of pavement condition.

Repair strategies are chosen based on the condition of the road segment. Road surfaces RSL will dictate the repair strategy that should be used. Each repair strategy has multiple repair methods. The repair method used to implement a repair strategy should be based on the standard practices of the City/County. A new strategy is prepared for a two year period and updated to re-evaluate the pavement condition every two years thereafter. There are five generally accepted repair strategies explained below.

Figure 10. Typical Pavement Deterioration Curve



Deferred Action is always a viable option when developing a repair strategy. Most road networks will include a wide spectrum of RSLs for individual road segments. For the first few years after original construction, roadways should require very little maintenance. Likewise, when road segment RSLs becomes less than 3, routine and preventative maintenance will no longer improve the RSL. Reconstruction becomes the only alternative that will improve the RSL for road segments that have deteriorated to this stage. Reconstruction costs are very high and often not available in the maintenance funds. Therefore maintenance for certain roadways will be deferred until adequate funds are available to produce beneficial results that improve the road network system as a whole.

Routine Maintenance is usually driven by existing defects in the road surface. This maintenance can be used to prevent further deterioration of the roadway. Road segments that have RSLs greater than 7 to 10 years can benefit from routine maintenance. Examples of possible routine maintenance treatment alternatives include: crack sealing, cold patches, dig-out and cold patch, and fog coating.

Preventative maintenance is used to stop the deterioration on roadways before the surface distresses become a serious problem. This strategy provides the most benefit to a roadway if implemented before the RSL is below 7. Examples of possible preventative maintenance treatment alternatives include: sand seal, scrub seal, single chip seal, slurry seal, micro-surfacing.

Rehabilitation includes repair alternatives such as overlays and recycling. This strategy should be reserved for road surfaces that have a RSL between 1 to 7 years. The implementation of this strategy can require intense scheduling and will require allocation of a significant portion of the budget. This strategy should be reserved for road segments that fit into a major planning scheme. A possible candidate for such a strategy would be a road segment that is bordered by a newly constructed portion of that road and improving the

segment would increase the overall performance of the road. Examples of possible rehabilitation strategy treatment alternatives include: plant mix seal, thin hot mix overlay <2in., hot surface recycling, rotomill and overlay.

Reconstruction includes repair alternatives such as complete removal and replacement of a failed pavement section. Improving the road horizontal and vertical alignment, guard rail and drainage are all elements of a reconstruction strategy. This strategy will require considerable funding and lead time to allow for proper design. Reconstruction of a road segment is going to increase the RSL to nearly 20 years. Therefore, this strategy is reserved for roads that are at the end of their design life. Examples of possible reconstruction strategy treatment alternatives include: Thick Overlay (3 inch depth), Rotomill & Thick Overlay, Base Repair with Pavement Replacement, Cold Recycling & Thick Overlay, or Base and Pavement Replacement.

Table 14 displays the benefit different treatment strategies provide in increased RSL over the existing roadway segments RSL along with typical material costs for such treatments.

Table 14. Typical Pavement Treatment Costs and Increased Remaining Service Life

MAINT. TYPE	TREATMENT TYPE	TREATMENT COST		BENEFIT OF TREATMENT (in yrs.) BASED ON RSL EXISTING							
		Per Sq. Yd	Per mile*	0	1-3	4-6	7-9	10-12	13-15	16-18	19-20
Routine	Crack Seal	\$.70	\$11,500	0	0	0	0	1	2	3	4
Preventative	Single Chip Seal	\$1.75	\$28,750	0	1	3	5	5	5	5	5
Rehabilitation	Thin Hot Mix Overlay (<2")	\$6.00	\$98,560	0	4	6	7	7	7	7	7
Reconstruction	Thick Overlay (3")	\$7.50	\$123,200	12	12	12	12	12	12	12	12
Total Reconstruction	Base & Pavement Replacement	\$18.00	\$500,000 - \$1 M **	20	20	20	20	20	20	20	20

* Cost per mile includes only material costs and assumes 28 foot wide pavement surface (12' travel lanes with 2' shoulders), additional cost would be associated with wider lanes or shoulders. Substantial additional cost is associated with mobilization, traffic control, striping, or other site specific efforts.

* Per Square Yard Treatment Costs are based on 2007 costs for County Roads. Treatment costs for cities are typically higher and can be as much as double the cost per mile due to additional roadway width and traffic issues.

** Total Reconstruction can be very expensive and a large range of costs is being experienced by many jurisdictions. The primary reason for such high wide ranging cost is the fact that when total reconstruction activities are undertaken a roadway must be built to current standards of width, horizontal and vertical alignment.

For each treatment type, the treatment improves the RSL of a segment based on the segments current condition. As an example, crack sealing adds no additional life to a pavement that has a RSL of 9 or less. Above 9, crack sealing adds from 1 to 4 years, depending on the current pavement condition. Another example is chip sealing. Chip sealing is one of the most widely used preventative maintenance treatments. Chip sealing roads with RSL of 7 or greater increases the roads RSL by 5 years. However, applying a chip

seal to a road with a 4 to 6 RSL only adds 3 years, and applied to a road with a 1 to 3 RSL only adds 1 year. It can be seen that applying chip seals to roads with RSLs of 6 or less is not a cost effective approach.

County Routine Maintenance Activities

The importance of maintaining the transportation system was discussed above in the existing transportation section of the RTP as well as in the Key Issues section. This section will briefly describe several of the routine transportation system maintenance activities that go on regularly. Some are directly related to taking care of pavements or roadway surfaces while others are not but serve a vital function to ensure the safest operation of the transportation network possible. Many of these activities are performed by county crews:

- Gravel and Dirt roadways are graded
- Rock is added to gravel roadways regularly
- Pavement cracks are sealed to prevent more serious degradation in later years
- Potholes in paved surfaces are repaired
- Shoulder maintenance including guardrails, grading, roadside vegetation
- Signage and pavement markings
- Drainage ways such as roadside ditches and culverts. This effort is critical in that if water does not move it can seriously damage the roadway below the surface.
- Bridge maintenance
- Snow removal
- Traffic Services
- Litter Cleanup

Table 15 provides a summary of expenditures for each county over the previous 5 year period. It must be understood that county engineers and others make the best use of funding that they can with available information. Table 15 indicates only the expenditures on the types of activities listed above, but does not attempt to identify unmet needs. There are likely many miles of county roadways that are being untreated because more serious problems exist elsewhere. Each roadway must often wait its turn in priority order.

Table 15. Historical Expenditures for Roadway Maintenance and Preservation

Year	Adams County	Grant County	Kittitas County	Lincoln County
2000	\$4,285,390	\$6,017,562	\$3,089,874	\$3,762,610
2001	\$3,210,588	\$5,842,221	\$2,780,426	\$3,555,798
2002	\$3,454,826	\$6,263,228	\$2,883,730	\$4,066,562
2003	\$3,267,939	\$6,258,113	\$3,014,915	\$4,030,233
2004	\$3,643,907	\$7,052,091	\$3,022,883	\$4,146,916
2005	\$3,631,275	\$7,611,159	\$3,443,953	\$4,309,894
Total	\$21,493,925	\$39,044,374	\$18,235,781	\$23,872,013
Average/Year	\$3,582,321	\$6,507,396	\$3,039,297	\$3,978,669
Center-line Miles	1778.5	2526.8	561.8	1992.3
Average/Mile	\$2,014	\$2,575	\$5,410	\$1,997

Source: WSDOT Financial Planning and Economic Analysis

Examination of Table 15 quickly reveals that considerable funding is required in order to perform the routine maintenance activities described above. Funds reported in Table 15 do not include construction funds for new roads or reconstruction of roads that have failed pavement, nor bridge replacement funds. These are typically only accomplished when grants which require local matching funds are obtained.

The amount of funding spent on snow removal, which can vary greatly from year to year, has a direct effect on the level of effort that can be put toward other maintenance activities.

Expenditures for non-paved roadways is considerable given the amount of mileage that each county has of graveled roadways. When you consider that non-paved surfaces require more frequent maintenance activities, it is easier to understand the maintenance costs for these critical roadway connections for county farms.

Also significant in the maintaining of the roadway system is the number of structures less than 20 feet in length. The replacement of these structures does not have a designated funding source and can expend a significant portion of county maintenance funds.

Pavement Preservation and Maintenance

Pavement preservation activities primarily include chip sealing of roadways that have deteriorated so much that a new surface must be put in place. Although crack sealing is often done immediately prior to chip sealing, chip sealing involves much more. Although different treatment methods can be used, the basic concept is that additional road thickness is added. Sometimes old roadway surface is milled away and removed or recycled in order to place the new surface on the best bed possible without completely reconstructing the roadway. Typically, for older roadways, it is most beneficial to perform pavement preservation activities every 5 to 7 years. If pavement preservation activities are not performed regularly every 5 - 7 years then pavement deterioration will occur at an increased rate and the cost to repair the pavement goes up substantially as discussed earlier.

Table 16 shows the historical expenditures by county to preserve arterial pavement and what they have been able to accomplish with funds spent. Data is unavailable to determine the level of effort spent on non-arterial paved surfaced. Table 4 earlier showed that non-arterial paved surfaces are most prevalent in Lincoln County with over 280 miles of such roadways - primarily because of some urbanized areas within the county. Adams County has 123 miles of non-arterial paved surfaces while Grant County has 86 miles and Kittitas County has less than 5.

Examination of Table 16 shows two key issues:

- Although each counties allocation of money received from the County Arterial Preservation Program (CAPP) are relatively consistent throughout the years, the total eligible expenditures for some counties are sporadic. This is most likely due to the counties contributing more to the program in order to perform certain preservation activities.
- Over the last 6 years the percentage of arterial roadway pavements that have been treated ranges from 51% in Adams County to over 84% in Grant County. This is an important number in that 85% to 120% of paved surfaces should have been treated

during this 6 year period in order to minimize long-term preservation costs and maximize the useful life of the roadway.

Table 16. County Arterial Preservation Program Historical Expenditures and Accomplishments

Year	Eligible Arterial System Centerline Miles	Total Eligible Expenses (x \$1,000)	CAPP contribution (%)	Arterial Roadway Treated			
				Seal-coat (miles)	Overlay (miles)	Total (miles)	Percent
Adams County							
2000	531.9	121.2	100.0	19.6	0.0	19.6	3.7%
2001	545.5	123.1	61.4	58.2	0.0	58.2	10.7%
2002	545.3	126.0	64.4	20.8	0.0	20.8	3.8%
2003	545.4	153.0	62.4	59.8	0.0	59.8	11.0%
2004	545.5	834.8	70.4	72.0	0.0	72.0	13.2%
2005	545.5	674.9	88.8	47.9	0.0	47.9	8.8%
Six Year Total		\$2,033	76.8	278.3	0.0	278.3	51.1%
Six Year Average		\$339	74.6	46.4	0.0	46.4	8.5%
Average Annual Expenditures per mile (x \$1,000)							\$0.621
Grant County							
2000	818.5	554.7	33.8	121.6	16.5	138.1	16.9%
2001	817.3	923.6	57.3	96.4	5.7	102.1	12.5%
2002	823.8	893.0	51.3	89.0	7.9	96.9	11.8%
2003	830.8	940.0	76.5	119.9	0.0	119.9	14.4%
2004	831.1	1912.8	47.0	117.7	6.3	124.0	14.9%
2005	831.1	2288.1	40.1	105.0	10.7	115.7	13.9%
Six Year Total		\$7,512	49.4	649.6	47.1	696.7	84.4%
Six Year Average		\$1,252	51.0	108.3	7.9	116.1	14.1%
Average Annual Expenditures per mile (x \$1,000)							\$1.506
Kittitas County							
2000	305.9	2536.8	34.6	39.7	0.9	40.6	13.3%
2001	305.3	1536.2	0.0	25.1	0.0	25.1	8.2%
2002	305.2	1699.6	40.1	34.4	5.4	39.8	13.0%
2003	306.5	1221.3	0.0	38.4	0.0	38.4	12.5%
2004	306.2	695.7	0.0	35.3	0.0	35.3	11.5%
2005	306.1	969.5	0.0	58.7	0.0	58.7	19.2%
Six Year Total		\$8,659	18.0	231.6	6.3	237.9	77.8%
Six Year Average		\$1,443	12.5	38.6	1.0	39.6	13.0%
Average Annual Expenditures per mile (x \$1,000)							\$4.715

Table 16. (Continued)

		Lincoln County					
2000	377.4	920.3	63.2	47.3	2.7	50.0	13.2%
2001	373.3	584.6	95.7	34.2	0.0	34.2	9.2%
2002	373.3	1626.3	50.5	52.5	0.0	52.5	14.1%
2003	373.3	753.6	42.4	35.2	0.0	35.2	9.4%
2004	373.3	422.8	95.1	29.8	0.0	29.8	8.0%
2005	374.4	936.2	43.8	21.3	3.3	24.6	6.6%
Six Year Total		\$5,244	59.0	220.3	6.0	226.3	60.5%
Six Year Average		\$874	65.1	36.7	1.0	37.7	10.1%
Average Annual Expenditures per mile (x \$1,000)							\$2.334

Source: County Road Administration Board Annual Reports

Clearly the available funding to preserve pavements in some counties is inadequate to meet the need and in the not so distant future many roadways that have not received preservation treatment will be beyond possible preservation and require total reconstruction. This will involve substantial investment in order to keep important roadways on the freight and goods system from deteriorating to a point where they either need to be reconstructed for millions of dollars per mile, or are left to revert to gravel.

It should be noted that cities prefer overlays as their pavement preservation activity for arterial roadways. A better result is obtained with less frequent application and is more suited for urban areas with pedestrians and higher traffic volumes. Overlays are not always achievable, however, due to the significantly higher cost. Some overlays are performed but many cities often have to use chip seals in order to treat more roadways within their annual budget. Smaller cities are dependent on counties to perform reimbursable work while county crews are doing preservation work and counties primarily use chip seals for preservation activities. WSDOT also indicated that the higher cost of various treatments also significantly affects how they do business in recent years.

The following table was prepared to show the level of effort that would be needed in order to provide best practices of pavement maintenance and preservation for the jurisdictions in QUADCO, the calculations are based on 20 year maintenance plan with crack seals being performed every 3 years and chips seals every 7 years. The cost is based on an average cost per square yard. For the Counties, \$0.70 per square yard was used for crack seals and \$1.75 was used for chip seals. While the Cities cost per square yard were around 8.6% higher at \$0.76 for Crack Seals and \$1.90 for Chip Seals. Detailed calculations for each City and County are included in Appendix J.

Table 17. 20 Year Pavement Maintenance/Preservation Cost

MUNICIPALITY	Miles	Crack Seal		Single Chip Seal	
		20 year cost	average cost per year	20 year cost	average cost per year
Adams					
City (all combined)	78.00	\$ 7,280,000	\$ 364,000	\$ 8,023,000	\$ 401,150
County	649.43	\$ 42,262,000	\$ 2,113,100	\$ 65,074,000	\$ 3,253,700
Total	727.43	\$ 49,542,000	\$ 2,477,100	\$ 73,097,000	\$ 3,654,850
Grant					
City (all combined)	280.90	\$ 26,217,000	\$ 1,310,850	\$ 28,894,000	\$ 1,444,700
County	1395.45	\$101,367,000	\$ 5,068,350	\$154,515,000	\$ 7,725,750
Total	1676.35	\$127,584,000	\$ 6,379,200	\$183,409,000	\$ 9,170,450
Kittitas					
City (all combined)	102.26	\$ 9,544,000	\$ 477,200	\$ 10,518,000	\$ 525,900
County	493.15	\$ 31,666,000	\$ 1,583,300	\$ 48,479,000	\$ 2,423,950
Total	595.41	\$ 41,210,000	\$ 2,060,500	\$ 58,997,000	\$ 2,949,850
Lincoln					
City (all combined)	82.72	\$ 7,721,000	\$ 386,050	\$ 8,508,000	\$ 425,400
County	440.36	\$ 32,248,000	\$ 1,612,400	\$ 49,165,000	\$ 2,458,250
Total	523.08	\$ 39,969,000	\$ 1,998,450	\$ 57,673,000	\$ 2,883,650

Notes:

- City road widths assumes a 32 foot wide road.
- City road miles are taken 2005 WSDOT Revenue & Expenditures Summary.
- County road width and miles are actual amounts from the County Road Log.
- County road widths vary depending on actual road width
- Crack seal cost estimate assumes \$0.70 per sq.yd. for counties and \$0.76 for cities
- Chip seal cost estimate assumes \$1.75 per sq.yd. for counties and \$1.90 for cities
- Crack seal assumes a 3yr maintenance plan
- Chip seal assumes a 7yr maintenance plan

Also, based on the Table 4, the following Table 18 was prepared to calculate the cost to pave all of the existing gravel arterials so that they comply with the QUADCO design standard. It was assumed that the surface type of the roadway would be BST due to the fact that 90% of all paved county roads have a BST surface. Also an average roadway width of 26' was used. See Appendix L for the detailed engineers opinion of cost summary.

Table 18. Cost to Pave Current Gravel Arterials

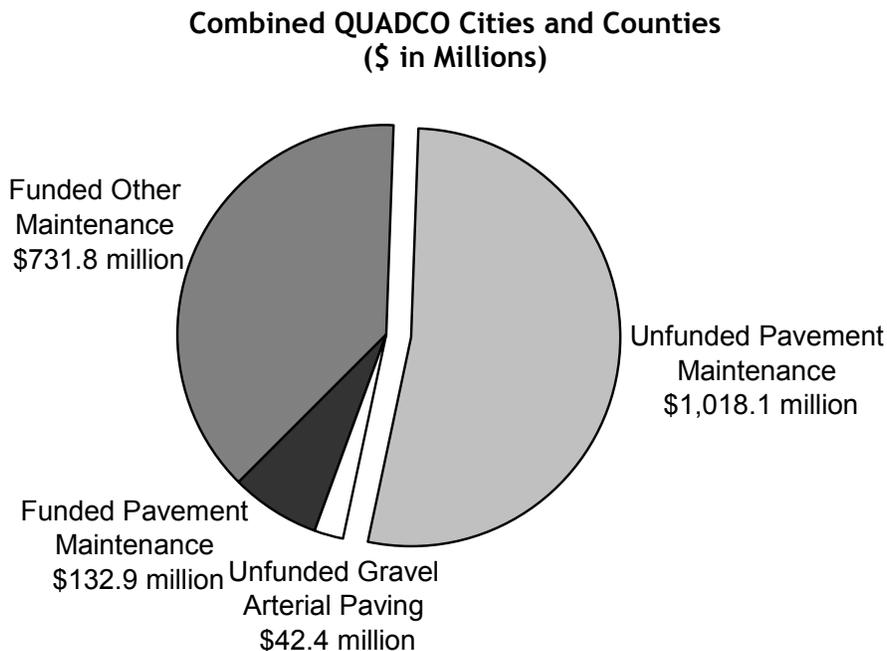
	County			
	Adams	Grant	Kittitas	Lincoln
Miles	123.36	86.47	4.06	280.25
Cost/Mile	\$ 52,629	\$ 52,629	\$ 52,629	\$ 52,629
Total	\$ 6,492,000	\$ 4,551,000	\$ 214,000	\$ 14,749,000

After review of the historic maintenance and preservation expenditures and future maintenance and preservation costs the pie charts shown in Figure 11 were developed to identify the 20 year funding needs for the QUADCO region. As a result, based on the 20 year revenue forecast by the WSDOT Financial Planning and Economic Analysis division, the QUADCO region is expected to receive \$864.7 million dollars in maintenance and preservation funds. Of those dollars \$132.9 million is proposed to be used to fund pavement maintenance projects through the CAPP and RAP programs while \$731.8 million is for other maintenance described at the beginning of this chapter.

Due to the large amount of road miles within each County, especially Grant County, the forecasted revenue for maintenance and preservation of the county roads is not enough to meet the needs of the region. As shown in the Figure, the QUADCO region will need an additional \$1,018.1 million dollars in funding in order to keep up with a routine maintenance and preservation program described above. Also, to be able to pave all of the gravel county arterials to a BST roadway surface, the region will need an additional \$42.4 million dollars. As a result the 20 year maintenance and preservation forecast for the region identifies that 55% (\$1,060.5 million) of the pavement maintenance projects for the region will be unfunded.

By comparison, the WTP calls for \$6.05 billion to preserve, maintain and operate City streets - statewide - as an Unfunded High Priority (pg. 72), while an unfunded medium priority identified on page 78 is for only \$41 million to preserve county roads and ferries. Clearly the funds called for by the WTP are grossly inadequate even if all of the \$41 million were spent on roadway within the QUADCO region.

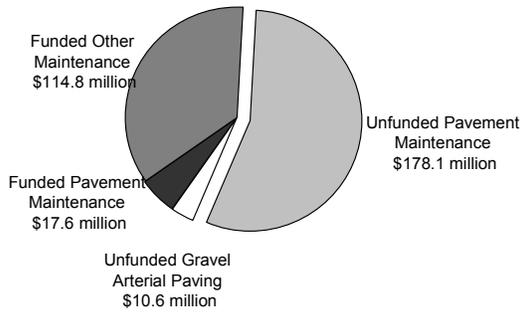
Figure 11. 20-Year Funding Needs for Maintenance and Preservation of City and County Roads



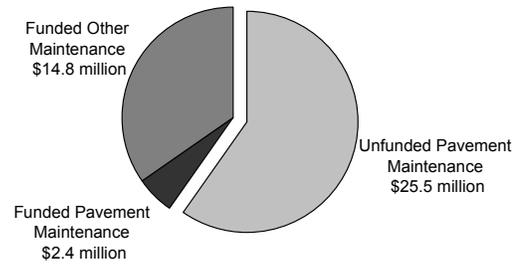
Source: WSDOT Financial Planning and Economic Analysis
County Road Administration Board.

Figure 11. (Continued)

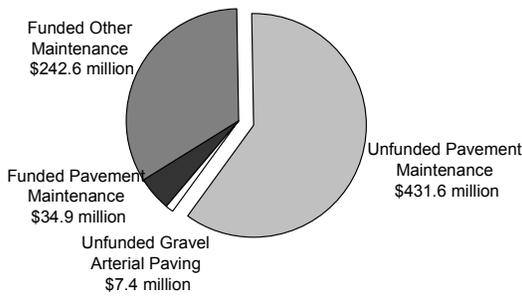
Adams County



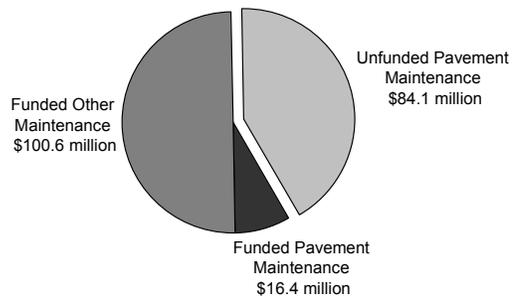
Adams County - Cities



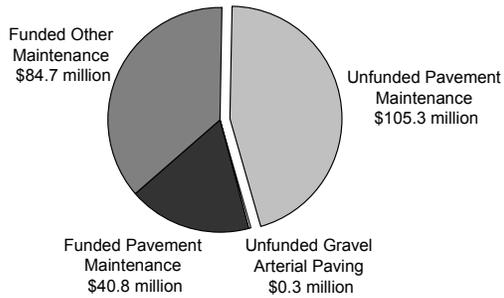
Grant County



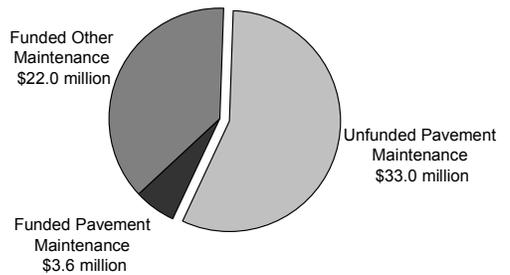
Grant County - Cities



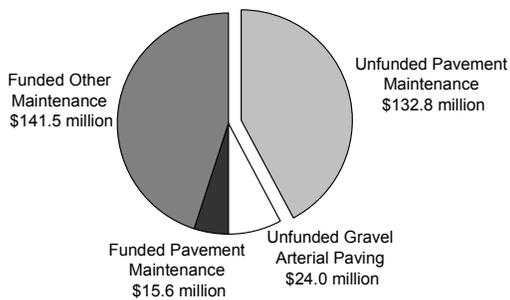
Kittitas County



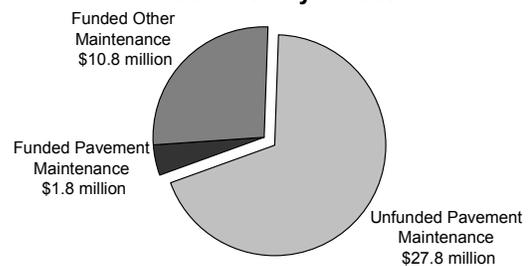
Kittitas County - Cities



Lincoln County



Lincoln County - Cities



Safety and Roadway Geometric Deficiencies

As identified in the Key Issues section above, safety is an important aspect of the transportation system. Table 19 is a summary of the accident rates on both county and state roadways. The average accident rate for rural state highway collectors is 1.57 per million vehicle miles of travel.

Table 19. QUADCO Accident Rates Summary

County Roads

	County				Total
	Adams	Grant	Kittitas	Lincoln	
Total Miles	1778.5	2526.8	561.56	1992.3	6859.1
Total VMT	234.71	1022.2	329.87	210.15	1797
Total Accidents (2002 - 2006)	348	1315	601	144	2408
Accidents/ MVMT	1.483	1.286	1.822	0.685	1.34

Interstate Highways

	County				Total
	Adams	Grant	Kittitas	Lincoln	
Total Miles	46.65	54.46	104.65	16.18	221.94
Total VMT	205.91	244.24	792.38	93.483	1336
Total Accidents (2002 - 2006)	327	507	2273	143	3250
Accidents/ MVMT	1.588	2.076	2.869	1.53	2.433

State Highways

	County				Total
	Adams	Grant	Kittitas	Lincoln	
Total Miles	200.69	310.68	89.98	275.73	877.08
Total VMT	180.48	359.52	89.141	117.84	746.97
Total Accidents (2002 - 2006)	608	1795	826	475	3704
Accidents/ MVMT	3.369	4.993	9.266	4.031	4.959

TOTAL State Highways

	County				Total
	Adams	Grant	Kittitas	Lincoln	
Total Miles	247.34	365.14	194.63	291.91	1099
Total VMT	386.38	603.76	881.52	211.32	2083
Total Accidents (2002 - 2006)	935	2302	3099	618	6954
Accidents/ MVMT	2.42	3.813	3.516	2.924	3.338

A way to improve the safety of the roadways is to make improvements in areas where safety and roadway deficiencies exist. Because of the topography of the region, many of the roadways have frequent horizontal and vertical alignment changes as they bend around the hills and follow rivers and streams through the valleys. Initial construction of these roadways was achieved without many cuts and fills to straighten alignments and improve sight distances. Also, travel lanes are often narrow and shoulders are sometimes non-existent, very narrow or in disrepair. Several intersections in the region have poor sight distances and adverse approach angles making it difficult for trucks to turn onto main highways safely.

Many accidents on rural highways could be preventable if roadways were built to current standards. If there is no shoulder along a roadway there is very little margin for error. Additional roadway width would allow drivers more time to take corrective measures. Table 20 identifies the current roadway design standard for the QUADCO region and compares each county's current road dimensions in order to determine the amount of deficient roads. As a result it was identified that most low volume county roads particularly in Lincoln and Adams County are graveled. Therefore they have a relatively high deficiency rating. Other deficiencies noted were based on roadway width and surface type. Table 21 identifies how many road miles are deficient in shoulder width and what the cost would be to improve the shoulders to the current standard. In conclusion, improvements made to the current deficient roads could assist in decreasing the number of accidents within the region.

Table 20. County Roadway Design Standard and Deficiencies

<u>Performance Measure</u>	<u>Design Standards</u>					
	<u>Principal Arterials</u>	<u>High Vol. Minor Arterials</u>	<u>Low Vol. Minor Arterials</u>	<u>High Vol. Collectors</u>	<u>Inter. Vol. Collectors</u>	<u>Low Vol. Collectors</u>
Peak Hour Volume	2,200	>400	<400	>200	<200	<40
ADT	22,000	>4000	<4000	>2000	<2000	<400
Rural Geometrics (1)	12/8/100	12/4/80	11/3/80	11/3/60	11/2/60	11/1/60
Urban Geometrics (1)	13/8/100	12/8/80	12/8/80	12/7/60	11/7/60	11/6/60
Thru Lane Width	12	12	11	11	11	11
Surface Type	BST/ACP	BST/ACP	BST/ACP	BST/ACP	BST/ACP	BST/ACP
Left Paved Shoulder	8	4	3	3	2	1
Right Paved Shoulder	8	4	3	3	2	1

(1) Lane Width/Shoulder Width/Right-of-Way

Table 20. (Continued)

<u>Performance Measure</u>	<u>Principal Arterials</u>	<u>High Vol. Minor Arterials</u>	<u>Low Vol. Minor Arterials</u>	<u>High Vol. Collectors</u>	<u>Inter. Vol Collectors</u>	<u>Low Vol. Collectors</u>
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Adams County

Total

total miles	-	-	3.25	59.97	1713.28	1776.50
miles of deficient rds	-	-	0.25	19.00	1408.54	1427.80
average def.	-	-	8%	32%	82%	80%

Grant County

Total

total miles	-	4.39	35.94	422.41	2064.06	2526.81
miles of deficient rds	-	1.28	5.28	112.22	1454.46	1573.23
average def.	-	29%	15%	27%	70%	62%

Kittitas County

Total

total miles	-	2.06	12.51	157.70	389.52	561.79
miles of deficient rds	-	1.02	0.00	62.42	270.85	334.29
average def.	-	50%	0%	40%	70%	60%

Lincoln County

Total

total miles	-	-	-	28.64	1963.62	1992.26
miles of deficient rds	-	-	-	9.47	1583.05	1592.52
average def.	-	-	-	33%	81%	80%

Table 21. Shoulder Improvement Costs

Adams County

Grant County

Deficient Width	Miles Deficient	Cost/0.10 Mile	Total Cost
2'	80.77	\$ 11,394	\$9,203,000
4'	201.44	\$ 17,954	\$36,167,000
6'	16.27	\$ 24,514	\$3,989,000
8'	0.03	\$ 31,051	\$ 9,000
10'	0.26	\$ 37,588	\$ 98,000
12'	0	\$ 44,147	\$ -
14'	0	\$ 55,550	\$ -
		TOTAL	\$49,466,000

Deficient Width	Miles Deficient	Cost/0.10 Mile	Total Cost
2'	271.79	\$ 11,394	\$30,968,000
4'	150.7	\$ 17,954	\$27,057,000
6'	10.5	\$ 24,514	\$2,574,000
8'	2.77	\$ 31,051	\$ 860,000
10'	0.6	\$ 37,588	\$ 226,000
12'	0.56	\$ 44,147	\$ 247,000
14'	0.09	\$ 55,550	\$ 50,000
		TOTAL	\$61,982,000

Table 21. (Continued)

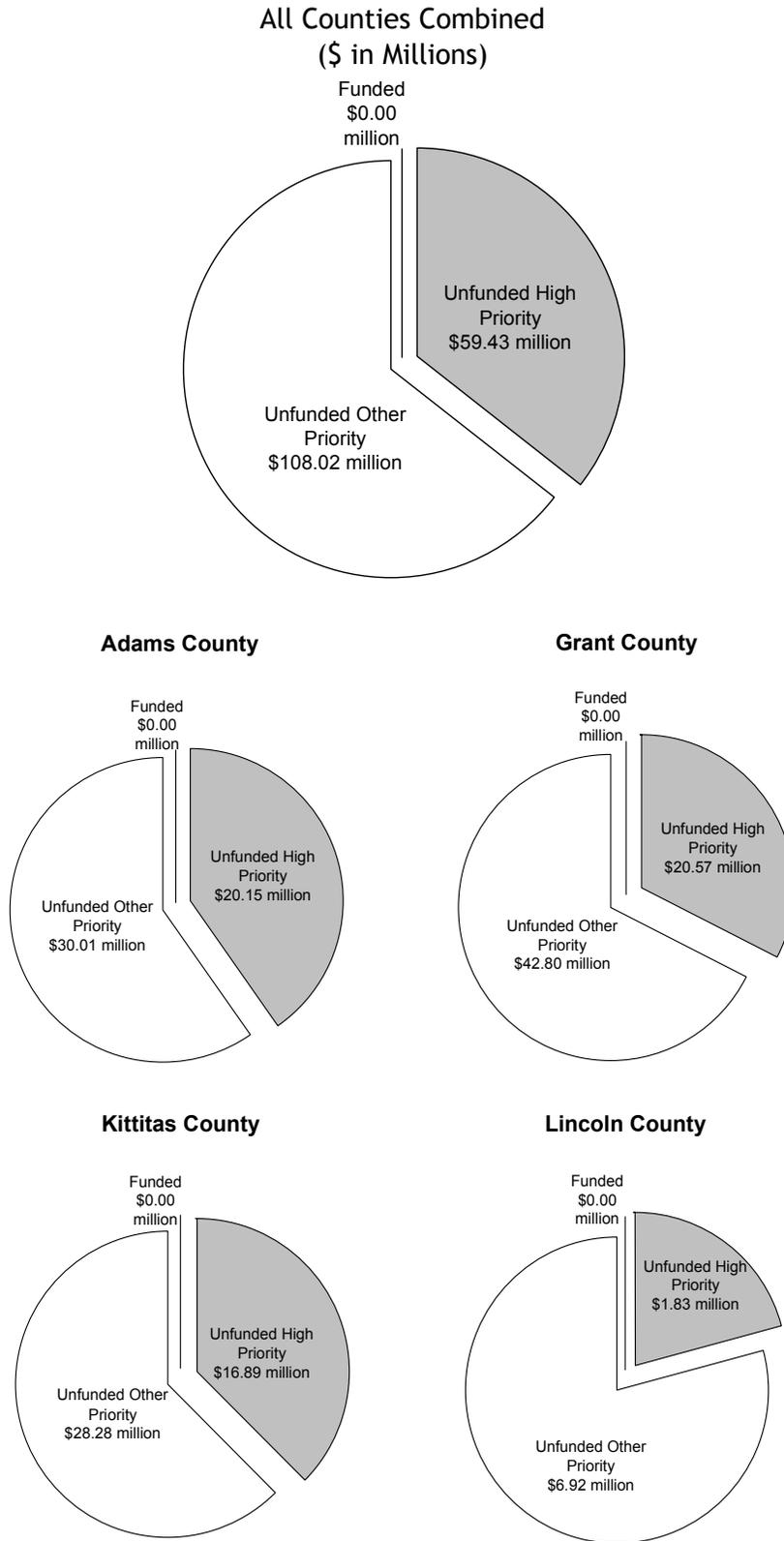
Kittitas County				Lincoln County			
Deficient Width	Miles Deficient	Cost/0.10 Mile	Total Cost	Deficient Width	Miles Deficient	Cost/0.10 Mile	Total Cost
2'	101.73	\$ 11,394	\$11,591,000	2'	28.65	\$ 11,394	\$3,264,000
4'	115.77	\$ 17,954	\$20,786,000	4'	11.95	\$ 17,954	\$2,146,000
6'	43.48	\$ 24,514	\$10,659,000	6'	9.65	\$ 24,514	\$2,366,000
8'	5.52	\$ 31,051	\$1,714,000	8'	0	\$ 31,051	\$ -
10'	0	\$ 37,588	\$ -	10'	0	\$ 37,588	\$ -
12'	0.09	\$ 44,147	\$ 40,000	12'	0.36	\$ 44,147	\$ 159,000
14'	0	\$ 55,550	\$ -	14'	0	\$ 55,550	\$ -
		TOTAL	\$44,790,000			TOTAL	\$7,935,000

More detailed examination was undertaken of accident data secured as part of this RTP update. County roadways with a higher accident rate than the county wide average accident rate were identified. Lists of these corridors in each county are included in Appendix M. Figure 12 identifies the 20 year funding minimum needs for safety improvements within the QUADCO region. The QUADCO region needs \$167.45 million dollars to improve the roadway safety for the county roads. As shown in the Figure, three separate improvement priorities are identified based on the accident rates for the roadways. Unfunded High Priority projects are those roadways which had an accident rate higher than the county average, while the unfunded other priority projects are those which require shoulder improvements.

The Unfunded High Priority projects include implementing low cost improvements such as signage, rumble strips and other safety devices to help increase driver awareness and safety. For the purposes of this study an estimate of \$2,000 per mile was used. Shoulder improvements include those listed above in Table 21 which would widen the shoulders of the existing deficient roadways to meet the regions current design standards. For the purposes of this study, shoulder improvements for roadways with an above average accident rate were identified as a High Priority project.

Of the safety projects, \$59.43 million is needed for High Priority areas while an additional \$108.02 million is needed to improve Other Priority areas. This compares to the Unfunded High Priority of \$200 million identified in the WTP (pg. 73) to improve rural two-lane county roads by implementing low-cost safety improvements.

Figure 12. Safety Improvement Costs



Financial Plan

Analysis of Funding Capabilities:

The responsibility for determining the application of funding for transportation projects (programming) in rural areas is significantly different from urban areas. In urban areas over population 50,000, a federally mandated regional Metropolitan Planning Organization performs the programming function. In rural areas there is no such federal mandate and individual state and local jurisdictions are required to program for their own specific projects.

Each jurisdiction in the region funds its projects through a variety of sources. Often the source of funding is determined by the type of the project. The various forms of funding mechanisms are described in Appendix N.

While some funding sources are directly allocated each year and thereby generally predictable, most sources, particularly those administered to WSDOT for state highways, have no direct allocation and must be “earned” or justified project-by-project on a state-wide or district-wide basis. These funds are available either by direct competition or through a prioritization method established by the administering jurisdiction. Consequently, development of funding capability forecasts for regional projects will be best focused on each participating jurisdiction’s six-year Transportation Improvement Program (TIP). The programming document required by WSDOT and the Federal Highway Administration shows how and where state and federal funds are to be spent.

Table 22 was prepared to show historic revenue sources for transportation expenditure levels for various project types by county and all cities combined in each county. Detailed information is included in Appendix O.

The top priority of the region is to maintain existing roadways, performing routine resurfacing and patching, snow removal, etc. as necessary. A relatively small amount of funding will be spent on major capital improvements such as roadway reconstruction or additions to the roadway network through widening of existing roads or new facilities.

The Regional Transportation Program is included as part of this Regional Transportation Plan by reference and is assembled each year by the QUADCO lead agency. For future updated of this plan, once 20 year needs have been identified for county roads, a more specific analysis of potential funding sources for the various projects should be performed.

Application of Future Funding to Needs:

There are clear distinctions in both the type of project necessary and the extent of work applied to each project. Typically, the vast majority of projects are limited to maintenance on both state and county roads. Those projects normally consist of patching, oiling or chip seal coating, and asphalt concrete overlays. Periodically for state routes, and more rarely on county roads, cold or hot mix resurfacing projects are done.

Further complicating funding issues are the varying sets of construction standards and regulations that apply to federal, state and local projects. As an example, while federal funding may be more readily available for state and county projects, the extensive list of

federal project standards and conditions tend to drive project cost significantly higher than state or locally funding work. As a result, the cost of any given project, regardless of priority, may range widely from as little as a few thousand dollars per mile to over one half million dollars per mile.

Expected Revenues

To program funds for projects, local jurisdictions and the RTPo must have an indication of expected revenues. This may be determined from experience or through written notice of a grant approval. Appendix O shows the 20 year projected transportation revenue forecast by jurisdiction. Assuming similar future federal apportionments, the estimated annual revenue for counties in QUADCO will remain the same for planning purposes.

Regional Project Recommendations

The projects submitted to the lead agency each year under this plan are deemed to be of importance to the QUADCO Region Regional Transportation Plan. See the Appendix P for the QUADCO Agencies Transportation Improvement Programs (TIP) (Appendix P is updated annually and retained on file with the Lead Agency annually. To request a current copy contact the Lead Agency).

The QUADCO RTPo has determined that each agency's TIPs when developed consistent with this plan will represent the members projects that have regional implications and will result in the best use of limited funds on projects of regional significance for the good of the region. Member agency's are encouraged to share their TIPs with adjacent member agency's so cross jurisdictional coordination and planning may occur within the QUADCO RTPo area. (As permitted Six Year TIPs may include additional projects for planning purposes even if funding is not being requested.)

This plan is a tool recommended to be used by those participating jurisdictions to assist them in developing 6 year TIPs that consider at a minimum the common regional transportation goals, policies and objectives that make up this regional planning effort. For cities and counties this recommendation should be viewed, as a positive option that recognizes their own needs as well as their neighbors and the region as a whole. The same perspective is true for WSDOT with additional consideration that state legislation requires incorporation of these recommendations into WSDOT plans for transportation improvements on state routes within the region.

The regional plan shall be implemented through mutual agreement of all members of the RTPo.

Identification of Alternative Solutions

It is recognized that some regionally prioritized needs will be difficult to program. In these cases consideration of alternative sources of funding or another means of meeting those needs must be found. Each unfunded project, by priority, should be carefully evaluated to identify any specific features that could be funded under special grants or programs and those sources should be pursued by both the responsible jurisdiction and the RTPo to obtain such available funding. These include the Enhancement, Statewide and Safety elements of the Surface Transportation Program of the federal Transportation Equity Act for the 21st Century (TEA 21).

A further alternative is to identify common project needs by type and work to promote the creation of a program element to address the specific need. An example of this alternative can be seen in the most recent development of the Rural Economic Diversification Support Program promoted by the RTPO, member counties and WSDOT to address the severe economic hardships brought on rural communities when essential freight routes are closed due to seasonal conditions.

All alternatives should be considered and the most viable should be vigorously pursued to the successful resolution of the need. Some alternatives may not appear to meet the apparent need but should be evaluated until its application is shown to be inapplicable.

