CHAPTER 3. AFFECTED ENVIRONMENT, ENVIRONMENTAL CONSEQUENCES, AND MITIGATION MEASURES

Transportation

The current traffic conditions and projected growth are driving the need for the Sunrise Project. Key study area roadways experience multiple hours of congestion and delay each weekday, which adversely affect system reliability, efficiency, and safety.

Planned Growth

Growth predicted for the Portland metropolitan region will exacerbate the problems of congestion, reliability, and safety. The study area is forecasted to grow from 16,000 to 32,000 households and from 48,000 to 89,000 jobs, close to 100 percent growth by 2030.[19] While only a part of Damascus is within the transportation study area, as a whole the city is forecast to undergo the largest growth of any of the districts contributing traffic to OR 212/224, growing from 3,500 to almost 25,000 households and from 1,100 jobs to 20,000 new jobs. A large parcel of land in the Rock Creek Industrial Area is currently proposed for development as a medical care complex with the potential to create 6,000 new jobs by 2030.

The study area for the traffic analysis is larger than the anticipated right-of-way or construction limits of the Sunrise Project. It is bounded by the SE Sunnyside Road I-205 ramp terminals to the north, OR 212 at SE Anderegg Parkway to the east, SE Jennifer Street at SE 82nd Drive to the south, and Milwaukie Expressway (OR 224) at SE Webster Road to the west.

The Transportation Technical Report on the DVD provides details on the following:

- Transportation study area boundary (Figure 5-1 in the technical report).
- Review of Transportation Plans.
- Current travel demand, traffic operations, transportation system performance, congestion, safety, bicycle and pedestrian systems, transit routes, emergency services.
- Planned 2030 transportation system.
- Effect of the proposed Sunrise Project on the regional and local transportation systems, bicycle and pedestrian systems, transit service.
- Transportation demand/system management.

Happy Valley, Milwaukie, the Clackamas Industrial Area, and the Clackamas Regional Center represent the other high growth areas near the study area. The planned growth will create a strong demand for east-west travel and for connection to the surrounding regional transportation system, principally I-205, SE 82nd Avenue, Milwaukie Expressway (OR 224), and OR 212/224. OR 224 and OR 212/224 are the primary arterials within the proposed Sunrise Project area. Commuters and truck traffic use the highways for local and regional trips. SE 82nd Drive is also heavily used, but the majority of traffic is more local.

OR 212/224 and the parallel roadways, such as SE Sunnyside Road, SE Sunnybrook Boulevard and SE Jennifer Street, cannot and are not intended to accommodate the amount of traffic and generally long-distance nature of trips that will be created by the planned growth.

Congestion

Traffic operations within the study area follow a predictable pattern. Figures 18 and 19 illustrate the traffic congestion in 2004 during the peak travel periods, one hour in the morning and one hour in the evening. Early morning periods of free-flowing traffic are followed by growing morning congestion,

[19] *Data in this Transportation section derive from Metro's regional traffic demand model and are discussed in the Sunrise Project Transportation Technical Report, Sections 5 and 6. See especially Figures 6-6 and 6-7 of the report.*

recovery from congestion during the late morning, growing congestion in later afternoon through evening, recovery from evening congestion during the late evening, and back to free-flowing operations during the night. During a typical weekday, the congestion develops at four primary locations:

- OR 224 at the I-205 ramp terminals (affects evening commute).
- OR 212/224 at SE 82nd Drive (affects morning and evening commute).
- OR 212/224 at SE 135th Avenue (affects morning commute).
- OR 212 near SE Armstrong Circle (affects morning and evening commute).

I-205 carries more daily and peak hour traffic than any other roadway in the study area. It serves as the primary regional, commuter, and truck route through the project area. Congestion on I-205 affects traffic patterns throughout the area, especially near the interchanges. During the afternoon peak traffic period, congestion on OR 212/224 backs up onto the additional lane ("add-lane") feeding into southbound I-205, causing stop-and-go traffic operations on the add-lane. Congestion in the add-lane creates slowing in the through-lanes, particularly the right-most through-lane. The congestion is caused by a lack of capacity on OR 212/224 between SE McKinley Avenue and SE 82nd Drive.

The project area currently serves high volumes of freight traffic. Five percent of traffic on I-205 is made up of heavy truck vehicles, largely during the middle of the day. Arterial roads in the project area carry approximately 5 percent truck traffic, a relatively high percentage that is indicative of the industrial nature of the area.

