

US 26: Brookwood Parkway/ Helvetia Road

Interchange Area Management Plan

Hillsboro and Washington County, Oregon



Prepared by:



Prepared for:

Oregon Department of
Transportation



September 2012

Adopted October 17, 2012

US 26: Brookwood Parkway/ Helvetia Road

Interchange Area Management Plan

Hillsboro and Washington County, Oregon

Acknowledgments

Project Advisory Committee (PAC)

Robert Bailey, Helvetia Committee Association
Stone Rose, Meek Neighborhood
Deanne Palm, Hillsboro Chamber of Commerce
Tom Waldron, Brookwood area bicyclist
Andrew Jones, Jacobson Road (Pac Trust)
Don Odermott, City of Hillsboro
Blair Crumpacker, Washington County (retired)
Steve L. Kelley, Washington County
Tim Wilson, ODOT

Project Policy Group (PPG)

Andrew Singelakis, Washington County Director
Land Use and Transportation
Pat Ribellia, City of Hillsboro Planning Director
Andy Johnson, ODOT Region 1 Major Projects
Manager

Project Management Team (PMT)

Washington County Land Use and Transportation
Gary Stockhoff, Capital Project Management
County Engineer
Blair Crumpacker (retired), Transportation
Planning Senior Planner
Steve L. Kelley, Transportation Planning Senior
Planner
City of Hillsboro
Don Odermott, Transportation Planning
Engineer
Oregon Department of Transportation, Region 1
Andy Johnson, Major Projects Manager
Tim Wilson, Senior Transportation Planner
Seth Brumley, Associate Planner
Lili Boicourt, Community Affairs Coordinator
Consultants
Ryan LeProwse, David Evans and Associates, Inc.
Scott Harmon, David Evans and Associates, Inc.
Stacy Thomas, JLA Public Involvement

September 2012

**Adopted by
the Oregon
Transportation
Commission**

October 17, 2012

LIST OF ACRONYMS

ADT	Average Daily Traffic
EBR	Shute Road Interchange Improvement Project Environmental Baseline Report
IAMP	Interchange Area Management Plan
JTA	Jobs and Transportation Act
LOS	Level of Service
MOU	Memorandum of Understanding
MP	Mile Point
OAR	Oregon Administrative Rules
ODOT	Oregon Department of Transportation
OHP	Oregon Highway Plan
PAC	Project Advisory Committee
PMT	Project Management Team
PPG	Project Policy Group
RTP	Regional Transportation Plan
TDM	Transportation Demand Management
TSM	Transportation System Management
TSP	Transportation System Plan
UGB	Urban Growth Boundary
v/c	volume-to-capacity

TABLE OF CONTENTS

INTRODUCTION 1

 BACKGROUND 1

 PURPOSE 1

 PROBLEM STATEMENT 1

 COORDINATION WITH LOCAL JURISDICTIONS..... 2

Jobs and Transportation Act Project 2

ODOT, Washington County, City of Hillsboro Coordination 3

 IAMP GOALS AND PRIORITIES 3

 IAMP STUDY AREA AND INTERCHANGE MANAGEMENT AREA 3

IAMP Study Area 3

Interchange Management Area 3

 COMMITTEE STRUCTURE/PUBLIC INPUT..... 4

Decision-Making..... 4

 PUBLIC INVOLVEMENT 5

EXISTING CONDITIONS 7

 LAND USE ANALYSIS 7

 NATURAL AND CULTURAL RESOURCES ANALYSIS 8

 TRANSPORTATION ANALYSIS 8

Traffic Volumes..... 8

Traffic Operations..... 8

Intersection Operations..... 8

Freeway Operations 11

Safety..... 11

Bicycle and Pedestrian Facilities..... 13

FUTURE CONDITIONS 14

 FUTURE 2035 BASELINE CONDITIONS (NO BUILD) 14

 FUTURE LAND USE 14

Transportation Network 15

Traffic Volumes..... 15

Intersection Operations..... 16

Queuing 17

Freeway Operations 17

Safety and Access Management Deficiencies 17

 FUTURE 2035 BUILD CONDITIONS 18

Land Use..... 18

Transportation Network..... 18

Traffic Volumes..... 21

Intersection Operations..... 21

Operational Justification for Improvements that Support the JTA 24

Queuing 25

Freeway Operations 26

Safety..... 26

Bicycle and Pedestrian Facilities..... 26

INTERCHANGE AREA MANAGEMENT PLAN..... 28

 INTERCHANGE FUNCTION AND CLASSIFICATION 28

LAND USE ASSUMPTIONS	28
PRIORITIZED TRANSPORTATION AND CIRCULATION IMPROVEMENT PROJECTS	29
<i>Prioritization Process</i>	29
<i>Tier 1 Projects</i>	31
<i>Tier 2 Projects</i>	32
<i>Tier 3 Projects</i>	32
TRANSPORTATION DEMAND MANAGEMENT MEASURES	33
TRANSPORTATION SYSTEM MANAGEMENT MEASURES	33
ACCESS MANAGEMENT	34
IAMP IMPLEMENTATION	35
<i>ODOT Management Actions</i>	35
<i>City of Hillsboro Management Actions</i>	35
<i>Washington County Management Actions</i>	36
<i>Future Interchange Design and Land Use Changes</i>	37

APPENDICES

- Appendix A: Plan and Policy Findings of Compliance
- Appendix B: Technical Memorandum #2: Existing Conditions Analysis
- Appendix C: Technical Memorandum #3: Future 2035 Baseline Conditions (No Build)
- Appendix D: Technical Memorandum #4: Future 2035 Build Conditions
- Appendix E: JTA Traffic Analysis
- Appendix F: JTA Project Environmental Baseline Report

LIST OF TABLES

TABLE 1. ACRES BY ZONING DESIGNATION IN THE IAMP STUDY AREA AND INTERCHANGE MANAGEMENT AREA	7
TABLE 2. 2011 EXISTING INTERSECTIONS WHERE OPERATIONAL STANDARDS ARE EXCEEDED ¹	11
TABLE 3. HOUSEHOLDS AND EMPLOYMENT FOR BASE YEAR 2010 AND FUTURE YEAR 2035.....	14
TABLE 4. 2035 BASELINE INTERSECTIONS WHERE OPERATIONAL STANDARDS ARE NOT MET ¹	20
TABLE 5: 2035 BASELINE INTERSECTIONS WITH QUEUE SPILLBACK	17
TABLE 6. 2035 BUILD INTERSECTIONS WHERE OPERATIONAL STANDARDS ARE NOT MET ¹	23
TABLE 7. 2035 BUILD INTERSECTIONS WITH QUEUE SPILLBACK	25
TABLE 8. PROPOSED IAMP IMPROVEMENT PROJECTS	30
TABLE 9. GROVELAND DRIVE REALIGNMENT OPTIONS CONSIDERED AND REJECTED	32

LIST OF FIGURES

FIGURE 1. VICINITY MAP.....	2
FIGURE 2. IAMP STUDY AREA AND INTERCHANGE MANAGEMENT AREA.....	4
FIGURE 3. COMMITTEE STRUCTURE AND DECISION-MAKING PROCESS.....	6
FIGURE 4. CITY/COUNTY GENERALIZED ZONING DESIGNATIONS	7
FIGURE 5. 2011 EXISTING PEAK HOUR INTERSECTION OPERATIONS	9
FIGURE 6. NON-FREEWAY STUDY AREA CRASH TYPE AND SEVERITY FROM 2008 TO 2010.....	12
FIGURE 7. FREEWAY STUDY AREA CRASH TYPE AND SEVERITY FROM 2008 TO 2010.....	13
FIGURE 8. FUTURE PLANNING AND DEVELOPMENT AREAS	15
FIGURE 9. 2035 BASELINE PEAK HOUR INTERSECTION OPERATIONS, 2035 NO BUILD	16
FIGURE 10. JTA PROJECT MAP	19
FIGURE 11. JTA CROSS SECTION	20
FIGURE 12. 2035 BROOKWOOD LOCAL CIRCULATION NETWORK	21
FIGURE 13. 2035 BUILD PEAK HOUR INTERSECTION OPERATIONS.....	22
FIGURE 14. PROPOSED IAMP IMPROVEMENT PROJECTS.....	31
FIGURE 15. ACCESS CONTROL.....	34

This page intentionally left blank.

INTRODUCTION

BACKGROUND

Oregon Department of Transportation (ODOT) is modifying the US 26: Brookwood Parkway/Helvetia Road interchange as part of the US 26: Brookwood Parkway/Helvetia Interchange Jobs and Transportation Act (JTA) Project. Oregon Administrative Rule (OAR) 734-051 and the Oregon Highway Plan (OHP) require preparation of an Interchange Area Management Plan (IAMP) for a new interchange and recommend it for major modifications to an existing interchange. The JTA Project modifications to the interchange are costly, and the purpose of this IAMP is to protect the interests of the state, local governments, and their citizens to ensure that the interchange functions through the planning horizon year of 2035 as it is currently being designed.

US 26 is a freight route linking Portland to Washington County and the Oregon coast. It is an important transportation corridor for the regional economy and is a primary lifeline and tourist route for coastal communities (see **Figure 1**, Vicinity Map). US 26 is locally and regionally significant in moving people, goods, and services through North Hillsboro and throughout the metropolitan region and the state.

The Brookwood interchange has been, and will continue to serve as, a major entry point to large high-tech employment centers based throughout North Hillsboro. The interchange is a critical access point, currently serving the mobility needs of 25,000 employees of the high-tech companies and expected to serve the future expansion of these high-tech companies as well as new companies that locate within North Hillsboro properties added to the regional Urban Growth Boundary (UGB) in the future. The interchange serves employee commute trips and truck freight traffic generated by raw material supply and finished product distribution

associated with the major industries in North Hillsboro.

PURPOSE

The purpose of the IAMP is to:

- Support the US 26: Brookwood Parkway/Helvetia Interchange JTA Project
- Support the ongoing and future City of Hillsboro and Washington County transportation, land use, and economic development planning efforts in and around the study area described below (North Hillsboro); and
- Protect the future function of the interchange.

PROBLEM STATEMENT

The US 26: Brookwood Parkway/Helvetia Road interchange is configured as a standard diamond with traffic signals at both ramp junctions. The interchange is currently approaching or exceeding the mobility standards identified in the OHP for this facility. The heavy westbound off-ramp traffic during the AM peak hour heading southbound and the corresponding northbound-to-eastbound movement in the PM peak hour are of primary concern. These heavy flows have a detrimental effect on traffic operations on the US 26 mainline, the surface arterial roadways near the interchange, and the expansion of current and future businesses (and jobs) in the surrounding area that depend on adequate interchange traffic capacity.

Local road connections to Brookwood Parkway and Helvetia Road near the interchange do not meet OHP access spacing standards, and the proximity of the local road connections to the interchange make local road access difficult and contribute to traffic congestion at and near the interchange during peak travel times. Traffic at the US 26: Brookwood Parkway/Helvetia Road interchange is projected to increase as new industrial development is attracted to North Hillsboro.

Figure 1. Vicinity Map



On October 20, 2011, the Metro Council approved modest expansions to the region’s UGB in four areas. One of the four areas is a 330-acre area north of Hillsboro, in the vicinity of the US 26: Brookwood Parkway/Helvetia Road interchange, for the purposes of attracting future large-site industrial employers. The 330-acre expansion in North Hillsboro, located southwest of the interchange, will add additional traffic at the interchange (see **Figure 2**).

COORDINATION WITH LOCAL JURISDICTIONS

JOBS AND TRANSPORTATION ACT PROJECT

The Oregon JTA of 2009 appropriated \$45,000,000 for ODOT to design and construct needed improvements to the interchange to address existing operation and safety issues and to address anticipated future travel demand in North Hillsboro. The JTA-funded interchange improvement project includes:

- Design and construction of a westbound-to-southbound loop ramp on US 26 at Brookwood Parkway;
- Design and reconstruction of the westbound entrance ramp to US 26;
- Design and construction of intersection and storage improvements for the US 26 eastbound entrance ramp;
- Design and construction of improved bicycle and pedestrian facilities and an additional travel lane southbound across the Brookwood/Helvetia overcrossing of US 26; and
- Allocation of excess JTA funding to Washington County and the City of Hillsboro to design and construct local road improvements in the immediate vicinity to support access to and from the interchange.

ODOT, WASHINGTON COUNTY, CITY OF HILLSBORO COORDINATION

ODOT, Washington County, and the City of Hillsboro formed a cooperative partnership to guide the preparation of the IAMP. The formation of this interagency partnership included the development and approval of a Memorandum of Understanding and a Partnering Agreement detailed below.

MEMORANDUM OF UNDERSTANDING

The project partners are ODOT Region 1, Washington County, and the City of Hillsboro (the Partners). The Partners developed a Memorandum of Understanding (MOU—August 5, 2010) to jointly agree on the need to address necessary improvements to the interchange itself within the proposed JTA Project budget. The MOU memorializes the intentions of the Partners for their collaborative work on the JTA Project. The MOU identifies needed improvements that were developed through previous planning work conducted by the City of Hillsboro, as well as traffic analysis of the interchange and the other connected roadways. The MOU states that the Partners would participate jointly in the planning, the environmental permitting process, construction oversight for the project improvements, and the development of the IAMP, before ODOT transfers money to the city or county for associated local street system improvements in the interchange vicinity.

PARTNERING AGREEMENT

The Partners signed a Partnering Agreement on December 16, 2010. It establishes the JTA and IAMP terms, tasks, priorities, boundaries, phases, roles and responsibilities, and communication protocols.

IAMP GOALS AND PRIORITIES

The goals state the intentions of the Partners for operations in the management area (defined below). Based on the purpose and the problem statement, the goals of the IAMP are to:

- Support the ongoing and future City of Hillsboro and Washington County transportation, land use, and economic development planning efforts in and around the study area; and
- Protect the future function of the interchange.

The IAMP priorities include safety and capacity improvements that:

- Maintain or improve safety and operations at the US 26 interchange, and at other facilities in the vicinity of the interchange area;
- Identify and address the interchange operation needs associated with current and future industrial land designated in the existing adopted comprehensive plan, to the extent feasible;
- Develop a local street network that provides for local connectivity and helps minimize the need for local travel using or traveling through the interchange; and
- Identify facilities for adequate bicycle and pedestrian circulation in the area.

IAMP STUDY AREA AND INTERCHANGE MANAGEMENT AREA

IAMP STUDY AREA

The IAMP Study Area includes a section of the US 26 corridor and the accompanying local road networks serving North Hillsboro, including land encompassed by Cornelius Pass Road (at US 26 mile point [MP] 62.53) on the east, Evergreen Road on the south, Jackson School Road (at US 26 MP 58.42) on the west, and West Union Road on the north, as shown in **Figure 2**. Existing and planned land uses and activities within the IAMP Study Area inform the IAMP planning process.

