I-5 Exit 27 (South Medford Interchange)

South Medford Traffic Solutions

TECHNICAL MEMORANDUM #1
(TASK 3 – EXISTING CONDITIONS)

MAY 2020

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EXECUTIVE SUMMARY

Technical Memorandum #1 establishes the Year 2020 Baseline Conditions for the South Medford Transportation Solutions Plan. It summarizes the best available information documented in the 2007 Exit 27 Interchange Area Management Plan (IAMP), 2018 Medford Transportation System Plan (TSP) Update and other supporting documents within the South Medford Interchange Influence Area. The Project Management Team (PMT) reviewed this documentation and updated land use and transportation conditions that have changed within the study since Year 2007.

TM #1 also summarizes Year 2010 and Year 2030 traffic conditions that were forecasted in the Exit 27 IAMP prior to construction of the Exit 27 Single Point Urban Interchange (SPUI) on Garfield Street. The 2007 Exit 27 IAMP traffic analysis forecasted that there would be no traffic problems at the SPUI. This is no longer the case in that existing traffic data shows that the SPUI currently experiences traffic safety and operations issues during peak periods.

The Exit 27 IAMP and 2018 Medford TSP Update background information are only intended to provide structure for comparison purposes to the updated traffic analysis being prepared for the South Medford Transportation Solutions Transportation Plan. The Year 2020 and Year 2042 traffic analysis prepared for the South Medford Transportation Solutions Plan will be incorporated into the Exit 27 IAMP to remove and update the outdated data and analysis.

OVERVIEW

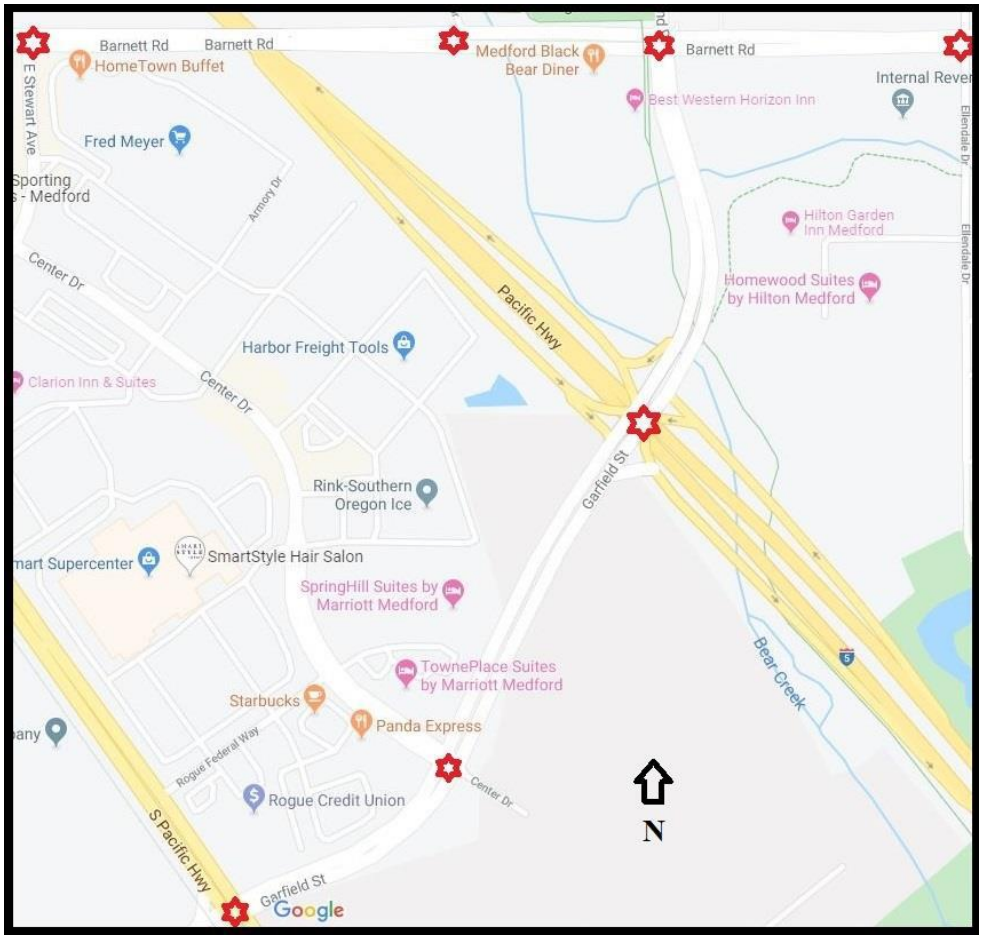
This memorandum summarizes the 2007 I-5 Exit 27 Interchange Area Management (IAMP) and the 2018 Medford Transportation System Plan Update (TSP) to establish Year 2020 base year conditions for the I-5 South Medford Traffic Solutions (Project). It also summarizes 2019 Reboot Your Commute Transportation Options Final Report.

The Project's study area is located within the existing Interchange Management Study Area (IMSA) established for 2007 I-5 Exit 27 IAMP. The Project's study intersections include the interchange ramp terminals and seven (7) local street intersections that affect interchange safety and operations (See Figure 1).

The Project's study area centers on I-5 Exit 27 (South Medford Interchange) bordered by:

- Stewart Avenue/Barnett Road intersection to the northwest;
- Barnett Road/Ellendale Drive intersection to the northeast; and
- OR 99/Garfield Street intersection to the southwest

FIGURE 1 - STUDY AREA



2007 I-5 EXIT 27 IAMP

The 2007 I-5 Exit 27 IAMP is a planning document used to help protect the function of the I-5 Exit 27 Single Point Urban Interchange (SPUI) at Garfield Street, and consequently the state's investment in the SPUI. It identifies long-range needs, and management actions to protect the function of the SPUI over a 20-year planning period.

IAMP Goals and Objectives

The IAMP goals and objectives were based upon the OTC's condition of approval specified in the 2006-2009 State Transportation Improvement Program (STIP).

GOAL - Maintain the function of the interchange over the 20-year planning period to preserve the investment in the facility.

Objective - Assess traffic operations at the SPUI using the most recent available data and most recent forecasts of year 2030 traffic, to determine whether the mobility standards prescribed in the OHP will be met for at least 20 years.

Objective - Manage access, including devising an access management strategy in compliance with applicable OAR 734 Division 51.

GOAL - Minimize the need for future major improvements to the interchange.

Objective - Identify whether future land uses might be inconsistent with the operation and safety of the SPUI and, if such land uses were identified, develop and recommend strategies for land use controls.

Objective - Ensure ODOT is involved in future land use decisions that could affected the function of the interchange.

Interchange Function

The Exit 27 SPUI functions as an urban interchange that serves primarily regional traffic. It also serves some local traffic movement between the north and south parts of Medford. It replaced the old Exit 27 interchange at Barnett Road with Barnett Road remaining as an I-5 overpass to function as a local east-west arterial with related bike and pedestrian improvements. The SPUI's ramp terminals are classified as an interstate highway with a maximum volume-to-capacity ratio of 0.85. The Highland-Garfield Connector (Connector 001WU) is classified as an Urban Other Principal Arterial with a maximum v/c ratio of 0.90.

The Exit 27 IAMP assessed whether, in light of recent development activity and new estimates of future development in the south Medford area (in 2007), the SPUI could be shown to have an operational life of at least 20 years. Traffic analysis confirmed that the SPUI would meet the Oregon Highway Plan (OHP) mobility targets of 0.85 v/c for at least the next 20 years, based on the assumptions made in 2007, and helped assure that ODOT's and local partners substantial investment made for the SPUI was protected. The Oregon Transportation Commission's (OTC) conditions of approval for funding the SPUI required the IAMP to provide for the protection of safe and efficient operation of the SPUI between connecting roadways and minimize the need for major improvements to existing interchanges.

The Exit 27 IAMP updated the analysis performed for the Final Environmental Impact Statement (FEIS) using new information compiled for population variables (i.e. number of households and population) and for employment (i.e. number of employees by category). The population and employment information was updated as part of an effort to use the most recent data for the 2005-2030 Regional Transportation Plan (RTP). The base year population and employment data for the IAMP was from Year 2002. The future year used for the Exit 27 IAMP was Year 2030, making it consistent with the 2005-2030 RTP.

The City of Medford provided 2004 traffic counts as the basis for assessing base year traffic operations for the Exit 27 IAMP. The future year traffic analysis made use of the new population and employment data by using information developed by RVMPO staff in cooperation with local agencies. This data was used in the regional transportation RVCOG forecasting model run by ODOT's Transportation Planning and Analysis Unit (TPAU). The model, including the base year and future year data, was the same as that used to analyze transportation needs, traffic operations, and the air quality analysis conducted for the 2005-2030 RTP.