Safety

Along OR 212/224 from I-205 to Rock Creek Junction, nearly 560 crashes were reported from 1998 to 2002. Over 40 percent of crashes involved injuries, of which two were fatal. Over 80 percent of crashes involved a turning or rear-end maneuver consistent with high-volume, multi-lane, signalized roadways. The only intersection with an unduly high crash rate is SE 82nd Drive at OR 224.

A safety analysis was performed for the study area bounded by the SE Sunnyside Road I-205 ramp terminals to the north, OR 212 at SE Anderegg Parkway to the east, SE Jennifer Street at SE 82nd Drive to the south, and OR 224 at SE Johnson Road to the west. The safety analysis was conducted to identify existing transportation characteristics and deficiencies.

The Safety Priority Index System (SPIS) is a scoring system developed by ODOT for prioritizing locations where funding for safety improvements can be spent most efficiently and effectively. The SPIS score is based on crash frequency, rate, and severity. Clackamas County also maintains SPIS data for its roadways. The intersection of SE Clackamas Road at SE 82nd Drive was a top 10 percent SPIS location for Clackamas County.

SE Adams Street at SE 82nd Drive was also a top 10 percent SPIS location for Clackamas County. Data showed that a large number of vehicles accessed SE Adams Street from SE 82nd Drive in order to reach the U.S. Post Office on SE Adams Street.

The intersection of SE 82nd Drive at OR 212/224 had 160 reported crashes during the five-year period from 1998 to 2002. Rear-end crashes were the most common type, with the majority occurring along OR 212/224. Just over 100 of the 160 crashes caused property damage only; the remaining 58 crashes caused personal injuries. The conditions are typical of a high-volume, congested, signalized intersection.

A 2010 safety analysis was conducted to reflect more recent crash data provided by the ODOT Crash Analysis and Reporting Unit for years 2005 through 2009. Along OR 212/224 from I-205 to Rock Creek Junction, 582 crashes were reported from 2005 through 2009. Approximately 25 percent of crashes involved injuries, including two fatalities. There has been a moderate reduction since the previous (1998 through 2002) analysis in injury-related crashes

throughout the corridor. Approximately 75 percent of crashes were turning or rear-end related, consistent with high-volume, multi-lane, signalized roadways.

The intersection of SE 82nd Drive at OR 212/224 continues to operate with a high crash rate, but shows a significant improvement in recent years, which is likely a result of intersection modifications that have occurred.[20]

Safety performance from 2007 through 2009 has placed segments of OR 212 east of Rock Creek Junction, I-205 between milepoints 12.0 and 15.0, and Milwaukie Expressway (OR 224) near I-205, in the top 10 percent of the SPIS. However, Clackamas County no longer ranks any of the study area locations on their top SPIS list.

An analysis of bicycle facilities in the study area revealed them generally to be fair to good in terms of their presence and condition. SE McKinley Avenue, SE Mather Road, SE Jennifer Street, and SE 82nd Drive have worse conditions because of intersections that are difficult to navigate, sections that are incomplete, or bike lanes that are too narrow. An analysis of pedestrian facilities in the study area revealed them generally to be fair to good in terms of their presence and condition (see Figure 5, in Executive Summary). SE Hubbard Road, SE 135th Avenue, SE Jennifer Street, SE Mather Road, and SE Webster Road are not conducive to walking due to difficult intersections, incomplete sidewalk segments, and sidewalks on alternating sides of the street. Currently, six TriMet bus routes serve the project area; all are wheelchair-accessible.

The 2030 Transportation System

For **Alternatives 1, 2,** and **3,** Figures 20 through 25 illustrate the traffic congestion that the transportation model predicted would occur from growth by 2030. The congestion levels are shown during the peak travel periods, one hour in the morning and one hour in the evening. Figures PA-9 and PA-10 illustrate forecasted traffic congestion under the **Preferred Alternative.**

Table 7 compares the differences in transportation impacts for **Alternatives 1, 2, 3**, and the **Preferred Alternative** using different measurements, such as travel speed, delays, intersections that exceed acceptable volume-to-capacity ratios, and hours and lane miles of congestion.

Alternative 1–No Build would implement the improvements planned by Metro, ODOT, and Clackamas County. Based on the traffic modeling results, the planned transportation system improvements would not be sufficient to handle predicted growth. System reliability and efficiency would diminish substantially given the expected levels of population and employment growth and the resulting increased demand for travel. For example, over 80 percent of intersections modeled for the **No Build Alternative** would have a "failing" level of service. Figures 20 and 21 illustrate the traffic congestion predicted for 2030 under **Alternative 1** during the peak travel periods, one hour in the morning and one hour in the evening.

Figures 22 through 25 illustrate the traffic congestion predicted for 2030 during the peak travel periods, one hour in the morning and one hour in the evening, for **Alternatives 2** and **3**.

