

# MEMORANDUM

**TO:** Myron Hora – CDOT Region 4

**FROM:** Karl Buchholz, PE, PTOE  
Gray Clark, PE

**PROJECT:** I-25 SH 66 to SH 56  
MEC Project No. 12-003.01

**DATE:** July 30, 2014

**SUBJECT:** I-25 Managed Lanes Traffic Operations Analysis - Final

# MULLER

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## INTRODUCTION

The purpose of this technical memorandum is to document the traffic operations analysis for several I-25 managed lane scenarios from 84<sup>th</sup> Avenue in Denver to SH 14 near Fort Collins. The traffic operations analysis complements the *Traffic and Revenue Assessment of Tolled Express Lanes Scenarios* (herein referred to as the T&R Study) completed by CDM-Smith on July 23, 2014 for the same corridor limits and scenarios. The analysis is intended to assist CDOT in assessing the operational benefits associated with different lane configuration scenarios. **Figure 1** to the right shows the limits of the analysis.

## MANAGED LANE SCENARIOS

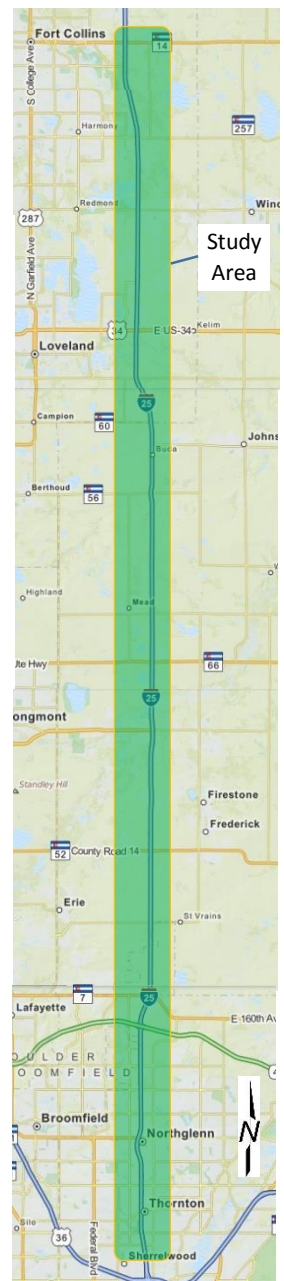
**Table 1** shows the mainline lane configuration for each scenario (Schematic drawings of each scenario are shown in Appendix A).

The **No Action (NA)** scenario includes the current lane configuration along I-25 without the addition of tolled express (TE) lanes that are currently under construction from US 36 (84<sup>th</sup> Avenue) to 120<sup>th</sup> Avenue. The NA lane configuration consists of three general purpose (GP) lanes in each direction from 84<sup>th</sup> Avenue to SH 66, and two GP lanes in each direction from SH 66 to SH 14. The reason for analyzing this scenario is for the purpose of meeting NEPA requirements for the EIS ROD 2 study that is currently underway.

The **Existing Condition (EX)** scenario includes the current lane configuration along I-25 with the addition of the tolled express lanes that are currently under construction from 84<sup>th</sup> Avenue to 120<sup>th</sup> Avenue. The addition of the TE lanes will add a 4<sup>th</sup> lane in each direction to the current three GP lanes in each direction. North of 120<sup>th</sup> Avenue, the existing conditions include only general purpose lanes. Excluding auxiliary lanes, there are currently three GP lanes in each direction from 120<sup>th</sup> Avenue to SH 66. North of SH 66, I-25 has two GP lanes in each direction through the rest of the study area.

The **EIS Phase 1 ROD Revised and ROD 2 (E1)** scenario adds one TE lane in each direction from 84<sup>th</sup> Avenue to SH 7, from SH 66 to SH 56, and from SH 392 to SH 14. The segments between SH 7 and SH 66 and SH 56 and SH 392 would remain in their current lane configuration without any TE lanes.

**Figure 1 – Study Area**



**Scenario 3a** adds one TE lane in each direction for the remainder of the corridor (120<sup>th</sup> Avenue to SH 14); however, in the segment between SH 7 and SH 66 the TE lane is added by converting an existing GP lane to a TE lane in each direction.

**Scenario 3b** includes one TE lane in each direction for the entire corridor length from 84<sup>th</sup> Avenue to SH 14. Three GP lanes are provided in each direction from 84<sup>th</sup> Avenue to SH 66. The segment from SH 66 to SH 14 has two GP lanes in each direction.

**Scenario 3c** is the same as Scenario 3a except the GP lanes between SH 7 and SH 66 remain as is (3 in each direction), resulting in no TE lanes between SH 7 and SH 66.

**Scenario 4a** adds one TE lane in each direction from 120<sup>th</sup> Avenue to SH 66; however, in the segment between SH 7 and SH 66 the TE lane is added by converting an existing GP lane to a TE lane. North of SH 66, there are only 2 GP lanes in each direction.

**Scenario 4b** includes one TE lane in each direction from 84<sup>th</sup> Avenue to SH 66. Three GP lanes are provided in each direction from 84<sup>th</sup> Avenue to SH 66. The segment from SH 66 to SH 14 has two GP lanes in each direction.

**Scenario 4c** only adds one TE lane in each direction from 120<sup>th</sup> Avenue to SH 7. From SH 7 to SH 66 there are only 3 GP lanes in each direction. North of SH 66, there are only 2 GP lanes in each direction.

**Table 1 – Traffic Operations Analysis Scenarios**

Scenario:	No Action (to Match the North I-25 EIS No Action)		Existing (Post US 36 to 120th TEL Const.)		EIS Ph. 1 ROD w/ Rev.(TEL SH 392 - SH14) & ROD 2 (TEL		Scenario 3a		Scenario 3b		Scenario 3c		Scenario 4a		Scenario 4b		Scenario 4c	
Abbreviated Scenario Name:	NA		X1		E1		3a		3b		3c		4a		4b		4c	
Segment	GP	TEL	GP	TEL	GP	TEL	GP	TEL	GP	TEL	GP	TEL	GP	TEL	GP	TEL	GP	TEL
US 36 - 120th Ave.	3		3	1	3	1	3	1	3	1	3	1	3	1	3	1	3	1
120th Ave. - SH 7	3		3		3	1	3	1	3	1	3	1	3	1	3	1	3	1
SH 7 - SH 66	3		3		3		2	1	3	1	3		2	1	3	1	3	
SH 66 - SH 56	2		2		2	1	2	1	2	1	2	1	2		2		2	
SH 56 - SH 392	2		2		2		2	1	2	1	2	1	2		2		2	
SH 392 - SH 14	2		2		2	1	2	1	2	1	2	1	2		2		2	

- Notes
- US 36 to 120th Avenue Managed Lane Currently out to Construction
  - Highlighted Indicates a Change from Existing Condition

**ANALYSIS PERIODS AND TRAVEL DEMAND MODELING**

All nine scenarios were analyzed for AM and PM peak hour traffic operations for three horizon years: 2015, 2025 and 2035. The traffic volumes for each time period and horizon year were provided by CDM-Smith as part of the T&R Study. That T&R study used the Denver Regional Council of Governments (DRCOG) and North Front Range Metropolitan Planning Organization (NFRMPO) travel demand models as the basis for developing the T&R travel demand model. The DRCOG COMPASS 4.0, Cycle 2, 2012 and the NFRMPO February 2012 model runs were used. Land-use for the NFRMPO model was previously modified within the I-25 corridor to correct land-use discrepancies that were identified during the preliminary design phase for the I-25 SH 66 to North of SH 56 project.

During the travel demand modeling process it became apparent that the DRCOG I-25 mainline volumes were higher than the NFRMPO volumes in the area where the two models overlapped (SH 66 to CR 34). This was brought to the attention of DRCOG and NFRMPO staff and, with DRCOG's concurrence, the DRCOG model volumes were adjusted downward to more closely match NFRMPO volumes. Additionally, the I-25 laneage in the "build" condition was revised to add a third lane in each direction. Since the TransCAD travel demand model does not have the ability to explicitly code a tolled express lane, the additional lane was coded as a principal arterial rather than a freeway lane in order to approximate the lower operational capacity of a tolled express lane. The DRCOG and NFRMPO models were then "stitched" together to form a seamless model, and trips were assigned using the resulting model. The I-25 corridor was then "windowed" from the stitched model to create the final model used for traffic and revenue projections. The windowed model was calibrated to a base year of 2012 using volume and speed data collected in 2012 and 2013.

#### **CONFIRMATION OF TRAFFIC PROJECTIONS WITH DRCOG AND NFRMPO**

Following the initial forecasting results for the T&R Study, a meeting was held on April 7, 2014 with DRCOG and CDOT to review and confirm the T&R Study horizon year forecasts in the portion of the I-25 corridor that lies within the DRCOG region (i.e. south of CR 34). In preparation for the meeting, an analysis was completed to compare the T&R Study forecasted vehicle miles of travel (VMT) to DRCOG VMT forecasts. The VMT analysis also included the previous I-25 FEIS forecasts in order to provide another comparative data point. The results of the comparison showed that the DRCOG, FEIS and T&R Study had compounded annual growth rates (CARG) that all compared favorably with each other, ranging between 1.8 and 2.1 percent per year. Based on the VMT comparative analysis, DRCOG and CDOT staff concurred with the volume forecasts developed by the T&R Study. Appendix D provides the meeting minutes that document the modeling information presented at the April 7, 2014 meeting with CDOT and DRCOG.

A similar comparison was also completed for the portion of the I-25 corridor that falls within the NFRMPO Regional Transportation Plan (RTP) model (i.e. north of SH 66). Comparison of the T&R Study, I-25 FEIS, and NFRMPO RTP forecasts showed that the resulting T&R Study VMT growth rates were slightly higher than the RTP model, but significantly lower than the FEIS model results. The resulting CAGR for the FEIS was 3.2 percent, for the T&R Study it was 2.0 percent, and for the RTP it was 1.6 percent. In a conference call meeting held with NFRMPO and CDOT staff on March 20, 2014, the general consensus of the participants was that the higher VMT projections resulting from the FEIS model were primarily due to the FEIS model using more aggressive land use growth than the RTP and the T&R Study models. NFRMPO staff gave their concurrence for using the T&R Study forecasts on the basis that the T&R Study CAGR was not significantly higher than the RTP model CAGR (2.0 versus 1.6). Additionally, NFRMPO staff felt that the land use assumptions for their current RTP model may be underestimating growth in the I-25 corridor and, therefore, they were comfortable using the slightly higher projections developed by the T&R Study model. Meeting minutes from a subsequent meeting with CDOT on March 27, 2014, where this topic was discussed, are provided in Appendix D.

Also, it should be noted that the 2015 "opening day" traffic projections from the T&R Study are generally 10-20% above the 2012 Base Year Volumes. As part of the above mentioned review of the modeling forecasts, it was recognized that 2015 actual traffic volumes may fall short of the 2015 forecasts. Counts taken for 2013 from CDOT's Automated Traffic Recorder (ATR) stations indicate a recent upward trend in traffic volume. CDOT will continue to monitor the ATR data and will collect

supplemental manual counts in the corridor to determine if any adjustments are needed for the 2015 T&R Study forecasts.

### **ANALYSIS METHODOLOGY**

Traffic operations for the corridor were analyzed in accordance with the procedures from the 2010 Highway Capacity Manual (HCM 2010). The software program FREEVAL was utilized to perform the analysis. FREEVAL was developed by the Transportation Research Board (TRB) for the purpose of analyzing freeway facilities that comprise of multiple interchange and basic freeway segments across multiple time periods. A spreadsheet application was developed by Muller Engineering to import the peak period traffic volume data from the T&R model output directly into FREEVAL. The volume data from the T&R study included general purpose traffic, toll traffic, and HOV traffic. The T&R analysis used a three person HOV threshold for free access to the TE lanes.

### **ANALYSIS ASSUMPTIONS**

The following assumptions were used in the traffic operations analysis for I-25:

- 10-percent average trucks in the corridor (based on CDOT's Online Transportation Information System).
- All HOV3+ passenger cars and light trucks, buses and van pools will be eligible to use the TE lanes for free. Motorcycles will also be able to use the TE lanes for free.
- For the GP and TE lanes, a free-flow travel speed of 60 mph was used for the segment from 84<sup>th</sup> Avenue to 120<sup>th</sup> Avenue, 65 mph for the segment from 120<sup>th</sup> Avenue to E-470, and 70 mph for the segment from E-470 to SH 14. This free-flow speeds were based on 2013 speed data collected by CDM-Smith during low volume conditions.
- The AM and PM analysis time periods are 7:15-8:15 AM and 5:00-6:00 PM. The analysis for both periods was converted to 15-minute time slices using existing 15-minute count data.
- The TE lane will be buffer separated (not barrier separated) and ingress and egress points were restricted to the locations shown in Appendix B.
- The terrain of the corridor is rolling (as classified by CDOT).
- The interchange configurations were based on the EIS Phase 1 ROD with the exception of the Prospect Road and SH 14 interchanges. These two interchanges were configured to match the T&R Study, which used the existing interchange layouts. As a result, operations through the northernmost segment of I-25 will likely be slightly better than shown in the attached analysis output.

### **TOLLING ZONES AND ACCESS POINTS TO TOLLED EXPRESS LANES**

The *Concept of Operations for I-25 North Managed Lanes* (Apex Design, July 2013, Version 0.2) identified the tolling points and access zones (ingress/egress locations) for the managed lanes. The proposed tolling concept for the I-25 corridor from 120<sup>th</sup> Avenue to SH 14 utilizes a mix of combined Access Zones (accommodating both ingress and egress movements) and separate ingress and egress Access Zones. The layout incorporates the following key assumptions:

- Four segments will be priced in each direction, based on the major destinations in the corridor. These include 120<sup>th</sup> Avenue, E-470/SH 7, SH 119/SH 66, US 34 and the end of the Managed Lanes in the vicinity of SH 14.
- VTMS signs will display pricing for the next two major toll segments.

- Each segment may have more than one toll point, however all users will be charged the same toll. If users are recorded at more than one toll point in a segment, they will be matched and only tolled once.
- The number of Access Zones was optimized taking into account two factors:
  - (1) Provide sufficient access to the Managed Lanes to maximize use, and
  - (2) Maintain good operations by minimizing weaving areas. As a result, secondary interchanges in the study area are not accommodated as directly as the major destinations requiring longer distances to enter/exit the Managed Lanes.

**Figure 2** shows the preliminary layout for access zones and tolling points that was used for the T&R Study and for the Traffic Operations Analysis. This overall concept was modified for each scenario to reflect the limits of the tolled express lanes for the respective scenarios. Figures for each tolling point and access zone scenario are shown in Appendix B. The tolling points and access zones for the segment between 84<sup>th</sup> Avenue and 120<sup>th</sup> Avenue were modeled according to the design that is currently under construction.

### ANALYSIS RESULTS AND FINDINGS

**Table 2** provides a summary of the traffic operations results for the entire corridor for each scenario. **Tables 3 and 4** show separate results for GP only lanes and TE only lanes, respectively. **Figure 3** shows the travel time by scenario and by horizon year. **Figure 4** shows the travel time savings for motorists using the TE lanes in each scenario compared to motorists traveling in the GP lanes. **Figure 5** shows the corridor travel speed by segment and year. Average daily traffic (ADT) volumes for each scenario and each horizon year (2015, 2025, and 2035) are provided in Appendix C. Detailed traffic operations output is provided in Appendices E and F.

Some of the key findings from the traffic operations analysis are:

1. Scenarios 3a and 3b provide the greatest travel time savings for users of the TE lanes. This is due to the presence of TE lanes for the full corridor length with both scenarios. The additional travel time savings with Scenario 3a over 3b is due to the proposed GP to TE lane conversion between SH 7 and SH 66.
2. With the exception of the segment from 84<sup>th</sup> Avenue to 120<sup>th</sup> Avenue, the TE lanes operate at LOS C or better during all time periods and horizon years. Between 84<sup>th</sup> and 120<sup>th</sup>, the TE lanes in years 2025 and 2035 will operate at LOS D while the GP lanes operate at LOS E and F.
3. Scenario 4a (new TE Lane from 84<sup>th</sup> Ave to SH 7 and GP to TE lane conversion from SH 7 to SH 66) performs slightly worse than the No Action and Existing Configuration scenarios from a corridor-wide perspective. This is likely due to the added congestion that is created with the lane conversion without the benefit of TE lane north of SH 66.
4. By year 2035, the segment between SH 66 and SH 56 will experience the lowest overall travel speeds in the corridor if additional capacity is not added (i.e. TE lanes). Adding TE lanes in this segment improves travel speeds by as much as 45% over the existing configuration in year 2035.
5. Travel time savings for the TE lanes compared to the GP lanes will approximately double for all TEL scenarios between 2015 and 2035 (see Figure 4). During the same time period, total traffic volume in the corridor (GP + TE) is projected to increase by approximately 35%.