Exit 27 IAMP Interchange Management Study Area (IMSA)

The Exit 27 IAMP IMSA centered on the SPUI and included parcels along I-5, OR 99 and Barnett Road. The boundaries included Siskiyou Boulevard on the north, the city limits/urban growth boundary (UGB) on the south, Olympic Avenue/Murphy Road on the east, and the UGB and South Holly Street on the west. It contained a mix of residential, commercial, industrial land and open space. The IMSA excluded downtown, but encompassed a substantial portion of the commercial, industrial, and multi-family residential (MFR) land in south-central Medford.

The Exit 27 IMSA matched the transportation analysis zone (TAZ) boundaries used to model the 2005-2030 RTP and the FEIS for the South Medford Interchange Design Project. It accounted for more than ten (10%) percent of the region's total employment and about two (2%) of the region's households. The IMSA contained approximately 1,000 residences and a significant amount of single-family residential development east of I-5.

Employment comprised an important component of land uses, accounting for over 9,000 employees. Service and retail sector employment accounted for about 85% percent on the employment and included both big box retail and fast food restaurants, many of which were found along the Barnett Road and OR 99 corridors. There was some vacant and under-utilized commercial land in the vicinity of Center Drive and OR 99. Land located in the south part of the IMSA, between I-5 and OR 99, which was designated as Regional Commercial, has been developed as a Regional Sports Park.

Industrial employment accounted for about 10% percent of the employment within the IMSA. Industrial development could also be found along the OR 99 corridor. This area also featured some vacant and under-utilized land with industrial zoning designations, with most of the vacant industrial land being located on the west-side of OR 99. More industrial development along this corridor was expected. According to the forecasts of households and population used in the 2005-2030 RTP, a total of about 400 new households were assumed to be developed within the IMSA by Year 2030. Employment forecasts for the 2005-2030 RTP predicted that the IMSA would add about 1,500 employees by Year 2030 for a total of approximately 10,600 employees in the IMSA.

Existing Conditions Analysis

Adopted transportation plans and land use plans were reviewed to help ensure consistency with applicable plans and regulations so that the Exit 27 IAMP would meet state and community goals for the area, and to identify how local planning efforts, policies and regulations would protect the SPUI.

The traffic analysis performed for the Exit 27 IAMP focused on making certain that the SPUI would have an operational life of at least twenty years. The analysis was based upon the population, employment and traffic volumes developed for the RVMPO 2005-2030 RTP. The RTP assumptions were based on the land uses permitted under the City of Medford's adopted comprehensive plan and Land Development Code. A traffic analysis using the regional traffic forecasting model demonstrated that the SPUI would substantially meet ODOT's mobility targets in Year 2030, with an overall v/c of 0.58.

The traffic analysis also considered an Alternative Development Scenario developed to test what would happen if traffic generation exceeded RTP assumptions. This alternative used higher traffic generating employment values than the RTP and also added additional dwelling units in the Exit 27 IMSA. The traffic analysis from this alternative scenario also indicated the SPUI would meet ODOT's mobility targets in Year 2030, with a v/c of 0.70.

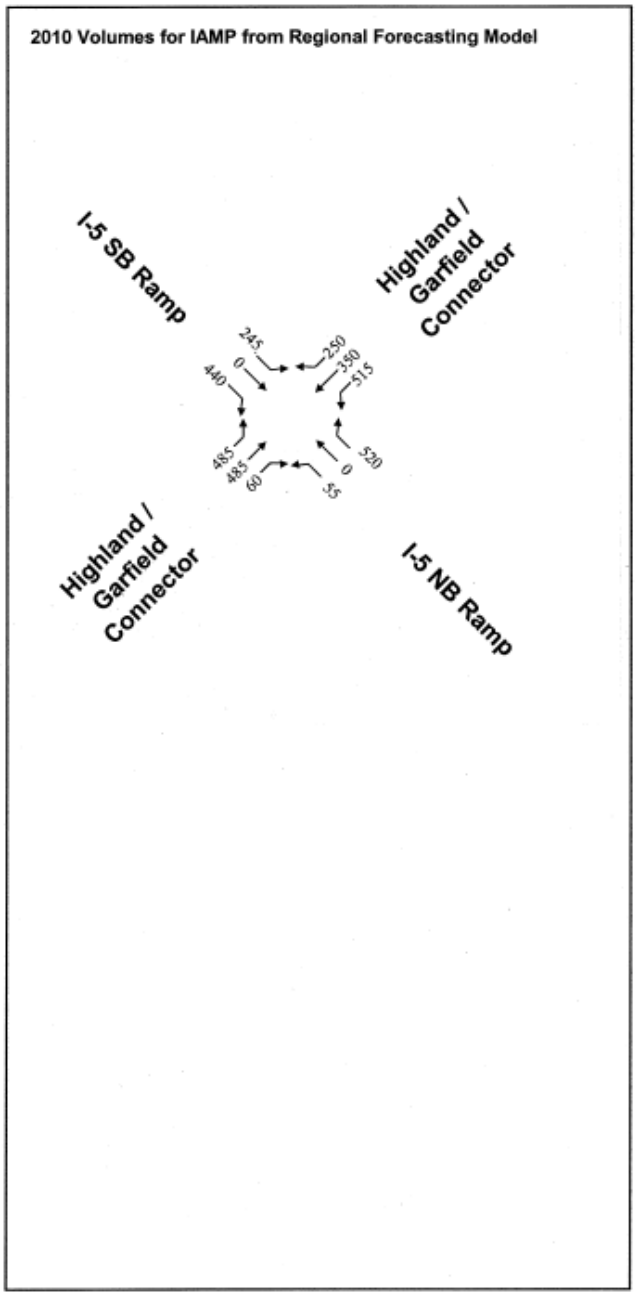
The traffic analysis for both the RTP assumptions and the Alternative Development Scenario were conducted using the same regional forecasting model that was used for the 2005-2030 RTP. This model was referred to as the "RVCOG" model. This model was used for the Exit 27 IAMP because it was previously used for the FEIS and therefore enabled the IAMP to be consistent with both the FEIS and the RTP.

Projected Year 2010 Traffic Volumes

The Exit 27 IAMP year 2010 traffic volumes were developed from household, population, and employment data in the RVMPO RTP and land use models. Due to the reconfiguration of the SPUI, traffic patterns in the area were considerably altered by the SPUI.

One of the priorities of the Exit 27 IAMP was to update the traffic operations analysis performed for the FEIS. Updating the operations analysis for the SPUI required estimating the Year 2010 traffic volumes. Projected Year 2010 traffic volumes were developed by analyzing the actual traffic counts in the area from Year 2004, provided by City of Medford staff, and results of the runs of the regional model for the base year and Year 2010. The regional model was also used to determine travel patterns of traffic using the SPUI's northbound and southbound ramps (See Figure 2).

FIGURE 2 – EXIT 27 SPUI 2010 VOLUMES



Predicted Year 2010 Traffic Operations

The traffic operations for the Exit 27 SPUI were analyzed using the Synchro and SimTraffic analysis packages (See Tables 1 and 2). These analysis tools are based on the Highway Capacity Manual. Unlike the regional model, which reports traffic volumes, the traffic operations analysis packages such as Synchro and SimTraffic show the v/c ratios, delay, and queues at intersections.

TABLE 1 – EXIT 27 SPUI 2010 V/C AND LOS

SPUI		Calculated V/C Ratio	ODOT V/C Standard	Calculated LOS
Overall		0.47	0.85	B
I-5 Southbound Off-Ramp	LT	0.71	na	C
	RT	0.31	na	A
I-5 Northbound Off-Ramp	LT	0.16	na	C
	RT	0.37	na	A
Garfield Northeast-bound	LT	0.78	na	C
	Thru	0.46	na	B
	RT	0.04	na	A
Highland Southwest-bound	LT	0.80	na	C
	Thru	0.32	na	B
	RT	0.18	na	A

TABLE 2 – EXIT 27 QUEUE LENGTHS

SPUI	Movement	Calculated 95th Percentile Queue	Storage Distance
Southbound Off-Ramp	LT	125	Na
	RT	75	200
Northbound Off-Ramp	LT	50	Na
	RT	125	200
Garfield Northeast-bound	LT	175	300
	Thru	175	Na
	RT	50	200
Highland Southwest-bound	LT	200	300
	Thru	125	Na
	RT	50	200

Forecast Year 2030 Population, Households and Employment
Some vacant land was available in the Exit 27 IMSA for new households and for a variety of employment growth. All assumptions about population, household and employment growth were the same as used in the 2005-2030 RTP.