Table 8 lists the volume-to-capacity (v/c) ratios for north-south and east-west roadways. Under **Alternatives 2** and **3,** v/c ratios for alternative routes drop under capacity, but latent demand causes alternate routes to be over capacity in the AM and PM peak hours even with the Sunrise Project. On the north-south roadways, v/c ratios for roads north of the proposed Sunrise Project drop, while v/c ratios at the end points of the proposed Sunrise Project increase—the additional volume of traffic within the study area has to blend back into the existing network on either side of the study area. Table 9 provides travel times for all trips between selected destinations. Travel

[20] *Section 5.6 of the Transportation Technical Report documents the safety research for this FEIS.*

under **Alternatives 2** and **3** would be faster between some locations (principally for trips that use the entire Sunrise Project). Other travel becomes slightly slower (principally where trips do not use the Sunrise Project but are affected by congestion near the west and east ends of the proposed Sunrise Project corridor). Intersections that are predicted to be at failing levels of service would be over 50 percent of all intersections studied, except for **Alternative 2** in the PM peak hours.

Preferred Alternative

The transportation system features of the **Preferred Alternative** and **Alternative 2** are substantially the same and the transportation system performance for automobile, freight, and transit users are the same, as summarized in Table 7.

One notable exception, however, is the number of failing intersections predicted. The improvements associated with the **Preferred Alternative** result in roughly half as many intersections operating at a failing level of service than any of the previous three alternatives studied.

Enhanced benefits provided by the **Preferred Alternative** for bicyclists and pedestrians are summarized later in this section.

Table 7. Transportation Effects, 2030

Transportation Measure	Alternative 1—No Build	Alternative 2	Alternative 3	Preferred Alternative
Average Travel Speed	7-8 mph slower than existing	3 mph faster than Alternative 1	3 mph faster than Alternative 1	3 mph faster than Alternative 1
Vehicles in Peak Hour	4,440	12,400	11,600	12,400
Vehicle Hours Delay, AM Peak	+ 130% AM peak compared to existing	- 2% compared to Alternative 1	- 2% compared to Alternative 1	- 2% compared to Alternative 1
Vehicle Hours Delay, PM Peak	+ 70% AM peak compared to existing	- 35% compared to Alternative 1	- 33% compared to Alternative 1	- 35% compared to Alternative 1
Congested Hours on Roadway	9	4	5.5	4
Intersections Not Meeting Oregon Highway Standards[1]	19 in AM, 20 in PM out of 24 (~81%)	18 in AM, 10 in PM out of 32 (~44%)	20 in AM, 15 in PM out of 30 (~58%)	11 in AM, 4 in PM out of 35 (~43%)
Percent Lane Miles Congested in PM Peak	11%	9%	10%	9%

[1] Overall intersection will operate at LOS F during at least one out of the two hours in the peak period.

Table 8. Volume-to-Capacity Ratios for Select Roadways (by North/South and East/West Parallel Roadways, 2030)

			PM		AM	
	Roadway		EB	WB	EB	WB
East/West	SE Jennifer St.	Alt. 1	0.82	0.57	0.56	0.87
		Alt. 2	0.33	0.50	0.52	0.44
		Alt. 3	0.40	0.52	0.53	0.49
		Pref. Alt.	0.33	0.50	0.52	0.44
	OR 212/224	Alt. 1	1.27	0.87	0.87	1.24
		Alt. 2	0.87	0.77	0.54	0.87
		Alt. 3	0.91	0.82	0.63	0.89
		Pref. Alt.	0.87	0.77	0.54	0.87
	SE Sunnyside Rd.	Alt. 1	1.34	0.65	0.49	1.37
		Alt. 2	1.02	0.52	0.67	1.05
		Alt. 3	1.04	0.52	0.37	1.06
		Pref. Alt.	1.02	0.52	0.67	1.05
	SE Otty Rd.	Alt. 1	1.11	0.35	0.20	0.94
		Alt. 2	0.86	0.32	0.22	0.77
		Alt. 3	0.88	0.32	0.22	0.78
		Pref. Alt.	0.86	0.32	0.22	0.77
			SB	NB	SB	NB
North/South	SE 82nd Ave.	Alt. 1	0.85	0.86	0.80	0.79
		Alt. 2	0.88	0.85	0.81	0.87
		Alt. 3	0.88	0.85	0.81	0.86
		Pref. Alt.	0.88	0.85	0.81	0.96
	I-205	Alt. 1	0.96	0.77	0.73	0.96
		Alt. 2	1.04	0.85	0.76	1.02
		Alt. 3	1.04	0.85	0.76	1.02
		Pref. Alt.	1.04	0.85	0.76	1.02
	SE 129th Ave.	Alt. 1	0.89	0.91	0.84	0.74
		Alt. 2	0.66	0.65	0.56	0.56
		Alt. 3	0.66	0.66	0.57	0.55
		Pref. Alt.	0.66	0.65	0.56	0.56
	SE 145th Ave.	Alt. 1	1.54	0.65	0.23	1.92
		Alt. 2	1.34	0.60	0.27	1.67
		Alt. 3	1.35	0.59	0.28	1.70
		Pref. Alt.	1.34	0.60	0.27	1.67
	SE 172nd Ave.	Alt. 1	1.10	0.86	0.75	1.19
		Alt. 2	1.03	0.95	0.85	1.09
		Alt. 3	1.04	0.95	0.85	1.10
		Pref. Alt.	1.03	0.95	0.85	1.09