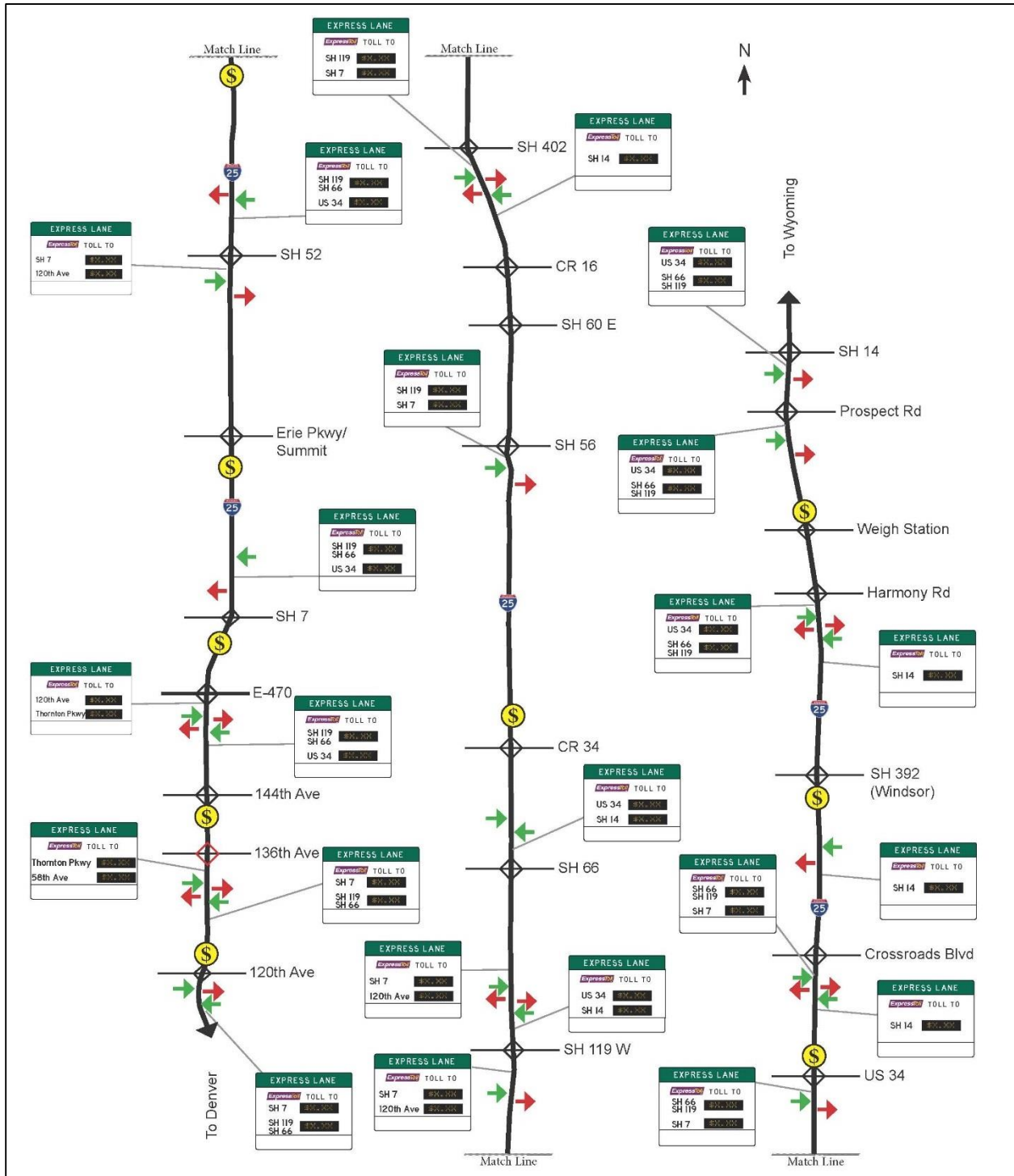


Figure 2 – Electronic Tolling Point and Access Zone Locations (Source: Apex Design, July 2013)

**Table 2 – Traffic Operations Analysis (Composite of GP and TE Lanes<sup>4</sup>) – 84<sup>th</sup> Ave to SH 14**

Measures of Effectiveness <sup>2</sup> (MOE)	2015					2025					2035					
	AM		PM		Avg or Total <sup>1</sup>	AM		PM		Avg or Total <sup>1</sup>	AM		PM		Avg or Total <sup>1</sup>	
	SB	NB	SB	NB		SB	NB	SB	NB		SB	NB	SB	NB		
Travel Time per Veh (min)	No Action NA	61.5	61.2	67.3	71.2	65.3	71.9	70.6	76.4	87.3	76.6	79.4	87.1	87.5	103.1	89.3
	Existing Config X1	60.3	60.8	67.7	69.8	64.6	70.8	69.3	78.2	90.0	77.1	79.6	86.2	91.9	107.8	91.4
	EIS ROD <sup>5</sup> E1	59.0	59.3	64.9	65.8	62.2	67.0	65.6	72.8	82.6	72.0	72.1	89.6	84.3	107.0	88.2
	Scenario 3a	60.0	58.5	61.3	65.4	61.3	68.9	61.0	62.3	73.2	66.3	71.6	78.9	71.3	85.6	76.9
	Scenario 3b	57.1	57.0	59.7	61.6	58.9	62.3	58.8	60.5	69.3	62.7	67.6	67.5	70.0	83.6	72.2
	Scenario 3c	58.4	57.6	60.6	63.5	60.0	66.2	59.5	62.7	78.4	66.7	70.4	78.9	71.9	98.5	79.9
	Scenario 4a	61.2	62.1	69.5	72.7	66.4	72.9	72.3	78.7	89.9	78.5	85.5	97.4	96.1	105.0	96.0
	Scenario 4b	58.5	60.3	66.3	68.3	63.4	65.2	68.6	77.6	85.5	74.2	75.5	84.8	92.5	106.2	89.8
	Scenario 4c	59.5	60.7	66.5	70.2	64.2	68.1	69.4	74.9	88.0	75.1	76.5	86.6	81.7	106.5	87.8
Speed (mph)	No Action NA	49.0	50.9	46.0	43.7	47.4	41.3	44.5	41.4	35.9	40.8	38.2	37.1	38.0	31.1	36.1
	Existing Config X1	50.5	51.4	46.3	45.1	48.3	42.3	45.7	41.4	35.0	41.1	38.6	37.9	37.0	29.8	35.8
	EIS ROD <sup>5</sup> E1	51.9	52.9	48.4	47.9	50.3	45.2	48.3	44.6	38.5	44.2	42.7	37.6	40.1	31.1	37.9
	Scenario 3a	50.4	53.4	50.9	47.6	50.6	44.7	51.2	50.2	42.7	47.2	43.3	40.2	44.9	37.5	41.5
	Scenario 3b	53.2	54.9	52.2	50.7	52.8	48.3	53.2	51.6	45.1	49.6	44.5	47.4	45.9	38.7	44.1
	Scenario 3c	52.2	54.5	51.7	49.3	51.9	45.5	53.1	50.1	40.2	47.2	43.5	41.5	45.0	33.7	40.9
	Scenario 4a	50.2	50.6	45.5	43.8	47.5	43.2	44.1	41.8	36.1	41.3	37.9	33.6	36.5	31.9	35.0
	Scenario 4b	52.6	52.0	47.4	46.6	49.7	46.9	46.2	42.6	37.9	43.4	41.2	39.1	38.5	31.4	37.6
	Scenario 4c	51.5	51.7	47.2	45.3	48.9	44.6	46.0	43.3	36.4	42.6	40.7	38.2	40.8	30.8	37.6
Level of Service (LOS)	No Action NA	D	D	D	E	D	E	E	F	E	F	F	F	F	F	
	Existing Config X1	D	D	D	E	D	E	D	E	F	E	F	F	F	F	
	EIS ROD <sup>5</sup> E1	C	C	D	D	D	D	D	D	F	E	E	E	E	F	
	Scenario 3a	C	C	D	D	D	D	D	D	E	D	E	E	E	F	
	Scenario 3b	C	C	C	D	C	D	C	D	E	D	D	D	D	E	
	Scenario 3c	C	C	D	D	D	D	C	D	E	D	E	E	E	F	
	Scenario 4a	D	D	D	E	D	E	E	E	F	E	E	F	F	F	
	Scenario 4b	C	C	D	D	D	D	D	E	F	E	E	E	E	F	
	Scenario 4c	D	D	D	E	D	E	D	E	F	E	E	E	E	F	
Veh Miles of Travel (veh-mi)	No Action NA	167 K	163 K	182 K	201 K	178 K	194 K	193 K	196 K	220 K	201 K	211 K	206 K	203 K	218 K	210 K
	Existing Config X1	172 K	164 K	188 K	206 K	183 K	201 K	196 K	203 K	226 K	206 K	218 K	209 K	210 K	225 K	216 K
	EIS ROD <sup>5</sup> E1	179 K	166 K	194 K	213 K	188 K	211 K	200 K	215 K	236 K	216 K	233 K	219 K	228 K	239 K	230 K
	Scenario 3a	180 K	167 K	202 K	213 K	190 K	206 K	207 K	230 K	240 K	221 K	232 K	237 K	245 K	264 K	244 K
	Scenario 3b	180 K	167 K	201 K	217 K	191 K	217 K	207 K	233 K	256 K	228 K	245 K	240 K	249 K	281 K	254 K
	Scenario 3c	179 K	167 K	202 K	216 K	191 K	211 K	206 K	230 K	244 K	223 K	236 K	235 K	247 K	255 K	243 K
	Scenario 4a	179 K	165 K	189 K	209 K	186 K	204 K	200 K	209 K	228 K	210 K	222 K	211 K	214 K	231 K	220 K
	Scenario 4b	180 K	165 K	190 K	213 K	187 K	216 K	200 K	211 K	240 K	217 K	237 K	217 K	220 K	244 K	230 K
	Scenario 4c	179 K	165 K	188 K	214 K	186 K	211 K	200 K	207 K	234 K	213 K	232 K	216 K	217 K	234 K	225 K
Veh Hours of Travel (veh-hrs)	No Action NA	3,410	3,210	3,960	4,590	3,790	4,700	4,350	4,730	6,110	4,970	5,530	5,550	5,340	7,020	5,860
	Existing Config X1	3,410	3,190	4,060	4,570	3,810	4,750	4,280	4,900	6,460	5,100	5,640	5,500	5,690	7,560	6,100
	EIS ROD <sup>5</sup> E1	3,460	3,130	4,000	4,450	3,760	4,670	4,150	4,810	6,130	4,940	5,450	5,830	5,680	7,690	6,160
	Scenario 3a	3,570	3,120	3,960	4,470	3,780	4,610	4,040	4,580	5,630	4,720	5,360	5,880	5,460	7,030	5,930
	Scenario 3b	3,380	3,040	3,860	4,280	3,640	4,500	3,890	4,510	5,670	4,640	5,500	5,070	5,410	7,260	5,810
	Scenario 3c	3,440	3,060	3,900	4,390	3,700	4,640	3,890	4,580	6,060	4,790	5,430	5,660	5,490	7,550	6,030
	Scenario 4a	3,570	3,270	4,160	4,770	3,940	4,730	4,530	5,010	6,300	5,140	5,860	6,280	5,880	7,240	6,320
	Scenario 4b	3,420	3,180	4,010	4,580	3,800	4,600	4,330	4,960	6,340	5,060	5,750	5,550	5,720	7,770	6,200
	Scenario 4c	3,470	3,200	3,970	4,720	3,840	4,730	4,360	4,780	6,430	5,080	5,710	5,660	5,320	7,590	6,070
Veh Hours of Delay (veh-hrs)	No Action NA	1,000	800	1,270	1,640	1,180	2,310	1,510	1,970	2,930	2,180	3,380	2,520	2,570	4,290	3,190
	Existing Config X1	1,020	770	1,590	1,530	1,230	2,530	1,400	2,540	3,590	2,520	4,100	2,440	3,540	5,070	3,790
	EIS ROD <sup>5</sup> E1	970	690	1,270	1,310	1,060	2,560	1,190	1,750	3,310	2,200	3,840	2,600	2,640	5,520	3,650
	Scenario 3a	1,040	660	1,040	1,330	1,020	2,860	990	1,260	3,270	2,100	4,810	2,540	2,640	5,570	3,890
	Scenario 3b	850	580	920	1,080	860	2,080	840	1,150	2,540	1,650	3,520	1,590	2,450	5,190	3,190
	Scenario 3c	940	600	950	1,200	920	2,520	850	1,250	3,080	1,930	3,670	2,250	2,560	5,350	3,460
	Scenario 4a	1,040	830	1,710	1,690	1,320	2,990	1,580	2,310	4,140	2,760	5,030	3,230	3,420	6,160	4,460
	Scenario 4b	890	740	1,580	1,430	1,160	2,200	1,370	2,160	3,430	2,290	4,000	2,340	3,030	5,380	3,790
	Scenario 4c	970	760	1,200	1,570	1,130	2,450	1,410	1,740	3,670	2,320	4,110	2,470	2,120	5,800	3,520

- Notes:  
 1. Total or Average of AM and PM peak hour plus NB and SB traffic  
 2. MOE results based on FREEVAL Methodology from 2010 Highway Capacity Manual, TRB  
 3. Traffic volume demand from CDM-Smith Tolling and Revenue Study, November 14, 2013  
 4. MOE results are a composite of both General Purpose and Tolloed Express Lanes  
 5. EIS Phase 1 ROD Revised & ROD 2 E1