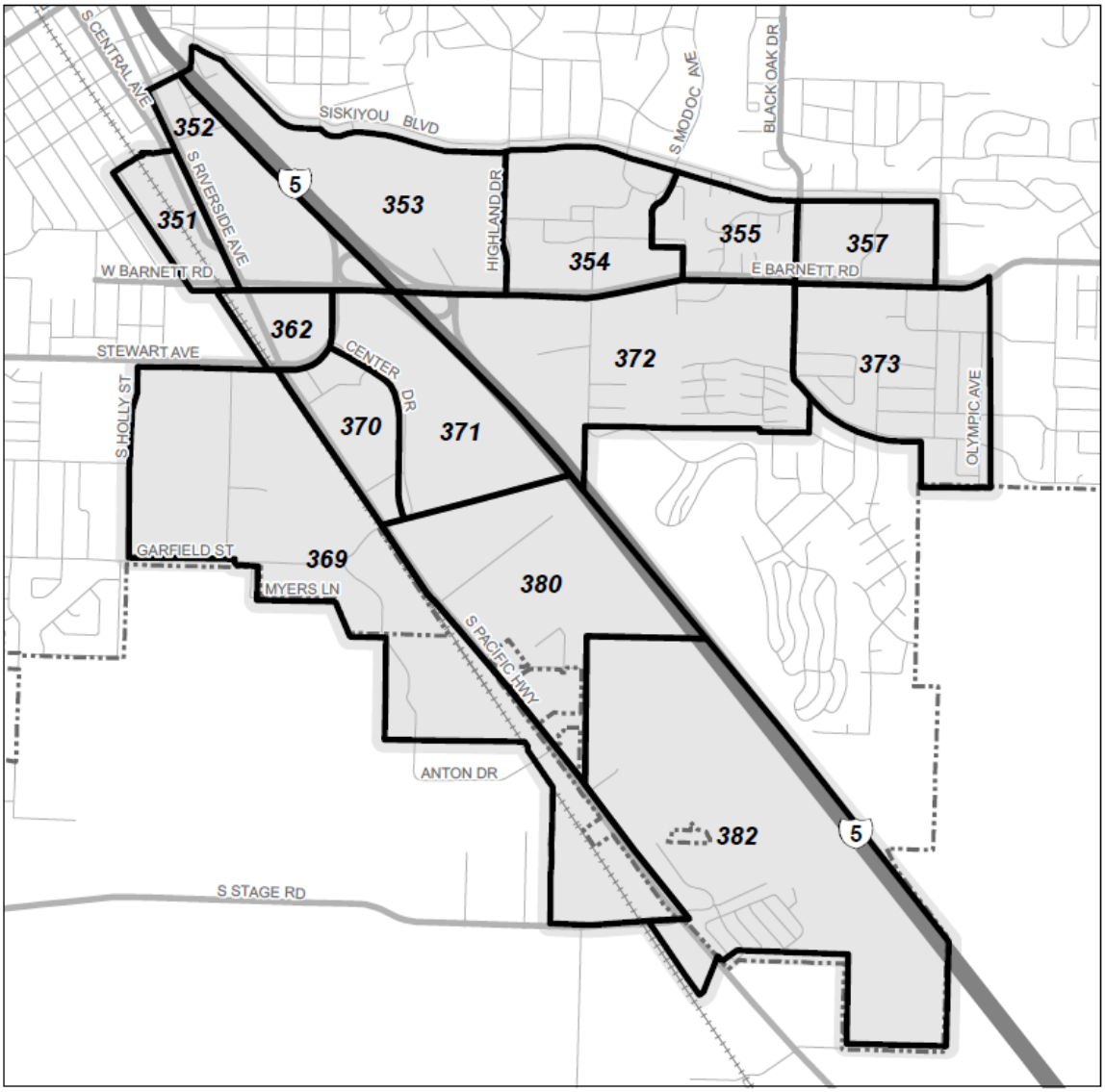
Almost half the residential growth in the Exit 27 IMSA was predicted in TAZ 373 and only three others (TAZs 369, 372, and 380) were expected to add more than 50 households. Likewise, employment growth in the IMSA was expected to be concentrated (See Table 3).

TABLE 3 – YEAR 2030 POPULATION, HOUSEHOLDS & EMPLOYMENT BY TAZ

			Employment by Category				
TAZ	Population	Households	Retail	Service	Industrial	Other	Total
351	120	43	30	215	53	192	490
352	188	64	218	394	57	1	670
353	148	64	19	71	3	0	93
354	304	132	19	76	5	0	100
355	368	133	0	120	6	0	126
357	39	15	2	2,220	0	5	2,227
362	46	16	96	232	74	8	410
369	311	113	1,805	706	586	124	3,221
370	28	13	212	408	5	6	631
371	41	19	189	502	26	0	717
372	573	278	24	245	2	62	333
373	926	398	56	462	0	107	625
380	273	130	151	317	222	0	690
382	83	39	55	138	63	19	275
Total	3,448	1,457	2,876	6,106	1,102	524	10,608

TAZs 369 and 370 were expected to account for half the employment growth in the Exit 27 IMSA, with each accounting for almost 400 new employees. Only two others (TAZs 380 and 382) were expected to add more than 100 new jobs (See Figure 3).

FIGURE 3 – SOUTH MEDFORD TAZS

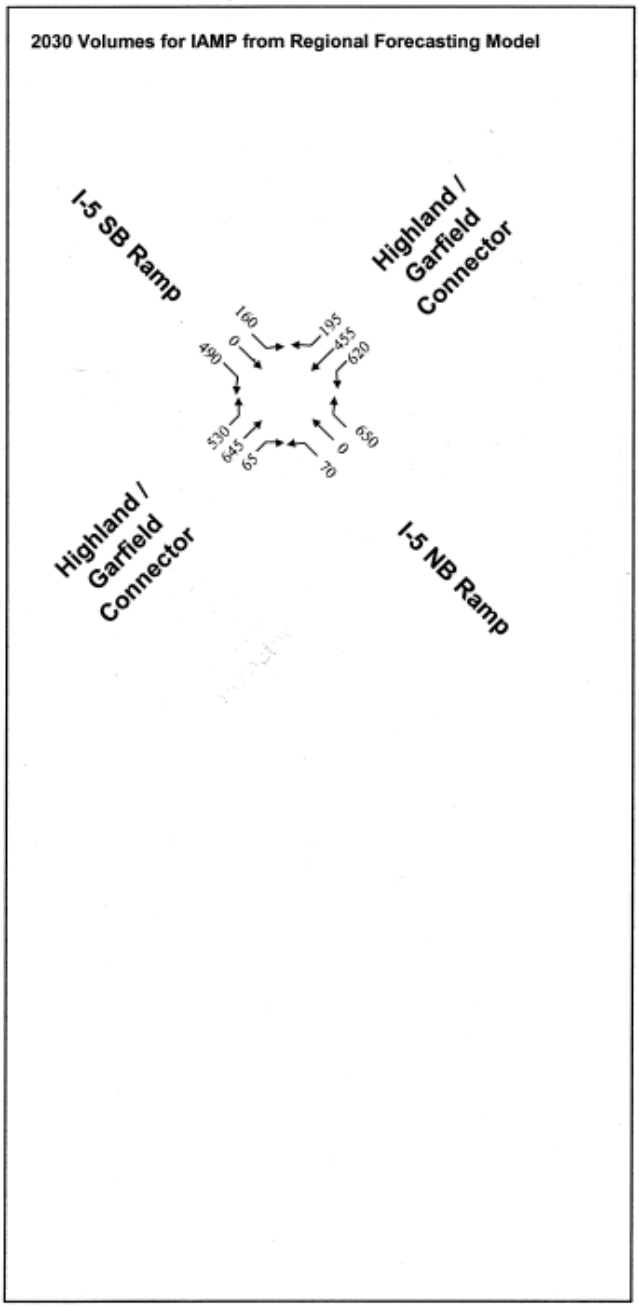


Projected Year 2030 Traffic Volumes

The traffic volumes were developed from household, population, and employment data in the 2005-2030 RTP and land use models. Since the goal of the Exit 27 IAMP was to assess traffic operations for a twenty-year period, Year 2030 was used as the basis for future traffic operations analysis.

Year 2030 traffic volumes were developed by analyzing the actual traffic counts in the area from Year 2004 and results of the runs of the regional model for Year 2010 and Year 2030 (See Figure 4).

FIGURE 4 – EXIT 27 SPUI 2030 VOLUMES



Predicted Year 2030 Traffic Operations Analysis

The traffic at the Exit 27 SPUI for Year 2030 was analyzed using the same methodology described for Year 2010 conditions. The configuration of the SPUI was identical, only the traffic volumes were changed. Synchro and SimTraffic were also used for the Year 2030 analysis.