Note: Numbers highlighted in Table 8 are v/c ratios that exceed 1.0, indicating a failing condition.

Changes in travel patterns

Alternative 1 would not change travel patterns, except indirectly, as people would try to avoid congested roads. Traffic eastbound on the Milwaukie Expressway heading to the Clackamas Industrial Area would continue to take I-205 southbound to the next exit at OR 212/224.

Both **Alternatives 2** and **3** address one of the needs for this project by eliminating the high volume and high-speed lane changes on I-205.

Under **Alternative 2**, the traffic from west of I-205 to the Clackamas Industrial Area would use the proposed Sunrise Project and its new connection via a midpoint interchange near SE 122nd Avenue, instead of OR 224 to OR 212/224. The midpoint connection would reduce the travel time from SE Johnson Road to SE 122nd Avenue by three minutes.

Under **Alternative 3**, OR 224 and southbound I-205 traffic patterns would be similar to those under **Alternative 1** to reach the industrial area along OR 212/224; however, weaving maneuvers would be eliminated by ramps that separate certain traffic routes. Therefore, a major distinction between the build alternatives is that **Alternative 3** would not provide access to the industrial area.

Building the Sunrise Project will change travel patterns on local roads, as discussed in the description of the alternatives in this FEIS under the heading "How New Connections Will Be Made" (Chapter 2). Figures 10 through 17 illustrate the changes to travel patterns. Rerouting trips from parallel roads could also create localized congestion where the Sunrise Project would link to the existing system, particularly at the end points near SE Johnson Road and Rock Creek Junction.

Preferred Alternative

The **Preferred Alternative** and **Alternative 2** change travel patterns in similar ways. However, the **Preferred Alternative** includes several important refinements that will enhance local access and mobility compared to **Alternative 2**.

The **Preferred Alternative** has three westbound lanes to provide more capacity in the transition to the Milwaukie Expressway and I-205. SE 82nd Drive and its intersection with OR 212/224 will have a dedicated westbound right-turn lane and all left turns will be restricted. To compensate for that restriction, opportunities for u-turns will be provided north and south of the intersection. Based on stakeholder input and traffic refinements, the following additions to the **Preferred Alternative** were made in the Rock Creek Junction area to provide for reasonable community access:

- A right-out-only access at the end of SE Orchard View Lane to northbound OR 224 will be created. **Alternative 2** had north SE Orchard View Lane as a cul-de-sac, with no access to/from OR 224.
- A connection between SE 162nd Avenue and SE Goosehollow Drive south of OR 212 will be created at the northeast corner of the Orchard Lake neighborhood.

Transit system

Transit improvements under **Alternative 1–No Build** would consist mostly of modest increases in service hours identified in the 2035 financially constrained RTP. Current regional plans identify SE Sunnyside Road as the primary east-west, high capacity transit route within the Sunrise Project area.

Alternatives 2 and **3** would provide additional transit service out to 2030 beyond what was contained in the 2035 financially constrained RTP. Identified enhancements include adding new local service from Happy Valley to the Springwater area, more frequent service between Damascus and Gresham, more frequent transit service between Clackamas Regional Center and Damascus via SE Sunnyside Road, and new express bus service along the proposed Sunrise Project between the Clackamas Transit Center and Damascus Town Center.

Preferred Alternative

The **Preferred Alternative** will provide the same transit service improvements as those identified for **Alternatives 2** and **3**. Because the **Preferred Alternative** also includes the third westbound lane along OR 224, transit reliability will be enhanced by improving overall westbound traffic flow.

Bicycle and pedestrian system

Under **Alternative 1**, the bicycle and pedestrian system would maintain the existing roadway system except for the planned roadway improvements by ODOT and Metro. Although the roadway widening projects for SE 82nd Drive and SE 172nd Avenue is directly related to the bicycle and pedestrian networks, it is likely that they would incorporate bicycle and pedestrian improvements for the benefit of cyclists and pedestrians.