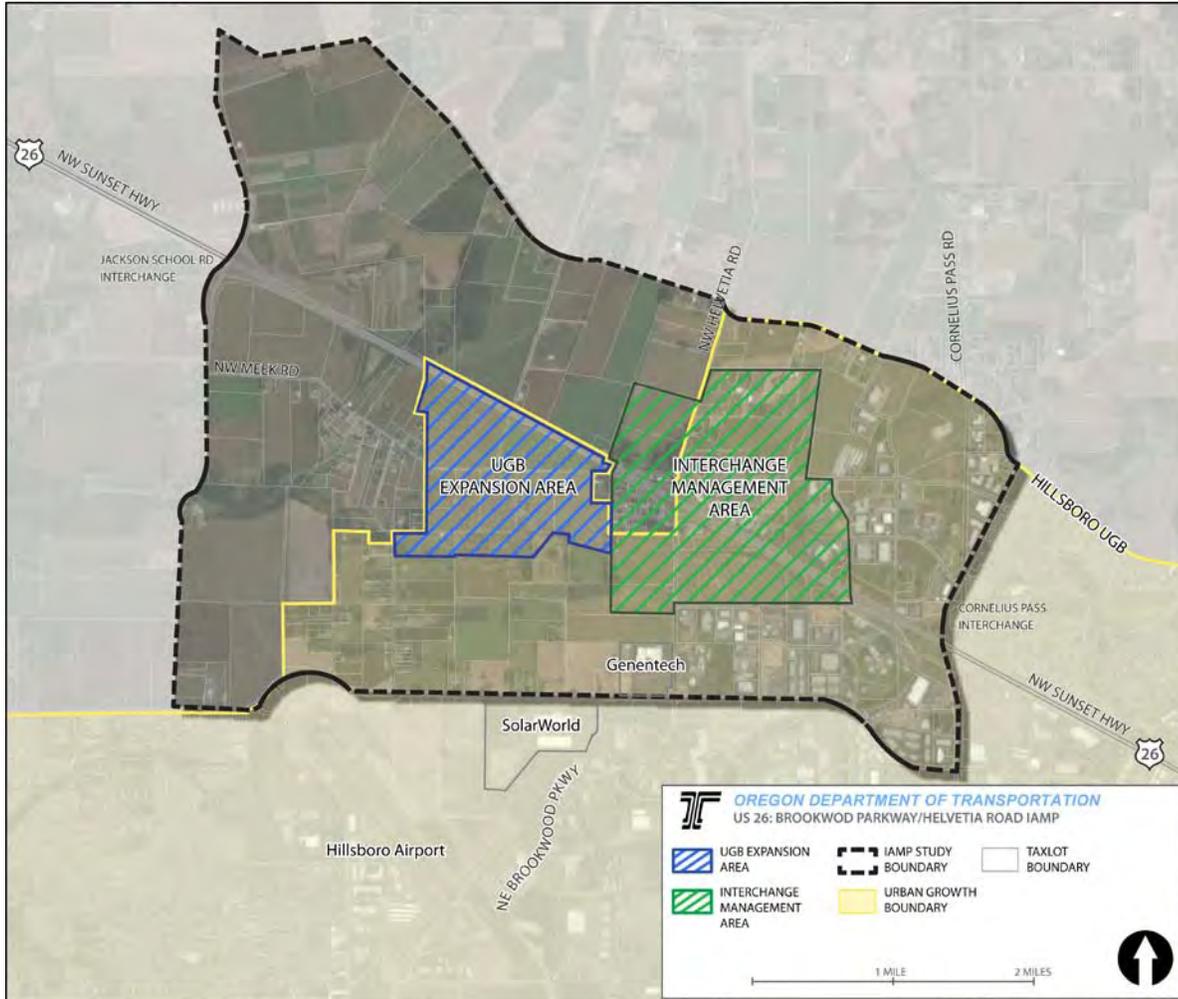
INTERCHANGE MANAGEMENT AREA

The Interchange Management Area, also delineated in **Figure 2**, includes the land within 1,320 feet to the north and south of the interchange ramp terminals, extending beyond Schaaf Road to the

north and beyond Huffman Road to the south. To the east and west of the interchange, this Interchange Management Area includes land that may be affected by realignment of an existing

facility or planned construction of a new facility. Land that is within the IAMP Study Area but is not within the Interchange Management Area boundary is not subject to the provisions in the IAMP.

Figure 2. IAMP Study Area and Interchange Management Area



COMMITTEE STRUCTURE/PUBLIC INPUT

This section summarizes the decision-making process and public involvement used during the development of the IAMP. Project committees guided the process and provided important policy, community, and technical feedback through the project.

DECISION-MAKING

The decision-making process involved three groups: the Project Management Team (PMT), Project

Advisory Committee (PAC), and the Project Policy Group (PPG). The PAC provided input to the PMT, and the PMT provided final recommendations to the PPG for decisions regarding the IAMP (see **Figure 3**).

PROJECT MANAGEMENT TEAM (PMT)

Lead staff from ODOT, Washington County, City of Hillsboro, and the consultant team comprised the project team (PMT). The PMT provided day-to-day project oversight, administration, and management and was responsible for facilitating the PAC.

PROJECT POLICY GROUP (PPG)

The PPG was comprised of senior agency management staff for the project.

PROJECT ADVISORY COMMITTEE (PAC)

The Project Advisory Committee (PAC) was created to guide the IAMP process and provide important policy, community, and technical feedback throughout the project. The PAC was composed of technical staff from partner jurisdictions and community stakeholder representatives. Members were strategically selected to represent the interests of all of the Partners in the IAMP and to provide a venue for representatives of the public to follow and contribute to the development of the plan. PAC members included one representative each from the Helvetia Community Association, Meek Neighborhood, Hillsboro Chamber of Commerce, Brookwood area bicyclists, Jacobson Road (Pac Trust), City of Hillsboro, and Washington County, and the ODOT project manager. The purpose of the committee was to ensure that technically viable solutions are also responsive to community needs. PAC members, PMT members, PPG members, and members of the public attended the PAC meetings. PAC duties include:

- Providing technical recommendations to the PMT concerning IAMP strategy, assumptions, and land use and transportation proposals in coordination with pertinent county and city plans and programs;
- Reviewing consultant deliverables;
- Advising the PMT on community concerns and issues;
- Serving as liaisons to constituents and representing the community as a whole; and
- Building interjurisdictional consensus by communicating with jurisdictional and agency partners to ensure issues are identified and addressed early.

PUBLIC INVOLVEMENT

Interviews, public meetings, and briefings were held with neighbors, business interests, and local community organizations. Informational materials—newsletters, the project website, and a press release—provided project updates to the general public.

OPEN HOUSES

Two events were held to share information and invite feedback from the general public. The first was held January 17, 2012, at Liberty High School in Hillsboro, Oregon. Forty-nine (49) people signed in to the event. The second event was held June 25, 2012 at the Hillsboro Civic Center. Twenty-three (23) people signed in. Information handouts and comment cards were made available.

At both open house events; project information was shared, and PMT staff engaged participants in discussion and answered their questions. A comment form was used at each open house as the primary tool for recording the feedback received. Feedback received was recorded in an open house summary and shared with the PAC.

PUBLIC OUTREACH

Two key methods were used to reach the interested public in and around the study area. The community received project updates and an invitation to the two project open houses through two project newsletters. Each newsletter was mailed to approximately 3,100 addresses in an area surrounding the interchange and posted on the project website approximately two weeks before each open house. Newsletters included names, titles, and contact information for PMT staff. In addition to the project newsletters, email notifications were sent. The list included individuals who had expressed interest in the project, legislators, emergency service providers, local businesses, organizations, and members of the PAC.

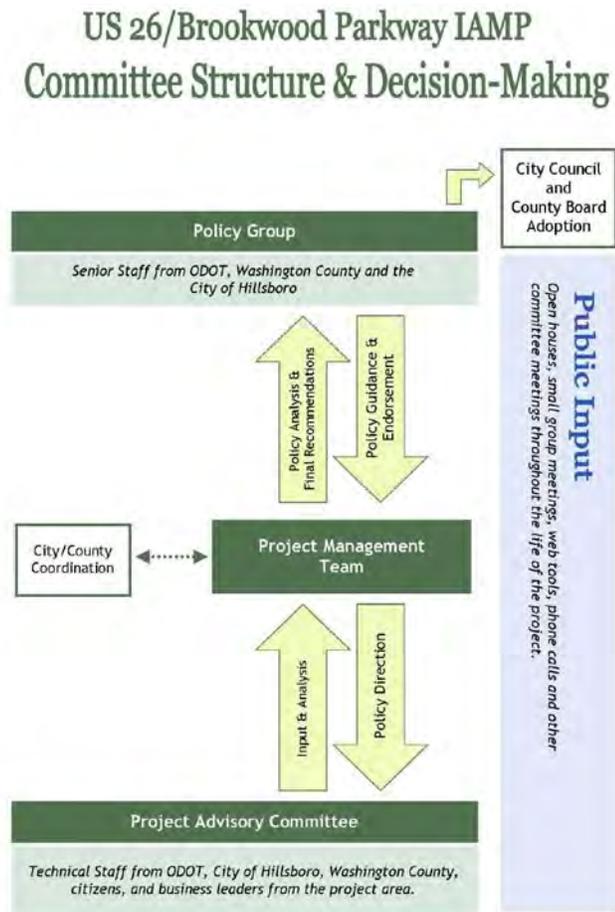
PROJECT WEBSITE

The project website was developed and made publicly available early in the process. It was the central location for project information and served as a resource for the public and PAC members. The site included a project description, maps, project schedule, open house materials, and PAC materials. The project website also advertised the open houses on its home page (www.oregon.gov/odot/hwy/region1/us26_brookwoodpkwy).

PRESS RELEASE

A press release was sent to media contacts through ODOT’s Region 1 office before each event.

Figure 3. Committee Structure and Decision-Making Process



EXISTING CONDITIONS

LAND USE ANALYSIS

The US 26: Brookwood Parkway/Helvetia Road interchange is located within both the City of Hillsboro and Washington County jurisdictional boundaries. **Figure 4** shows the city/county generalized zoning designations. The figure also shows the city/county boundary and the UGB.

The IAMP Study Area represents the western developed edge of the Portland Metropolitan area, with large areas of farmland mostly to the west, and is adjacent to industrial areas and residential development to the east. The interchange is a critical access point, serving the mobility needs for high-tech and supporting companies located both inside and outside of the IAMP Study Area, including Intel, Genentech, SolarWorld, TriQuint Semiconductor, Tokai Carbon USA, and Tokyo Ohka Kogyo America (TOK America). Hillsboro Airport, Oregon's second busiest airport, is just south of the IAMP Study Area. Major community features include the Rice Northwest Museum of Rocks and Minerals (on the National Register of Historic Places), West Union Elementary School, Liberty High School, Oregon Department of Environmental Quality Sunset/Hillsboro Vehicle Emission Testing Station, the Gordon Faber Recreation Complex west of Cornelius Pass Road, and the Hillsboro Public Library.

The northwest quadrant of the IAMP Study Area is within Washington County jurisdiction. The portion of the southwest quadrant of the IAMP Study Area within Washington County jurisdictional boundaries consists of rural residential uses and rural agricultural uses and is zoned Exclusive Farm Use and Agriculture and Forest. The portion of the southwest quadrant within the City of Hillsboro is undeveloped and used for agricultural uses, except for the 75-acre parcel that is owned by Genentech Incorporated and that is zoned Industrial. The northeast quadrant of the IAMP Study Area is within the City of Hillsboro and is mostly commercial/industrial uses. Land use designations in this northeast quadrant are mostly industrial,

with a band of floodplain designation for Waibel Creek. The southeast corner of the IAMP Study Area is within the City of Hillsboro and has agricultural and commercial/industrial uses interspersed with a few smaller, undeveloped parcels. Designations include floodplain and industrial. The City of Hillsboro has also implemented a Significant Natural Resource Overlay to protect natural resources located along portions of the floodplains in the area. **Table 1** shows acreage within the IAMP Study Area by designation.

The IAMP Study Area covers a total of 4,770 acres under the land use jurisdictions of Washington County and the City of Hillsboro. Washington County has responsibility for 68 percent of the land area and is zoned EFU (Exclusive Farm Use) and rural residential uses. Hillsboro has land use authority for the remaining 32 percent of the land area located in the eastern portion of the IAMP Study Area. Only 2 percent of the land within the existing city limits is designated for commercial or residential use—98 percent is designated industrial.

Figure 4. City/County Generalized Zoning Designations

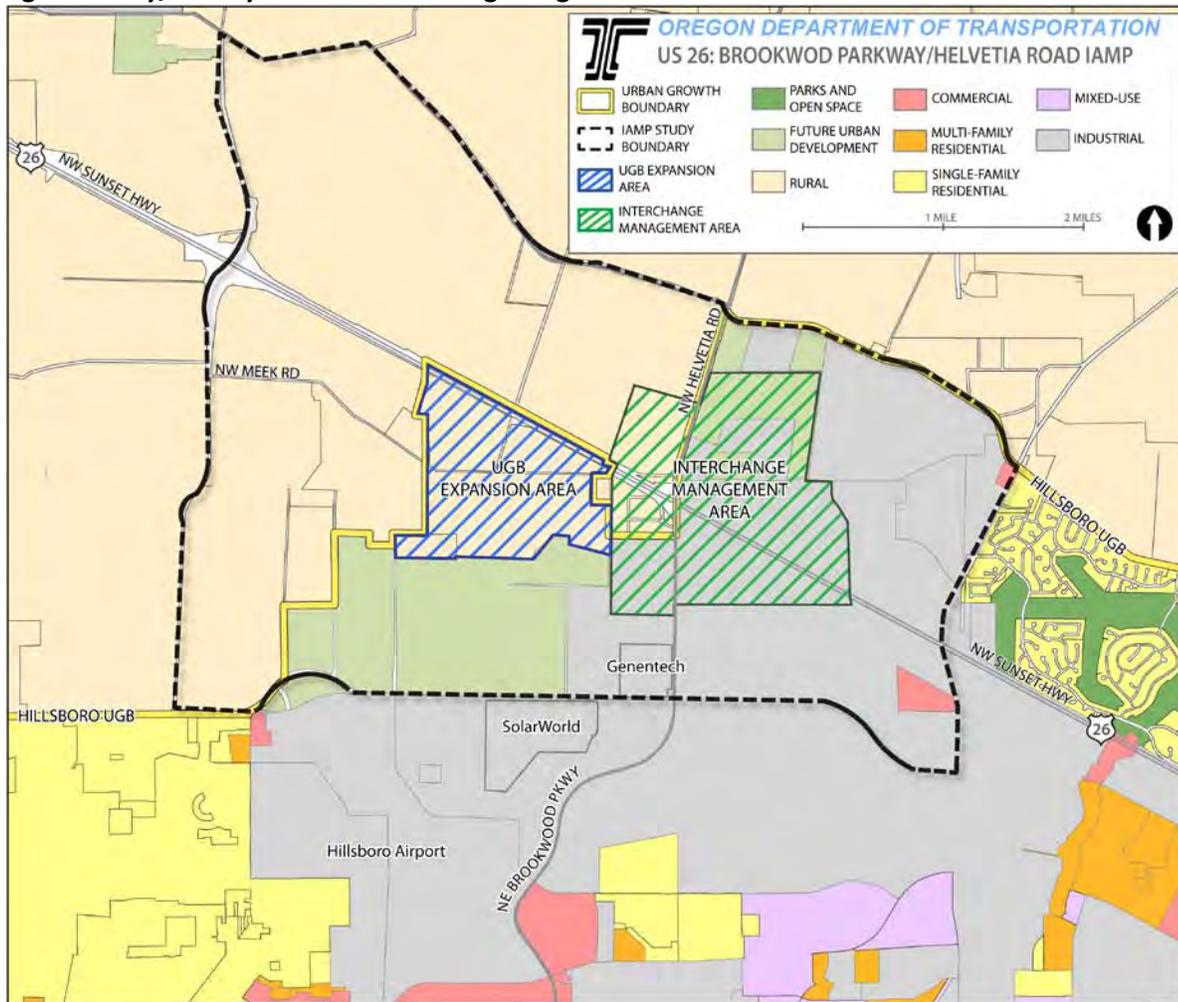


Table 1. Acres by Zoning Designation in the IAMP Study Area and Interchange Management Area

Zoning	Acres			
	Study Area	%Study Area	Mgt Area	%Mgt Area
Hillsboro				
Commercial	27.3	1%	0.0	0%
Industrial	1,484.5	30%	430.5	66%
Single Family Residential	2.7	0%	0.0	0%
SUBTOTAL	1514.5		430.5	
Washington County				
Rural	2,609.7	55%	109.0	17%
Future Urban Development	645.4	14%	111.6	17%
Industrial	0.6	0%	0.0	0%
SUBTOTAL	3255.7		220.6	
TOTAL	4770.2	100%	651.1	100%

NATURAL AND CULTURAL RESOURCES ANALYSIS

Natural and cultural resources were identified for the IAMP using multiple sources, in particular, the Shute Road Interchange Improvement Project Environmental Baseline Report (EBR) (MB&G 2010). Although the EBR focused on an Area of Potential Influence (API) that was different from the IAMP Study Area, the areas overlap, and information common to both is included in this IAMP in this section. The EBR API included more area to the west and south than the IAMP Study Area, as well as a long, narrow corridor along US 26.