The traffic operations analysis results for projected Year 2030 traffic volumes showed the SPUI to meet OHP mobility standards with a v/c of 0.58 (See Figures 5 and 6).

FIGURE 5 – EXIT 27 SPUI 2030 V/C & LOS

SPUI		Calculated V/C Ratio	ODOT V/C Standard	Calculated LOS
Overall		0.58	0.85	B
I-5 Southbound Off-Ramp	LT	0.61	0.85	C
	RT	0.35	0.85	A
I-5 Northbound Off-Ramp	LT	0.27	0.85	C
	RT	0.46	0.85	A
Garfield Northeast-bound	LT	0.80	0.90	C
	Thru	0.59	0.90	B
	RT	0.05	0.90	A
Highland Southwest-bound	LT	0.80	0.90	C
	Thru	0.38	0.90	B
	RT	0.14	0.90	A

FIGURE 6 – EXIT 27 SPUI 2030 QUEUE LENGTHS

SPUI	Movement	Calculated 95th Percentile Queue	Storage Distance
Southbound Off-Ramp	LT	100	Na
	RT	50	200
Northbound Off-Ramp	LT	150	Na
	RT	225	200
Garfield Northeast-bound	LT	200	300
	Thru	225	Na
	RT	75	200
Highland Southwest-bound	LT	225	300
	Thru	150	Na
	RT	25	200

The results of this analysis were checked with the results from Final EIS and were again found to be very similar. The overall conclusion from this analysis is that the SPUI was expected to meet ODOT mobility standards through Year 2030.

POTENTIAL FUTURE MANAGEMENT MEASURES

The SPUI was predicted to continue to operate acceptably and meet ODOT mobility standards through year 2030 without any mitigation measures. Potential management measures were not considered specifically needed to meet mobility standards for the twenty-year plan horizon, but it was acknowledged that they could be implemented at some future time to extend the operational life of the interchange beyond this timeframe.

In addition to a description of these measures, Plan policies and ordinance language were cited to demonstrate that the City of Medford, as well as the MPO Region, acknowledged and supported management measures that would provide future protection to the Interchange. These future management measures were described as follows:

Transportation Demand Management (TDM) Strategies are designed to reduce vehicle miles traveled, especially in the peak periods. These strategies focus on the provision of services or facilities intended to shift travelers to different travel modes, or to travel at non-peak times, or to offer trip substitution choices such as telecommuting.

Transportation System Management (TSM) Strategies are designed to make maximum use of existing transportation facilities and include traffic engineering measures such as signal timing changes, provision of turn lanes, turn restrictions, and restricting on-street parking to increase the number of travel lanes. Traffic operations affecting the study area will be refined after construction of the SPUI, to assure that it operates safely and efficiently.

Intelligent Transportation Systems (ITS) Management Strategies can enable agencies to monitor traffic, respond to traffic accidents faster and communicate with the motoring public in real time. ITS can also be used to control traffic without adding traffic capacity in the vicinity of the interchange, and includes transit signal priority, lane control signals and variable speed limit signs. The RVMPO has completed an ITS Architecture Plan for the Rogue Valley area, with the City of Medford assuming a prominent role in guiding plan development.

Ramp Metering is typically used on the on-ramps to freeways and other limited access highways, to meter the rate of traffic flow entering the highway. Ramp meters can use a fixed-time signal to set minimum intervals between vehicles entering the freeway or they can adjust the rate of entering vehicles in response to the actual, real-time flow on the freeway. The RTP contains policy language regarding the potential use of ramp meters in the MPO area. Ramp meters are successful when deployed throughout the corridor system, which means that to help alleviate congestion at the South Medford Interchange, ramp metering should be considered on all ramps entering I-5 over the entire MPO area.

Adopt Revised Standards for Parking with Lower Minimums and a Maximum reduce parking helps to discourage automobile use especially if combined with TDM measures, that provide positive incentives for people to use transit or carpooling for their trips.

The City of Medford is required to develop a parking plan as a condition of DLCD approval of their TSP. This measure could be used for commercial and employment areas in the vicinity of the new interchange, to reduce traffic congestion.

Limiting New Trips or Land Use Changes in a Specific Study Area can be considered to limit the amount of additional traffic generated by new development in a specified management area. Although this tool was considered by the South Medford IAMP TAC for use in the study area, it was determined that it was not warranted at this time. It was also noted that much of the traffic affecting the new interchange was generated from beyond the interchange study area, which would make a trip budget within the study area less effective. Also, both the Transportation Planning Rule (TPR) and City code require ODOT review of land use changes in the interchange area, with mitigations applied to assure facility adequacy. Although not necessitated at this time, these measures could be incorporated at a future time, if needed to control trip generation.

MEASURES RECOMMENDED IN THE IAMP

Based on the analyses performed during this project, it was predicted that the SPUI would operate acceptably and would meet ODOT mobility standards throughout the twenty-year planning period. However, to protect the function of the new South Medford Interchange during and beyond the 20-year planning period, two management measures were recommended for inclusion in the adopted IAMP. These measures were as follows;

- The implementation of the Access Management Strategy – South Medford Interchange Project, 2003.
- The inclusion of provisions in the IAMP from the Medford TSP and Land Development Code, that provide added protection for the function of the new interchange.

Implement Access Management Strategy

ODOT developed the Access Management Strategy – South Medford Interchange Project in 2003, for the new South Medford Interchange in compliance with the OHP, Division 51, the City of Medford Comprehensive Plan and other local plans and policies. The strategy, which the Medford staff was given an opportunity to review, included access management recommendations that support the Project objectives of the South Medford Interchange Project balanced with the City of Medford's land use, local street, and economic development goals. All were consistent with state access management requirements for safe and efficient highway operations.

The Access Management Strategy provided a comprehensive inventory of all public and private approaches in the interchange area and identified strategies that meet or improve current conditions, by moving towards the appropriate access management standards. The inventory identified all rights of access between the adjoining properties and the state highway, including reservations and grants of access. It contained findings for Division 51 requirements including deviations. The strategy also developed a basis for a future intergovernmental agreement to transfer access review responsibility (See Figures 7, 8 and 9).

Key provisions of the Access Management Strategy are:

- Full access control along the Highland-Garfield Connector, a new facility that extends between Riverside Avenue and Barnett Road.
- The removal of the existing Barnett Road freeway ramps.
- Access changes to OR 99 including the closure of four existing access points and the conversion of some existing accesses to right-in, right-out only.