**Table 3 – Traffic Operations Analysis (General Purpose Lanes Only<sup>4</sup>) – 84<sup>th</sup> Ave to SH 14**

Measures of Effectiveness <sup>2</sup> (MOE)		2015					2025					2035				
		AM		PM		Avg or Total <sup>1</sup>	AM		PM		Avg or Total <sup>1</sup>	AM		PM		Avg or Total <sup>1</sup>
		SB	NB	SB	NB		SB	NB	SB	NB		SB	NB	SB	NB	
Travel Time per Veh (min)	No Action NA	61.5	61.2	67.3	71.2	▽ 65.3	71.9	70.6	76.4	87.3	▽ 76.6	79.4	87.1	87.5	103.1	▽ 89.3
	Existing Config X1	60.3	60.8	67.7	69.8	▽ 64.7	70.8	69.3	78.2	90.1	▽ 77.1	79.6	86.2	91.9	107.9	▽ 91.4
	EIS ROD <sup>5</sup> E1	59.3	59.4	65.3	66.2	▽ 62.6	67.4	66.0	73.7	83.3	▽ 72.6	72.7	90.8	85.5	108.7	▽ 89.4
	Scenario 3a	61.5	59.4	63.4	68.0	▽ 63.1	72.1	63.6	65.5	78.2	△ 69.9	76.2	84.7	76.3	94.5	△ 82.9
	Scenario 3b	58.0	57.7	61.2	63.1	△ 60.0	63.8	60.6	63.1	72.7	△ 65.1	70.7	71.1	74.0	90.5	△ 76.6
	Scenario 3c	58.9	58.0	61.6	64.3	△ 60.7	66.9	60.5	64.2	79.8	△ 67.9	71.5	81.0	74.5	101.3	△ 82.1
	Scenario 4a	62.0	62.3	70.0	73.7	▽ 67.0	74.8	73.0	79.5	92.1	▽ 79.9	88.2	98.9	97.2	108.2	▽ 98.1
	Scenario 4b	58.9	60.4	66.5	68.7	▽ 63.6	66.0	68.9	78.0	86.3	▽ 74.8	76.7	85.2	93.0	107.9	▽ 90.7
	Scenario 4c	59.7	60.7	66.6	70.3	▽ 64.3	68.3	69.5	75.0	88.2	▽ 75.3	76.7	86.7	81.8	106.8	▽ 88.0
Speed (mph)	No Action NA	49.0	50.9	46.1	43.8	▽ 47.5	41.3	44.4	41.5	35.9	▽ 40.8	38.2	37.1	38.0	31.1	▽ 36.1
	Existing Config X1	50.4	51.4	46.1	45.0	▽ 48.2	42.0	45.5	41.0	34.7	▽ 40.8	38.2	37.7	36.6	29.5	▽ 35.5
	EIS ROD <sup>5</sup> E1	51.4	52.8	47.8	47.4	▽ 49.9	44.4	47.7	43.4	37.6	▽ 43.3	41.6	36.6	38.8	29.8	▽ 36.7
	Scenario 3a	49.2	52.7	49.1	45.8	▽ 49.2	42.7	49.1	47.5	39.9	▽ 44.8	40.4	37.2	41.6	33.5	▽ 38.2
	Scenario 3b	52.5	54.2	50.8	49.6	△ 51.8	47.1	51.6	49.4	42.9	△ 47.8	42.3	44.9	43.3	35.4	△ 41.5
	Scenario 3c	51.6	54.0	50.5	48.5	△ 51.2	44.6	51.8	48.4	38.6	△ 45.9	41.9	39.6	42.7	31.5	△ 38.9
	Scenario 4a	49.2	50.2	44.6	42.6	▽ 46.7	41.5	43.0	40.1	34.3	▽ 39.7	35.9	32.1	34.7	29.7	▽ 33.1
	Scenario 4b	51.9	51.8	46.9	45.9	▽ 49.1	45.9	45.6	41.3	36.8	▽ 42.4	39.9	38.1	37.1	30.0	▽ 36.3
	Scenario 4c	51.1	51.6	46.9	44.9	▽ 48.6	44.0	45.4	42.6	35.8	▽ 42.0	39.8	37.5	40.0	30.1	▽ 36.9
Level of Service (LOS)	No Action NA	D	D	D	E	D	E	E	E	F	E	F	F	F	F	F
	Existing Config X1	D	D	D	E	D	E	E	E	F	E	F	F	F	F	F
	EIS ROD <sup>5</sup> E1	D	C	D	E	D	E	D	E	F	E	E	F	E	F	F
	Scenario 3a	D	C	D	E	D	E	D	D	E	E	E	F	E	F	F
	Scenario 3b	C	C	D	D	D	D	D	D	E	D	E	E	E	F	E
	Scenario 3c	D	C	D	D	D	E	D	D	F	E	E	E	E	F	F
	Scenario 4a	D	D	E	E	D	E	E	E	F	E	F	F	F	F	F
	Scenario 4b	D	C	D	E	D	E	D	E	F	E	E	E	E	F	F
	Scenario 4c	D	D	D	E	D	E	E	E	F	E	F	F	E	F	F
Veh Miles of Travel (veh-mi)	No Action NA	167 K	163 K	182 K	201 K	△ 178 K	194 K	193 K	196 K	220 K	△ 201 K	211 K	206 K	203 K	218 K	△ 210 K
	Existing Config X1	166 K	163 K	184 K	202 K	△ 179 K	195 K	192 K	197 K	220 K	△ 201 K	211 K	205 K	205 K	219 K	△ 210 K
	EIS ROD <sup>5</sup> E1	167 K	162 K	183 K	202 K	△ 178 K	197 K	188 K	195 K	220 K	△ 200 K	213 K	204 K	208 K	218 K	△ 211 K
	Scenario 3a	157 K	153 K	172 K	183 K	▽ 167 K	175 K	171 K	181 K	196 K	▽ 181 K	187 K	192 K	193 K	202 K	▽ 193 K
	Scenario 3b	162 K	156 K	177 K	194 K	▽ 172 K	193 K	176 K	188 K	217 K	▽ 193 K	205 K	198 K	203 K	225 K	△ 208 K
	Scenario 3c	166 K	158 K	181 K	199 K	△ 176 K	196 K	179 K	195 K	217 K	△ 197 K	209 K	206 K	208 K	219 K	△ 211 K
	Scenario 4a	159 K	158 K	175 K	190 K	▽ 171 K	179 K	183 K	185 K	200 K	▽ 187 K	192 K	191 K	190 K	199 K	▽ 193 K
	Scenario 4b	164 K	160 K	181 K	200 K	△ 176 K	197 K	188 K	192 K	221 K	△ 199 K	214 K	201 K	200 K	221 K	△ 209 K
	Scenario 4c	167 K	163 K	181 K	205 K	△ 179 K	198 K	191 K	195 K	223 K	△ 202 K	216 K	205 K	204 K	222 K	△ 212 K
Veh Hours of Travel (veh-hrs)	No Action NA	3,410	3,206	3,955	4,588	▽ 3,790	4,705	4,353	4,726	6,114	▽ 4,974	5,531	5,553	5,342	7,024	▽ 5,862
	Existing Config X1	3,300	3,164	3,992	4,492	▽ 3,737	4,639	4,212	4,793	6,347	▽ 4,997	5,518	5,439	5,590	7,432	▽ 5,995
	EIS ROD <sup>5</sup> E1	3,247	3,062	3,820	4,262	▽ 3,598	4,442	3,943	4,496	5,837	▽ 4,680	5,110	5,587	5,362	7,320	▽ 5,845
	Scenario 3a	3,194	2,910	3,510	4,002	△ 3,404	4,099	3,472	3,821	4,909	△ 4,076	4,625	5,156	4,633	6,023	△ 5,109
	Scenario 3b	3,088	2,872	3,485	3,922	△ 3,342	4,105	3,402	3,810	5,044	△ 4,090	4,849	4,411	4,685	6,356	△ 5,075
	Scenario 3c	3,212	2,924	3,574	4,108	△ 3,454	4,384	3,455	4,033	5,626	△ 4,374	4,981	5,187	4,875	6,960	△ 5,501
	Scenario 4a	3,239	3,157	3,933	4,462	▽ 3,698	4,306	4,255	4,607	5,840	▽ 4,752	5,351	5,946	5,481	6,696	▽ 5,868
	Scenario 4b	3,156	3,099	3,862	4,362	▽ 3,619	4,287	4,118	4,643	6,020	▽ 4,767	5,363	5,275	5,383	7,373	▽ 5,849
	Scenario 4c	3,260	3,158	3,851	4,579	▽ 3,712	4,512	4,208	4,567	6,244	▽ 4,883	5,427	5,475	5,101	7,368	▽ 5,843
Veh Hours of Delay (veh-hrs)	No Action NA	1,005	800	1,267	1,638	▽ 1,177	2,308	1,507	1,971	2,931	▽ 2,179	3,382	2,522	2,572	4,292	△ 3,192
	Existing Config X1	1,007	771	1,585	1,521	▽ 1,221	2,512	1,396	2,523	3,555	▽ 2,496	4,087	2,429	3,524	5,016	△ 3,764
	EIS ROD <sup>5</sup> E1	948	685	1,255	1,295	▽ 1,046	2,535	1,178	1,722	3,257	▽ 2,173	3,798	2,585	2,599	5,433	△ 3,604
	Scenario 3a	1,000	650	1,016	1,298	▽ 991	2,801	958	1,199	3,195	▽ 2,038	4,700	2,454	2,543	5,390	△ 3,772
	Scenario 3b	820	578	901	1,061	△ 840	2,040	815	1,097	2,479	△ 1,608	3,438	1,545	2,368	5,047	△ 3,099
	Scenario 3c	919	598	933	1,179	△ 907	2,500	822	1,205	3,013	△ 1,885	3,615	2,203	2,486	5,237	△ 3,385
	Scenario 4a	1,009	824	1,692	1,663	▽ 1,297	2,930	1,564	2,273	4,073	▽ 2,710	4,936	3,187	3,377	6,045	▽ 4,386
	Scenario 4b	863	738	1,569	1,417	▽ 1,147	2,166	1,359	2,132	3,389	▽ 2,261	3,947	2,324	2,998	5,723	△ 3,748
	Scenario 4c	948	761	1,192	1,559	▽ 1,115	2,427	1,399	1,722	3,637	▽ 2,296	4,060	2,458	2,095	5,321	△ 3,483

Notes:  
 1. Total or Average of AM and PM peak hour plus NB and SB traffic  
 2. MOE results based on FREEVAL Methodology from 2010 Highway Capacity Manual, TRB  
 3. Traffic volume demand from CDM-Smith Tolling and Revenue Study, November 14, 2013  
 4. MOE results reflect only travel in general purpose lanes  
 5. EIS Phase 1 ROD Revised & ROD 2 E1

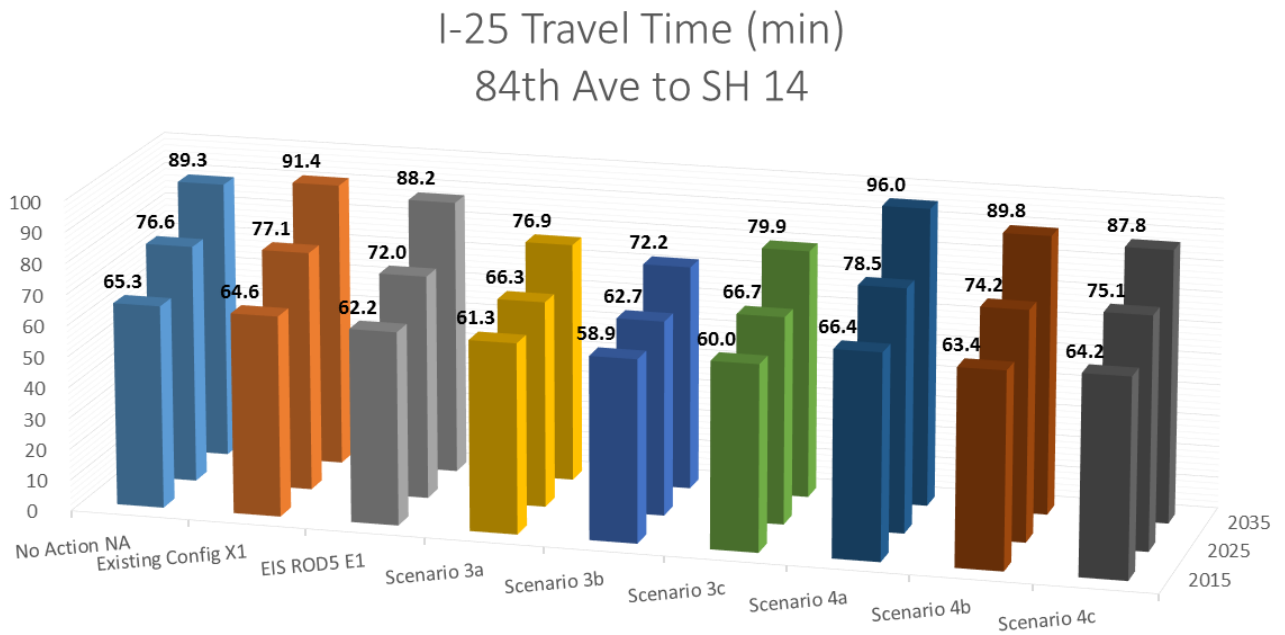


**Table 4 – Traffic Operations Analysis (Tolled Express Lanes Only<sup>4</sup>) – 84<sup>th</sup> Ave to SH 14**

Measures of Effectiveness <sup>2</sup> (MOE)		2015					2025					2035				
		AM		PM		Avg or Total <sup>1</sup>	AM		PM		Avg or Total <sup>1</sup>	AM		PM		Avg or Total <sup>1</sup>
		SB	NB	SB	NB		SB	NB	SB	NB		SB	NB	SB	NB	
Travel Time per Veh (min)	No Action NA	61.5	61.2	67.3	71.2	▼ 65.3	71.9	70.6	76.4	87.3	▼ 76.6	79.4	87.1	87.5	103.1	▼ 89.3
	Existing Config X1	59.4	60.2	67.0	68.9	▼ 63.9	69.7	68.6	77.4	85.9	▼ 75.4	78.3	85.3	91.1	103.3	▼ 89.5
	EIS ROD <sup>5</sup> E1	54.5	54.3	58.1	58.8	► 56.4	60.8	59.3	64.0	73.8	► 64.5	65.7	72.9	71.2	89.7	► 74.9
	Scenario 3a	49.6	48.0	49.0	49.3	► 49.0	51.2	49.0	50.4	51.3	► 50.5	52.6	54.0	52.7	56.7	► 54.0
	Scenario 3b	48.9	48.0	49.1	48.9	► 48.7	49.9	48.9	49.7	50.5	► 49.8	51.7	50.3	52.2	55.8	► 52.5
	Scenario 3c	52.3	50.9	52.1	54.5	► 52.5	58.0	52.7	53.9	67.1	► 57.9	61.8	64.2	57.6	80.7	► 66.1
	Scenario 4a	54.9	57.0	63.7	63.0	► 59.7	59.2	65.0	72.7	74.0	▼ 67.7	68.3	82.8	87.4	85.7	▼ 81.1
	Scenario 4b	54.4	56.7	62.3	62.9	► 59.1	57.0	64.5	73.2	75.8	► 67.6	63.7	79.6	87.6	89.9	▼ 80.2
Scenario 4c	57.4	59.2	64.7	68.0	▼ 62.3	65.0	67.7	72.7	84.0	▼ 72.4	73.5	84.8	79.3	101.7	▼ 84.8	
Speed (mph)	No Action NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Existing Config X1	55.3	56.3	56.7	54.5	▼ 55.7	54.6	55.9	55.7	50.1	▼ 54.1	55.5	55.8	55.6	48.0	▼ 53.7
	EIS ROD <sup>5</sup> E1	59.0	61.1	61.7	59.0	► 60.2	59.2	59.8	61.1	57.6	► 59.4	59.4	60.6	60.3	56.9	► 59.3
	Scenario 3a	61.2	65.2	64.7	63.1	► 63.5	61.3	64.1	63.7	62.1	► 62.8	61.2	62.5	63.4	61.3	► 62.1
	Scenario 3b	60.8	65.2	64.3	62.9	► 63.3	61.0	64.1	63.7	62.3	► 62.8	61.6	63.8	63.1	61.5	► 62.5
	Scenario 3c	59.6	64.3	63.9	61.5	► 62.3	60.1	63.5	63.3	60.7	► 61.9	61.0	62.5	63.0	59.9	► 61.6
	Scenario 4a	60.7	62.9	62.1	60.9	► 61.6	59.8	61.3	61.1	59.6	► 60.5	58.9	60.0	61.0	59.2	► 59.8
	Scenario 4b	60.2	62.5	61.0	60.2	► 61.0	59.8	60.5	60.8	58.9	► 60.0	59.0	60.3	60.8	57.6	► 59.4
Scenario 4c	58.4	59.2	59.2	57.7	► 58.6	58.2	59.0	58.8	55.7	► 57.9	57.2	59.3	58.7	54.9	► 57.5	
Level of Service (LOS)	No Action NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Existing Config X1	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	EIS ROD <sup>5</sup> E1	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	Scenario 3a	A	A	A	A	A	A	A	B	B	B	B	B	B	C	B
	Scenario 3b	A	A	A	A	A	A	A	B	B	A	B	B	B	B	B
	Scenario 3c	A	A	A	A	A	A	A	A	A	A	A	A	B	B	A
	Scenario 4a	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	Scenario 4b	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Scenario 4c	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	
Veh Miles of Travel (veh-mi)	No Action NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Existing Config X1	6 K	1 K	4 K	4 K	▼ 4 K	6 K	4 K	6 K	6 K	▼ 6 K	7 K	4 K	6 K	6 K	▼ 6 K
	EIS ROD <sup>5</sup> E1	13 K	4 K	11 K	11 K	▼ 10 K	14 K	12 K	19 K	17 K	▼ 15 K	20 K	15 K	19 K	21 K	▼ 19 K
	Scenario 3a	23 K	13 K	29 K	29 K	► 24 K	31 K	36 K	48 K	45 K	► 40 K	45 K	45 K	52 K	62 K	► 51 K
	Scenario 3b	18 K	11 K	24 K	23 K	► 19 K	24 K	31 K	44 K	39 K	► 35 K	40 K	42 K	46 K	56 K	► 46 K
	Scenario 3c	14 K	9 K	21 K	17 K	► 15 K	15 K	28 K	34 K	26 K	► 26 K	27 K	29 K	39 K	35 K	► 33 K
	Scenario 4a	20 K	7 K	14 K	19 K	► 15 K	25 K	17 K	25 K	27 K	► 24 K	30 K	20 K	24 K	32 K	► 27 K
	Scenario 4b	16 K	5 K	9 K	13 K	► 11 K	19 K	13 K	19 K	19 K	► 18 K	23 K	17 K	20 K	23 K	► 21 K
Scenario 4c	12 K	3 K	7 K	8 K	▼ 7 K	12 K	9 K	12 K	10 K	▼ 11 K	16 K	11 K	13 K	12 K	▼ 13 K	
Veh Hours of Travel (veh-hrs)	No Action NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Existing Config X1	107	23	68	78	► 69	116	72	108	113	► 102	123	66	103	126	► 105
	EIS ROD <sup>5</sup> E1	214	67	179	191	► 163	230	205	318	289	► 261	335	245	322	368	► 318
	Scenario 3a	372	205	451	466	▼ 374	507	567	760	716	▼ 638	733	722	826	1,011	▼ 823
	Scenario 3b	292	172	378	358	▼ 300	393	491	698	627	▼ 552	651	661	726	903	▼ 735
	Scenario 3c	230	136	327	278	► 243	257	433	545	436	► 418	451	472	613	587	► 530
	Scenario 4a	329	109	225	307	► 243	424	278	402	459	► 391	509	336	401	546	► 448
	Scenario 4b	265	81	151	217	► 178	317	208	319	323	► 292	382	274	337	401	► 349
Scenario 4c	209	43	116	141	► 127	214	157	212	188	► 193	280	186	215	217	► 224	
Veh Hours of Delay (veh-hrs)	No Action NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Existing Config X1	17	2	7	12	► 9	21	7	14	36	► 20	18	6	14	52	► 23
	EIS ROD <sup>5</sup> E1	24	4	12	19	► 14	23	16	26	53	► 30	43	18	37	82	► 45
	Scenario 3a	36	7	24	30	▼ 24	60	30	60	75	▼ 56	106	89	96	178	▼ 117
	Scenario 3b	27	6	22	23	► 19	39	25	49	58	► 43	77	50	87	145	▼ 90
	Scenario 3c	25	6	20	23	► 18	25	24	44	65	► 39	55	42	77	109	► 71
	Scenario 4a	31	4	14	25	► 19	62	17	37	66	▼ 46	93	47	42	112	► 73
	Scenario 4b	26	3	10	18	► 14	36	14	27	45	► 30	58	19	28	80	► 46
Scenario 4c	26	3	10	16	► 13	28	11	23	37	► 25	51	14	24	57	► 36	