Table 22. Forecasted 20-year Funding by County and Source

Funding Type	Adams County	Adams Cities	Grant County	Grant Cities
Property Tax	27,451,874	4,172,601	144,203,822	18,054,672
State Motor Fuel Tax	122,227,164	5,760,614	188,240,168	27,225,713
Federal Revenues	36,782,106	336,784	30,686,422	3,145,121
Base Total	186,461,144	10,269,998	363,130,412	48,425,506
General Fund				
Appropriations	7,478,754	10,381,870	2,306,118	41,172,286
Other Local Receipts	3,317,544	11,756,314	7,962,206	64,632,594
Other State Funds	14,395,370	4,941,698	22,860,542	31,559,872
Total Estimate	211,652,812	37,349,880	396,259,278	185,790,258

Funding Type	Kittitas County	Kittitas Cities	Lincoln County	Lincoln Cities
Property Tax	72,210,581	2,536,977	27,578,323	2,466,095
State Motor Fuel Tax	60,970,768	13,946,882	121,626,676	3,697,724
Federal Revenues	24,319,257	807,125	30,827,717	34,754,651
Base Total	157,500,606	17,290,984	180,032,717	40,918,470
General Fund				
Appropriations	3,540,172	25,873,144	6,806,976	9,811,102
Other Local Receipts	19,136,980	17,817,184	6,930,200	881,614
Other State Funds	17,306,970	15,703,252	13,273,728	13,473,076
Total Estimate	197,484,728	76,684,564	207,043,621	65,084,262

Forecasts of Revenue are based on historical revenues spent on transportation expenditures during the period 1996 - 2006. Data provided by WSDOT.

See Appendix O for more detailed information

Regional Implementation Priorities

In the QUADCO region each jurisdiction is responsible for identifying, planning, programming and constructing any transportation projects within the scope of their responsibility. The RTPO has no specific authority to fund or direct transportation improvements. The involvement of each jurisdiction in the RTPO (with the exception of WSDOT) is voluntary and consequently the results of the regional planning process necessarily takes the form of recommendations for consideration in each jurisdiction's overall program responsibilities.

Consequently, this plan is a tool to be used by those participating jurisdictions to assist them in programming efforts. For cities and counties these recommendations should be viewed as positive options that recognize both their own needs as well as their neighbors and the region as a whole. The same perspective is true for WSDOT with the additional consideration that state legislation requires the incorporation of these recommendations in WSDOT plans for transportation improvements on state routes within the region.

The regional plan shall only be implemented through mutual agreement among all members of the RTPO. Implementation of the Regional Plan following its adoption will consist of the following elements:

(The strategies provided here have been developed based on issues identified in Goals, Policies, and Objectives Section and the need to develop common or similar standards for regionally significant coordination. They are intended to be used to facilitate an agencies 6-year TIP project selection.)

- **Improve transportation system safety (Safety).** Select projects, which improve safety characteristics such as increasing sight distance, improving curve radii, and improving rail crossings have a qualitatively higher rating than those that do not. Moreover, it is important that projects, which do not necessarily improve safety, do not compromise the safety of the transportation system otherwise.
- **Implement projects with the highest investment value (Investment Value).** Any project should be economically viable. Funding should be readily available during the life of Plan. The project should meet the criteria specified for the funding source and should be as competitive as possible with similar projects elsewhere. The project should offer a viable solution to a recognized problem and do so in a cost-effective manner.
- **Ensure system continuity (System Continuity).** The Quad County regional transportation system is linked to the transportation systems of adjacent jurisdictions and any project that facilitates that linkage provides value to both this region and the statewide system as a whole. System continuity is a characteristic, which ensures that access between facilities and areas is maximized, and that the capacities, conditions and other attributes of each planned element are considered.
- **Eliminate deficiencies that reduce system efficiency (System Efficiency).** Projects that increase capacity or otherwise increase the ability of persons and goods to move unhindered and without delay are examples of system efficiency.
- **Provide multimodal solutions to transportation problems (Multimodal Solutions).** This includes projects which utilize more than one mode or which provide more opportunities to choose between modes.

Appendix A

QUADCO RTPO BOARD MEMBERS

Appendix A - RTPO Membership Lists

MEMBER

LeRoy Allison	Grant County	Commissioner
Jim Baergen	Town of Hartline	Mayor
Richard Becker	City of Harrington	Councilmember
Paul Bennett	Lincoln County	Public Works Director
Katherine Bohnet	Town of Wilson Creek	Mayor
Brandon Drexler	Kittitas County	Public Works Director
Sam Braun	Town of Odessa	Mayor
Wallace Bushman	City of George	Public Works Director
Larry Haydon	Town of Creston	Mayor
Bruce Johnson	City of Reardan	Administrative Assistant
D. Lee	City of Othello	
Jim Leonhard	City of Cle Elum	Public Works Director
Ryan Lyyski	City of Ellensburg	P.E.
Gerry McFaul	City of Moses Lake	P.E.
Barry Peacock	Town of Coulee Dam	Public Works Superintendent
Patty Phillips	Town of Lind	
Rudy Plager	Adams County	Commissioner
Jeri Porter	City of Roslyn	Mayor
Robert Rupe	Electric City	Councilmember
Tim Snead	City of Quincy	
Mike Thompson	City of Warden	City Administrator
Craig Ulleland	City of Ritzville	Mayor

ALTERNATE MEMBER

John Akers	City of Ellensburg	Public Works Director
Julie Berry	City of Davenport	Deputy Clerk
Roldan Capetillo	City of Warden	Mayor
Paul Gilliland	City of Harrington	Mayor
Sherman Johnson	Town of Reardan	Mayor
Harry Yamamoto	City of Quincy	Public Works Director
Matthew Morton	City of Cle Elum	City Planner
Robin Newcomb	City of Kittitas	Clerk/Treasurer
Todd O'Brien	Adams County	Public Works Director
Derek Pohle	Grant County	P.E.
Roger Sebesta	Town of Odessa	Public Works Director
Ehman Sheldon	City of Othello	City Administrator.
Scott Yaeger	Adams County - PW	
Jan Ollivier	Kittitas County	Transportation Planner
Jay Van Ness	City of Othello	Public Works Director

OTHER REPRESENTATIVES

Ed Barry	City of Ellensburg	
Terry Brewer	G.C. Economic Dev. Ctr.	
Linda Burns	Grant Transit Auth.	Manager
Gina Cadagan	WSDOT District 6 - East	Executive Assistant
Dan Evans	City of Sprague	Mayor
Dennis Francis	City of Grand Coulee	Foreman Public Works
Pat Gerdes	Town of Mattawa	Clerk
Laurie Hilton	Electric City	Clerk
Dave Honsinger	WSDOT District 2 - North	
Ted Hopkins	Lincoln County	Commissioner
Susan James	Town of Wilson Creek	Clerk
Justin Jenkins	City of Royal City	
Bill Johns	Adams County - PW	County Engineer
Valinda Knighten	City of Grand Coulee	Clerk
Larry Koch	Town of Lind	Mayor
Elliot Kooy	City of George	Mayor
Einar Larson	Town of Almira	Mayor
Jerry Lenzi	WSDOT District 6 - East	
Tracy Lesser	Town of Krupp	Mayor
Shannon Mckay	City of Othello	Mayor
Alta Paulssom	Coulee City	Clerk
Bill Preston	WSDOT District 5 - SCR	
Kim Ramm	Town of Odessa	Councilmember
Donald Reid	Town of Wilbur	Mayor
Bill Riley	WSDOT Big Bend EDC	
Mark Rohwer	WSDOT District 6 - East	Planning Manager
Bill Sangster	City of Ephrata	
Don Senn	WSDOT District 2 - North	
Gayland Snow	Town of Coulee Dam	Mayor
Isabelle Stigall	City of Soap Lake	Clerk
Neil Todd	Town of Washtucna	Mayor
Leslie Trachsler	City of Ephrata	Clerk
Carol Viskar	Town of Coulee Dam	Clerk
Bill Weibe	WSDOT	
Travis Wise	WSDOT	
Matt Wisen	WSDOT District 2 - North	
Todd Perry	City of Royal City	Public Works Director
Dick Zimbelman	City of Quincy	Mayor

Appendix B

DETAILED AIRPORT RUNWAY DATA

QUADCO Airport Runway Data

Airport	Main Runway (1)	Secondary Runway (*)	Airport Navigational Aids (*)	Fuel Avail. (*)	FAA Service Level (**)	State Service Level (**)
Bowers Field	11-29 (4,300' x 150' Concrete)	7-25 (5,590' x 150' Asphalt)	MIRL (11-29), Rotating Beacon, Wind Cone, Segmented Circle,	Yes	General Aviation	Regional Service
Cle Elum Municipal	7-25 (2,552' x 40' Asphalt)		MIRL, Rotating Beacon, Lighted Wind Cone, Segmented Circle	No	General Aviation	Local Community <10
Davenport	5-23 (3,107' x 50' Asphalt)	3-21 (2,271' x 45' Gravel)	MIRL (5-23), Rotating Beacon, Lighted Wind Cone	Yes	General Aviation	Local Community >10
De Vere Field	8-26 (2,055' x 30' Asphalt)		LIRL, Wind Cone	No	None	Recreation or Remote
Desert Aire	10-28 (3,665' x 36' Asphalt)		MIRL, Rotating Beacon, Lighted Wind Cone, Segmented Circle	No	None	Recreation or Remote
Easton State	9-27 (2,640' x 100' Turf)		MIRL, Wind Cone	No	None	Recreation or Remote
Ephrata Municipal	2-20 (6,700' x 150' Asphalt)	11-29 (3,843' x 60' Concrete)	MIRL, Rotating Beacon, Lighted Wind Cone, Segmented Circle	Yes	General Aviation	Local Community >10
Grand Coulee Dam	3-21 (4,199' x 75' Asphalt)		MIRL, PAPI, Rotating Beacon, Lighted Wind Cone, Segmented Circle	No	General Aviation	Local Community <10
Grant County	4-22 (10,000' x 100' Concrete)	14L-32R (13,503' x 200' Concrete) (Additional Runways on Airport)	MIRL, HIRL, PAPIs, VASIs, MALSRs, Rotating Beacon, Lighted Wind Cone, Segmented Circle, Control Tower	Yes	Commercial Service - Non-Primary (***)	Commercial Service (***)
J-Z	16-34 (1,900' x 48' Turf)		Wind Cone	No	None	Recreation or Remote
Lind Municipal	5-23 (3,197' x 50' Asphalt)		MIRL, Rotating Beacon, Wind Cone	No	None	Local Community <10
Moses Lake Municipal	16-34 (2,513' x 50' Asphalt)		MIRL, Rotating Beacon, Lighted Wind Cone, Segmented Circle, PAPIs	Yes	None	Local Community >10
New Warden Municipal	17-35 (2,811 x 60' Asphalt)		MIRL, Rotating Beacon, Lighted Wind Cone	No	None	Local Community <10
Odessa Municipal	2-20 (3,125' x 60' Asphalt)		MIRL, Rotating Beacon, Lighted Wind Cone, PAPIs	Yes	General Aviation	Local Community >10
Othello Municipal	7-25 (3,564' x 45' Asphalt)		MIRL, Rotating Beacon, Wind Cone, PAPI (25)	No	General Aviation	Local Community >10
Pru Field	1-19 (3,635' x 40' Asphalt)		MIRL, Rotating Beacon, Lighted Wind Cone	No	General Aviation	Local Community <10
Quincy Municipal	9-27 (3,660' x 50' Asphalt)		MIRL, Rotating Beacon, Lighted Wind Cone, PAPI (27)	No	None	Local Community <10
Wilbur Municipal	2-20 (3,119' x 35' Asphalt)		MIRL, Rotating Beacon, Lighted Wind Cone	Yes	General Aviation	Local Community >10
Wilson Creek	10-28 (3,074' x 50' Asphalt)		Wind Cone	No	None	Local Community <10

* Information Based on Current FAA Form 5010 Data.

** Information Based on Washington State Long-Term Air Transportation Study (LATS), Phase I Technical Report Dated September 30, 2006.

*** Service Levels Prior to Termination of Commercial Service in Late 2006.

- FAA Service Levels:
 - Commercial Service (Non-Primary) - Mainly general aviation airports with limited commercial passenger service of 2,500 to 10,000 annual enplanements.
 - General Aviation - Airports included in the NPIAS that do not receive scheduled commercial passenger service.
- State Service Levels:
 - Commercial Service - Non-Primary: Airport can accommodate scheduled commercial passenger service.
 - Local Community - Medium to low-activity airports in small to medium-sized communities with limited general aviation facilities.
 - >10 - More than 10 aircraft based at the airport.
 - <10 - Less than 10 aircraft based at the airport.
 - Recreation or Remote - Airport facilities that serve recreation communities or leisure destinations and remote backcountry locations.

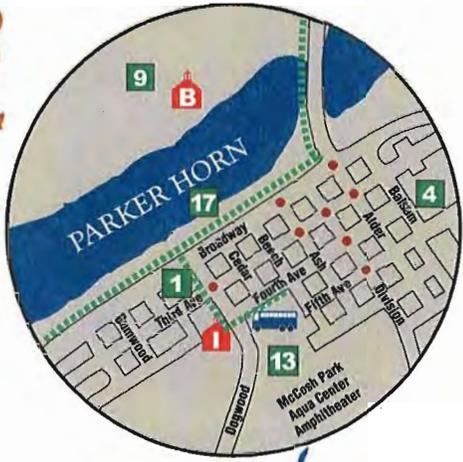
Appendix C

CITY OF MOSES LAKE AND ELLENSBURG TRAIL SYSTEM PLANS



MOSES LAKE

Moses Lake Museum and Art Center
Corner of Third and Beech



▲ MOSES LAKE VISITOR INFORMATION CENTER
 ■ MOSES LAKE LIBRARY
 ■ CITY HALL POLICE DEPT. PARKS & RECREATION DEPT.

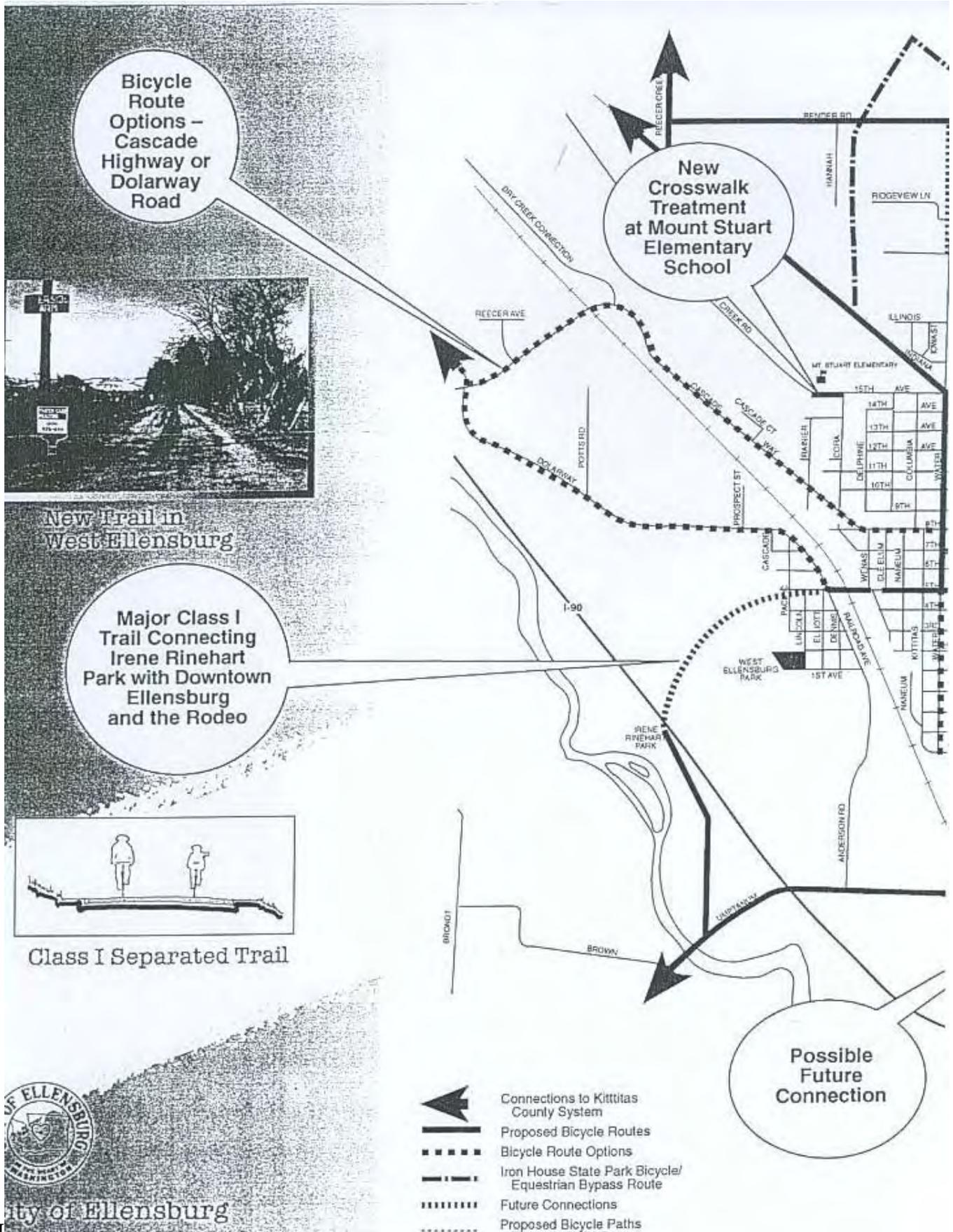
- PARKS:**
- | | |
|------------------------|-----------------------------------|
| 1. Carl T. Ahlers Park | 11. Larson/Peninsula Park |
| 2. Carpenter Park | 12. Lower Peninsula Park |
| 3. Cascade Park | 13. McCosh Park |
| 4. Civic Center Park | 14. Montlake Park |
| 5. Connelly Park | 15. Community Park |
| 6. Gillette Park | 16. Larson Recreation Center |
| 7. Hayden Park | 17. Neppel Landing |
| 8. Juniper Park | 18. Paul Lauzier Athletic Complex |
| 9. Knolls Vista Park | 19. John E. Caliborn Island Park |
| 10. Lakeview Park | 20. Japanese Gardens |

- SCHOOLS:**
- | |
|-------------------------------------|
| A. Garden Heights Elementary |
| B. Knolls Vista Elementary |
| C. Lakeview Elementary |
| D. North Elementary |
| E. Larson Heights Elementary |
| F. Longview Elementary |
| G. Midway/Discovery Learning Center |
| H. Chief Moses Middle School |
| I. Frontier Middle School |
| J. Moses Lake H.S. |
| K. Columbia Basin Secondary School |
| L. Peninsula Elementary |

MAP LEGEND

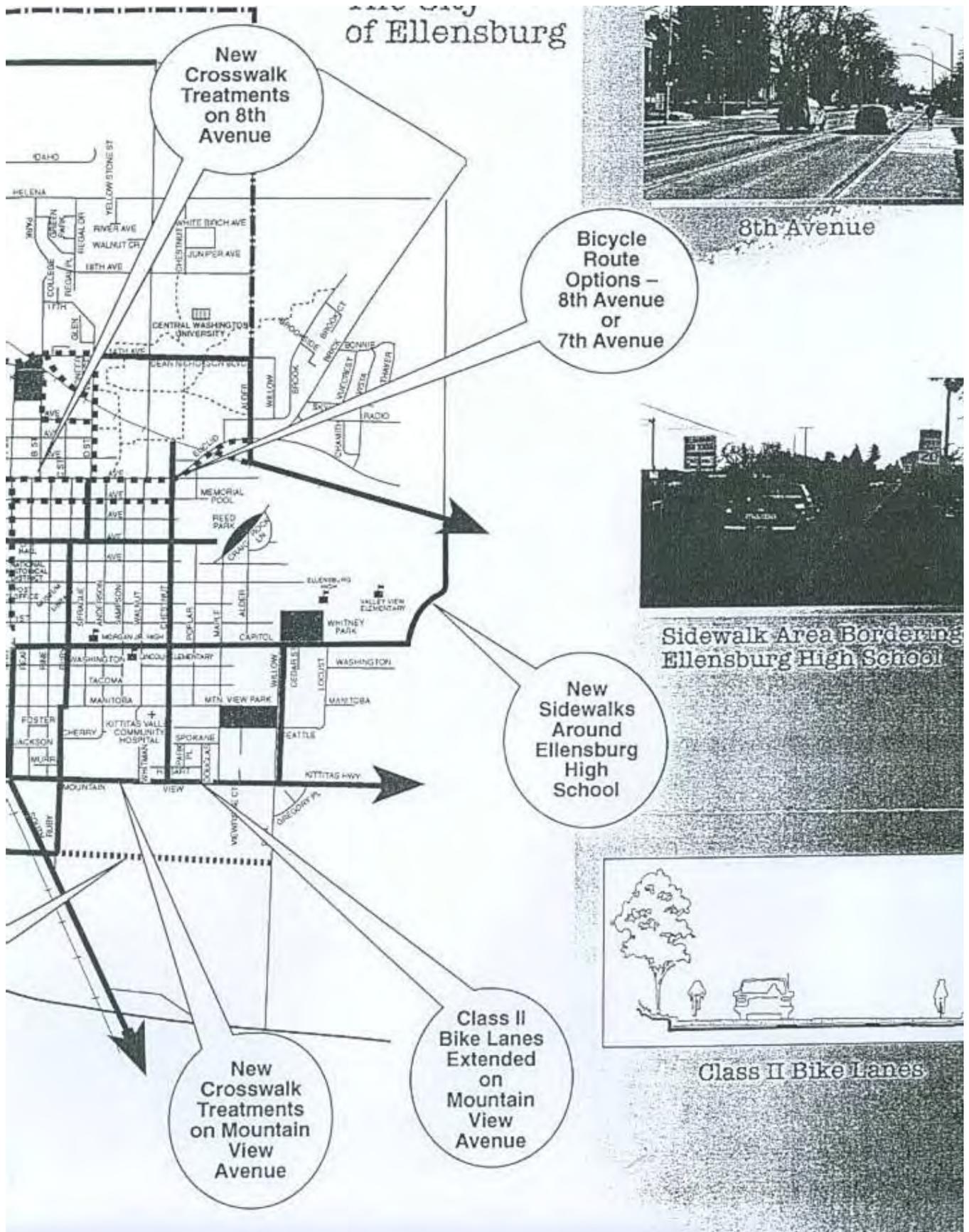
- Activity Paths and Trails
- Future Trails
- City Bus Stop
- Parks (please refer to left for list of parks)
- School (please refer to left for list of schools)
- Stoplight

Caution: Map is not to scale.

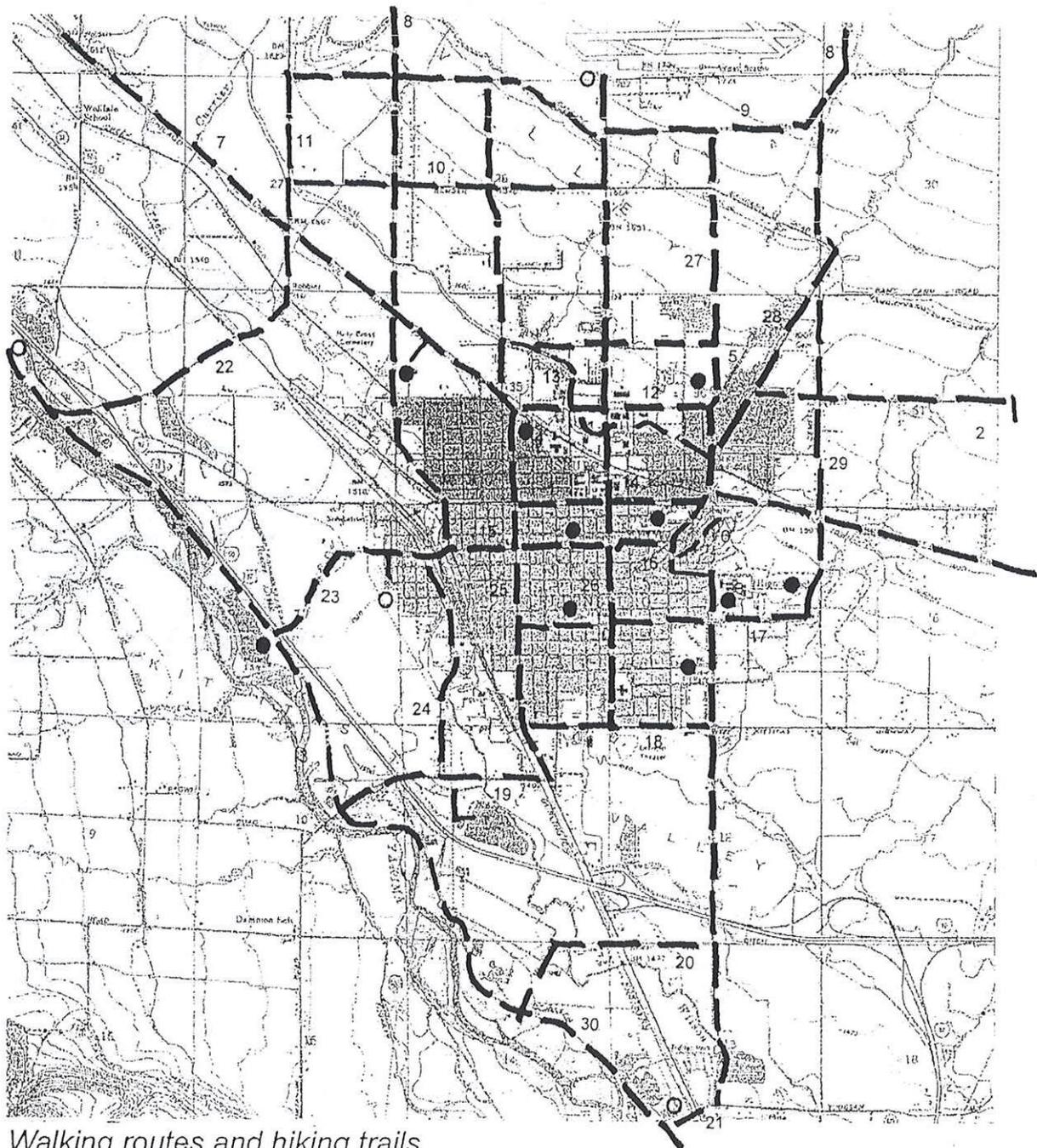


City of Ellensburg

STREET STANDARDS



CITY STANDARDS



Walking routes and hiking trails

- | | | |
|---|-----------------------------|-------------------------------|
| <u>Existing trails incl park trails</u> | | |
| 1 Naneum Watershed | 12 Dean Nicholson Boulevard | 25 Main Street |
| 2 Paul Rogers Wildlife Refuge | 13 Town Canal Trail | 26 Walnut Street/Airport Road |
| 3 Irene Rinehart Riverfront Park | 14 8th Avenue | 27 Bull Road |
| 4 Kiwanis Park | 15 5th Avenue | 28 Brick Road |
| 5 McElroy Park | 16 Rodeo/3rd Avenue | 29 Pfenning/Look Road |
| 6 Sagebrush Trail | 17 Capitol Avenue | 30 Yakima River Trail |
| 7 John Wayne/Iron Horse Trail | 18 Mountain View Avenue | |
| <u>Proposed trails</u> | | |
| 8 Airport Loop/Look/Hungary Jcnct | 19 Umptanum Road | |
| 9 Cascade Canal/Bowers Road | 20 Berry Road | |
| 10 Bender/Sanders Road | 21 Tjossem Road | |
| 11 John Wayne Bypass Trail | 22 Reecer Creek/Cascade Way | |
| | 23 Campus to Canyon Trail | |
| | 24 Railroad/Anderson Avenue | |

- Existing trail
- Proposed trail
- Existing trailhead
- Proposed trailhead

Appendix D

PRIORITIZED LIST OF TRANSIT PROJECTS

QUADCO—KITTTAS, LINCOLN, GRANT, AND ADAMS COUNTIES PROJECT RANKING

(A) Projects – 50 Points

Agency	Title of Project	Type of Project	Service Area	Is the project new/expanded / preservation	Project Description	Funds Requested	Matching Funds
HopeSource	HopeSource... .Dial-a-Ride/Route Deviated Service	Dial-A-ride and Route Deviated Service	Kittitas County: Easton, Teanaway/ Blewett Pass to Yakima. Ronald, Cle Elum, S Cle Elum, Suncadia, etc.	Sustain/ Expansion	Preservation of the existing services in Kittitas County for the Special Needs and General Public population. Reestablish service to the Upper County to serve the Special Needs population as well as employment, medical, shopping and education transportation needs. The expansion portion of this project is to provide greater local transportation options while freeing up the one existing vehicle to access clients from great distances and still maintain the three round trips a day service we currently provide between Upper County and Ellensburg.	\$1,355,648	\$228,750
People For People	Community Connector-Grant/Adams/ Lincoln	Fixed route	Adams, Lincoln, and Grant Counties Moses Lake to Ritzville and Moses Lake to Davenport	Sustain/ Expansion	Fixed route transportation services for the special needs population and general public in Adams, Lincoln, and in Grant County where current ADA and fixed route transportation does not meet the needs of the vulnerable population.	\$525,163	\$0
People For People	Demand Response and Route Deviated Transportation	Demand Response, Route Deviated	Adams, Lincoln and Grant Counties	Sustain/ Expansion	Provide service for persons with special needs and the general public in Adams and Lincoln with limited services in Grant county where current ADA and fixed route transportation doesn't meet the current needs.	\$1,668,799	\$236,954
Grant Transit Authority	Preservation of fixed (express) route service to assist low income production plant workers	Fixed Route	Moses Lake to Warden	Sustain	Ensure current transportation resources for low income production plant workers who travel from Moses Lake to work at the Warden Production Plants.	\$170,625	\$170,625

(B) Projects – 25 Points

Agency	Title of Project	Type of Project	Service Area	Is the project new/expanded / preservation	Project Description	Funds Requested	Matching Funds
Grant Transit Authority	Connection service for Adams County (Othello, WA) production plant workers to GTA Fixed (Express) Route Service from Moses Lake.	Fixed Route	Moses Lake, Othello	Expand Service, Establish New Service Area.	Ensure coordinated connection transportation resources for Othello based production plant workers to travel from Moses Lake to Othello.	\$85,000	\$85,000
HopeSource	HopeSource Central Transit New Fixed Route;	Fixed Route	Ellensburg	New Service	Student friendly fixed route to connect student housing areas with downtown businesses which is also available to Special Needs and general public clients.	\$200,000	\$200,000
Special Mobility Services	Davenport/Spokane Connector Route (M-W-F) Ritzville/Spokane Connector Route (Tue/Thur)	Route Deviated	Lincoln, Adams, and Grant County	Expand/ New Service	Transportation service from Davenport to Spokane and from Ritzville to Spokane.	\$ 152,446	\$0
HopeSource	HopeSource Ellensburg/ Yakima Fixed Route Service	Fixed Route	Ellensburg into Yakima	Expand/ New Service	A new service serving Special Needs and General Public clients who live in one community and have service needs in another community (Ellensburg and Yakima).	\$541,140	\$0

(C) Projects – 12 Points

Agency	Title of Project	Type of Project	Service Area	Is the project new/expanded / preservation	Project Description	Funds Requested	Matching Funds
HopeSource	HopeSource Capital Funding; Demand Response/Route Deviated	Capital – Demand Response, Route Deviated	Kittitas County	Sustain and Expand	Replace two wheelchair ramp equipped minivans and purchase two minibuses for reestablishing a discontinued service and the preservation of two existing services in Ellensburg and Upper County.	\$234,000	\$46,800
People For People	Vehicle Purchase to Sustain Demand Response-Route Deviated Service	Capital: Demand Response, Route Deviated	Adams, Lincoln and Grant Counties.	Sustain	Replace 10 ADA 14-passenger minibuses to transport individuals with special needs.	\$642,140	\$71,349
HopeSource	HopeSource Capital Funding/ Expansion (Yakima and Central)	Capital: Demand Response/Fix Route	Kittitas County	Expand	Capital Needs; 4 minibuses for expansion/new services. Plus shelters/signs for fixed route service	\$337,000	\$0
People For People	Mobility Coordinator-Travel Trainer	Mobility Management	Adams, Lincoln and Grant Counties	New Service	Mobility Coordinator-Travel Trainer will serve the vulnerable populations and general public, coordinate transportation resources and provide public education regarding existing transportation resources.	\$139,199	\$0

(D) Project – 0 Points

Agency	Title of Project	Type of Project	Service Area	Is the project new/expanded/ preservation	Project Description	Funds Requested	Matching Funds
HopeSource	HopeSource After-hours/weekend vouchers	After hours, weekend	Kittitas County	Expand Service. Provide new services to new riders	By providing vouchers, HopeSources will coordinate with the local taxi service for employment options and Special Needs transportation of seniors, youth, and those with lower incomes during hours HopeSource transportation is not available. The Special Needs Transportation would be for medical, shopping, employment, or education related reasons, including vouchers.	\$20,000	\$2000

Appendix E

TRANSCO INFORMATIONAL BROCHURE

Roads Trails Rails Runways

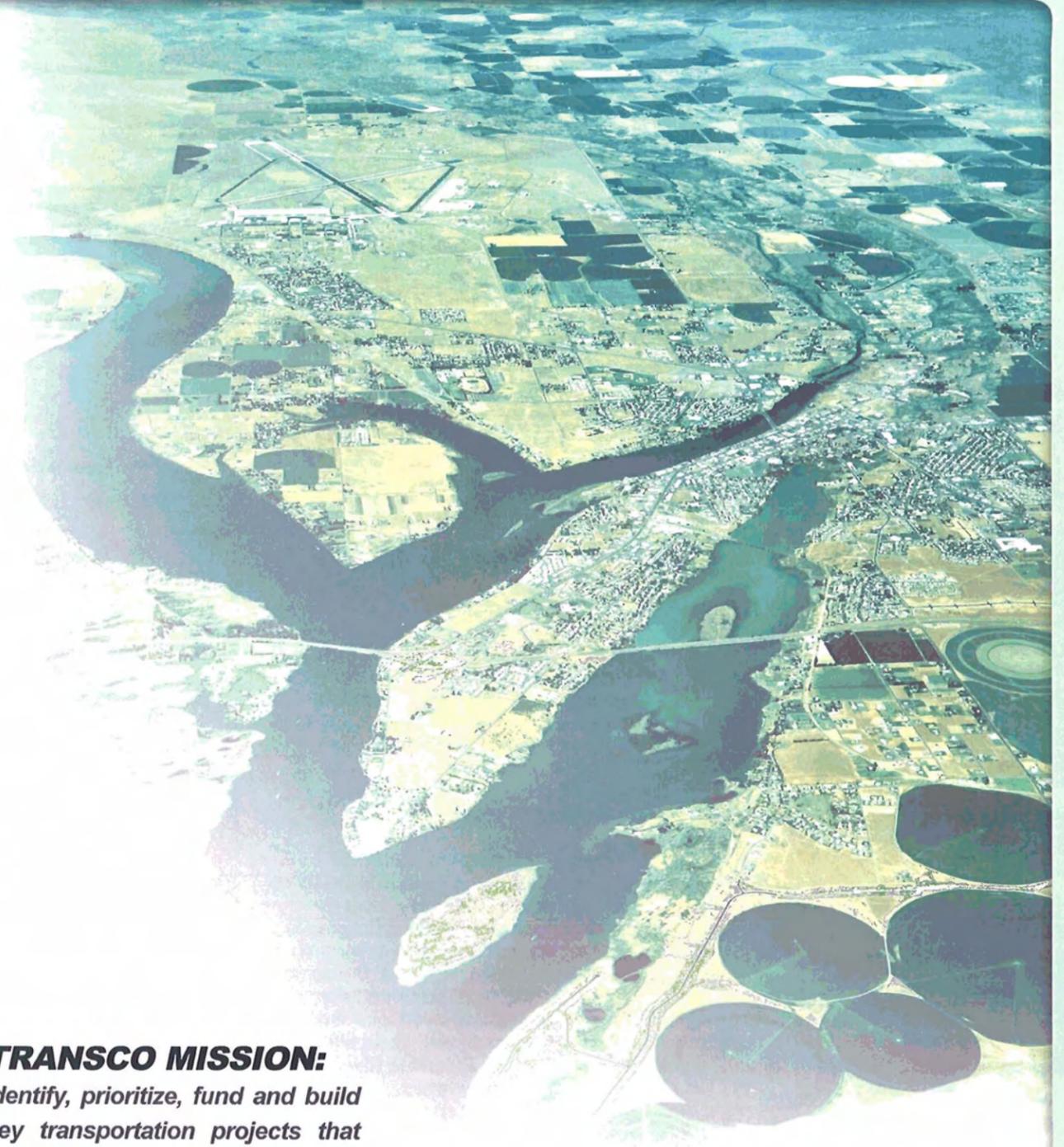
TransCo has benefited from the attention, efforts and input of a number of public and private organizations, including multiple representatives from:

Adams County
ASPI Group
Basic American Foods
Big Bend Community College
Big Bend Economic Development Council
Big Bend Resource Conservation & Development
BNSF
Cascadia Center
Columbia Basin Herald
City of Ellensburg
City of Ephrata
City of George
City of Moses Lake
City of Quincy
Columbia Basin Railroad
Coulee Corridor Consortium
Ephrata Street Advisory Committee
Grant County Economic Development Council
Grant County
John L. Scott Realty
JR Simplot
Moses Lake Business Association
Moses Lake Chamber of Commerce
Moses Lake Industries
Moses Lake Planning Commission
People For People
Port of Coulee City
Port of Ephrata
Port of Hartline

Port of Mattawa
Port of Warden
Port of Moses Lake
Port of Quincy
Port of Royal
Port of Wilson Creek
QUADCO RTPO
Quincy Foods
REC Silicon
Rep. Judy Warnick
Rep. Bill Hinkle
Sen. Janea Holmquist
Sen. Joyce Mulliken
SE Washington RTPO
Town of Wilson Creek
Vision 2020
Western Pacific Engineering, Inc.
Western Polymer Corp.
Windermere Realty
WSDOT
Washington State Potato Commission
Zip Trucking



TransCo,
PO Box 1454
Moses Lake, WA 98837
Contact: Karen Bonaudi, 509.760.7224



March 2007



Photos credit: Columbia Basin Herald

TRANSCO MISSION:
Identify, prioritize, fund and build key transportation projects that contribute to the economic vitality and quality of life of our area.



Photos credit: Port of Moses Lake

How TransCo was created:

TransCo was formed in 2006 to help solve transportation challenges in Central Washington. Shared difficulties and successes inspired this coalition of public and private organizations to work together to develop regionally significant transportation solutions.

TransCo grew out of three educational transportation summit meetings held at Big Bend Community College in Moses Lake. Key members of local communities came together to share similar interests and to hear reports on transportation initiatives currently underway. As a result of the meetings, the group developed a list of projects to address the region's greatest transportation needs.

TransCo's objective is to help make those projects happen.

What TransCo is doing:

TransCo partners cooperatively compiled a list of transportation projects and have prepared funding timelines of state and federal sources. With this data we will help identify and pursue the specific projects that have the most imminent need, largest support and stand the greatest chances of being funded and completed.

A smoothly functioning transportation network is critical to the economic vitality of our communities. Roadways, from the interstate highway system to county roads and city streets, are a top priority for both freight movement and safety. At the same time, growers and manufacturers have identified the increasing need for a more effective rail system as well as an efficient barge system on the Columbia River. Community trails and walkways are important to both improve quality of life and enhance commerce.

TransCo also serves as a public forum and communication network for transportation updates, issues and planning.

The TransCo Projects

Our goals are to identify, support, fund and build key transportation projects that contribute to the economic vitality and quality of life in our area.



Projects:
List identifies current needs in no order of priority.

- Trails**
 - 1 McDonald Siding to Parker Horn, railroad right of way conversion
 - 2 Coulee Corridor trail
- Rails**
 - 3 Port of Moses Lake - Northern Columbia Basin Railroad Project
 - 4 Port of Quincy rail siding extension
 - 5 Rehabilitate rail at Port of Ephrata
 - 6 Royal City to Othello - Rail restoration
 - 7 Palouse and Coulee City Railroad restoration
 - 8 Ellensburg to Lind rail restoration,
 - 9 BNSF full capacity issue, double track Everett to Spokane
 - 10 N. Columbia Basin Rail Project connection to BNSF main line
- Roads**
 - 11 Lake Loop I-90/Hiawatha to SR 17
 - 12 Broadway to Cascade Valley lake crossing
 - 13 I-90/Road N on/off ramps for freight traffic
 - 14 I-90 Corridor - Snoqualmie Pass widening
 - 15 SR 17, US 395 to Ephrata - Widen to four lanes
 - 16 SR 28/SR 281, Wenatchee to I-90 - Widen to four lanes
 - 17 Renovate Road R between US 2 and SR 28
 - 18 Central Washington Commerce Highway, US 395/SR 17/US 97
- Runways**
 - 19 Resume passenger air service to Grant Co. International Airport

Appendix F

SUCCESSFUL GRAIN TRAIN PROGRAM ADDS A THIRD TRAIN



RAIL

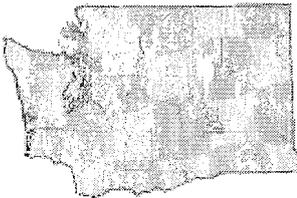
RIDE THE TRAIN [More >>](#)

- » [Amtrak Cascades](#)
- » [Stations](#)
- » [Sounder Commuter Rail](#)

BACKGROUND INFO

- [Station History \(pdf\)](#)
- [Rail Lines Map \(pdf\)](#)
- [Abandoned Lines](#)
- [Rail Terms](#)
- [Railroads & Contacts](#)
- [Freight Commodities](#)
- [Rail Homepage](#)

Click the Map for
Community Commute
and Travel Listings



[Click here to enlarge map](#)

RELATED TOPICS

- [Transit](#)
- [Transportation Demand Management](#)
- [Special Needs Transportation](#)

CONTACTS

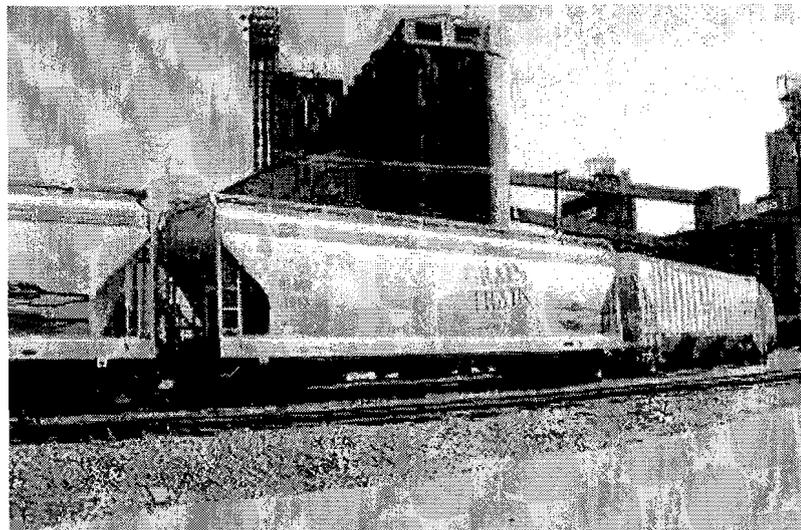
- [WSDOT Rail Office](#)

Successful Grain Train Program Adds a Third Train

A national shortage of rail hopper cars made it difficult and expensive for Washington State farmers to get grain to market. Working with local port districts, the state of Washington and the federal government helped purchase grain hopper cars. These rail cars are now locally-owned and dedicated to moving grain from Washington farm communities to Columbia River and Puget Sound ports. In addition to helping keep Washington goods moving, the grain trains help reduce damage to highways by reducing the number of heavy trucks carrying grain.