The EBR identified three general vegetation communities in the API that were within the IAMP Study Area: riparian forest/wetland fringe along the McKay Creek unnamed tributaries, oak woodland adjacent to Helvetia Road, and disturbed/maintained grassland/highway right-of-way adjacent to the highway facilities.

The summary of natural and cultural resources in the IAMP Study Area is contained in Technical Memorandum #2, in **Appendix B**. Resources identified are floodplains and floodways, Goal 5 resources, wetlands, plant and wildlife species, hazardous materials, historic resources, archaeological resources, Section 4(f) resources (public parks and historic sites), and Section 6(f) resources (Land and Water Conservation Fund sites).

This environmental and cultural resource baseline report was prepared by ODOT specifically to support the JTA-funded US 26: Brookwood Parkway/Helvetia Road interchange improvement project. The EBR is being utilized by the design team to avoid and/or mitigate adverse impacts to significant resources at and near the interchange. In the future, Washington County and the City of Hillsboro will perform additional environmental and cultural resource baseline work for transportation projects within the IAMP Study Area.

TRANSPORTATION ANALYSIS

The existing conditions transportation analysis summarizes traffic volumes, operations, and safety issues, and discusses bicycle/pedestrian facilities. The transportation analysis focused primarily on the Interchange Management Area near the interchange and, to a lesser extent, on the broader IAMP Study Area. After adoption of this IAMP, Washington County and the City of Hillsboro will conduct more detailed traffic analysis work in the IAMP Study Area as they update their local TSPs.

TRAFFIC VOLUMES

Traffic volume data was collected at 39 intersections and five 24-hour classification count locations within the IAMP Study Area. The common peak hour for the intersections was 7:30 to 8:30 AM and 4:45 to 5:45 PM. The peak hour at each intersection may not correspond to the common peak hour, but all individual peak hours generally overlap within at least a portion of the common peak hour. **Figure 5** illustrates the IAMP Study Area intersections.

TRAFFIC OPERATIONS

The two methods used to measure traffic operations of roadways and intersections are volume-to-capacity (v/c) ratio and level of service (LOS). When the v/c ratio is closer to zero, traffic conditions are generally good, with little congestion and low delays for most intersection movements. As the v/c ratio approaches 1.00, traffic becomes more congested and unstable, with longer delays. Six LOS standards have been established, ranging from LOS A, where there is little or no delay, to LOS F, where there is delay of more than 50 seconds at unsignalized intersections, or more than 80 seconds at signalized intersections.

INTERSECTION OPERATIONS

Traffic operations were evaluated at all 39 IAMP Study Area intersections during the PM peak hour and at the 15 key AM peak hour intersections.

Figure 5 illustrates the IAMP Study Area intersections. Intersections highlighted in red are the intersections that are failing to meet operational standards in the AM and/or PM peak hour.

Table 2 summarizes the intersections that exceed operational standards for ODOT, the City of Hillsboro, or Washington County.

Figure 5. 2011 Existing Peak Hour Intersection Operations

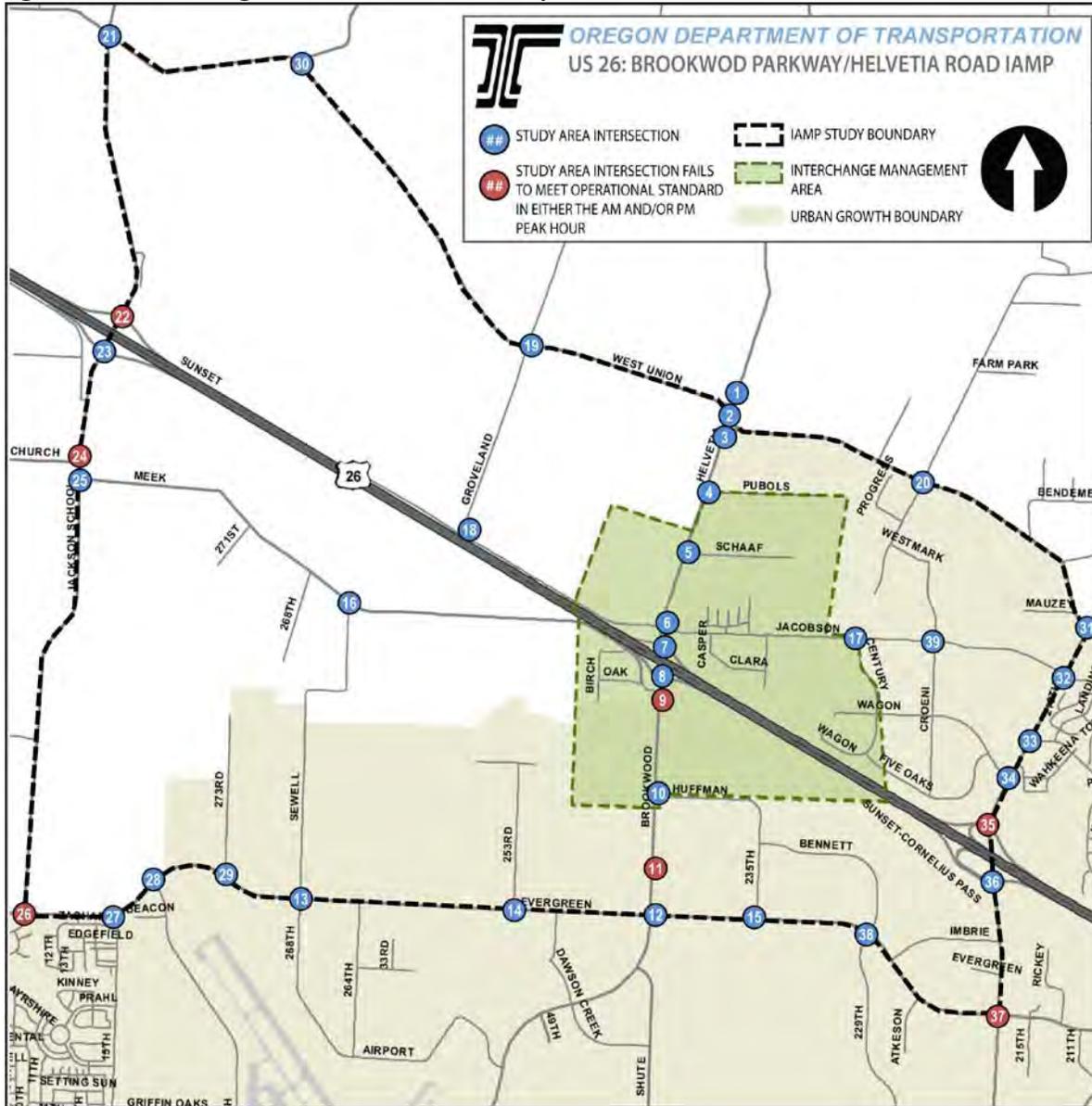


Table 2. 2011 Existing Intersections Where Operational Standards Are Exceeded¹

Intersection	Critical Movement ² AM (PM)	AM		PM		Jurisdiction Where Operational Standard Not Met ³	
		V/C Ratio	LOS	V/C Ratio	LOS		
Interchange Management Area							
9	Brookwood Pkwy @ Meek Rd	EB L/T/R (EB L/T/R)	>1.0	F	0.33	F	All
IAMP Study Area							
22	Jackson School Rd @ US26 WB Ramps	(WB L/T)	0.63	C	0.98	F	All
24	Jackson School Rd @ Scotch Church Rd	(EB L/R)	Not analyzed in AM Peak Hour		0.83	F	Hillsboro
26	Jackson School Rd @ Evergreen Pkwy	Overall	0.85	E	0.89	D	Hillsboro
11	Brookwood Pkwy @ Genentech Access	(WB L/T/R)	Not analyzed in AM Peak Hour		>1.0	F	Wash Co, Hillsboro
35	Cornelius Pass Rd @ US26 WB Ramps	Overall	>1.0	F	0.91	D	All
37	Cornelius Pass Rd @ Evergreen Pkwy	Overall	0.79	D	>1.0	E	Wash Co, Hillsboro

For intersection approaches NB = northbound, SB = southbound, EB = eastbound, and WB = westbound. At the intersection approach L = left-turn movement, T = through movement, and R=right-turn movement. Some approaches have shared lanes where two or more travel movements may be permitted as indicated with a slash.

Notes:

1. **Shaded** results indicate an intersection that fails to meet operational standards. Operational standards for ODOT, Washington County, and the City of Hillsboro can be found in Technical Memorandum #2.
2. The critical movement at a signalized intersection is the overall operation of the intersection. The critical movement at an unsignalized intersection is the stopped (or yield) movement with the worst v/c ratio.
3. "All" indicates the following jurisdictions: ODOT, City of Hillsboro, Washington County.

For the Interchange Management Area, the intersection of Brookwood Parkway at Meek Road exceeds operational standards during the AM and PM peak hour. The movements that are failing are on the minor street approach at the intersection that is close to the eastbound ramp terminal. For the IAMP Study Area, six intersections would exceed operational standards during the AM and/or PM peak hour. Future growth in traffic volumes will exacerbate substandard operations and impact surrounding intersections.

FREEWAY OPERATIONS

US 26 within the IAMP Study Area (between the Jackson School Road interchanges and the Cornelius Pass Road interchange) is operating within ODOT standards.

SAFETY

A crash analysis was conducted to determine whether any significant, documented safety issues exist within the IAMP Study Area. The crash analysis included a review of crash history data supplied by the ODOT Crash Analysis and Reporting Unit for the period between January 1, 2008, and December 31, 2010, the three most recent full years of complete data records.

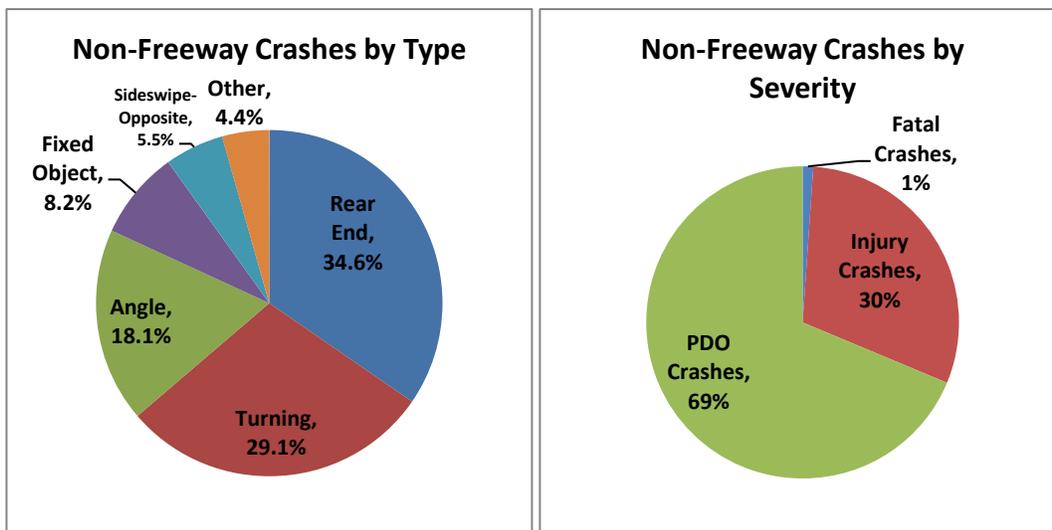
NON-FREEWAY

During the three-year period there were 182 reported crashes within the IAMP Study Area on local roadways or at intersections. Approximately 30 percent (55 crashes) involved minor injuries, and 69 percent (125 crashes) were property-damage-only crashes. The majority of crashes (63 crashes)

were rear end-related crashes, which are frequently attributed to congestion and queuing. The next most frequent type of crash (53 crashes) was turning-related. There were two reported bicycle/pedestrian crashes within the IAMP Study Area. There are no obvious crash trends that would warrant mitigation within the IAMP Study Area, although modifications to the geometry at the unsignalized intersection of Jackson School Road at West Union Road would have the potential to improve safety.

Approximately 30 percent (55 crashes) of all reported non-freeway crashes involved minor injuries, 69 percent (125 crashes) involved property-damage-only crashes, and the remaining 1 percent (2 crashes) involved a fatality or serious injury collision. The following figures summarize the local roadway and intersection related crashes within the IAMP Study Area by crash type and by severity.

Figure 6. Non-Freeway Study Area Crash Type and Severity from 2008 to 2010



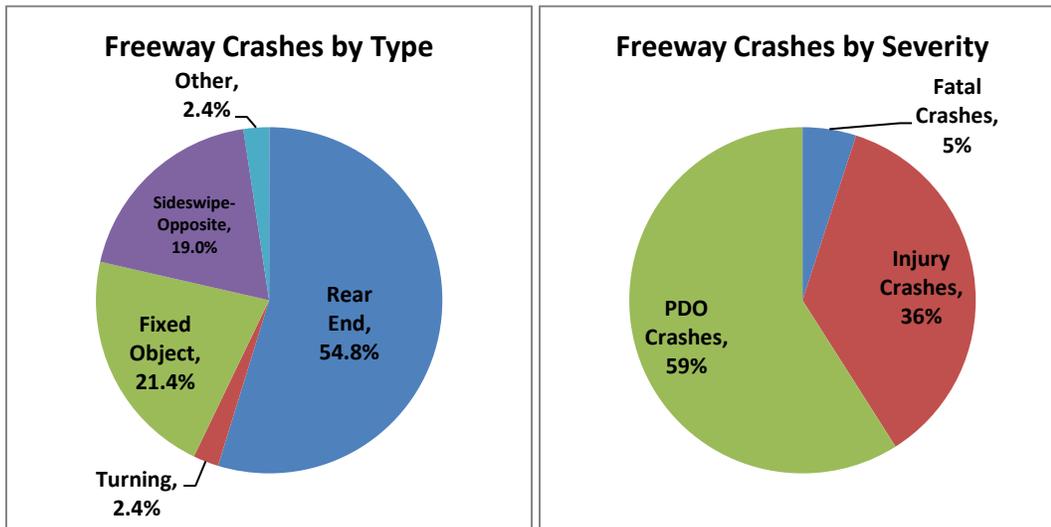
FREEWAY

The 42 crashes that occurred along US 26 within the IAMP Study Area during the three-year period were primarily rear end, fixed-object, and sideswipe related. None of the freeway crashes were pedestrian or bicycle related. Approximately 36 percent (15 crashes) of the freeway crashes involved minor injuries, 59 percent (25 crashes) involved property-damage-only crashes, and the

remaining 5 percent (2 crashes) involved a fatality or serious injury collision.

The safety data for this section of US 26 indicates a low incidence of traffic crashes (one-fourth the statewide average for similar facilities within the urban highway system). The following figures summarize the freeway related crashes within the IAMP Study Area by crash type and by severity. There are no obvious crash trends that would warrant mitigation.

Figure 7. Freeway Study Area Crash Type and Severity from 2008 to 2010



BICYCLE AND PEDESTRIAN FACILITIES

The existing US 26: Brookwood Parkway/Helvetia Road interchange and segments of Brookwood Parkway and Helvetia Road were originally constructed without bicycle or pedestrian facilities, because this area of North Hillsboro was rural and the interchange was designed for motor vehicles. At present, Brookwood Parkway between Evergreen Road and the interchange has no marked bike lanes within the Interchange Management Area. Sidewalks are present on the section of Brookwood Parkway between Huffman Street south to Evergreen Road, but sidewalks have not yet been extended to the interchange. North of the interchange, Helvetia Road does not have marked bike lanes or sidewalks within the Interchange Management Area. A few intermittent sections of sidewalks do exist in some of the rural residential neighborhoods north of the interchange. The US 26: Brookwood Parkway/Helvetia Road interchange structure was constructed without sidewalks or marked bike lanes. Sidewalks were not included in the original interchange and road designs because of rural nature of North Hillsboro at the time this interchange was constructed.

Bicycle use in North Hillsboro has increased in popularity in recent years as the area transitions to more urban types of land uses and as recreational

bicycle use has increased in the area. Brookwood Parkway and Helvetia Road are becoming a popular bicycle route for recreational riders touring the Helvetia area north of the interchange.