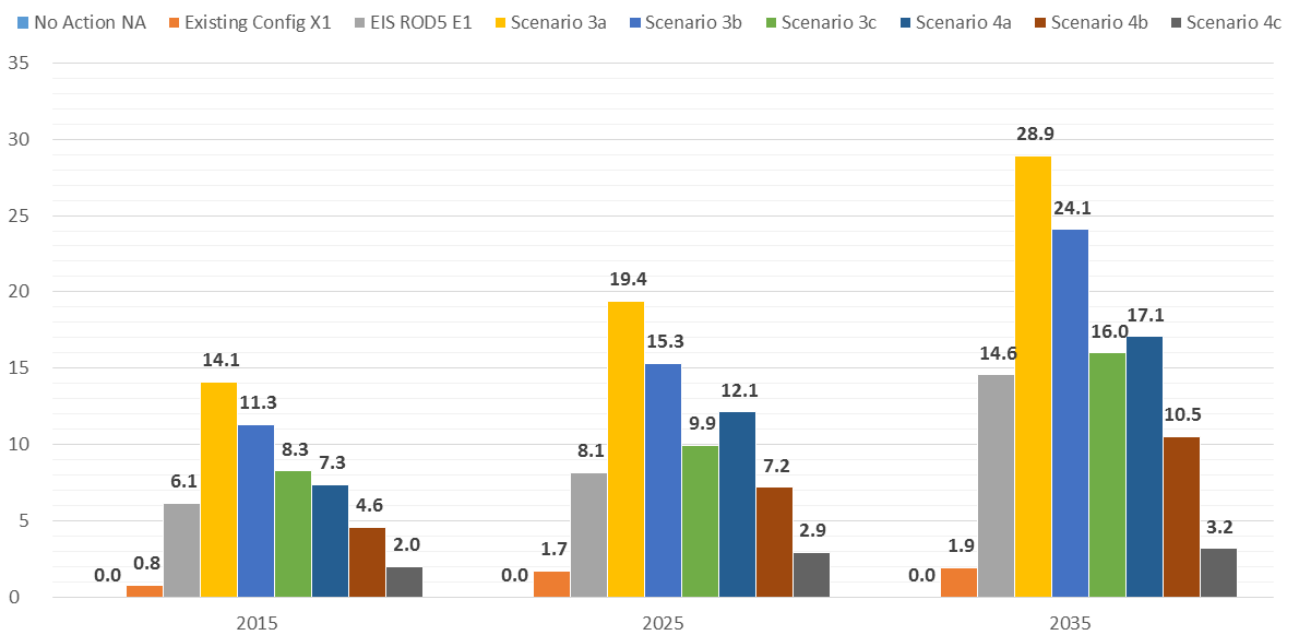
Notes:  
 1. Total or Average of AM and PM peak hour plus NB and SB traffic  
 2. MOE results based on FREEVAL Methodology from 2010 Highway Capacity Manual, TRB  
 3. Traffic volume demand from CDM-Smith Tolling and Revenue Study, November 14, 2013  
 4. MOE results reflect travel in tolled express lanes, plus general purpose lane travel where tolled express lanes do not exist  
 5. EIS Phase 1 ROD Revised & ROD 2 E1

**Figure 3 – Composite Average Travel Time  
 (Average of AM and PM Peak, NB and SB, and GP and TE Lanes)**

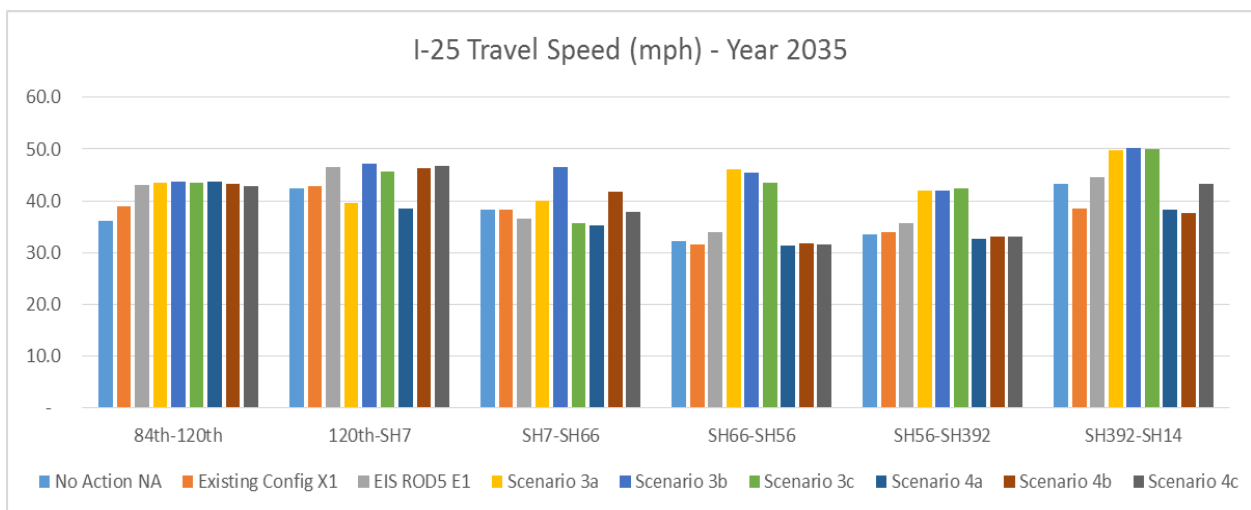
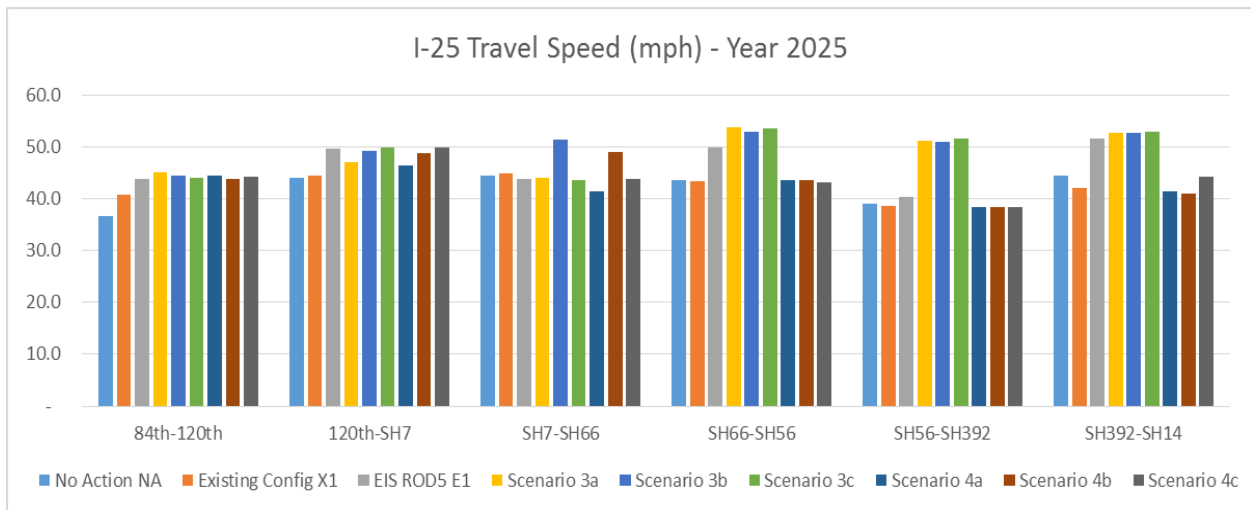
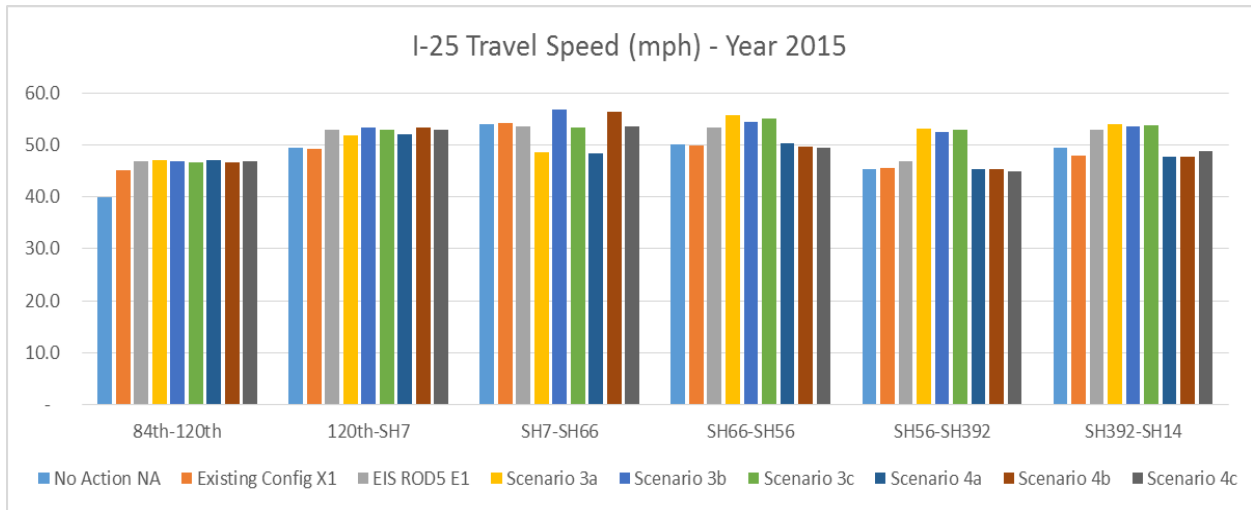


**Figure 4 – Travel Time Savings of TE Lanes Compared to GP Lanes  
 (Average of AM and PM Peak, and NB and SB savings in minutes)**

I-25 Travel Time Savings Using Toll Lanes (minutes)  
 84th Ave to SH 14



**Figure 5 – I-25 Travel Speed by Corridor Segment – 2015, 2025 and 2035  
 (Average of AM and PM Peak, and NB and SB)**



## **APPENDICES**

A – Scenario Schematics

B – Electronic Tolling Points and Access Zone Locations for Each Scenario

C – Average Daily Traffic Projections for 2015, 2025, and 2035

D – Travel Demand Modeling Meeting Minutes

E – Traffic Operations Analysis Summary by Corridor Segment

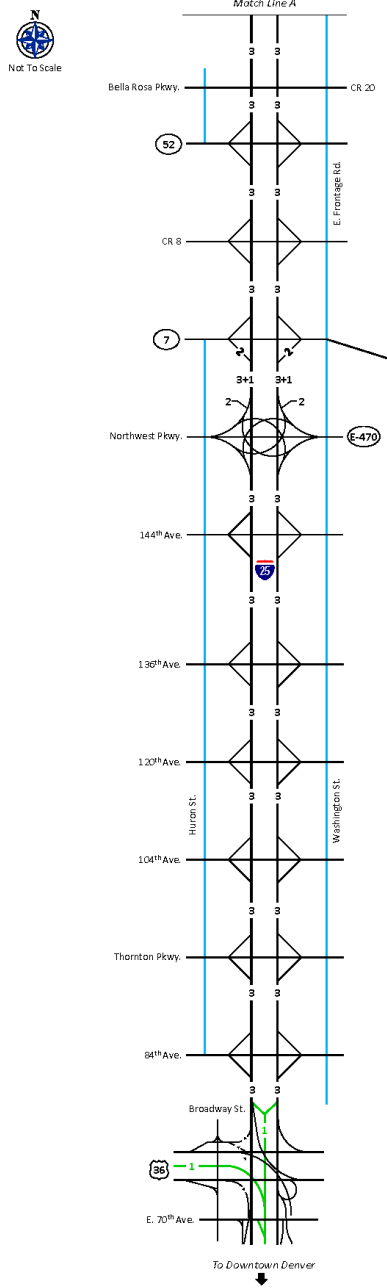
F – Detailed Traffic Operations Analysis Output

## **Appendix A – Scenario Schematics**

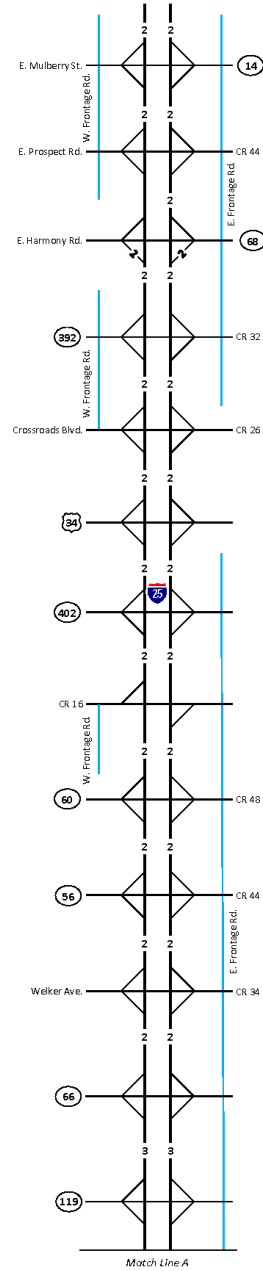
I-25: 84<sup>th</sup> Avenue to SH 14  
 Traffic Operations Analysis Memorandum – Final  
 July 30, 2014

CO 93200 / Graphics / Powerpoint / Portrait 13x17.pptx / 3-26-13

Tolled Express Lane Traffic and Revenue Study



- LEGEND
- 0 Number of I-25 ETL Extension Lanes
  - 0 Number of Existing I-25 Reversible ETL Lanes
  - 0 Number of General Purpose Lanes
  - + 0 Number of Auxiliary Lanes
  - I-25 Frontage Road



**SCENARIO: NO BUILD  
 (MATCHES N. I-25 EIS NO BUILD)**

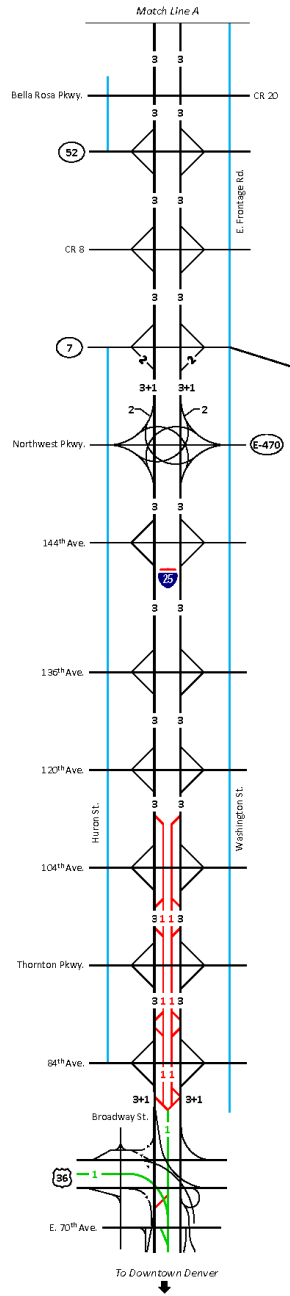
FIGURE 2



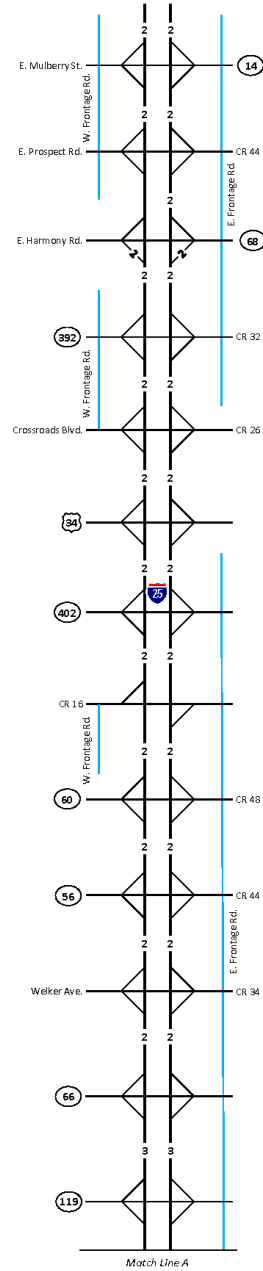
I-25: 84<sup>th</sup> Avenue to SH 14  
 Traffic Operations Analysis Memorandum – Final  
 July 30, 2014

CO 93200 / Graphics / Powerpoint / Portrait 13x17.pptx / 3-26-13

Tolled Express Lane Traffic and Revenue Study



- LEGEND**
- - - - - Number of I-25 ETL Extension Lanes
  - - - - - Number of Existing I-25 Reversible ETL Lanes
  - - - - - Number of General Purpose Lanes
  - Number of Auxiliary Lanes
  - I-25 Frontage Road



**SCENARIO: EXISTING CONDITION  
 (POST U.S. 36 - 120<sup>th</sup> TEL Construction)**

FIGURE 1



I-25: 84<sup>th</sup> Avenue to SH 14  
 Traffic Operations Analysis Memorandum – Final  
 July 30, 2014