At first the program offered service only in the Walla Walla area. In 2000 profits from the operations of the first grain train financed the purchase of a second, which serves Moses Lake area farmers. The same process allowed the purchase of a third grain train operated by the Port of Whitman County in 2003. In all, the grain train program operates 94 railcars.

- [What is the grain train program?](#)
- [Where do grain trains operate?](#)
- [How did the grain train program develop?](#)
- [How many farmers do the grain trains serve?](#)
- [How many grain train hopper cars are in the fleet?](#)
- [How much did the grain trains cost and where was the money from?](#)
- [Has the grain train program been financially successful?](#)
- [What led to the grain train project?](#)
- [What are the state's goals for the grain train project?](#)
- [What benefits do the grain trains deliver?](#)



What is the grain train program?

Started in 1994, the grain train program represents an excellent example of successful public/private partnerships. The grain train program is financially self-sustaining, as it has been since its inception.

In cooperation with local port districts, the program used federal funds for the initial purchase and ongoing profits to purchase additional grain hopper cars. Washington's farmers and shippers then agree to load the grain train cars, which are dedicated solely

to their shipping needs to river and coastal ports. This program has not only alleviated a shortage of rail cars, but also prevents damage to highways and helps keep Washington farmers competitive in world markets.

Where do grain trains operate?

Grain trains serve farmers in the Walla Walla, Moses Lake, and Whitman County areas moving grain to deep-water ports on the Columbia River and Puget Sound. A very successful new concept, informally named the grain shuttle, uses backup cars from the three grain train sets to shuttle grain from elevators to local river ports.

How did the grain train program develop?

The first grain train was a joint effort between the Port of Walla Walla, the Washington State Department of Transportation (WSDOT) Rail Office, the Blue Mountain Railroad, and four Walla Walla area grain co-ops. The Washington State Energy Office provided funding for the initial cars from legal settlements.

The first grain train, operating near Walla Walla, generated enough revenue to pay for another train. The first grain train recaptured 80 percent of the purchase price of the grain cars in its first six years of operation. These cars still have at least 20 years of life remaining. The Moses Lake grain train, unveiled in a ribbon-cutting ceremony in April 2000, established a partnership between the state, the Port of Moses Lake, and over 600 wheat farmers in Grant and Adams Counties. Now the new third train is a partnership with the Port of Whitman County and its shippers.

How many farmers do the grain trains serve?

The grain trains serve more than 2,500 cooperative members/farmers, moving their product to the deep-water ports of the Columbia River and Puget Sound. The cooperatives served are located in the eastern Washington towns and cities of Oakesdale, Plaza, Spangle, Fallon, Thornton, Endicott, Willada, Prescott, McCoy, and Palouse. All three trains also help to preserve rail service in these rural communities.

How many grain train hopper cars are in the fleet?

Ninety-four. Seventy-six are owned by Washington State. The Port of Walla Walla owns 18.

How much did the grain trains cost and where was the money from?

The first grain train was purchased in 1994 with money Washington State received from the Washington State Energy Office. These federal funds came from money awarded the government as a result of successful litigation against oil companies, who had overcharged consumers. The upfront investment in 1995 was \$667,510 to purchase 29-previously used rail grain cars. These hoppers, built between 1966 and 1981, were then repaired and repainted. The total average cost per car—including repairs—was \$25,079.

The state purchased another 47 hopper cars (18 to match the Port of Walla Walla's 18 for the second train, 29 cars for the third train) using the accrued income the grain train generates from the railroads. These railroads pay the state market rental rate for use of state-owned grain hopper cars. In an effort to preserve rail lines in Walla Walla County, the Port of Walla Walla purchased 18 cars of their own.

The average cost of the initial grain train hopper cars is \$25,000. A more highly competitive railcar market lowered the cost of the cars for the third train to under \$8,000 each. The average car has 20 years of useful life left. The program has been financially self-sustaining since the initial equipment purchase.

Has the grain train program been financially successful?

An independent economic analysis conducted after the first year of the project concluded that the project had "successfully met all general goals and most original specific goals. Rail car capacity has been increased in a period of continuing car shortage. Rail service has been saved, generating benefits that reach beyond the grain

also to other shippers, the general agricultural and rural community, and even to those entities working on rural roads and economic development. This interconnected relationship is complex, but definite." (p. 19, *An Economic Evaluation of the Performance...*) With so many lines potentially at risk of abandonment, this partnership program provides a tangible benefit by contributing to the economic viability of these lines.

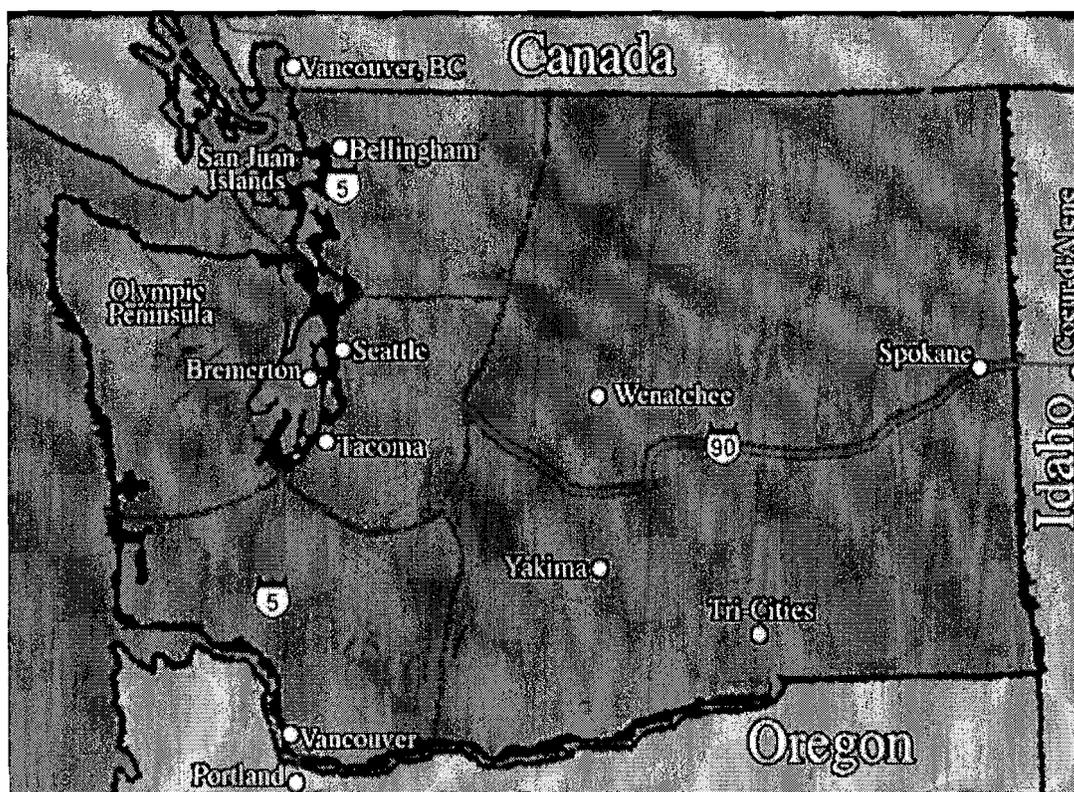
- They serve wheat producers in areas of eastern Washington who have relatively few transportation options. In particular, grain cooperatives located in Oakesdale, Plaza, Spangle, Fallon, Thornton, Endicott, Willada, and Prescott use the grain trains to get their wheat to market in a timely and cost-effective way.
- They reduce transportation costs because shipping by rail is cheaper than shipping by truck. It is estimated that the four original grain cooperatives (Thornton, Endicott, Willada, and Prescott) saved \$92,320 in 1995 alone by using rail rather than trucks to get their product to market (*An Economic Evaluation of the Performance...*, p. 25).
- They reduce the number of trucks on our state's highways. If trucks had been used to ship the 156,900 tons of wheat that the first two grain trains have carried to Columbia River and Puget Sound ports, it would have added 4,482 heavy truck loads to Washington State highways.
- They reduce highway repair and maintenance costs. It is estimated that the grain carried in a single grain train would require 540 tractor-trailer combinations if shipped by highway. Tractor-trailers cause significant road damage, requiring expensive repairs and maintenance. In 1995 it was estimated that the road damage avoided by use of the grain trains saved \$188,727 in repairs and maintenance to both state and county roads (*An Economic Evaluation of the Performance...*, p. 23). The *Washington State Freight Rail Plan Update*, p. 8, estimates that the continuation of rail service on the branch-line system saves the state \$20 million annually in avoided roadway maintenance costs.
- Rail uses significantly less fuel than trucks—estimated fuel savings for 1995, as a result of using rail rather than trucks, were 10,190 gallons.
- These lines are important because they handle local traffic that, if not moved by the railroads, would either move by truck over state and local roads or would cease to move, which could cause businesses to close or relocate.
- Trains typically carry heavier weights using much less fuel than trucks do. This is because the friction involved in moving steel wheel vehicles on steel rails is about a tenth of that involved in moving rubber-tired vehicles on pavement. Consequently, the energy required to move the same weight is much less on rails than on pavement. The end result is that far less energy is consumed in shipping by rail than by truck, which means that shipping by rail generates less pollution, thus preserving air quality.
- Rail serves as an alternative shipping mode. This option could become increasingly important in the future if barge traffic on the Columbia River is affected by draw downs to save endangered salmon runs. It already is important to growers in areas served only by county roads that are closed when there is frost or ice.
- They also help to keep the transportation system healthy by providing shippers competitive alternatives (*Washington State Freight Rail Plan*, pp. 2-15).

Appendix G

EASTERN WASHINGTON GRAIN-HAULING SHORT-LINE RAILROADS

Washington State

Eastern Washington Grain-Hauling Short-Line Railroads



Washington State

**Eastern Washington
Grain-Hauling Short-Line
Railroads**

Prepared for
**Washington State
Department of Transportation**

By

HDR Engineering, Inc.
and
Denver Tolliver

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Executive Summary

What is the objective of the eastern Washington short-line railroad study?

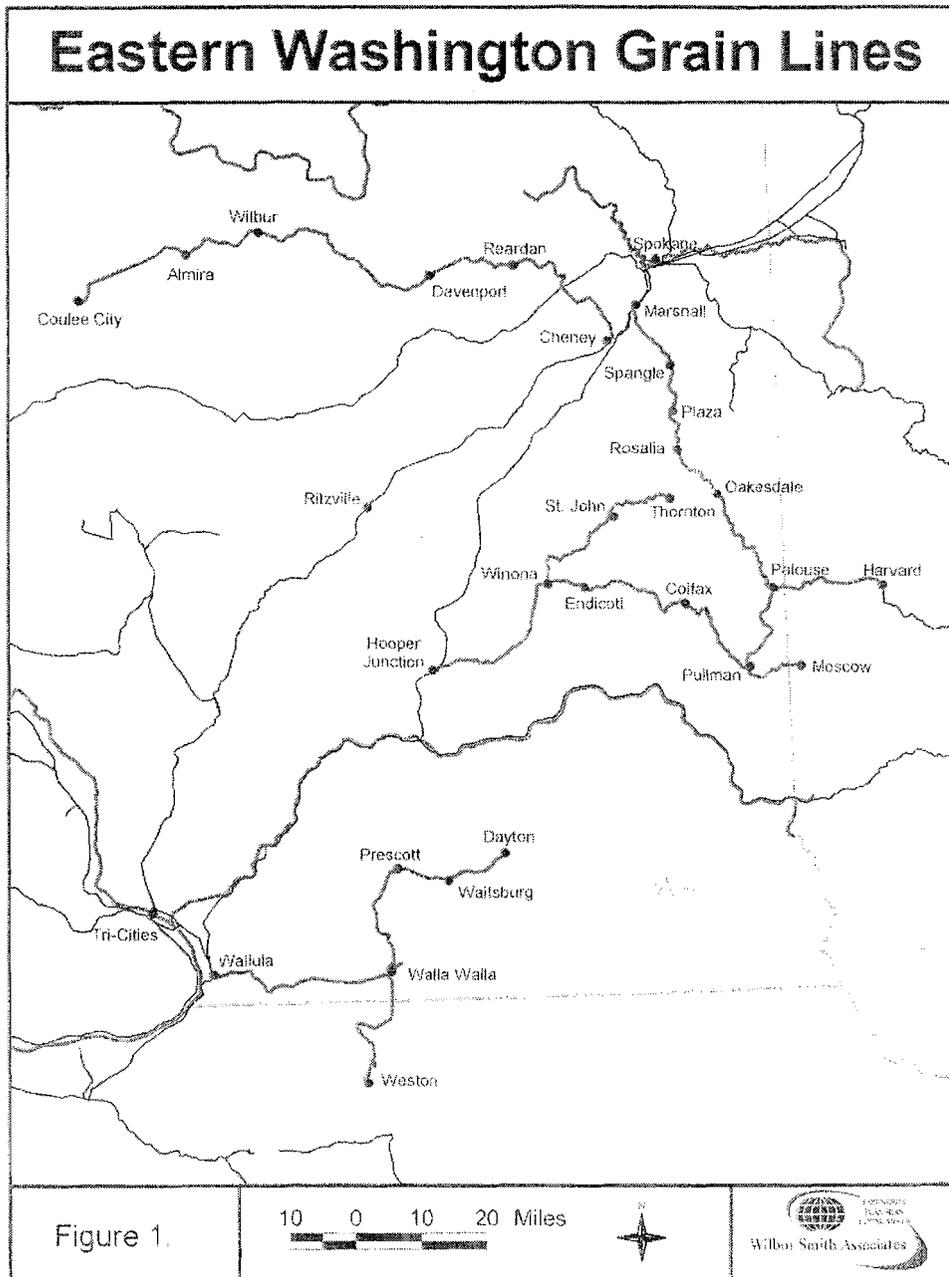
- To analyze the economic viability of the 372-mile grain hauling eastern Washington rail system known as the Palouse River and Coulee City Railroad (PCC). (See Figure 1 for map of PCC's eastern Washington grain lines.) In 2000 these lines generated 10,700 carloads of traffic.
- To value the public benefits of preserving the PCC system.

What are WSDOT's conclusions and recommendations?

The Washington State Department of Transportation's (WSDOT) conclusions and recommendations are:

- In private ownership the 372-mile PCC rail system is not self-sustaining and is highly susceptible to abandonment.
- The lower cost of rail bulk transport allows the PCC to save eastern Washington shippers \$2.17 million per year in reduced freight charges.
- Preserving this rail system keeps more than 29,000 heavy truckloads per year off state and county roadways. Looking over a number of years, the PCC creates an annualized net public benefit of \$4.16 million per year in avoided highway truck damage.
- Additional data received since the study shows that the immediate loss of wages and benefits in affected rail-dependent industries has an annual cost of \$6.4 million. In addition, potential job losses plus planned jobs that would not be realized could cost another \$11.1 million per year in lost wages and benefits.
- Local rural economic development efforts to keep existing firms or lure prospective businesses to rural eastern Washington also benefit from continued rail access.
- The PCC system has an acquisition value (net liquidation/scrap value less outstanding public debt) of approximately \$7.45 million. This contrasts against annual public benefits ranging from \$12.9 to \$23.9 million per year. Consequently, the benefits from purchasing and preserving the system will repay the public in the first year with additional benefits every year thereafter.

- WSDOT supports placing this rail system in public ownership to realize these benefits to the communities, businesses, and shippers in Whitman, Grant, Lincoln, Walla Walla, Columbia, and Spokane Counties. A consortium of port districts and county governments ultimately should be responsible to manage and preserve the PCC at the local level.



What is the background of the Palouse River and Coulee City Railroad?

In the summer of 2001, the PCC advised WSDOT that significant sections of its 372-mile eastern Washington rail system would have to be abandoned in the next five years. The PCC's reason was that these rail lines do not and cannot generate enough freight revenues to cover both the costs of rail system ownership and ongoing track maintenance.

Ownership costs include PCC's loan payments for the purchase of the branch lines from the Burlington Northern and Santa Fe Railway (BNSF) and Union Pacific Railroad (UP). Maintenance costs include the track rehabilitation expenses needed to cover the decades of deferred track maintenance before their sale. In addition, many of the lines must soon be upgraded to handle the newer and heavier 286,000-pound freight cars that the rail industry is moving towards. More state rail assistance loans would be of no help, because the increased debt burden on the railroad would lead to financial distress.

However, the PCC does believe that enough freight revenue is generated from current rail business to cover the operating expenses of the rail system which includes: normalized track and bridge maintenance, transportation (primarily locomotives and train crew labor), equipment maintenance, and general administrative costs.

The primary purpose of this report is to provide an independent analysis on the viability of the PCC rail system. This evaluation is not predicated upon information provided by the railroad or groups with potential conflicts of interest. The PCC system is analyzed as if it were a hypothetical stand-alone short-line railroad operation providing common carrier rail freight service to branch-line shippers. Independent estimates of track net liquidation values and normalized maintenance costs are derived from detailed field data, track charts, and engineering models.

A second purpose is to provide a firm estimate of how much additional heavy truck roadway damage will result if cargo currently moving over the PCC rail system is diverted to state highways. This would be important to determining the best course of action if WSDOT determined through independent analysis that the PCC system is likely to be abandoned.

Since the eastern Washington short-line railroad study was completed in early fall 2002, WSDOT has undertaken additional analyses and consultations with local ports, county commissions, civic leaders, shippers, and shipper associations. Some of the information reported in this summary reflects that more recent data, especially on wages and benefits that may be lost if the PCC is abandoned.

What are WSDOT's findings?

Is the PCC system viable?

Study results indicate that the PCC needs to generate \$4.4 million per year to operate trains, perform normalized track and bridge maintenance, and cover general and administrative expenses. They accomplish this currently through the collection of \$4.15 million in annual freight revenues and \$0.26 million in annual property lease revenues.

However, there are two significant non-operating costs that the PCC system is unable to cover from existing revenues. One is the debt burden owed by the railroad and the other is the rehabilitation expense of deferred track maintenance from the previous owners (BNSF and UP), along with related 286,000-pound freight car track and bridge upgrades.

The cost of property ownership of the 321-mile¹ PCC is estimated at \$1,005,000 per year. This ownership cost does not include any rail line maintenance costs. The annual ownership cost is determined by what the owner of the rail system could net if the property were sold at market value and the proceeds from the sale generated 10.2 percent in interest per year. The 10.2 percent interest is the 2001 American rail industry cost of debt and equity capital according to the United States Department of Transportation. These additional million dollars per year for the cost of ownership of the PCC system trackage is an expense that cannot be covered from existing revenues.

Obviously, if the PCC rail system were in public ownership, the one million dollar private ownership financial burden would be eliminated, significantly improving the probability of the railroad's long-term survival.

¹ While the PCC operates 372 miles of rail lines in Washington State, the PCC only owns 321 miles of track. This accounts for the difference in track miles between track miles owned and miles of track to operate and maintain. The remaining 51 miles are owned by other entities such as the Port of Columbia, which owns the 39-mile Walla Walla to Dayton branch. However, the PCC still has the responsibility to operate trains and maintain the track and bridges on the Walla Walla to Dayton branch.

Does the PCC need to catch-up on deferred maintenance?

The other long-term dilemma that faces the PCC system is up to \$40 million in track and bridge upgrades required to create a completely renewed and upgraded infrastructure. This is necessitated by years of deferred track maintenance at the hands of the previous rail line owners and also to upgrade the line's capacity to handle the industry's current standard of 286,000-pound railcars. With today's newer and heavier freight cars operating over ancient lightweight rail, there are increasing numbers of low-speed train derailments. The threat of nuisance derailments forces trains to move at restricted speeds, which causes train crew labor expenses to skyrocket, which leads to the rail line becoming too labor intensive and ultimately too costly to operate.

Not every PCC line needs the full 286,000-pound upgrade, but there is a need for considerable infrastructure investment. Assuming the worst case of \$40 million spread over 12 years, the PCC would require annual capital expenditures of approximately \$3.33 million per year, which threatens the long-term viability of the PCC system. While the revenues generated from freight and property leases can cover normal railroad operating expenses, the railroad needs help catching up on the capital expenditures.

Upgrading track from 10 mph to 25 mph train speeds could significantly reduce train crew labor costs and locomotive expenses. If the majority of these rail lines could be operated at 25 mph, train crew labor cost savings would provide additional funds that could be reinvested into badly needed track and bridge rehabilitation work.

What savings from avoided highway damage is there for the state of Washington?

If the PCC rail system were lost to abandonment, more than 29,000 heavy truckloads per year would be added to state roadways. It is estimated that the damage to these roads will total \$4.76 million per year. However, these trucks would pay an additional \$598,000 in government roadway user fees. Consequently, the annualized value of the net additional roadway damage expense to the state is \$4.16 million per year.

What are the potential economic impacts?

Increased shipping charges

If the PCC system were lost to abandonment, the lower cost alternative of rail shipment would no longer be available. As a result, the cost of shipping products (primarily Washington State grain) produced in this region to market would increase by an estimated \$2.17 million per year.

There is also the possibility that water and motor carriers freed of lower cost rail competition would raise rates even more. And while it is difficult to estimate a monetary impact, the higher transportation charges will make it more difficult for Washington products to compete on world markets.

Job and wage losses

Since the eastern Washington short-line railroad study was completed, a review of potential job and wage impacts has been completed based on information provided by port districts, county commissions, and local economic development agencies. They are listed below, calculated on a conservative basis of wages of \$10 per hour and 25 percent benefits over a 2,000-hour work year, unless otherwise noted.

Immediate job losses if the PCC is abandoned

It should be noted that many of these losses might occur well before actual abandonment once the industry in question believes it will occur and begins seeking other business locations, if possible.

- Seneca Green Giant cannery at Dayton, Columbia Co.:
 - ◊ 60 full time jobs = $60 \times 2,000 \times 10 \times 125\% = \1.5 million
 - ◊ 1,100 part time jobs = $1,100 \times 200 \text{ hrs} \times \$6.90 = \$1.5$ million
- Feed mill at Reardan, Lincoln Co.:
 - ◊ 100 full time jobs = $100 \times 2,000 \times 10 \times 125\% = \2.5 million
- PCC railroad workers in all served counties:
 - ◊ 35 full time jobs = $35 \times 2,000 \times 10 \times 125\% = \0.9 million

Total annual lost wages and benefits are estimated at \$6.4 million

Potential job losses if the PCC does not continue operations

- Metal fabrication plant at Airway Heights Industrial Park, Spokane Co.:
 - ◊ 250 full time jobs = $250 \times 2,000 \times 10 \times 125\% = \6.25 million
- Plant expansions at Airway Heights:
 - ◊ 150 full time jobs = $150 \times 2,000 \times 10 \times 125\% = \3.75 million
- New feed mill at Creston, Lincoln Co. (which would be the town's largest employer):
 - ◊ 45 full time jobs = $45 \times 2,000 \times 10 \times 125\% = \1.1 million

Total potential annual lost wages and benefits are estimated at \$11.1 million.

Damage to future economic development prospects

The PCC is the main or only local rail service to the counties of Whitman, Walla Walla, Columbia, Lincoln, Spokane, and Grant. Its demise could severely hinder future rural economic development efforts to lure potential plants and industries to this area of high unemployment. Many large employers are rail dependent because they must transport bulky or hazardous (restricted) commodities. The lack of rail service will prevent many rural towns from trying to site such job producers nearby.

What would be the public cost of buying the PCC?

The study reports that the railroad's value is in its net liquidation value. That is, if the railroad were scrapped and all scrap and real estate sold, what would be the amount realized? This so-called net liquidation value (NLV) is reported as \$9.8 million in the eastern Washington short-line railroad study. However, since the study was published, the Union Pacific Railroad has clarified that it still owns a portion of the mileage operated by the PCC and that the PCC pays an annual fee for use of the track. Therefore, the net liquidation value has been recalculated as \$8.85 million. This includes short segments of track in Idaho and Oregon that generate considerable revenues for the PCC and must therefore be included in any Washington purchase of the line.

The PCC has an outstanding balance of \$1.4 million on a Washington State Department of Transportation freight rail assistance loan. Assuming a public purchase of the line to place it in public ownership, the net payment to the owners of the PCC (WATCO of Pittsburg, KS) would then be \$7.45 million (\$8.85 million less \$1.4 million).

Does the price WATCO paid for the PCC enter into the calculation?

No. If WATCO were able to persuade the federal Surface Transportation Board that the line is no longer viable due to declining physical condition and thus be granted the right to abandon it, they could in fact realize the net liquidation value. The only way to avoid the granting of the abandonment would be for some other entity to purchase the line at the net liquidation value.

Would public efforts to preserve the PCC benefit Washington State?

Clearly, yes. Annual public benefits would range from a total of \$12.9 million up to \$23.9 million if all potential new jobs could be realized. Even the lower figure is more than 50 percent above the \$7.45 million it would take to put the PCC into public ownership and prevent its abandonment.

Reduced freight transportation costs	\$2.17 million/yr.
Annualized value of net avoided highway damage costs	\$4.16 million/yr.
Wages and benefits from direct job losses	\$ 6.4 million/yr.
Total Annual Public Benefits <i>Incl. direct losses of wages and benefits</i>	\$12.8 million/yr.

Wages and benefits from potential job losses	\$11.1 million/yr.
Total Annual Public Benefits <i>Incl. direct and potential losses of wages and benefits</i>	\$23.9 million/yr.

Appendix H

RAILROAD MAINLINE TRAIN COUNTS AND CAPACITIES

Appendix I

WSDOT WTP SUMMARY MATERIALS

Washington Transportation Plan

Phase 2: Developing the Constrained Plan

September 2004 - July 2005

Adopt Strategies

In the fall of 2004 the Transportation Commission will adopt the strategies, which will establish the policy framework for developing the investment plan.

Adopt Strategies

Develop Investment Plan

Set Priorities

Adopt the Plan

Develop Investment Plan

The Department of Transportation in cooperation with the Regional Transportation Planning Organizations will develop an investment plan to implement the strategies for our state's key transportation issues. These investments will vary by region and will reflect the appropriate regional response to implement the statewide strategies.

Set Priorities

Because funding is limited and competition for this limited funding is keen, the Transportation Commission will prioritize the investment plan to be constrained to a reasonable level of revenue. This prioritization process will reflect, to the extent possible, stated regional priorities.

Adopt the Plan

In the summer of 2005, the Transportation Commission will adopt the updated plan, which will include the constrained investment proposals, with state projects and state program recommendations, plus statewide policy recommendations needed to implement the plan. The updated plan will become the basis for the 2007-2009 Transportation budget proposal that the Transportation Commission will submit to the 2007 Legislature.

Ways to Participate in the Outcome

- Regularly attend your respective Regional Transportation Planning Organization's meetings.
- Visit WTP on the Web: www.wsdot.wa.gov/planning
- Attend WTP workshops, conference presentations, meetings and forums.

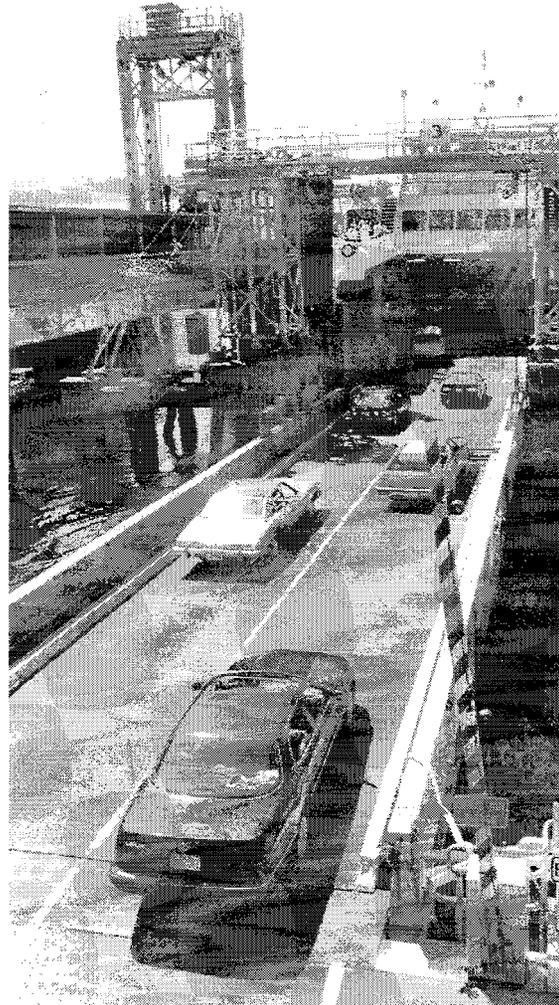
Here are a few that are currently scheduled:

Safety Conscious Planning Workshop

April 20th, 2004, 8:30 AM – 3:00 PM Red Lion, SeaTac

Planning Association of Washington Conference

May 14th, 2004 WTP Panel Session Red Lion, Richland



2005 Update: Work Plan Overview

“How can transportation serve our economy's productivity, our communities' livability, our ecosystem's viability, and our citizens' convenience?”

Washington's Transportation Plan (WTP) is a blueprint for transportation programs and investment. The plan covers all modes of Washington's transportation system: roadways, ferries, public transportation, aviation, freight rail, passenger rail, marine ports and navigation, bicycles and pedestrians. The WTP is required by state and federal law to be regularly updated. The update currently underway will be adopted by the Transportation Commission in 2005, will cover the period 2007-2026, and will be the basis for an investment proposal to the legislature in 2007.

This folio outlines the work plan for the plan update. The first phase: developing and analyzing data about the transportation system, includes current and expected future conditions, the use for movement of people and goods, and the effects of the system on the economy and the environment. This baseline data is being stored online in a WTP Data Library, available in Spring 2004. The data will support development of effective strategies to address the key issues facing the future of our statewide transportation system. The strategies will form the basis for the second phase of the WTP update including identifying & prioritizing specific program investments that will result in a constrained transportation plan. (see back page).



What is the Overall Process?

Phase 1: Data Compilation, Analysis & Strategy Development

December 2003 – September 2004

The Work Underway:

- Create the Statewide Transportation Data Library
- Analyze Statewide Trends & System Conditions
- Identify Key Strategic Issues & Develop Effective Strategies
- Share What We've Learned

Create the Statewide Transportation Data Library

The update to the plan started in late 2003 with several concurrent activities primarily involving data collection and analysis. Special subject research and modal plan update efforts are taking place to fill the gaps in the current data and customer input readily available for this update. Examples of the modal efforts include the long-range plan for the Washington State Ferries, a Marine Cargo Forecast, and updating the Intercity Passenger Rail and Public Transportation Plan. The research efforts are topics that apply across modes and jurisdictional boundaries, such as but not limited to, statewide safety needs, congestion relief analysis, local roadway needs, habitat corridors and species diversity, freight customer interviews, and economic development.

Techniques for collecting data vary from reviewing census information to conducting focus groups and workshops. Traditional demographic and economic trend data will be compiled. In addition, freight, personal travel, congestion, safety, technology, and environmental trends will be included. These baseline facts and assessments will provide the context for developing the strategies of the plan. In several areas forecasted information will describe the outlook of the next twenty years.

Analyze Statewide Trends & System Conditions

Identifying and understanding major trends and their implications to Washington's economy and demands on the transportation system are critical to developing the Washington Transportation Plan update. The statewide transportation system includes all modes of travel and related facilities and services, regardless of ownership. The condition assessment being conducted for this plan update is a summary that will include information such as the number of lane miles of federal, tribal, state, and local roadways, the location of airports and rail lines, and the condition or health of the facilities for each mode of transportation. In addition background papers are being compiled on our state's financial options, examining the relationship between growth management and transportation, and a summary of state and federal planning requirements.

Identify Key Strategic Issues & Develop Effective Strategies

The focus of this update is organized into nine key strategic issue areas. Each fundamental issue relates in some way to all modes of the transportation system and its facilities and services. Understanding the interrelationships between these issues is essential to creating a plan that has an appropriate positive contribution to our state. This step in the process involves identifying the needs at the regional level with specific modal needs that have statewide significance. Strategies for addressing gaps and needs will be developed for each of the nine issue areas. (See key issues list on right.)

Nine Key Statewide Transportation Issues

System Preservation

Fundamental Issue: What will it take to make sure that the elements of the transportation system that we take for granted today will still be in place when we need them in two, six, or twenty years?

System Efficiencies

Fundamental Issue: How can we best work toward optimizing how efficiently we derive the benefits of our current transportation system facilities and those we are able to create in the future?

Safety

Fundamental Issue: How do we make transportation systems and facilities throughout the state safer for their users?

Transportation Access

Fundamental Issue: Where basic transportation services are indispensable for all citizens' societal engagement, how is a "safety net" for transportation needs to be provided every citizen in every community?

System Extensions

Bottlenecks and Chokepoints

a. What opportunities for investment in new facility and system assets can help address system chokepoints and bottlenecks? What are the most effective near-term solutions through expanding capacity to move people and goods in shorter and more reliable times?

Contributing to a Strong Economy and Good Jobs

b. What investments in new facility and system assets can help support the state's economic vitality and strengthen the job picture?

Moving Freight

c. How are the special needs of freight movement to be incorporated into the state's transportation plan?

Building Future Visions

d. What are the visions of transportation system futures - shared and unshared - that should shape today's transportation planning to help create pathways to the future?

Health and the Environment

Fundamental Issue: How can transportation investments be developed, implemented and used in ways that at the same time enhance our citizens' transportation goals and our citizens' goals for healthy communities and a well-protected environment?

Share What We've Learned

Throughout Phase 1 information will be shared on the Department's web page as well as at workshops and meetings on various topics throughout the state. In addition, on September 21, 2004 the Washington State Transportation Commission will host an event that will serve as a milestone in the update process. This meeting of a variety of interests and transportation service and facility providers will provide an opportunity for a broader discussion of the data, the trends, the issues, and gaps and proposed strategies. This opportunity for review will also provide input to the Transportation Commission for Phase 2.

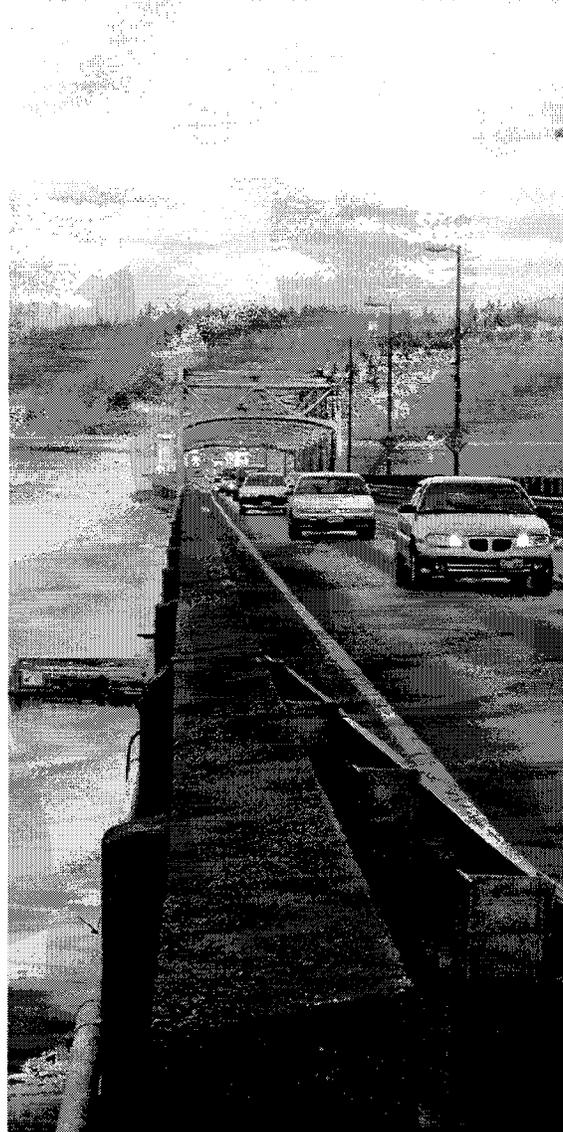
System Preservation

Emerging Directions

- Asset preservation or "fix it first" has emerged as a major issue for the WTP: "Pay me now, or pay me more—lots more—later."
- Big ticket state highway preservation needs include replacement of the Alaskan Way Viaduct, the SR 520 floating bridge, and concrete interstate pavements. In addition, regular state highway preservation programs (such as unstable slopes, drainage systems, electrical systems, and others) need to be augmented.
- Local roadway preservation shortfalls are affecting system performance and need to be addressed.
- Stable funding for transit and ferries is needed to enable fleet and terminal asset management strategies to work.
- An approach for prioritizing general aviation pavement rehabilitation needs is needed as is continued emphasis on protecting airports from land use encroachment.
- A policy defining the state role in and a strategy for short line rail preservation is needed.



Alaskan Way Viaduct, Seattle

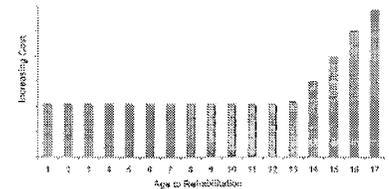


What will it take to make sure that the elements of the transportation system that we take for granted today will still be in place when we need them in two, six, or twenty years?

The Importance of Preservation

There is no more fundamental transportation capital investment than system preservation—keeping the physical infrastructure in good condition. As transportation facilities age and are used, a regular schedule of rehabilitation, reconstruction, and replacement is needed to keep the system usable. Timing is important: if preservation investment is deferred, costs increase dramatically, leading to the saying "Pay me now, or pay me more—lots more—later."

Asphalt Rehabilitation on State Highways (Cost per lane mile)



"Asset management" is a term that describes a proactive approach to investing in preservation at the right time to optimize condition. Asset management includes having comprehensive inventories of transportation facilities; a system for measuring and reporting system condition; predictive condition models that anticipate rehabilitation or replacement needs; and an investment program that ensures that the right investments are made at the right time. WSDOT's pavement management system, which includes a history of pavement performance from the 1970s is a good example of asset management. This system has been adapted for use by local governments in managing their pavement investments.

In 2002 and 2003, the Legislature reinforced this state's commitment to asset management. Legislation specifically required maintenance and preservation to be included in state plans for highways, ferries, and rail, and required cities, counties, and transit agencies to manage and report system condition. These requirements will help ensure that more consistent condition information will exist in the future about all transportation assets.

The Washington State Transportation Commission and the Washington State Department of Transportation are in the process of updating the Washington Transportation Plan. This long range plan is based on data analysis and is focused on ten issues: System Preservation, System Efficiencies, Safety, Transportation Access, Bottlenecks and Checkpoints, Economy and Jobs, Moving Freight, Future Visions, Health and Environment and Funding and Governance. This plan will shape future transportation budget proposals.

For more on this topic, visit www.wsdot.wa.gov/planning/wtp

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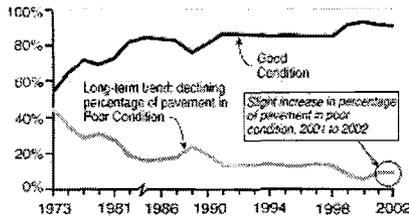
System Preservation

What are we finding?

On State Highway Pavements:

WSDOT has made progress on asphalt and chip seal pavements, improving conditions and achieving lowest life cycle cost investment.

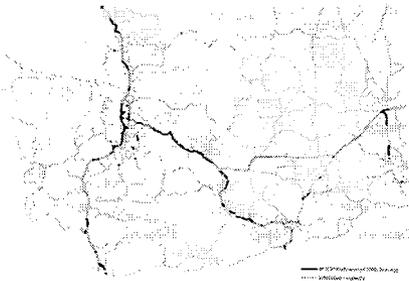
Pavement Condition Trends Percent of Pavements



Source: WSDOT Materials Lab.

Concrete pavements are an emerging need: they are disproportionately represented in future poor pavement miles. The current funding allocations are adequate to cover asphalt and chip seal repaving needs, but fall far short of funding concrete rehabilitation needs.

Concrete Pavements in Poor condition on Washington State Highways in 2003



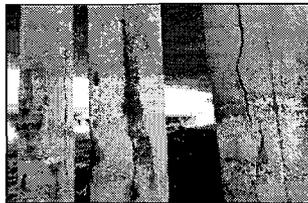
On State Highway Bridges:

A comprehensive bridge inventory exists, and WSDOT has made good progress on bridge rehabilitation, but aging bridges represent a growing need. Two big ticket bridge preservation needs include replacement of the Alaskan Way Viaduct and the SR 520 floating bridge, which are unfunded and represent a shortfall of several billion dollars. Bridges that are structurally sound, but have width and geometry deficiencies, are another emerging concern. Some of these bridges are among our

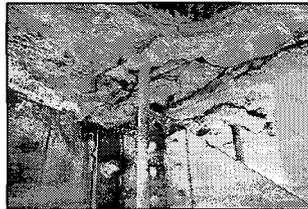


oldest, and have narrow lanes and narrow or no shoulders and poor pedestrian access. Modernizing these width and geometry challenged bridges could cost an additional \$1.4 billion which is now unfunded.

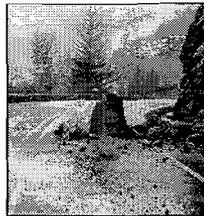
Tacoma Narrows Bridge (suspender cables)



US 101 Mud Bay (Olympia) concrete column deterioration



SR 99 George Washington Bridge, Seattle



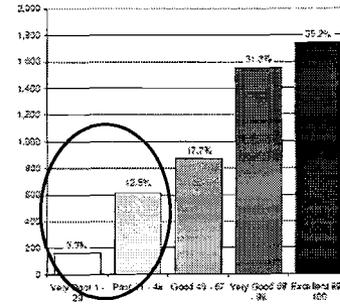
Other State Highway needs include shortfalls in unstable slope work; rest area preservation; and potentially large shortfalls in preserving drainage structures and electrical systems, pending complete inventories.