Alternatives 2 and **3** have the same impact on bicyclists and pedestrians, improving walking and bicycling conditions over the existing and no build conditions. **Alternatives 2** and **3** provide better bicycle and pedestrian accommodation by improving connections to the existing I-205 trail system. These improvements include:

- Filling in the missing section of the I-205 multi-use path between SE 82nd Drive and SE Roots Road.
- Providing new multi-use path improvements that parallel the proposed Sunrise Project to the existing on-street facilities at SE 122nd Avenue.
- Providing potential connections to the neighborhood directly to the west of I-205.

Preferred Alternative

In addition to the bicycle and pedestrian facilities included in **Alternatives 2** and **3**, the **Preferred Alternative** will extend the Sunrise Project multi-use path from SE 122nd Avenue approximately two miles farther east to Rock Creek Junction.

I-205 Interchange Design Option A-2

Under **Alternatives 2** and **3**, the alignment of the proposed Sunrise Project would sever the connection of SE Lawnfield Road to SE 82nd Drive and eliminate the existing northbound on-ramp to I-205 at SE Lawnfield Road. To replace the loss of this on-ramp, a new North Lawnfield Extension is proposed to accommodate long-load trucks and help redirect Lawnfield area traffic away from the congested SE 82nd Drive corridor to the underutilized Sunnybrook Interchange area. **Design Option A-2** would replace the North Lawnfield Extension with a connection over the Union Pacific Railroad tracks between SE Industrial Way and SE 82nd Drive via SE Tolbert Street. This design option would also accommodate long-load trucks and enhance local access and circulation.

Preferred Alternative

In the I-205 Interchange area, the **Preferred Alternative** consists of **Alternative 2** with the addition of the Tolbert overcrossing from **Design Option A-2**. The Tolbert overcrossing will directly link the Lawnfield area and SE 82nd Drive corridor businesses. This improvement will allow drivers to avoid out-of-direction travel via OR 212/224 (in comparison to **Alternatives 2** and **3)**. Connecting the existing north and south sections of the I-205 multi-use path will provide a continuous and separated pathway, thus alleviating the need for users to transition to use of heavily traveled SE 82nd Drive.

The third westbound lane on OR 212/224 from I-205 to SE 98th Court will enhance westbound mobility by allowing users to better disperse among available travel lanes based on their destination. This improvement will reduce congestion-related queuing and improve travel times.

The **Preferred Alternative**'s western transition to the Milwaukie Expressway will be widened to three westbound lanes (in comparison to **Alternatives 2** and **3**) within the existing OR 224 right-of-way. The additional third lane will be

extended to the west through SE Webster Road and result in reduced congestion-related queuing and improved travel times and reliability. Additionally, the project will improve mobility and safety by closing SE Lake Road with a cul-de-sac at SE Johnson Road to address existing access spacing deficiencies at this location.

SE 82nd Drive and its intersection with OR 212/224 will be expanded to improve overall mobility and safety. Restricting all left turns at this intersection, providing u-turn opportunities through signalized intersections north and south of OR 212/224, and adding a raised median will substantially increase intersection capacity and reduce congestion-related queuing, and improve travel times along both corridors (see Table 9, Travel Times, on the following page).

Impacts of the Midpoint Interchange

Under **Alternative 2**, the midpoint interchange near SE 122nd Avenue would connect the proposed Sunrise Project to existing OR 212/224. The transportation impacts would be different between **Alternatives 2** and **3**.

A midpoint interchange would provide an important third point of access to and from the Clackamas Industrial Area. Approximately 1,600 trips per hour during peak times would be able to remain on the faster-moving proposed Sunrise Project and exit at the midpoint interchange. Under **Alternative 3**, traffic would have to use the I-205 and Rock Creek Junction interchanges and travel at lower speeds on OR 212/224 to reach destinations in the Midpoint area.

The aggregate travel time without a midpoint interchange would be slower for all trips. However, PM peak hour travel times along specific routes show a pronounced benefit. For example, eastbound trips along Milwaukie Expressway at SE Johnson Road destined to SE 122nd Avenue at OR 212/224 would take seven minutes to the midpoint interchange under **Alternative 2**. The same trips under **Alternative 3** would take about ten minutes via SE Johnson Road, SE 82nd Drive (through several traffic signals), before reaching OR 212/224 to SE 122nd Avenue.

