

TECHNICAL MEMORANDUM #6

DATE: December 23, 2014

TO: Project Management Team

FROM: Scott Mansur, Brad Coy, and Jordin Ketelsen, DKS Associates

SUBJECT: Future Traffic Forecast Methodology (Task 5.1)

P11086-018

Traffic forecasting is an important step in the transportation planning process because it provides estimates of future motor vehicle travel demand. This memorandum describes the forecasting assumptions and methodologies used to estimate growth in traffic volumes at study intersections through the year 2036, which is the horizon year for Lane County's Transportation System Plan (TSP) update. The findings of the analysis will be used in the development of proposed improvements to address transportation needs within the County.

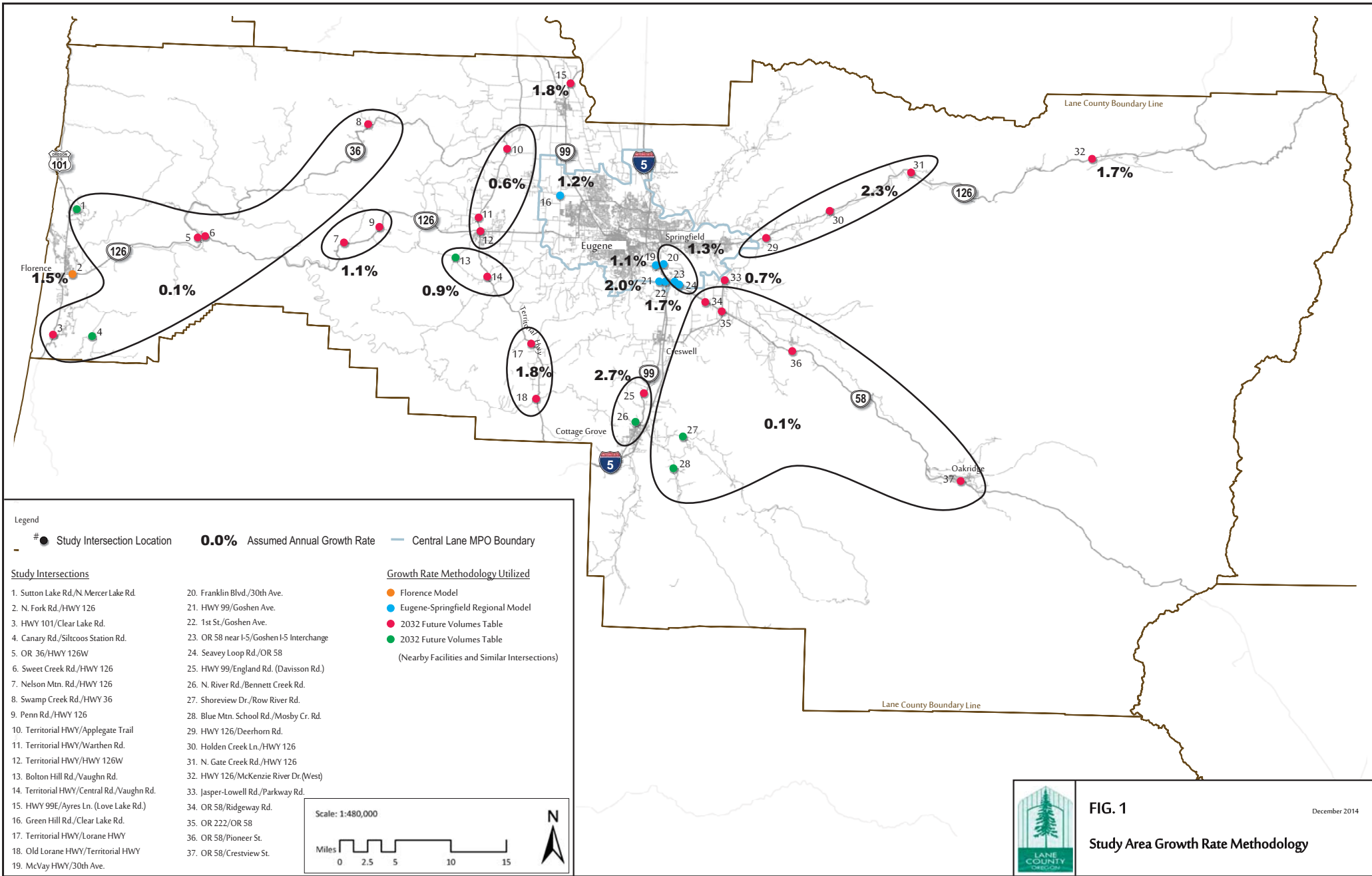
This memorandum includes a methodology overview, as well as a description of the methodology utilized in conjunction with the travel demand models and the ODOT Future Volume Tables. All intersection growth rates and an overview of the methodology used for specific intersections can be found in Table 1 at the end of this memorandum.