On Local Roadways:

Local governments face large shortfalls in preserving their pavements and bridges, with local transportation funding being squeezed by revenue reductions, growing needs of local government services and competing expansion needs. Recently compiled data indicate that sixteen percent of city roadway pavements are in poor or very poor condition

with indications that, at current funding levels, this number will grow. Additional data on preservation needs of local roadways is being developed.

City Roadway Condition (Lane miles)



On Washington State Ferries:

Current funding assumptions for the next ten years show the Washington State Ferries meeting targets for both vessel and terminal preservation, including the replacement of four 1927 vessels. Further vessel replacement beyond the 10 year period is an outstanding and unfunded issue.

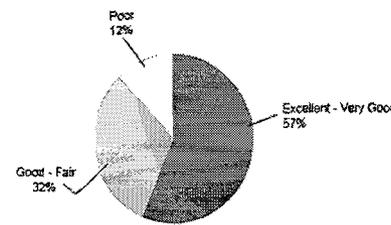
On Local Ferries:

There are four county-operated ferries in Washington which have needs for vessel and terminal assets. Need estimates are being compiled.

On General Aviation Airports:

A shortfall exists in paving, lighting, and navigation aids. An inventory is being updated. An important issue for airports is the need to preserve the airport sites themselves and their operations from encroachment by inappropriate land use development.

Airport Pavement Conditions, 2000

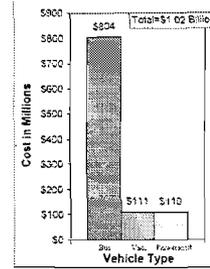


On Public Transit Systems:

An inventory is being developed on transit asset preservation needs. Issues include funding stability for bus fleet replacement strategies; increasing costs for preservation of service levels; park and ride lot preservation needs; and operating needs, especially for expensive demand response service, competing with other transit priorities including preservation.

10-Year Cycle of Bus Fleet Replacement

Cost in Millions for Current Fleets*



Source: WSDOT Bureau of Public Transportation - 2002 and King County. Mean average calculated for 1995-2002.

*Programmatic estimates to give an order of magnitude of vehicle replacement needs. Better information forthcoming as asset inventories and plans are received.

On Railroads:

Short line railroads are mostly owned by private operators, making information on system condition difficult to compile. Indications are that short line rail tracks are facing large rehabilitation needs, and may be at least partly unfunded. Worsening track conditions could lead to further abandonment.

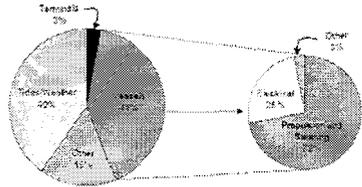
Railroad	Miles in Washington
Puget Sound and Pacific	149
Tacoma Rail Mountain Division	132
Lewis and Clark	14
Joppenish Simcoe and Western	21
Cascade and Columbia River	137
Royal Slope	26
Tri-Cities and Olympia	50
Columbia Basin	86
Palouse River and Coulee City/Blue Mountain	400
Camas Prairie	69
Mount Vernon Terminal	2
Yakima Valley Transportation	11
Ballard Terminal	3
Columbia and Cowlitz	8
Port of Chehalis	10
Tacoma Rail (Port operators)	32
Meeker Southern	5

Washington Transportation Plan

System Efficiencies

Trip Reliability
WSF measures, reports, and manages on-time performance and missed boats by route to improve customer service.

Most Common Trip Cancellation Causes



Emerging Directions

System efficiency is about aligning transportation system performance with customer expectations and getting the highest performance possible out of the existing system – this applies to all modes.

On roadways, including transit, throughput is a key measure of system efficiency.

- Basic maintenance and operations are essential to keep the system open and operating.
- As traffic grows, increasingly sophisticated management techniques are needed to maintain flow.
- Information technology will allow the next generation of management techniques.
- Advance communication will permit real-time information for travelers.
- In-vehicle ITS devices (such as On-Star) will be the next step, sharing weather, safety, and transportation system data with drivers, system providers, and first responders.

- Closer integration of modes (highway and transit) will need to address real-time system coordination.

The focus has been on system efficiency measures – the next frontier is point-specific applications to improve flow at specific chokepoints (such as truck performance at specific on-ramps).

- System pricing is emerging as one of the primary options to effectively maintain flow, because price allows the ultimate flexibility in matching roadway capacity to traffic demands.
- Operational approaches should be viewed as a part of a continuum and an integral part of our investment program: a commitment to maintain and operate the system; management techniques to maximize use of the system, and capital investment to expand the system where needed.

The Washington State Transportation Commission and the Washington State Department of Transportation are in the process of updating the Washington Transportation Plan. This long range plan is based on data analysis and is focused on ten issues: System Preservation, System Efficiencies, Safety, Transportation Access, Bottlenecks and Chokepoints, Economy and Jobs, Moving Freight, Future Visions, Health and Environment and Funding and Governance. This plan will shape future transportation budget proposals.

For more on this topic: www.wsdot.wa.gov/planning/wtp

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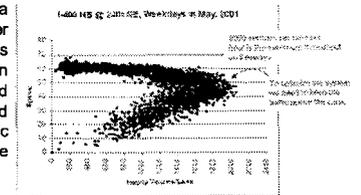
How can we best work toward optimizing how efficiently we derive the benefits of our current transportation system facilities and those we are able to create in the future?

Getting the highest possible performance from our existing transportation investments through operational strategies, from basic maintenance and operations activities to the application of sophisticated technologies, can make the system work better for customers and recover lost productivity. Several factors contribute to system inefficiency, including congestion caused by too much traffic or incidents, design issues, weather, mechanical failures in buses or ferries, uncoordinated operating schedules or traffic signals, and driver behavior itself. Operating programs can address many of these factors to improve how the system works.

Operating our roadways for maximum throughput is the key to getting the most out of the system

For most roadways, basic day to day maintenance activities such as snow plowing, picking up debris, controlling vegetation, and pothole patching are the activities needed to keep the road available for optimal use. When use of the roadway grows and congestion occurs, more sophisticated operating activities are needed to optimize use. Each roadway has an optimal capacity where throughput is maximized. The chart below is typical for a freeway, and represents real data from I-405.

The chart indicates that maximum throughput is about 2000 vehicles per lane per hour, and at this density, traffic is flowing at about 45 to 50 miles per hour. If demand increases further, speeds slow and throughput actually drops by as much as half of maximum throughput. This means that under congested conditions, the capacity of a roadway is actually less than if flow is maintained at a steady 45 to 50 miles per hour. Knowing that this is how roadways operate can lead to strategies aimed at maintaining flow and trying to prevent traffic from dropping "below the curve."



System Efficiencies



Intelligent Transportation System Technologies

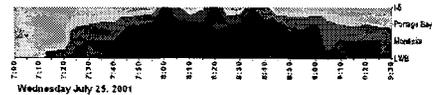
As roadway congestion increases, Intelligent Transportation Systems are used to maintain vehicle throughput. We now use these types of technology including ramp metering, traveler information, incident response, border crossing technology, weather operations based on prediction tools, commercial vehicle information systems networks (CVISN), and coordinated signal technology.

Ramp metering has been in place in the Seattle area for years and has proven highly effective in maintaining and even increasing throughput. Ramp meters work by metering the traffic from a ramp onto the freeway mainline, allowing smooth merging and preventing the brake-tapping which can lead to reduced speeds. The chart below shows the effect of ramp metering on SR 520 in Seattle: the ramp meters all but eliminated stop-and-go traffic, and actually increased the flow across the bridge by almost 500 vehicles per hour. This represents restored capacity that had been lost to congestion. Similar to ramp metering, providing travelers with accurate, timely information on traffic conditions can help spread traffic to avoid local slowdowns thereby maintaining flow.

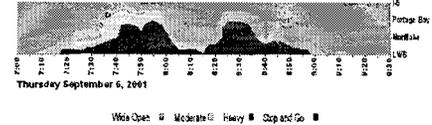
Ramp Metering

SR520 Westbound Ramp Meter Effects

BEFORE a series of ramp meters were activated: EB morning congestion, I-5 to Lake Washington Blvd.



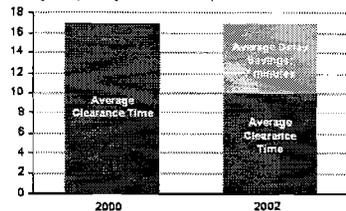
AFTER ramp meter activation:



Incident response

Traffic accidents and other incidents can contribute to congestion two ways: the incident itself can close lanes or

I-405 Disabled Vehicles
Average Delay Savings with Incident Response in Minutes

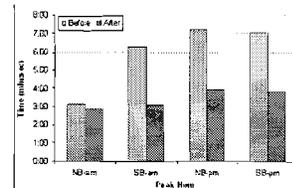


cause a distraction which reduces speed and throughput. However the primary incident often leads to secondary fender benders as traffic slows, exacerbating the problem. Incident response programs focus on responding quickly and clearing incidents to minimize primary impacts and prevent secondary collisions. In 2002, enhanced incident response patrols were instituted on I-405. These patrols have reduced the average clearance time for incidents on I-405 by over 40%.

Traffic Signals

Traffic signal synchronization is an issue that most drivers and riders can relate to. Like ramp metering for freeways, signal synchronization contributes to arterial operation efficiency similar to the maximum throughput concept on freeways. This example shows the effectiveness of signal synchronization on a 1.35-mile section of SR 527. Implementing signal optimization showed a reduction in average vehicle travel times up to 2 minutes 27 seconds (northbound evening commute). This reduced the travel time by nearly 38%.

Delay Reduction due to Signal Optimization on SR 527 from 228th Street to SR 624



Truck Operations

Trucks are required to be weighed, inspected, and registered for travel in Washington. Stopping at truck scales and ports of entry, however, can inconvenience and delay truck shipments. Advanced technology is being applied to improve efficiency, through the Commercial Vehicle Information Systems Networks (CVISN), to weigh the trucks, and check registration and inspection status without stopping at the scales.

Managed Lanes

Special use lanes, such as those restricted to High Occupancy Vehicles (HOV), have been used successfully to maintain flow. These lanes work by allowing limited numbers of vehicles to enter the lanes – in the case of HOV lanes, only those who meet certain occupancy requirements. By limiting the number of vehicles, maximum throughput can be maintained without breaking down into congestion. In addition, HOV lanes also improve the efficiency of the system by carrying more people than other lanes during peak traffic periods. In the Puget Sound region, some HOV lanes actually move more vehicles than the adjacent general purpose lanes because they maintain flow while the adjacent lanes are congested and have lost productivity.

Pricing

Information from other places clearly shows the huge potential of roadway pricing to maintain flow and capacity and prevent congestion. This is done by charging users a fee for using the roadway during congested times. The fee limits the vehicles using the lanes, keeping volumes at a level that allows smooth flow and maximum throughput. California and Texas have had success in charging a fee to use underused HOV lanes. These High Occupancy/Toll (HOT) lanes improve the utilization of the HOV lane, while maintaining smooth flow and a travel time advantage for transit and carpools. Pricing represents the next frontier and a real potential to maximize use of the system.

Improving Transit Operations

Transit agencies in Washington spend over \$600 million per year (54% of transit expenditures) operating their systems. Improving the efficiency of these operations is important in a time of doing more with less. Strategies that transit agencies are pursuing to improve operational efficiency include:

System Operating Configuration

Designing how to operate a transit system often involves trading off system efficiencies with the quality of customer service. Some systems have chosen a transfer-based system, which brings people to a central point for timed transfers to other locations. This type of system contrasts with a direct point-to-point system, often used for commuter bus services at peak periods. Route deviated services have been developed to allow fixed route buses to go off route to serve special needs people, especially in lower density areas. Demand response service has been plagued by high operating costs, but technologies such as automatic vehicle locators and efficient routing programs have helped improve efficiency.

Improving Communications

Just like highway operations, communication technologies have improved the efficiency and effectiveness of transit services, including automated vehicle locators to manage the fleet and inform customers of bus arrivals; transit signal pre-emption and queue jumps at ramp meters; and on-line trip planning services.

HOV Lanes Strategies

HOV lanes provide a predictable and quick travel time for buses, allowing them to maintain schedules and a travel time advantage.

Park and Ride Lots

Park and ride lots provide efficient service access in low density areas, allowing transit agencies to pick up large numbers of people at one location as opposed to circulating through widespread neighborhoods.

Vanpools

Washington State has the largest public vanpool program in the country. There are approximately 1,310 vans operating in the Puget Sound region and statewide over 1,600 vehicles each weekday. Additional vanpool vehicles are provided and used by nonprofit groups, employers, and private individuals.

Commuter Trip Reduction (CTR)

The goals of the CTR Program are to reduce traffic congestion, air pollution, and fuel consumption by working with local jurisdictions and major employers to reduce drive-alone commuting. Nearly 1,100 worksites in Washington State participate in the program.

Travel Conservation

Efforts to affect the demand for transportation, diverting it to carpooling or transit, or to a less crowded time of day, have been effective through employer-based promotion programs, vanpool programs, and other ridesharing services.

Land Use Strategies

Research has shown a link between land use patterns and travel patterns – denser, mixed-use types of development with good pedestrian and transit access have shown higher walking, transit, and carpooling behavior than lower density areas.

Issues in Ferry System Efficiency

Operations are a large focus at Washington State Ferries (WSF), representing 62% of all expenditures on the system.

Congestion and Peaking in the System

The ferry system is affected by peak travel demand like all other travel modes – denser, mixed-use types of development with good pedestrian and transit access have shown higher walking, transit, and carpooling behavior than lower density areas. Sizing the fleet for peaks is difficult, since vessels are expensive, and their capacity comes in large units – you can't add a half boat to take on a peak load. WSF has adopted boat wait standards to communicate peak capacity to users. WSF has also adopted zero boat wait standards for buses, walk-on passengers, pre-registered carpools and vanpools, and certain reservations and freight users.

Intermodal Connections

In Island and Kitsap Counties and on Vashon Island, transit service is timed and linked with ferry schedules. In downtown Seattle, there is very frequent transit service, but not specifically linked to ferry schedules. New intermodal connections issues will emerge with the construction of new intermodal ferry terminals in Mukilteo and Edmonds, that may have connections to commuter rail services.

collisions. Two elements of operations – Incident Response Teams and Traveler Information Systems – play a key role in highway safety. Incident Response Teams help clear the road and direct traffic when incidents happen and reduce the risk of secondary collisions in the backup. Traveler Information Systems provide motorists with real-time traffic information that allows them to make informed travel decisions.

Roadway design and construction

Safety improvements are incorporated in WSDOT projects in many different ways – from the major improvement projects that add lanes or build interchange connections – to small projects that add a left-turn lane to address a specific problem.

Combined Average for 21 Safety Projects Collisions Per Year

	All Types	Property Damage Only	Injury Fatal
Before	15.5	8.8	6.7
After	9.7	5.5	4.2

Responsibility for programs and projects in the highway safety area is widely shared. At the state level, the Washington Traffic Safety Commission is a consortium of local and state organizations responsible for reducing death, injuries, and economic losses resulting from motor vehicle collisions. All of these groups, associations, and public agencies work together not to prevent all traffic collisions, but to make them more survivable.

Emerging Directions

- Behavioral approaches will be a significant part of the strategy to address impaired driving, seat belt use, speeding, aggressive driving, and other contributing driver behaviors. WSDOT and the Washington Traffic Safety Commission are working together to evaluate the effectiveness of potential behavioral countermeasures.
- Roadway Environment - safety conditions on rural two-lane roadways can and should be addressed. Strategies such as increased enforcement, centerline and edge rumble-strips, and improved shoulders and roadsides are being evaluated. Also, median cable barriers and rumble-strips on Interstates are proving to be cost-effective solutions.
- Pedestrians, bicyclists, and motorcyclists are disproportionately represented in fatality rates and need to be addressed in the safety strategy.
- Stepped up efforts to prevent railroad trespassing, such as Operation Lifesaver, are needed.
- Improved weather information access at general aviation airports will help pilots make good flight decisions.
- Better understanding of data should help target safety efforts where they will have the most effect.



Safety

How do we make transportation systems and facilities throughout the state safer for their users?

Transportation safety is a paramount concern in all forms of transportation: airplanes, ferries, buses, trains, roadways, marine ports, bicycles, and pedestrians. The data tell us that roadway safety, including bicyclists and pedestrians, is our biggest concern, accounting for 600 annual fatalities. Because of this most of the discussion that follows is focused on understanding our roadway safety issue, followed by a brief summary of safety concerns of other modes. In addition, transportation system security is an area that has recently moved into the forefront of public concern.

What The Data Are Telling Us

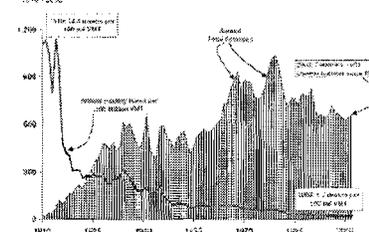
Despite declines, fatalities continue to be a serious problem

The number of deaths on Washington's roadways has declined over the past several years. Even so, more than 600 people die in collisions in Washington State each year – an unacceptable number despite our progress.

On Washington's highway system, collisions of all types (non-injury, other injury, disabling injury, and fatal) have gone up since 1980, from 34,662 in 1980 to 50,157 in 2002, an increase of 45 percent. However the fatality rate in the chart below has tended to steadily decline from 1915 forward.

The societal cost of motor vehicle collisions for all roadways (state, county, city, tribal, and federal) is estimated at \$5.6 billion annually. Although fatal collisions make up only 2.5 percent of the total number of collisions, they account for 54 percent of the total societal costs.

Washington Motor Vehicle Total Fatalities & Fatality Rates * 1915-2002



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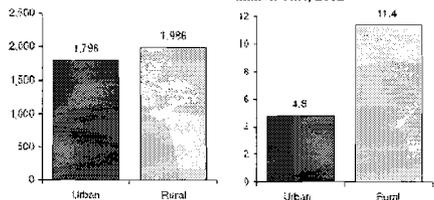
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By Traffic Volume, Serious Collisions occur most Frequently on Rural Roads

A greater number of fatal and disabling collisions occur on state highways (1,714) than on city streets (1,289) or county roads (1,087). When the volume of traffic is taken into account, however, the rate (per 100 million vehicle miles traveled) of serious collisions that occur is greatest on county roads (12.4 per 100 million vehicles miles traveled), followed by city (9.2) streets, and then highways (5.4).

When looking at the data from an urban area versus a rural area, the number of collisions is about evenly divided. When the volume of traffic is examined, the rate of collisions per 100 million vehicle miles traveled is highest in rural areas.

Number of Fatalities and Disabling Injury Collisions by Urban and Rural Roadways, 2002 and **Rate of Fatalities and Disabling Injury Collisions by Urban and Rural Roadways, Rate Per 100 Million VMT, 2002**

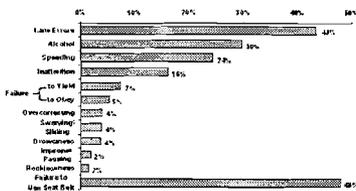


The Contributing Factors

Age - Young inexperienced drivers (16 – 20 years old) are the age group with the highest rate of fatal collisions. On the other end of the age spectrum, the risk of being involved in a fatal collision begins to grow in the 71+ age group. As the state's population ages, this will be a continuing concern.

Driver errors and behavior - The top three contributors in fatal accidents are: Lane errors – 43%, Alcohol – 30 %, and Speeding – 24% ("Lane errors" is a broad category that includes improper lane changes, merging and exiting, leaving the roadway, crossing into the path of on-coming traffic, etc.)

Driver Errors and Behaviors Associated With Fatal Crashes: Washington State 1993 - 2001



Not using seatbelts contributes to fatalities - Analysis of motor vehicle fatalities for 2002, when seat belt use in Washington was about 93% (the highest in the nation), shows that about half the persons who died were not wearing seat belts.

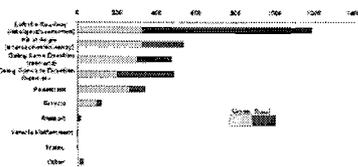
Motorcycle, pedestrian, and bicycle collisions

While the rate of all collisions involving motorcycles is only 1.4%, the percent of fatal and disabling collisions involving motorcycles is 12%. The number of pedestrian fatalities as a result of vehicle collisions has declined slightly since 1993. Even so, the number of pedestrian deaths (11% of all fatalities in 2002) remains disproportionate to the frequency they are involved in roadway collisions (1.4% of all roadway collisions). The number of bicycle fatalities and disabling injuries compared to the number of crashes involving bicycles suggest that bicycle crashes with automobiles are of concern because they are so severe.

Roadway design

Features of the roadway may be a contributing factor in serious accidents. These features include access points along the roadway (driveways, intersections), objects along the roadway (trees, utility poles), curves (sight distance), and lane configuration (multiple lanes, median area, turn lanes). The conditions and circumstances that influence safety vary greatly between urban and rural aspects of the problem. In rural settings, "leaving the roadway" and "head-on collisions" are more likely, whereas in an urban setting, "hit at an angle" and "rear-end" collisions are more likely.

Roadway Circumstances and Conditions Associated with Fatal and Disabling Injury Collisions Washington State 2002



Safety Issues for other Modes

Rail Transportation

Passenger rail transportation has a strong safety record with a national accident fatality rate of .08 per 100 million passenger miles, about 1/10 that of motor vehicles. Work remains to further improve rail safety, including rail crossings, trespassing, and oversight of light rail and monorail systems. Flashing lights and gates now protect nearly all crossings on busy main line tracks resulting in a 56% reduction in railroad crossing collisions since 1992. Trespassing and suicides on rail lines have resulted in 14 people killed in 2002 and four killed in collisions at rail crossings.

Aviation

General aviation has an excellent safety record in Washington. The national picture shows a fatality rate of .03 for 100 million miles flown. In recent years, general aviation has experienced about 51 accidents per year, with fatalities numbering in a range from 3 to 16 per year. The majority of general aviation collisions are the result of pilot error and weather.

Washington State Ferries

Washington State Ferries has a strong safety record in both its marine and terminal operations. It operates 28 vessels on 10 routes and carries over 25 million passengers annually. The United State Coast Guard sets safety standards for vessels and crew licensing. In 2002, there were 100 reported injuries to passengers on ferries – all of them minor in nature. There were 33 reported injuries at terminals – all minor in nature.

Transportation Security

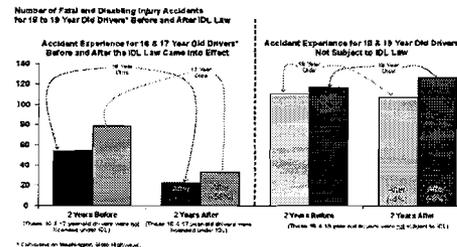
Terrorism activities have become an issue of public concern following the attack on the United States of September 11, 2001. As a result, transportation system security has become a focus of safety planning to deal with operational challenges that might be present in a terrorist emergency. Transportation system security includes: implementing protections to prevent harm to the transportation systems or their users; putting measures in place that deter terrorists from acting; and preparing to respond in the aftermath of a terrorist act.

Effectiveness of Safety Programs

Through collecting and tracking data, it has been demonstrated that many steps to increase safety are effective in lowering the toll of fatalities, injuries, and property damage on our roadways. These strategies focus on education, enforcement, and roadway conditions.

Intermediate drivers' license for young drivers

This law, passed in July 2001, requires an additional 50 hours of behind-the-wheel driving time for drivers under the age of 18 before they can obtain a license. It also limits the number and age of passengers in a vehicle and late night driving hours for young drivers.



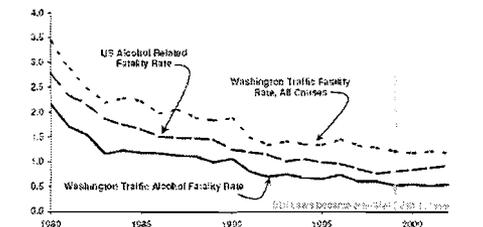
Early statistics collected in the two years after the law began indicate a drop of 60% in the number of fatalities and disabling injuries for 16 and 17 year-old drivers.

Alcohol limit .08

The State Legislature enacted anti-drunk-driving laws in 1998 that lowered the blood alcohol intoxication standard from 0.10 to 0.08 percent and provided for automatic loss of licenses for drunk drivers. The graph shows that in years prior to about 1998, a significant drop had been seen in the rate of alcohol related traffic fatalities. Since 1998, however, in Washington the trend mirrors the nationwide picture where the rate of alcohol related traffic fatalities has remained steady. Meanwhile, the nationwide rate has increased slightly from the year of its best performance (1998). In 2002, the rate of driver alcohol impairment associated with motor vehicle fatalities was 40%. This data is puzzling in view of the broad perception that the lowered alcohol threshold would, or has, spurred improvement in the drunk driving situation. More investigation is required before WSDOT can confidently suggest the meaning of these data.

Other measures taken in Washington to reduce drunk driving include offenders required use of ignition interlock devices (a device attached to the car's ignition system that requires the driver to blow into the device before starting the car – if alcohol is detected the car won't start) and a crackdown on deferred DUI prosecutions.

Alcohol Related Traffic Fatalities Washington State's Public Roadway Facility Fatality Rate and Alcohol Related Fatality Rate Per 100 Million VMT 1980-2002



Seat belts and the Click it or Ticket Program

Washington's strong policies and enforcement of the seat belt law resulted in a high of 93% seat belt use in 2002 and increased to about 95% in 2003 and 2004. Half of the fatalities of motor vehicle occupants are people who were among the 5% to 7% of non-seat belt users.

Maintenance and operations of the roadway

Maintaining and operating highway systems makes a critical contribution to roadway safety. Day-to-day maintenance activities – including snow and ice control, debris removal, guardrail repair, traffic signal maintenance and repair – help reduce the conditions and circumstances that can lead to

Transportation Access

and fares. Participating agencies can access Trip Planner to plan necessary trips when a wheelchair lift, infant car seat, or daycare stop is needed.

Emerging Directions

- Comprehensive strategies are needed to address the transportation issues of the growing elderly population, and of increasing rural isolation. Understanding the state role in providing basic transportation needs is necessary to effectively develop partnerships in meeting the state's interest.
- Consistent funding and service levels for demand response service by both transit agencies and other providers need to be addressed. Lack of consistent funding acts as a barrier to efficient coordinated transportation service.
- Continued focus on better coordination between services is needed to minimize duplication and make the most of available revenue. The Agency Council for Coordinated Transportation should continue its efforts to provide this coordination and needs adequate funding to accomplish this goal. Continued coordination to allow implementation of programs like Trip Planner should occur.
- New public transportation service strategies are needed to improve evolving transit markets, particularly rural, elderly, and suburban mobility.
- A policy defining the state's interest in Intercity transportation is needed from the Transportation Commission. This policy would define the state's objectives in intercity transportation access needs.



Where basic transportation services are indispensable for all citizens' societal engagement, how is a "safety net" for transportation needs to be provided for every citizen in every community?

Washington's Transportation Plan (WTP) is identifying key issues for people without access to an automobile or the ability to drive who face increasing isolation and the inability to have access to basic necessities or activities enhancing the quality of their lives.

Washington State citizens require access to basic transportation services. Individuals without access or who cannot transport themselves rely on services provided by volunteers, human service agencies, and public transportation agencies. This population is referred to as "persons with special transportation needs." Persons with special transportation needs fall into four broad groups: the elderly, people with low incomes, persons with disabilities, and children. It is difficult to determine how many people in these groups need specialized transportation services, but demand is growing.

Not all people who fit one or more of the four groups have a special transportation need, nor do they need financial assistance to access transportation. More information is required to better assess needs.

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Transportation Access

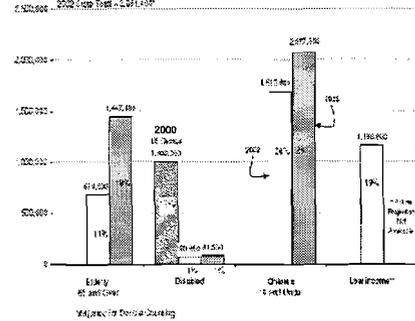
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People With Special Transportation Needs Include the Elderly, Persons With Disabilities, Children and Low-income Individuals.

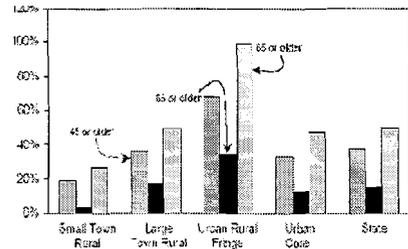
People with Potential Transportation Access Needs



Washington's Elderly Population is Growing

The elderly are a growing share of the population and they are driving more and longer than their predecessors. They are "aging in place," increasingly living in suburban areas

Percent Change in Elderly Population by Rural Classification Washington, 1990-2009



where driving is essential, and public transit service is difficult and expensive to provide. As a person ages, the ability of the person to meet their own transportation needs diminishes. The growing proportion of "old" elderly (85+) will increase demand for demand response public transportation. The growing number of older drivers will require special roadway safety emphases such as signing.

Persons with Disabilities in Washington

It is difficult to know how many people with disabilities in Washington have special transportation needs. What we do know, however, is that the 2000 U.S. Census says there are 1 million people with disabilities in Washington. Not all of these disabilities create a need for special transportation services.

There are a total of 60,850 persons with disabilities receiving assistance from the Dept. of Health and Human Services (DHS). According to the National Health Information Statistical Database, in Washington sensory limitations severe enough to affect everyday life afflict about five percent of the adult population. About 228,000 people have physical disabilities that affect their ability to walk and get around outside the home.



Washington's Children

From 1990 to 2000, the number of persons 19 and under increased 20.5 percent and account for nearly 28 percent of the total state population. More than 1 million children attend school in Washington and state funding covers 65 percent of the school districts' transportation costs. Transportation for childcare and after school programs is often limited, particularly for kids in rural communities. Homeless children have transportation difficulties when transitioning from temporary housing locations.

Washington's Low Income Population

In 2002, 1.16 million people with low incomes were assisted by DHS, totaling \$2.45 billion in assistance. Low-income residents spend a higher percentage of their income on transportation than others. However, many people on public assistance subsidies receive transportation support. Low-income people in some rural counties and Tribal Nations may not have access to public transportation services.

Transportation Challenges in Rural Areas

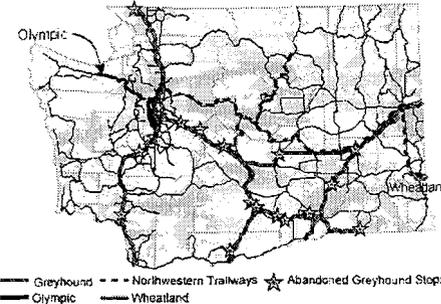
To maintain economic viability of rural communities, people in these communities must maintain access to the urban centers for banking, commerce, law, engineering, medicine and other specializations. In rural areas, this access is normally provided by automobile. With limited options, and long distances, providing this access to people who cannot drive is a challenge.

Intercity connections are supplied through a network of public and private services. As the business model for private providers changes, smaller rural communities are losing access to the national intercity network and the educational, employment, social service, and cultural opportunities in urban communities.

There are gaps in programs and funding that leave many of Washington's citizens without access to transportation for basic necessities, personal business, education and recreation. This is particularly true in rural and suburban areas outside of public transportation service areas.

Private intercity bus companies are abandoning service to small communities throughout Washington. In Summer 2004, Greyhound cancelled service in 21 mostly rural communities. Greyhound routes and abandoned service stops are shown in this map below. Without access to transportation, many residents will not be able to leave their communities.

Intercity Bus Service



Special Transportation Service Providers

Public transit agency spending represents a majority of funding for access services, but many people, especially in rural areas of the state do not have public transportation services. The continued loss of intercity bus services has further contributed to a sense of rural isolation. A large number of non-profit and for profit groups provide access services in all areas of the state. Many of these services rely on volunteers and funding is precarious. Demand response services are expensive to

provide and are taking an increasing share of limited transit funding. With current funding, transit agencies face a trade-off between demand response service and fixed route service.

Public transportation systems are seeing an increasing demand for expensive door-to-door service that significantly reduces their ability to maintain fixed route services at current levels. This challenge is further compounded by the increasing demand for trips by the growing elderly population, particularly in rural and suburban areas that are difficult or impossible to serve with traditional transit service. Public transportation agencies provided 4.8 million demand response trips in 2003 at a cost of \$104 million, more than \$21 per trip.

In addition to public transit agencies, a broad network of public and private non-profit and for-profit agencies provide specialized transportation services. The large and small public and private agencies face considerable challenges with insurance, reliable long-term funding (often based on grants), volunteer recruitment, and program costs vs. transportation funding choices.

To better coordinate Medicaid-related transportation (\$50 million a year to purchase 2.8 million trips) 8 medical assistance brokers, covering 13 brokerage areas, match up clients with providers.

Current Efforts underway with Transportation Access Coordination

Agency Council on Coordinated Transportation
 The Washington State Legislature created the Agency Council on Coordinated Transportation (ACCT) in 1998 to increase transportation access by removing barriers through coordinated transportation services statewide. Significant local, state, federal, and private money is spent on accessing transportation. We cannot afford to have needs unmet due to uncoordinated spending.

The ACCT is chaired and staffed by WSDOT. The Council represents numerous public and state agencies and private transportation providers in an effort to achieve optimum coordination. This coordination is critically important as it leverages all public and private funds together to improve effectiveness of the return on investment for transportation; reduces duplication and unnecessary service trips; and makes it easier for users to access essential services.

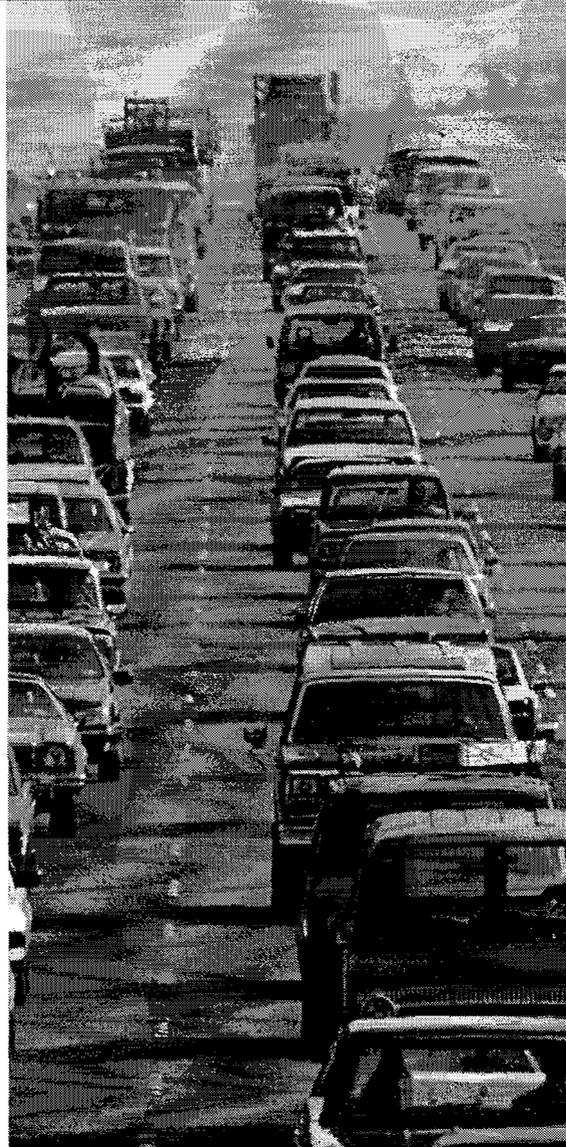
Trip Planner

WSDOT joined Oregon's DOT (ODOT) to develop a bi-state Regional Trip Planner system. The Trip Planner tool will improve coordination and use of public transportation. A multiyear project Trip Planner is the Internet-based, integrated transportation information system. It will reduce barriers to travel and services by capitalizing on the efficiencies of the Internet for the planning of trips including schedules, routes,

Emerging Directions

- The imbalance of demand and capacity on our system causes significant delay that affects the quality of people's lives. This imbalance will grow as the state experiences increases in population and jobs resulting in an increase of travel unmatched by new investment in highway system capacity. WSDOT is pursuing a practical and balanced strategy, which includes operational improvements (HOV lanes, ramp metering, incident response, traveler information, and signal synchronization) and targeted capital investments to get the most out of the existing system and restore lost productivity.
- History suggests that, although large-scale corridor improvement plans are desirable as a long-range vision, funding reality says that we need smaller scale affordable capital investments targeting specific traffic restrictions. Targeting capital investments at bottleneck and chokepoint locations would be less expensive than full corridor build-outs, but could deliver significant delay savings and restored productivity. These improvements offer the greatest return on investment.
- The Legislature's 2003 Transportation Funding Package is an example in delivering these targeted investments. For example, the package provides \$485 million for targeted improvements to I-405 at the worst congested locations: the Kirkland Crawl, through the Wilburton Tunnel approaching I-90 southbound, and at the I-405/SR 167 Interchange vicinity. Similarly, the package targets funding at other locations where traffic flow improvements can make a difference.

- Bottleneck and chokepoint investment options could be developed to improve travel for commuters, freight, interregional movement, recreation, and event access. However, new analysis techniques are needed to identify and prioritize the optimal combination of investments.



What opportunities for investment in new facility and system assets can help address system chokepoints and bottlenecks, the most effective near-term solution through expanding capacity to move people and goods in shorter times and more reliable times?

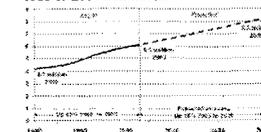
In Washington State, the growth in travel demand has outpaced expansion of transportation system capacity. Additionally there is little evidence that major levels of new investment in highway system capacity will be forthcoming, leaving the state with a backlog of capacity needs now and in the future. This imbalance of demand and capacity occurs in virtually every mode of transportation - at our airports, on our rail lines, and especially on our roadway systems.

The growing demand/capacity imbalance affects citizens' daily lives and almost every sector of economic activity. Commutes to work are time-consuming and often aggravating. Non-work trips, too, must be planned to avoid congestion or with an extra time allowance to account for the lack of reliability in travel times. Freight delivery becomes slower and less reliable. Air pollution is exacerbated by cars and trucks stuck in traffic. Even rural areas that have never seen traffic jams are penalized when highway congestion associated with urban areas interferes with their agricultural products reaching ports and customers.

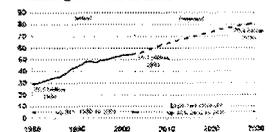
Washington is Growing

Population and jobs are expected to continue to grow in Washington State. This population growth will translate into substantial increases in travel demand. Washington's workforce is also growing and will continue to a projected 3.9 million by the year 2030. This growth is leading to more travel and compounding delay.

Population in Washington 1980 to 2030 in millions



Vehicle Miles Traveled in Washington 1980 to 2030



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Bottlenecks and Chokepoints

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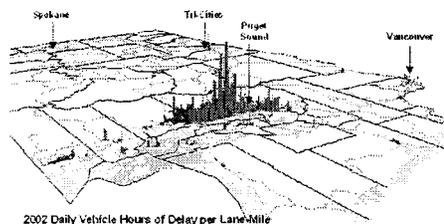
Washington State Transportation Plan

Elizabeth Robbins robbins@wsdot.wa.gov

Bottlenecks and Chokepoints

Delay Occurs Mostly in Urban Areas

There is a projected growth in travel that will be concentrated in Puget Sound, Spokane, and Vancouver. Consequently, the gap between demand and capacity will grow wider in the future, especially in the major urban areas and high traffic volume corridors.

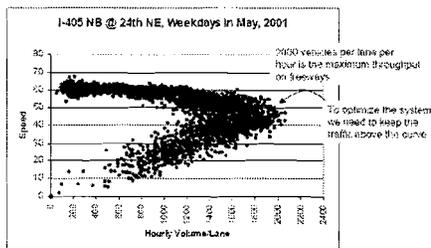


Delay is more prevalent in urban areas with the greatest delay found in the Central Puget Sound area. The total delay across the state is estimated to be over 365,000 hours per weekday and represents about \$1.6 billion annually in lost time.

Congestion Actually Reduces Capacity

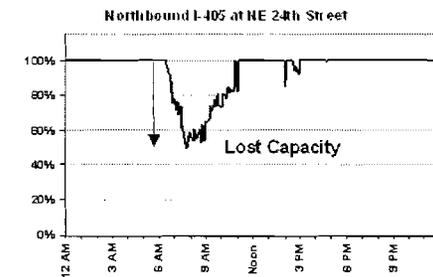
Congestion in the form of vehicle delay creates inefficiency and has the effect of reducing freeway capacity. The graph below illustrates that although congestion increases and freeway speeds drop below the posted speed limit, the total throughput of the freeway increases until a maximum throughput is reached at about 45 mph. If congestion worsens beyond this point speeds and total throughput drop rapidly. To optimize the efficiency of the freeway system we need to keep the traffic flow on top of the curve.

Congestion reduces the capacity of roadways by up to 50%.



This efficiency loss can be seen more clearly in this graph. On a section of I-405 during the morning commute the throughput lost due to congestion was equal to nearly half the highway's capacity. In other words, at the very time when the capacity is most needed the equivalent of one whole lane (out of two general purpose lanes) is lost to congestion. These efficiency losses often occur at bottleneck and chokepoint locations, which can severely hinder the entire system's performance.

Percent of Lane Capacity Lost Due to Delay



Bottlenecks and Chokepoints are Major Causes of Delay

Bottlenecks and chokepoints are typically locations on the system where geometry and traffic patterns contribute to congestion. Examples include the Kirkland crawl on I-405, the Southcenter hill climb on I-5, SR-18 between I-5 at Federal Way and SR-167 at Auburn, the Renton S-curves on I-405, US 2 near Monroe, and interchanges such as I-5/I-90 in Seattle, I-405/I-90 in Bellevue, and I-5/SR 16 in Tacoma.

In addition, weather can cause congestion or affect the passability of a roadway creating a bottleneck or chokepoint. Avalanche control on the I-90 Snoqualmie Pass and roadways closed due to spring thaw restrictions are examples of weather related bottlenecks and chokepoints throughout the state.

Operational and Targeted Capital Investments Can Improve Roadway Productivity

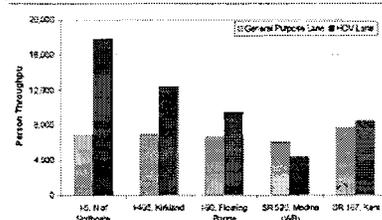
The state currently manages a number of programs to improve the productivity of our highway system. These programs include operational measures and capital investments.