FIGURE 7 – EXIT 27 SPUI ACCESS JURISDICTIONS

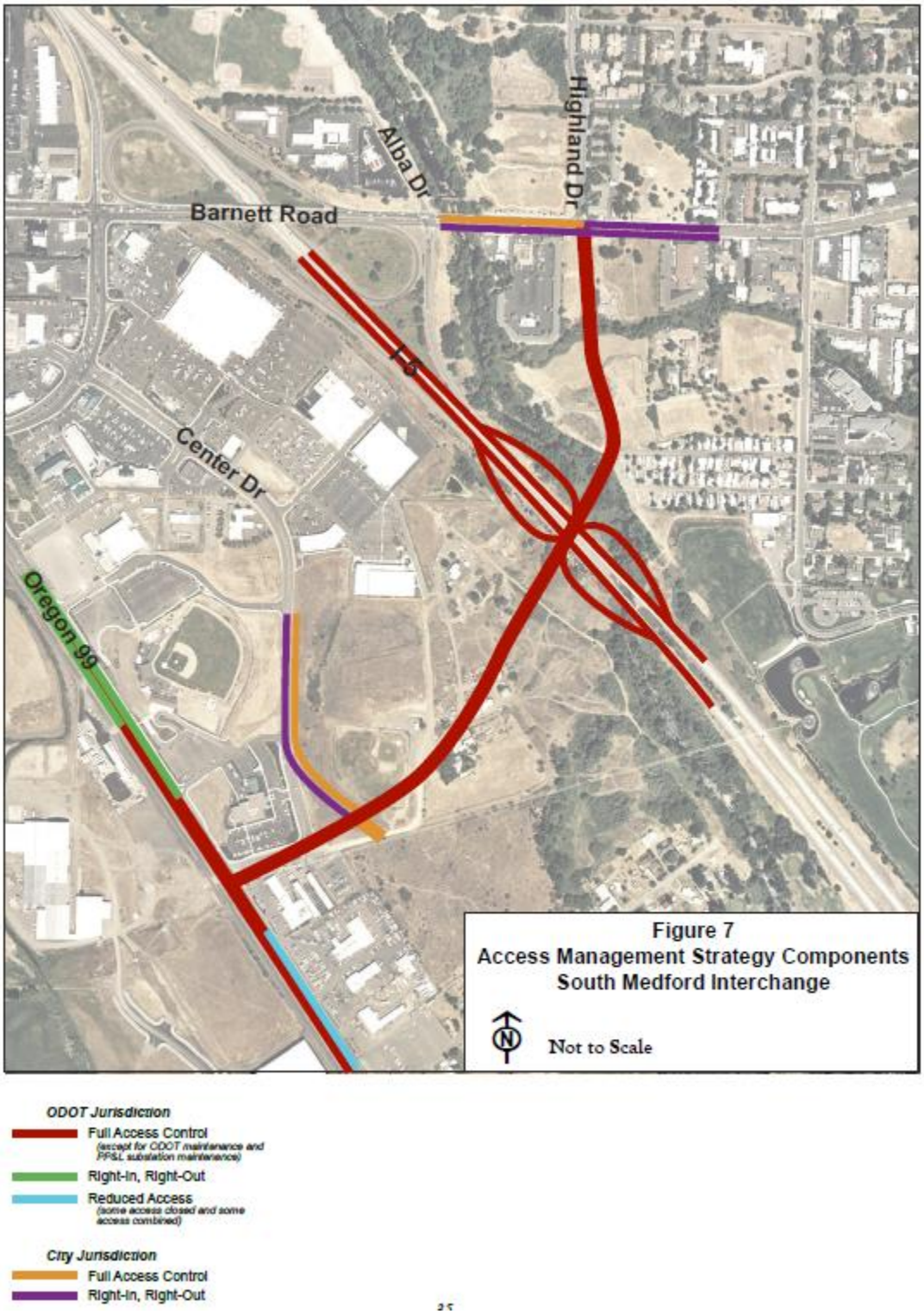


FIGURE 8 – EXIT 27 SPUI ACCESS LOCATIONS

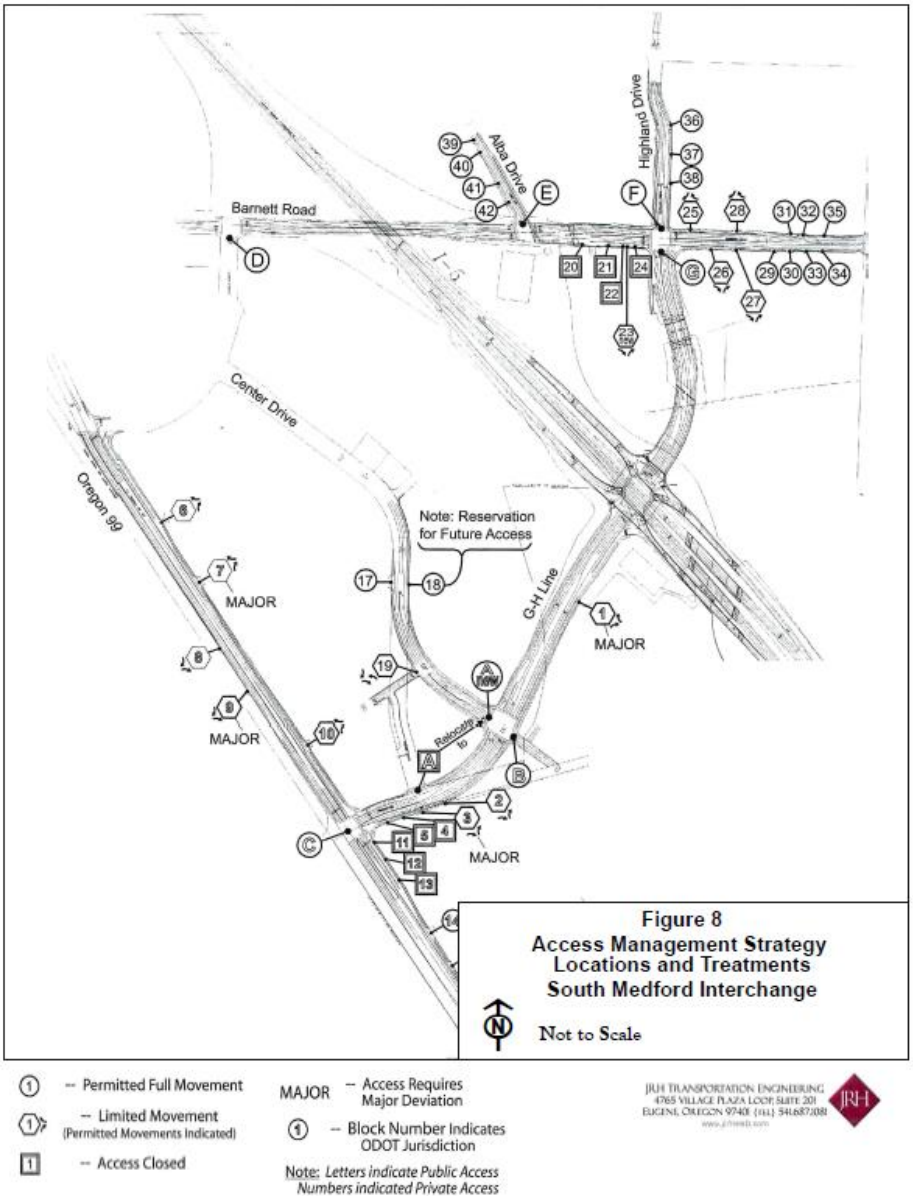


FIGURE 9 – EXIT 27 SPUI ACCESS LOCATIONS

Access number	Station	Left/ Right	Paved Width	Description	Public or Private	Code
G-H Line – Garfield Highland Connector						
1	0+626	L	4.2	ODOT Maintenances access to water quality facility and bridges	Private	MAJOR
2	0+014	L	10.3	Access for PP&L substation maintenance – right-in/right-out only	Private	C-O
3	0+046	L	10.3	Access for PP&L substation maintenance – right-in/right-out only	Private	MAJOR
4	0+075	L		Closing existing Les Schwab access	N/A	D-O
5	0+095	L		Closing existing Les Schwab access	N/A	D-O
A	0+032	R		Center Drive – replaced by access "A-new" – signalized	N/A	B-O
A-New	0+861	R	21.6	Center Drive (Relocated from A) - signalized	Public	A-O
B	0+861	L	11.4	Future public road, access for existing residence	Public	A-O
Highway 99						
C	0+893	L/R	26.0	Garfield-signalized-public road	Public	A-O
6	0+320	L	7.7	Armory Drive-right-in/right-out only	Private	C-O
7	0+432	L	11.4	Miles Field access-right-in/right-out only	Private	MAJOR
8	0+536	R	18.0	Oil Company-right-in/right-out only	Private	C-O
9	0+618	R	13.5	Oil Company-right-in/right-out only	Private	MAJOR
10	0+742	L	7.7	Rogue Federal Credit Union/Miles Field-right-in/right-out only	Private	C-O
11	0+925	L		Closing existing Les Schwab/Skinner access	N/A	D-O
12	0+963	L		Closing existing Les Schwab/Skinner access	N/A	D-O
13	0+001	L		Closing existing Les Schwab/Skinner access	N/A	D-O
14	0+101	L	16.7	Skinner/Naumes-full movement	Private	C-O
15	0+162	L	12.2	Naumes-full movement	Private	MAJOR
16	0+206	L		Closing existing restaurant access	N/A	D-O
Barnett Road						
20	0+596	R		Closing existing gas station access	N/A	D-M
21	0+614	R		Closed motel/restaurant access	N/A	D-M
22	0+638	R		Closing existing restaurant access	N/A	D-M
23 New	0+667	R	9.0	Motel and restaurant access-replaces 22 and 24 right-in/right-out	Private	B-M
24	0+678	R		Closing existing motel access	N/A	D-M
25	0+768	L	6.9	Highlander apartments- right-in/right-out only	Private	C-M
26	0+802	R	6.1	Vacant lot access- right-in/right-out only	Private	C-M
27	0+841	R	9.7	State farm westerly access- right-in/right-out only	Private	C-M
28	0+842	L	9.2	Vacant lot access- right-in/right-out only	Private	C-M
29	0+902	R	7.3	State Farm easterly access- right-in/right-out only	Private	A-M
30	0+927	R	9.2	Residence	Private	A-M
31	0+928	L	6.8	Woodcreek apartments and townhomes	Private	A-M
32	0+948	L	6.8	Lazy Creek professional condominiums	Private	A-M
33	0+954	R	6.2	Party Place-full movement	Private	A-M
34	0+978	R	7.5	Rogue Valley Manor Community Services	Private	A-M
35	0+981	L	3.9	AAA of Oregon	Private	A-M
D	0+033	R	21.2	Stewart Avenue-signalized-SB off-ramp removed	Public	A-M
E	0+513	L	9.9	Alba Drive-signalized with NB off-ramp removed	Public	A-M
F	0+721	L	20.1	Highland Drive intersection-north leg-signalized-public	Public	A-M