CO 93200 / Graphics / Powerpoint / Portrait 13x17.zps / 3-20-13

Tolled Express Lane Traffic and Revenue Study

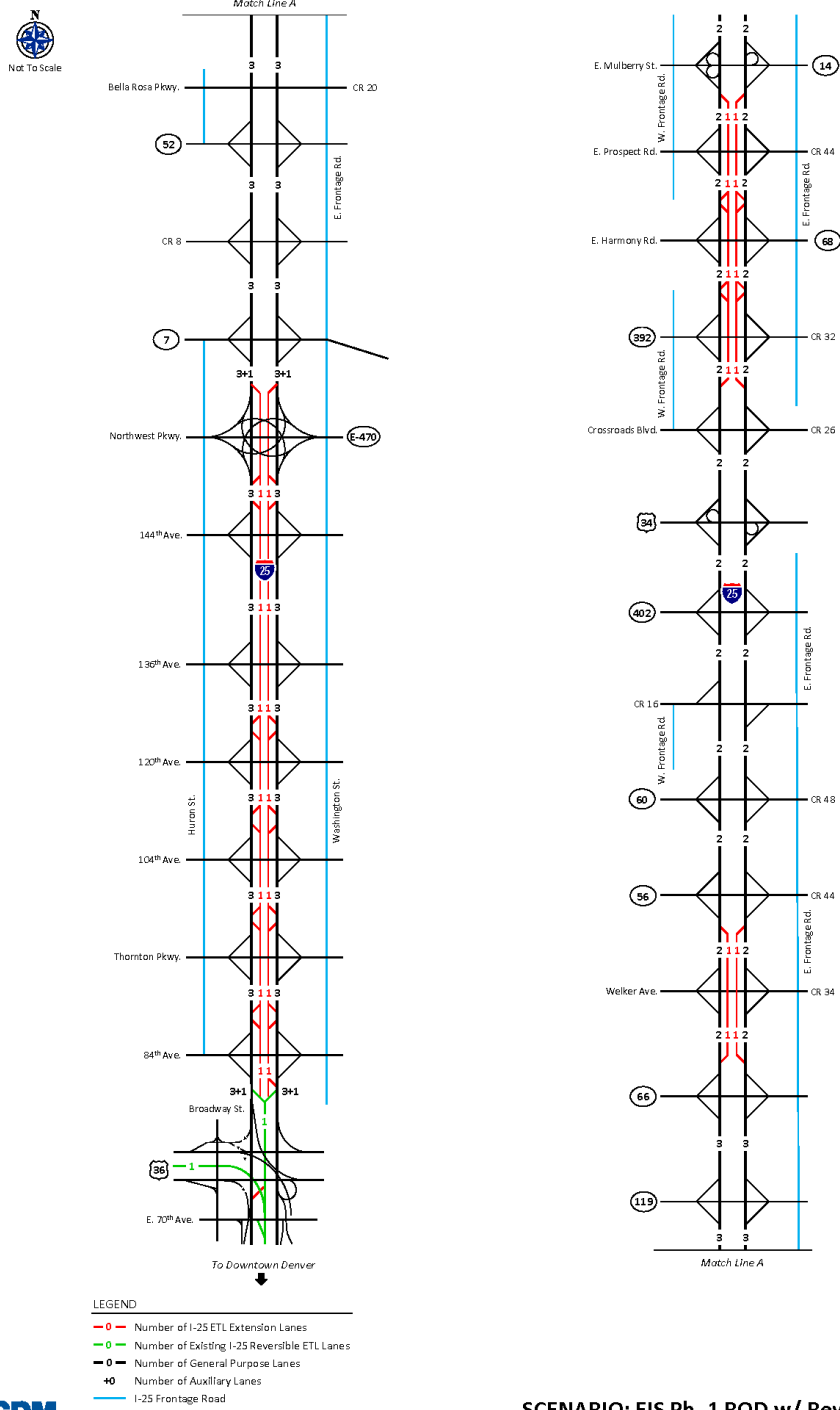


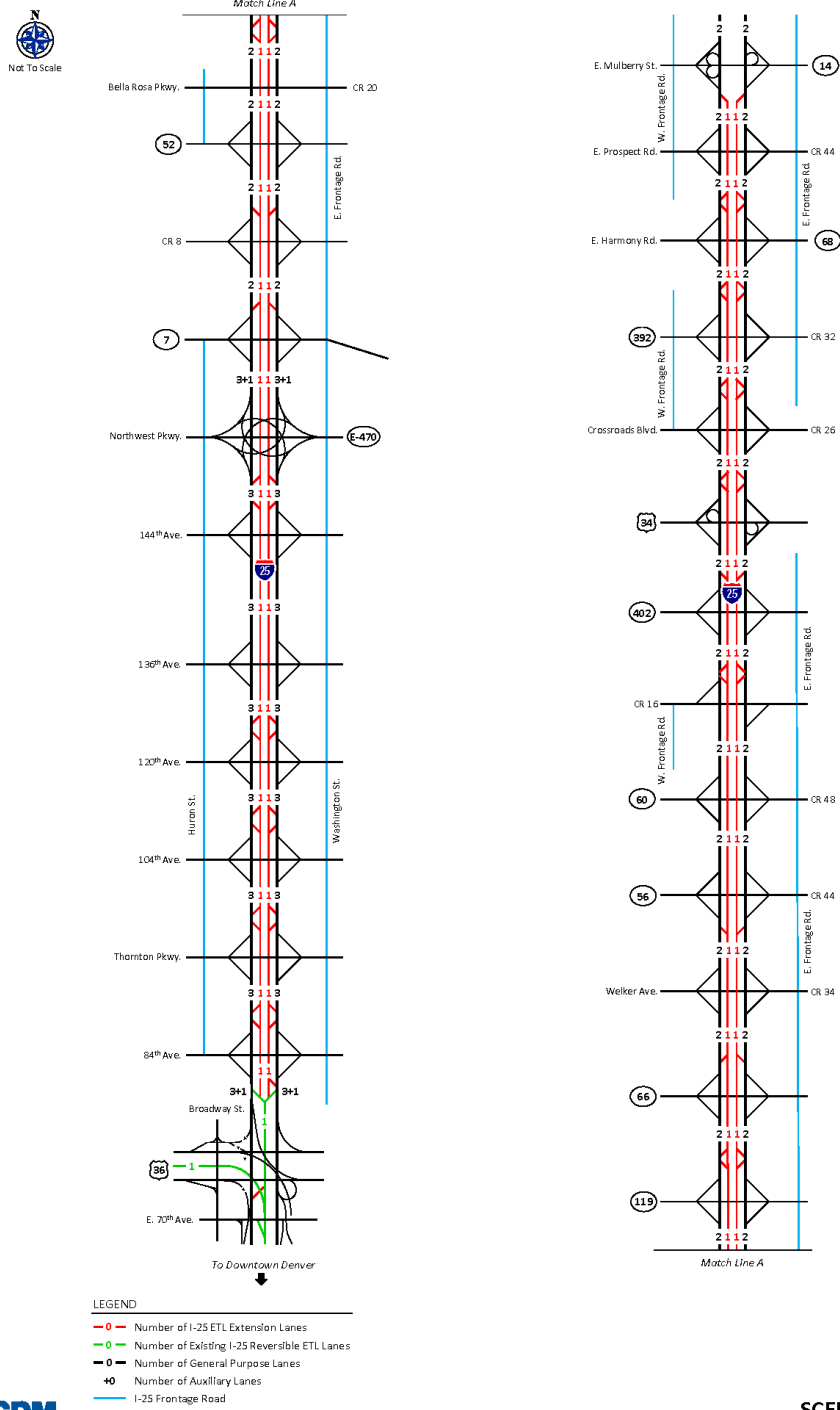
FIGURE 3



I-25: 84<sup>th</sup> Avenue to SH 14  
 Traffic Operations Analysis Memorandum – Final  
 July 30, 2014

CO 93200 / Graphics / Powerpoint / Portrait 13x17.zptx / 3-20-13

Tolled Express Lane Traffic and Revenue Study



SCENARIO: 3a

FIGURE 3

I-25: 84<sup>th</sup> Avenue to SH 14  
 Traffic Operations Analysis Memorandum – Final  
 July 30, 2014

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Tolled Express Lane Traffic and Revenue Study

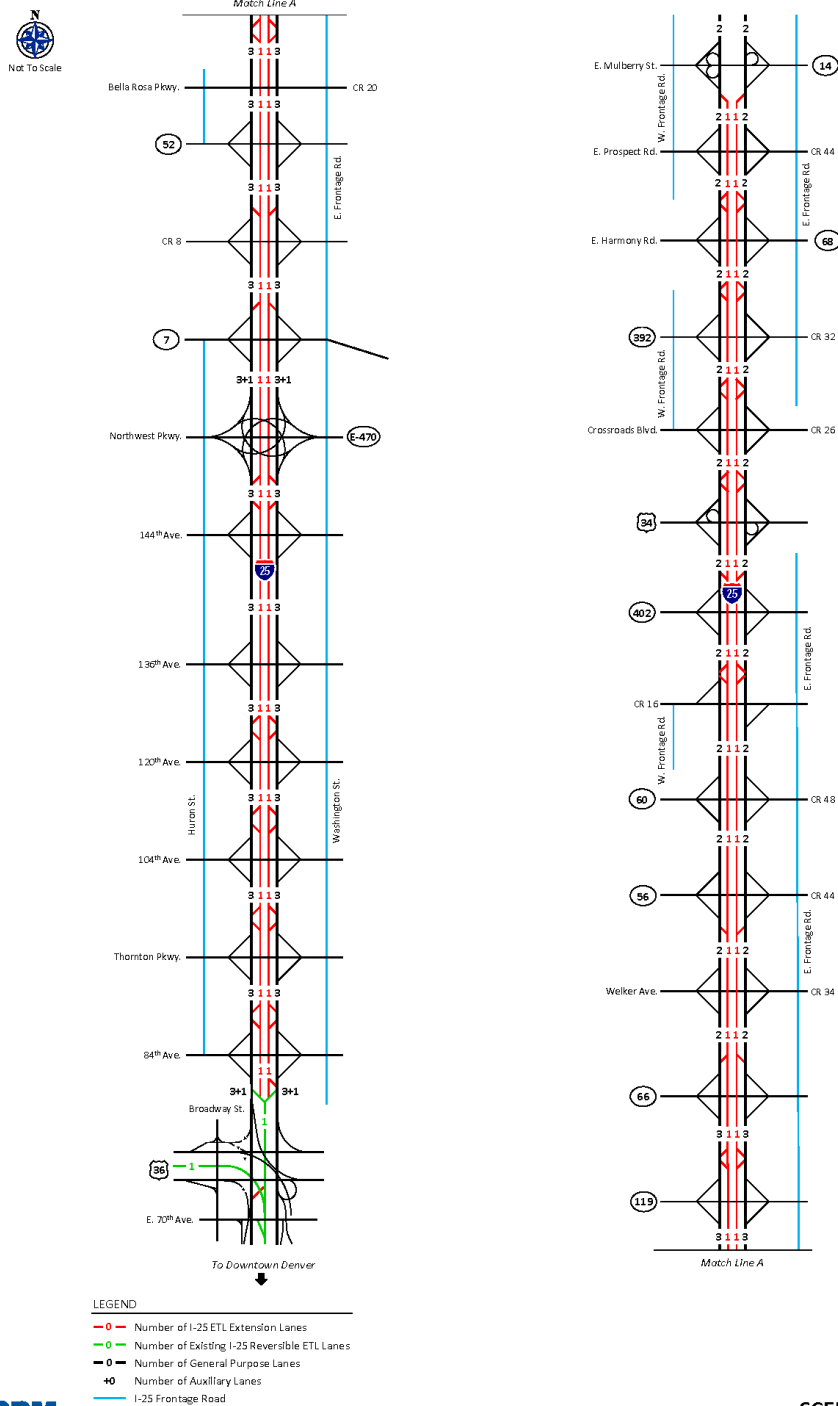
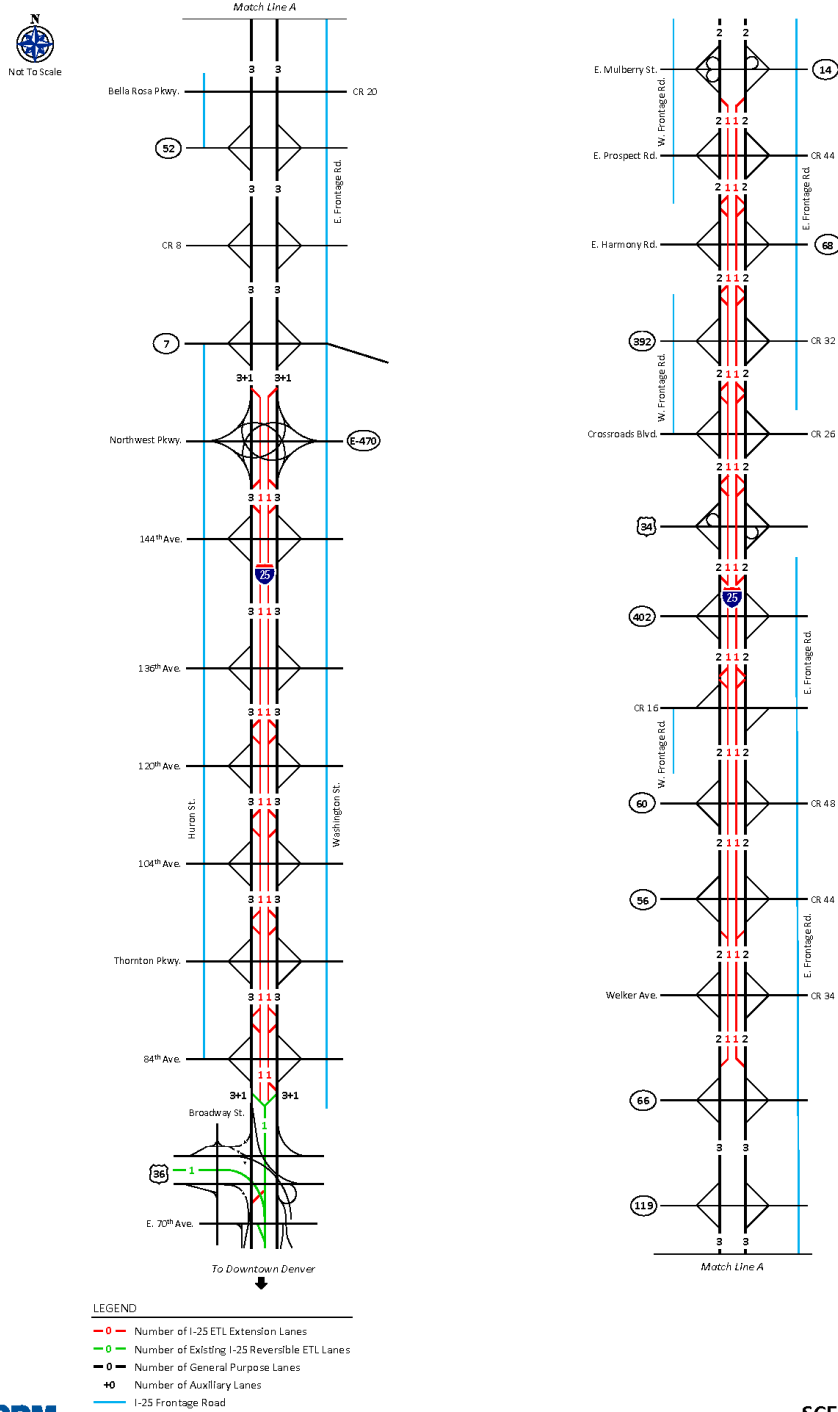


FIGURE 5

I-25: 84<sup>th</sup> Avenue to SH 14  
 Traffic Operations Analysis Memorandum – Final  
 July 30, 2014

CO 93200 / Graphics / Powerpoint / Portrait 13x17.zps / 3-20-13

Tolled Express Lane Traffic and Revenue Study



I-25: 84<sup>th</sup> Avenue to SH 14  
 Traffic Operations Analysis Memorandum – Final  
 July 30, 2014