Washington State is considered a leader in the use of high occupancy vehicle (HOV) lanes, ramp metering, and signal synchronization to improve the maximum throughput of a roadway experiencing congestion.

HOV Lanes

HOV lanes increase the efficiency of our system in three ways: by limiting the number of vehicles, overcrowding of the lane is prevented and vehicle throughput is increased, while the higher occupancy rate increases person-throughput and creates an incentive to commute via HOV modes.

People Moved in General Purpose and HOV Lanes (2002) PM Peak Period Peak Direction



This graph illustrates that in general on the Puget Sound freeways more people are moved in most HOV lanes than the average general purpose lane during the peak period. In this way HOV lanes help increase system efficiency and allow the region to accommodate increased demand.

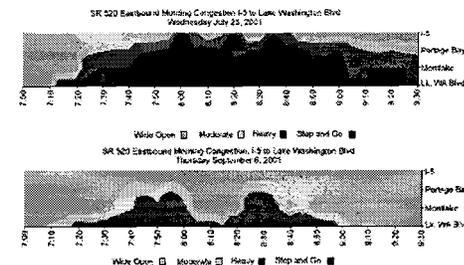
Fixing Bottlenecks and Chokepoints

Targeted traffic flow improvements can also make a significant difference in system performance. The recently completed I-405/SR 167 Flyover ramp is a good example of one such targeted investment.

Prior to the opening of the new ramp stop-and-go conditions occurred weekday mornings between 6:45 and 8:00 am. Immediately after the opening of the new ramp, the stop-and-

Ramp Meters

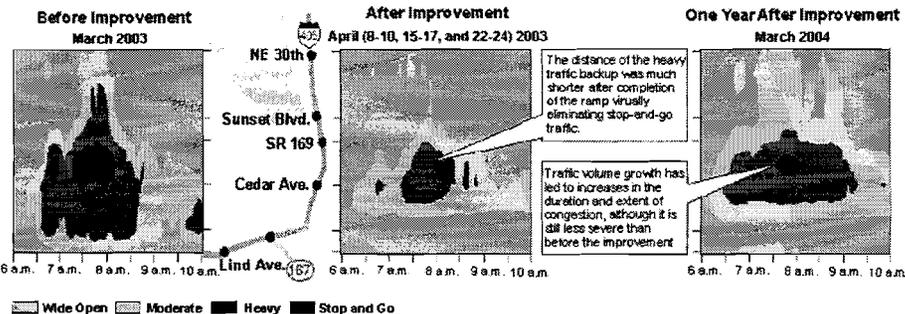
The effect of ramp metering in reducing delay is well documented. These graphs provide a comparison to show the benefits of ramp metering on SR 520. The black/darkest shading shows stop-and-go traffic conditions. Prior to ramp metering, stop-and-go conditions occurred between 7:25 and 9:25 am. After the ramp metering, most of the stop-and-go condition was eliminated.



go condition was almost entirely eliminated. In the past year we've seen continued growth in the I-405 mainline volumes as well as the I-405 southbound to SR 167 southbound ramp. While serving higher volumes, the congestion at the interchange area is still considerably lower than the conditions prior to the project. On weekends, both the stop and go traffic and heavy congestion conditions have been essentially eliminated.

Average Weekday Congestion

I-405 Southbound



Economy and Jobs

Aviation

Washington's system of 129 airports, generated 171,311 jobs, over \$4 billion in wages, and over \$18.5 billion in annual sales output.

The Tourism Cluster

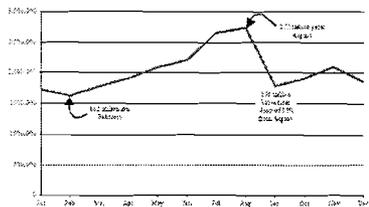
Transportation has a clear and inseparable link to the tourism cluster by providing several statewide services and programs including: infrastructure such as highways, airports, ferries, passenger rail, safety rest areas, viewpoints. Traveler information services include highway signing for destinations and businesses, roadside interpretation, traveler information, traffic cameras, interactive communications, and publications.

The Ferry System

The Washington State Ferries is a component that links central Puget Sound with the Olympic Peninsula. The ferry system is a tourist attraction with a ridership of 2.75 million in August 2003. In 1980, total ferry ridership was 16.7 million; in 2002 it increased 50 percent to 25.1 million. These volumes are projected to continue to increase to 43.4 million by 2020.

Total Monthly Ridership

All Ferries, all routes 2003



Scenic Byways

Washington's scenic byways are destinations for tourists. In the 2002 findings by the USDA Forest Service's National Survey on Recreation and Environment reports that 56 percent of Americans participate in driving for pleasure in rural or natural areas. In 2002, travelers in Washington spent \$11.2 billion generating \$3.5 billion in earnings and providing 139,200 jobs. In 2003 this increased to \$3.9 billion.

Emerging Directions

- Transportation infrastructure is a necessary factor for economic development, but not sufficient to ensure economic development. Other factors are important and may overshadow transportation investment.
- The Transportation Commission defines economic-development as: economic activities that result in development or retention of income-generating industries (those industries that raise per capita income). Transportation policy should continue to focus transportation projects on supporting "sure bets" rather than speculative development and should be aimed at supporting generative industries, not development that just redistributes personal income from one locality to another (such as retail).
- Targeted transportation economic development projects should focus on retaining existing jobs or probable new jobs to help ensure success.
- WSDOT should continue to work closely with the Washington State Department of Community, Trade and Economic Development and the State Economic Development Commission to evaluate the transportation needs of industry clusters and to support the overall state economic development direction as the Statewide Economic Vitality Plan is updated.



What investments in new facility and system assets can help support the state's economic vitality and strengthen the job picture?

Transportation's link to economic development is vital. Roadways, airports, ferries, transit, water ports, and railways are all necessary for a strong economy, providing access to businesses, jobs, and world markets, as well as moving freight and commerce.

Economic benefits of transportation investment fall into four categories:

- Basic user benefits (mainly reduced operating and production costs, reduced passenger and freight delay and reduced accidents)
- Jobs from project construction and the multiplier effect*
- Economic productivity increases that help expand the state economy
- Development for local or regional economies (through improved land access and support for tourism)

"The most important competitive investment the state of Washington can make is to improve its transportation infrastructure. Washington's currently overwhelmed transportation system threatens jobs and economic vitality, wastes people's time and money, diminishes quality of life, and degrades our environment." – Washington Competitiveness Council Report

This folio examines the structure of the state's economy, what research says about quantifying the benefits of transportation infrastructure investments and the role of the transportation system in supporting the economy. The discussion in this folio is closely related to the folios about Moving Freight and Bottlenecks and Chokepoints.

*The multiplier effect is a measure of the economic consequences of the change in one sector of the economy upon the other sectors of the economy. It incorporates the direct effects (project construction jobs) plus those supported through project purchases of goods and services (indirect jobs) plus the effects to the rest of the economy due to household spending (induced jobs).

The Washington State Transportation Commission and the Washington State Department of Transportation are in the process of updating the Washington Transportation Plan. This long range plan is based on data analysis and is focused on ten issues: System Preservation, System Efficiencies, Safety, Transportation Access, Bottlenecks and Chokepoints, Economy and Jobs, Moving Freight, Future Visions, Health and Environment and Funding and Governance. This plan will shape future transportation budget proposals.

For more on this topic: www.wsdot.wa.gov/planning/wtp

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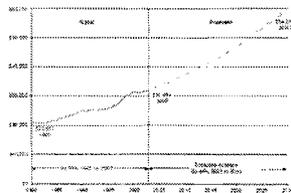
Economy and Jobs



Washington's Economic Structure

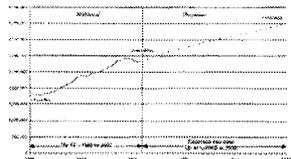
Per capita income is a real indicator of the state's economic growth. In Washington per capita income was \$31,984 in 2003, which ranked 14th nationally. Over the long run, growth in per capita income in Washington has trended closely with, and usually above, the national average.

Washington Per Capita Income (in 2000 dollars)



Along with population, Washington's workforce is also growing and will continue to grow.

Growth in Employment 1980 to 2030



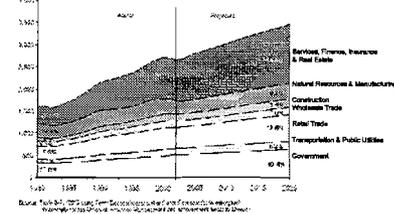
In March 2004 the state's unemployment rate of 7.6 percent was higher than the national rate of 5.7 percent (reflecting the severity of the recession on Washington's economy).

Most economic sectors are expected to see steady growth in the next 20 years, but the structure of Washington's economy is shifting. Following a national trend, services are expected to increase to almost 40 percent of non-agricultural employment by 2020, up from 25 percent in 1980. Most other sectors are projected to keep near their historical shares.

While remaining relatively steady in the number of jobs, manufacturing employment is expected to drop from 19.4 percent to 9.9 percent of all non-agricultural employment between 1980 and 2020. Even with this drop in share, Washington out-performs the nation in manufacturing.

In 2003, Washington manufacturers grossed \$88.3 billion, 21.3 percent of the total state gross business income. This sector employed more than 285,000 workers in 2002 (11 percent of Washington's jobs). Employment in the manufacturing sector has been down since 1998 mainly due to a downturn in the aerospace industry, though Washington is expected to see an average growth rate of 0.4% in manufacturing employment through 2030.

Washington Non-Agricultural Employment by industry, in thousands of jobs 1980 to 2020.



Agriculture

Agriculture is big business in Washington, even though it only employs about 3 percent of our workforce. In 2002, Washington produced \$5.6 billion in food and agricultural products, ranking ninth nationally as the number one producer of 11 crops.

Agriculture employed more than 87,000 people in Washington in 2002. Eighty percent of all agricultural employment is located in Eastern Washington. Yakima County accounts for 24 percent of statewide agricultural employment.

Quantifying the Economic Benefit of Transportation Investments

Research shows that transportation is linked to the economic health of a locality, state or region. Transportation infrastructure is a necessary but not sufficient factor for economic development. Transportation investments alone cannot prescribe the duration or magnitude of a specific economic improvement. Other factors are important and may overshadow the transportation investment. Transportation benefits are grouped into the following four categories.

Basic User Benefits

Improving safety, reducing delay, and lowering operating and production costs are examples of basic user benefits from making a transportation infrastructure investment. These are experienced directly by travelers and businesses.

Jobs, Project Construction, and the Multiplier Effect

The workforce that designs and builds transportation projects sees a direct benefit as additional funding for transportation projects is secured. Economists also show that there is an indirect benefit, or multiplier effect. Transportation infrastructure investment supports high paying jobs in the professional and construction sectors of the economy as well as additional jobs in the sectors that support transportation construction through the purchase of goods and services. Wages paid to this workforce translate into jobs in other trade and service sectors through household expenditures.

Statewide Economic Productivity Increases

Transportation investments have linked producers to new markets leading to statewide productivity increases and economic growth and expansion. Continued investment has contributed to improved business efficiency through new practices such as just-in-time delivery.

Research by Nadin and Mamuneas establishes the link between the highway network and economic performance. Their work provides empirical analysis about the historical contributions of roads to the U.S. economy. From 1950 to 1991, U.S. industries realized annual production cost savings averaging 18 cents for each dollar invested in the road system. This analysis captured the significant benefit that building the interstate system provided for economic growth and productivity. Decreased investment since the building of the interstate system has slowed transportation's contribution to productivity increases, but highway investment has remained a contributor to economic productivity growth.

Local and Regional Economic Development

Most importantly, transportation provides access and opportunities for local or regional economies to compete in larger areas of state, national, or world markets. Producers have greater opportunities to capitalize on their natural assets whether it be labor force, tourism, or other competitive advantages. Transportation access is necessary for the expansion of home-grown industries and the attraction of new industries.

Washington's Economic Clusters

In 2001 a study by the Washington Department of Community, Trade and Economic Development summarized the state's economic clusters. The study's intent was to encourage others to think about economic vitality issues in the framework of the clusters. An economic cluster consists of a lead or final product industry and suppliers, often concentrated in a particular region of the state. The state's economic vitality plan calls for supporting the needs of these industry clusters.

Washington's Top Three Economic Clusters

Ranked by Gross Business Income	2000
Aerospace	\$37.81 billion
Health Care	\$13.2 billion
Tourism	\$10.2 billion

Ranked by Employment	2000
Tourism	261,625
Health Care	216,618
Aerospace	88,079

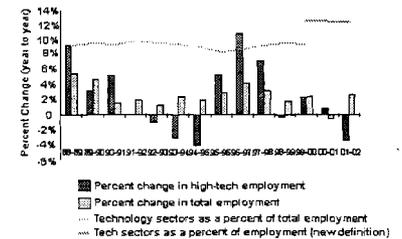
Aerospace and Technology

Regionally, an interesting shift occurred in technology job growth. Established technology-rich communities like Seattle, Vancouver and Spokane saw a drop in technology jobs over the last two years. While Bellingham, the Tri-Cities, and Bremerton all exhibited strong technology job growth over the past two years.

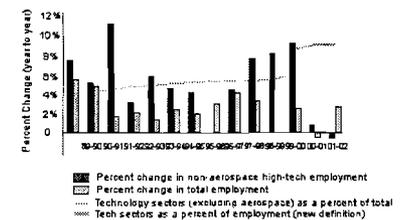
Technology industries account directly for more than 12 percent of Washington's total employment. Washington retains a highly educated workforce, critical to the technology industry, ranking twelfth for states with residents who have higher education degrees.

Since 1988, total high-tech employment fluctuated with the economic cycles of the aerospace industry, while non-aerospace high-tech employment showed steady growth during that same period.

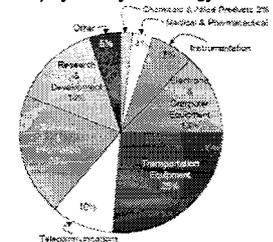
Technology Industries account directly for more than 12 percent of Washington's total employment



Technology Industries, excluding aerospace, account directly for almost nine percent of Washington's total employment



High Tech Employment by Technology Sector



Washington Transportation Plan

In Summary

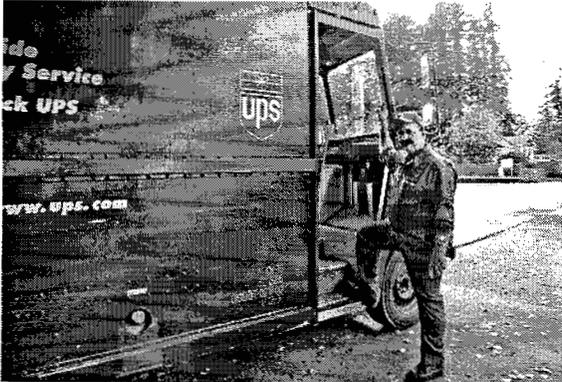
The three components of Washington's freight system are integrated and support our state's economy:

- International goods enter Washington State gateways and become part of Washington's manufactured output, or are distributed in our retail system. Washington's global gateways also carry national and international goods to and from the larger U.S. market.
- Washington manufacturers and farmers ship products directly to customers and to wholesalers in national and international markets. These industries support hundreds of thousands of jobs and contribute billions of dollars to the gross state product.
- Washington wholesalers and retailers supply consumers with goods from all over the U.S. and the world. They sustain our modern economy.

Freight related issues such as security, safety and the environment are being considered in other parts of the update of the Washington Transportation Plan.

What ideas did we miss?

We want the conversation about freight strategy to involve all parties. We need your help to make good investment choices that will address the needs of freight movement on our state's transportation systems and facilities. Especially when there isn't nearly enough money to do everything that clearly needs to be done.



Moving Freight

How are the special needs of freight movement to be incorporated into the state's transportation plan?

The three components of Washington's freight system – international gateways, transportation serving Washington's producers and manufacturers, and the retail and wholesale distribution systems – underpin our national and state economies, support national defense, directly sustain hundreds of thousands of jobs, and distribute the necessities of life to every resident of the state everyday.

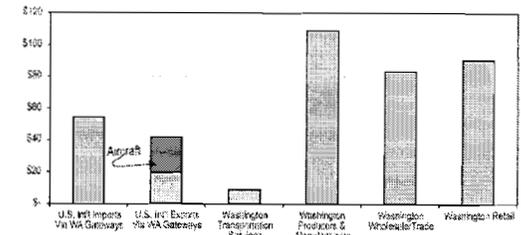
Washington is a gateway state, connecting Asian trade flows to the U.S. economy, Alaska to the Lower 48, and Canada to the U.S. West Coast. About 70 percent of international goods entering Washington gateways continue on to the larger U.S. market. Thirty percent become part of Washington's manufactured output or are distributed in our retail system.

Our own state's manufacturers and farmers rely on the freight system to ship Washington-made products to local customers, to the big U.S. markets in California and on the east coast, and worldwide. Washington producers generate wealth and jobs in every region of the state.

Washington's distribution system is a fundamental local utility, since without it our citizens would have nothing to eat, nothing to wear, nothing to read, no spare parts, no fuel for their cars, and no heat for their homes. In other words, the economy of the region would no longer function.

The value and volume of goods moving in these freight systems is huge and growing.

Washington State Value of Freight Shipments (2002: Billions of Dollars)



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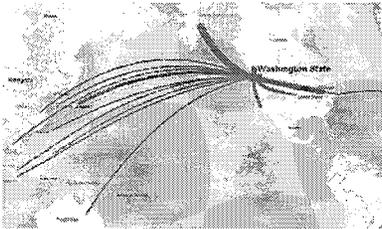
Moving Freight
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International and National Trade Flows Through Washington

Washington Gateways

National and international economies rely on the efficiency and capacity of Washington's transportation systems. In 2002, almost \$96 billion of goods entered or departed the U.S. stream of commerce through Washington's global gateways, facilitating international trade with U.S. trading partners. About seventy percent of international goods entering Washington gateways are destined for the larger U.S. market. International and national trade routes run through our state on both east-west and north-south corridors.



Gateways Connect Asia to the U.S. Via East-West Corridors

Washington's Puget Sound seaports move large volumes of imported manufactured goods that are shipped in containers from Asian trading partners. The ports of Tacoma and Seattle, combined, are among the top three marine container cargo complexes in North America, handling 8.2 percent of total U.S. container traffic. About 76 percent of all international containers arriving at these ports are transferred to rail and delivered to the Midwest and/or the East Coast. The annual volume of containers through Puget Sound seaports is expected to more than double from 2002 to 2025 (some 80 percent of this growth will be international).

U.S. Agricultural Exports Rely on Washington's Transportation System

Washington's transportation system is also important for U.S. agricultural exports. In 2002, food and food products totaling almost 20 million tons were, by volume, the largest commodities leaving our seaports. Agricultural products such as wheat, corn, and soybeans, from the Midwest and Eastern Washington travel by barge and rail through the Columbia River ports of Vancouver, Kalama, and Longview to Asian buyers.

Washington Gateways Support National Defense

Washington State gateways are a critical link in the U.S. defense and national security system. Fort Lewis is the only Power Projection Platform on the West Coast. In the event of a major military conflict, inbound cargo needed for

mobilization will travel by road and rail across the U.S. for shipment out of the Port of Tacoma. The Port of Seattle is a designated sustainment port, used to ship consumable supplies to troops in the event of a major overseas conflict.

Canadian - U.S. Trade is Trucked on North-South Corridors

Canada has a long history as a significant U.S. trading partner, and Canadian trade is big business in the state. In 2002, \$16 billion in U.S. - Canadian trade was imported or exported through Washington. The majority of these goods are transported by truck along the I-5 corridor through the Western Washington border crossings of Blaine, Sumas and Lynden. About half of the trucks deliver goods within Washington State, and half transit the state to link the Canadian and the greater U.S. economies. Blaine is, by far, the busiest truck crossing in Washington State; in 2002 it was the fifth busiest in the nation. Cross-border truck volumes in Western Washington have nearly doubled over the past 11 years.

Washington Links Alaska to the Lower 48 States

In addition to international trade, Washington is a key gateway for trade with Alaska. By tonnage, crude petroleum from Alaska is the greatest waterborne commodity entering Washington State. In 2002, almost 25 million tons of crude petroleum was carried to Washington State from Alaska, using the inland waterways and landing at Puget Sound refineries. In turn, needed consumer products leave Washington seaports for Alaska. In 2002, more than 77 percent of domestic waterborne cargo tonnage entering Alaska originated from Washington State.

Time-Sensitive Freight Travels By Air

Our airports are critical for the fast shipment of goods to and from national and international markets. High-value, time-sensitive products from computer chips to fresh fish and perishable fruits travel through these gateways. Washington's largest volume of air cargo is received at Seattle-Tacoma International Airport, which ranks eighteenth in the United States by tons of cargo handled.

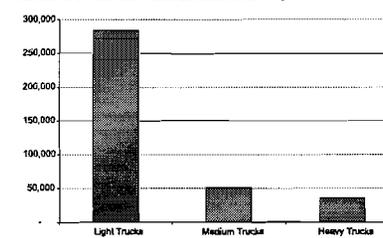
Competitive Advantages

Washington has built on its natural advantages: deep-water ports, proximity to fast-growing Asian and Canadian economies, and a short all-water route to Alaska, to create an enormously valuable multi-modal freight infrastructure. As a result, Washington also gains advantage from the region's "soft" trade infrastructure: human capital that facilitates financial, legal, and other international business issues.

Distribution Systems: Wholesale and Retail

By far, the greatest volume of trucks on our roads and highways serve the daily needs of Washington consumers through the wholesale and retail distribution system. Up to 80 percent of all truck trips operate in the local distribution system.

Number of Commercial Trucks Licensed in Washington State: 2004

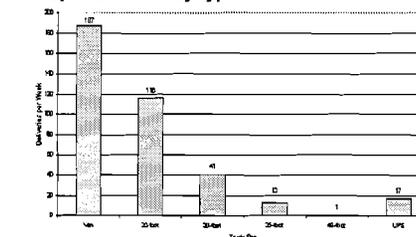


An enormous variety of goods are handled on this system; food and groceries, fuel, pharmaceuticals and medical supplies, retail stock, office supplies and documents, trash and garbage, construction materials and equipment. Without these goods, and the transportation system that moves the goods, Washington citizens would be without the daily necessities of life. High-volume distributors' goals for Washington's freight system are on-time delivery (50 percent), price (38 percent) and reliable trip time (12 percent). Source: WSDOT survey, 2004.

Grocery, Food Service, Retail, Parcels and Medical Supplies

Final distribution of goods is almost 100 percent by truck. For example, a huge volume of truck trips serves the daily needs of grocery shoppers. Efficient and cost-effective transportation is necessary to keep goods on the shelf at the lowest cost to consumers. A typical large grocery store receives two big semi-tractor-trailer deliveries and ten to twenty other specialized deliveries per day. Specialty markets, such as the Metropolitan Market on Seattle's Queen Anne Hill, may receive 375 van and small truck deliveries per week.

Weekly Deliveries to the Queen Anne Hill Metropolitan Market by Type of Vehicle



High-value, time-critical deliveries such as business documents and packages, cash in armored cars, and critical medical supplies and drug deliveries, must move quickly through the freight distribution system. When faced with transportation uncertainty, many companies are forced to add expensive buffer to their inventory stores. The costs of maintaining additional inventory – including space to store it, carrying and handling charges, waste and damage jeopardize the sustainability of these companies and the services they provide.

The Refuse System – Garbage Trucks Take It All Away

In 2001, Washington generated almost nine million tons of solid waste, over eight pounds per person per day. Garbage trucks pick up over 12,000 tons of residential and commercial waste every day and deliver it to transfer stations and landfills. Seventy percent of Washington's solid waste is shipped by railcar to the Roosevelt landfill in eastern Washington and to several Oregon landfills. Three 100-car trains of garbage arrive at Roosevelt every day, full of Washington garbage.

The Fuel Distribution System

In 2001, citizens of Washington State used 17.6 million gallons of petroleum every day. How does all that gas get to the gas station?

First, crude oil is processed at five refineries in Washington State; these refineries produce 89 percent of the petroleum needs for Washington State and 70 percent of Oregon's needs (there are no refineries in Oregon). The Olympic Pipe Line carries 50 to 60 percent of the output of these refineries to distribution centers in Western Washington, and is the sole source of jet fuel for Sea-Tac Airport. Two other pipelines serve Eastern Washington. Fuel that does not move by pipeline gets to distribution centers by barge or small tanker. Tanker trucks then make the final delivery to 2,800 gas stations throughout Washington State. Large gas stations may receive one or two fuel trucks each day, smaller facilities might receive one truckload of fuel per week.

Emerging Directions

Distribution

- Solution to I-5 congestion in urban areas: there is no alternative route to the mainline
- Solution to I-405 and Highway 167 congestion
- Completion of major freight corridors such as Highway 509, Highway 167/I-5 and Highway 18 to I-90
- Alaskan Way Viaduct risk of closure and freight capacity
- I-90 Snoqualmie Pass
- Local truck route program
- Construction planning on truck routes
- Ferry system freight runs
- Fuel pipeline capacity and distribution alternatives to meet long-term demand



Emerging Directions

Global Gateways

- Future east-west rail capacity, constraints, and port-rail connections
- Preservation and/or enlargement of rail yards in metro regions: Seattle, Spokane, Tacoma and Vancouver WA
- Capacity and constraints throughout the north-south I-5 corridor, including congestion from Everett to Olympia, missing highway links such as Highway 509 and Highway 167, and the Columbia River Bridge
- I-90 Snoqualmie Pass improvements
- Local road connections to ports
- Maintaining the Columbia-Snake River barge system (dredging and lock maintenance)
- Washington - Canadian border delays, congestion and security issues
- Ground access for air cargo: SR 518
- Grade separations at high-impact locations
- Operational improvements: complete statewide Weigh-In-Motion system, communications/ITS, truck rest stops

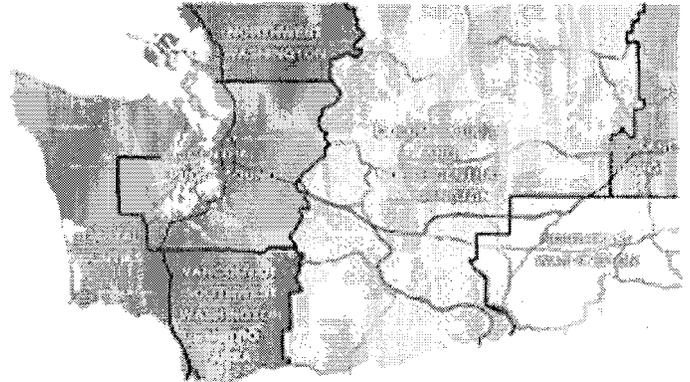
Washington Producers and Manufacturers

Our state's regions have built strong and distinct economies based on industry and agriculture. Regional manufacturing, agriculture, construction, and forestry depend on an effective and efficient freight transportation system.

Agriculture is big business in our state and supports the family farm as well as agri-business. In 2002, Washington State farmers and ranchers produced \$5.6 billion in food and agricultural products. Transportation is especially important for Washington agriculture because the state produces about three times as much food – and for some commodities up to twenty times as much – as it consumes, and is separated by long distances from the majority of the nation's consumers.

Manufacturing is rebounding in Washington State. In 2003, manufacturing Gross Business Revenues were \$88.3 billion, 21.3 percent of the total State Gross Business Income. The sector employed more than 265,000 workers (13 percent of all jobs) and paid 16 percent of total wages in Washington.

Regional Economies Rely on Washington's Freight System



Southeast Washington Sells Wheat to the World

Nationally, Washington ranked third in wheat production with 130 million bushels grown on 2.7 million acres in 2002. Eighty-five percent of Washington State wheat is sold to export markets, primarily Asia.

Only 50 percent of wheat growers are highly satisfied with the current performance of the state freight system. Maintenance and preservation of the Columbia River and the Snake River channels and locks are critical as 92 percent of southeast Washington wheat is shipped to Columbia River ports. Wheat growers say that getting their grain to the port on time, transportation costs, and adequate grain storage at the right locations are their big issues. Southeast Washington farmers shipping other foods to Central Puget Sound need improvements on I-90 at Snoqualmie Pass to prevent winter weather closures. All growers surveyed cite the need for a core all-weather county road system.

The Columbia Basin and North Central Washington: Agricultural Growing and Processing Center

87,500 jobs in the Columbia Basin and North Central Washington are directly dependent on our freight system. Washington is the second largest potato producing state in the country, and 90 percent of Washington potatoes are shipped to the U.S. market. Washington State ranked number one nationally in apple production, with a value of \$1.02 billion in 2002; 70 percent of apples are sold in the United States. Apples and potatoes must be shipped in refrigerated truck or rail cars; 90 percent is trucked. Continued refrigerated truck shortages are likely due to seasonal peak demands, and an ongoing pull from other U.S. regions for refrigerated capacity.

Timber sales from tribal lands such as those owned by the Confederated Tribes of the Colville Reservation and the Yakama Nation have become an important industry in Eastern Washington. Washington's harvest from tribal lands totaled 324 million board-feet in 2001; almost 300 million board-feet of the harvest was in Eastern Washington.



Growers and processors are seeking a solution to reposition refrigerated equipment, and I-90 Snoqualmie Pass improvements to avoid severe weather closures. Growers need a core all-weather county road system, and in the long run are interested in improving Highway 97 south to California markets.

Central Puget Sound Manufacturing, Construction, and Maritime Center

Freight dependent industries employed 484,000 in manufacturing, transportation, construction, and wholesale trade in Central Puget Sound in 2002. The Boeing Company is Washington's largest manufacturer, with \$22.4 billion in revenues in 2003. Boeing's dependence on the freight system will be even greater as it sets new levels of efficiency in the manufacture of the new 7E7 Dreamliner. Another 6,500 mid-market manufacturing companies employed 150,000 in the region, and the maritime industry employed over 22,000 in King County alone.

Shippers and carriers in Central Puget Sound need solutions to I-5 congestion from Olympia to Everett, as there is no practical alternative route to the state's major freight corridor. The majority of Washington State air cargo moves through SeaTac and King County Airports, and I-5 congestion directly impacts reliability and on-time performance of the air cargo system. Industry inventory reduction strategies are driving shorter on-time delivery windows for producers and carriers, and those business needs are also driving demand for a solution to I-405 congestion, completion of major freight corridors such as Highway 509, Highway 167/ I-5 and Highway 18 to I-90, the Alaskan Way Viaduct, port connections, Fast Action Strategy (FAST) projects including SR519/Royal Brougham, the Cross Base Highway, ferry system freight runs, and local truck route programs.

Spokane Region Eastside Center of Manufacturing and Commerce

52,000 jobs in the Spokane region are directly dependent on the freight system, and the regional health care center receives vital supplies via the I-90 corridor. Fifty-six percent of Spokane manufacturers identified on-time delivery as the most important freight service, while 26 percent say price is the most important factor.

Spokane manufacturers and carriers say that meeting those customer needs will require I-90 Snoqualmie Pass improvements to avoid winter weather closures, as well as solutions to mainline congestion in Puget Sound and I-90 pavement rutting. They support a local truck route program and grade separations at high-impact crossings.

Vancouver: Southwest Washington Metropolitan Area

48,000 jobs in the Vancouver metro region directly depend on the freight system, in manufacturing, construction, trade and transportation. Clark County's economy is integrally linked with that of the larger Vancouver/Portland metropolitan area. The Vancouver/Portland metro region is connected by two bridges over the Columbia River on I-5 and I-205, while comparable cities such as Kansas City has 10 bridges and Cincinnati has seven. East Clark County's high-tech industries value speed of transit to ship high-value parts on I-205, the fast route to Portland International Airport.

Vancouver manufacturers and carriers ship product to Central Puget Sound, Portland, and California and require a solution to I-5 congestion from Olympia to Everett and on the Columbia River Bridge. They also support Columbia River channel maintenance, deepening and barge access, improving I-90 Snoqualmie Pass to avoid winter weather closures, and local truck route programs.

Northwest Washington

31,000 jobs in Whatcom and Skagit Counties rely on freight. The region's manufacturing sector's customers are predominately to the south and ship via the I-5 corridor. Their first priority is I-5 congestion from Olympia to Everett that delays fast truck service to California and Washington markets, airfreight to and from Sea-Tac International Airport, and container moves to the Ports of Seattle and Tacoma. Border delays caused by multiple federal databases regulating freight transport are an issue, as is the need for all-weather local roads, and improved east-west connections between I-5 and the Guide Meridian and Highway 9.

Coastal Counties

16,000 jobs in Clallam, Grays Harbor, Mason, Pacific and Wahkiakum Counties are in freight-dependent industries such as manufacturing and forestry. The forest industry in Washington is the second largest in the nation, behind Oregon, with about 10 percent of U.S. forestry employment. Over 90 percent of Pacific and Grays Harbor Counties are in forestland, and privately owned forests account for more than 80 percent of timber harvested in Washington. \$2.95 billion total products were shipped in 170,000 truckloads on Highways 12, 8, and 101 from the coast to the I-5 corridor in 2003. Thirty-six percent of that \$1.06 billion were logs and finished wood, and paper products. \$840 million, 28 percent, was machinery.

Future Visions

Hybrid vehicles are here now. They operate on two fuel sources, most commonly gasoline in an internal-combustion engine and electricity stored in a battery. The Toyota Prius and Honda Civic are two such models already on the market. Other makes and models are scheduled for production within the next three years. Hybrids are efficient in their gasoline consumption because they run on electricity except when additional power is necessary, at which point the internal combustion engine kicks in. Industry experts expect hybrid vehicle sales to accelerate sharply in the next few years. By 2008, it is estimated that hybrids will account for 2 percent of all vehicle sales.



GM Hy-wire Toyota Prius

Hybrid Launch Dates

Make/Model	Date	Make/Model	Date
Honda Insight	1990	Honda Accord	2005
Toyota Prius	2000	Lexus RX400	2005
Honda Civic	2002	Toyota Camry	2005
Chevy Silverado	2004	Toyota Highlander	2005
GM Sierra PU	2004	Nissan Altima	2006
Ford Escape SUV	2005	Chevy Malibu	2007

Hydrogen fuel cell vehicles obtain electrical energy from the chemical process of separating oxygen atoms from hydrogen atoms. In its pure form, the only waste product created by the process is warm water. However, most fuel cells currently being developed require another energy source to drive the chemical separation, such as an internal combustion engine. But that may not always be the case. In May 2003, a drivable, engine-less fuel cell prototype called the Hy-

wire was introduced by General Motors. It runs on compressed hydrogen and transmits energy to the drive train by electrical wire, rather than by mechanical linkages.

Emerging Directions

- In order to build the new systems and capacity expansions needed to support growth, new financing strategies will be needed. Regional approaches, such as the Regional Transportation Investment District (RTID) of Puget Sound, show promise if voters will support regional funding sources to augment state transportation funding.
- Pricing approaches also show promise to supplement traditional transportation funding, especially in congested corridors.
- As ITS technologies continue to be developed, such as smart vehicles and smart roads, Washington needs to be on the forefront of adapting the transportation system to make sure that the benefits of these innovations are accessible to drivers, including commercial drivers who make their living on the roads.
- The anticipated shift from petroleum-based fuels to alternative fuels requires Washington to adapt the current transportation funding system. Innovative and fair strategies for meeting future system needs must be devised and implemented.



What are the visions of transportation system futures - shared and unshared - that should shape today's transportation planning to help create pathways to the future?

There are a lot of visions for the future of transportation in Washington that come from all levels and perspectives - some are beyond our grasp (either by just a little or sometimes by a lot), and some are within sight (sometimes clearly, and sometimes more distantly). Some are clearly needed - some are less justified. Given that Washington's population is still growing, it is important to think today about shaping the future, even though current funding is tight.

Adding New Systems

New types of transportation are being pursued to provide alternatives to driving and to support growth management plans at the local and regional level.

High Capacity Transit

A high capacity transit vision is starting to unfold in Washington. Sound Transit's Tacoma Link light rail is now operating in downtown Tacoma. The first 14-mile segment of the Seattle Link light rail is under construction between downtown Seattle and Tukwila, with a second phase being planned. The light rail system vision lays out proposed connections across Lake Washington to Bellevue and Redmond and extensions north to Everett and south to Federal Way. Sound Transit commuter rail is now operating from Tacoma to Seattle and from Everett to Seattle, with expanded service under development. Sound Transit Express buses are also operating on major freeway corridors throughout the Puget Sound region, and a series of direct access ramps are being constructed to improve transit access to park and ride lots from HOV lanes.

In Portland, the TriMet MAX light rail system has four lines operating, two of which approach Clark County in the I-5 and I-205 corridors. The Vancouver area is considering high capacity transit in Clark County and connections across the Columbia River into Oregon. In Spokane, preliminary planning has been done for a light rail line from the Spokane Valley to downtown Spokane.

The Washington State Transportation Commission and the Washington State Department of Transportation are in the process of updating the Washington Transportation Plan. This long range plan is based on data analysis and is focused on ten issues: System Preservation, System Efficiencies, Safety, Transportation Access, Bottlenecks and Chokepoints, Economy and Jobs, Moving Freight, Future Visions, Health and Environment and Funding and Governance. This plan will shape future transportation budget proposals.

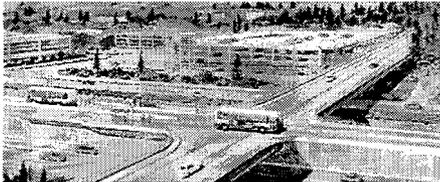
For more on this topic: www.wsdot.wa.gov/planning/ftp

Future Vision
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Future Visions

Direct Access Ramp I-90 at Eastgate



Supporting this high capacity transit vision is the 300-mile HOV lane system in the Puget Sound region, with over 200 miles already constructed within congested freeway corridors. This HOV system is supported by a broad network of park and ride lots, an extensive vanpool fleet, and demand management programs aimed at encouraging transit alternatives. Transit-oriented developments – land uses that provide densities, mixed uses, and pedestrian facilities to build a walk-to-market for transit have been built in Bellevue, Issaquah, Dupont, Vancouver, and throughout the city of Seattle, and are being planned along the light rail and other transit corridors.

Monorail

Extension of Seattle's vintage monorail line was approved by voters in November 2002. Phase I will build the Green Line, which runs 14 miles from Ballard to downtown Seattle and from West Seattle to downtown Seattle. Future phases of the monorail are intended to connect other parts of the city.

High Speed Intercity Passenger Rail

Washington has a vision for high speed intercity passenger rail in the federally-designated Pacific Northwest Rail corridor which runs from Eugene, Oregon, through Portland and Seattle to Vancouver, British Columbia.

Amtrak Cascades Daily Roundtrip Trains

Total Trains	1994	2003	Mid-point	2023
Portland, OR to Seattle, WA	1	3	8	13*
Seattle, WA to Vancouver, BC	0	2**	3	4

*Includes 10th train which travel north, beyond Seattle, to Vancouver, BC.
**Amtrak Cascades #513016 travels between Seattle and Bellingham.

This service is being incrementally implemented through track, signal, and rolling stock improvements to increase speeds and frequencies. The Amtrak Cascades currently provides three roundtrips per day between Seattle and Portland, and two roundtrips per day north of Seattle (one to Vancouver, B.C., and one to Bellingham). The lack of a stable source of state multimodal funding, and to date little federal support, has slowed the implementation of this vision and is leading WSDOT to reassess its high speed intercity passenger rail plan.

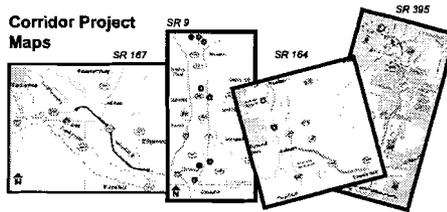
Major Roadway Capacity Expansions

With the population and job growth experienced in the past 20 years, which is projected to continue, Washington's roadway capacity is inadequate to meet the growing demand. WSDOT's highway system plan has identified over \$30 billion of unfunded capacity expansion needs on state highways, and regional plans have identified large additional expansion needs on city and county arterials.

Major corridor expansions have been planned for the I-405 corridor in East King County, SR 167 in South King County, and SR 522 and SR 9 in Snohomish County. A new north/south corridor as part of SR 395 has been planned in Spokane, with the first segment under construction. Highway missing links, including SR 509 south of SeaTac Airport, SR 167 from the Port of Tacoma to Puyallup, and SR 704 Cross-base Highway in south Pierce County, are also part of the state's expansion plan. In Vancouver, there is a need for an expanded I-5 Columbia River Bridge, with planning proceeding jointly between Oregon and Washington.

Capacity needs exist across the state, including SR 28 in East Wenatchee, SR 17 in Moses Lake, SR 101 in Olympia, SR 539 in Bellingham, and SR 240 in the Tri-Cities. In the Puget Sound region, growing delay is affecting regional highways such as SR 202 east of Redmond, SR 169 in Maple Valley, SR 164 from Auburn to Enumclaw, SR 162 in Pierce County, SR 524 in Snohomish County and others. Local arterial expansion plans to meet growth needs are numerous, including Myra Road in Walla Walla, Stevens Drive in Richland, Valley Mall Boulevard Extension in Yakima, and Schurman Way Extension at the Port of Woodland.

Corridor Project Maps



Changes in How Freight is Moved

Intermodal Logistics Parks

Freight capacity is being expanded by development of intermodal efficiencies and connections. Burlington-Northern Santa Fe Railroad (BNSF) is developing rail-truck Intermodal Logistic Parks. Recognizing the shift from a manufacturing economy to a warehouse and distribution economy sparked development of this concept of offering multimodal transportation choices in major regional markets. BNSF is developing a "four corner" nationwide strategy with one location in the Pacific Northwest.

Short Sea Shipping

Short sea shipping is a future intermodal shipping concept that would transport freight via barge or container ship for short-hauls over water in lieu of highway or rail movements that might be delayed by congestion. The water-borne freight would bypass the most congested land areas and be picked up by truck or rail to complete its journey.

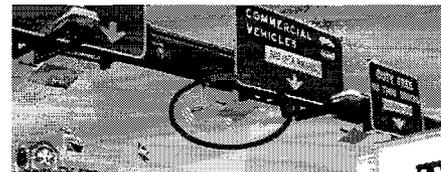
Intelligent Transportation Systems – Smart Vehicles and Smart Roads

Intelligent Transportation Systems (ITS) technology is rapidly evolving and includes such things as smart vehicles and smart roadways. Imagine having a vehicle that can sense the location of other vehicles on the road and activate variable cruise control and collision avoidance systems. A non-connected train of vehicles such as these, all communicating directly with each other, will allow them to safely travel at close distances and high speeds, while improving current highway system efficiency. Vehicles outfitted with smart technologies are starting to enter the marketplace, such as the On-Star navigation system.