Pedestrian activity in the vicinity of the interchange remains minimal in large part because of the limited population in the area and lack of development within walkable distance for the residents that do live here. As urban uses develop in North Hillsboro and the area south of the interchange develops for light industrial uses, it is anticipated that additional pedestrian and bicycle facilities will be needed. New bicycle and pedestrian links will be important to connect existing intermittent sidewalks along some of the local roads north of the interchange and to provide better connectivity and a safer traveling environment for an increasing number of cyclists and pedestrians as the area develops.

FUTURE CONDITIONS

FUTURE 2035 BASELINE CONDITIONS (NO BUILD)

The 2035 Baseline conditions transportation analysis summarizes the future land use, transportation network, traffic volumes, traffic operations, queuing, and safety in the IAMP Study Area.

FUTURE LAND USE

There are two key areas within the UGB designated for future planning and development: the North Hillsboro Industrial Area/Sanctuary and the UGB expansion area (see **Figure 8**). Information from these existing concept plans has been incorporated into this IAMP.

The North Hillsboro Industrial Area covers two areas north and south of the interchange that overlap with the IAMP Study Area. The Industrial Sanctuary Zone (IS) that implements the North Hillsboro Industrial Area Community Plan retains and strengthens the requirements for large lots and restrictions on commercial development. However, it does broaden allowable industrial uses and still allows commercial, retail, office, and service support uses. Permitted uses are industrial services, manufacturing and production, public safety facilities, warehousing and distribution, wholesale sales, and utility facilities. There are multiple conditional and limited uses as well. Commercial nodes are limited to less than 20,000 square feet in three areas that support industrial uses. The plan

also establishes a planning foundation for possible future UGB expansions.

On October 20, 2011, the Metro Council decided to expand the region’s UGB, including the 330-acre (358.89 acres including roads and right-of-way) area north of Hillsboro, in the vicinity of NW Meek Road and south of US 26, for the purposes of attracting future large-site industrial employers. After adoption of the IAMP, the City of Hillsboro plans to start the planning process required by Metro’s Urban Growth Management Functional Plan Title 11: Planning for New Urban Areas (Metro Code section 3.07) to allow for the future planning and development of the 358.89-acre area. The City of Hillsboro will annex the land areas within the UGB for future industrial land uses.

The areas outside the Metro UGB will remain designated for rural uses.

All of the year 2035 scenarios using the regional transportation model include the North Hillsboro Industrial Area and the UGB expansion area. Travel demand model assumptions for households and employment in the IAMP Study Area for the base year (2010) and future year (2035) are shown in **Table 3**.

As **Table 3** shows, the number of households in the IAMP Study Area is projected to grow by approximately 20 percent over the 2010 conditions. The number of jobs in the IAMP Study Area is expected to grow by more than six times the current number. This will result in a substantial number of vehicle trips entering and exiting the IAMP Study Area.

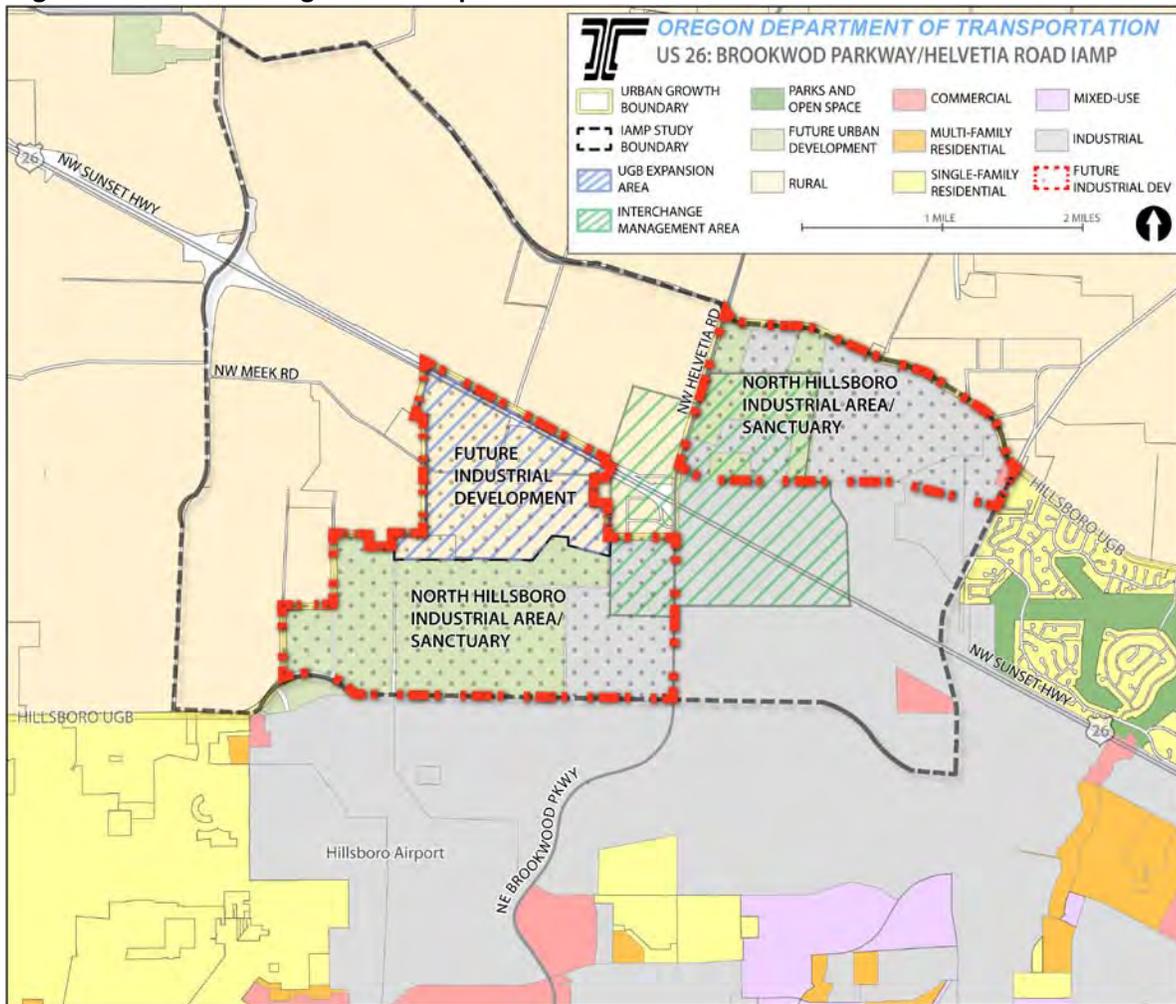
Table 3. Households and Employment for Base Year 2010 and Future Year 2035

	2010 ¹	2035 ²	Difference
Households	298	353	56
Employment	4,876	29,716	24,840

Notes:

1. 2010 data based on Metro’s household and employment allocation.
2. 2035 data based on City of Hillsboro’s household and employment allocation.
3. Household and Employment data based on 14 Traffic Analysis Zones: 1252, 1253, 1254, 25% of 1255, 1257, 1258, 1259, 1260, 1261, 1270, 1271, 1272, 1273, and 1274.

Figure 8. Future Planning and Development Areas



TRANSPORTATION NETWORK

The 2035 Baseline is based on a financially constrained transportation system. The financially constrained system will include projects from Metro’s adopted 2035 Regional Transportation System Plan (RTP) and both city and county adopted Transportation System Plans (TSPs). Projects in local community plans were not included in the travel demand model. The 2035 Baseline assumes that the JTA Project is not constructed.

TRAFFIC VOLUMES

Planned population growth and expected land uses resulted in an average vehicular growth rate from 2011 to 2035 of approximately 50 percent for the

AM peak hour and approximately 45 percent for the PM peak hour. Traffic volume growth varies throughout the IAMP Study Area, with some intersections experiencing a minimal growth of approximately 2 percent. Intersections where there are intense land use changes have forecasted traffic volumes that are more than double existing traffic volumes.

The expected growth within the IAMP planning horizon (2011–2035) will require future transportation improvements to the local road network in North Hillsboro. The local road network will be improved over time to support the new industrial development and to improve access to the Brookwood interchange. This IAMP will provide Washington County, the City of Hillsboro, and ODOT

with a planning tool to coordinate local and state highway planning efforts in the future.

INTERSECTION OPERATIONS

Traffic operations were evaluated at all 39 IAMP Study Area intersections during the PM peak hour and at 17 key AM peak hour intersections (the intersections of Brookwood Parkway at Huffman Street and Brookwood Parkway at Genentech

Access were added for the 2035 AM analysis).

Figure 9 illustrates the IAMP Study Area intersections for the 2035 Baseline scenario. Intersections shaded in red show intersections that fail to meet operational standards in the AM and/or PM peak hour.

Table 4 summarizes the intersections that exceed operational standards for ODOT, City of Hillsboro, or Washington County for the 2035 Baseline scenario.

Figure 9. 2035 Baseline Peak Hour Intersection Operations, 2035 No Build

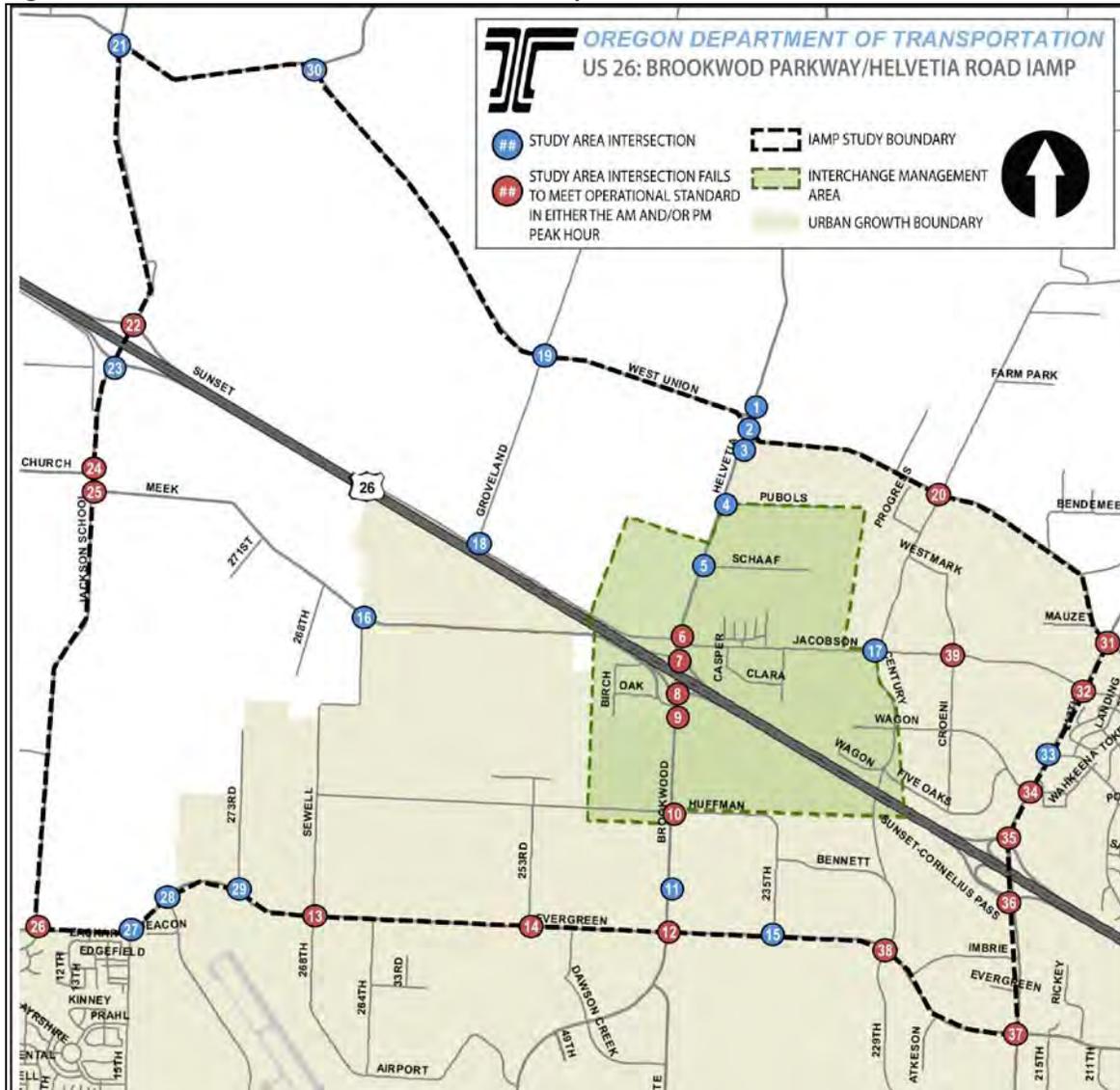


Table 4. 2035 Baseline Intersections Where Operational Standards Are Not Met¹

Intersection	Critical Movement ² AM (PM)	AM		PM		Jurisdiction Where Operational Standard Not Met ³	
		V/C Ratio	LOS	V/C Ratio	LOS		
Interchange Management Area							
6	Helvetia Rd @ Jacobson Rd	WB L/T/R (WB L/T/R)	0.13	C	>1.0	F	All
7	Brookwood Pkwy @ US26 WB Ramps	Overall	0.93	D	>1.0	D	ODOT, Wash Co
8	Brookwood Pkwy @ US26 EB Ramps	Overall	>1.0	D	>1.0	D	ODOT, Wash Co
9	Brookwood Pkwy @ Meek Rd	NB L (EB L/T/R)	>1.0	F	>1.0	F	All
10	Brookwood Pkwy @ Huffman St	Overall	>1.0	F	>1.0	F	Hillsboro
IAMP Study Area							
22	Jackson School Rd @ US26 WB Ramps	Overall	>1.0	F	>1.0	F	All
24	Jackson School Rd @ Scotch Church Rd	(EB L/R)	Not analyzed in AM Peak Hour		>1.0	F	Wash Co, Hillsboro
25	Jackson School Rd @ Meek Rd	(WB L/R)	Not analyzed in AM Peak Hour		>1.0	F	Wash Co, Hillsboro
26	Jackson School Rd @ Evergreen Pkwy	Overall	>1.0	E	>1.0	F	Wash Co, Hillsboro
13	Sewell Rd @ Evergreen Pkwy	(SB L/T)	Not analyzed in AM Peak Hour		>1.0	F	Wash Co, Hillsboro
14	253 rd Ave @ Evergreen Pkwy	(SB L)	Not analyzed in AM Peak Hour		>1.0	F	Wash Co, Hillsboro
12	Brookwood Pkwy @ Evergreen Pkwy	Overall	0.77	C	0.99	E	Hillsboro
20	Century Blvd @ West Union Rd	(SB L/T/R)	Not analyzed in AM Peak Hour		>1.0	F	Wash Co, Hillsboro
39	Croeni Rd @ Jacobson Rd	(SB L)	Not analyzed in AM Peak Hour		>1.0	F	Wash Co, Hillsboro
38	229th Avenue @ Evergreen Pkwy	Overall	>1.0	F	>1.0	F	Wash Co, Hillsboro
31	Cornelius Pass Rd @ West Union Rd	Overall	0.99	E	>1.0	F	Wash Co, Hillsboro
32	Cornelius Pass Rd @ Jacobson Rd	Overall	Not analyzed in AM Peak Hour		>1.0	D	ODOT, Wash Co
35	Cornelius Pass Rd @ US26 WB Ramps	Overall	>1.0	F	>1.0	F	All
36	Cornelius Pass Rd @ US26 EB Ramps	Overall	0.78	B	0.87	B	ODOT
37	Cornelius Pass Rd @ Evergreen Pkwy	Overall	0.94	E	>1.0	F	Wash Co, Hillsboro
34	Cornelius Pass Rd @ Wagon Way	Overall	Not analyzed in AM Peak Hour		>1.0	E	Wash Co, Hillsboro

For intersection approaches NB = northbound, SB = southbound, EB = eastbound, and WB = westbound. At the intersection approach L = left-turn movement, T = through movement, and R=right-turn movement. Some approaches have shared lanes where two or more travel movements may be permitted as indicated with a slash.