Another example is comparing PM peak hour trips along southbound I-205 at SE Sunnyside Road destined to SE 122nd Avenue at OR 212/224. Under **Alternative 2**, these trips would exit I-205 directly onto a flyover ramp onto the proposed Sunrise Project and exit at the midpoint interchange in six minutes. Under **Alternative 3**, these trips would follow the current route along I-205 to OR 212/224, traveling to SE 122nd Avenue in nine minutes.

A third example relates to trips westbound from SE 172nd Avenue to SE 122nd Avenue at OR 212/224. Under **Alternative 2**, travel along the proposed Sunrise Project would exit at the midpoint interchange in six minutes. Under **Alternative 3**, the trips would exit at the Rock Creek Interchange, travel south to SE Goosehollow Drive, turn left onto a frontage road and double back to OR 212/224, turn left onto OR 212/224, and proceed to SE 122nd Avenue in 40 minutes.

The midpoint interchange would be a single diamond at SE 122nd Avenue (**Alternative 2**) or a split diamond that would disperse traffic on frontage roads between SE 122nd Avenue and SE 130th Avenue intersections to OR 212/224 (**Design Option B-2**). Traffic operations under both designs would be comparable, with little advantage from either interchange design in terms of traffic operations.

Preferred Alternative

In the Midpoint area, the **Preferred Alternative** consists of **Alternative 2**, the tight diamond interchange at SE 122nd Avenue with a connection to OR 212/224 at SE 122nd Avenue, and **Design Option C-2**, the southernmost alignment between the Midpoint and Rock Creek interchanges. The transportation benefits associated with having a midpoint interchange are the same as those summarized for **Alternative 2**.

Table 9. Travel Times Between Select Districts (Minutes, 2030)

	AM 2-hour Period				PM 2-hour Period			
	Alt. 1	Alt. 2	Alt. 3	Pref. Alt.	Alt. 1	Alt. 2	Alt. 3	Pref. Alt.
Damascus to Milwaukie	36.1	29.7	29.8	29.7	25.4	21.6	21.2	21.6
Damascus to Rock Creek Interchange Area	9.8	11.3	11.3	11.3	8.1	8.7	8.6	8.7
Mid-Clackamas Industrial Area to Milwaukie	22.3	19.8	21.5	19.8	16.1	14.5	15.2	14.5
Milwaukie to Damascus	22.8	18.8	18.7	18.8	35.1	28.1	28.3	28.1
Milwaukie to Mid-Clackamas Industrial Area	14.2	13.0	14.7	13.0	21.6	18.5	21.2	18.5
Rock Creek Interchange Area to Damascus	7.6	7.7	7.6	7.7	9.2	10.1	10.0	10.1

Note: Numbers in Table 9 are from the Metro travel demand model and are not directly comparable to the congestion influence diagrams on Figures 20 through 25.

In response to stakeholder input, the **Preferred Alternative** includes an extension of the Sunrise Project multi-use path from SE 122nd Avenue farther east along OR 212/224 to the Rock Creek Interchange. This will allow connection to existing and planned future trails near Rock Creek and accommodates trail users along a dedicated non-motorized pathway separated from automobiles.

Rock Creek Junction Design Options

Design options for either **Alternative 2** or **3** at Rock Creek Junction are folded diamond interchanges. **Design Option D-2** is a folded diamond. **Design Option D-3** is a single-point urban interchange (SPUI). The different interchange design would affect movements—left turns versus right turns—but not traffic demand. **Design Options D-2** and **D-3** would not create important negative or positive impacts to intersection operations. The SPUI would require less right-of-way than a folded diamond but would cost more to construct.

Preferred Alternative

In the Rock Creek Junction area, the **Preferred Alternative** consists of **Design Option D-3**, the SPUI. In addition, the eastern leg of the SE Goosehollow Drive/ OR 224 intersection will be closed to improve overall intersection capacity, operations, and safety. This closure will substantially increase intersection capacity and reduce congestion-related vehicle queuing along OR 224. The **Preferred Alternative** will provide reasonable alternative access into and out of the Orchard Lake neighborhood by providing:

- A right-out-only access at the end of SE Orchard View Lane to northbound OR 224.
- A connection between SE 162nd Avenue and SE Goosehollow Drive south of OR 212 at the northeast corner of the Orchard Lake neighborhood.

Consistency with Transportation Plans and Policies

Alternatives 1, 2, and 3

Alternative 1–No Build conflicts with the Metro 2035 RTP and the Clackamas County Comprehensive Plan, which identify the need for the proposed Sunrise Project as a regional highway facility and freight route. **Alternative 1** would not meet the freight movement goals for OR 212/224 in the Oregon Transportation Plan.