Smart road technologies are being put into place as quickly as they can be developed and funded. In the future, roads across the state will feature such things as variable speed limits, customized traveler information delivered directly to a traveler's car or personal digital assistant (PDA), interaction between arterial traffic signals and ramp meters, special time-saving features for transit, and automated maintenance devices that protect worker safety, such as remote control traffic cones.

There are also ITS technologies designed to meet the special needs of truckers. Roadside weigh stations have traditionally performed a number of inspection and enforcement functions, including weighing of trucks, safety inspections, and license and operator credential checks. But waiting in line at a weigh station adds time (and therefore expense) to the trucker's trip. The Commercial Vehicle Information Systems and Networks (CVISN) and Weigh-In-Motion (WIM) system embedded in the roadway about a half-mile before a weigh station weighs each truck passing over it. At the same time, trucks equipped with an Automatic Vehicle Identification (AVI) transponder electronically transmit essential safety rating credentials, weight, size, and other information to the weigh stations.

CVISN/WIM System



The data is instantly checked and if no problems appear, the truck can bypass the station and continue down the highway. Within the next four years all interstate weigh stations should be converted to this technology. Up to now WSDOT has applied an incremental approach to CVISN. The ultimate vision is paperless permitting and tracking and data sharing within a national system. International border crossing applications of this technology are underway with a pilot project for sealed cargo containers.

Tolling Technologies

System pricing strategies show promise as a way to increase traditional transportation funding, especially in congested corridors. Also known as congestion pricing, these concepts include

- System-wide tolling, where fees are based on actual road use throughout the entire system. "Dynamic Pricing" (variable pricing based on demand) may be applied in this form of congestion pricing.
- Segment tolling, such as traditional, limited-access toll roads or toll express lanes. Advances in electronic toll collection now provide for "at speed" (no tollbooth) collection of tolls.
- Cordon tolling, where all drivers are charged a toll when entering an area, such as a downtown district.
- High-Occupancy-Toll (HOT) lanes, where single-occupant vehicles can pay to use High-Occupancy Vehicle (HOV) lanes when there is available capacity. Almost 20 different projects using or studying HOT lane applications are currently underway in the United States.

Systemwide Tolling



New Fuels

Fluctuating world petroleum markets causing price increases and concern about environmental pollution are focusing attention on alternative fuels. Non-petroleum energy sources include biodiesel, ethanol, natural gas, electricity, propane and hydrogen. Alternative fuel development will likely become a significant factor in the second decade of this century.

Health and Environment

Emerging Directions

Automobiles and Sprawl

• One state growth management goal is to reduce sprawl, and transportation expansion projects are often discussed and debated in connection with sprawl. Is it appropriate to address sprawl on a project-by-project basis, as currently required by federal environmental review laws, or should it be addressed in a more systematic way? A systems approach for addressing the cumulative effects of transportation projects and induced growth issues is needed.

Healthy Communities

• WSDOT places a priority on improving pedestrian and bicycle safety through the construction of sidewalks, trails, crosswalks, medians, and other features, particularly when it results in increased opportunities for children and others to be physically active and reduces environmental impacts. To continue to improve conditions for biking and walking, state resources for pedestrian safety will focus on locations that improve modal connections, specifically transit access. Existing resources for paths and trails will be applied to statewide priorities with a focus on improving safety for the young and the old.

Improving Air Quality

• The transportation sector is the source of more than half of the state's carbon dioxide emissions. The governors of Washington, Oregon, and California have begun to develop strategies to reduce carbon dioxide emissions in their states. The two ways to reduce transportation's carbon dioxide emissions are to improve vehicle technology and to reduce driving. California is proposing new carbon dioxide standards for cars and light trucks, beginning in 2009. The Washington State Legislature and Governor passed legislation to adopt the California standards in 2005.

Greater Returns on Investments

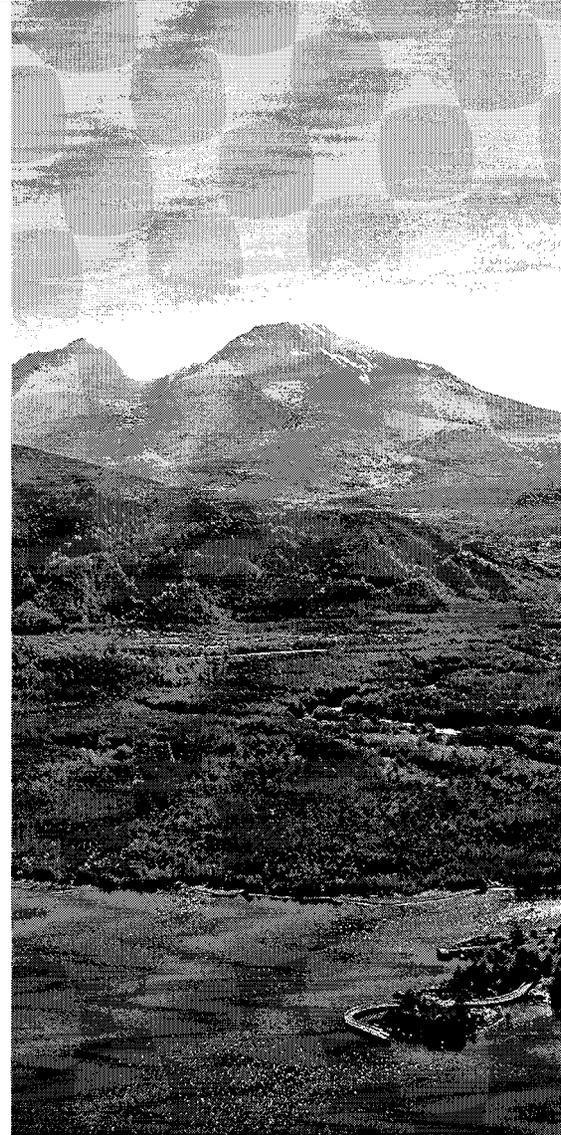
• The watershed approach involves looking at watershed needs and improvement opportunities beyond the immediate area of a project. In some watersheds, dollars can be better spent to deliver large benefits to water quality protection and habitat conservation and enhancement by investing in stormwater and wetlands needs away from the highway, compared to localized mitigation by the highway. This strategy continues to be developed.

Managing Stormwater

• The stormwater retrofit program addresses some of the highest priority stormwater deficiencies, but the program remains largely unfunded. In the WTP update, WSDOT will examine the environmental performance of existing facilities and propose methods to address deficiencies. In order to determine what to fix first, WSDOT needs to continue to inventory its outfalls and stormwater facilities. Only when the inventory is more complete can the highest priorities and most cost-effective locations be identified.

Protecting and Connecting Habitat

• WSDOT is addressing the need for habitat connections in the design of several projects, including SR 240 near the Tri-Cities, the I-90 Hyak to Easton project in the Cascade Mountains, and the Cross-Base Highway in Pierce County. Careful analysis is needed to determine the highest priority locations where investments should be made for connectivity, and habitat data needs to be better integrated into transportation planning and design. Integrating habitat planning and transportation planning is a key challenge for this WTP update. At the same time, existing retrofit programs for fish passage and chronic environmental deficiencies need more dedicated funding to address existing problems on the state highway system.



How can transportation investments be developed, implemented, and used in ways that both enhance our citizens' transportation goals and our citizens' goals for healthy communities and a well-protected environment?

Transportation systems touch many complex health and environmental concerns, including human health, natural ecosystem processes, species protection, climate change, and land use.

WSDOT's environmental enhancement efforts take their cues from citizen expectations that have been captured over time in federal, state, and local environmental regulations and policies. Public discussion of emerging issues, advances in scientific knowledge, and the evolution of transportation practices further direct our efforts.

WSDOT's overarching transportation goal related to human health is improving the safety of users of the transportation system. Beyond that core principle, WSDOT recognizes its role in protecting and sustaining the natural environment and the cultural and historic resources that are also critical to our quality of life. The Health and Environment paper explores five ways that transportation systems interact with communities and the environment:

- Air quality
- Active living and healthy communities
- Noise issues for highways and ferries
- Stormwater runoff
- Protecting and connecting habitat

An analysis of growth management trends and policy recommendations will be released as a stand-alone paper at a later date.

Protecting Washington's water supply, air quality, natural ecosystems along with other efforts to sustain the abundant natural setting of this state is no small task and will require the efforts of every citizen. For a fuller description of WSDOT's environmental work, visit: www.wsdot.wa.gov/environment

For up to date environmental reports, visit: www.wsdot.wa.gov/accountability

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For more on this topic: www.wsdot.wa.gov/planning/wtp

Health and Environment

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Washington State Transportation Plan

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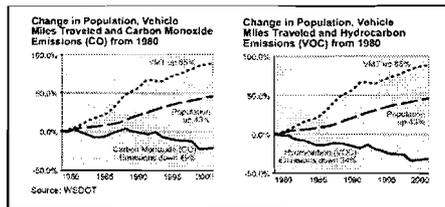
Health and Environment



Environmental & Health Trends in Washington

Air Quality

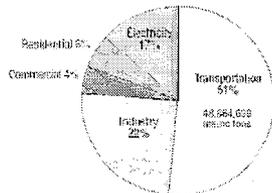
Emissions associated with transportation – from cars, trucks, buses, cargo vessels, cruise ships, ferries, and trains – are major sources of local air pollution and greenhouse gases. Air quality trends for regulated pollutants have improved over the past few decades, even as the state's population and vehicle miles traveled have increased.



However, concerns are growing in the areas of unregulated air toxics and inhalable soot (PM_{2.5}) related to diesel exhaust. While scientific study of the health effects of diesel continues to evolve, it is generally understood that prolonged exposure to these fine particles lead to respiratory and other health problems. Steps already taken in the regulatory arena (low sulfur diesel fuel and new exhaust systems in heavy trucks) and in Washington State (the recent move to low sulfur diesel in all state ferries) have helped to reduce PM_{2.5} emissions by more than 20 percent from 1980.

Another emerging trend is the share of carbon dioxide (CO₂) produced by transportation sector. Because Washingtonians rely less on fossil fuel for electricity generation, our vehicles are the largest source of CO₂ emissions.

Carbon Dioxide Emissions in Washington State by Source, 2000



The opportunities to constrain CO₂ emissions from motor vehicles lie in:

- Increasing fuel efficiency
- Converting to less polluting technologies
- Holding down vehicle miles traveled

WSDOT and other state and federal agencies are working together to respond to these issues.

Healthy Communities

Transportation not only determines how we move from place to place, but also the character of our communities. There is an increasing body of research suggesting that automobile-oriented land uses (e.g., those that create auto dependency) limit transportation options, adversely affect air quality, water quality and safety, and discourage physical activity.

Some of the most compelling new research related to transportation and healthy communities has shown that:

- Children's walking trips to school have declined by 40 percent between 1977 and 1999, and children between the ages of 5 and 15 make only 10 to 12 percent of their school trips by walking or riding their bicycles.
- Nearly a third of our nation's children and adolescents are overweight or at risk of becoming overweight. This proportion has more than doubled over the past 20 years.
- One half of all trips people make are less than three miles, but most of these are made by car.
- People walking and biking on the road face disproportionately high risks as 13 percent of all traffic deaths are pedestrians.

Access to sidewalks and bike paths as well as transit friendly land use patterns can improve our health and the health of our communities by helping to improve air quality and providing more opportunity for physical activity.



Reducing Highway Noise

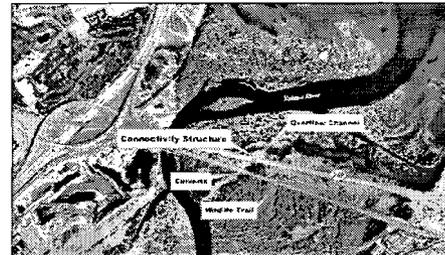
Traffic can create a lot of noise, sometimes at levels that are unacceptable for nearby neighborhoods. Though WSDOT cannot provide sound barriers everywhere, federal law and state policy requires that every project that adds through-lanes or significantly realigns roadways must receive a noise evaluation. Outdoor noise impacts (more than 66 decibels) on locations such as homes, schools, churches, day cares, and hospitals trigger evaluation of whether noise mitigation (e.g., walls, earth berms) will be meaningful and cost-effective. The result is that WSDOT builds many noise barriers that generally halve residents' perception of traffic noise. From 1963 to 2000, WSDOT built approximately 65 miles of noise barriers throughout the state.

Before 1976, noise was not accounted for on highway projects. WSDOT's noise retrofit program allows placement of barriers on existing highways where homes existed before May 1976. More than seventy locations are on the priority list, subject to funding.

Protecting Habitat and Wetlands

Washington State has a wide diversity of habitats that support more than 650 native fish and wildlife species. As the population increases, and our human footprint expands, added pressure is placed on natural systems that are already heavily stressed in many cases. Habitat fragmentation, road kill, and wetlands loss are some of the impacts that transportation systems can cause.

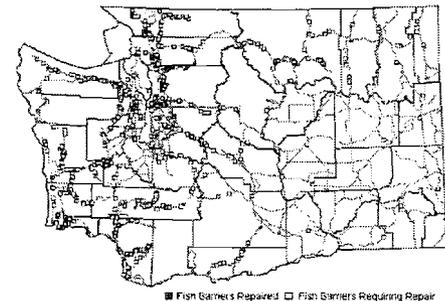
Roads can fragment habitat for fish and wildlife, restrict the movement of wildlife across landscapes, and lead to vehicle collisions with wildlife (on average, 1,200 reported accidents, 134 injuries, and one fatality each year – in 2004, five people were killed in vehicle-wildlife collisions).



Highway 240 near Tri-Cities: Additional structures allow for high water flows as well as enhanced wildlife movement in a wildlife refuge.

Nearly 900 WSDOT fish barriers have been identified for correction. The Washington Department of Fish and Wildlife has estimated there are another 33,000 non-WSDOT fish passage barriers located on city, county, federal, private, and tribal roads. So far, 140 WSDOT fish barriers have been fixed during the construction of a larger highway project, routine maintenance, or through the fish barrier retrofit program. Since 1991, 370 linear miles of stream habitat have been restored.

Fish Passage Barriers on State Highways



WSDOT adheres to wetlands protection requirements under Section 404 of the Clean Water Act and numerous state and local environmental provisions. At the same time, WSDOT is working with others to improve the effectiveness of wetlands protection and replacement requirements through opportunities for "watershed-based mitigation."

This and many other important efforts, such as water conservation, herbicide use reduction, and native plantings along roadsides, can be found at www.wsdot.wa.gov/accountability/graynotebook.

Construction projects affecting wetlands can avoid or minimize impacts by selecting a different alignment, widening bridge structures, or adding retaining walls that limit the need for fill. To compensate for unavoidable wetland impacts, WSDOT has developed 116 mitigation sites, totaling 675 acres since 1987. Of the 53 sites (272 acres) that have completed monitoring since 1988, 49 (267 acres) have been judged successful.

Stormwater Runoff

When stormwater flows over roads and through roadway drainage systems, it carries pollutants originating from motor vehicles, the atmosphere, and other sources into surface water bodies. Sediments and pollutants (nutrients, oil, grease, metals) are carried into rivers and streams in this way, affecting the quality and health of the water for people, animals, and plants.

Typical Sources of Pollutants in Urban Runoff

	Highways	Residential	Commercial/Industrial
Phosphorus	4%	39%	53%
Hydrocarbons	16%	26%	54%
Copper	9%	10%	79%
Suspended Sediments	7%	44%	44%

Source: NPODES Municipal Stormwater Permit Application, Volume I, Portland OR Metropolitan Area, May 1993

Controlling the amount of flow is also important, as high flows can damage habitat, property, and transportation infrastructure. Managing stormwater flowing over transportation facilities is achieved through use of runoff treatment and flow control. Most of WSDOT's stormwater outfalls were built prior to stormwater regulations and have no treatment facilities. To date, only 4,000 of WSDOT's estimated 18,000 to 24,000 outfalls have been inventoried, so adequate data is lacking to prioritize outfalls for retrofit.

At the current rate of construction, it will take at least a century to fix all of the locations lacking treatment facilities.

What are the Legal Requirements?

Federal Surface Transportation Act (TEA-21)

- Each state must prepare a transportation plan and program providing for development, management, and operation of systems and facilities considering all modes of transportation.
- Plan must be based on at least a 20-year forecast period and may include a financial plan.
- The plan shall be continually evaluated and periodically updated as appropriate.

Section 135 of title 23 of the U.S. Code

State Law

- WSDOT must prepare a “comprehensive and balanced statewide transportation plan” every two years based on legislative policies and applicable state and federal laws.

RCW 47.01.071

- The Commission must develop a state transportation policy plan that establishes a vision and goals for the transportation system consistent with the state's growth management goals; identifies significant transportation policy issues; and recommends statewide transportation policies to the Legislature.

RCW 47.06.030

What are the Stipulated Goals of the Plan? How Clear is the Overall Guidance?

Federal Planning Factors <small>(23USC135)</small>	State Planning Emphasis Areas <small>(RCW 47.06)</small>	Required Modal Plans <small>(RCW 47.06)</small>
<ul style="list-style-type: none"> ▪ Support the economic vitality of the United States, the States, and metropolitan areas, especially by enabling global competitiveness, productivity, and efficiency. ▪ Increase the safety and security of the transportation system for motorized and non-motorized users. ▪ Increase the accessibility and mobility options available to people and for freight. ▪ Protect and enhance the environment, promote energy conservation, and improve quality of life. ▪ Enhance the integration and connectivity of the transportation system, across and between modes throughout the State, for people and freight. ▪ Promote efficient system management and operation. ▪ Emphasize the preservation of the existing transportation system. 	<ul style="list-style-type: none"> ▪ Relief of congestion. ▪ Preservation of existing investments. ▪ Preservation of downtowns. ▪ Ability to attract or accommodate planned population and employment growth. ▪ Improvement of traveler safety. ▪ Efficient movement of freight and goods. ▪ Improvement and integration of all transportation modes to create a seamless intermodal transportation system for people and goods. 	<p><u>State-owned</u></p> <ul style="list-style-type: none"> ▪ Highways ▪ Ferries <p><u>State Interest</u></p> <ul style="list-style-type: none"> ▪ Aviation ▪ Public Transportation ▪ Freight Rail ▪ Intercity Passenger Rail ▪ Bicycle & Pedestrian ▪ Marine Ports & Navigation

Washington Transportation Plan Update

Interim Briefing to the Transportation Commission

Charlie Howard
Director

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Amy Arnis

Deputy Director

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Douglas B MacDonald

Secretary of Transportation

Paula Hammond

Chief of Staff

Commission Retreat
April 22, 2004



Washington State
Department of Transportation

4/29/2004

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4/29/2004

3

This Afternoon:

- Planning requirements and the update process
- Key financial background

Tomorrow:

- Issue area progress
- Special briefing topics

4/29/2004

2

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4/29/2004

4

Base Chronology of Transportation Planning Efforts in Washington State

	Transportation Planning Environment	Example Documents & Plans
1960's	Interstate Era: Highway and Transit Expansion Plan	1964 Puget Sound Regional Transportation Plan
1970's	Freeway Revolt: <ul style="list-style-type: none"> • Removal of cross sound bridges from plan • Removed freeways from Central Puget Sound • Transit in Central Puget Sound voted down 	1975 Puget Sound Regional Transportation plan
1977	State DOT and Transportation Commission created and state transportation plan required.	1980 State Transportation Plan, with 1981 and 1982 Updates
Mid 80's	Financial Bust: WSDOT eliminated planning – "maintain only" operation with a pessimistic view on revenue.	No Plan
1987	Commission and WSDOT restart planning – Strategic Issues and Policy	1989 to 1993 State Transportation Policy Plans
1993	WSDOT begins system planning – First highway system plan published	1993 State Highway Systems Plan
1995	First Multimodal Plan published - Each mode in its own silo	1995 Washington's Transportation Plan
2001	Multimodal Approach: <ul style="list-style-type: none"> • Multimodal goals and objectives • Focused on objectives, not modes • No financial constraints 	2001 Washington's Transportation Plan

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How is the Process Taking Shape?

Phase 1: Data and Approach Development

- Build statewide transportation "data library".
- Analyze statewide trends and system conditions.
- Identify key issues and choices.
- Share the learning and analysis with others.

Phase 2: Developing the Plan Update

- Commission guides tentative judgments on scale and direction of investment programs.
- WSDOT works with RTPOs and others to develop proposals for investment plans and funding scenarios.
- Commission matches priorities to funding scenarios
- Commission adopts the plan.

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Aspiration for the 2005 Plan Update

- Data driven, analytically grounded and organized by major Issue areas.
- Program and investment proposals advanced for the state for each major issue area.
- Investment and programs proposals prioritized into high, medium, and low priority categories.
- Scale of proposed investment constrained by financial realities.

What we're hearing...

"The WTP should be a collection of information and data from which decision makers can make choices."

"DOT's analytic capability must be strengthened so that we have better information on which to take the long view... The key word everyone has to keep in mind is prioritization..."

"We must prioritize and make choices. The debate is not about how to keep doing just about what we are already doing. It's about how to choose to spend the money we have on what we really want."

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What is the Outreach Program?

RTPO Outreach

- Briefing by Secretary MacDonald at quarterly meeting with all MPOs and RTPOs.
- WSDOT Modal Directors one on one meetings with each RTPO.
- WSDOT WTP briefings at RTPO policy or technical committees by WSDOT regional staff.
- Joint process for developing investment plan.

Document and Information Sharing

- The WTP web page.
- Creating web based documents accessible by everyone.
- Creating an on-line data library to share WTP data.
- Publishing and distributing folios describing WTP progress.

Special Outreach Meetings

- Legislator and legislative committee staff conversations
- Tribal Transportation Planning Organization
- Washington Public Ports Planning Group
- Freight Customer Interviews
- Safety Conscious Planning Workshop
- Freight Workshop with FMSIB
- Congestion Relief Study in Puget Sound, Vancouver and Spokane
- Other Events

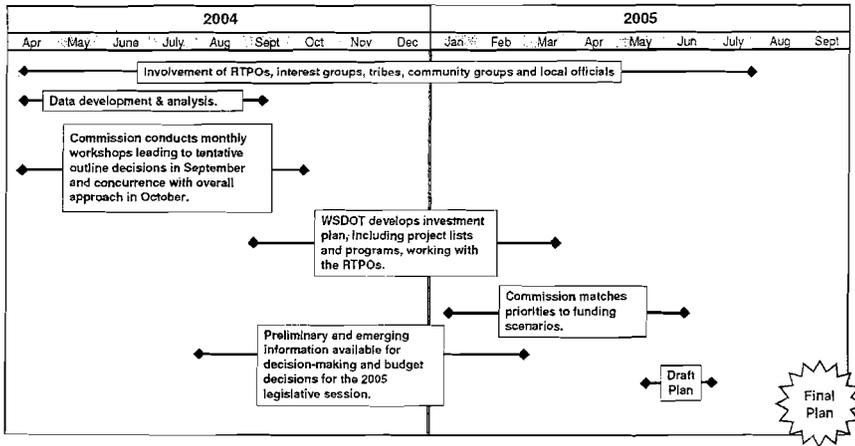
Late Summer "Milestone" Event

- Scheduled for September 21, 2004
- Hosted by Transportation Commission
- Opportunity to share what we've learned, to discuss approaches, and solicit views.

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What's the Schedule?



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Demands on the Transportation Systems and Services

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Washington Transportation Plan Update

What you will hear over and over throughout this two-day presentation. . .

- Demands on our state's transportation systems are up, and have not been adequately addressed for years.
- Funds for transportation are not there to do what needs to be done.
- Aging and deterioration of our state's transportation system will require spending more and more to "stay in place".

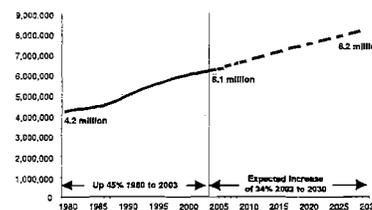
How do we talk about and settle on our real priorities in light of these paramount realities?

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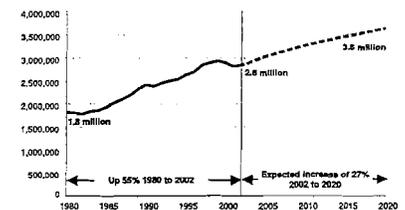
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Demand is up...

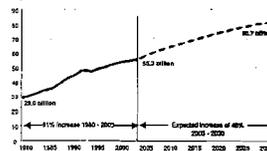
Population Will Continue to Grow



Employment Will Continue to Grow

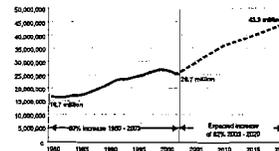


Vehicle Miles Traveled Will Continue to Grow (Miles in billions)



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Ferry Ridership Will Continue to Grow



Transit Ridership Will Continue to Grow (Fixed Urban Passenger Trips displayed)



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Funding

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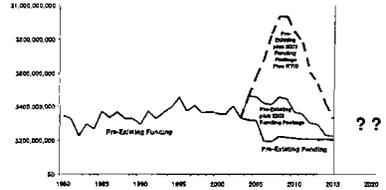
13

The New Games in Town for Funding are:

RTID:

- If passed, could increase capital investments by \$10+ billion in King, Pierce and Snohomish counties.

Overall Level of Capital Investment Continues to Depend on the RTID (in 1990 constant dollars)



Initiative 864: 25% Property Tax Initiative

- If passed, could result in a statewide reduction of \$426m per year (based on 2004).
- Of this reduction, \$112m counties current expense \$76m county roads, \$131m cities. Compounds losses already experienced by I-695, I-776 and I-747

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Initiative 883:

"Reduce Traffic Congestion" Plan

- Declares road construction to reduce traffic congestion the top priority of the transportation system.
- Revenue from three existing taxes are redirected to a new account: for congestion relief. The new account would capture 2.8c of existing gas tax, 20% of existing gross weight fees, and about one third of existing tax on vehicle sales tax which equals about \$330 million currently going to the State General Fund.
- Funding criteria to rate and choose state and arterial transportation projects by congestion relief rating ranking..
- HOV lanes are opened at off-peak hours and are re-evaluated.

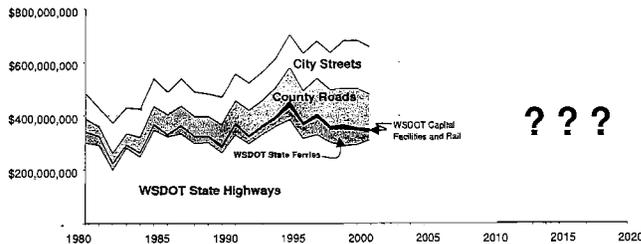
Additional State Revenue:

?

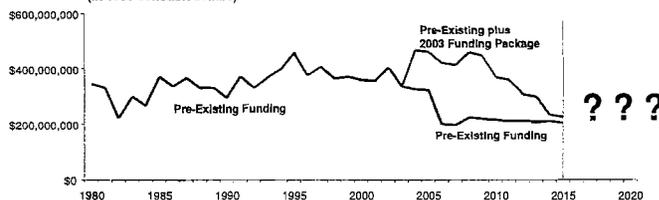
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Funding: Down or flat...more or less....???

Transportation Capital Investment by WSDOT, Counties, & Cities
1980 – 2001 - projections to 2020 (1980 dollars)



Over the Next Decade WSDOT Funding is Declining
Even With the Last Funding Package
(in 1980 constant dollars)



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What are we hearing about funding issues from the cities and counties and transit systems?

- County road levy and the current share of the gas tax cannot meet current funding needs.
- Most rural counties do not have an adequate tax base to fund general government needs let alone local transportation improvements.
- Local options cannot generate enough funds to provide for construction maintenance and preservation programs.
- Recent statewide initiatives have repealed local transportation funding tools.
- For transit, the state provides less than 2% of their total funding.
- Capital needs of transit systems vary depending on size and location, but are most acute in urban areas.
- Most critical for transit is augmenting funding for operations.
- In some areas of the state, the sales tax imposed by transit will not grow by enough to support funding for current operations.

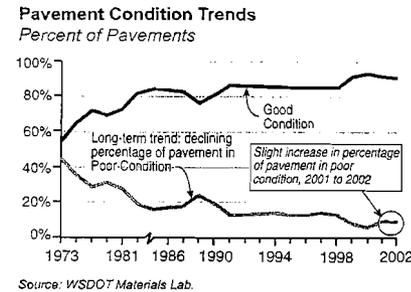
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The System is Aging and Deteriorating...

Even though *asphalt pavement* conditions are improving, *concrete pavement* conditions on the state's most important highways are in decline and will be expensive and inconvenient to fix.

System Aging and Deterioration



2004 Concrete Lane Miles*		
Current Age (Construction or Reconstruction)	Total Lane Miles	Lane Miles Rehabilitated to Date by Dowel Bar Retrofit
0-10	147.1	0.0
11-20	274.0	0.0
21-30	566.8	35.0
31-40	642.0	322.4
41-50	279.1	58.1
51-60	5.0	0.2
61 or more	66.1	0.0
Total	1980.0	415.7

* Does not include 321 lane miles of bridge sections and 112 lane miles of ramps.

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The System is Aging and Deteriorating...

These problems are best recognized by the public as:

- Alaskan Way Viaduct
- SR 520 (Evergreen Point Floating Bridge)
- Interstate Pavements

On inspection, this is the problem of “preservation” investment. It is statewide and multimodal. It affects bridges, pavement and other facilities that the public assumes it can “take for granted”.

But preservation cannot be taken for granted and needs to be funded.

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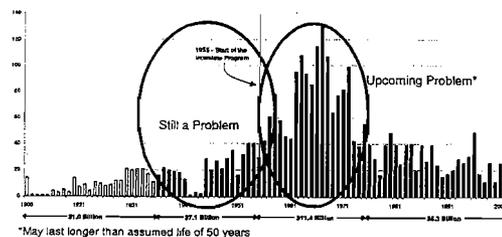
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The System is Aging and Deteriorating

Bridges are getting older.

- In the next 20 years, much of the bridge inventory will reach the age of 50 or more years.
- As more of our bridge inventory reaches the age of 50, investment needs for bridge rehabilitation will continue to rise sharply with the most pressing needs being to replace the oldest structures in the system.

Bridge Inventory by Age and Replacement Costs
2004 dollars



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Ferry system assets are getting older.

- Just as with bridges the time is coming when expensive investments in ferry terminals and vessels will need to be made.
- Of our 28 ferry boats, 21 are more than 20 years old and six are 50 years or older.

Class	Name	Year Constructed	Age	
Jumbo/Mar II	Tazonia	1997	7	
	Wenatchee	1998	6	
Jumbo	Puyallup	1998	6	
	Spokane	1972	32	
	Walla Walla	1972	32	
Super	Hyak	1967	37	
	Kalaelan	1967	37	
Isaquah 130	Yakima	1967	37	
	Bend	1967	37	
	Issaquah	1979	25	
	Kitsap	1980	24	
	Kittitas	1980	24	
	Cathlamet	1981	23	
	Chelan	1981	23	
	Sealth	1982	22	
	Evergreen State	Evergreen State	1954	50
		Kahowya	1958	46
Tillamook		1959	45	
Steel Electric	Oysterville	1927	77	
	Ilwaco	1927	77	
Miscellaneous	Nisqually	1927	77	
	Klickitat	1927	77	
	Rhododendron	1947	57	
Passenger Only	Hiyu	1957	37	
	Skagit	1989	15	
	Kelama	1988	15	
Chinook	Chinook	1998	6	
	Snohomish	1999	6	

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So how should we approach the problem of making choices and setting priorities?

Capital investment in preservation and current investment in maintenance and operations are paramount issues.

Also:

- The ability to address “New Capacity” for congestion relief will be an issue.
- Targeted safety investments that provide the highest benefit will also need to be made.
- There are many other potential priorities in the area of rural roads and freight mobility - to name a few.

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The Discussion Involves:

- Even with RTID, more will be needed from the state for the Alaskan Way Viaduct, SR 520 (Evergreen Point Floating Bridge), interstate pavements, and other preservation needs.
- Maintenance and other operating and capital programs were not augmented by Transportation 2003 Funding Package. Safety programs need more funding.
- Only the very worthiest “new works” (i.e., capacity enhancement) projects can be funded at the likely levels of future investment capacity. How should they be prioritized?
- The 18th Amendment will continue to present a roadblock to multimodal funding – other sources besides the gas tax and vehicle fees will need to be tapped.
- Increased state funding will need to be shared with cities, counties and transit.
- Equity amongst areas of the state will continue to be an issue: the “donor areas” are very restless.

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Reality Intrudes

How much additional funding could be raised over the next decade?
Choose a Scenario!

Dollars in millions

Three scenarios, 2 options each.	Option A				Total	Option B			
	Local Share	State Share		Total		Local Share	State Share		Total
	50%	20% Maintenance	80% WSDOT Capital*			25%	75%	80% WSDOT Capital*	
Scenario 1: 1¢ gas tax increase each year for the next 10 years	\$993	\$198	\$1,835	\$3,027	\$497	\$298	\$2,722	\$3,517	
Scenario 2: 10¢ gas tax increase beginning July 1, 2005	\$1,781	\$356	\$2,526	\$4,663	\$890	\$534	\$3,790	\$5,214	
Scenario 3: 10¢ gas tax increase beginning July 1, 2005, plus another 10¢ increase July 1, 2011	\$2,675	\$535	\$4,344	\$7,554	\$1,337	\$802	\$6,577	\$8,716	

*Amounts shown for WSDOT Capital investment include assumptions for the sale of bonds using the available revenue stream. The funding level can vary depending on the timing of expenditures and the resulting bond sales needed, as well as from financing assumptions including interest rates and debt service coverage requirements.

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Local Roadways: The County System

Washington State Transportation Commission
October 19, 2004



Gary Nelson,
Snohomish County
Council member

Jim Whitbread, PE
Stevens County Engineer

This presentation was prepared and presented by the Washington Association of Counties and may not be representative of the Washington State Transportation Commission and the Department of Transportation's viewpoint.

An Overview of Washington's Counties

- 39 counties (281 cities and towns)
- The total population living in unincorporated areas is 2.423 million (40% of the total state population of 6.041 million).
- The county road system makes up 66% of the center line miles and carries 16.5% of the vehicle miles traveled.

Diversity of County Road System

- **Approximately 85,000 lane miles of roads.**
 - 57,800 miles paved (68%)
 - 27,200 miles unpaved (32%)
- **Freight and Goods system is comprised of over 21,000 lane miles.**
 - Many of these roads have deficiencies that require closures or restrictions.
- **Four counties operate ferries and they have similar operations and maintenance issues as the state ferry system.**

Major County Responsibilities County Wide

- Law & Justice (except Police/Sheriff)
- Assessment, Tax Collection
- Records, Elections
- Public Health
- Human Services

Unincorporated

- Police/Sheriff
- Road Construction & Maintenance (in unincorporated areas funded with dedicated property tax)
- Land Use

Major Funding Sources

Counties

- Sales Tax
- Property Tax

Cities

- Sales Tax
- Property Tax
- Utility Tax
- B & O Tax
- Business License Fees

County Road Levy Summary

2002 Revenue produced by full levy of \$2.25/\$1,000

- \$386 million – if full levy applied
- \$327 million – actual revenue produced
 - \$306 million in revenue to the road fund
 - \$21 million diverted for traffic enforcement and other purposes

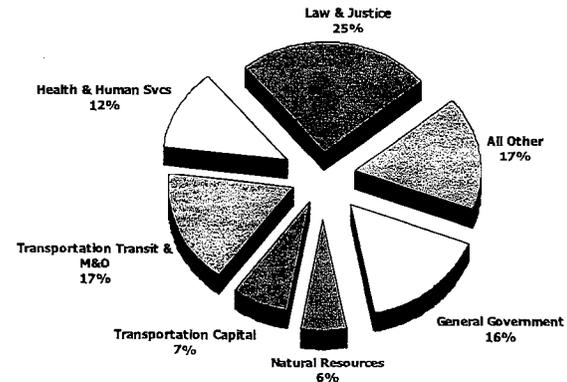
Major Funding Sources – General Fund County Wide

- \$1.80 Property Tax Levy
- Sales Tax (15% of City Tax)
- 0.1% Sales Tax Correctional Facilities
- 0.1% Sales Tax - Criminal Justice (shared with cities)

Unincorporated

- Up to 1% Sales Tax

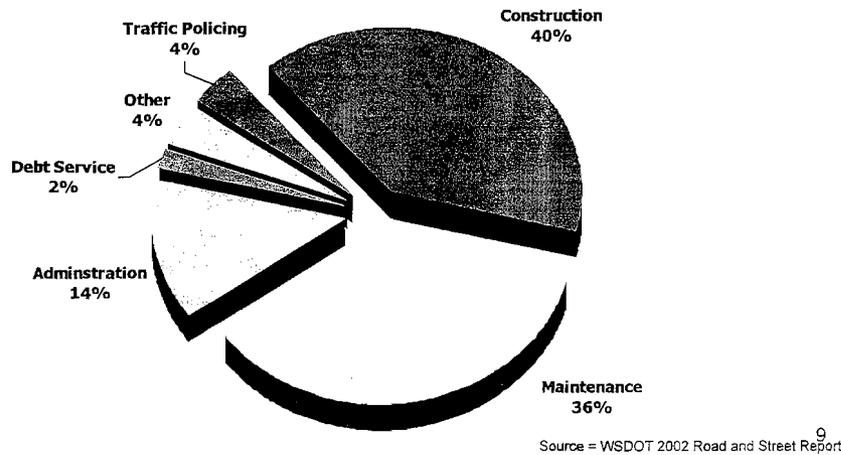
2002 County Expenditures



Source = State Auditor's Office
2002 Audited data from the
Local Government Financial Reporting System

2002 County Transportation Expenditures

\$756.8 Million

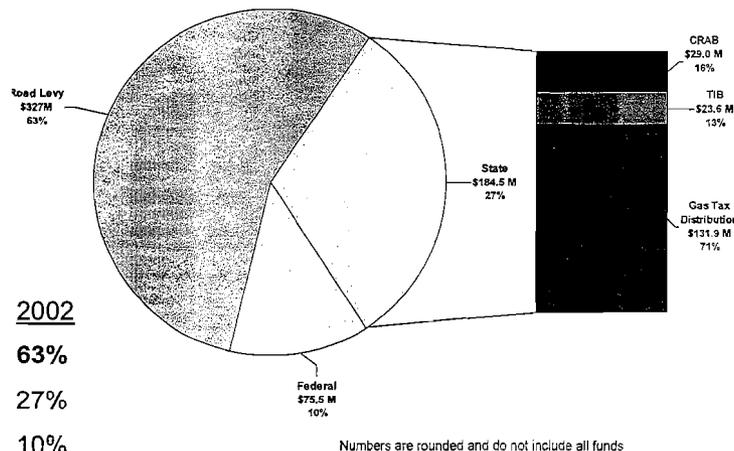


Washington's Transportation Plan

You asked us:

- Have we identified the right issues?
- Have we collected the right data?
- Do we interpret the data in the right way?
- What are the implications for capital investment?

Local Funds are paying for the majority of the system



	1991	2002
Local	56%	63%
State	34%	27%
Federal	11%	10%

Issues we agree on

- ✓ System Efficiencies
- ✓ Transportation Access
- ✓ Health & the Environment
- ✓ Strong Economy & Good Jobs
- ✓ Building Future Visions

Preservation

- The current state funding programs through WSDOT, TIB and CRAB are not keeping up with the need.
- Counties are trying to balance competing needs between safety, preservation and maintenance and falling short on all three.

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Freight

- We agree with the emerging directions.
- For counties, many of the roads have deficiencies that necessitate weight restrictions and/or road closures during certain times of the year, making them unusable for reliable freight transport. Estimated costs range from \$2.4 Billion for upgrading all roads to all weather standards to \$1.8 Billion for making improvements that would still necessitate moderate restrictions on the roadways.

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Strong Economy & Good Jobs

- We agree with the statewide perspective.
- And, we must note: urban areas need the rural areas to survive and rural areas need the urban areas to survive. Urban areas provide the jobs and markets. The rural areas provide the food and resources for the urban areas.
- We must work together in order to be successful.

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Safety

- We agree with the emerging directions and findings.
- Two lane rural roads have the highest accident rates and deserve special attention.
- Investments are needed for both the roadways, and education and enforcement.

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So...

- Every trip begins and ends on a local road.
- Urban counties are using preservation funding for construction to meet growth needs.
- Rural counties are using construction money to preserve the system.
- Inflation pressures exceed road levy growth rate limits.
- Criminal justice costs are significant and are placing increased pressures on the road levy.

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What do Counties need?

- We need additional program funding for
 - Preservation;
 - Maintenance;
 - Safety improvements;
 - Congestion relief and;
 - Local freight improvements in order to maintain and improve the system.
- The funding should be flexible enough to allow local elected's and professional staff to manage diverse demands.

