

Chapter 6. Comparison of Transportation and Environmental Impacts Between Alternatives

The alternatives analysis was conducted at a level of detail sufficient to compare broadly the performance and environmental effects of the studied alternatives with one another, which is a greater level of analysis detail than normally used in comprehensive land use and transportation planning, but is a substantially less detailed analysis than expected in analyzing the specific impacts of a proposed project design where exact right-of-way lines, construction limits, and facility geometry and design features are known.

The comparative analysis of alternatives is organized as follows:

- ◆ Transportation (Chapter 7)
- ◆ Land Use and Socioeconomics (Section 8.1)
- ◆ Biology (Section 8.2)
- ◆ Wetlands (Section 8.3)
- ◆ Water Quality (Section 8.4)
- ◆ Utilities (Section 8.5)
- ◆ Visual Resources (Section 8.6)
- ◆ Hazardous Materials (Section 8.7)
- ◆ Geology, Soils, and Groundwater (Section 8.8)
- ◆ Cultural (Archaeological and Historic) Resources (Section 8.9)
- ◆ Noise (Section 8.10)
- ◆ Energy (Section 8.11)
- ◆ Air Quality (Section 8.12)

Table 6.1-1 summarizes the findings of the alternatives analysis.

Table 6.1-1 Summary of Transportation and Environmental Impacts

Resource/Measure	Alternative 1 No Build	Alternative 2 TDM/TSM	Alternative 3 EESA	Alternative 4 Corridor 4D	Alternative 5 Corridor 4E	Alternative 6 Corridor 5B
<p>Vehicle miles traveled in project area during 2030 weekday PM peak period (2 hours) by type of roadway:</p> <p>State routes* 200,200 (59%)</p> <p>Arterials 83,900 (24%)</p> <p>Non-arterial roads inside UGB 50,300 (15%)</p> <p>Non-arterial roads outside UGB 8,300 (2%)</p> <p>Totals 342,700</p> <p><i>* Although it would not likely be designated as a state highway, Tualatin-Sherwood Road is expected to function as a route for regional and state travel under EESA. Connector corridors classified as state routes under Alternatives 4, 5, and 6.</i></p>	<p>Traffic would use non-arterial roads both inside and outside the UGB to avoid congestion.</p>	<p>No measurable change from No Build Alternative.</p>	<p>Some traffic would shift demand from other roads outside the UGB.</p>	<p>Some traffic would shift from congested arterials to the state highway system and demand would be substantially reduced on other roads both inside and outside UGB.</p>	<p>Some traffic would shift from congested arterials to the state highway system and demand would be substantially reduced on other roads both inside and outside UGB.</p>	<p>Traffic demand would be substantially reduced on other roads both inside and outside UGB.</p>
<p>Truck vehicle miles traveled in project area during 2030 weekday PM peak period (2 hours) by type of roadway:</p> <p>State routes* 31,500 (86%)</p> <p>Arterials 3,500 (9%)</p> <p>Non-arterial roads (inside & outside UGB) 1,700 (4%)</p> <p>Totals 36,700</p> <p><i>* Although it would not likely be designated as a state highway, Tualatin-Sherwood Road is expected to function as a route for regional and state travel under EESA. Connector corridors classified as state routes under Alternative 4, 5, and 6.</i></p>	<p>Trucks would use non-arterial roads to avoid congestion.</p>	<p>No measurable change from No Build Alternative.</p>	<p>No shift of trucks from non-arterial roads.</p>	<p>Truck demand reduced on all non-state facilities.</p>	<p>Truck demand reduced on all non-state facilities.</p>	<p>Truck demand reduced on all non-state facilities.</p>