Notes:

1. **Shaded** results indicate an intersection that fails to meet operational standards. Operational standards for ODOT, Washington County, and the City of Hillsboro can be found in Technical Memorandum #3.
2. The critical movement at a signalized intersection is the overall operation of the intersection. The critical movement at an unsignalized intersection is the stopped (or yield) movement with the worst v/c ratio.
3. "All" indicates the following jurisdictions: ODOT, City of Hillsboro, Washington County.

For the Interchange Management Area, the 2035 Baseline conditions are expectedly worse than existing conditions, with five intersections exceeding operational standards during the AM and/or PM peak hour compared to one intersection under existing conditions. The eastbound and westbound Brookwood Parkway ramp termini would be over capacity and would fail to meet operational standards.

For the IAMP Study Area, 16 intersections would exceed operational standards during the AM and/or PM peak hour compared to six intersections under existing conditions. The westbound ramp terminal at Jackson School Road and the eastbound and

westbound Cornelius Pass Road ramp termini would be over capacity and would fail to meet operational standards.

QUEUING

Queuing was evaluated using SimTraffic (a microsimulation tool) at the Jackson School Road interchange, the Cornelius Pass Road interchange, and along Brookwood Parkway/Helvetia Road from Jacobson Road to Evergreen Parkway. **Table 5** illustrates the approach and time period when queuing would be expected to extend into the upstream intersections for the Interchange Management Area and the IAMP Study Area.

Table 5: 2035 Baseline Intersections with Queue Spillback

Intersection with Queue Spillback		Direction & Movement	Peak Period	
			AM	PM
Interchange Management Area				
7	Brookwood Pkwy @ US26 WB Ramps	WBLT	■	■
		NBT		■
8	Brookwood Pkwy @ US26 EB Ramps	EBLT	■	■
		NBT		■
		SBT	■	
9	Brookwood Pkwy @ Meek Rd	EBLTR	■	■
		SBTR	■	
10	Brookwood Pkwy @ Huffman St	EBTR		■
		WBTR	■	
		NBL	■	■
		NBTR	■	
		SBTR	■	
IAMP Study Area				
22	Jackson School Rd @ US26 WB Ramps	WBLT	■	■
23	Jackson School Rd @ US26 EB Ramps	NBR		■
11	Brookwood Pkwy @ Genentech Access	NBTR	■	
12	Brookwood Pkwy @ Evergreen Pkwy	EBTR	■	■
		NBT	■	
35	Cornelius Pass Rd @ US26 WB Ramps	NBT		■
		SBT		■
36	Cornelius Pass Rd @ US26 EB Ramps	NBT		■
		NBR		■

■ = Queue spillback during peak period

NB = northbound, SB = southbound, EB = eastbound, and WB = westbound. At the intersection approach L = left-turn movement, T = through movement, and R=right-turn movement.

For the Interchange Management Area with 2035 Baseline conditions, four intersections would have approaches with queue spillback, and queuing from Brookwood Parkway would extend onto US 26. In addition, southbound queuing along Brookwood Parkway during the AM peak hour would spill back into upstream intersections. The queuing that primarily occurs in the northbound direction and on the minor street approaches of unsignalized intersections at Jacobson Road and Meek Road during the PM peak hour will be addressed through the JTA Project and local projects identified in the IAMP.

For the IAMP Study Area, six intersections would have queuing with spillback into upstream intersections during either the AM and/or PM peak hour. This includes the eastbound and westbound ramp terminals at Jackson School Road and Cornelius Pass Road. During the PM peak hour, the eastbound ramp meters at Jackson School Road and southbound Cornelius Pass Road spill back into upstream intersections. Queuing at these intersections will not be addressed in the IAMP.

FREEWAY OPERATIONS

US 26 within the IAMP Study Area (between the Jackson School Road interchanges and the Cornelius Pass Road interchange) would operate within ODOT standards except for the westbound diverge to Brookwood Parkway/Helvetia Road during the AM peak hour. This segment is forecast to operate at a v/c ratio of 1.09, resulting in slowing and congestion on the mainline affecting all travel lanes.

SAFETY AND ACCESS MANAGEMENT DEFICIENCIES

The Baseline operations analysis reveals several long-term traffic safety issues that need consideration. Long delays and extensive queues may cause drivers to engage in riskier actions, such as running lights or traveling longer distances in the two-way left-turn lane to go around queues, which could result in more turning, angle, and sideswipe collisions. On unsignalized side streets, longer delays may increase the likelihood that drivers

would accept shorter gaps in the mainline traffic, putting them at risk for turning or angle collisions.

US 26 westbound exit ramp: Congestion at the Brookwood/Helvetia westbound ramp terminal with US 26 will impact overall freeway operations, which could result in more rear-end and sideswipe collisions. Where congestion is expected to worsen, current safety concerns as well as new safety concerns (especially queuing backing onto US 26) would be exacerbated. This causes the diamond interchange to fail and is one of the prime motivations for the JTA Project.

Eastbound entrance ramp: Queuing for the eastbound entrance ramp could potentially cause conflicts with northbound through movements on Brookwood Parkway.

Jacobson Road: This intersection does not meet minimum interchange access spacing standards and will not meet operational standards.

Meek Road/Brookwood Parkway: This intersection does not meet minimum interchange access spacing standards and the current sight distance is inadequate considering the speed on Brookwood Parkway. In addition, the intersection will not meet operational standards and will experience queue spillback during the peak period. Longer delays may increase the likelihood that drivers would accept shorter gaps in the mainline traffic, putting them at risk for turning or angle collisions.

Groveland Drive: This intersection does not meet minimum interchange access spacing standards and the current sight distance is inadequate considering the speed on Brookwood Parkway.

Bicycle and Pedestrian Access: Inadequate bicycle and pedestrian facilities crossing US 26 could cause potential conflicts with vehicles and other modes attempting to use the interchange.

FUTURE 2035 BUILD CONDITIONS

LAND USE

The land use assumptions for the 2035 Build conditions are the same as for the Baseline.

TRANSPORTATION NETWORK

Within the Interchange Management Area, the 2035 Build scenario assumes that in addition to the city and county TSP projects, the JTA Project is constructed and that Jacobson Road is realigned to the north to improve access spacing between the new JTA interchange and Jacobson Road.

THE JTA PROJECT

The JTA Project will address existing operation and safety issues and address anticipated future travel demand in North Hillsboro. These improvements are directed at enabling job development of the employment areas within the City of Hillsboro. The JTA-funded interchange improvements include:

- The westbound-to-southbound loop ramp on US 26 and an additional travel lane southbound across the Brookwood/Helvetia overcrossing of US 26 will alleviate the safety issue along US 26 at the westbound exit ramp.
- Intersection and storage improvements for the US 26 eastbound entrance ramp will provide more storage for vehicles entering the freeway and reduce potential conflicts on Brookwood Parkway.
- Improved bicycle and pedestrian facilities will reduce conflicts between modes.
- Jacobson Road will be realigned to the north to improve access spacing between the new JTA interchange and Jacobson Road.

Figure 10 shows the JTA project map and **Figure 11** shows the JTA cross section.

IMPROVEMENTS TO SUPPORT THE JTA PROJECT

In addition, four road improvement projects are necessary to support the JTA Project within the Interchange Management Area:

- **Brookwood Parkway:** The new interchange loop ramp requires three lanes southbound to accommodate the amount of traffic expected to use the interchange in the AM peak period and to access industrial lands. Three lanes northbound from Evergreen Road to the eastbound US 26 ramp terminal will provide storage for vehicles entering US 26 eastbound in the PM peak period and reduce potential conflicts on Brookwood Parkway.
- **253rd Avenue (Meek Road):** 253rd Avenue will be widened to three lanes with bike lanes and sidewalks from Evergreen Road to Meek Road to provide an alternate route once Meek Road is cut off from Brookwood Parkway due to interchange spacing standards and safety concerns. It will also provide access to industrial lands and a parallel route to Brookwood Parkway.
- **Groveland Drive Realignment:** In order to improve safety and meet access spacing standards, Groveland Drive is to be reconnected to Helvetia Road across from Schaaf Road. The loop ramp precludes Groveland Drive from connecting at the current location. Schaaf Road is the southernmost practical connection point that avoids the grove of trees and the floodplain in the northwestern quadrant of the interchange.
- **Huffman Street East of 253rd Avenue:** Huffman Street is required to access undeveloped industrial land within the UGB and provide a parallel route to Evergreen Parkway. Five lanes will be needed on Huffman Street between Brookwood Parkway and 253rd Avenue to accommodate traffic accessing the industrial lands while preserving capacity for through movements. Huffman Street, in combination with the 253rd Avenue extension, provides an alternate route once Meek Road is disconnected from Brookwood Parkway due to

interchange spacing standards and safety concerns.

Figure 10. JTA Project Map

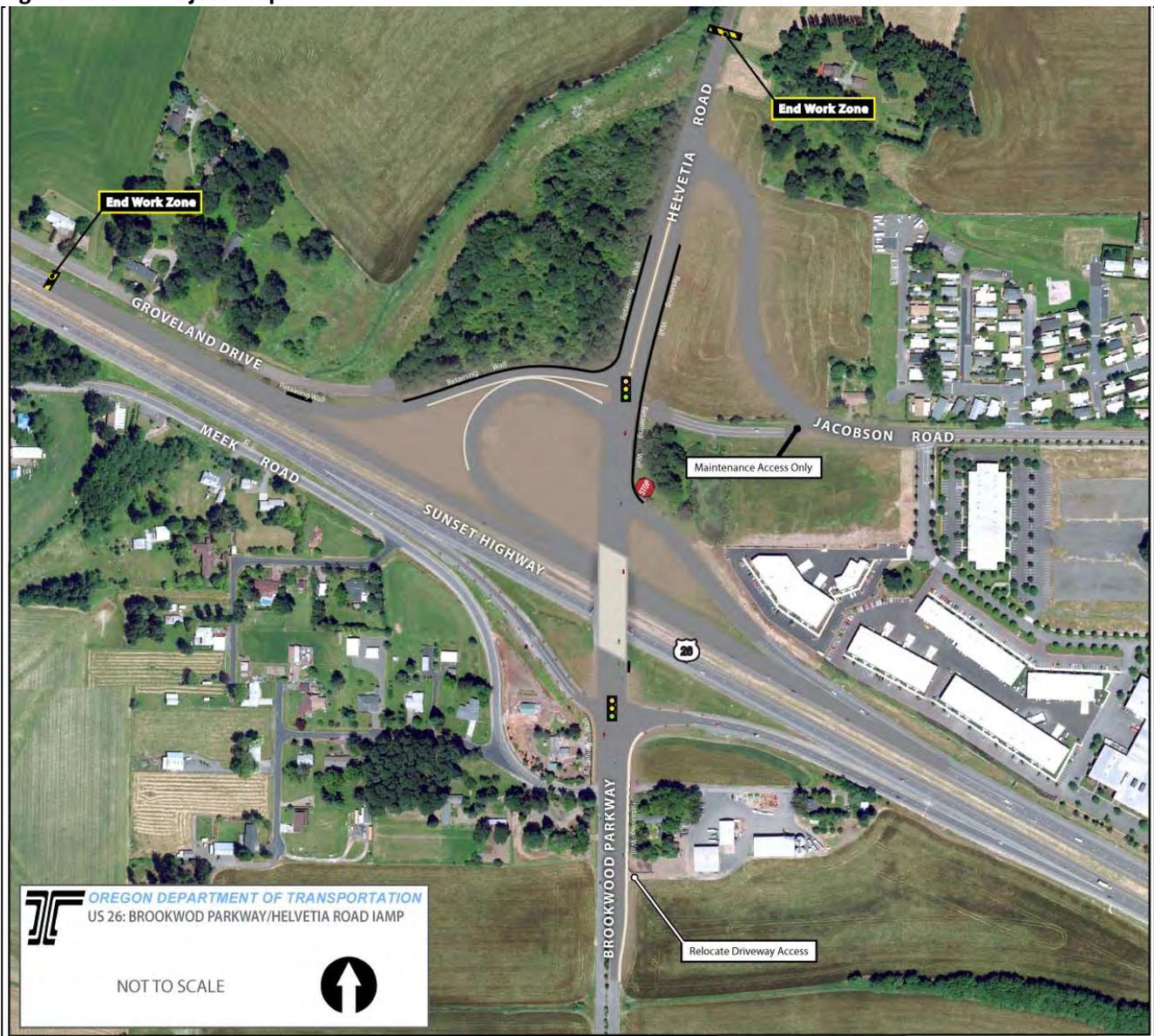
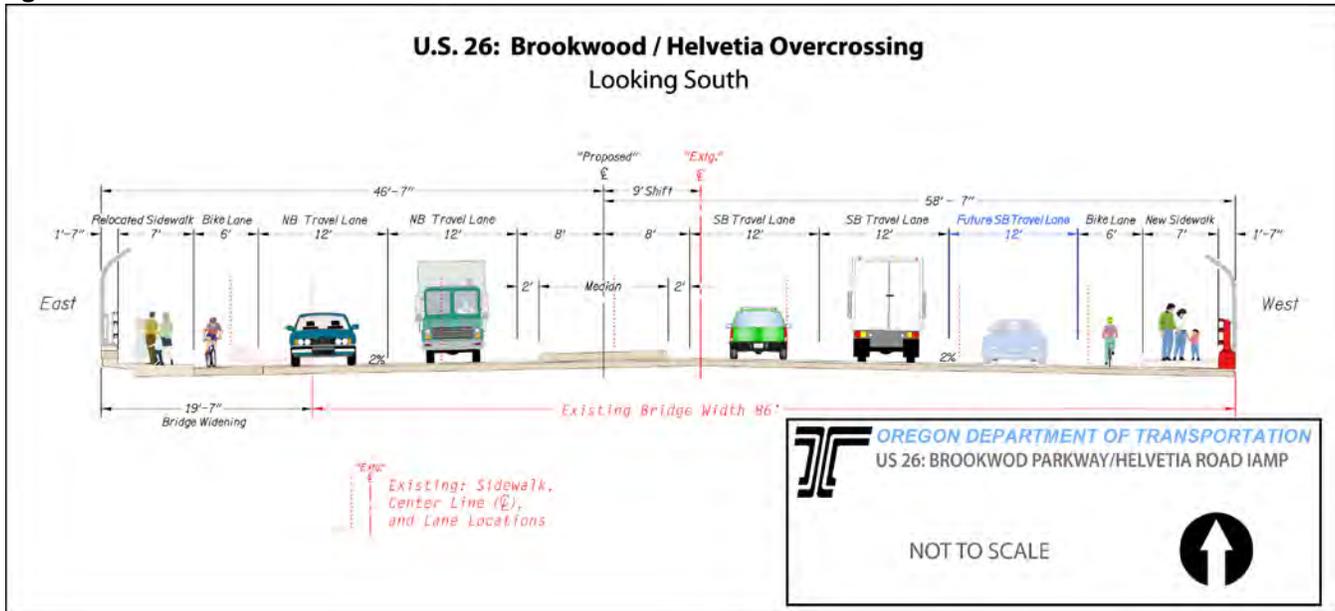