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Appendix J

PAVEMENT MAINTENANCE/PRESERVATION DETAILED FORCAST FOR CITIES AND COUNTIES

20 Year Pavement Maintenance/Preservation Cost CITIES

	Miles	Pavement Width	Crack Seal				Single Chip Seal			
			Cost/ Sq.Yd.	Cost/mile	20 year cost	average cost per year	Cost/ Sq.Yd.	Cost/mile	20 year cost	average cost per year
Adams										
Hatton	6.00	32	\$ 0.76	\$ 14,000	\$ 560,000	\$ 28,000	\$ 1.90	\$ 36,000	\$ 617,000	\$ 30,850
Lind		32	\$ 0.76	\$ 14,000	\$ -	\$ -	\$ 1.90	\$ 36,000	\$ -	\$ -
Othello	37.00	32	\$ 0.76	\$ 14,000	\$ 3,453,000	\$ 172,650	\$ 1.90	\$ 36,000	\$ 3,806,000	\$ 190,300
Ritzville	35.00	32	\$ 0.76	\$ 14,000	\$ 3,267,000	\$ 163,350	\$ 1.90	\$ 36,000	\$ 3,600,000	\$ 180,000
Washtucna		32	\$ 0.76	\$ 14,000	\$ -	\$ -	\$ 1.90	\$ 36,000	\$ -	\$ -
Total	78.00				\$ 7,280,000	\$ 364,000			\$ 8,023,000	\$ 401,150

Grant

Coulee City	7.00	32	\$ 0.76	\$ 14,000	\$ 653,000	\$ 32,650	\$ 1.90	\$ 36,000	\$ 720,000	\$ 36,000
Electric City	10.40	32	\$ 0.76	\$ 14,000	\$ 971,000	\$ 48,550	\$ 1.90	\$ 36,000	\$ 1,070,000	\$ 53,500
Ephrata	42.39	32	\$ 0.76	\$ 14,000	\$ 3,956,000	\$ 197,800	\$ 1.90	\$ 36,000	\$ 4,360,000	\$ 218,000
George	5.68	32	\$ 0.76	\$ 14,000	\$ 530,000	\$ 26,500	\$ 1.90	\$ 36,000	\$ 584,000	\$ 29,200
Grand Coulee	11.39	32	\$ 0.76	\$ 14,000	\$ 1,063,000	\$ 53,150	\$ 1.90	\$ 36,000	\$ 1,172,000	\$ 58,600
Hartline	8.20	32	\$ 0.76	\$ 14,000	\$ 765,000	\$ 38,250	\$ 1.90	\$ 36,000	\$ 843,000	\$ 42,150
Krupp	2.65	32	\$ 0.76	\$ 14,000	\$ 247,000	\$ 12,350	\$ 1.90	\$ 36,000	\$ 273,000	\$ 13,650
Mattawa	6.96	32	\$ 0.76	\$ 14,000	\$ 650,000	\$ 32,500	\$ 1.90	\$ 36,000	\$ 716,000	\$ 35,800
Moses Lake	98.90	32	\$ 0.76	\$ 14,000	\$ 9,231,000	\$ 461,550	\$ 1.90	\$ 36,000	\$ 10,173,000	\$ 508,650
Quincy	27.03	32	\$ 0.76	\$ 14,000	\$ 2,523,000	\$ 126,150	\$ 1.90	\$ 36,000	\$ 2,780,000	\$ 139,000
Royal City	11.20	32	\$ 0.76	\$ 14,000	\$ 1,045,000	\$ 52,250	\$ 1.90	\$ 36,000	\$ 1,152,000	\$ 57,600
Soap Lake	21.22	32	\$ 0.76	\$ 14,000	\$ 1,981,000	\$ 99,050	\$ 1.90	\$ 36,000	\$ 2,183,000	\$ 109,150
Warden	22.38	32	\$ 0.76	\$ 14,000	\$ 2,089,000	\$ 104,450	\$ 1.90	\$ 36,000	\$ 2,302,000	\$ 115,100
Wilson Creek	5.50	32	\$ 0.76	\$ 14,000	\$ 513,000	\$ 25,650	\$ 1.90	\$ 36,000	\$ 566,000	\$ 28,300
Total	280.90				\$ 26,217,000	\$ 1,310,850			\$ 28,894,000	\$ 1,444,700

	Miles	Pavement Width	Treatment Type							
			Cost/ Sq.Yd.	Cost/mile	Crack Seal 20 year cost	average cost per year	Cost/ Sq.Yd.	Cost/mile	Single Chip Seal 20 year cost	average cost per year

Kittitas

Cle Elum	16.43	32	\$ 0.76	\$ 14,000	\$ 1,533,000	\$ 76,650	\$ 1.90	\$ 36,000	\$ 1,690,000	\$ 84,500
Ellensburg	62.11	32	\$ 0.76	\$ 14,000	\$ 5,797,000	\$ 289,850	\$ 1.90	\$ 36,000	\$ 6,388,000	\$ 319,400
Kittitas	6.55	32	\$ 0.76	\$ 14,000	\$ 611,000	\$ 30,550	\$ 1.90	\$ 36,000	\$ 674,000	\$ 33,700
Roslyn	11.55	32	\$ 0.76	\$ 14,000	\$ 1,078,000	\$ 53,900	\$ 1.90	\$ 36,000	\$ 1,188,000	\$ 59,400
South Cle Elum	5.62	32	\$ 0.76	\$ 14,000	\$ 525,000	\$ 26,250	\$ 1.90	\$ 36,000	\$ 578,000	\$ 28,900
Total	102.26				\$ 9,544,000	\$ 477,200			\$ 10,518,000	\$ 525,900

Lincoln

Almira	7.00	32	\$ 0.76	\$ 14,000	\$ 653,000	\$ 32,650	\$ 1.90	\$ 36,000	\$ 720,000	\$ 36,000
Creston	7.00	32	\$ 0.76	\$ 14,000	\$ 653,000	\$ 32,650	\$ 1.90	\$ 36,000	\$ 720,000	\$ 36,000
Davenport	20.00	32	\$ 0.76	\$ 14,000	\$ 1,867,000	\$ 93,350	\$ 1.90	\$ 36,000	\$ 2,057,000	\$ 102,850
Harrington	5.72	32	\$ 0.76	\$ 14,000	\$ 534,000	\$ 26,700	\$ 1.90	\$ 36,000	\$ 588,000	\$ 29,400
Odessa	10.25	32	\$ 0.76	\$ 14,000	\$ 957,000	\$ 47,850	\$ 1.90	\$ 36,000	\$ 1,054,000	\$ 52,700
Reardan	8.00	32	\$ 0.76	\$ 14,000	\$ 747,000	\$ 37,350	\$ 1.90	\$ 36,000	\$ 823,000	\$ 41,150
Sprague	7.00	32	\$ 0.76	\$ 14,000	\$ 653,000	\$ 32,650	\$ 1.90	\$ 36,000	\$ 720,000	\$ 36,000
Wilbur	17.75	32	\$ 0.76	\$ 14,000	\$ 1,657,000	\$ 82,850	\$ 1.90	\$ 36,000	\$ 1,826,000	\$ 91,300
Total	82.72				\$ 7,721,000	\$ 386,050			\$ 8,508,000	\$ 425,400

Note: City road widths assumes a 32 foot wide road.

City road miles are taken 2005 WSDOT Revenue & Expenditures Summary.

Crack seal cost estimate assumes \$0.76 per sq.yd. for cities

Chip seal cost estimate assumes \$1.90 per sq.yd for cities

Crack seal assumes a 3yr maintenance plan

Chip seal assumes a 7yr maintenance plan

20 Year Pavement Maintenance/Preservation Cost

COUNTIES

Adams County

Treatment Type

County	Miles	Pavement Width	Crack Seal				Single Chip Seal			
			Cost/ Sq.Yd.	Cost/mile	20 year cost	average cost per year	Cost/ Sq.Yd.	Cost/mile	20 year cost	average cost per year
Adams	0.26	14	\$ 0.70	\$ 6,000	\$ 10,000	\$ 500	\$ 1.75	\$ 14,000	\$ 15,000	\$ 750
Adams	0.03	16	\$ 0.70	\$ 7,000	\$ 1,000	\$ 50	\$ 1.75	\$ 16,000	\$ 2,000	\$ 100
Adams	12.39	18	\$ 0.70	\$ 7,000	\$ 578,000	\$ 28,900	\$ 1.75	\$ 18,000	\$ 892,000	\$ 44,600
Adams	194.99	20	\$ 0.70	\$ 8,000	\$ 10,400,000	\$ 520,000	\$ 1.75	\$ 21,000	\$ 16,379,000	\$ 818,950
Adams	91.39	22	\$ 0.70	\$ 9,000	\$ 5,483,000	\$ 274,150	\$ 1.75	\$ 23,000	\$ 8,407,000	\$ 420,350
Adams	158.28	24	\$ 0.70	\$ 10,000	\$ 10,552,000	\$ 527,600	\$ 1.75	\$ 25,000	\$ 15,828,000	\$ 791,400
Adams	19.38	26	\$ 0.70	\$ 11,000	\$ 1,421,000	\$ 71,050	\$ 1.75	\$ 27,000	\$ 2,093,000	\$ 104,650
Adams	63.28	28	\$ 0.70	\$ 11,000	\$ 4,641,000	\$ 232,050	\$ 1.75	\$ 29,000	\$ 7,341,000	\$ 367,050
Adams	86.76	30	\$ 0.70	\$ 12,000	\$ 6,941,000	\$ 347,050	\$ 1.75	\$ 31,000	\$ 10,758,000	\$ 537,900
Adams	2.96	32	\$ 0.70	\$ 13,000	\$ 257,000	\$ 12,850	\$ 1.75	\$ 33,000	\$ 391,000	\$ 19,550
Adams	13.00	34	\$ 0.70	\$ 14,000	\$ 1,213,000	\$ 60,650	\$ 1.75	\$ 35,000	\$ 1,819,000	\$ 90,950
Adams	0.42	36	\$ 0.70	\$ 15,000	\$ 42,000	\$ 2,100	\$ 1.75	\$ 37,000	\$ 62,000	\$ 3,100
Adams	1.03	38	\$ 0.70	\$ 16,000	\$ 110,000	\$ 5,500	\$ 1.75	\$ 39,000	\$ 161,000	\$ 8,050
Adams	3.30	40	\$ 0.70	\$ 16,000	\$ 352,000	\$ 17,600	\$ 1.75	\$ 41,000	\$ 541,000	\$ 27,050
Adams	0.27	42	\$ 0.70	\$ 17,000	\$ 31,000	\$ 1,550	\$ 1.75	\$ 43,000	\$ 46,000	\$ 2,300
Adams	0.32	45	\$ 0.70	\$ 18,000	\$ 38,000	\$ 1,900	\$ 1.75	\$ 46,000	\$ 59,000	\$ 2,950
Adams	1.37	50	\$ 0.70	\$ 21,000	\$ 192,000	\$ 9,600	\$ 1.75	\$ 51,000	\$ 280,000	\$ 14,000
Total	649.43				\$ 42,262,000	\$ 2,113,100			\$ 65,074,000	\$ 3,253,700

Grant County

Treatment Type

County	Miles	Pavement Width	Crack Seal				Single Chip Seal			
			Cost/ Sq.Yd.	Cost/mile	20 year cost	average cost per year	Cost/ Sq.Yd.	Cost/mile	20 year cost	average cost per year
Grant	0.09	10	\$ 0.70	\$ 4,000	\$ 2,000	\$ 100	\$ 1.75	\$ 10,000	\$ 4,000	\$ 200
Grant	0.63	12	\$ 0.70	\$ 5,000	\$ 21,000	\$ 1,050	\$ 1.75	\$ 12,000	\$ 30,000	\$ 1,500
Grant	0.60	14	\$ 0.70	\$ 6,000	\$ 24,000	\$ 1,200	\$ 1.75	\$ 14,000	\$ 34,000	\$ 1,700
Grant	2.77	16	\$ 0.70	\$ 7,000	\$ 129,000	\$ 6,450	\$ 1.75	\$ 16,000	\$ 177,000	\$ 8,850
Grant	2.20	18	\$ 0.70	\$ 7,000	\$ 103,000	\$ 5,150	\$ 1.75	\$ 18,000	\$ 158,000	\$ 7,900
Grant	120.78	20	\$ 0.70	\$ 8,000	\$ 6,442,000	\$ 322,100	\$ 1.75	\$ 21,000	\$ 10,146,000	\$ 507,300
Grant	1.21	21	\$ 0.70	\$ 9,000	\$ 73,000	\$ 3,650	\$ 1.75	\$ 22,000	\$ 106,000	\$ 5,300
Grant	251.67	22	\$ 0.70	\$ 9,000	\$ 15,100,000	\$ 755,000	\$ 1.75	\$ 23,000	\$ 23,154,000	\$ 1,157,700
Grant	237.09	24	\$ 0.70	\$ 10,000	\$ 15,806,000	\$ 790,300	\$ 1.75	\$ 25,000	\$ 23,709,000	\$ 1,185,450
Grant	180.16	26	\$ 0.70	\$ 11,000	\$ 13,212,000	\$ 660,600	\$ 1.75	\$ 27,000	\$ 19,457,000	\$ 972,850
Grant	252.61	28	\$ 0.70	\$ 11,000	\$ 18,524,000	\$ 926,200	\$ 1.75	\$ 29,000	\$ 29,302,000	\$ 1,465,100
Grant	80.89	30	\$ 0.70	\$ 12,000	\$ 6,471,000	\$ 323,550	\$ 1.75	\$ 31,000	\$ 10,030,000	\$ 501,500
Grant	43.55	32	\$ 0.70	\$ 13,000	\$ 3,774,000	\$ 188,700	\$ 1.75	\$ 33,000	\$ 5,748,000	\$ 287,400
Grant	151.46	34	\$ 0.70	\$ 14,000	\$ 14,136,000	\$ 706,800	\$ 1.75	\$ 35,000	\$ 21,204,000	\$ 1,060,200
Grant	39.25	36	\$ 0.70	\$ 15,000	\$ 3,925,000	\$ 196,250	\$ 1.75	\$ 37,000	\$ 5,809,000	\$ 290,450
Grant	3.56	38	\$ 0.70	\$ 16,000	\$ 380,000	\$ 19,000	\$ 1.75	\$ 39,000	\$ 556,000	\$ 27,800
Grant	13.51	40	\$ 0.70	\$ 16,000	\$ 1,441,000	\$ 72,050	\$ 1.75	\$ 41,000	\$ 2,215,000	\$ 110,750
Grant	0.21	42	\$ 0.70	\$ 17,000	\$ 24,000	\$ 1,200	\$ 1.75	\$ 43,000	\$ 37,000	\$ 1,850
Grant	2.20	44	\$ 0.70	\$ 18,000	\$ 264,000	\$ 13,200	\$ 1.75	\$ 45,000	\$ 396,000	\$ 19,800
Grant	0.29	46	\$ 0.70	\$ 19,000	\$ 37,000	\$ 1,850	\$ 1.75	\$ 47,000	\$ 55,000	\$ 2,750
Grant	7.11	48	\$ 0.70	\$ 20,000	\$ 948,000	\$ 47,400	\$ 1.75	\$ 49,000	\$ 1,394,000	\$ 69,700
Grant	0.51	50	\$ 0.70	\$ 21,000	\$ 71,000	\$ 3,550	\$ 1.75	\$ 51,000	\$ 104,000	\$ 5,200
Grant	0.33	51	\$ 0.70	\$ 21,000	\$ 46,000	\$ 2,300	\$ 1.75	\$ 52,000	\$ 69,000	\$ 3,450
Grant	1.46	52	\$ 0.70	\$ 21,000	\$ 204,000	\$ 10,200	\$ 1.75	\$ 53,000	\$ 310,000	\$ 15,500
Grant	0.25	54	\$ 0.70	\$ 22,000	\$ 37,000	\$ 1,850	\$ 1.75	\$ 55,000	\$ 55,000	\$ 2,750
Grant	0.41	55	\$ 0.70	\$ 23,000	\$ 63,000	\$ 3,150	\$ 1.75	\$ 56,000	\$ 92,000	\$ 4,600
Grant	0.05	58	\$ 0.70	\$ 24,000	\$ 8,000	\$ 400	\$ 1.75	\$ 60,000	\$ 12,000	\$ 600
Grant	0.61	60	\$ 0.70	\$ 25,000	\$ 102,000	\$ 5,100	\$ 1.75	\$ 62,000	\$ 152,000	\$ 7,600
Total	1395.45				\$ 101,367,000	\$ 5,068,350			\$ 154,515,000	\$ 7,725,750

Kittitas County

Treatment Type

County	Miles	Pavement Width	Crack Seal				Single Chip Seal			
			Cost/ Sq.Yd.	Cost/mile	20 year cost	average cost per year	Cost/ Sq.Yd.	Cost/mile	20 year cost	average cost per year
Kittitas	0.09	12	\$ 0.70	\$ 5,000	\$ 3,000	\$ 150	\$ 1.75	\$ 12,000	\$ 4,000	\$ 200
Kittitas	3.39	16	\$ 0.70	\$ 7,000	\$ 158,000	\$ 7,900	\$ 1.75	\$ 16,000	\$ 217,000	\$ 10,850
Kittitas	23.76	18	\$ 0.70	\$ 7,000	\$ 1,109,000	\$ 55,450	\$ 1.75	\$ 18,000	\$ 1,711,000	\$ 85,550
Kittitas	105.44	20	\$ 0.70	\$ 8,000	\$ 5,623,000	\$ 281,150	\$ 1.75	\$ 21,000	\$ 8,857,000	\$ 442,850
Kittitas	120.88	22	\$ 0.70	\$ 9,000	\$ 7,253,000	\$ 362,650	\$ 1.75	\$ 23,000	\$ 11,121,000	\$ 556,050
Kittitas	82.20	24	\$ 0.70	\$ 10,000	\$ 5,480,000	\$ 274,000	\$ 1.75	\$ 25,000	\$ 8,220,000	\$ 411,000
Kittitas	0.32	25	\$ 0.70	\$ 10,000	\$ 21,000	\$ 1,050	\$ 1.75	\$ 26,000	\$ 33,000	\$ 1,650
Kittitas	68.01	26	\$ 0.70	\$ 11,000	\$ 4,987,000	\$ 249,350	\$ 1.75	\$ 27,000	\$ 7,345,000	\$ 367,250
Kittitas	0.09	27	\$ 0.70	\$ 11,000	\$ 7,000	\$ 350	\$ 1.75	\$ 28,000	\$ 10,000	\$ 500
Kittitas	59.26	28	\$ 0.70	\$ 11,000	\$ 4,345,000	\$ 217,250	\$ 1.75	\$ 29,000	\$ 6,874,000	\$ 343,700
Kittitas	12.76	30	\$ 0.70	\$ 12,000	\$ 1,021,000	\$ 51,050	\$ 1.75	\$ 31,000	\$ 1,582,000	\$ 79,100
Kittitas	3.38	32	\$ 0.70	\$ 13,000	\$ 293,000	\$ 14,650	\$ 1.75	\$ 33,000	\$ 446,000	\$ 22,300
Kittitas	7.27	34	\$ 0.70	\$ 14,000	\$ 679,000	\$ 33,950	\$ 1.75	\$ 35,000	\$ 1,018,000	\$ 50,900
Kittitas	0.80	36	\$ 0.70	\$ 15,000	\$ 80,000	\$ 4,000	\$ 1.75	\$ 37,000	\$ 118,000	\$ 5,900
Kittitas	0.62	38	\$ 0.70	\$ 16,000	\$ 66,000	\$ 3,300	\$ 1.75	\$ 39,000	\$ 97,000	\$ 4,850
Kittitas	3.77	40	\$ 0.70	\$ 16,000	\$ 402,000	\$ 20,100	\$ 1.75	\$ 41,000	\$ 618,000	\$ 30,900
Kittitas	0.49	42	\$ 0.70	\$ 17,000	\$ 56,000	\$ 2,800	\$ 1.75	\$ 43,000	\$ 84,000	\$ 4,200
Kittitas	0.38	44	\$ 0.70	\$ 18,000	\$ 46,000	\$ 2,300	\$ 1.75	\$ 45,000	\$ 68,000	\$ 3,400
Kittitas	0.17	46	\$ 0.70	\$ 19,000	\$ 21,000	\$ 1,050	\$ 1.75	\$ 47,000	\$ 31,000	\$ 1,550
Kittitas	0.10	64	\$ 0.70	\$ 26,000	\$ 16,000	\$ 800	\$ 1.75	\$ 66,000	\$ 25,000	\$ 1,250
Total	493.15				\$ 31,666,000	\$ 1,583,300			\$ 48,479,000	\$ 2,423,950

Lincoln County

Treatment Type

County	Miles	Pavement Width	Crack Seal				Single Chip Seal			
			Cost/ Sq.Yd.	Cost/mile	20 year cost	average cost per year	Cost/ Sq.Yd.	Cost/mile	20 year cost	average cost per year
Lincoln	0.05	10	\$ 0.70	\$ 4,000	\$ 1,000	\$ 50	\$ 1.75	\$ 10,000	\$ 2,000	\$ 100
Lincoln	0.50	12	\$ 0.70	\$ 5,000	\$ 17,000	\$ 850	\$ 1.75	\$ 12,000	\$ 24,000	\$ 1,200
Lincoln	9.55	18	\$ 0.70	\$ 7,000	\$ 446,000	\$ 22,300	\$ 1.75	\$ 18,000	\$ 688,000	\$ 34,400
Lincoln	4.08	20	\$ 0.70	\$ 8,000	\$ 218,000	\$ 10,900	\$ 1.75	\$ 21,000	\$ 343,000	\$ 17,150
Lincoln	18.02	22	\$ 0.70	\$ 9,000	\$ 1,081,000	\$ 54,050	\$ 1.75	\$ 23,000	\$ 1,658,000	\$ 82,900
Lincoln	63.19	24	\$ 0.70	\$ 10,000	\$ 4,213,000	\$ 210,650	\$ 1.75	\$ 25,000	\$ 6,319,000	\$ 315,950
Lincoln	137.63	26	\$ 0.70	\$ 11,000	\$ 10,093,000	\$ 504,650	\$ 1.75	\$ 27,000	\$ 14,864,000	\$ 743,200
Lincoln	151.45	28	\$ 0.70	\$ 11,000	\$ 11,106,000	\$ 555,300	\$ 1.75	\$ 29,000	\$ 17,568,000	\$ 878,400
Lincoln	22.43	30	\$ 0.70	\$ 12,000	\$ 1,794,000	\$ 89,700	\$ 1.75	\$ 31,000	\$ 2,781,000	\$ 139,050
Lincoln	11.76	32	\$ 0.70	\$ 13,000	\$ 1,019,000	\$ 50,950	\$ 1.75	\$ 33,000	\$ 1,552,000	\$ 77,600
Lincoln	1.66	34	\$ 0.70	\$ 14,000	\$ 155,000	\$ 7,750	\$ 1.75	\$ 35,000	\$ 232,000	\$ 11,600
Lincoln	13.85	36	\$ 0.70	\$ 15,000	\$ 1,385,000	\$ 69,250	\$ 1.75	\$ 37,000	\$ 2,050,000	\$ 102,500
Lincoln	0.36	38	\$ 0.70	\$ 16,000	\$ 38,000	\$ 1,900	\$ 1.75	\$ 39,000	\$ 56,000	\$ 2,800
Lincoln	0.06	40	\$ 0.70	\$ 16,000	\$ 6,000	\$ 300	\$ 1.75	\$ 41,000	\$ 10,000	\$ 500
Lincoln	2.53	42	\$ 0.70	\$ 17,000	\$ 287,000	\$ 14,350	\$ 1.75	\$ 43,000	\$ 435,000	\$ 21,750
Lincoln	3.24	44	\$ 0.70	\$ 18,000	\$ 389,000	\$ 19,450	\$ 1.75	\$ 45,000	\$ 583,000	\$ 29,150
Total	440.36				\$ 32,248,000	\$ 1,612,400			\$ 49,165,000	\$ 2,458,250

Note:

- County road width and miles are actual amounts from the County Road Log.
- Crack seal cost estimate assumes \$0.70 per sq.yd. for counties
- Chip seal cost estimate assumes \$1.75 per sq.yd for counties
- Crack seal assumes a 3yr maintenance plan
- Chip seal assumes a 7yr maintenance plan

Appendix K

DETAILED ENGINEERS OPINION OF PROBABLE COST TO ADD SHOULDERS TO MEET DESIGN STANDARDS

Detailed Engineers Opinion of Probable Cost to Add Shoulders to meet Design Standards

Item Name	Unit	Unit Cost	Quantities per 0.10 mile						Cost per 0.10 mile					
			Widths						Widths					
			2	4	6	8	10	12	2	4	6	8	10	12
HMA -- 4"	SF	\$ 2	1056	2112	3168	4224	5280	6336	\$ 2,112.00	\$ 4,224.00	\$ 6,336.00	\$ 8,448.00	\$ 10,560.00	\$ 12,672.00
CSTC	TON	\$ 20	24	48	72	96	119	143	\$ 477.55	\$ 955.09	\$ 1,432.64	\$ 1,910.19	\$ 2,387.73	\$ 2,865.28
CSBC	TON	\$ 20	36	72	109	145	181	217	\$ 723.56	\$ 1,447.11	\$ 2,170.67	\$ 2,894.22	\$ 3,617.78	\$ 4,341.33
Roadway Excavation	CY	\$ 15	79	129	179	229	279	329	\$ 1,184.13	\$ 1,934.13	\$ 2,684.13	\$ 3,434.13	\$ 4,184.13	\$ 4,934.13
Embankment Compaction	CY	\$ 2	50	100	150	200	250	300	\$ 100.00	\$ 200.00	\$ 300.00	\$ 400.00	\$ 500.00	\$ 600.00
Clearing & Grubbing	ACRE	\$ 1,500	0.02	0.05	0.08	0.10	0.12	0.15	\$ 30.00	\$ 75.00	\$ 120.00	\$ 150.00	\$ 180.00	\$ 225.00
Sawcutting	LF	\$ 2	1056	1056	1056	1056	1056	1056	\$ 2,112.00	\$ 2,112.00	\$ 2,112.00	\$ 2,112.00	\$ 2,112.00	\$ 2,112.00
Roadside Seeding	ACRE	\$ 1,500	0.36	0.36	0.36	0.36	0.36	0.36	\$ 545.45	\$ 545.45	\$ 545.45	\$ 545.45	\$ 545.45	\$ 545.45
Soil Sterilant	ACRE	\$ 500	0.13	0.18	0.23	0.28	0.33	0.38	\$ 66.42	\$ 90.67	\$ 114.91	\$ 139.15	\$ 163.39	\$ 187.64

Item Totals \$ 7,351.11 \$ 11,583.45 \$ 15,815.80 \$ 20,033.14 \$ 24,250.49 \$ 28,482.83

Traffic Control	15%	15%	15%	15%	15%	15%	15%	15%	\$ 1,102.67	\$ 1,737.52	\$ 2,372.37	\$ 3,004.97	\$ 3,637.57	\$ 4,272.42
Engineering/Administrative Fees	20%	20%	20%	20%	20%	20%	20%	20%	\$ 1,470.22	\$ 2,316.69	\$ 3,163.16	\$ 4,006.63	\$ 4,850.10	\$ 5,696.57
Contingency	20%	20%	20%	20%	20%	20%	20%	20%	\$ 1,470.22	\$ 2,316.69	\$ 3,163.16	\$ 4,006.63	\$ 4,850.10	\$ 5,696.57

Total Cost per 0.10 Miles \$ 11,394.22 \$ 17,954.35 \$ 24,514.49 \$ 31,051.37 \$ 37,588.26 \$ 44,148.39

Total Cost Rounded to nearest 100 \$ 11,000 \$ 18,000 \$ 25,000 \$ 31,000 \$ 38,000 \$ 44,000

Basic Information

Length:	0.10 mile	528 ft.
Width:	Variable	
Depth:	HMA	0.33 ft.
	CSTC	0.33 ft.
	CSBC	0.50 ft.
	Exc.	1.16 ft.
	Emb.	

Appendix L

DETAILED ENGINEERS OPINION OF PROBABLE COST TO CONSTRUCT BST ROADWAY OVER EXISTING GRAVEL ROAD

ENGINEER'S OPINION OF PROBABLE COST

PROJECT: QUADCO Regional Transportation Plan Up **DATE:** 4/4/2007

PROJECT DESCRIPTION: Construct BST roadway over existing gravel road -- 26' wide
Cost per mile of Road

CLIENT: QUADCO Sheet: 1 of 1

CLIENT PROJ. NO. n/a

J-U-B PROJ. NO.: 70-06-94

ITEM NO.	DESCRIPTION	SCHEDULE OF VALUES			
		QUANTITY	UNIT	UNIT PRICE	TOTAL COST
ROADWAY/STORM DRAINAGE					
1	Processing and Finishing	1.00	Mile	\$1,500.00	\$1,500.00
2	Furnishing and Placing Crushed Screening 3/4 to 1/2	224	CY	\$28.00	\$6,272.00
3	Furnishing and Placing Crushed Screening 1/2 to No. 4	161	CY	\$28.00	\$4,508.00
4	Furnishing and Placing Crushed Screening No. 4 to 0	26	CY	\$28.00	\$728.00
5	Additional Brooming	1	HOUR	\$80.00	\$80.00
6	Asphalt MC-250	29.1	TON	\$360.00	\$10,476.00
7	Asphalt CRS-2	27.0	TON	\$500.00	\$13,500.00
8	Paint Line	5280	LF	\$0.10	\$528.00
SUBTOTAL					\$37,592.00
	Sales Tax			0.00%	\$0.00
	Engineering/Administration Fees			20.00%	\$7,518.40
	Contingency			20.00%	\$7,518.40
Total					\$52,628.80

J-U-B ENGINEERS, INC.

SUITE 201, 2810 WEST CLEARWATER AVE., KENNEWICK, WASHINGTON 99336 (509) 783-2144

Appendix M

HIGH PRIORITY SAFETY CORRIDORS

Adams County

Road .	Road Name	Length	MVMT	Accidents	Accident Rate per MVMT
90354	KAYLEE RD	0.369	0.0006	4	7064.38
90344	RAINIER RD	0.21	0.0003	1	3103.28
90174	MAY ST RD	0.2	0.0058	3	513.70
90124	ANDES RD	0.55	0.0161	6	373.60
90144	APRIL RD	0.24	0.0070	2	285.39
90284	DANIELLE RD	0.31	0.0091	2	220.95
90194	SPUR LANE RD	0.15	0.0149	1	67.09
90204	SADDLE RD	0.49	0.0477	3	62.87
90172	PANAMA RD	0.38	0.0369	2	54.20
52414	GRAY RD	1.1	0.0214	1	46.66
90214	CANAL RD	0.28	0.0278	1	35.94
90114	JUNE RD	0.31	0.0296	1	33.79
84731	SCHOESSLER RD	1.1	0.0321	1	31.13
90164	JULY RD	0.41	0.0709	2	28.21
90134	WAGON RD	0.44	0.0437	1	22.87
12092	HATTON RD	0.98	0.1094	2	18.29
21842	BILLINGTON RD	0.96	0.0987	1	10.13
62964	HILLER RD	1	0.0994	1	10.06
33501	ROXBORO RD	2.38	0.2029	2	9.86
23304	JOHNSON RD	9.68	0.4125	4	9.70
11504	MOON RD	0.4	0.2140	2	9.35
12352	CEMETERY RD	0.341	0.1173	1	8.52
57624	DYER RD	1.34	0.1279	1	7.82
45604	THIEL RD	6.04	0.1444	1	6.92
11294	SCHAAKE RD	1.74	0.1456	1	6.87
33491	ROXBORO RD	9.06	0.3253	2	6.15
23124	IRBY RD	10.06	0.1671	1	5.99
33674	DAMON RD	1.19	0.1754	1	5.70
32611	HERMAN RD	12.76	0.7578	4	5.28
75261	LONGMEIER RD	6.07	0.1943	1	5.15
64444	KOCH RD	14.99	0.2011	1	4.97
21704	STEELE RD	2.04	0.2046	1	4.89
12602	HERMAN RD	1	0.2109	1	4.74
66024	GRIFFITH RD	6.14	0.2115	1	4.73
12722	PROVIDENCE RD	0.82	0.2188	1	4.57
11462	THACKER RD	1.41	0.4565	2	4.38
33664	DAMON RD	4.84	0.4859	2	4.12
11072	BARTON RD	2.02	0.2436	1	4.11
64371	URQUHART RD	2.52	0.2453	1	4.08
11372	MORGAN LAKE RD	1.64	0.2590	1	3.86
74574	WEBER RD	2.84	0.2711	1	3.69
63483	ROXBORO RD	5.17	0.2821	1	3.55
12101	HATTON RD	4.63	1.1322	4	3.53
11451	TAYLOR RD	1	2.2679	8	3.53
84494	HEINEMANN RD	2.11	0.2976	1	3.36
12421	LEE RD	1.006	2.9239	9	3.08
84903	TOKIO RD	5.02	0.3269	1	3.06
11612	REYNOLDS RD	1.92	0.3431	1	2.91
11581	REYNOLDS RD	5.046	4.2608	12	2.82
12371	CUNNINGHAM RD (MAIN ST)	0.53	0.3565	1	2.81
11134	DANIELSON RD	1.41	0.3968	1	2.52
57611	BECKLEY RD	13.2	0.4282	1	2.34
87194	DURRY RD	4.66	0.4409	1	2.27
33521	LIND-HATTON RD	13.83	3.1065	7	2.25
74582	WEBER RD	0.86	0.4553	1	2.20
12711	MCMANAMON RD	12.014	12.2515	26	2.12
33511	LIND-HATTON RD	3.12	0.4926	1	2.03
87903	MCCALL RD	8.74	0.5147	1	1.94
33784	LAUER RD	5.62	0.5184	1	1.93

Adams County

Road .	Road Name	Length	MVMT	Accidents	Accident Rate per MVMT
22121	HATTON RD	11.16	2.7077	5	1.85
75121	WAHL RD	11.79	0.5491	1	1.82
66064	ARLT RD	5.94	0.5555	1	1.80
52921	RALSTON-BENGE RD	14.48	1.6829	3	1.78
22724	PROVIDENCE RD	11.27	0.5795	1	1.73
84561	WELLSANDT RD	15.11	2.9028	5	1.72
63364	DEAL RD	18.79	1.2023	2	1.66
12241	BENCH RD	8	14.5693	24	1.65
32674	PHILLIPS RD	5.71	0.6130	1	1.63
11562	ATKINSON RD	2.16	1.2274	2	1.63
22242	BENCH RD	3.08	1.3035	2	1.53
12252	BENCH RD	2	6.6534	10	1.50
85761	DANEKAS RD	9.32	4.9674	7	1.41
52741	BENGE-WINONA RD	8.69	0.7234	1	1.38
21844	BILLINGTON RD	3.55	0.7602	1	1.32
64431	SCHRAG RD	15.49	0.7870	1	1.27
TOTAL		1778.50	234.52	272	1.16
Unidentified Accidents*				76	
Total		1778.50	234.52	348	1.48

* Unidentified accidents includes all accidents located within the County on private or Forest Service roads or accidents without a primary trafficway identified.

Grant County

Road .	Road Name	Length	MVMT	Accident	Accident Rate per MVMT
92150	EL CAMINO CT	0.09	0.0030	1	337.69
46482	18.6 NE	0.04	0.0034	1	292.15
92180	FRONTENAC ST	0.12	0.0039	1	253.27
45139	IDANO LN	0.46	0.0214	5	233.37
41027	H.2 NE	0.51	0.0160	2	125.26
21645	SUPERIOR CT	0.17	0.0081	1	122.80
10110	N SW	0.5	0.0088	1	113.39
10870	A ST *SCHAWANA*	0.12	0.0103	1	97.38
45022	FORRESTALL LN	0.13	0.0218	2	91.67
10871	T.5 SW	0.52	0.0445	4	89.89
24715	X SE	0.13	0.0111	1	89.89
12530	13.5 SW	0.28	0.0128	1	77.91
20600	LINDEN ST	0.15	0.0128	1	77.91
10600	J SW	0.83	0.0146	1	68.31
55630	57.1 NE	0.18	0.0154	1	64.92
11030	PASCO ST	0.19	0.0163	1	61.51
43101	JOEY RD	0.45	0.0343	2	58.23
45023	HALSEY DR	0.07	0.0176	1	56.75
46680	18.5 NE	0.22	0.0188	1	53.12
45032	CANNON LN	0.09	0.0755	4	52.97
45022	BONG LP	0.23	0.0579	3	51.81
11050	TACOMA ST	0.228	0.0195	1	51.25
10800	MORRISON ST	0.26	0.0222	1	44.95
45017	TRAVIS DR	0.4	0.2056	9	43.77
45016	DOW AV	0.1	0.0252	1	39.72
42082	JACKIE DR	0.19	0.0255	1	39.20
41390	CALVERT RD	0.49	0.0258	1	38.80
41480	LEE DR	0.08	0.0295	1	33.86
41210	DENTON RD	0.35	0.0300	1	33.39
43200	FRONT ST	0.28	0.0314	1	31.87
42680	APPLE RD	0.14	0.0342	1	29.22
41580	DAHL RD	0.24	0.0350	1	28.54
20990	D.4 SE	0.41	0.0351	1	28.50
53030	39.7 NE	0.41	0.0351	1	28.50
42604	SAGEDALE RD	0.14	0.0352	1	28.38
45025	WESTOVER BLVD	0.25	0.0369	1	27.13
45038	PERSHING RD	0.31	0.0780	2	25.63
45049	MOSES ST	0.24	0.1204	3	24.91
94030	7 NE WYE	0.05	0.0403	1	24.80
45033	VANDENBERG LP	0.23	0.1274	3	23.55
31990	U.5 NW	0.5	0.0428	1	23.37
11980	12.5 SW	0.51	0.0436	1	22.91
31280	5.2 NW	0.51	0.0436	1	22.91
45039	LINDBERG LN	0.23	0.0877	2	22.81
45090	M.2 NE	0.22	0.0443	1	22.57
46630	B.7 NE	0.52	0.0445	1	22.47
10510	G SW	0.46	0.0475	1	21.07
12450	H SW	1.5	0.1531	3	19.60
42910	M NE	0.62	0.0531	1	18.85
10736	HILDY WY	0.32	0.0553	1	18.09
53930	41.5 NE	0.66	0.0565	1	17.71
10360	S SW	0.77	0.0585	1	17.10
93039	8.5 NW	0.37	0.1173	2	17.05

Grant County

Road .	Road Name	Length	MVMT	Accident	Accident Rate per MVMT
53050	J NE	0.72	0.0616	1	16.23
11880	10.5 SW	2.5	0.1266	2	15.80
34470	MOSES LAKE AV	0.35	0.0646	1	15.48
12230	14 SW	1.51	0.0663	1	15.09
43390	3RD ST *WHEELER*	0.3	0.0668	1	14.97
42070	BROAD ST	0.34	0.0681	1	14.68
41510	WILD GOOSE RD	0.84	0.0682	1	14.66
45058	NORTHWEST LN	0.18	0.0755	1	13.24
56110	EDEN HARBOR RD	1.06	0.1530	2	13.07
21630	YOUNG RD	0.76	0.0775	1	12.91
31490	U NW	0.46	0.0777	1	12.86
30431	10 NW	1.03	0.0782	1	12.78
42650	ALMA RD	0.55	0.3185	4	12.56
40200	8 NE	1.63	0.0834	1	12.00
10350	K SW	0.98	0.0847	1	11.81
41970	DOROTHY ST	0.46	0.0852	1	11.73
36270	O NW	1	0.0856	1	11.69
46430	DIVISION.5 NE	0.51	0.0865	1	11.56
17000	L SW	1.03	0.0881	1	11.35
52430	X NE	2	0.0885	1	11.30
46220	7.8 NE	1.93	0.0957	1	10.45
95037	52 NE	1.01	0.1023	1	9.78
40300	I NE	2.32	0.2094	2	9.55
34360	GOLF CLUB RD	0.23	0.1051	1	9.51
52300	CANNAWAI VALLEY RD	3.9	0.1095	1	9.13
40514	5 NE	2.61	0.1099	1	9.10
34050	18 NW	0.2	0.1109	1	9.02
25190	T SE	1.32	0.1130	1	8.85
41440	RAINIER RD	0.41	0.1155	1	8.66
45013	BIGGS DR	0.28	0.1235	1	8.10
15990	6 SW	1.52	0.1296	1	7.72
32350	T NW	2.58	0.2649	2	7.55
41550	COCHRAN RD	0.25	0.6660	5	7.51
45017	TINKER LP	0.23	0.2675	2	7.48
93039	O NW	1.55	0.5369	4	7.45
46500	18.8 NE	0.82	0.1354	1	7.38
45013	CARSWELL DR	0.41	0.2717	2	7.36
21603	VIEWMONT DR	0.62	0.2742	2	7.29
43110	CRYSTAL SPRINGS DR NE	0.47	0.1406	1	7.11
45012	LORING DR	0.9	0.8581	6	6.99
32850	OVEREN RD	2.72	0.1521	1	6.57
32950	Q.5 NW	1.78	0.1523	1	6.57
30550	V SW	2	0.1544	1	6.48
33150	J NW	4.93	0.1557	1	6.42
45047	LOWRY DR	0.61	0.8031	5	6.23
33350	JOHNSON RD/CULVERT C162	2.99	0.8194	5	6.10
20450	S SE	2	0.1643	1	6.09
47600	10 NE	2.02	0.3342	2	5.98
50150	A NE	2	0.1711	1	5.84
52500	29 NE	6.23	0.1713	1	5.84
94020	8 NE	2.98	0.3438	2	5.82
45028	DOOLITTLE DR	0.42	0.7433	4	5.38
15990	6.5 SW	1	0.1860	1	5.38

Grant County

Road .	Road Name	Length	MVMT	Accident	Accident Rate per MVMT
46222	STONECREST RD	1.21	0.1929	1	5.18
30990	SILICA RD	6.733	2.3502	12	5.11
53150	I.8 NE	1.12	0.3925	2	5.10
92047	8.5 SE	1.1	0.3925	2	5.10
30990	1 NW	5.43	2.3555	12	5.09
33350	JOHNSON RD	2.53	0.2017	1	4.96
10100	E SW	1.71	1.0238	5	4.88
92015	M NE	0.64	0.2063	1	4.85
92039	SOUTH FRONTAGE RD	0.11	0.2114	1	4.73
45017	DALEY DR	0.35	0.4238	2	4.72
46800	21 NE	4.97	0.4245	2	4.71
45055	MATHER ST	0.41	0.2159	1	4.63
42440	KINDER RD	0.4	0.4323	2	4.63
34200	DIVISION N	0.32	0.2171	1	4.61
45024	WESTOVER BLVD	0.23	0.6621	3	4.53
40300	HARRIS RD	1.51	0.4460	2	4.48
31090	RIVER DR	0.86	0.2260	1	4.42
55810	SPOKANE BLVD	0.35	0.2312	1	4.32
34360	ADAMS ST	0.34	0.2319	1	4.31
40510	A NE	2.8	0.2355	1	4.25
18990	D SW	1.81	0.4737	2	4.22
45014	LORING DR	0.4	1.9289	8	4.15
10590	U SW	2.72	0.9654	4	4.14
41360	LYBBERT DR	0.56	0.2433	1	4.11
13950	A SW	3.36	0.7404	3	4.05
41500	KONISHI RD	0.77	0.2468	1	4.05
45060	CRAIG BLVD	0.65	1.0008	4	4.00
37750	RAILROAD AVE	0.64	0.5034	2	3.97
50610	B NE	5.95	0.5092	2	3.93
22000	L SE	3.04	0.2561	1	3.91
54400	46 NE	3.01	0.2576	1	3.88
53850	S NE	3.02	0.2584	1	3.87
93039	N.5 NW	5.55	1.5639	6	3.84
45056	LARSON BLVD	0.42	0.5448	2	3.67
93035	P NW	1.57	1.1220	4	3.57
21590	SAND DUNES RD	5.086	3.3974	12	3.53
36700	WINCHESTER RD	2.01	0.2835	1	3.53
45372	COLLEGE PARKWAY NE	1.321	1.1393	4	3.51
46450	B.5 NE	4.867	1.1586	4	3.45
15990	O SW	2.93	0.5879	2	3.40
55700	ALCAN RD	0.76	0.3037	1	3.29
10662	EAST DESERT AIRE DR	1.8	0.6189	2	3.23
43970	V NE	3.84	0.3286	1	3.04
94040	NORTHLAKE RD NE	0.916	0.3363	1	2.97
40750	PANORAMA DR NE	1.05	0.3378	1	2.96
45080	TYNDALL RD	1	1.3720	4	2.92
45028	SCHILLING DR	0.55	0.3442	1	2.91
55650	LUDOLPH RD	1.39	0.3443	1	2.90
20790	E SE	6.42	1.7578	5	2.84
92045	R SE	1.09	0.7273	2	2.75
10640	E SW	1.98	0.3736	1	2.68
94046	20 NE	9.26	4.5451	12	2.64
41660	SHORECREST RD	0.81	0.3789	1	2.64