CO 93200 / Graphics / Powerpoint / Portrait 13x17.zptx / 3-20-13

Tolled Express Lane Traffic and Revenue Study

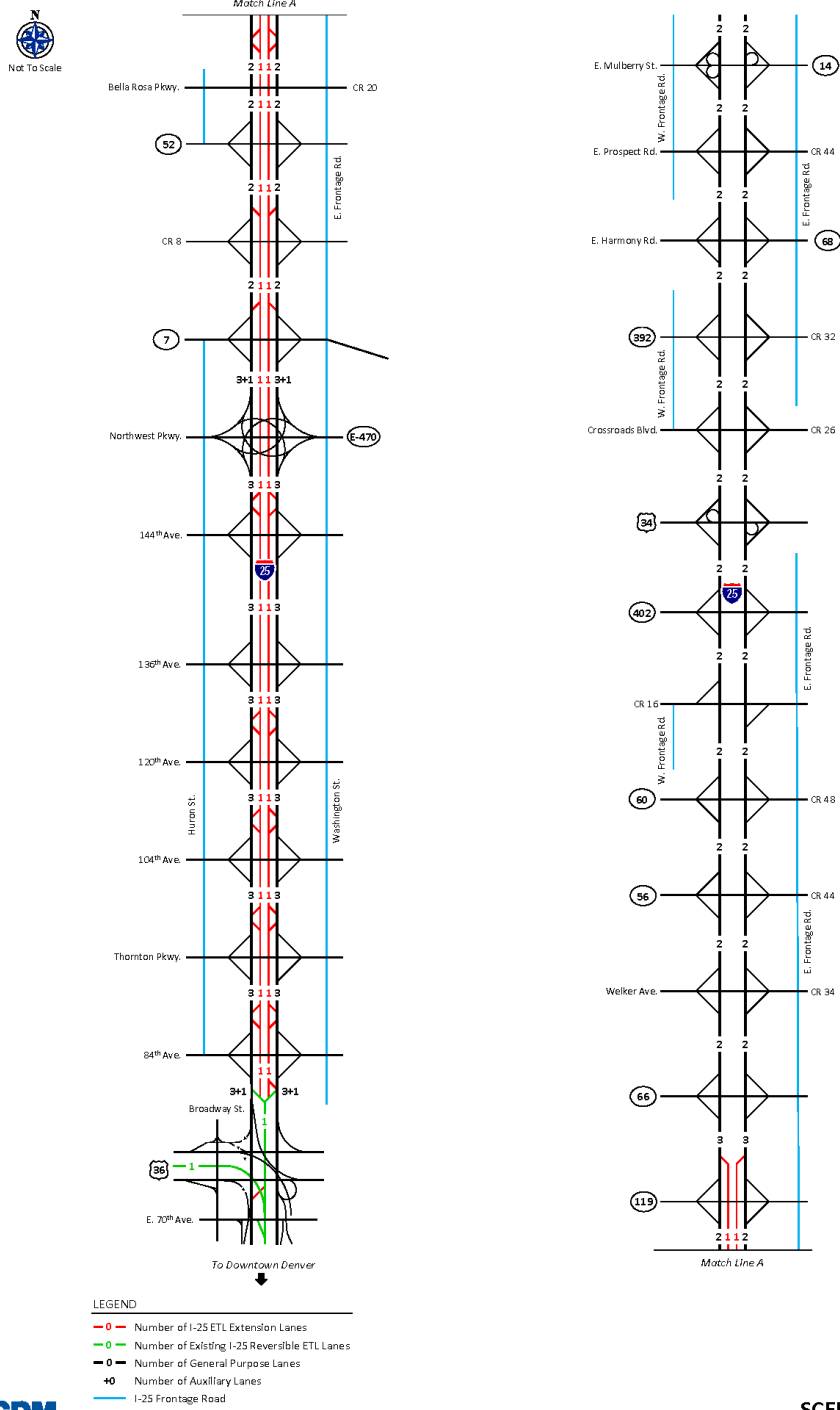
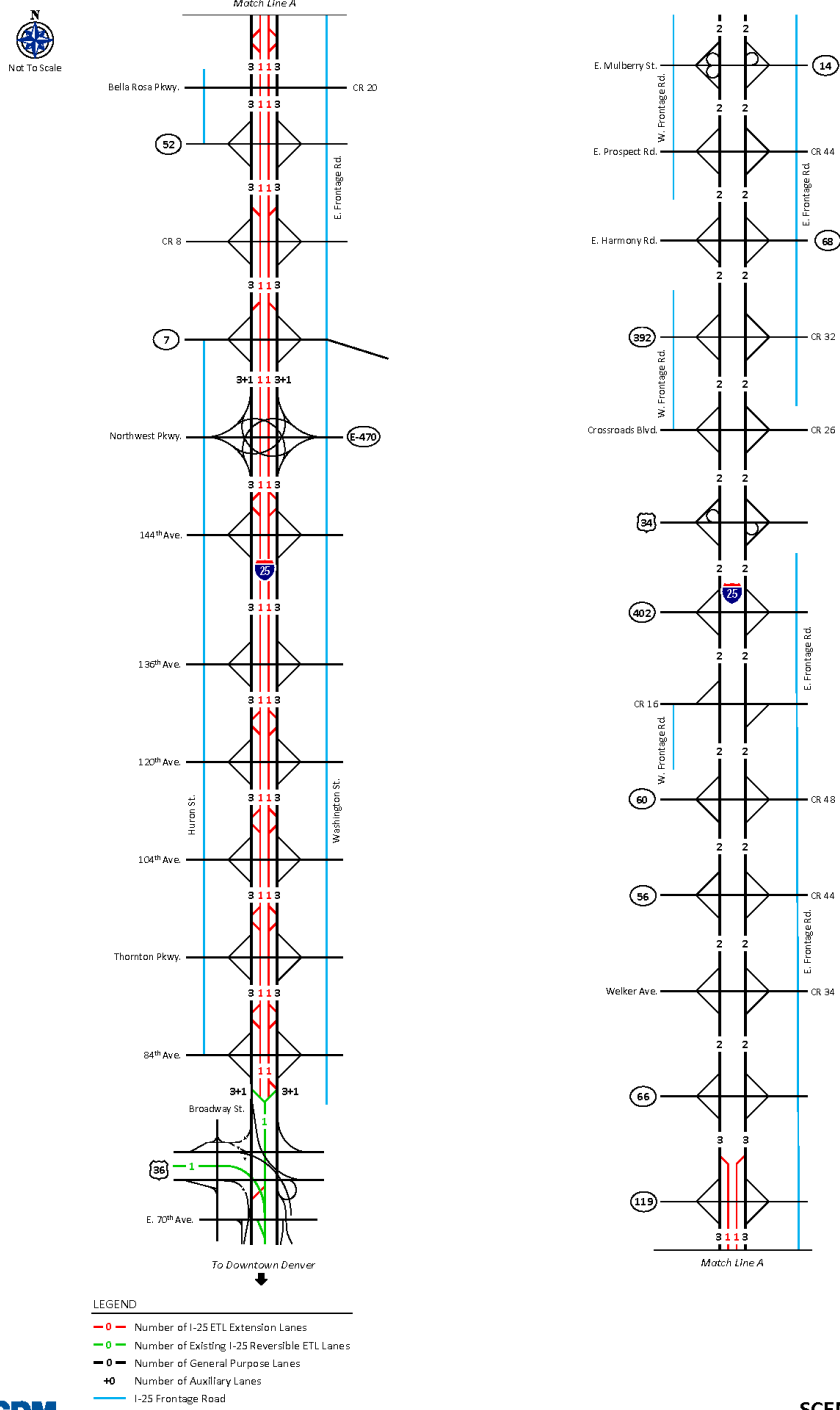


FIGURE 5

I-25: 84<sup>th</sup> Avenue to SH 14  
 Traffic Operations Analysis Memorandum – Final  
 July 30, 2014

CO 93200 / Graphics / Powerpoint / Portrait 13x17.pptx / 3-26-13

Tolled Express Lane Traffic and Revenue Study



SCENARIO: 4b

FIGURE 8

I-25: 84<sup>th</sup> Avenue to SH 14  
 Traffic Operations Analysis Memorandum – Final  
 July 30, 2014

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Tolled Express Lane Traffic and Revenue Study

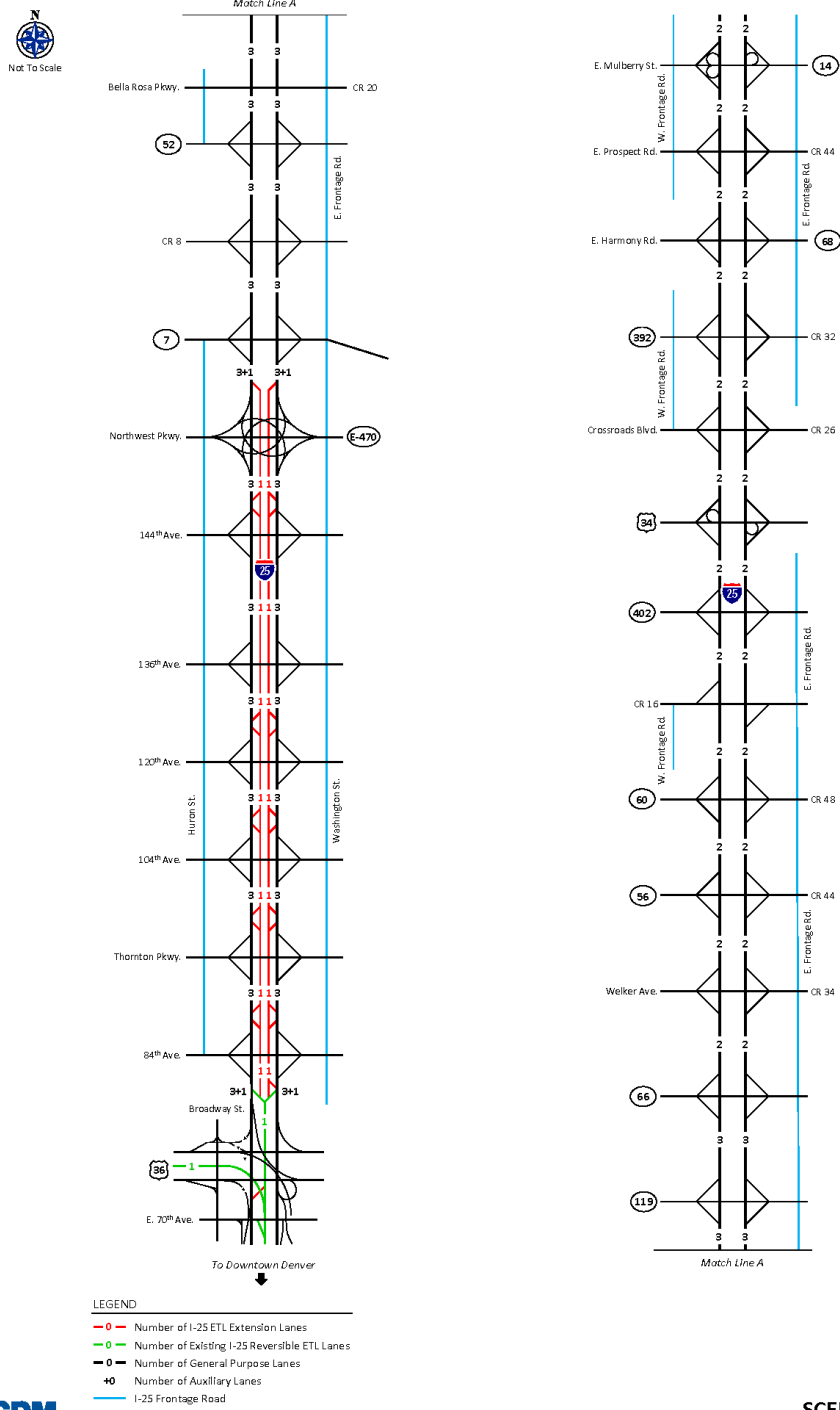
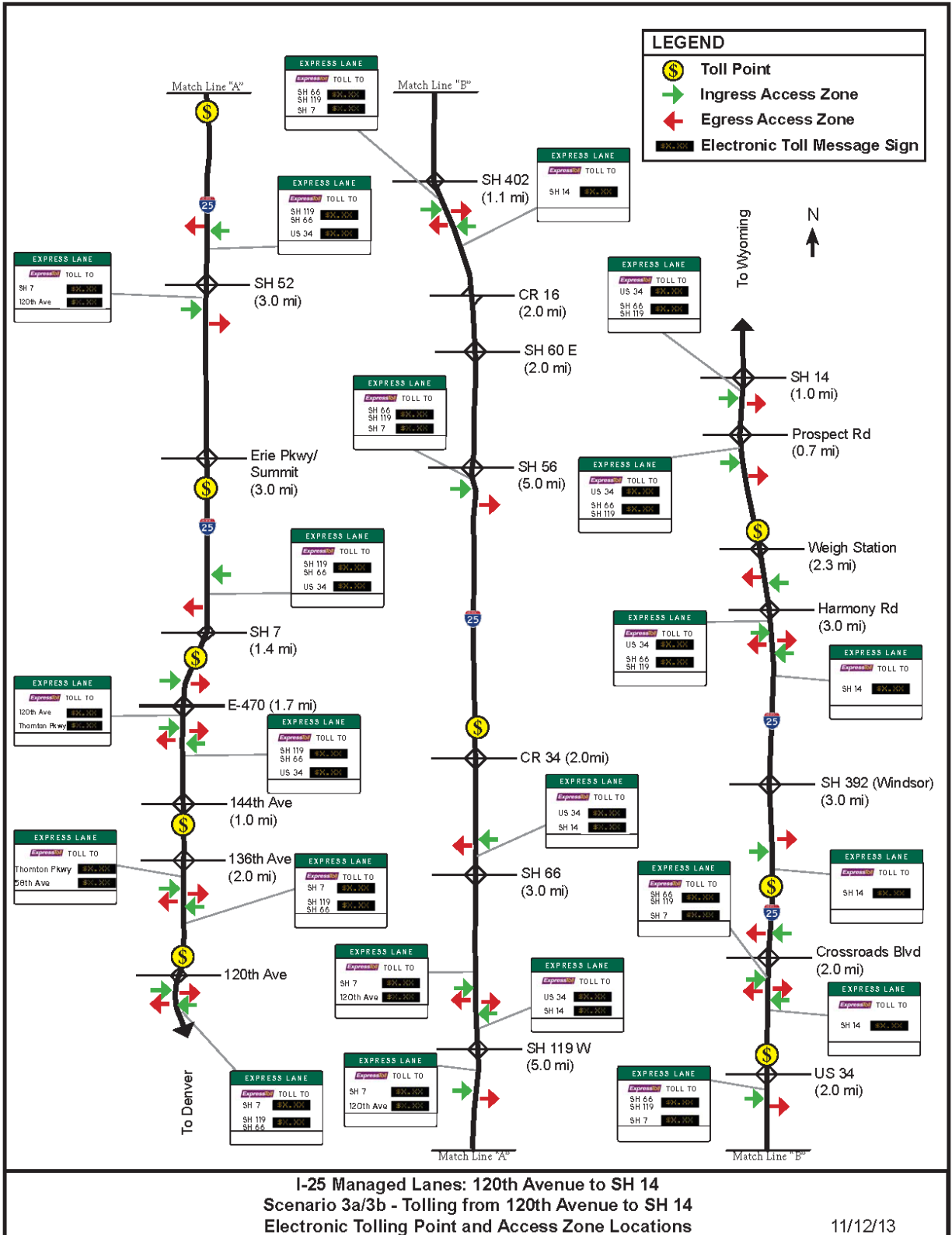


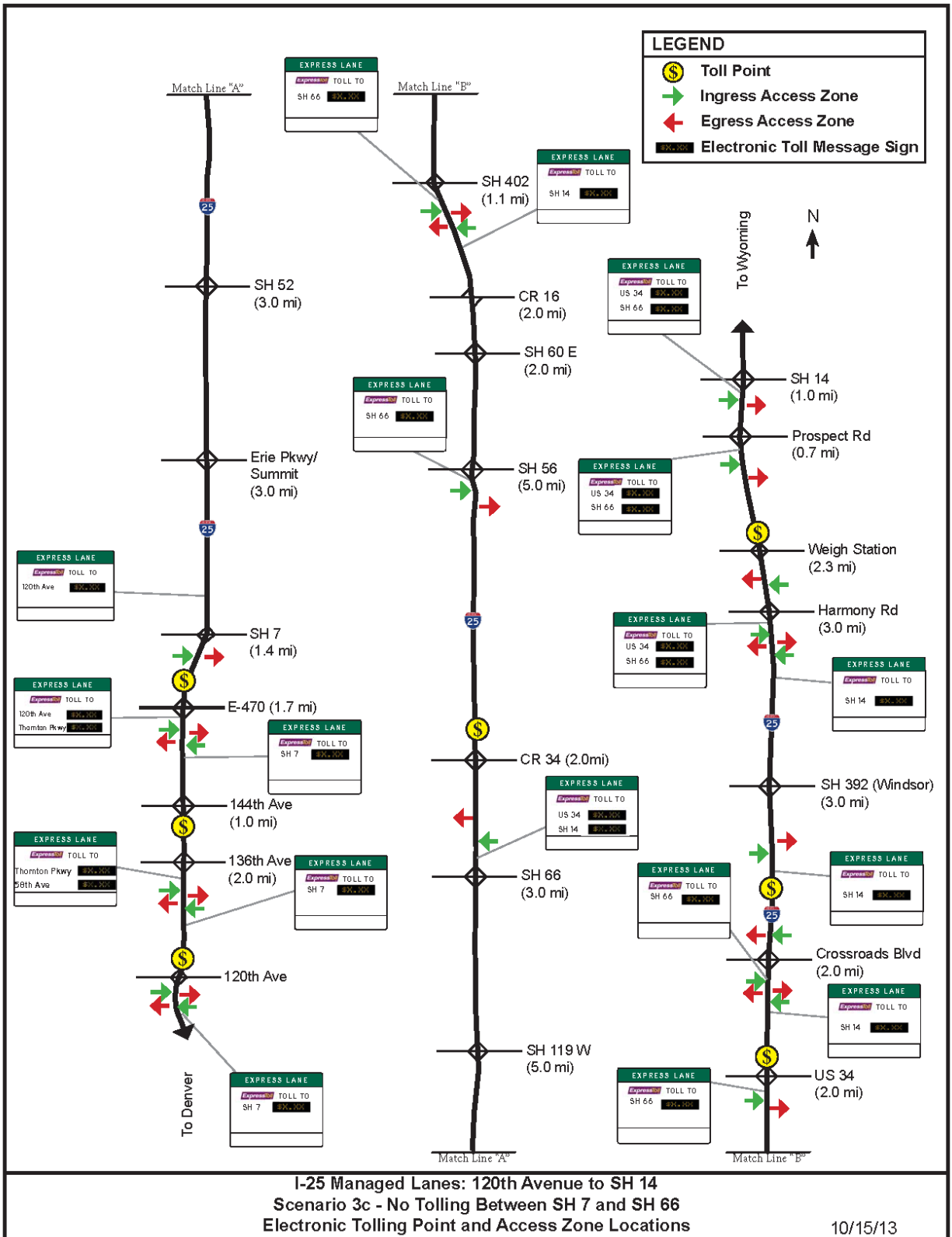
FIGURE 6

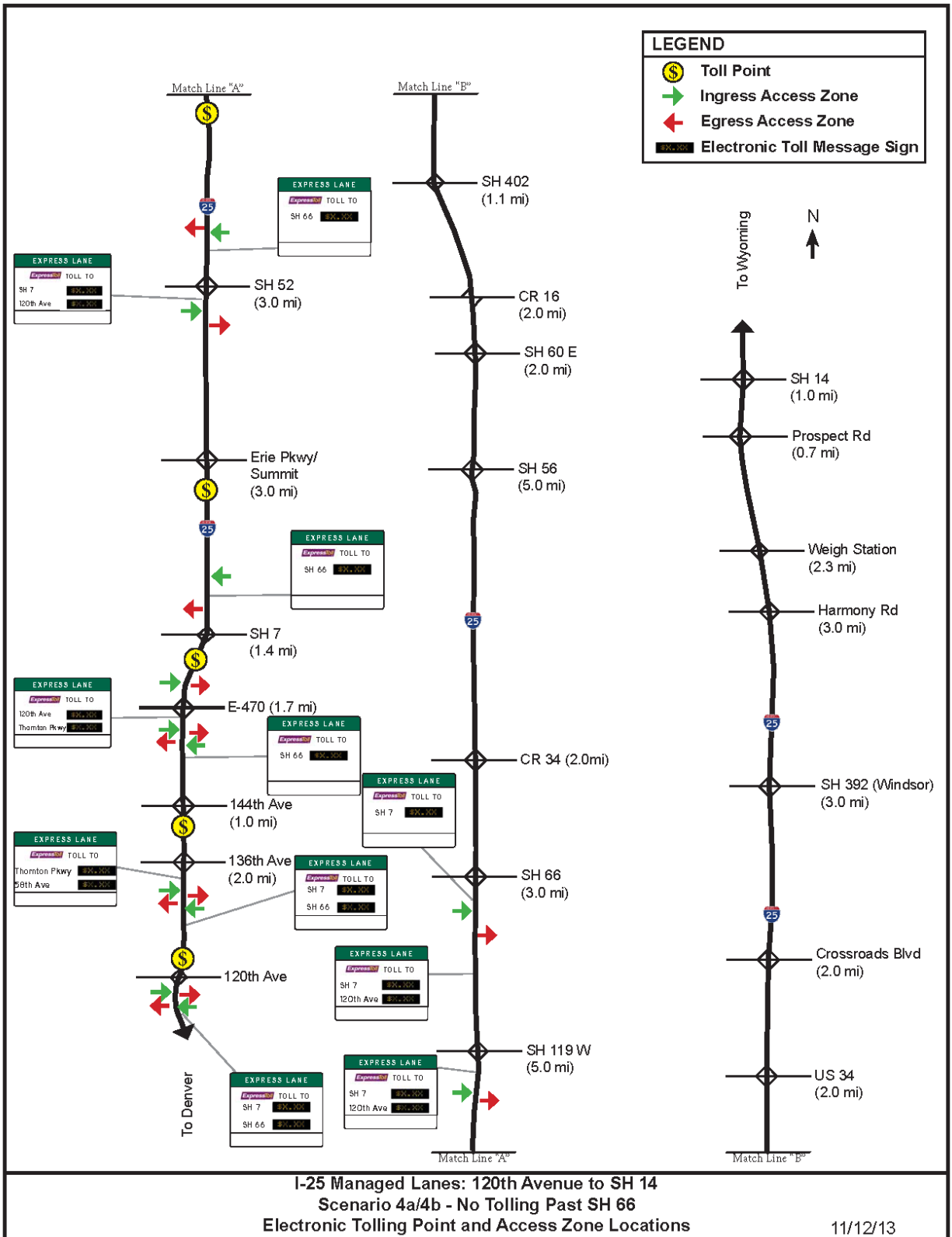
**Appendix B – Electronic Tolling Points and Access Zone Locations for  
Each Scenario**