Figure 11. JTA Cross Section



LOCAL STREET CONNECTIONS

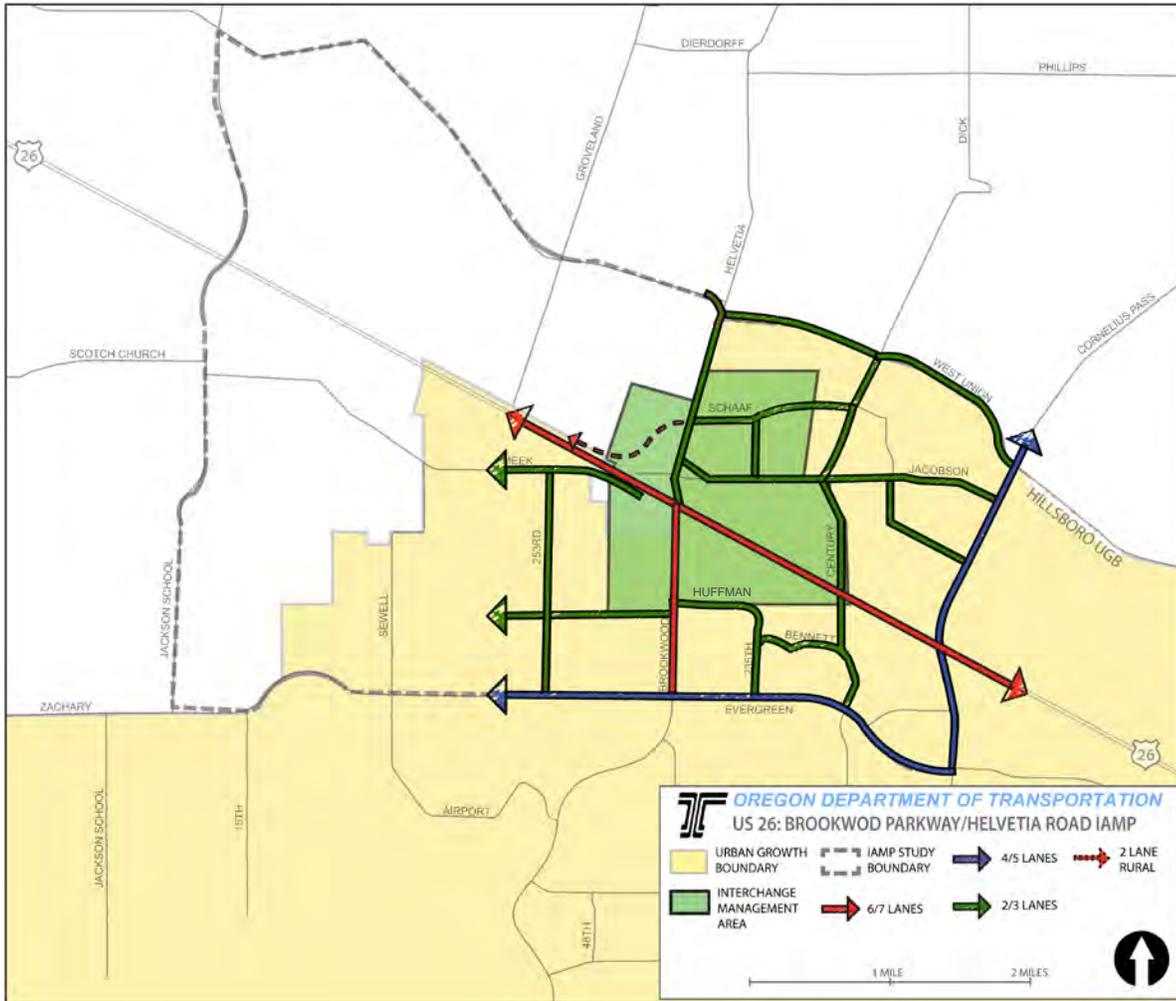
The following projects were identified in local TSPs and concept plans. ODOT, Washington County, and the City of Hillsboro will continue to work in partnership in planning for future road improvements to address the traffic safety and access issues in the vicinity of the US 26: Brookwood Parkway/Helvetia Road interchange. Projects not addressed as part of the JTA-funded interchange improvements or through excess JTA funding will be further evaluated in the updates to the Washington County and City of Hillsboro TSPs. Local projects are:

- **Huffman Street West of 253rd Avenue:** Huffman Street west of 253rd Avenue is needed to access industrial lands and provide a parallel route to Evergreen Parkway.
- **264th Avenue:** 264th Avenue is needed to provide a parallel local route to Jackson School Road and to access industrial lands.

- **Schaaf Road:** Schaaf Road east of Helvetia Road is needed to access industrial lands and to provide a parallel route to Jacobson Road, and will extend to connect to Century Boulevard.
- **Connector Road:** A new connector road will connect Jacobson Road to Schaaf Road northeast of the interchange.
- **Century Boulevard:** A new overpass will connect Century Boulevard from Evergreen Parkway to Jacobson Road, Schaaf Road and West Union Road.

Figure 12 illustrates the proposed local circulation system to accommodate the future 2035 traffic projections within the IAMP Study Area. This proposed system allows for the east/west movement of traffic to the future development areas with the City's UGB areas and provides a new north/south crossing of US 26 at Century Boulevard. This will allow north/south traffic to cross US 26 without having to use the interchanges at Brookwood Parkway and Cornelius Pass Road.

Figure 12. 2035 Brookwood Local Circulation Network



TRAFFIC VOLUMES

Future Build traffic volumes for the IAMP Study Area were forecast based on the adopted City of Hillsboro and Washington County TSPs and the RTP. Planned population growth and expected land uses, based on locally adopted comprehensive plans, resulted in an average vehicular growth rate from 2011 to 2035 of approximately 50 percent for the AM peak hour and approximately 45 percent for the PM peak hour. Traffic volume growth varies throughout the IAMP Study Area, with some intersections experiencing a minimal growth of approximately 2 percent. Intersections near areas of intense lane use changes have forecasted traffic volumes that are more than double existing traffic volumes.

INTERSECTION OPERATIONS

Traffic operations were evaluated at all 39 IAMP Study Area intersections during the PM peak hour and at 17 key AM peak hour intersections as analyzed under the Baseline scenario. **Figure 13** illustrates the IAMP Study Area intersections. Intersections shaded in red show intersections that fail to meet operational standards in the AM and/or PM peak hour.

Table 6 summarizes the intersections that exceed operational standards for ODOT, City of Hillsboro, or Washington County for the 2035 Build scenario.

Figure 13. 2035 Build Peak Hour Intersection Operations



Table 6. 2035 Build Intersections Where Operational Standards Are Not Met¹

Intersection		Critical Movement ² AM (PM)	AM		PM		Jurisdiction Where Operational Standard Not Met ³
			V/C Ratio	LOS	V/C Ratio	LOS	
Interchange Management Area							
6	Helvetia Rd @ Jacobson Rd	WB L (WB L)	0.18	C	>1.0	F	All
7	Brookwood Pkwy @ US26 WB Ramps	Overall	0.97	C	0.58	A	ODOT
IAMP Study Area							
22	Jackson School Rd @ US26 WB Ramps	Overall	>1.0	F	>1.0	F	All
24	Jackson School Rd @ Scotch Church Rd	(EB L/R)	Not analyzed in AM Peak Hour		>1.0	F	Wash Co, Hillsboro
25	Jackson School Rd @ Meek Rd	(WB L/R)	Not analyzed in AM Peak Hour		>1.0	F	Wash Co, Hillsboro
26	Jackson School Rd @ Evergreen Pkwy	Overall	>1.0	E	>1.0	F	Wash Co, Hillsboro
13	Sewell Rd @ Evergreen Pkwy	(SB L)	Not analyzed in AM Peak Hour		>1.0	F	Wash Co, Hillsboro
14	253 rd Ave @ Evergreen Pkwy	(SB L)	Not analyzed in AM Peak Hour		>1.0	F	Wash Co, Hillsboro
20	Century Blvd @ West Union Rd	(SB L/T/R)	Not analyzed in AM Peak Hour		>1.0	F	Wash Co, Hillsboro
39	Croeni Rd @ Jacobson Rd	(SB L)	Not analyzed in AM Peak Hour		>1.0	F	Wash Co, Hillsboro
38	229th Avenue @ Evergreen Pkwy	Overall	1.00	F	>1.0	F	Wash Co, Hillsboro
31	Cornelius Pass Rd @ West Union Rd	Overall	>1.0	F	>1.0	F	Wash Co, Hillsboro
32	Cornelius Pass Rd @ Jacobson Rd	Overall	Not analyzed in AM Peak Hour		>1.0	E	ODOT, Wash Co
35	Cornelius Pass Rd @ US26 WB Ramps	Overall	>1.0	F	>1.0	E	All
36	Cornelius Pass Rd @ US26 EB Ramps	Overall	0.74	A	0.88	B	ODOT
37	Cornelius Pass Rd @ Evergreen Pkwy	Overall	0.88	D	>1.0	F	Wash Co, Hillsboro
34	Cornelius Pass Rd @ Wagon Way	Overall	Not analyzed in AM Peak Hour		>1.0	D	ODOT, Wash Co

For intersection approaches NB = northbound, SB = southbound, EB = eastbound, and WB = westbound. At the intersection approach L = left-turn movement, T = through movement, and R=right-turn movement. Some approaches have shared lanes where two or more travel movements may be permitted as indicated with a slash.

Notes:

1. **Shaded** results indicate an intersection that fails to meet operational standards. Operational standards for ODOT, Washington County, and the City of Hillsboro can be found in Technical Memorandum #4.
2. The critical movement at a signalized intersection is the overall operation of the intersection. The critical movement at an unsignalized intersection is the stopped (or yield) movement with the worst v/c ratio.
3. "All" indicates the following jurisdictions: ODOT, City of Hillsboro, Washington County.

The 2035 Build condition shows improvement from the Baseline condition. The JTA Project and Brookwood Parkway improvements would improve intersection operations near US 26 within the Interchange Management Area. All intersections analyzed within the Interchange Management Area are forecast to meet operational standards with the exception of two intersections. The Brookwood Parkway at US 26 westbound ramp terminal would operate with a v/c ratio of 0.97 during the AM peak hour, which exceeds the OHP standard of 0.85. Even though the westbound ramp terminal is forecast to exceed the OHP v/c standard, the Brookwood interchange ramp terminals would not impact US 26 operations as they are forecast to under the Baseline scenario. Under Build conditions, the ramp terminals will operate at an overall intersection LOS C or better during the AM and PM peak hours and will improve safety. The proposed intersection design will maintain safe stopping sight distance for all off-ramps under the forecast 2035 traffic volumes.

In addition to the westbound ramp terminal, Helvetia Road at Jacobson Road will not meet operational standards during the PM peak hour. Similar to the Baseline condition, vehicles turning left from Jacobson Road would experience long delays waiting for gaps in traffic on Helvetia Road. A future project connecting Jacobson Road to Schaaf Road east of Helvetia Road will lead to the conversion of Jacobson Road at Helvetia Road to right-in/right-out and reroute left-turning traffic to the intersection of Schaaf Road at Helvetia Road. It is assumed that this intersection would be signalized and, once signalized; this intersection will be able to accommodate the additional left-turning traffic.

Within the IAMP Study Area, many of the same intersections that failed to meet operational standards under the Baseline scenario would also fail to meet them under the Build scenario. With the Build scenario, 15 intersections would fail to meet operational standards compared to 16 intersections that would fail to meet operational standards with the Baseline scenario.

For intersections that fail to meet City of Hillsboro, Washington County, or ODOT standards, improvements may be pursued by the jurisdictions that would result in these intersections operating below the appropriate standards. Improvements may include (but are not limited to) signalizing intersections, optimizing signal timing, providing protected turn movements, adding turn lanes, adding through lanes and/or additional ramp meter storage. These improvements will be addressed in local TSPs.

OPERATIONAL JUSTIFICATION FOR IMPROVEMENTS THAT SUPPORT THE JTA

The proposed improvements in the IAMP Study Area will allow Brookwood Parkway and the intersection of Brookwood Parkway at Huffman Street to operate within operational standards. Under the 2035 Build conditions, Brookwood Parkway is expected to have an Average Daily Traffic (ADT) of 38,500 vehicles, which would result in peak period/peak direction demand of approximately 2,600 vehicles and would require three lanes of traffic in each direction. Huffman Street is estimated to have an ADT of 18,000 vehicles and a peak period/peak direction volume of approximately 1,500 vehicles. This will require two lanes in each direction on Huffman Street.

In addition, the turn lanes required at the intersection Brookwood Parkway and Huffman Street will allow the intersection to meet operational standards. Under 2035 Baseline conditions, the intersection of Brookwood Parkway at Huffman Street would be operating at a LOS F with a v/c ratio greater than 1.0, resulting in long queues along both Brookwood Parkway and Huffman Street. The proposed improvements to the intersection of Huffman Street with Brookwood Parkway under the build scenario would result in an LOS of D and a v/c ratio of 0.99. These will meet the City of Hillsboro and Washington County operational standards.

The following projects are justified based on need for access to industrial lands or as an alternative to a closed access near the Brookwood interchange and not based on operational needs:

- 253rd Avenue north of Evergreen Parkway
- Groveland Drive realignment
- Huffman Street east of 253rd Avenue
- Huffman Street west of 253rd Avenue
- 264th Avenue
- Schaaf Road

QUEUING

Queuing was evaluated at the Jackson School Road interchange, the Cornelius Pass Road interchange, and along Brookwood Parkway/Helvetia Road from Jacobson Road to Evergreen Parkway. **Table 7** below illustrates the approach and time period

when queuing would be expected to extend into the upstream intersections for the Interchange Management Area and the IAMP Study Area.

The only intersection for the 2035 Build scenario within the Interchange Management Area forecast to spill back into an upstream intersection is Brookwood Parkway at Huffman Street during the AM peak hour. The large number of southbound vehicles on Brookwood Parkway requires the majority of the intersection green time each cycle. This results in longer queues on the minor street approaches. Although more traffic would be on Brookwood Parkway (no metering effect at the ramp terminals as is the case under the Baseline scenario), the queuing would not extend into the Brookwood Parkway eastbound ramp terminal. In addition, queue spillback would not occur from the ramp terminals at Brookwood Parkway onto US 26 as forecast under the Baseline scenario.

Table 7. 2035 Build Intersections with Queue Spillback

Intersection with Queue Spillback		Direction & Movement	Peak Period	
			AM	PM
Interchange Management Area				
10	Brookwood Pkwy @ Huffman St	WBT	■	
IAMP Study Area				
22	Jackson School Rd @ US26 WB Ramps	WBLT	■	■
23	Jackson School Rd @ US26 EB Ramps	NBT		■
12	Brookwood Pkwy @ Evergreen Pkwy	EBTR		■
		NBT	■	■
		SBT	■	
35	Cornelius Pass Rd @ US26 WB Ramps	SBR	■	
		NBT		■
		SBT		■
36	Cornelius Pass Rd @ US26 EB Ramps	NBT		■
		SBT		■

■ = Queue spillback during peak period

NB = northbound, SB = southbound, EB = eastbound, and WB = westbound. At the intersection approach L = left-turn movement, T = through movement, and R=right-turn movement.

During the PM peak hour, queuing primarily occurs in the northbound direction and on the minor street approaches of Jacobson Road, Huffman Street, and Evergreen Parkway. The Brookwood Parkway/Helvetia Road eastbound on-ramp spills back from the ramp meter onto Brookwood Parkway under the Build scenario and not the Baseline scenario. This is due to demand (which is similar in both the Baseline and Build scenarios) being able to reach the on-ramp in the Build scenario and not the Baseline scenario. In the Baseline scenario, vehicles are unable to reach the interchange from Meek Road, Huffman Street, and Evergreen Parkway, resulting in northbound Brookwood Parkway queuing extending from the eastbound US 26 ramp meter to south of the Genentech access.

In the IAMP Study Area, two intersections in the AM and five in the PM peak hour would have queuing with spillback into upstream intersections. This is a slight improvement over the Baseline condition, which is forecast to have three intersections in the AM and five intersections in the PM that would have queuing with spillback into upstream intersections.

FREEWAY OPERATIONS

Highway Capacity Software was used to determine freeway operations along US 26 between the Jackson School Road interchanges and the Cornelius Pass Road interchange for the 2035 Build scenario. During the AM and PM peak hours, US 26 within the IAMP Study Area (between the Jackson School Road interchanges and the Cornelius Pass Road Interchange) would operate within the ODOT standards in the OHP. The westbound mainline segment between the Brookwood Parkway/Helvetia Road off-ramps is forecast to operate at v/c ratios of 0.90 and 0.83 for the AM and PM peak hours. This is less than the OHP standard of 0.99.

With the addition of the westbound loop off-ramp to southbound Brookwood Parkway, the v/c ratio for the Build scenario diverge to Brookwood Parkway/Helvetia Road meets the standards, while the single off-ramp under the Baseline scenario is

forecast to operate above ODOT standards. Under Build conditions, the westbound off-ramp to northbound Helvetia Road would operate with a v/c ratio of 0.14 and the westbound off-ramp to southbound Brookwood Parkway would operate with a v/c ratio of 0.54. During the PM peak hour, the westbound off-ramp to northbound Helvetia Road would operate with a v/c ratio of 0.07 and the westbound off-ramp to southbound Brookwood Parkway would operate with a v/c ratio of 0.23.