Alternatives 2 and **3** would meet the Oregon Transportation Plan goals for freight movement. **Alternatives 2** and **3** also comply with the RTP and the Clackamas County Comprehensive Plan, which identify the need for the proposed Sunrise Project as a regional highway facility and freight route.

Alternatives 2 and **3** would comply with the adopted East Happy Valley Comprehensive Plan and the Happy Valley Transportation System Plan.

Preferred Alternative

The **Preferred Alternative** is consistent with the adopted state, regional, and local plans and policies, as described above for **Alternatives 2** and **3**.

Mitigation Measures for the Preferred Alternative

Design Refinements

Several refinements were added to the **Preferred Alternative** to mitigate for predicted impacts that were not addressed by **Alternative 2** and the design options alone. These refinements are presented below.

To reduce queuing of westbound traffic that is otherwise predicted to occur from SE Webster Road to I-205, the western transition to the Milwaukie Expressway will have three westbound lanes instead of two and extend to the west through SE Webster Road.

A dedicated westbound right-turn lane will be added at SE 82nd Drive and OR 212/224.

SE 82nd Drive and its intersection with OR 212/224 will be expanded and circulation reconfigured to improve overall mobility. All left turns will be eliminated. To accommodate those restricted left turns, drivers will turn north or south at the intersection and make U-turns (including trucks) on SE 82nd Drive to head in the direction they intend.

SE 82nd Drive will be widened from three to five lanes between the Fred Meyer store and SE Clackamas Road and a new signal installed at the intersection of SE 82nd Drive and SE Clackamas Road for the U-turn movement there.

SE 162nd Avenue will be extended south of OR 212 to connect with SE Goosehollow Drive to mitigate the closure of SE Goosehollow Drive at OR 224.

A right-out (northbound) only exit from the Orchard Lake neighborhood on SE Orchard View Lane adds another access point to mitigate the closure of SE Goosehollow Drive at OR 224.

To avoid lengthy queues of westbound traffic on the Sunrise Project/OR 224 between the I-205 interchange and SE Webster Road, a third westbound lane will be added.

The intersection of SE Johnson Road and Deer Creek Lane will be revised by maintaining the existing intersection location and roadway alignments to minimize impacts to local businesses.

New frontage roads with driveways will be built for local businesses along OR 224 (south of Rock Creek Junction), near 125th Court, and near SE 82nd Drive. The frontage roads mitigate for closures or turning movement restrictions that will occur at those locations.

Bike and pedestrian access will be built between SE Adams and SE 82nd Drive to better accommodate the high demand of bicyclists and pedestrians accessing the post office from SE 82nd Drive.

A connection between SE Ambler Road and SE Jasmine Lane will be built on a structure over the rail corridor to improve circulation for businesses in that area. This allows for the businesses west of I-205 and east of SE 82nd Avenue to have access to their properties. Building the connection on a structure avoids impacting the rail corridor.

Cul-de-sacs constructed at several locations-Hubbard Road, SE 142nd Avenue, SE 162nd Avenue, and SE 82nd Drive-will become parts of new access roads and will mitigate either closure of existing accesses, or provide turn-around points due to closure of existing intersections or roadways.

A local circulation road will be constructed between SE Adams and SE St. Helens along SE

82nd Drive to mitigate for turning movement restrictions or closures of some driveways and intersections on SE 82nd Drive.

Traffic analysis will be conducted to determine if signal warrants will be met at SE 82nd Drive at SE Jannsen Road prior to construction.

Exceptions

While the **Preferred Alternative** provides the highest degree of capacity, access, and travel performance, some locations will not operate within ODOT's mobility standards (based on v/c ratio). Similar to **Alternatives 2** and **3**, specific design exceptions (albeit a smaller number of them) will be required by ODOT where the **Preferred Alternative** will not meet mobility standards. ODOT has the list of likely design exceptions and FHWA and ODOT would need to approve any design exceptions.