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Vehicle miles traveled in town centers during 2030 weekday PM peak period (2 hours): Tualatin Sherwood Wilsonville Tigard	14,520 8,850 4,140 8,260	14,450 8,790 4,130 8,230 No measurable change from No Build Alternative.	15,500 11,920 4,130 8,050 Higher mileage in Tualatin and Sherwood.	13,480 10,570 4,450 7,940 Reduced mileage in Tualatin but higher in Sherwood.	13,390 9,490 4,450 7,950 Reduced mileage in Tualatin but some increase in Sherwood.	13,670 7,460 4,450 8,030 Reduced mileage in Sherwood and Tualatin.
Trip Types on Tualatin-Sherwood Road (through/regional/local) – near Cipole Road during 2030 weekday PM peak hour	Through – 13% Regional – 60% Local – 27%	Through – 13% Regional – 61% Local – 26% No measurable change from No Build Alternative.	Through – 38% Regional – 51% Local – 11% Through trips would be attracted to Tualatin-Sherwood Road by providing highest carrying capacity in Alternative 3.	Through – 4% Regional – 70% Local – 26% Through demand would be reduced and regional and local demand would increase.	Through – 5% Regional – 65% Local – 30% Through demand would be reduced and regional and local demand would increase.	Through – 6% Regional – 59% Local – 35% Through demand would be reduced; local demand would increase most of any alternative.
Percent of traffic on Tualatin-Sherwood Road in Sherwood traveling to/from the Southwest Portal (OR 99W south of Brookman) during 2030 weekday PM peak period (2 hours)	15%	15% No measurable change from No Build Alternative.	17% Would allow more portal traffic by providing highest carrying capacity on Tualatin-Sherwood Road.	14% Portal traffic would remain on Tualatin-Sherwood Road.	2% Portal traffic would shift to connector corridor.	6% Portal traffic would shift to connector corridor.
Number of lane miles in project area where vehicular demand would exceed roadway capacity during 2030 weekday PM peak hour	35 miles	34 miles Small change from No Build Alternative.	22 miles Almost 40% reduction below No Build Alternative.	8 miles More than 75% reduction below No Build Alternative.	7 miles 80% reduction below No Build Alternative.	16 miles 55% reduction below No Build Alternative.

SUMMARY

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Vehicle hours of delay on congested roadways in project area during 2030 weekday PM peak period (2 hours)	9,300 hours	9,210 hours Minimal decrease.	8,490 hours Almost 10% reduction below No Build Alternative.	5,030 hours More than 45% reduction below No Build Alternative.	5,320 hours Almost 45% reduction below No Build Alternative.	6,130 hours Almost 35% reduction below No Build Alternative.
Travel times to/from OR 99W south of Sherwood and the Interstate System during 2030 weekday PM peak hour	27 to 36 min.	27 to 35 min.	26 to 34 min.	22 to 33 min.	18 to 31 min.	14 to 28 min.
Travel times to/from Tualatin Industrial Area and the Interstate System during 2030 weekday PM peak hour	10 to 24 min.	10 to 24 min.	9 to 22 min.	8 to 22 min.	7 to 21 min.	8 to 22 min.
<i>Transit ridership on key routes (total ridership per alternative)</i>	<i>47,850</i>	<i>56,450</i>	<i>62,500</i>	<i>48,450</i>	<i>49,550</i>	<i>49,500</i>
Cost						
Cost (million 2008 dollars)	--	\$40-45	\$755-790	\$930-1,025	\$930-985	\$965-1,040
Land Use						
Land converted to transportation uses (total acres)	0	0-10	80-115	600-745	630-785	635-795

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Protecting the vitality of town centers	Would not address regional and through traffic conflicts with local access and circulation. Increasing congestion could reduce economic vitality of Tualatin, Tigard, and Sherwood town centers.	Would increase bike/pedestrian connectivity but would not address regional and through traffic conflicts with local access and circulation. Increasing congestion could reduce economic vitality of Tualatin and Sherwood town centers.	Multimodal access improved; would not address conflicts between local and regional traffic enough to reduce the congestion in Tualatin and Sherwood town centers. Reduced access to Tualatin-Sherwood Road would have an adverse impact on the Tualatin and Sherwood town centers.	Regional and through trips would use the connector, improving local travel in Tualatin, Tigard, and Sherwood town centers. Wilsonville would see a minor increase in regional and through trips accessing the connector.	Regional and through trips would use the connector, improving local travel in Tualatin and Sherwood town centers. Wilsonville Town Center would undergo a small increase in regional and through trips accessing the connector. Loss of access to Sherwood Town Center could affect economic viability of that town center.	Most successful in removing regional and through traffic from the Sherwood Town Center and reduces through and regional demand in the Tigard and Tualatin town centers, but would have a minor increase in regional and through traffic in Wilsonville's town center. Least impact to land uses in Sherwood and Tualatin town centers.
Consistency with adopted plans and policies (<i>Qualitative summary based on Land Use analysis</i>)	Does not meet Oregon Highway Plan (OHP) mobility standards; does not construct corridor as listed in local plans.	Does not meet OHP mobility standards; does not construct corridor as listed in local plans.	Does not meet OHP mobility standards; not consistent with plans identifying a connector but includes several projects identified in local and regional plans.	Consistent with plans identifying a connector.	Consistent with plans identifying a connector.	Consistent with plans identifying a connector. Would require UGB amendment or goal exception.
Community Impacts						
Residential displacements (% from I-5)	0 (0%)	0 (0%)	110-130 (0%)	130-160 (80%)	110-140 (90%)	140-180 (70%)
Commercial displacements (% from I-5)	0 (0%)	0 (0%)	10-20 (0%)	80-110 (60%)	60-80 (70%)	60-80 (70%)
Industrial displacements (% from I-5)	0 (0%)	0 (0%)	0-10 (0%)	10-20 (0%)	0-10 (0%)	0-10 (0%)