SAFETY

LOCAL NETWORK

The Build scenario operations analysis reveals several long-term traffic safety issues that need consideration. Long delays and extensive queues may cause drivers to engage in riskier actions, such as running lights or traveling longer distances in the two-way left-turn lane to go around queues, which could result in more turning, angle, and sideswipe collisions. On unsignalized side streets, longer delays may increase the likelihood that drivers would accept shorter gaps in the mainline traffic, putting them at risk for turning or angle collisions. Where congestion is expected to worsen, it is safe to assume that current safety concerns would be exacerbated.

HIGHWAY

Congestion at the Brookwood/Helvetia westbound ramp terminal with US 26 under the Build scenario is improved compared to the Baseline conditions, which should result in improved safety on US 26 and US 26 westbound off-ramps.

BICYCLE AND PEDESTRIAN FACILITIES

Washington County has recently completed a Suitability Mapping process as part of its Bicycle and Pedestrian Improvement Prioritization Project. The segment of Brookwood Parkway south of the US 26: Brookwood Parkway interchange scored at a High Level, with Helvetia Road scoring at a Medium Level, indicating areas where bicycle and pedestrian

improvements will likely have the highest impact on the largest number of existing and potential users. The development of the US 26: Brookwood Parkway/Helvetia Road IAMP provides ODOT, Washington County, and the City of Hillsboro with a planning framework to fully consider and plan for future bicycle and sidewalk improvements within and near the Interchange Management Area and extending beyond to the IAMP Study Area.

The JTA-funded Brookwood interchange improvement project includes both bicycle and sidewalk facilities. The interchange redesign will include striped bike lanes and sidewalks on both sides of the bridge structure crossing US 26. The bike lanes and sidewalks will terminate to the north at Jacobson and they will end just south ends of the interchange structure, because bicycle and pedestrian facilities do not currently exist on either Brookwood Parkway to the south or Helvetia Road to the north of the interchange.

Washington County's 2020 Transportation Plan calls for sidewalks and bike lanes on Brookwood Parkway south of the interchange, and newly developed design options add flexibility to the design of these facilities. Sidewalks and bike facilities are also planned for on Helvetia Road adjacent to the urban area north of the interchange; improvements to Helvetia Road sections adjacent to the rural lands would be consistent with rural roadway design standards. Some sidewalk and bike facility improvements would be included with future Helvetia Road improvement projects for the Interchange Management Area, but it is expected that these improvements to the north will be limited to the immediate interchange area. In addition, the City of Hillsboro will include sidewalks and bike lanes in its plans and designs for the North Hillsboro UGB expansion area southwest of the interchange.

INTERCHANGE AREA MANAGEMENT PLAN

This IAMP consists of the interchange function statement, land use assumptions, prioritized transportation and circulation improvement projects, transportation demand management measures, transportation system management measures, and an access management plan.

INTERCHANGE FUNCTION AND CLASSIFICATION

The primary function of the US 26: Brookwood Parkway/Helvetia Road interchange is to serve existing and future industrial and employment uses based throughout North Hillsboro inside the existing UGB. The secondary function is to provide access to the residences in the unincorporated community and local attractions surrounding the interchange.

US 26 (Sunset Highway No. 47) from MP 53.33 to MP 73.81 is classified as part of the National Highway System, a highway of Statewide Importance, Expressway, Freight Route, and federally designated truck route.

The Washington County Transportation System Plan (TSP) 2020 designates US 26 as a freeway, and Brookwood Parkway and Cornelius Pass Road as arterials. According to the TSP, arterial streets serve as primary connections to and provide freight movement in support of Principal Arterials. Arterial streets link major commercial, residential, industrial, and institutional areas. Arterials have moderate access control for cross streets and driveways.

LAND USE ASSUMPTIONS

Interchange improvements are consistent with City of Hillsboro land use and transportation plans and regulations. Other amendments to the Hillsboro Comprehensive Plan, TSP, or zoning and subdivision ordinances and the Washington County Comprehensive Framework Plan, Community Plans, 2020 Transportation Plan, and Community Development Code are not necessary. The City of

Hillsboro has undertaken extensive planning efforts in the Interchange Management Area and adopted the North Hillsboro Industrial Area Community Plan.

ODOT is relying on the currently adopted plans, policies, and codes to ensure that the land uses within the Interchange Management Area remain supportive of the function of the interchange (see **Appendix A**). The City of Hillsboro and Washington County participated in the preparation of the IAMP. The IAMP assumes that, within the Interchange Management Area, the City of Hillsboro and Washington County will maintain their respective:

- Current land use designations with current uses and densities;
- Plan and code amendment processes;
- Requirements for traffic impact studies; and
- Processes for notification to ODOT regarding land use actions that may affect state transportation facilities.

This IAMP assumes that the City of Hillsboro either will retain the current comprehensive plan and zoning designations and code provisions that the IAMP relies on to protect the performance of the US 26: Brookwood Parkway/Helvetia Road interchange, or that the City of Hillsboro will notify ODOT and jointly undertake an evaluation of impacts to the interchange and potentially amend the IAMP if it proposes to change designations. The Hillsboro Comprehensive Plan (Ordinance No. 2793-4-77, approved April 5, 1977, and amended through March 2012), the Zoning Ordinance Volume I (No. 1945), and Subdivision Ordinance (No. 2808) maintain a variety of zoned uses within the Interchange Management Area. Changes to the current plan designations, zoning, and development standards could dramatically affect the number of trips generated, trip patterns, and traffic volumes at intersections and the interchange. Should these occur, traffic operations at the interchange could approach capacity more rapidly than anticipated, shortening the life of the new interchange and hastening the need for costly investments for additional interchange improvements.

Since provisions of the Hillsboro Comprehensive Plan and Washington County Comprehensive Framework Plan for the Urban Area, the West Union Community Plan, and Rural/Natural Resource Plan and the city and county zoning and subdivision ordinances are adopted by reference into this IAMP, ODOT has the ability to review and weigh in on proposed amendments to plans and codes, before their adoption by the City of Hillsboro and Washington County, to ensure that any changes to these land uses avoid development that would unacceptably jeopardize the achievement of the goal and objectives of the IAMP.

Applicable provisions of the following City of Hillsboro and Washington County plans and codes are adopted by reference into this IAMP:

- The Hillsboro Comprehensive Plan designations within the Interchange Management Area, as shown on the adopted Hillsboro Area General Plan Map and described in the Hillsboro Area General Plan.
- Washington County West Union Community Plan and Rural/Natural Resource Plan designations within the Interchange Management Area, as shown on the maps and described in the plans.
- The City of Hillsboro and Washington County land use and zoning designations within the Interchange Management Area, as shown on the adopted maps (see **Figure 4** and described, defined, and regulated in the City of Hillsboro Development Code and Washington County Community Development Code.

PRIORITIZED TRANSPORTATION AND CIRCULATION IMPROVEMENT PROJECTS

The transportation improvement projects within the IAMP Study Area have been tiered based on their support of and importance for the Brookwood interchange. This tiering was reviewed at a public open house and then approved by the PAC to prioritize local road network projects near the

interchange. The Partnering Agreement stipulates that excess funding not needed for the current JTA Project will be transferred to Washington County or City of Hillsboro as appropriate based upon roadway improvement jurisdiction. This excess JTA funding will be used to fund some of the local road improvements that support the improved interchange.

PRIORITIZATION PROCESS

Throughout the IAMP process the PMT and the PAC developed and revised the project priority list. PAC Meeting #2 was focused on discussing and prioritizing potential transportation improvements in the area. Project management team members prepared and presented maps that displayed the City of Hillsboro and Washington County identified improvements as a starting point. PAC members provided input on the maps during the meeting and also provided additional comments later. The PAC agreed that improvements are meant to open up access to industrial land within the city of Hillsboro and also improve interchange performance.

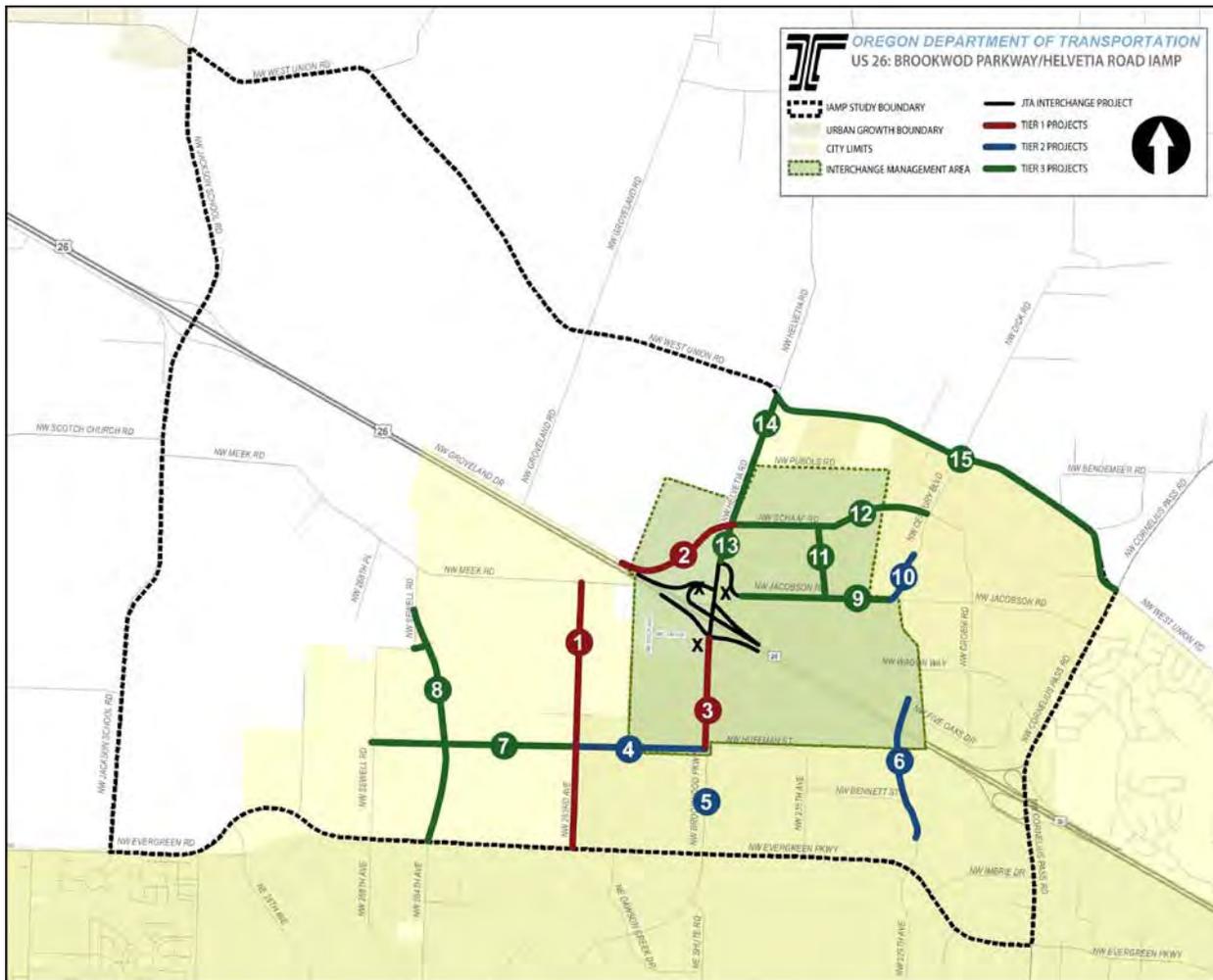
The project management team developed the tiers based on input from PAC Meeting #2 and Open House #1. At PAC Meeting #3 on April 13, 2012, the project management team discussed the reasoning behind the proposed tiers. At the conclusion of PAC Meeting #3, all PAC members present except for one member generally agreed the recommended tiers were appropriate based on public and technical input.

Table 8 lists and **Figure 14** shows the tiering of projects to support the interchange. These priorities relate to the Interchange Management Area and the JTA Project. Some of the tiered projects in the immediate vicinity of the interchange may be addressed in the short term if excess funding from the JTA interchange improvement project is available. Washington County and the City of Hillsboro will have responsibility for planning and scheduling future local roadway improvements near the interchange during the planning horizon.

Table 8. Proposed IAMP Improvement Projects

	Map / Project #	Project Name	Washington County Functional Classification	Project Location	Project Description
Tier 1 Projects	1	253 rd Avenue	Collector (proposed)	Evergreen Road to Meek Road (outside city limits; inside UGB)	Construct three lanes with bike lanes and sidewalks
	2	Groveland Drive Realignment	Local street	Helvetia Road to Groveland Drive (outside UGB)	Construct two-lane rural connector
	3	Brookwood Parkway	Arterial	Huffman Street to US 26 eastbound ramp terminal	Widen to three lanes northbound and three lanes southbound and construct with bike lanes and sidewalks
Tier 2 Projects	4	Huffman Street	Collector (proposed)	Brookwood Parkway to 253 rd Avenue (outside city limits; inside UGB)	Construct five lanes with bike lanes and sidewalks
	5	Brookwood Parkway	Arterial	Evergreen Parkway to Huffman Street	Widen to three lanes northbound and three lanes southbound and construct with bike lanes and sidewalks
	6	231 st Avenue/ Century Boulevard	Collector	Bennett Street to West Union Road	Construct two-/three-lane US 26 overpass with bike lanes and sidewalks, connecting existing segments
	10	Century Boulevard	Collector	Jacobson Road and Century Boulevard	Construct three-lane roadway with bike lanes and sidewalks
Tier 3 Projects	7	Huffman Street	Collector (proposed)	253 rd Avenue to Sewell Road (outside city limits; inside UGB)	Construct three lanes with bike lanes and sidewalks
	8	264 th Avenue	Collector (proposed)	Evergreen Road to Meek Road (outside city limits; inside UGB)	Build three lanes with bike lanes and sidewalks
	9	Jacobson Road	Collector	Jacobson Road at Helvetia Road	Widen and add bike and pedestrian facilities
	11	Jacobson Road to Schaaf Road	Collector	Jacobson Road to Schaaf Road	Construct three-lane roadway with bike lanes and sidewalks
	12	Schaaf Road	Collector (proposed)	Helvetia Road to Century Road	Construct three-lane roadway with bike lanes and sidewalks
	13	Helvetia Road	Arterial	Jacobson Road to Schaaf Road	Construct three-lane roadway with bike lanes and sidewalks
	14	Helvetia Road	Arterial	Schaaf Road to West Union Road	Construct three-lane roadway with bike lanes and sidewalks
	15	West Union Road	Collector	Helvetia Road to Cornelius Pass Road	Construct three-lane roadway with bike lanes and sidewalks

Figure 14. Proposed IAMP Improvement Projects



TIER 1 PROJECTS

253rd Avenue (project 1). 253rd Avenue will be constructed to three lanes with bike lanes and sidewalks from Evergreen Road to Meek Road to provide an alternate route once Meek Road is cut off from Brookwood Parkway due to interchange spacing standards and safety concerns. It will also provide access to industrial lands and provide a parallel alternate route to Brookwood Parkway.

Groveland Drive Realignment (project 2). Groveland Drive needs to be realigned to improve safety and meet access spacing standards. Groveland Drive is to be reconnected to Helvetia

Road across from Schaaf Road. The new westbound-southbound US 26 loop ramp precludes Groveland Drive connecting at the current location. Schaaf Road is the southernmost practical connection point that avoids the grove of trees and floodplain in the northwestern quadrant of the interchange.

The JTA interchange project removes the Groveland Drive connection to Helvetia Road. ODOT, Washington County, and the City of Hillsboro explored a wide range of options to reconnect or reroute Groveland Drive (see **Table 9**). Using engineering judgment and public comments the following options were analyzed and rejected.