Methodology Overview

The forecasting methodology for each of the 37 study intersections varies based on the forecasting tools available, as well as the location, characteristic, and jurisdiction of the facility. The following provides a summary of the forecasting tools that were used for the Lane County TSP update.

- **One (1) study intersection in the Florence area:** Model growth rates from the Florence travel demand model were utilized for areas within the model boundaries.
- **Seven (7) study intersections in the Eugene-Springfield area:** Model growth rates from the Lane County Council of Governments (LCOG) Eugene-Springfield regional model were utilized for both County and ODOT intersections within the model boundaries.
- **Twenty-Three (23) study intersections on State Highways:** Growth rates derived from the 2032 ODOT Future Volumes Table were utilized.
- **Six (6) study intersections under County jurisdiction and outside model boundaries:** Growth rates from the 2032 ODOT Future Volume Tables from nearby ODOT facilities that served a similar travel function were utilized.

Figure 1 on the next page displays all 37 study interactions as well as the methodology tool utilized and the assumed annual growth rate.



Travel Demand Models

Two travel demand models applied to study intersections within Lane County: the Eugene-Springfield regional travel demand model¹ and the Florence travel demand model.² The sections below give an overview of each model as well as the post-processing methodology.

Eugene-Springfield Travel Demand Model

The Eugene-Springfield regional travel demand model was utilized as the primary tool to estimate future travel demand for the seven study intersections within the Eugene and Springfield area. The model has a regional scale and the roadway network includes the primary arterial and collector roadways in the model area. Engineering judgment and manual methods (such as evaluating screen lines) are often needed to “post-process” link-based model results to estimate turn movement volumes and to account for circulation and routing at the local level.

Land use data within the model area is divided into transportation analysis zones (TAZs), which represent the origins and destinations for traffic trips throughout the region. Estimates of trips generated from each TAZ are based on associated land use data. In addition, regional trip growth on facilities connecting to the Eugene-Springfield area is accounted for by extrapolating historic growth trends. The traffic growth between the 2011 base and 2035 future scenarios of the Eugene-Springfield regional model were factored to reflect the 2014 traffic counts and 2036 future horizon year used for the Lane County TSP update.

Florence Travel Demand Model

The Florence travel demand model was utilized as the primary tool to estimate future travel demand for the single study intersection in the Florence area. The model includes roads under all jurisdictions within the Florence urban growth boundary. The 2008 base and 2035 future scenarios of the Florence model were factored to reflect the 2014 traffic counts and 2036 future horizon year used for the Lane County TSP update.

Post Processing

Even though travel demand models are calibrated to local conditions and volumes, raw volumes from the travel demand models are not used for intersection operations analysis. Rather, motor vehicle turn movement volume forecasts are developed using post-processing methods consistent with the ODOT Procedures Manual.³ This approach is derived from methodologies outlined in the National Cooperative Highway Research Program (NCHRP) Report 255, *Highway Traffic Data for Urbanized Area Project Planning and Design* and is considered to result in more accurate traffic forecasts.

The post-processing methodology involves estimating model growth using the difference method (i.e., volume differences between base and future models), scaling the growth by the

¹ The Eugene-Springfield regional travel demand model is managed by the Lane County Council of Governments (LCOG).

² The Florence travel demand model is managed by the Lane County Council of Governments (LCOG).

³ *Analysis Procedures Manual (APM)*, Oregon Department of Transportation (ODOT) Transportation Planning Analysis Unit (TPAU), Last Updated November 2014.

number of forecast years (i.e., forecast years divided by difference in model years), and adding these volumes to existing traffic counts.⁴ Traffic growth on links in the travel demand models were applied to individual turn movements using a Fratar method to account for growth on both inbound and outbound links. Engineering judgment is used as part of the post-processing methodology. This process resulted in future year forecasts that are based on a combination of observed traffic count data and model estimates derived from the Eugene-Springfield regional travel demand model and the Florence travel demand model.

ODOT Future Volume Tables

For the 25 study intersections outside of the Eugene-Springfield or Florence model boundaries, future traffic growth was estimated based on ODOT's 2032 future volume tables. Average daily traffic (ADT) volumes are provided for various mile points along State highways for the base year (2010, 2011, or 2012 depending on the location) and future year (2032). These volumes were utilized to determine an expected growth trend, suggesting an annual growth rate to be applied to applicable intersections in Lane County. The annual growth rate was applied to the seasonally factored 2014 base year volumes to develop traffic volumes for the 2036 TSP horizon year.

For study intersections along State facilities that are also outside of the model areas, annual growth rates derived from the ODOT Future Volume Tables were utilized. For County study intersections outside of the model areas, growth rates derived from the ODOT Future Volume Tables were utilized based nearby ODOT facilities that served a similar travel function. This methodology was applied to six County study intersections.