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Community cohesion and connectivity impacts	Growing congestion would continue to degrade access and mobility in project area.	Improved multimodal options, but growing congestion would continue to degrade access and mobility in project area.	Some improvements to bicycle and pedestrian connectivity. Additional roads improve connectivity but would not reduce congestion for communities in project area.	Arterial and collector access would be maintained. Connector may improve community access to the region.	Arterial and collector access would be maintained. Connector may improve access to the region. It is the only alternative that would locate an interchange adjacent to a town center and would require significant access changes. Approximately 40 percent of Sherwood's industrial land supply would be converted to transportation use.	Arterial and collector access would be maintained. Connector may improve access to the region.
Potential impacts to minority and low-income populations	No impacts anticipated.	No impacts anticipated.	Minimal impacts anticipated; impacts not disproportionate.	Some displacements anticipated; impacts not disproportionate.	Some displacements anticipated; impacts not disproportionate.	Some displacements anticipated; impacts not disproportionate.

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Economy						
Economic impact on commercial/industrial areas	Congestion for freight, consumers, and employers would continue to increase.	Congestion for freight, consumers, and employers would continue to increase.	Some congestion improvement; restricted access to Tualatin-Sherwood Road commercial area.	Improved traffic flow; reduced freight traffic in Tualatin and Sherwood town centers, although Wilsonville Town Center experiences a slight increase in freight traffic accessing state highway system.	Improved traffic flow; reduced freight traffic in Tualatin and Sherwood town centers, although Wilsonville Town Center experiences a slight increase in freight traffic accessing state highway system; state highway access may become more difficult for Tualatin-Sherwood Road businesses.	Direct east-west access; avoids Sherwood Town Center. Improved traffic flow; reduced freight traffic in Tualatin and Sherwood town centers, although Wilsonville Town Center experiences a slight increase in freight traffic accessing state highway system.
Biology						
Impacts to upland habitat (wooded, grassland, nesting areas)	Little to no impact.	Little to no impact. Least impact of all build alternatives.	Lower impact than the three corridor alternatives, but higher than Alternative 2.	Greater impacts than Alternatives 2 and 3, but less than Alternatives 5 and 6.	Higher impact than Alternative 4, but less impact than Alternative 6.	Highest functional impact. Crosses all major drainages in relatively undeveloped headwater areas.
(acres of habitat affected)			(10)	(130-172)	(139-191)	(174-222)

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<p>Impacts to riparian habitat</p> <p>(acres of habitat affected)</p>	Little to no impact.	Little to no impact. Least impact of all build alternatives.	<p>Lower impact than the three corridor alternatives. Minor impacts to riparian corridors and several creeks. New road and bridge over the Tualatin River may impact wildlife movement.</p> <p>(19)</p>	<p>Greater impacts than Alternatives 2 and 3, but less than Alternatives 5 and 6.</p> <p>(91-116)</p>	<p>Greater impacts than Alternatives 2, 3, and 4. Potentially higher acreage impacts than Alternative 6 but crosses fewer high quality drainages.</p> <p>(101-125)</p>	<p>Highest functional impact to riparian corridors since it crosses all major high quality drainages in the project area.</p> <p>(89-111)</p>
<p>Aquatic resources impacts (relative impacts are based on the amounts of new impervious surfaces added by each alternative)</p> <p>(acres of new impervious surface)</p>	Little to no impact.	Little to no impact.	<p>Construction impacts to Tualatin River. Lowest potential impact of the three connector alternatives to overall project area, and specifically to Saum, Seely/ Coffee, and Chicken/ Cedar subbasins.</p> <p>(177)</p>	<p>Highest impact of the three connector alternatives to Seely/Coffee subbasin. Lowest impact of the three to Rock subbasin.</p> <p>(178-194)</p>	<p>Similar impacts as Alternative 4.</p> <p>(171-195)</p>	<p>Highest impact among the alternatives to Chicken/Cedar subbasins, and highest overall project area impact.</p> <p>(186-209)</p>