Table 9. Groveland Drive Realignment Options Considered and Rejected

Options	Property Impacts	Environmental Impacts	Comments
Permanently Close	No property impacts	No environmental impacts	Rejected because of out-of-direction travel and impact to property owners of permanently routing trips on a substandard rural road, including the Rice Rock Museum.
Tunnel	Limited property impacts	Potential environmental and engineering issues	Rejected because of the major engineering impacts and cost factors.
Roundabout	Major property impacts	Major environmental impacts	Rejected because of the major environmental impacts to the oak grove and traffic operations impacts to the interchange.
Realign through the Oak Grove Area	Major property impacts	Major environmental impacts	Rejected because of the major property and environmental impacts to the oak grove.

After the evaluation and consultation, it was determined that the reconnection of Groveland Drive to Helvetia Road was needed to provide access to the surrounding existing rural uses. The realignment of the rural road will follow the Washington County policies and requirements for realignment of an existing rural road in farm land.

Brookwood Parkway (project 3). The new westbound-southbound US 26 loop ramp requires three lanes south between the US 26 interchange and Huffman Street to accommodate the amount of traffic expected to use the interchange in the AM peak period and to access industrial lands. Three lanes northbound will provide storage for vehicles entering eastbound US 26 in the PM peak period.

TIER 2 PROJECTS

Huffman Street (project 4). The IAMP proposes to construct Huffman Street between Brookwood Parkway and 253rd Avenue to five lanes to accommodate future growth in the North Hillsboro Area. Huffman Street is required to access undeveloped industrial land within the UGB and provide a parallel route to Evergreen Parkway. Five lanes will be needed on Huffman Street between Brookwood Parkway and 253rd Avenue to accommodate traffic accessing the industrial lands while preserving capacity for through movements on Brookwood Parkway.

Brookwood Parkway (project 5). The IAMP proposes to widen Brookwood Parkway to three lanes with bike lanes in each direction between Huffman Street and Evergreen Road. This project is required to accommodate the amount of traffic expected to use the interchange and future growth in the North Hillsboro Area.

231st/Century Boulevard Overcrossing (project 6). This project proposes to construct a two- to three-lane US 26 overpass with bike lanes and sidewalks, connecting existing segments from Bennett Street to West Union Road. This project will provide an alternative route to Brookwood Parkway and Cornelius Pass Road. In addition, it will provide another overcrossing of US 26 between the Brookwood and Cornelius Pass interchanges.

Century Boulevard (project 10). This project would construct a three-lane roadway with bike lanes and sidewalks from Jacobson Road north to the existing road to complete the roadway.

TIER 3 PROJECTS

Tier 3 includes all other City of Hillsboro and Washington County projects that are not included in tiers 1 and 2 (**projects 7 through 9 and 11 through 15**). These project needs and their justification are documented in the Washington

County TSP, City of Hillsboro TSP, or other local community plans.

TRANSPORTATION DEMAND MANAGEMENT MEASURES

Travel Demand Management (TDM) measures are designed to increase the use of commute alternatives, spread the timing of travel, reduce the need to travel, change the routing of Single-Occupant Vehicles and trucks to less congested roadways, and reduce the number of vehicles on the roadway. This is done using strategies that encourage:

- Road users to shift their mode to carpooling, vanpooling, transit, bicycling, and walking programs;
- Road users to shift their time of travel to non-peak periods (e.g., through use of flexible work schedules and off-peak shifts); and
- Telecommuting.

TDM strategies are most effective in areas with high concentrations of employment and where a robust transit system exists. Generally, the strategies are easiest to implement where there are large employers or where a transportation management association has been established to pool the efforts of many smaller employers. These measures are accounted for during the trip-generation and mode-split steps of the four-step process. During trip-generation, the model assumes that all regional centers have TDM measures that are consistent with Metro's 2040 Growth Concept. During the mode-split step, the model is determining whether a road user will make a single-occupant vehicle trip or an alternative mode such as high-occupancy-vehicle, transit, walk, or bicycle.

Goals and policies of the State of Oregon, Metro, Washington County, and the City of Hillsboro contain provisions that embrace TDM measures. Urban areas with populations over 25,000 are required by the Oregon Transportation Planning Rule to address TDM.

Metro's Regional Travel Options program, which has been in place since 2009, looks to reduce car traffic while creating more opportunities for walking, biking, taking transit, and carpooling. The program features a coordinated marketing effort to reach key audiences, an employer outreach program, a regional rideshare program, and a grant program that funds partner efforts. Partnering agencies include but are not limited to ODOT, Washington County, and the Westside Transportation Alliance. Local jurisdictions will continue to work with local business and agencies on implementing TDM in the area.

TRANSPORTATION SYSTEM MANAGEMENT MEASURES

Transportation System Management (TSM) measures are designed to maximize the number of vehicles using the existing transportation facilities, and include:

- Traffic engineering measures (such as signal timing changes, provision of turn lanes, turn restrictions, and restriction of on-street parking to increase the number of travel lanes without road widening) that improve the operations and efficiency of streets and intersections;
- System monitoring and traveler information systems (e.g., Intelligent Transportation Systems (ITS), and variable message signs);
- Facility management systems (e.g., ramp meters, special use lanes, and signal priority for special users such as transit); and
- Incident management systems (e.g., incident response and recovery teams).

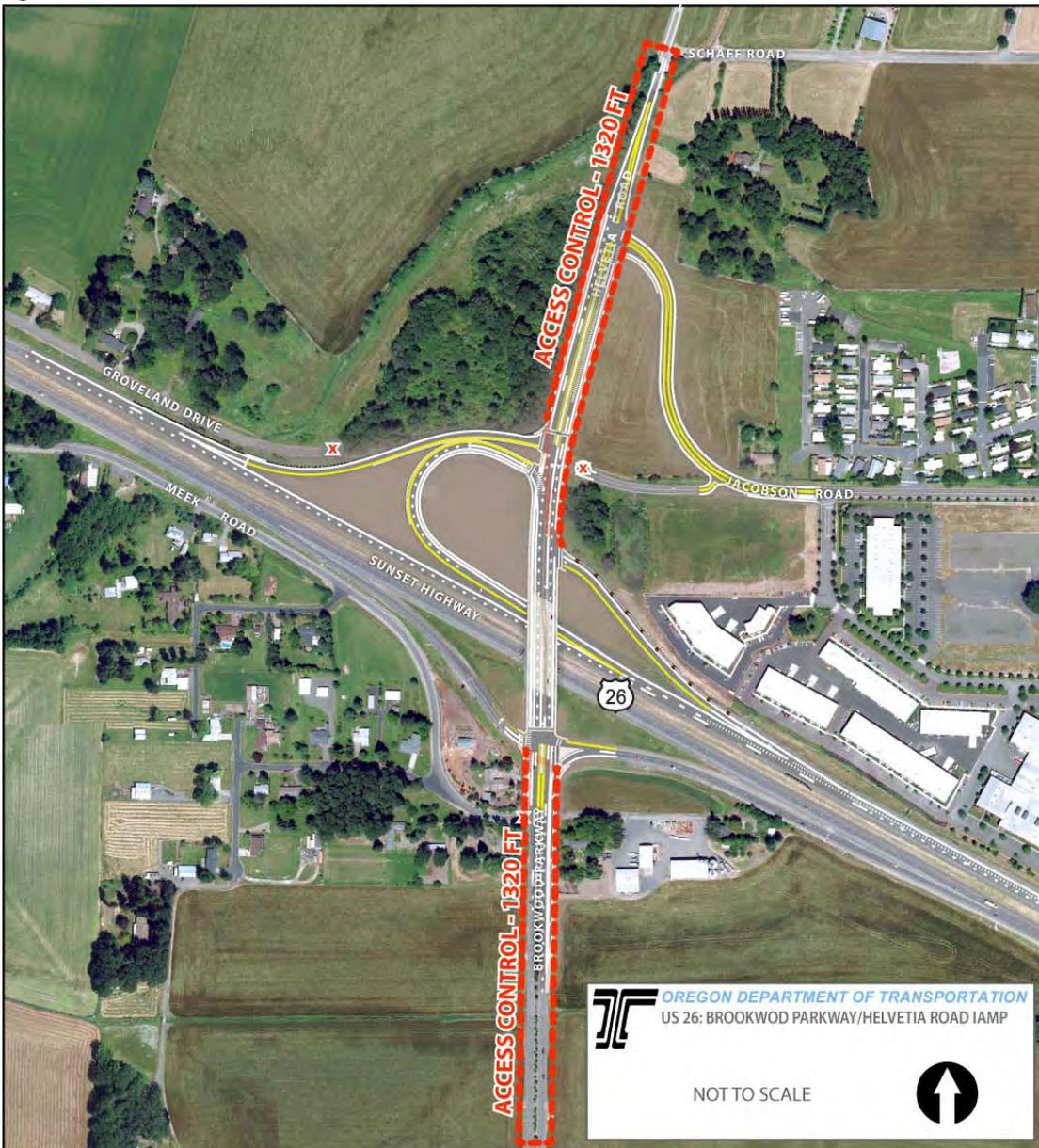
Components of these TSM measures are in use today and accounted for in the four step process. Ramp meters, turn lanes, and user fees (such as parking costs) are some examples of TSM in the regional travel demand model. Local jurisdictions will continue to monitor, adjust, and implement TSM strategies as needed.

ACCESS MANAGEMENT

ODOT has authority over its state highway facilities and therefore can purchase access control on state highways. ODOT also has the authority to purchase access rights on local roadways within the influence area of intersections or interchanges of highways if it can demonstrate that access to these roadways creates or may result in an adverse effect on the state highway. In addition, local government has authority to manage access on its local roadways. An access management strategy is being prepared

for the JTA Project that identifies short-term access management measures for each approach that will be implemented during the construction phases of the JTA Project. As shown in **Figure 15**, ODOT will purchase access control within 1,320 feet from the interchange ramp terminals. Access control means that there will be no right of access between a property abutting the highway and the highway. Per OAR 734-051-4020 (8), Standards and Criteria for Approval of Private Approaches, the access spacing standard for statewide highways with a posted speed of 55 mph is 1,320 feet.

Figure 15. Access Control



The short-term access management measures to be addressed as part of the JTA-funded interchange improvement project include:

- **Jacobson Road:** Closure of the existing roadway connection to Helvetia Road and relocation of the existing connection farther north away from the interchange. This will be constructed as a full intersection as part of the JTA Project. The full intersection will change to a right-in/right-out only when Schaaf Road is constructed to a three-lane facility and Jacobson Road is connected to Schaaf Road (**Project 11**).
- **Meek Road:** Closure of the existing roadway connection to Brookwood Parkway with concurrent new extension of 253rd Avenue from Evergreen Road to Meek Road. The driveway across from Meek Road on Brookwood Parkway will be moved to the south along the property line.
- **Groveland Drive:** Closure of the existing Groveland Drive connection to Helvetia Road north of the interchange and relocation of the existing connection across from Schaaf Road to the north.

IAMP IMPLEMENTATION

The adoption of the IAMP will enable the partner agencies to comply with applicable agency planning requirements and provide for the future planning, development, and management of the transportation system within the IAMP Study Area. The IAMP will be used by ODOT as a planning tool to guide the future planning and management of the interchange that connects to the county and city street systems. The IAMP will be utilized by Washington County and the City of Hillsboro to guide the management and improvements to the local road network in the Interchange Management Area. Specific IAMP implementation actions are detailed below for each partner agency.

ODOT MANAGEMENT ACTIONS

- After the City and County adoption processes, the Oregon Transportation Commission will

adopt the US 26: Brookwood Parkway/Helvetia Road IAMP as a transportation facility plan—an amendment to the OHP, per PLA 01, ODOT Transportation Facility Plan Adoption Process.

- ODOT will use the IAMP as a guide in formulating future management decisions regarding the US 26: Brookwood Parkway/Helvetia Road interchange.
- ODOT will continue the partnership with the city and county to guide the implementation of the IAMP.
- ODOT will continue to coordinate with the city and county throughout the UGB expansion process, TSP updates, as well as comprehensive plan and development code amendments and development review process, to ensure the interchange is protected.

CITY OF HILLSBORO MANAGEMENT ACTIONS

- The City of Hillsboro will adopt this IAMP as a refinement plan to its TSP.
- On October 20, 2011, the Metro Council decided to expand the region’s UGB, including the 330-acre (358.89 acres including roads and right-of-way) area north of Hillsboro, in the vicinity of NW Meek Road and south of US 26, for the purposes of attracting future large-site industrial employers. After adoption of the IAMP, the City of Hillsboro plans to start the planning process required by Metro’s Urban Growth Management Functional Plan Title 11: Planning for New Urban Areas (Metro Code section 3.07) to allow for the future planning and development of the 358.89-acre area. The City of Hillsboro will annex the land areas within the UGB for future industrial land uses.
- Implementation of the local improvement projects shown on **Figure 14** will require the City of Hillsboro to amend the TSP.
 - **Brookwood Parkway (projects #3 and #5).** The new westbound-southbound US 26 interchange loop ramp requires three lanes southbound to accommodate the amount of traffic expected to use the interchange in

the AM to access industrial lands. Three lanes northbound will provide storage for vehicles entering US 26 eastbound in the PM.

- **253rd Avenue (project #1).** 253rd Avenue is required to provide an alternate route once Meek Road is cut off from Brookwood Parkway due to interchange spacing standards and safety concerns. It will also provide access to industrial lands and a parallel route to Brookwood Parkway. (Part of this is outside of the current UGB but within the 330-acre expansion area.)
- **Huffman Street East of 253rd Avenue (project #4).** Huffman Street is required to access undeveloped industrial land within the UGB and provide a parallel route to Evergreen Parkway. Five lanes will be needed on Huffman Street between Brookwood Parkway and 253rd Avenue to accommodate traffic accessing the industrial lands while preserving capacity for through movements.
- **Huffman Street West of 253rd Avenue (project #7).** Huffman Street west of 253rd Avenue is needed to access industrial lands and provide a parallel route to Evergreen Parkway.
- **264th Avenue (project #8).** 264th Avenue is needed to provide a parallel local route to Jackson School Road and to access industrial lands. (Part of this is outside of the current UGB but within the 330-acre expansion area.)
- **New Collector (project #11).** A new collector street is needed to connect Jacobson Road to Schaaf Road.
- **Schaaf Road (project #12).** Schaaf Road east of Helvetia Road is needed to access industrial lands and provide a parallel route to Jacobson Road.
- The City of Hillsboro will continue to coordinate with ODOT and Washington County in evaluating land use actions (including amendments to the comprehensive plan, TSP,

and development code, the UGB expansion, and transportation improvements) that could affect the function of the interchange in order to ensure that coordination is timely and that actions and improvements are consistent with the defined function of the IAMP.

WASHINGTON COUNTY MANAGEMENT ACTIONS

- Washington County will adopt this IAMP by ordinance to its TSP.
- Implementation of the local improvement projects shown on **Figure 14** will require Washington County and the City of Hillsboro to amend their TSPs.
 - **Brookwood Parkway (projects #3 and #5).** The TSP lists the roadway as four to five lanes and classifies it as an arterial, but the proposed improvement is for six lanes. The new westbound-southbound US 26 interchange loop ramp requires three lanes southbound to accommodate the amount of traffic expected to use the interchange in the AM to access industrial lands. Three lanes northbound will provide storage for vehicles entering US 26 eastbound in the PM.
 - Projects listed above under City of Hillsboro (projects #1, 4, 7, 8, 11, and 12).
- **Groveland Drive realignment (project #2).** Groveland Drive is located outside the UGB and is to be reconnected to Helvetia Road.
- Washington County will continue to coordinate with ODOT and the City of Hillsboro in evaluating land use actions (including amendments to the comprehensive plan, TSP, and development code, and transportation improvements) that could affect the function of the interchange in order to ensure that coordination is timely and that actions and improvements are consistent with the defined function of the IAMP.

FUTURE INTERCHANGE DESIGN AND LAND USE CHANGES

- If an alternative interchange design is proposed during design of the JTA Project, additional traffic work would be needed to amend the IAMP. Additional measures would need to be considered, and city and county amendments may be needed.
- If, in the future, the existing land use designations are changed such that they would impact the operation and safety of the interchange, ODOT, the City of Hillsboro, and Washington County shall jointly prepare amendments to the IAMP management actions and prepare an accompanying funding plan to implement those actions.