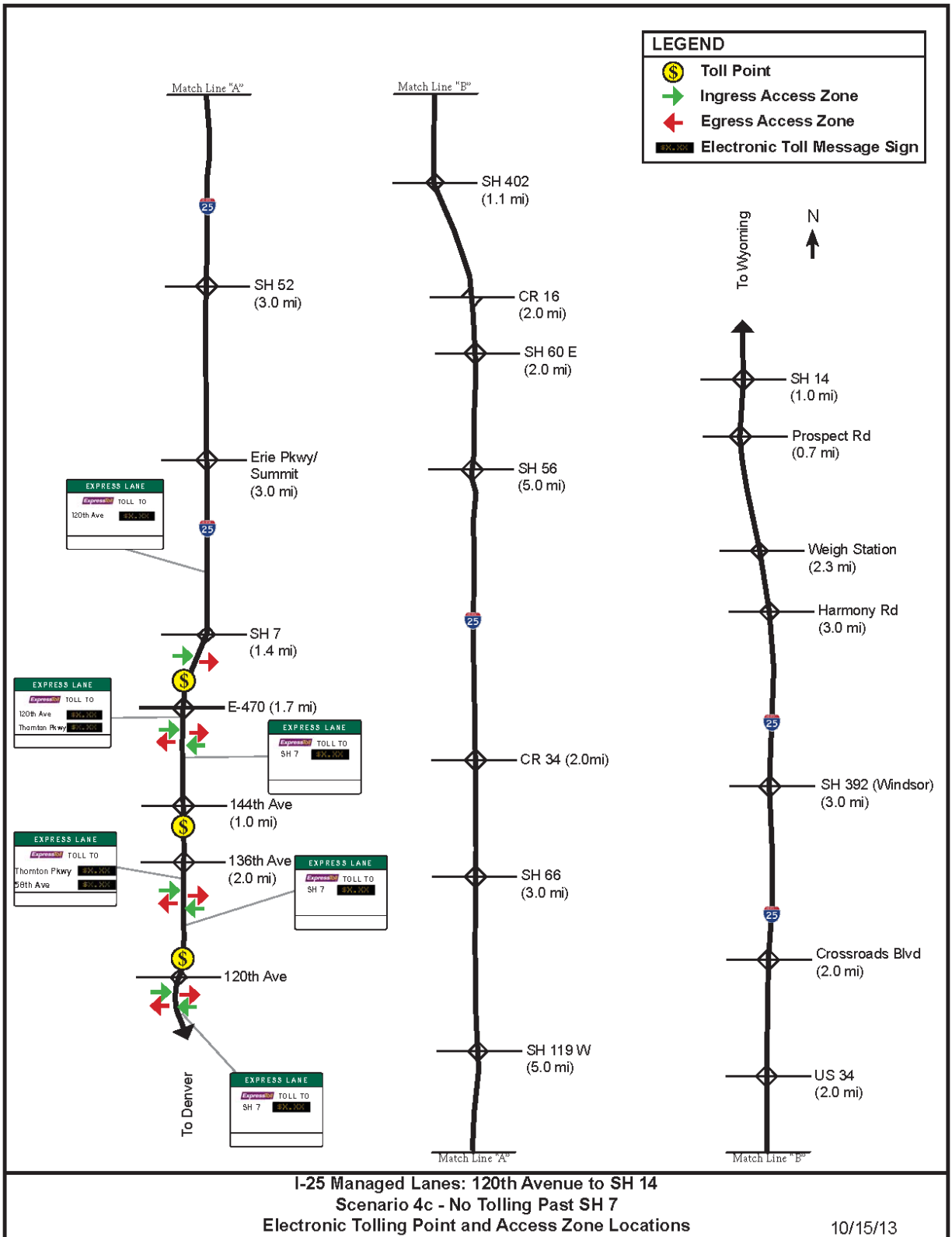












## **Appendix C – Average Daily Traffic Projections for 2015, 2025, and 2035**

**2015 Average Daily Traffic (ADT) Estimates \***

	2012 Base Year ADT	I-25 Lane Configuration Scenarios								
		No Action	Existing Configuration	EIS Ph 1 ROD Rev. & ROD2	3a	3b	3c	4a	4b	4c
SH 14										
	50,100	60,400	60,800	60,600	61,100	60,900	60,900	60,600	60,500	60,500
Prospect Rd										
	57,100	71,200	71,300	72,000	72,200	72,200	72,200	71,700	71,700	71,800
Harmony Rd										
	72,000	87,100	87,200	88,000	88,300	88,300	88,300	87,800	87,700	87,700
SH 392										
	71,300	86,500	86,700	87,400	88,700	88,500	88,600	87,000	86,900	86,900
Crossroads Blvd										
	71,600	80,800	81,100	81,200	82,500	82,600	82,700	81,200	81,000	81,100
US 34										
	70,700	82,200	82,100	82,400	83,800	83,500	83,700	82,400	82,300	82,400
SH 402										
	71,400	80,200	80,000	80,200	81,300	81,300	81,300	80,200	80,200	80,200
CR 16										
	71,200	78,600	78,600	78,700	79,200	79,300	79,300	78,600	78,800	78,700
SH 60										
	69,200	75,900	75,900	76,200	76,500	76,300	76,500	75,900	76,100	76,000
SH 56										
	68,400	71,100	71,100	71,600	71,800	71,700	71,800	71,300	71,400	71,400
CR 34										
	69,200	74,000	74,000	74,600	74,600	74,600	74,700	74,100	74,300	74,300
SH 66										
	73,200	78,700	78,700	79,500	79,200	79,600	79,600	79,000	79,500	79,400
SH 119										
	82,800	89,800	89,900	91,100	90,200	91,300	91,200	90,200	91,300	91,000
SH 52										
	92,600	102,200	102,100	103,500	102,100	103,900	103,500	102,000	103,800	103,500
CR 8										
	95,400	107,500	107,600	109,100	106,800	109,400	109,100	106,900	109,400	109,000
SH 7										
	102,600	114,200	114,300	116,100	115,000	116,000	116,200	115,100	115,900	116,100
NW Pkwy / E-470										
	91,300	110,200	110,300	112,900	113,000	114,000	113,100	113,000	113,700	112,800
144th Ave										
	99,600	122,900	123,000	126,300	126,500	127,200	126,600	126,300	127,100	126,400
136th Ave										
	111,100	135,700	136,100	140,500	140,600	140,500	140,600	140,500	140,500	140,600
120th Ave										
	132,300	145,400	148,100	151,800	151,900	151,800	152,000	151,900	151,700	151,900
104th Ave										
	145,000	155,600	160,200	163,000	163,200	163,000	163,100	163,000	162,800	163,100
Thornton Pkwy										
	154,500	162,600	169,600	171,500	172,000	171,600	171,600	171,800	171,500	172,100
84th Ave										

\* 2015 ADT volumes were estimated from the Tolling and Revenue modeling output for the weekday time period of 5:00 am to 7:00 pm and then factored to a full 24-hour weekday using 2012 hourly traffic volume data.

**2025 Average Daily Traffic (ADT) Estimates\***

	2012 Base Year ADT	I-25 Lane Configuration Scenarios								
		No Action	Existing Configuration	EIS Ph 1 ROD Rev. & ROD2	3a	3b	3c	4a	4b	4c
SH 14										
Prospect Rd	50,100	68,400	68,700	69,700	69,900	70,200	70,200	69,200	69,400	69,500
Harmony Rd	57,100	84,100	83,700	85,100	86,200	86,300	86,300	84,900	84,700	84,600
SH 392	72,000	97,000	96,700	98,200	99,200	99,300	99,200	97,500	97,600	97,500
Crossroads Blvd	71,300	95,300	95,100	96,600	99,400	99,600	99,300	95,900	95,700	95,900
US 34	71,600	92,600	92,900	94,000	97,100	97,300	97,300	93,300	93,600	93,400
SH 402	70,700	93,400	93,600	94,200	97,600	97,200	97,400	94,100	93,900	94,000
SH 402	71,400	91,800	91,800	92,300	95,500	95,300	95,500	92,100	92,200	92,200
CR 16	71,200	90,000	89,900	90,500	92,600	92,500	92,700	90,300	90,300	90,400
SH 60	69,200	88,900	88,800	89,600	90,700	90,700	90,700	89,200	89,200	89,300
SH 56	68,400	81,200	81,100	82,300	82,800	83,000	83,000	81,400	81,600	81,600
CR 34	69,200	90,400	90,400	91,900	92,200	92,600	92,400	90,700	91,200	91,100
SH 66	73,200	96,600	96,600	98,800	97,600	99,200	98,900	96,800	98,700	98,700
SH 119	82,800	110,700	110,800	113,100	110,800	114,200	113,300	110,500	113,900	113,100
SH 52	92,600	127,900	128,000	130,400	126,500	132,200	130,500	126,200	131,700	130,400
CR 8	95,400	137,000	137,200	139,800	133,200	142,100	139,900	133,200	141,600	139,800
SH 7	102,600	142,400	142,500	146,400	144,800	147,800	146,600	144,500	147,100	146,600
NW Pkwy / E-470	91,300	136,000	136,500	142,000	142,100	144,700	142,200	141,600	144,300	141,800
144th Ave	99,600	150,200	151,200	158,700	159,700	161,000	159,000	158,900	160,400	158,500
136th Ave	111,100	164,800	166,200	176,300	177,600	177,300	176,400	177,400	176,900	176,400
120th Ave	132,300	172,400	178,100	186,800	188,100	187,900	186,900	187,800	187,500	186,900
104th Ave	145,000	181,300	192,600	197,800	199,000	198,800	198,000	198,700	198,300	197,800
Thornton Pkwy	154,500	184,400	199,900	204,000	204,900	204,500	204,000	204,500	204,700	204,100

\* 2025 ADT volumes were estimated from the Tolling and Revenue modeling output for the weekday time period of 5:00 am to 7:00 pm and then factored to a full 24-hour weekday using 2012 hourly traffic volume data.

**2035 Average Daily Traffic (ADT) Estimates \***

	2012 Base Year ADT	I-25 Lane Configuration Scenarios								
		No Action	Existing Configuration	EIS Ph 1 ROD Rev. & ROD2	3a	3b	3c	4a	4b	4c
SH 14	50,100	83,600	83,500	85,900	86,500	86,700	86,300	85,000	84,700	85,300
Prospect Rd	57,100	97,600	97,600	100,300	101,600	101,700	101,600	99,200	99,300	99,400
Harmony Rd	72,000	110,300	110,600	113,300	114,800	115,200	115,000	111,800	112,100	112,200
SH 392	71,300	107,600	107,700	110,000	115,300	115,700	115,500	108,400	108,700	108,600
Crossroads Blvd	71,600	108,200	108,200	109,700	115,800	115,900	115,800	108,900	109,200	109,100
US 34	70,700	110,100	110,100	110,800	116,600	116,500	116,500	110,400	110,400	110,400
SH 402	71,400	112,900	112,800	113,400	119,900	120,200	120,200	113,000	113,000	113,000
CR 16	71,200	113,500	113,500	114,100	120,000	119,900	120,100	113,500	113,700	113,600
SH 60	69,200	109,400	109,500	110,600	114,700	114,700	114,900	109,900	110,200	110,000
SH 56	68,400	98,700	98,700	101,400	103,300	103,500	103,500	99,000	99,300	99,200
CR 34	69,200	108,900	109,000	111,900	113,600	114,200	113,600	108,900	109,700	109,700
SH 66	73,200	114,400	114,600	117,700	115,100	119,000	118,100	112,600	117,800	117,300
SH 119	82,800	128,200	128,400	131,500	127,800	133,900	131,700	126,800	133,200	131,500
SH 52	92,600	146,400	146,700	149,700	144,000	153,300	149,700	143,100	152,700	149,600
CR 8	95,400	155,200	155,400	158,700	149,700	163,100	158,800	149,000	162,200	158,700
SH 7	102,600	157,800	158,300	163,500	161,800	166,700	163,800	161,200	165,800	163,600
NW Pkwy / E-470	91,300	150,100	151,000	159,300	160,900	164,200	159,500	160,500	163,800	159,000
144th Ave	99,600	164,100	164,700	176,100	177,300	179,200	176,200	176,800	179,200	175,800
136th Ave	111,100	177,600	179,500	195,200	197,400	196,800	195,500	197,200	196,500	195,100
120th Ave	132,300	182,200	190,100	203,300	204,300	203,800	203,200	204,200	204,000	203,000
104th Ave	145,000	190,900	206,000	214,200	215,000	215,000	214,200	214,700	215,100	214,200
Thornton Pkwy	154,500	193,000	213,500	219,800	219,900	219,600	219,600	219,900	220,100	219,800
84th Ave										

\* 2035 ADT volumes were estimated from the Tolling and Revenue modeling output for the weekday time period of 5:00 am to 7:00 pm and then factored to a full 24-hour weekday using 2012 hourly traffic volume data.



## **D – Travel Demand Modeling Meeting Minutes**

**MEETING MEMORANDUM**

**Project**

I-25 Reconstruction – Denver to Wyoming

**Meeting Date**

April 7, 2014

**Client**

Colorado Department of Transportation – Region 4

**Issue Date**

April 22, 2014

**Meeting Location**

Denver Regional Council of Governments  
1290 Broadway, Suite 700, Denver, CO 80203

**Project No.**

MEC 12-003.01

**Attendees**

See attached Attendance Roster

**Purpose**

Continue coordination among four projects for traffic engineering tasks

The following is our understanding of the subject matter covered in this meeting. If this differs with your understanding, please notify us.

**Action Items**

<u>Item</u>	<u>Description</u>	<u>Due Date</u>
1.	Scott Ramming will forward Jacobs the most recent DRCOG model run ( <i>Action item has been completed</i> ).	4/11/2014
2.	Jacobs will re-run the VMT calculations based on the latest DRCOG model ( <i>Action item has been completed</i> ).	4/18/2014
3.	Myron will confirm whether the T&R Study can now be considered finalized.	4/30/2014

**Discussion**

1. Introductions – See attached sign-in sheet
2. Meeting Purpose – The purpose of the meeting was to:
  - a. Update DRCOG on the status of I-25 Tolling and Revenue (T&R) Study
  - b. Review the modeling process used for the T&R Study
  - c. Review comparisons of various 2035 Vehicle Miles of Travel (VMT) forecasts
  - d. Decide on the volume forecasts to be used for CDOT’s NEPA study from 120<sup>th</sup> Avenue to SH 7
3. Update on Work Completed Since Previous DRCOG Meeting in September

- a. The primary work task this past fall and winter was the completion of the T&R Study. CDM-Smith (subconsultant to Muller Engineering) developed tolling, revenue, and traffic volume projections for 2015, 2025 and 2035 horizon years. The draft study was completed in late November. Subsequent work included completing traffic operations analyses of the corridor, follow-up analysis of the traffic volume forecasts for 2015, 2025 and 2035, and miscellaneous preliminary design/study work related to interchanges along the corridor. HDR has also started their NEPA work for the 120<sup>th</sup> Avenue to SH 7 TEL project.