FIGURE 9 – EXIT 27 SPUI ACCESS LOCATIONS (CONTINUED)

Access number	Station	Left/ Right	Paved Width	Description	Public or Private	Code
G	0+724	R	27.6	Highland Drive intersection-south leg-signalized-public	Public	A-O
Center Drive						
17	0+334	R	11.0	Miles Field/Armory access-full movement-future signal (per City)	Private	A-M
18	0+334	L	11	Reservation for future access to development (per City)	Private	A-M
19	0+475	R	7.3	RFCU/Miles Field-right-in/right-out, left turn only	Private	C-M
Highland Drive						
36	0+212	L	8.5	Apartment access north of Lazy Creek-full movement	Private	A-M
37	0+257	L	7.6	Apartment access-full movement	Private	A-M
38	0+303	L	7.1	Apartment access-full movement	Private	A-M
Alba Drive						
39	0+006	R	9.4	Motel 6 access-full movement	Private	A-M
40	0+029	R	7.6	Dairy Queen drive through-full movement	Private	A-M
41	0+086	R	9.5	Dairy Queen-full movement	Private	A-M
42	0+120	R	9.4	Dairy Queen/motel-full movement	Private	A-M
G-H Line – Garfield Highland Connector						
1	0+626	L	4.2	ODOT Maintenances access to water quality facility and bridges	Private	MAJOR
2	0+014	L	10.3	Access for PP&L substation maintenance – right-in/right-out only	Private	C-O
3	0+046	L	10.3	Access for PP&L substation maintenance – right-in/right-out only	Private	MAJOR
4	0+075	L		Closing existing Les Schwab access	N/A	D-O
5	0+095	L		Closing existing Les Schwab access	N/A	D-O
A	0+032	R		Center Drive – replaced by access "A-new" – signalized	N/A	B-O
A-New	0+861	R	21.6	Center Drive (Relocated from A) - signalized	Public	A-O
B	0+861	L	11.4	Future public road, access for existing residence	Public	A-O
Highway 99						
C	0+893	L/R	26.0		Public	A-O
6	0+320	L	7.7		Private	C-O
7	0+432	L	11.4		Private	MAJOR
8	0+536	R	18.0		Private	C-O
9	0+618	R	13.5		Private	MAJOR
10	0+742	L	7.7		Private	C-O
11	0+925	L			N/A	D-O
12	0+963	L			N/A	D-O
13	0+001	L			N/A	D-O
14	0+101	L	16.7		Private	C-O
15	0+162	L	12.2		Private	MAJOR
16	0+206	L			N/A	D-O
Barnett Road						
20	0+596	R			N/A	D-M
21	0+614	R			N/A	D-M
22	0+638	R			N/A	D-M
23 New	0+667	R	9.0		Private	B-M
24	0+678	R			N/A	D-M
25	0+768	L	6.9		Private	C-M
26	0+802	R	6.1		Private	C-M
27	0+841	R	9.7		Private	C-M
28	0+842	L	9.2		Private	C-M

FIGURE 9 – EXIT 27 SPUI ACCESS LOCATIONS (CONTINUED)

Access number	Station	Left/ Right	Paved Width	Description	Public or Private	Code
29	0+902	R	7.3		Private	A-M
30	0+927	R	9.2		Private	A-M
31	0+928	L	6.8		Private	A-M
32	0+948	L	6.8		Private	A-M
33	0+954	R	6.2		Private	A-M
34	0+978	R	7.5		Private	A-M
35	0+981	L	3.9		Private	A-M
D	0+033	R	21.2		Public	A-M
E	0+513	L	9.9		Public	A-M
F	0+721	L	20.1		Public	A-M
G	0+724	R	27.6		Public	A-O
Center Drive						
17	0+334	R	11.0		Private	A-M
18	0+334	L	11		Private	A-M
19	0+475	R	7.3		Private	C-M
Highland Drive						
36	0+212	L	8.5		Private	A-M
37	0+257	L	7.6		Private	A-M
38	0+303	L	7.1		Private	A-M
Alba Drive						
39	0+006	R	9.4		Private	A-M
40	0+029	R	7.6		Private	A-M
41	0+086	R	9.5		Private	A-M
42	0+120	R	9.4		Private	A-M

Note: Some widths may be revised as the design is refined.

A-M Full movement approach – Medford jurisdiction

A-O Full movement approach – ODOT jurisdiction

B-M Approaches to be combined or relocated – Medford jurisdiction

B-O Approaches to be combined or relocated – ODOT jurisdiction

C-M Approaches to be converted to right-in, right-out– Medford jurisdiction

C-O Approaches to be converted to right-in, right-out— ODOT jurisdiction

D-M Approaches to be closed– Medford jurisdiction

D-O Approaches to be closed— ODOT jurisdiction

MAJOR Major deviation required– ODOT jurisdiction

MINOR Minor deviation required– ODOT jurisdiction

The 2018-2038 Medford TSP is based on the City of Medford's current Comprehensive Plan land uses and provides for a transportation system that accommodates the expected population and employment growth resulting from development of the planned land uses.

The TSP identifies existing and future transportation facilities located within the Medford City Limits and an additional 4,000 acres located within its Urban Growth Boundary (UGB). The UGB provides the City with a 20 year supply of land for future growth. Land use is a key factor in developing a functional transportation system; the amount of land planned for development, the types of land uses, and how they relate to each other have a direct relationship to the anticipated demands on the transportation system. Similarly, the makeup of the population influences the types of facilities and programs needed to move the residents and visitors within the community.

Existing Land Uses

The Comprehensive Plan provides a long-term guide for where and how future development will occur. Segregated, low-density land uses tend to limit transportation choices by separating trip origins and destinations and increasing average trip lengths. This makes walking and bicycling less convenient and makes transit less efficient, which could in turn result in more single occupancy vehicles traveling the system and inefficiencies in freight movement. Alternatively, mixed-land uses at higher densities tend to bring a larger number of origins and destinations close together, thereby shortening average trip lengths and making walking, biking, and transit feasible for a larger number of trips (See Figures 10 and 11).