Grant County

Road .	Road Name	Length	MVMT	Accident	Accident Rate per MVMT
93000	BEVERLY BURKE RD	1.469	1.9565	5	2.56
30410	K NW	6.55	1.9670	5	2.54
46451	C NE	4.59	0.3983	1	2.51
12990	E SW	2.88	1.1956	3	2.51
43750	S NE	12.1	1.2203	3	2.46
43160	4 NE	8.99	0.4083	1	2.45
30690	T NW	4.46	0.4132	1	2.42
93048	SHEEP CANYON RD	6.98	1.2508	3	2.40
31140	2 NW	4.98	0.8340	2	2.40
15140	SOUTH FRONTAGE RD	4.75	0.8366	2	2.39
33450	NORTON CANYON RD	5.83	1.2637	3	2.37
15000	S SW	5.99	0.8560	2	2.34
50980	23 NE	2.8	0.8593	2	2.33
10610	M SW	1.99	0.4373	1	2.29
42440	ORCHARD DR	0.53	0.4393	1	2.28
37810	EMPIRE RD	0.97	0.4412	1	2.27
32100	10 NW	0.85	0.4433	1	2.26
46350	NEPPEL RD	6.22	3.5518	8	2.25
47150	K NE	5.14	0.4606	1	2.17
95003	V NE	6.06	0.4624	1	2.16
91044	FRENCHMAN HILLS RD	0.99	0.4642	1	2.15
41250	VALLEY RD	2.5	7.9929	17	2.13
95039	GRAND COULEE HILL RD	4.93	0.9547	2	2.09
11500	10 SW	3.06	0.4820	1	2.07
93020	9 NW	13.07	5.8369	12	2.06
42600	MAPLE DR	1.42	1.4634	3	2.05
31500	6 NW	1.51	0.4884	1	2.05
10620	WAHLUKE SLOPE RD	8.46	2.4674	5	2.03
20670	D SE	5.11	2.4791	5	2.02
37000	10 NW	1.51	0.5031	1	1.99
93032	20 NW	1.51	1.0064	2	1.99
91049	G SW	2.04	1.0167	2	1.97
43100	5 NE	1.27	3.0507	6	1.97
94030	M NE	5.19	4.1863	8	1.91
45900	19 NE	5.04	0.5238	1	1.91
45042	ARLINGTON DR	0.52	1.0708	2	1.87
31550	S NW	5	2.7062	5	1.85
42400	BEACON RD	0.49	0.5418	1	1.85
46450	19 NE	2.45	2.7168	5	1.84
33450	E NW	2.51	0.5441	1	1.84
41240	SCOTT RD	0.56	0.5446	1	1.84
50100	L NE	6.56	0.5527	1	1.81
45020	ANDREWS ST	0.707	0.5581	1	1.79
22140	SOUTH FRONTAGE RD	7.06	1.1240	2	1.78
45100	10 NE	2.95	1.6878	3	1.78
94030	7 NE	3	6.2339	11	1.76
40555	HIAWATHA RD	3.91	2.2941	4	1.74
10300	26 SW	7	1.7325	3	1.73
91047	K SW	1.89	0.5780	1	1.73
94040	10 NE	5.6	2.9575	5	1.69
45053	ARNOLD DR	0.75	1.1886	2	1.68
22050	O SE	3.03	1.2013	2	1.66
94010	6 NE	2.04	0.6016	1	1.66

Grant County

Road .	Road Name	Length	MVMT	Accident	Accident Rate per MVMT
46750	16 NE	3.99	1.2058	2	1.66
91043	O SW	9.44	4.3358	7	1.61
53500	42 NE	12.15	0.6215	1	1.61
31650	V NW	1.97	0.6312	1	1.58
95010	44 NE	6.07	0.6317	1	1.58
45170	PATTON BLVD	2.29	21.7492	34	1.56
93045	B NW	5.05	3.8400	6	1.56
10270	12 SW	7.97	8.9761	14	1.56
93047	SAGEBRUSH FLATS RD	12.03	5.1415	8	1.56
91010	E SW	3.69	1.9290	3	1.56
94030	12 NE	3.01	0.6457	1	1.55
10290	28 SW	7.3	1.2923	2	1.55
93004	4 NE	6.42	3.9707	6	1.51
42900	4 NE	3.26	3.3533	5	1.49
30350	MONUMENT HILL RD	8.26	0.6764	1	1.48
92025	N NE	1.97	2.0431	3	1.47
92020	2 SE	4.04	2.0792	3	1.44
14200	10 SW	3.52	0.7024	1	1.42
46200	6.5 NE	1.03	0.7031	1	1.42
91030	DODSON RD	28.23	58.4248	83	1.42
94025	STRATFORD RD	19.86	48.6813	68	1.40
93010	U NW	4.72	15.9996	22	1.38
40305	7 NE	0.81	1.4572	2	1.37
30250	9 NW	4.76	2.9363	4	1.36
30400	MARTIN RD	16.5	6.7699	9	1.33
92005	H SE	4.67	3.0325	4	1.32
93010	5 NW	18.19	22.8115	30	1.32
95025	PINTO RIDGE RD	14.5	8.6386	11	1.27
40350	U NE	7.06	0.7886	1	1.27
91017	ADAMS RD	25.26	40.5379	50	1.23
92045	S SE	4.93	4.0907	5	1.22
15240	9 SW	4.89	0.8225	1	1.22
41690	AIRWAY DR	1.78	6.7025	8	1.19
10660	DESERT AIRE DR	2.57	1.6765	2	1.19
12710	G SW	3.29	5.0323	6	1.19
52250	Q NE	12.73	0.8411	1	1.19
43050	K NE	3.03	7.6552	9	1.18
TOTAL		2526.81	1022.24	1206	1.18
	Unidentified Accidents*			109	
	Total	2526.81	1022.24	1315	1.29

* Unidentified accidents includes all accidents located within the County on private or Forest Service roads or accidents without a primary trafficway identified.

Kittitas County

Road .	Road Name	Length	MVMT	Accident	Accident Rate per MVMT
69650	MANITOBA ST	0.05	0.0018	1	542.52
13760	SILVER TRAIL	0.17	0.0206	1	48.65
22540	1ST ST (RONALD)	0.27	0.0244	1	40.98
61261	BULL RD	0.6	0.1265	4	31.62
56010	THORP DEPOT RD	0.86	0.0342	1	29.21
56761	DURR RD	1.95	0.0345	1	28.98
69752	WILLIS RD EAST	0.26	0.0388	1	25.75
42777	COLEMAN CREEK RD	0.56	0.0562	1	17.81
15020	KACHESS RIVER RD	0.48	0.0609	1	16.43
63686	VANDERBILT RD	0.48	0.0623	1	16.05
34002	KLOCKE RD	0.53	0.0711	1	14.06
22240	TAYLOR RD	0.88	0.0779	1	12.84
22611	NELSON DAIRY RD	1.17	0.0875	1	11.42
35541	HANNAH RD	0.35	0.0914	1	10.95
69010	BERRY RD	1.03	0.1840	2	10.87
33800	HOWARD RD	1.99	0.2168	2	9.23
68750	TJOSSEM CONNECTION	0.09	0.1165	1	8.58
25850	HORVATT RD	0.46	0.1235	1	8.10
61680	MATTHEWS RD	0.36	0.2500	2	8.00
10600	SNOQUALMIE DRIVE	0.885	0.2571	2	7.78
25620	WATSON CUTOFF RD	1.12	0.2824	2	7.08
25860	MCDONALD RD	0.6	0.1522	1	6.57
56770	TANEUM RD WEST	1.96	0.3121	2	6.41
22510	PAYS RD	0.9	0.1699	1	5.89
25500	WHITE RD	0.52	0.1733	1	5.77
13090	CABIN CREEK RD	2.92	0.1839	1	5.44
68020	ALKALI RD	1	0.1843	1	5.43
40315	SANDERS RD	1.16	1.9281	10	5.19
63065	DODGE RD	1.04	0.1963	1	5.09
40271	JUDGE RONALD RD	1	0.1976	1	5.06
43752	GILBERT RD	1.54	0.1998	1	5.00
43163	SCHNEBLY RD	2.98	0.2031	1	4.92
35562	PIONEER RD	0.51	0.2098	1	4.77
41010	BOWERS RD	0.56	0.2139	1	4.68
43883	COOKE CANYON RD	4.61	0.8867	4	4.51
22350	MOHAR RD	2.01	0.4624	2	4.33
60640	ANDERSON RD	0.41	0.9680	4	4.13
34761	FAUST RD	2.47	0.4992	2	4.01
29000	HIDDEN VALLEY RD	2.37	0.5223	2	3.83
69770	FIRST AV (GRASSLANDS)	0.54	0.2637	1	3.79
94026	AIRPORT RD	0.32	0.5393	2	3.71
44760	FOX RD	1.55	0.2857	1	3.50
53650	BARNES RD	0.78	0.2956	1	3.38
69370	PARKE CREEK RD	7.06	2.4667	8	3.24
43512	CHARLTON RD	2.5	0.3306	1	3.02
69511	CLERF RD	2.71	2.3172	7	3.02
54150	WEAVER RD	3.65	1.3439	4	2.98
35285	ROBBINS RD	2.82	1.0182	3	2.95
42000	NANEUM RD	8.94	3.4801	10	2.87
21900	GOLF COURSE RD	0.89	1.1703	3	2.56
93526	REECER CREEK RD	11.49	9.3706	24	2.56
94051	GAME FARM RD	2.54	1.6042	4	2.49
42012	RADER RD	3.68	0.8083	2	2.47

Kittitas County

Road .	Road Name	Length	MVMT	Accident	Accident Rate per MVMT
40761	LOOK RD	3.3	4.8649	12	2.47
42271	ALFORD RD	1.07	0.8331	2	2.40
96951	KITTITAS HWY	4.61	20.8313	49	2.35
69910	THIRD AV (GRASSLANDS)	0.46	0.4341	1	2.30
41271	BRICK MILL RD	7.21	3.9139	9	2.30
53010	RIVERBOTTOM RD	3.06	1.3164	3	2.28
40772	LYONS RD	7.05	1.4034	3	2.14
93075	BENDER RD	0.754	0.9834	2	2.03
22710	WESTSIDE RD	7.34	7.0061	14	2.00
23030	NELSON SIDING RD	4.49	3.0096	6	1.99
95501	COVE RD	4.42	2.0632	4	1.94
96400	CLEMAN RD	2.86	3.6474	7	1.92
64756	UPPER BADGER POCKET RD	6.62	2.1557	4	1.86
65002	PRATER RD	2.48	0.5392	1	1.85
22770	LOWER PEOH POINT RD	4.71	2.7314	5	1.83
96937	UMPTANUM RD	8.91	9.2566	16	1.73
75040	HUNTZINGER RD	10.74	6.3919	11	1.72
94126	WILSON CREEK RD	9.02	8.7406	15	1.72
96200	NO. 6 RD	5.1	8.2358	13	1.58
56160	STRANDE RD	3.61	0.6412	1	1.56
TOTAL		561.787	329.87	512	1.55
	Unidentified Accidents*			89	
	Total	561.787	329.87	601	1.82

* Unidentified accidents includes all accidents located within the County on private or Forest Service roads or accidents without a primary trafficway identified.

Lincoln County

Road .	Road Name	Length	MVMT	Accident	Accident Rate per MVMT
64920	SAWYER ROAD #64920	1.08	0.0147	1	67.89
37070	KALLENBERGER ROAD #37070	0.8	0.0327	1	30.55
64300	HALLETT ROAD #64300	1.01	0.0531	1	18.82
65200	ALEXANDER ROAD #65200	6.11	0.2026	3	14.81
65590	GREEN CANYON ROAD #65590	1.76	0.2128	3	14.10
40010	CHILDERS ROAD #40010	8.79	0.2059	2	9.71
57860	HAWK CREEK ROAD #57860	1.63	0.2240	2	8.93
40360	ZIMMERMAN ROAD #40360	1.32	0.1183	1	8.45
51620	BACHELOR PRAIRIE ROAD #51620	2.22	0.1341	1	7.46
96310	BALD RIDGE ROAD #96310	4.07	0.3372	2	5.93
66370	MILL CANYON ROAD #66370	6.55	0.7149	4	5.60
11450	LAUER ROAD #11450	4.38	0.1804	1	5.54
43910	JOHNSON ROAD #43910	2.81	0.1916	1	5.22
21170	COYOTE HEIGHTS ROAD #21170	4.36	0.1998	1	5.01
46170	SHERMAN DRAW ROAD #46170	7.34	0.6058	3	4.95
62800	SUNSET HIGHWAY ROAD #62800	5.7	0.6115	3	4.91
68890	TRAMM ROAD #68890	5.25	0.8303	4	4.82
21040	LANEY BROTHERS ROAD #21040	12.2	0.4429	2	4.52
63060	DETOUR ROAD #63060	4.5	0.4941	2	4.05
29880	MT VIEW CEMETARY ROAD #29880	2.61	0.2532	1	3.95
65720	FOUR CORNERS ROAD #65720	5.84	0.2557	1	3.91
12670	LAKEVIEW RANCH LOOP ROAD #12670	7.54	0.2883	1	3.47
53880	COTTONWOOD CREEK ROAD #53880	6.34	0.2887	1	3.46
48950	MOUNTVIEW ROAD #48950	6.51	0.2897	1	3.45
20260	HEIMBIGNER ROAD #20260	3.01	0.2910	1	3.44
27870	SCHMIERER ROAD #27870	8.09	0.3052	1	3.28
45860	RUX ROAD #45860	7.29	0.3160	1	3.16
43740	ALDERSON ROAD #43740	6.11	0.3321	1	3.01
28130	HIGHLINE ROAD #28130	5.23	0.3330	1	3.00
68200	TAMARACK CANYON ROAD #68200	3.38	0.6915	2	2.89
66890	HART ROAD #66890	3.12	0.3482	1	2.87
32760	LAKE VALLEY LOOP ROAD #32760	3.3	0.7490	2	2.67
19010	CRICK ROAD #19010	9.62	0.3774	1	2.65
35880	STAR BARN ROAD #35880	5.56	0.3792	1	2.64
92200	DOERSCHLAG ROAD #92200	14.49	1.1416	3	2.63
93050	LAKE ROAD #93050	6.71	0.3940	1	2.54
63000	SUNSET HIGHWAY ROAD #63000	5.32	1.2868	3	2.33
66450	TEEL HILL ROAD #66450	10.64	0.9018	2	2.22
62040	TELECKY ROAD #62040	8.32	0.5168	1	1.93
62240	DENNY STATION ROAD #62240	10.82	0.5317	1	1.88
29110	VALLEY ROAD #29110	6.4	0.5351	1	1.87
51410	UNDERWOOD CANYON ROAD #51410	2.3	0.5378	1	1.86
45800	CRESTON BUTTE ROAD #45800	2.91	0.5690	1	1.76
92100	KING RANCH ROAD #92100	6.17	2.0248	3	1.48
54710	GUNNING ROAD #54710	8.01	1.5049	2	1.33
28560	SEVEN SPRINGS DAIRY ROAD #28560	12.89	0.8124	1	1.23
96430	PORCUPINE BAY ROAD #96430	6.1	2.4970	3	1.20
57860	INDIAN CREEK ROAD #57860	8.73	0.8505	1	1.18
63370	GRAVELLE ROAD #63370	7.87	0.8591	1	1.16
22250	COAL COULEE ROAD #22250	13.07	0.8677	1	1.15
20790	DOWNS ROAD #20790	8.75	0.8878	1	1.13
94750	SWANSON LAKE ROAD #94750	8.82	1.8462	2	1.08
93150	MAX HARDER ROAD #93150	3.82	1.0446	1	0.96

Lincoln County

Road .	Road Name	Length	MVMT	Accident	Accident Rate per MVMT
52870	HAWK CREEK RANCH ROAD #52870	4.67	1.0503	1	0.95
96540	DEVILS GAP ROAD #96540	3.13	2.3269	2	0.86
93350	WAUKON ROAD #93350	17.84	4.6539	4	0.86
95100	MILES CRESTON ROAD #95100	18.96	19.6708	16	0.81
41100	DOUGLAS ROAD #41100	9.86	1.2573	1	0.80
55540	HAWK CREEK ROAD #55540	10.66	1.4008	1	0.71
92550	ROCKLYN ROAD #92550	10.72	2.9045	2	0.69
48410	HANSON HARBOR ROAD #48410	12.37	1.4890	1	0.67
TOTAL		1992.2566	210.15	122	0.58
Unidentified Accidents*				22	
Total		1992.2566	210.15	144	0.69

* Unidentified accidents includes all accidents located within the County on private or Forest Service roads or accidents without a primary trafficway identified.

Appendix N

FUNDING MECHANISMS

Funding Mechanisms

This is excerpted from Your Community's Transportation System - "A Transportation Element Guidebook" by Washington State Department of Community Development (1993), and supplemented with more up-to-date information on the Washington State Gas Tax.

This appendix identifies funding mechanisms and types of debt available for transportation improvement. These mechanisms include new sources provided through state legislation in conjunction with the State Growth Management Program. The state provides for imposition of impact fees, additional real estate excise taxes, local option taxes (fuel tax, vehicle license fee, commercial parking and street utility), and High Occupancy Vehicle (HOV) local option taxes.

These transportation-funding mechanisms require that the city or county interested in using the mechanism comply with transportation planning requirements of the State Growth Management Program, including the finance element.

City/County Funds

City/county revenue resources can be categorized as unrestricted and dedicated. Unrestricted revenue is available for transportation to the extent transportation needs can compete with the many other local government needs.

Unrestricted Governmental Funds

General Funds: General funds include all local funds subject to appropriation by the governing body: property taxes, local option sales taxes, utility taxes, general state shared revenues, business license fees, etc. These funds may be used for transportation purposes.

Special Property Taxes: Additional taxes can be authorized by voters, usually for the purpose of bonds. If a proposal is above the statutory limitation for taxing rate, it must be approved by 60 percent of voters with 40 percent turnout. If it is below the legal limitation, a simple majority is sufficient (usually called a "lid lift"). The tax may be temporary or permanent.

Dedicated Governmental Funds for Capital Purposes

State Fuel Tax: Tax on motor fuels specifically dedicated to highway purposes. Currently a total of 34 cents is collected for each gallon of fuel sold. This will increase by \$0.02 on July 1, 2007 and by \$0.015 on July 1 2008 as part of the Transportation Partnership Act of 2005. Of the current total, 10.96 cents is allocated to state programs, 1.08 cents to ferries, 4.92 cents is allocated to counties, 2.96 cents to cities, 3.04 cents to the Transportation Improvement Board, and 1.03 cents to the County Road Administration Board. In 2003 the Nickel Funding Package added 5 cents of fuel tax to fund specific projects that have been grouped into the following: Highway Improvement (inc HOV), Highway Preservation, Ferry, Local Roads, Rail and Public Transportation Programs and Grants. The Transportation Partnership Act of 2005 increased the fuel Tax by 9.5 cents over 4 years, 5 cents of the current 34 cents

goes towards specific High Priority projects statewide and ½ cent each to cities and counties (included in numbers above).

Real Estate Excise: Tax on sale of real property. Two categories are available; now both can be used for all types of GMA defined capital projects, not just streets. One-fourth cent is authorized for capital facilities; if used, another 1¼ cent may be levied. The projects must be included in capital facilities element of the comprehensive plan.

Sales and Use Tax for High Occupancy Vehicles (HOV): Up to 0.9 percent additional sales tax for HCT by transit agencies for HOV in King, Pierce, Clark, Thurston, Spokane and Snohomish Counties; requires a vote prior to implementation.

Other Dedicated Governmental Funds for Transportation Purposes

Transportation Benefit Districts: Special taxing district for transportation purposes created by cities and/or counties. Allows more than one jurisdiction to join together for purposes of acquiring, constructing, improving, providing; funding any city street, county road, or state highway improvement within the district. With voter approval, has authority to levy property tax and issue general obligation bonds. With city/county approval, has authority to impose fees on building construction or land development.

Transit Tax: Separate taxing authority for transit authorities. Voter approval is required for B&O, household/utility, and sale and use taxes.

Federal Financial Assistance

Federal funds are available to cities or counties as distributed by the state and Metropolitan Planning Organizations (MPO). Allocation typically has three components: regional competition, statewide competition, and Washington State Department of Transportation (WSDOT) funding. Funds can be used for highways, roads, transit, bicycles facilities and related improvements.

For regional competition, funds would be distributed to:

- Transportation Management Areas (TMAs) (Areas with an urban population over 200,000.)
- Metropolitan Planning Organizations (MPOs) (Areas with an urban population over 50,000.)
- Counties (Areas with urban populations under 50,000.)

Public Works Trust Fund (PWTF): Available to cities, counties, and special purpose districts from the state in the form of low interest loans for public work improvements.

Motor Vehicle Excise (MVET) for Transit and High Occupancy Vehicle (HOV) Lanes: With voter approval, transit agencies may collect a local excise tax for vehicles registered within their taxing district, imposed as an addition to the state MVET, for high capacity transit service. Certain large population counties may, with voter approval, collect a local excise tax on vehicles registered within their county, imposed

as an addition to the state MVET, for high occupancy vehicle lanes and related facilities.

Local Development Matching Fund (LDMF): Available to cities to fund transportation related to economic development.

Essential Rail Assistance Account (ERAA): Available to cities, county rail districts and port districts; provided to preserve essential freight rail service on economically viable light density lines. Rail lines must appear in the State Freight Rail Plan.

Essential Rail Banking Account (ERBA): Available to cities, county rail districts, and port districts. Preserve freight rail corridors. The rail lines must appear in the State Freight Rail Plan.

User Fees

Transit Fares: Established by transit operator.

Tolls: Paid by user: limited to repayment of bonds to finance construction.

Ferry Fares: Established by ferry operator.

Parking Fees: Either for use of right-of-way (on street parking), or special facility (parking garage).

Developer Contributions

Developer Regulations: Various development regulations (especially subdivision ordinances) may require that certain facilities be available, frequently requiring developers to finance them.

Debt Types

Many of the various sources of revenue can be used either to fund the facility at one time or through various debt financing systems.

Voted General Obligations: Debt secured by "full faith and credit" of the jurisdiction: taxing power pledged to repay debt. Usually (not always) involves approval of an additional property tax levy pledged to retire the debt. Requires a vote with a 60 percent approval of those voting at an election, with participation of 40 percent of the number who voted in the last general election in the jurisdiction.

Non-voted General: This debt is also secured by "full faith and credit" of the jurisdiction. However, no voter approval is required and debt service is paid out of current taxing authority (revenue is diverted from operations and is committed debt service).

Revenue Bonds: Debt is secured by identified revenue source, not taxing power of the jurisdiction. Such revenue is usually some sort of user fees, such as fare box revenue or toll charges. Because such revenues are less secure than taxing powers, this type of

debt usually has higher interest costs than GO bonds. Rarely used for street financing, but theoretically possible. Street utilities could increase the use of this type of debt. Industrial revenue bonds are technically a specialized type of revenue bonds.

Double Barreled Bonds: Debt secured by taxing authority (under one of the two types of GO methods), but debt services is paid out of other revenues. This allows revenue bonds to enjoy the lower interest benefits of GO bonds.

Special Assessment Debt: Bonds financed by formation of a special assessment district: Local Improvement District, Road Improvement District, or Utility Improvement District. Predominate method of debt financing of developer contributions. Must be based on benefit to assessed properties, and must meet requirements of IRS code. Can be augmented by general revenues (usually by absorbing financing costs or "buying down" interest rates).

Appendix O

DETAILED HISTORIC EXPENDITURES AND REVENUE FORECASTS

Transportation Revenue Forecast Summary

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Forecast Revenues ForTransportation Total 2007 - 2027
Adams County																								
Property Tax	1,169,579	1,181,275	1,193,088	1,205,018	1,217,069	1,229,239	1,241,532	1,253,947	1,266,486	1,279,151	1,291,943	1,304,862	1,317,911	1,331,090	1,344,401	1,357,845	1,371,423	1,385,138	1,398,989	1,412,979	1,427,109	1,441,380	1,455,794	27,451,874
State Motor Fuel Tax	4,374,335	4,537,480	4,789,196	4,919,598	5,042,943	5,159,163	5,270,160	5,392,284	5,510,334	5,626,691	5,735,559	5,842,329	5,943,698	6,050,694	6,157,207	6,258,326	6,359,773	6,462,619	6,591,871	6,723,709	6,858,183	6,995,347	7,135,254	122,227,164
Federal Revenues	1,534,457	1,552,866	1,571,090	1,589,733	1,608,598	1,627,886	1,647,001	1,666,545	1,686,321	1,706,332	1,726,580	1,747,068	1,767,800	1,788,777	1,810,004	1,831,482	1,853,215	1,875,206	1,897,458	1,919,974	1,942,758	1,965,811	1,989,138	36,782,106
Total	\$7,078,371	\$7,271,420	\$7,553,374	\$7,714,349	\$7,868,609	\$8,016,088	\$8,158,693	\$8,312,776	\$8,463,142	\$8,612,174	\$8,754,082	\$8,894,259	\$9,029,409	\$9,170,561	\$9,311,612	\$9,447,653	\$9,584,412	\$9,722,963	\$9,888,319	\$10,056,662	\$10,228,049	\$10,402,538	\$10,580,186	186,461,144
Cities - Adams County																								
Property Tax	177,772	179,550	181,346	183,159	184,991	186,841	188,709	190,596	192,502	194,427	196,371	198,335	200,318	202,322	204,345	206,388	208,452	210,537	212,642	214,768	216,916	219,085	221,276	4,172,601
State Motor Fuel Tax	193,628	213,381	224,797	231,610	237,570	243,087	248,363	253,954	259,567	265,095	270,270	275,351	280,178	285,271	290,341	295,155	299,987	304,886	310,983	317,203	323,547	330,018	336,618	5,760,614
Federal Revenues	14,050	14,216	14,385	14,556	14,729	14,903	15,080	15,259	15,440	15,623	15,809	15,996	16,186	16,378	16,573	16,769	16,968	17,170	17,373	17,580	17,788	17,999	18,213	336,784
Total	\$385,450	\$407,148	\$420,528	\$429,325	\$437,289	\$444,831	\$452,152	\$459,809	\$467,509	\$475,146	\$482,450	\$489,682	\$496,683	\$503,971	\$511,258	\$518,313	\$525,407	\$532,592	\$540,999	\$549,551	\$558,251	\$567,103	\$576,107	10,269,998
Grant County																								
Property Tax	6,143,761	6,205,199	6,267,251	6,329,923	6,393,223	6,457,155	6,521,726	6,586,944	6,652,813	6,719,341	6,786,535	6,854,400	6,922,944	6,992,173	7,062,095	7,132,716	7,204,043	7,276,084	7,348,845	7,422,333	7,496,556	7,571,522	7,647,237	144,203,822
State Motor Fuel Tax	6,736,622	6,988,037	7,375,794	7,576,606	7,766,564	7,945,552	8,116,496	8,304,582	8,486,388	8,665,587	8,833,251	8,997,685	9,153,800	9,318,582	9,482,620	9,638,350	9,794,586	9,952,976	10,152,036	10,355,077	10,562,178	10,773,422	10,988,890	188,240,168
Federal Revenues	1,291,541	1,305,854	1,320,326	1,334,958	1,349,753	1,364,711	1,379,836	1,395,128	1,410,589	1,426,222	1,442,028	1,458,009	1,474,167	1,490,505	1,507,023	1,523,725	1,540,611	1,557,685	1,574,948	1,592,402	1,610,050	1,627,893	1,645,934	30,686,422
Total	\$14,171,924	\$14,499,090	\$14,963,371	\$15,241,488	\$15,509,540	\$15,767,418	\$16,018,058	\$16,286,653	\$16,549,790	\$16,811,150	\$17,061,814	\$17,310,094	\$17,550,912	\$17,801,260	\$18,051,739	\$18,294,791	\$18,539,241	\$18,786,745	\$19,075,828	\$19,369,812	\$19,668,784	\$19,972,837	\$20,282,061	363,130,412
Cities - Grant County																								
Property Tax	769,214	776,906	784,675	792,522	800,447	808,452	816,536	824,702	832,949	841,278	849,691	858,188	866,770	875,437	884,192	893,034	901,964	910,984	920,093	929,294	938,587	947,973	957,453	18,054,672
State Motor Fuel Tax	915,121	1,008,478	1,062,434	1,094,633	1,122,799	1,148,875	1,173,808	1,200,232	1,226,759	1,252,889	1,277,345	1,301,357	1,324,174	1,348,245	1,372,203	1,394,957	1,417,791	1,440,945	1,469,764	1,499,159	1,529,142	1,559,725	1,590,919	27,225,713
Federal Revenues	132,373	133,840	135,323	136,823	138,339	139,872	141,423	142,990	144,574	146,177	147,797	149,435	151,091	152,765	154,458	156,170	157,901	159,651	161,420	163,209	165,018	166,846	168,696	3,145,121
Total	\$1,816,708	\$1,919,224	\$1,982,432	\$2,023,978	\$2,061,586	\$2,097,199	\$2,131,766	\$2,167,923	\$2,204,282	\$2,240,343	\$2,274,832	\$2,308,979	\$2,342,034	\$2,376,447	\$2,410,853	\$2,444,160	\$2,477,656	\$2,511,579	\$2,551,277	\$2,591,662	\$2,632,747	\$2,674,544	\$2,717,068	48,425,506
Kittitas County																								
Property Tax	3,076,511	3,107,276	3,138,348	3,169,732	3,201,429	3,233,443	3,265,778	3,298,436	3,331,420	3,364,734	3,398,382	3,432,365	3,466,689	3,501,356	3,536,369	3,571,733	3,607,451	3,643,525	3,679,960	3,716,760	3,753,927	3,791,467	3,829,381	72,210,581
State Motor Fuel Tax	2,183,906	2,263,982	2,388,780	2,453,970	2,515,529	2,573,511	2,628,889	2,689,772	2,748,669	2,806,721	2,861,036	2,914,306	2,964,882	3,018,265	3,071,408	3,121,858	3,172,474	3,223,787	3,288,263	3,354,028	3,421,108	3,489,531	3,559,321	60,970,768
Federal Revenues	1,022,991	1,034,378	1,045,893	1,057,535	1,069,307	1,081,210	1,093,245	1,105,415	1,117,720	1,130,161	1,142,742	1,155,462	1,168,324	1,181,329	1,194,479	1,207,776	1,221,220	1,234,814	1,248,559	1,262,458	1,276,511	1,290,720	1,305,088	24,319,257
Total	\$6,283,407	\$6,405,636	\$6,573,021	\$6,681,237	\$6,786,265	\$6,888,164	\$6,987,912	\$7,093,622	\$7,197,809	\$7,301,616	\$7,402,159	\$7,502,134	\$7,599,896	\$7,700,951	\$7,802,256	\$7,901,367	\$8,001,144	\$8,102,126	\$8,216,782	\$8,333,245	\$8,451,546	\$8,571,717	\$8,693,790	157,500,606
Cities - Kittitas County																								
Property Tax	108,087	109,168	110,260	111,362	112,476	113,601	114,737	115,884	117,043	118,213	119,395	120,589	121,795	123,013	124,243	125,486	126,741	128,008	129,288	130,581	131,887	133,206	134,538	2,536,977
State Motor Fuel Tax	468,788	516,612	544,252	560,746	575,175	588,533	601,305	614,841	628,431	641,816	654,344	666,645	678,333	690,664	702,937	714,593	726,290	738,151	752,914	767,972	783,332	798,998	814,978	13,946,882
Federal Revenues	33,952	34,330	34,712	35,098	35,489	35,884	36,283	36,687	37,096	37,509	37,926	38,348	38,775	39,207	39,643	40,085	40,531	40,982	41,438	41,899	42,366	42,837	43,314	807,125
Total	\$610,827	\$660,109	\$689,223	\$707,207	\$723,140	\$738,018	\$752,325	\$767,413	\$782,569	\$797,538	\$811,665	\$825,582	\$838,903	\$852,884	\$866,824	\$880,163	\$893,561	\$907,141	\$923,640	\$940,453	\$957,584	\$975,041	\$992,830	17,290,984
Lincoln County																								
Property Tax	1,174,966	1,186,716	1,198,583	1,210,569	1,222,675	1,234,901	1,247,250	1,259,723	1,272,320	1,285,043	1,297,894	1,310,873	1,323,981	1,337,221	1,350,593	1,364,099	1,377,740	1,391,518	1,405,433	1,419,487	1,433,682	1,448,019	1,462,499	27,578,323
State Motor Fuel Tax	4,343,897	4,512,557	4,766,743	4,895,818	5,018,410	5,134,021	5,244,430	5,366,128	5,483,550	5,599,293	5,707,584	5,813,782	5,914,604	6,021,025	6,126,967	6,227,541	6,328,441	6,430,731	6,559,346	6,690,532	6,824,343	6,960,830	7,100,047	121,626,676
Federal Revenues	1,325,371	1,337,555	1,349,852	1,362,261	1,374,785	1,387,424	1,400,179	1,413,051	1,426,042	1,439,152	1,452,383	1,465,735	1,479,210	1,492,809	1,506,533	1,520,383	1,534,360	1,548,466	1,562,702	1,577,068	1,591,567	1,606,199	1,620,965	30,827,717
Total	\$6,844,234	\$7,036,828	\$7,315,177	\$7,468,649	\$7,615,870	\$7,756,346	\$7,891,860	\$8,038,902	\$8,181,912	\$8,323,488	\$8,457,860	\$8,590,390	\$8,717,795	\$8,851,055	\$8,984,093	\$9,112,024	\$9,240,542	\$9,370,715	\$9,527,480	\$9,687,088	\$9,849,592	\$10,015,048	\$10,183,511	180,032,717
Cities - Lincoln County																								
Property Tax	105,067	106,118	107,179	108,251	109,333	110,427	111,531	112,646	113,773	114,911	116,060	117,220	118,392	119,576	120,772	121,980	123,200	124,432	125,676	126,933	128,202	129,484	130,779	2,466,095
State Motor Fuel Tax	124,289	136,969	144,297	148,670	152,496	156,037	159,423	163,012	166,615	170,164	173,486	176,747	179,846	183,115	186,369	189,459	192,561	195,705	199,619	203,612	207,684	211,838	216,074	3,697,724
Federal Revenues	1,494,201	1,507,937	1,521,800	1,535,791	1,549,910	1,564,159	1,578,538	1,593,050	1,607,696	1,622,476	1,637,392	1,652,445	1,667,637	1,682,968	1,698,440	1,714,054	1,729,812	1,745,715	1,761,764	1,777,960	1,794,306	1,810,801	1,827,449	34,754,651
Total	\$1,723,55																							

	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>
Grant County											
Revenues											
Property Taxes	3,843,871	4,350,031	4,794,389	4,425,895	5,421,450	5,509,204	5,766,358	5,938,168	5,923,493	6,082,932	6,143,761
Special Assessments	-	-	-	-	-	-	7,012	11,860	8,263	3,554	-
General Fund Appropriations	153,676	-	558,611	-	-	-	175,454	-	-	265,318	-
Local Road User Taxes	740	-	-	-	-	-	-	-	-	-	-
Other Local Receipts	292,648	550,871	420,532	469,533	376,574	493,306	333,061	275,107	241,129	528,342	-
State Fuel Tax Distributions	5,368,730	5,656,254	5,876,187	5,979,392	6,123,246	6,274,795	6,262,559	6,373,593	6,402,974	6,602,225	6,736,622
Other State Funds	1,212,607	1,117,416	1,447,852	2,734,635	1,775,811	1,031,736	114,736	151,350	921,846	922,282	-
Federal Revenues	1,558,026	1,073,352	833,606	2,193,255	1,502,130	1,890,913	1,781,838	3,748,126	4,380,820	1,277,384	1,291,541
Bond Proceeds	-	-	-	-	-	-	-	-	-	-	-
Total	12,430,298	12,747,924	13,931,177	15,802,710	15,199,211	15,199,954	14,441,018	16,498,204	17,878,525	15,682,037	-
Expenditures											
Construction	5,805,955	5,436,676	5,439,948	6,097,652	5,199,323	5,667,949	5,522,119	5,948,195	6,793,352	7,427,391	-
Preservation	-	-	-	-	-	-	-	1,737,664	2,072,952	2,578,852	-
Maintenance	5,404,215	5,621,043	5,219,060	5,554,194	6,017,562	5,842,221	6,263,228	4,520,449	4,979,139	5,032,307	-
Administration	345,736	1,248,607	902,824	1,508,147	1,284,070	1,468,870	1,142,269	1,654,246	1,509,893	1,030,435	-
Plant Maintenance & Constructi	35,294	48,813	154,908	167,856	49,430	51,147	2,223,835	847,590	1,050,839	2,451,782	-
Debt Service	41,890	41,466	37,816	44,898	40,678	27,781	24,436	24,472	3,000	1,815	-
Other	32,545	867,981	165,089	235,017	778,570	85,301	740,701	1,617,546	242,775	133,939	-
Traffic Policing	153,676	-	178,961	176,657	154,133	167,833	175,454	179,836	181,030	182,538	-
Total	11,819,311	13,264,586	12,098,606	13,784,421	13,523,766	13,311,102	16,092,042	16,529,998	16,832,980	18,839,059	-
% Change											
Property Taxes	4.7%	13.2%	10.2%	-7.7%	22.5%	1.6%	4.7%	3.0%	-0.2%	2.7%	5.5%
State Fuel Tax Distributions	5.8%	5.4%	3.9%	1.8%	2.4%	2.5%	-0.2%	1.8%	0.5%	3.1%	2.7%
Federal Revenues	14.2%	-31.1%	-22.3%	163.1%	-31.5%	25.9%	-5.8%	110.4%	16.9%	-70.8%	16.9%
Population					74,698					82,397	
MVFT Allotment % Grant											4.11450%
MVFT CAP % Grant											6.44286%

Average

	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>
Cities - Grant County											
Revenues											
Property Taxes	480,557	833,587	461,332	521,700	795,952	714,020	784,314	841,285	833,016	761,598	769,214
Special Assessments	83,413	466,867	155,648	196,436	237,403	468,549	187,487	184,211	128,146	179,690	
General Fund Appropriations	2,109,209	723,520	1,529,176	1,672,591	2,387,399	1,596,913	1,861,482	2,777,744	2,791,489	3,136,620	
Local Road User Taxes	38,568	-	-	-	-	-	-	-	-	-	
Other Local Receipts	2,165,381	1,889,428	2,893,090	3,530,009	4,567,774	3,752,250	3,392,339	3,054,161	3,498,461	3,573,404	
State Fuel Tax Distributions	724,152	1,182,277	768,621	782,736	786,420	832,231	843,095	830,668	855,306	877,193	915,121
Other State Funds	315,751	345,305	1,614,566	2,064,953	3,887,380	2,179,413	3,548,591	993,579	551,608	278,790	
Federal Revenues	210,012	1,754	132,665	-	10,560	121,835	126,050	64,707	26,228	130,922	132,373
Bond Proceeds	1,853,374	1,883,190	1,346,386	1,597,439	-	-	-	-	-	-	
Total	7,980,417	7,325,928	8,901,484	10,365,864	12,672,888	9,665,211	10,743,358	8,746,355	8,684,254	8,938,217	
Expenditures											
Construction	2,653,016	2,665,303	3,178,868	3,413,402	5,239,761	3,282,465	4,367,268	1,678,281	783,874	867,210	
Preservation								18,021	75	-	
Maintenance	1,647,478	1,760,787	1,747,601	1,962,050	1,882,176	2,154,585	2,479,216	2,646,413	2,310,725	3,207,885	
Administration	90,042	98,787	100,917	115,463	189,571	166,213	447,376	340,147	388,631	352,938	
Plant Maintenance & Constructi	26,525	92,065	11,736	4,316	19,262	518,754	38,907	196,795	111,609	117,568	
Debt Service	199,896	529,036	1,343,754	1,645,270	1,426,144	726,013	263,950	286,910	342,729	175,137	
Other	216,665	135,267	64,809	122,495	177,157	213,456	261,770	130,023	130,998	323,466	
Traffic Policing	1,060,867	1,185,658	1,335,047	1,573,621	1,561,539	1,734,268	1,636,102	2,452,802	2,396,689	2,697,773	
Total	5,894,489	6,466,903	7,782,732	8,836,617	10,495,610	8,795,754	9,494,589	7,749,392	6,465,330	7,741,977	
% Change											
Property Taxes	4.5%	73.5%	-44.7%	13.1%	52.6%	-10.3%	9.8%	7.3%	-1.0%	-8.6%	9.6%
State Fuel Tax Distributions	1.7%	63.3%	-35.0%	1.8%	0.5%	5.8%	1.3%	-1.5%	3.0%	2.6%	4.3%
Federal Revenues	2700.2%	-99.2%	7463.6%	-100.0%	#DIV/0!	1053.7%	3.5%	-48.7%	-59.5%	399.2%	#DIV/0!
MVFT Allotment % Grant											1.07998%

Average

Appendix P

QUADCO AGENCY TRANSPORTATION IMPROVEMENT PROGRAMS

(UPDATED ANNUALLY AND BOUND SEPERATELY)