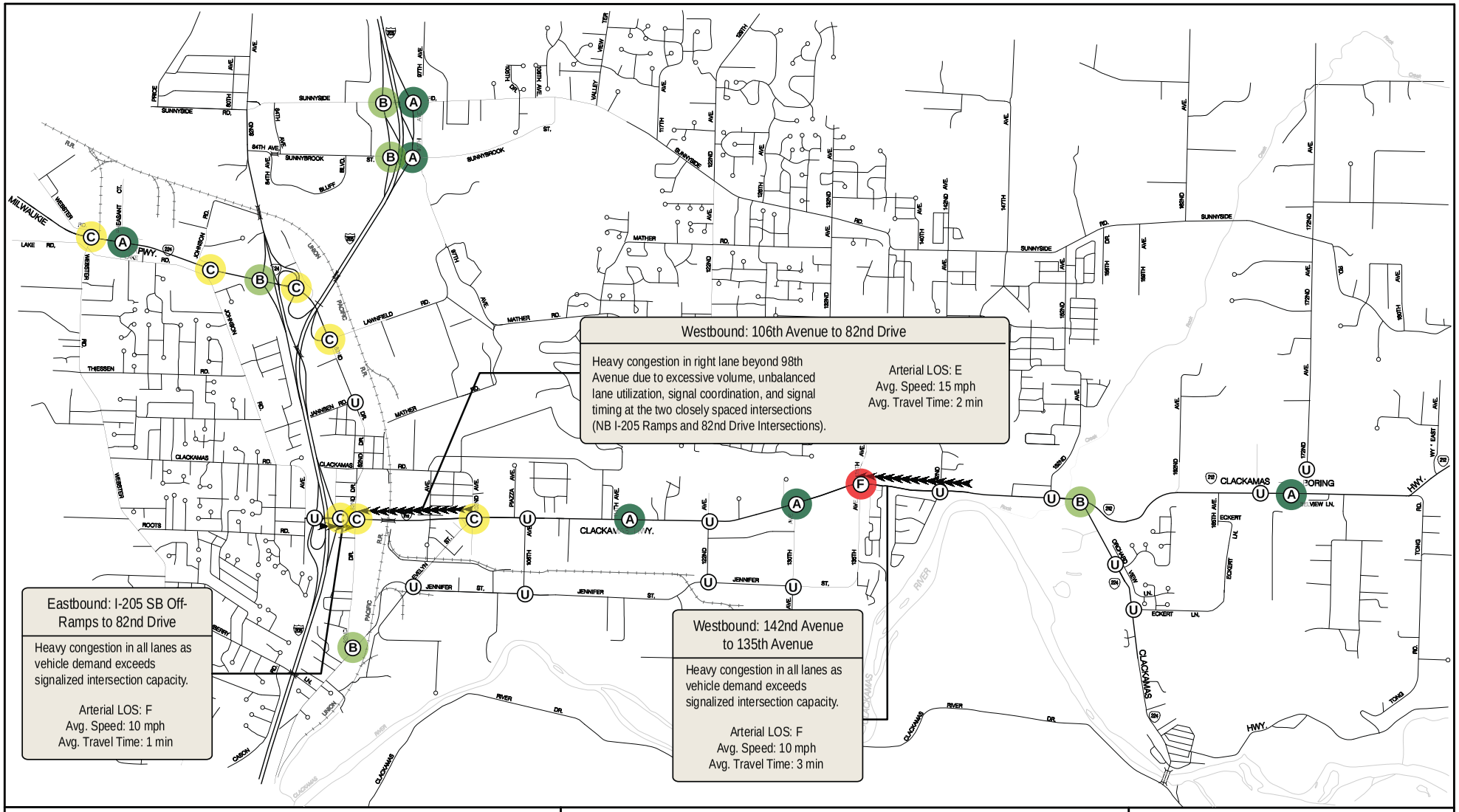
The established ODOT design exception process followed during the planning/EIS-level stage of project development entails informal coordination with ODOT Technical Services Division (Salem), and FHWA staff (as appropriate). The emphasis at this stage of planning and preliminary design (5-25 percent-complete engineering) is primarily intended to identify potential constraints (topographic, avoidance of environmental resources, etc.), related to issues of geometry and safety, that may require a future design exception.

This process entails the following steps:

- ODOT project designers identify a package of possible/potential design exceptions;
- The package of potential design exceptions is submitted to Technical Services Division for discussion;
- ODOT Technical Services Division staff may discuss selected design exceptions with FHWA for further informal discussion; and
- The package of potential design exceptions is on file at ODOT Region 1 for later review during project development.

The package of potential design exceptions has been reviewed by Ed Fischer, State Traffic Roadway Engineer, and selected design exceptions discussed informally with FHWA (Jeff Graham).

Mobility exceptions are a function of operational performance (volume/capacity ratio, queuing, delay, etc.) of the new facility and its interface with existing roadway network. The project team has identified a number of mobility exceptions associated with the Sunrise Project—on the Sunrise Project and adjacent, existing facilities. The mobility exceptions are identified in Appendix N of the Transportation Technical Report.



LEGEND:

- Congested Travel Direction
- Secondary Congestion
- Unsignalized Intersection

Signalized Intersection Level of Service (LOS): A B C D E F

Figure 18

Existing Congestion (2004)
7:00 - 8:00 AM

Sunrise Project, I-205 to Rock Creek Junction