FIGURE 10 - CITY COMPREHENSIVE PLAN LAND USE MAP

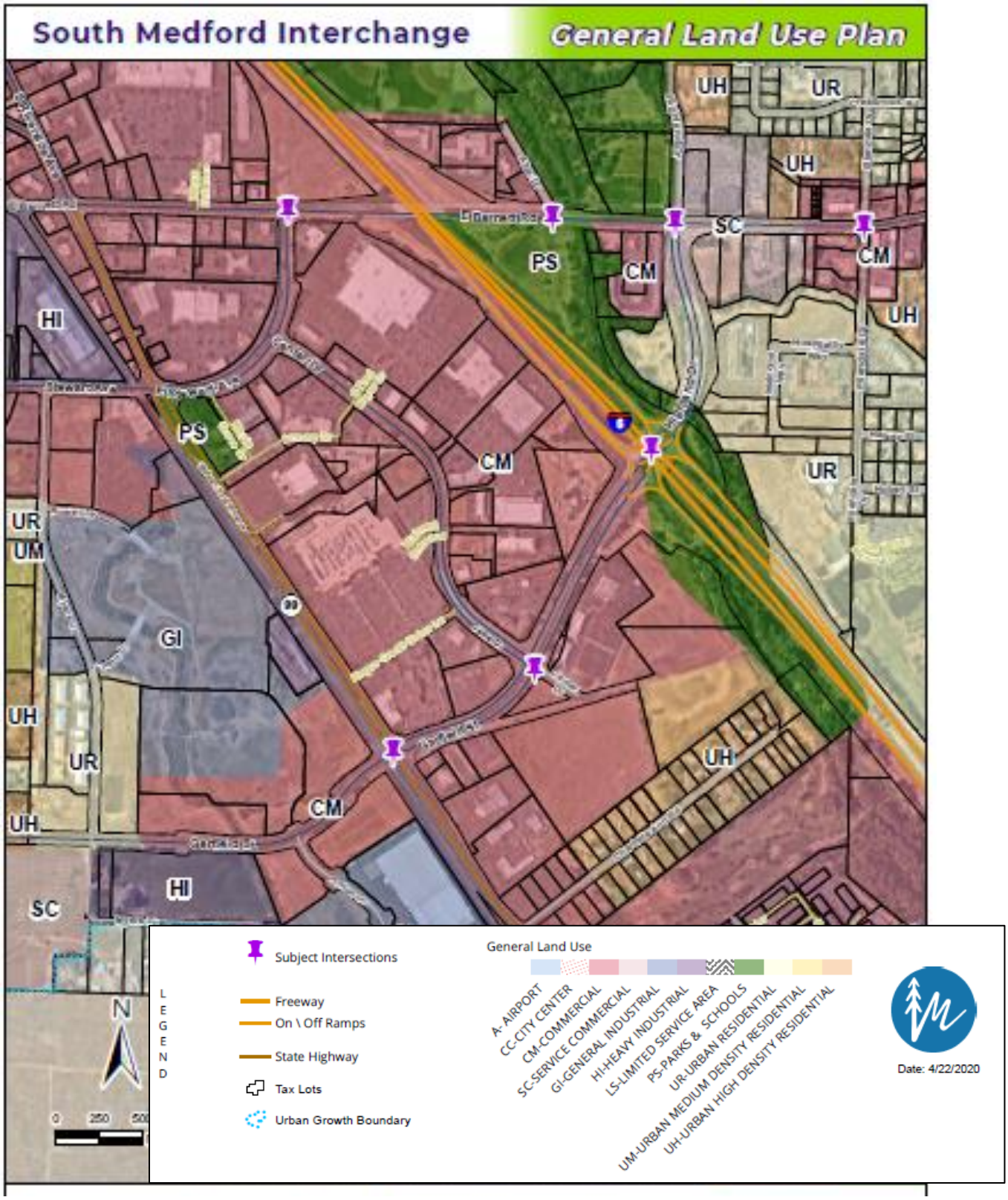
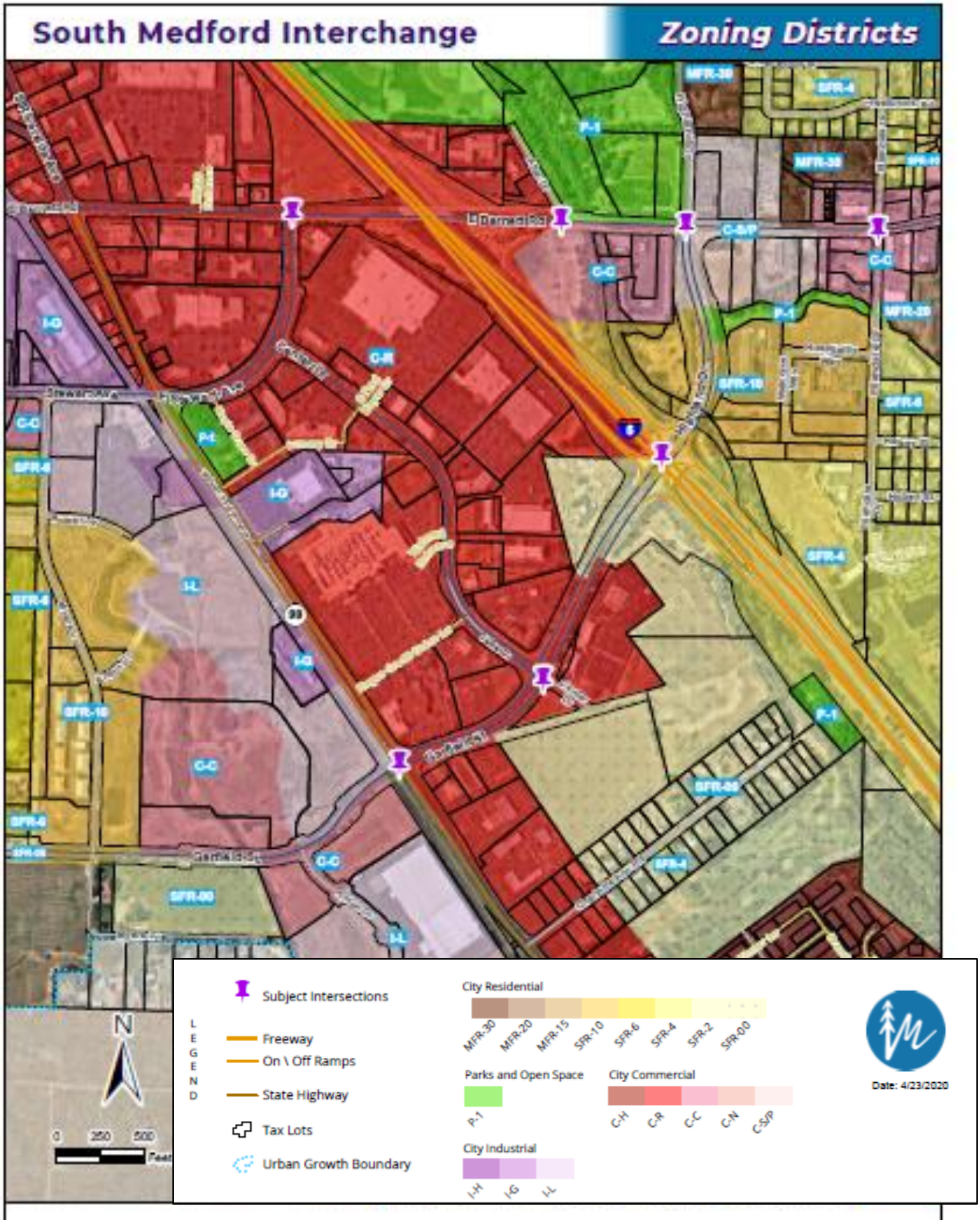


FIGURE 11 - CITY ZONING MAP



Existing Traffic Conditions

The existing traffic conditions analysis identifies how the study area's transportation system operates today. This analysis includes an evaluation of traffic operations at key intersections in the city during the weekday evening peak period. There are several intersections that do not currently meet the City's Level-of-Service standard. They are primarily located around the South Medford Interchange. The City of Medford is changing the mobility standard to Level-of-Service "E" at two intersections; Stewart Ave & S Pacific Highway and Barnett Rd & Highland Dr.

South Stage Road Extension

The South Medford Interchange is one of the most congested areas of the City. Medford anticipates growth in both southwest and southeast Medford. Providing an east-west connection between these two areas is expected to help reduce congestion at the South Medford Interchange, provide access to Major Arterials including North Phoenix Road, Riverside Avenue, and Columbus Avenue, allowing for travel around Medford without reliance on I-5 and the South Medford Interchange. This connection is also expected to remove circuitous trips between areas of Medford and Phoenix. This new connection over I-5 is assumed in the transportation analysis of the Year 2038 traffic forecast conditions. Further analysis is needed to confirm these potential transportation benefits.

South Medford Interchange (I-5/Garfield Street) and Garfield Street/Center Drive

These intersections are not projected to meet ODOT's mobility standards even with the South Stage Road Extension. These intersections need alternative mobility targets (Project I-83 and I-84) or to be evaluated further as part of an update to the Exit 27 IAMP. This future IAMP should also incorporate analysis of affected City intersections including Highland Drive/Barnett Road and Riverside Avenue/Pacific Highway/Stewart Avenue.

Highland Drive/Barnett Road

This intersection operates at an LOS "E" with a second northbound right-turn lane added (Project I-78). The city is adopting LOS "E" as the mobility standard for this intersection.

Traffic responsive control uses data collected from traffic detectors to change signal timing plans for intersections. The system uses data collected from the detectors to automatically select a timing plan best suited to current traffic conditions. This system is able to determine times when peak-hour timing plans begin or end, potentially reducing vehicle delays. Barnett Road is currently planned to be upgraded to have traffic responsive control.

Riverside Avenue/Pacific Highway/Stewart Avenue

This intersection operates at an LOS "E" with a second eastbound left and second southbound left added (Project I-17). The city has adopted LOS "E" as the mobility standard for this intersection.

OR 99 Corridor Plan

The OR 99 Corridor Plan was adopted by ODOT in June 2015. The plan focuses on the section of OR 99 that extends from Garfield Street in South Medford, through the communities of Phoenix and Talent, to S. Valley View Road at the north end of Ashland. This multimodal plan examines how the highway operates both now and over the next 20 years. It identifies strategies to preserve and improve highway safety and capacity consistent with a District Highway classification and local policies. It also incorporates improvements for all travel modes.