⁴ The traffic counts for the Lane County TSP study intersections were collected in 2014 and adjusted to average weekday and 30th highest hour conditions, as documented in *Technical Memorandum #5 (Existing Conditions)*.

Table 1: Annual Growth Rate Calculations for Study Intersections

Node	Study Intersection	Methodology Used	FVT Location ^a	Annual Growth Rate ^b
1	Sutton Lake RD/N Mercer Lake RD	2032 FTV (Nearby ODOT Facilities)	Florence Automatic Traffic Recorder, Sta. 20-026, 0.77 mile north of Heceta Beach Road	0.1%
2	N Fork RD/HWY 126	Florence Model	N/A	1.5%
3	HWY 101/Clear Lake RD	2032 FTV	0.02 mile south of Clear Lake Road	0.1%
4	Canary RD/Siltcoos Station RD	2032 FTV (Nearby ODOT Facilities)	0.02 mile south of Clear Lake Road	0.1%
5	OR 36/HWY 126W	2032 FTV	0.10 mile east of Sweet Creek Road	0.1%
6	Sweet Creek RD/HWY 126W	2032 FTV	0.10 mile east of Sweet Creek Road	0.1%
7	Nelson MTN RD/HWY 126W	2032 FTV	0.02 mile east of Poodle Creek Road	1.1%
8	Swamp Creek RD/HWY 36	2032 FTV	0.02 mile west of Lower Deadwood Creek Road	0.1%
9	Penn RD/HWY 126W	2032 FTV	0.02 mile east of Poodle Creek Road	1.1%
10	Territorial HWY/Applegate Trail	2032 FTV	0.02 mile south of Broadway Avenue	0.6%
11	Territorial HWY/Warthen RD	2032 FTV	0.02 mile south of Broadway Avenue	0.6%
12	Territorial HWY/HWY 126W	2032 FTV	0.02 mile south of Broadway Avenue	0.6%
13	Bolton Hill RD/Vaughn RD	2032 FTV (Nearby ODOT Facilities)	0.02 mile south of W. Bolton Hill Road	0.9%
14	Territorial HWY/Central RD/Vaughn RD	2032 FTV	0.02 mile south of W. Bolton Hill Road	0.9%
15	HWY 99E/Ayres LN (Love Lake RD)	2032 FTV	0.02 mile south of Noraton Road	1.8%
16	Green Hill Rd/Clear Lake Rd	Eugene-Springfield Model	N/A	1.2%
17	Territorial HWY/Lorane HWY	2032 FTV	0.02 mile south of Gowdyville Road	1.8%
18	Old Lorane HWY/Territorial HWY	2032 FTV	0.02 mile south of Gowdyville Road	1.8%
19	McVay HWY/30th AVE	Eugene-Springfield Model	N/A	1.1%
20	Franklin Blvd/30th AVE	Eugene-Springfield Model	N/A	1.3%
21	HWY 99/Goshen AVE	Eugene-Springfield Model	N/A	2.0%
22	1st ST/Goshen AVE	Eugene-Springfield Model	N/A	1.7%
23	OR 58/Goshen I-5 Interchange	Eugene-Springfield Model	N/A	1.3%
24	Seavey Loop RD/OR 58	Eugene-Springfield Model	N/A	1.3%
25	HWY 99/England RD (Davisson RD)	2032 FTV	0.02 mile south of Market Road	2.7%
26	N River RD/Bennett Creek RD	2032 FTV (Nearby ODOT Facilities)	0.02 mile south of Market Road	2.7%
27	Shoreview DR/Row River RD	2032 FTV (Nearby ODOT Facilities)	0.07 mile east of Margaret Street	0.1%
28	Blue MTN School RD/Mosby CR RD	2032 FTV (Nearby ODOT Facilities)	0.07 mile east of Margaret Street	0.1%
29	HWY 126/Deerhorn RD	2032 FTV	0.10 mile west of 79th Street	2.3%
30	Holden Creek LN/HWY 126	2032 FTV	0.10 mile west of 79th Street	2.3%
31	N Gate Creek RD/HWY 126	2032 FTV	0.10 mile west of 79th Street	2.3%
32	HWY 126/McKenzie River DR	2032 FTV	At McKenzie Highway west snow gate (OR242)	1.7%
34	OR 58/Ridgeway RD	2032 FTV	0.07 mile east of Margaret Street	0.1%
35	OR 222/OR 58	2032 FTV	0.07 mile east of Margaret Street	0.1%
36	OR 58/Pioneer ST	2032 FTV	0.07 mile east of Margaret Street	0.1%
37	OR 58/Crestview ST	2032 FTV	0.07 mile east of Margaret Street	0.1%

^a Source: 2012 Future Volumes Table, ODOT

^b Only statistically significant locations with R-squared values above 0.50 were applied.