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Resource/Measure	Alternative 1 No Build	Alternative 2 TDM/TSM	Alternative 3 EESA	Alternative 4 Corridor 4D	Alternative 5 Corridor 4E	Alternative 6 Corridor 5B
Description of wildlife corridor impacts. (acres of wildlife corridor affected)	Little to no impact.	Least impact of all build alternatives.	Least impact in terms of acreage, but limits wildlife movement by widening roads and adding two new crossings of Rock Creek. (6)	Mostly avoids main north-south corridor. Lowest impact to wildlife corridor of the three build alternatives. (33-43)	Impacts east-west movement between Rock Creek and the Tualatin River. Rock Creek crossing impacts habitat connectivity and wildlife movement. (46-56)	Highest functional impact. Limits east-west and north-south movements. Bisection of north-south corridor in three areas. (78-90)
Potential effects on threatened and endangered fish species	Little to no impact.	Little to no impact.	Least potential effect on listed fish species.	Higher potential of effects than Alternative 3, lower than Alternative 6.	Higher potential of effects than Alternative 3, lower than Alternative 6.	Highest potential effects to listed fish species.
Tualatin National Wildlife Refuge (description of potential impact, including acreage)	No direct impact to refuge or to land within the Congressionally authorized acquisition boundary.	No direct impact to refuge or to land within the Congressionally authorized acquisition boundary.	No direct impact to refuge. Two new roads near Tualatin-Sherwood Road impacts 8 acres of land within the Congressionally authorized acquisition boundary.	No direct impact to refuge. Widening Tualatin Sherwood Road impacts 8-10 acres of land within the Congressionally authorized acquisition boundary.	Slight impact to land within the existing refuge, but only marginal impacts to refuge functions. Requires 40-50 acres of land within the Congressionally authorized acquisition boundary. Rock Creek crossing impacts habitat connectivity and wildlife movement.	The 124 th Avenue extension in Tonquin Scablands is within the Congressionally authorized acquisition boundary. Requires 18-22 acres and impacts habitat connectivity and wildlife movement.
Wetlands						
Acres of potentially impacted wetlands	N/A	<1	8-9	25-33	18-24	19-26
New or modified stream crossings	0	0	18	10-24	9-21	19-29

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Water Quality						
Acres of increased impervious surface (indicator of potential for water quality impacts)	N/A	44	177	178-194	171-195	186-209
Utilities						
Potential for impacting utilities	Low – None	Low	High (Most utilities are near existing roadway right-of-way; expansions will require their relocation.)	Medium (Will cross several utilities.)	Medium (Will cross several utilities; will need to avoid electric substation on OR 99W and alteration of electric transmission lines.)	Low-Medium (Will cross utilities in some areas; location largely outside urbanized zone will allow avoidance of several major lines.)
Visual Resources						
Relative adverse impact to visual / aesthetic resources	Very Low	Very Low	Low	Low-Moderate	Moderate-High	Moderate
Overall estimated visual quality of views to alternative	Moderate	Moderate	Very Low	Low-Moderate	Low	Low
Overall estimated visual quality of views from alternative	Moderate	Moderate	Low	Low-Moderate	Low-Moderate	Moderate
Hazardous Materials						
Number of high-risk sites potentially affected	0	0	33	18	12	8

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Geology and Soils						
Potential impacts to groundwater resources	No construction; no impacts.	Minor shoulder construction for bicycle and pedestrian facilities; few potential impacts.	Shallow groundwater present; risk of discharge of collected drainage to groundwater.	Shallow groundwater present; risk of discharge of collected drainage to groundwater.	Shallow groundwater present; risk of discharge of collected drainage to groundwater.	Shallow groundwater present; risk of discharge of collected drainage to groundwater. Slope cuts near Brookman/Ladd Hill Road may disturb domestic water supply in areas of uncontained aquifer in the Columbia River basalt.
Cultural Resources						
Historic resources likely/possibly affected	0/0	0/0	9/10	15/18	15/15	5/6
Number of recorded archaeological resources within potential improvement area	N/A	0	5	2	2	2
Percent of potentially sensitive archaeological areas within potential improvement area	N/A	None	67%	63%	56%	59%
Noise						
Potential number of residential, recreational, church, school, or hotel noise impacted sites	1,300-1,350	1,300-1,350	1,490-1,540	1,460-1,510	1,410-1,460	1,260-1,310
Potential number of commercial or industrial noise impacted sites	90-140	90-140	120-170	100-150	100-150	70-120
Energy						
Annual fuel consumption (million gallons)	29.29	29.22	32.10	34.98	35.03	35.22
(Percent compared to No Build Alternative)	(-)	(0%)	(+10%)	(+19%)	(+20%)	(+20%)

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Air Quality	<ul style="list-style-type: none">• All alternatives, including the No Build, would be in conformance with regional air quality attainment goals.• Compared to the No Build Alternative, Alternatives 2 and 3 have a lesser potential for adverse air quality impacts than Alternatives 4, 5, and 6.					

SUMMARY