FIGURE 12 – 2018 TSP ODOT INTERSECTION PROJECTS WITHIN STUDY AREA

ODOT Intersection Projects					
Project #	Location	Description	Tier	Timeframe	Cost ($1,000)
I83	Garfield Street & South Medford I-5 Interchange	Intersection to be studied as a part of an update to ODOT's Exit 27 IAMP - intersection may need alternative mobility target if no solution identified	ODOT	Mid-term	NA
I84	Center Drive & Garfield Street	Intersection to be studied as a part of an update ODOT's Exit 27 IAMP - intersection may need alternative mobility target if no solution identified	ODOT	Mid-term	NA

FIGURE 13 – 2018 TSP CITY INTERSECTION PROJECTS WITHIN STUDY AREA

City Intersection Projects					
Project #	Location	Description	Tier	Timeframe	Cost ($1,000)
I-17	South Pacific Highway & Stewart Avenue	Intersection improvements such as second southbound left and second eastbound left-turn	1	Long-term	$3,000
I-78	Highland Drive & Barnett Road	Intersection improvements such as second northbound right-turn lane (protected)	1	Mid-term	$1,500

Note: Future improvements that add lanes may make it more difficult to walk and bike through intersections.

FIGURE 14 – 2018 TSP STREET CONNECTIVITY PROJECTS WITHIN STUDY AREA

Project Number	Name	Type
L14	Center Drive extension to Charlotte Ann Road	Local Street

FIGURE 15 – 2018 TSP TRAFFIC OPERATION PROJECTS WITHIN STUDY AREA

Project/Program Number	Name	Description/Location	Priority	Responsible Party
Traffic Operations Management				
TM01	Install or Upgrade Communications	Install communications to all ITS field devices, allowing agencies remote access to control and monitor devices. Options to consider include: Fiber communications, wireless options (cellular, WiFi, DSRC, radio), and Fiber sharing partnerships	High	ODOT, local agencies
TM02	Traffic Signal Interconnect, Connect to ODOT Central Traffic	Hwy 62 (interconnect and connection to CSS)	High	ODOT, local agencies
TM06	South Medford Interchange Improvements	Investigate targeted solutions to the congestion that occurs around the south Medford interchange.	High	ODOT
	Signal Server (CSS), Signal Timing Improvements, Adaptive Signal Systems	Barnett Rd, McAndrews Rd, Stewart Ave, Siskiyou Blvd, Hwy 99 (updated signal timing, possible adaptive signals)		

FIGURE 16 – 2018 TSP CAPACITY ENHANCEMENT PROJECTS WITHIN STUDY AREA

***I-5 Rogue Valley Corridor Plan* Improvement Projects**					
ODOT Plan Project #	**Location**	**Type**	**Description**	**ODOT Plan Priority**	**Cost (STIP/MTIP/ CIP)**
Corridor Concepts — Capacity Enhancement Measures					
12	Auxiliary Travel Lanes	Corridor	Add a northbound auxiliary lane from Exit 27 to 33 and southbound auxiliary lanes from Exit 27 to 30.	Medium	$$$
12	Auxiliary Travel Lanes	Corridor	Add a northbound auxiliary lane from Exit 21 to 27 and from Exit 33 to 35 and a southbound auxiliary lane from Exit 13 to 27.	Low	$$$

FIGURE 17 – 2018 TSP SAFETY LOCATIONS WITHIN STUDY AREA

Safety Locations				
Rank	Location	Project Type	Overlapping Safety Indicators	Overlapping TSP Projects
2	Stewart Avenue & Riverside Avenue	Intersection	ODOT 90th Percentile Crash Rates	I17
7	Garfield Street and I-5 On/Off-Ramps	Intersection	ODOT 90th Percentile Crash Rates	I83
10	Riverside Avenue & Barnett Barnett Road	Intersection	ODOT 90th Percentile Crash Rates, ARTS	
15	Barnett Road & Highland Drive	Intersection	ODOT 90th Percentile Crash Rates	I78
16	Garfield Street & Pacific Highway	Intersection	ODOT 90th Percentile Crash Rates	

FIGURE 18 – 2018 TSP BICYCLE NETWORK ROUTES WITHIN STUDY AREA

Bicycle Network Alternative Routes		
Street	Segment (From – To)	Alternative Route
Barnett Road	Ellendale Avenue – N. Phoenix Road	Larson Creek Greenway

FIGURE 19 – 2018 TSP BICYCLE PROJECTS WITHIN STUDY AREA

Bicycle Facility Projects					
Project #	Location	Project Type	Description	Tier	Cost ($1,000)
B12	Ellendale Drive, Barnett Road to Hospitality Way	Bicycle	Widen sidewalk to provide 14' wide bike/pedestrian facility behind the curb	2	$245.00
B156	Riverside Ave, Barnett Rd to Stewart Ave	Bicycle	Widen sidewalk to provide 14' wide bike/pedestrian facility behind the curb	2	$405.00
B158	Stewart Ave, west of Dixie Lane to Center Drive	Bicycle	Widen sidewalk to provide 14' wide bike/pedestrian facility behind the curb	2	$3,345.00

Note: Garfield does not meet ODOT standards for bike facilities, and that biking and walking in the area is uncomfortable at best (and connectivity to the Bear Creek Greenway is lacking).

2019 REBOOT YOUR COMMUTE TRANSPORTATION OPTIONS FINAL REPORT

The Reboot Your Commute campaign was designed to address safety and vehicle flow issues on I-5 in Medford, Oregon. Specifically, the campaign aimed to change the behavior of commuters traveling on weekdays to East Barnett Road. On many weekday mornings, excess traffic demand at the I-5 southbound Exit 27, headed to East Barnett Road, caused backups of vehicles the entire length of the off-ramp and into the freeway travel lane. Responding to the 2014 Oregon Transportation Options Plan (OTOP), rather than add travel lanes for vehicle capacity (a costly solution), ODOT instead piloted a new approach in partnership with the Rogue Valley Transportation District (RVTD) to provide outreach, education, and encouragement about the suite of transportation options (TO) already available in the area.

RESULTS

Self-Reported Travel Behavior

Thirty-three of the 163 program participants responded to a post-program survey. Responses indicated that participants were more likely to be aware of congestion (and how to avoid it) than non-participants. Although self-reported travel during peak times increased among participants, one-third reported trying a new way to get to work (most of whom said they were "somewhat likely" or "very likely" to continue using new modes). Drive-alone trips among participants decreased by 7%, replaced by carpool, transit, and telework trips. Over half of participants agreed that they changed their commute to find a less stressful option.

Traffic Pattern Changes

No significant change in the Exit 27 backup was observed by the project team, survey respondents, or employer interviewees. However, the program may have contributed in decreased southbound traffic turning right and left off the exit (i.e. towards the employers in the project area). Considering growth in the target area, it is conceivable that conditions could have worsened without the program.

Transit Counts

Ridership on Route 24 (which serves the project area) increased by 70% from summer 2017 to fall 2018. Although ridership was 44% higher during the program than it was during the same time period the previous year, overall ridership dipped 5% compared to the months immediately preceding the program. The overall transit ridership impact was unclear, but it is important to note that RVTD's ridership remained high compared to the previous year.

Employer Relationships

The program helped build positive and on-going relationships between the major employers in the project area and RVTD, paving the way for a longer-term collaboration to reduce drive-alone travel. Since the end of the program Asante, the target area's largest employer, assigned an employee with Employee Transportation Coordinator duties to help increase awareness of transportation options among employees. Promote the new segment of Larson Creek Greenway connection to Black Oak, which provides access to many of the large employers in the area.

LESSONS LEARNED & RECOMMENDATIONS

Motivating Participation

Sign-up survey respondents reported that they were motivated to participate in order to get more information about travel options (e.g. safer walking/biking routes), decrease their stress, and receive sign-up incentives (e.g. RVTD transit pass). The project team also received positive feedback about the area map and magnetic safety lights.

Successful Communication & Outreach Strategies

Gaining support from key decision-makers at employers was very important for communication and coordination. Most participants heard about the program from their employer e-newsletter. Short, direct content promoting sign-ups worked well. In-person outreach at employer-organized events was more successful than digital outreach (75% of sign-ups happened at outreach events).

Program Weaknesses

Reboot Your Commute may have had greater success if:

- The project timing didn't conflict with the winter holidays
- The program had a stronger suite of sign-on materials and higher value incentives for participating and sharing stories
- There were incentives for employer involvement, clear goals and responsibilities
- There was broader community support from high-profile community leadership, such as Chamber of Commerce, City Council, County Commissioners, or local media personalities

Ideas for the Future

The program team identified several other potential strategies that could be fruitful for future congestion mitigation outreach, including:

- Creating competitions between employers to raise the profile of the program
- Involving a greater number of small to mid-size employers in the targeted area
- Promoting the new statewide carpool matching and trip planning tool, Get There Oregon, which had not yet launched during the Exit 27 project
- Using geo-targeted social media communications and outdoor displays along relevant corridors
- Having frequently scheduled events and outreach opportunities for employees, and increasing outreach to schools, where applicable
- Establishing context-sensitive goals and associated evaluation metrics to determine the success of the program