#### 4. Modeling Process Used for the T&R Study

- a. Following the modeling procedures discussed with DRCOG in September, Jacobs Engineering provided CDM-Smith with trip table data for both the DRCOG and NFRMPO models. DRCOG's Compass Cycle 2, 2012 model was used. At the prior coordination meeting in September it was noted that DRCOG I-25 volumes did not match very well with NFRMPO I-25 volumes in the area where the two models overlapped (SH 66 to CR 34). The DRCOG volumes were noticeably higher than the NFR volumes. At that meeting DRCOG suggested that Jacobs should manually adjust the external station trips to match NFRMPO model because DRCOG's model was not as up-to-date as NFRMPO's model in using the latest travel survey data. In addition to making this change, Jacobs also modified the laneage on I-25 to add a third through-lane in each direction to reflect the 'build' condition of a managed lane on the corridor. The additional lane was coded as a principal arterial rather than a freeway lane in order to approximate the carrying capacity of a tolled express lane. After making these changes, Jacobs provided the resulting DRCOG and NFR trip tables to CDM-Smith for use in the T&R modeling.

CDM-Smith redistributed the trips and stitched the two models together. Trips were assigned using the stitched model. CDM-Smith then "windowed-out" a subarea of the stitched model that included the I-25 corridor and one to two arterials east and west of I-25. The window model was calibrated to a base year of 2012 using volume and speed data collected in 2012 and 2013. A total of 14 time slices were analyzed between the hours of 5:00 a.m. and 7:00 p.m. Speeds were capped at 70 mph for the general purpose lanes (GPL) and 73 mph for the tolled express lanes. Scott Ramming mentioned that he thinks the DRCOG model uses a maximum speed of 85 mph for the E470 and Northwest Parkway toll roads. These facilities, however, are different from buffer-separated tolled express lanes in that the entire roadway is a tolled facility and thus can accommodate higher speeds than TE lanes, which are adjacent to general purpose travel lanes.

#### 5. VMT Projections Along the Corridor – T&R Study and DRCOG RTP Model

- a. Keith Borsheim and Chris Primus presented the comparative analysis they conducted of the T&R Study 2035 VMT projections to the DRCOG Regional Model (COMPASS Cycle 2, 2012) VMT projections. The comparison also included the FEIS projections, although Chris noted that the FEIS results were based on older DRCOG/NFR models and different land-use data sets. The FEIS results reflected the FEIS Preferred (Build) Alternative. The Jacobs comparison for the T&R Study used the Build Scenario ROD 1 Revised plus ROD 2, and the Build Scenario 3b that assumes a continuous TEL from US 36 to SH 14.

- b. The results of the comparison are shown in the attached table and bar chart of 2035 VMT, assuming a compounded annual growth rate (CAGR) applied to the 2012 counts. With the exception of the DRCOG Regional Model 3b Alternative (blue bar in the middle of the bar chart), all of the model runs compared favorably from a CAGR standpoint (generally between 1.8% and 2.1% annual growth).
  - c. A comparison was also provided in the form of a line chart (see attached) that shows the corridor VMT by segment and by model run. The values for the build model runs compare well with each other with the exception of the FEIS VMT, which showed a lot of VMT growth in the vicinity of the SH 7. Chris and Scott mentioned that the level of land use growth assumed in the area of SH 7 has since been scaled back in the current DRCOG model. It was also noted that the FEIS assumed a 2+ HOV use policy for the TEL lane, in contrast to the near term proposed use policy of HOV 3+.
  - d. The general consensus of the group was the VMT projections compared favorably. Scott mentioned that he could provide the most recent DRCOG model run (subsequent to the 2012 Cycle 2 model) for Jacobs to compare to the other runs. He will do that and Jacobs will conduct a final comparison with the latest DRCOG model run.
6. NEPA Project for I-25 from 120<sup>th</sup> to SH 7
- a. Given the consensus of the group that the T&R volume (VMT) forecasts are reasonable, HDR is planning to use the T&R Study volumes for their NEPA work on the segment from 120<sup>th</sup> Avenue to SH 7. Scott confirmed that it made sense for HDR to use the T&R Study volumes for their NEPA study. CDOT also concurred.
7. Other
- a. Myron mentioned that CDOT would discuss internally about whether the T&R Study can be considered final now that there is general agreement with DRCOG and NFRMPO that the volume forecasts are acceptable. Myron will get back to the team after talking with others at CDOT.
  - b. Mark Connelly said he did not have any other immediate questions about the volume forecasts but would let us know if any questions come up. Chris offered to meet with Mark if needed.

## Attachments

Sign in sheet  
Meeting handouts

Prepared By:  
Karl Buchholz.  
Traffic Engineering Task Manager

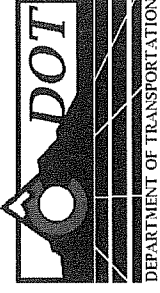
Reviewed By:  
A. Gray Clark                      Chris Primus  
Project Manager                      Jacobs Engineering

Distribution:  
All Attendees  
Project File

# STATE OF COLORADO

## DEPARTMENT OF TRANSPORTATION

Region Four  
2207 East Highway 402  
Loveland, CO 80537  
(970) 622-1270 Fax (970) 669-0289



**Project:** I-25 Reconstruction: SH 66 to SH 402; SH 402 to n/o Crossroads; n/o Crossroads to SH 14

**Meeting:** Traffic Engineering Coordination Meeting

**Date/Time:** April 7, 2014 / 1:30 am – 3:00 pm

**Location:** DRCOG Office

Initial	Name	Agency	Address	Phone	E-Mail
	Buchholz, Karl	Muller	777 S Wadsworth Blvd Suite 4-100 Lakewood, CO 80226	303.988.4939	<a href="mailto:kbuchholz@mullereng.com">kbuchholz@mullereng.com</a>
	Beazley, Sandy	HDR	1670 Broadway #3400 Denver, CO 80202	303.764.1520	<a href="mailto:Sandy.Beazley@hdrinc.com">Sandy.Beazley@hdrinc.com</a>
<i>KB</i>	Borsheim, Keith	Jacobs	707 17 <sup>th</sup> St, Suite 2300 Denver, CO 80202	720.359.3033	<a href="mailto:Keith.Borsheim@jacobs.com">Keith.Borsheim@jacobs.com</a>
<i>OMC</i>	Clark, Gray	Muller	777 S Wadsworth Blvd Suite 4-100 Lakewood, CO 80226	303.988.4939	<a href="mailto:gclark@mullereng.com">gclark@mullereng.com</a>
✓	Connelly, Mark	CDOT	1420 2 <sup>nd</sup> Street Greeley, CO 80631	970.350.2283	<a href="mailto:mark.connelly@state.co.us">mark.connelly@state.co.us</a>
	Gorek, Jennifer	CDOT			<a href="mailto:jennifer.gorek@state.co.us">jennifer.gorek@state.co.us</a>
✓	Hora, Myron	CDOT	1420 2 <sup>nd</sup> Street Greeley, CO 80631	970.350.2263	<a href="mailto:myron.hora@state.co.us">myron.hora@state.co.us</a>
✓	Marcella, Paul	CDM Smith	900 Chapel Street, Suite 1400 New Haven, CT 06510-2802	203.865.2191	<a href="mailto:marcellapm@cdmsmith.com">marcellapm@cdmsmith.com</a>
<i>GM</i>	McAfee, Gina	HDR	1670 Broadway #3400 Denver, CO 80202	303.764.1520	<a href="mailto:Gina.McAfee@hdrinc.com">Gina.McAfee@hdrinc.com</a>
✓	Parr, Carol	CDOT	1420 2 <sup>nd</sup> Street Greeley, CO 80631	970.350.2170	<a href="mailto:carol.parr@state.co.us">carol.parr@state.co.us</a>
✓	Patel, Yogeshkumar	CDM Smith	900 Chapel Street, Suite 1400 New Haven, CT 06510-2802	203.865.2191	<a href="mailto:patelyk@cdmsmith.com">patelyk@cdmsmith.com</a>



## Terminology

- DRCOG RTP Model
  - Geo-referenced networks; Cycle 2, 2012
  - Raw Model
- Design (Model) Results
- Design (Final) Results
  - Adjusted Results
- FEIS (Final) Results
- Compound Annual Growth Rate (CAGR)
- Tolled Express Lanes (TEL)

## Terminology Continued

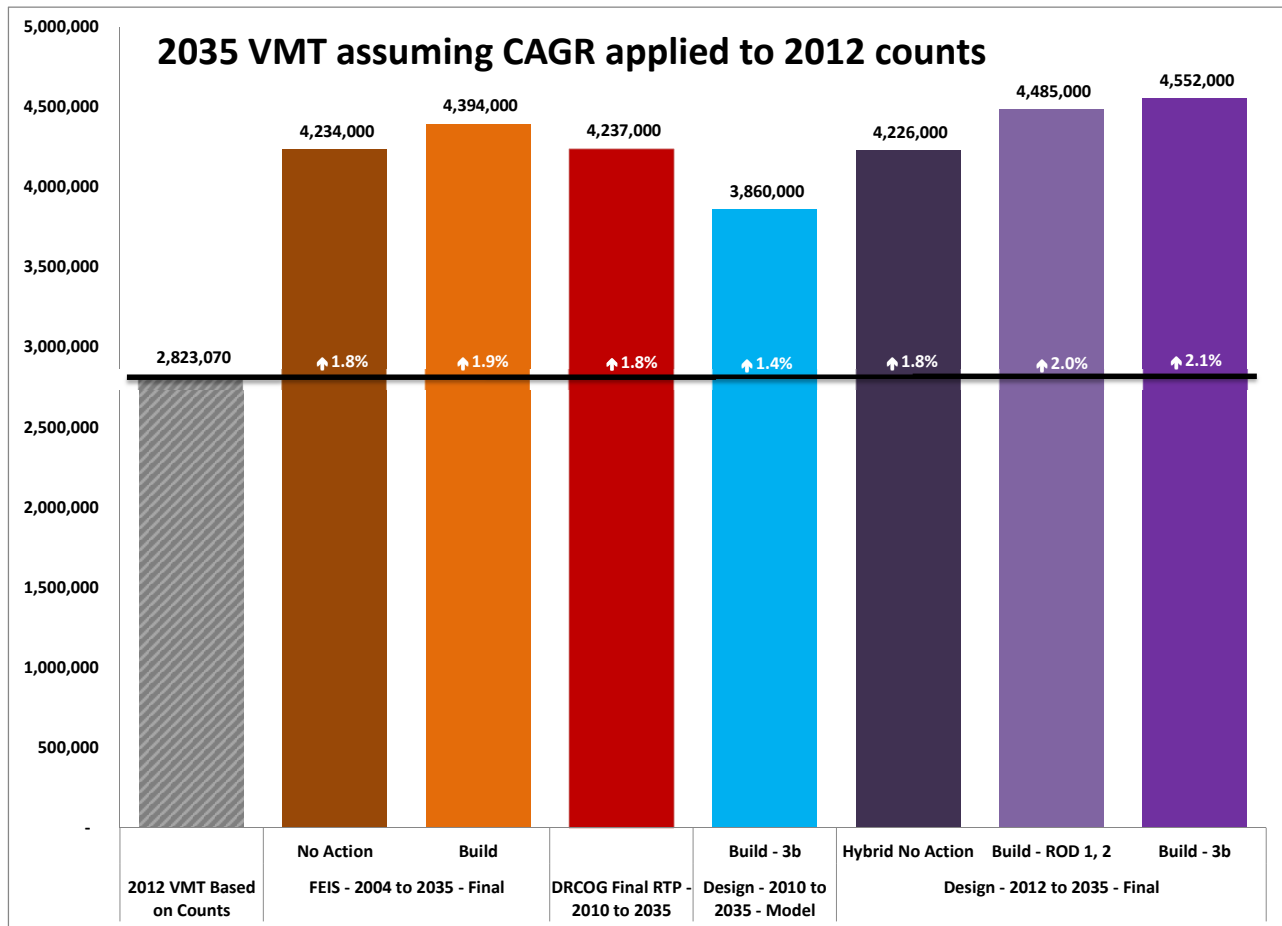
- Build Scenario ROD 1, 2: Existing and
  - TEL lanes between US-36 and 120<sup>th</sup>
  - TEL lanes between 120<sup>th</sup> and SH 7,
  - TEL lanes between SH 56 and SH 66,
  - TEL lanes between SH 392 and SH 14
- Build Scenario 3b: Existing and
  - TEL lanes between US-36 and 120<sup>th</sup>
  - TEL lanes between 120<sup>th</sup> and SH 14

Length (miles)	DRCOG I-25 ADT Projections					Design Project North I-25 ADT Projections										FEIS North I-25 ADT Projections								
	2012 Counts	DRCOG 2010 - Model		DRCOG 2035 RTP - Model		Design 2010 Model	Design 2035 RTP Test Run - Model		Design 2035 Original External Build - 3b - Model	Design 2035 Revised External Build - 3b - Model			Design 2035 Hybrid No Build - Final	Design 2035 Build ROD 1, 2 - Final	Design 2035 Build 3b - Final	2004 Counts	FEIS 2035 No Action - Final		FEIS 2035 Build - Model		FEIS 2035 Build - Final			
	NB + SB	NB+SB	NB+SB	Percent Growth (2009-35)	Annual % Growth Cmpnd	NB + SB	NB + SB	Annual % Growth Cmpnd	NB + SB	NB + SB	Percent Growth (2010-35)	Annual % Growth Cmpnd (Revised ext)	NB + SB	NB + SB	NB + SB	NB + SB	NB + SB	Percent Growth (2004-35)	Annual % Growth Cmpnd	NB + SB	NB + SB	Percent Growth (2004-35)	Annual % Growth Cmpnd	
2.0	68,400	71,406	149,509	109%	3.0%	71,406	149,509	3.0%	149,509	107,302	50%	1.6%	98,700	101,400	103,500	65,000	116,800	80%	1.9%	131,912	133,500	105%	2.3%	
1.0	69,200	74,207	142,807	92%	2.7%	74,207	142,807	2.7%	152,135	112,628	52%	1.7%	108,900	111,900	114,200	65,100	118,700	82%	2.0%	116,753	130,300	100%	2.3%	
3.0	73,200	88,666	157,620	78%	2.3%	88,666	157,620	2.3%	170,543	133,470	51%	1.6%	114,400	117,700	119,000	68,600	133,700	95%	2.2%	123,338	137,900	101%	2.3%	
5.0	82,800	89,686	154,031	72%	2.2%	89,686	154,031	2.2%	168,268	136,378	52%	1.7%	128,200	131,500	133,900	77,000	149,200	94%	2.2%	130,990	151,700	97%	2.2%	
3.0	92,600	105,716	172,874	64%	2.0%	105,716	172,874	2.0%	188,925	158,164	50%	1.6%	146,400	149,700	153,300	86,800	163,000	88%	2.1%	156,650	167,400	93%	2.1%	
3.0	95,400	111,929	176,551	58%	1.8%	111,929	176,551	1.8%	194,455	165,529	48%	1.6%	155,200	158,700	163,100	89,000	166,100	87%	2.0%	166,301	171,000	92%	2.1%	
1.4	102,600	114,260	171,654	50%	1.6%	114,260	171,654	1.6%	187,976	161,068	41%	1.4%	157,800	163,500	166,700	96,700	188,100	95%	2.2%	188,502	196,900	104%	2.3%	
1.6	91,300	105,895	158,608	50%	1.6%	105,895	158,608	1.6%	173,281	147,429	39%	1.3%	150,100	159,300	164,200	87,200	172,000	97%	2.2%	162,407	190,000	118%	2.5%	
1.0	99,600	118,658	171,800	45%	1.5%	118,658	171,800	1.5%	188,538	162,776	37%	1.3%	164,100	176,100	179,200	83,300	167,500	101%	2.3%	182,134	183,700	121%	2.6%	
2.0	111,100	120,088	180,589	50%	1.6%	120,088	180,589	1.6%	192,460	173,594	45%	1.5%	177,600	195,200	196,800	104,600	174,600	67%	1.7%	184,044	190,500	82%	2.0%	
2.0	132,300	142,256	196,281	38%	1.3%	142,256	196,281	1.3%	197,857	183,237	29%	1.0%	182,200	203,300	203,800	132,500	189,700	43%	1.2%	197,782	203,500	54%	1.4%	
1.2	145,000	161,739	207,813	28%	1.0%	161,739	207,813	1.0%	207,631	196,359	21%	0.8%	190,900	214,200	215,000	154,800	211,000	36%	1.0%	207,831	221,900	43%	1.2%	
1.3	154,500	168,813	213,613	27%	0.9%	168,813	213,613	0.9%	213,336	202,864	20%	0.7%	193,000	219,800	219,600	164,100	219,700	34%	0.9%	231,187	224,300	37%	1.0%	
1.0	168,500	198,456	247,096	25%	0.9%	198,456	247,096	0.9%	247,245	235,035	18%	0.7%	206,210	234,844	234,844	180,700	246,400	36%	1.0%	255,848	253,500	40%	1.1%	
28.5	<b>Corridor VMT</b>	<b>2,823,070</b>	<b>3,169,125</b>	<b>4,926,908</b>	<b>55%</b>	<b>1.8%</b>	<b>3,169,125</b>	<b>4,926,908</b>	<b>1.8%</b>	<b>5,237,588</b>	<b>4,452,819</b>	<b>41%</b>	<b>1.4%</b>	<b>4,226,270</b>	<b>4,485,004</b>	<b>4,551,724</b>	<b>2,725,490</b>	<b>4,706,550</b>	<b>73%</b>	<b>1.8%</b>	<b>4,649,722</b>	<b>4,947,430</b>	<b>82%</b>	<b>1.9%</b>

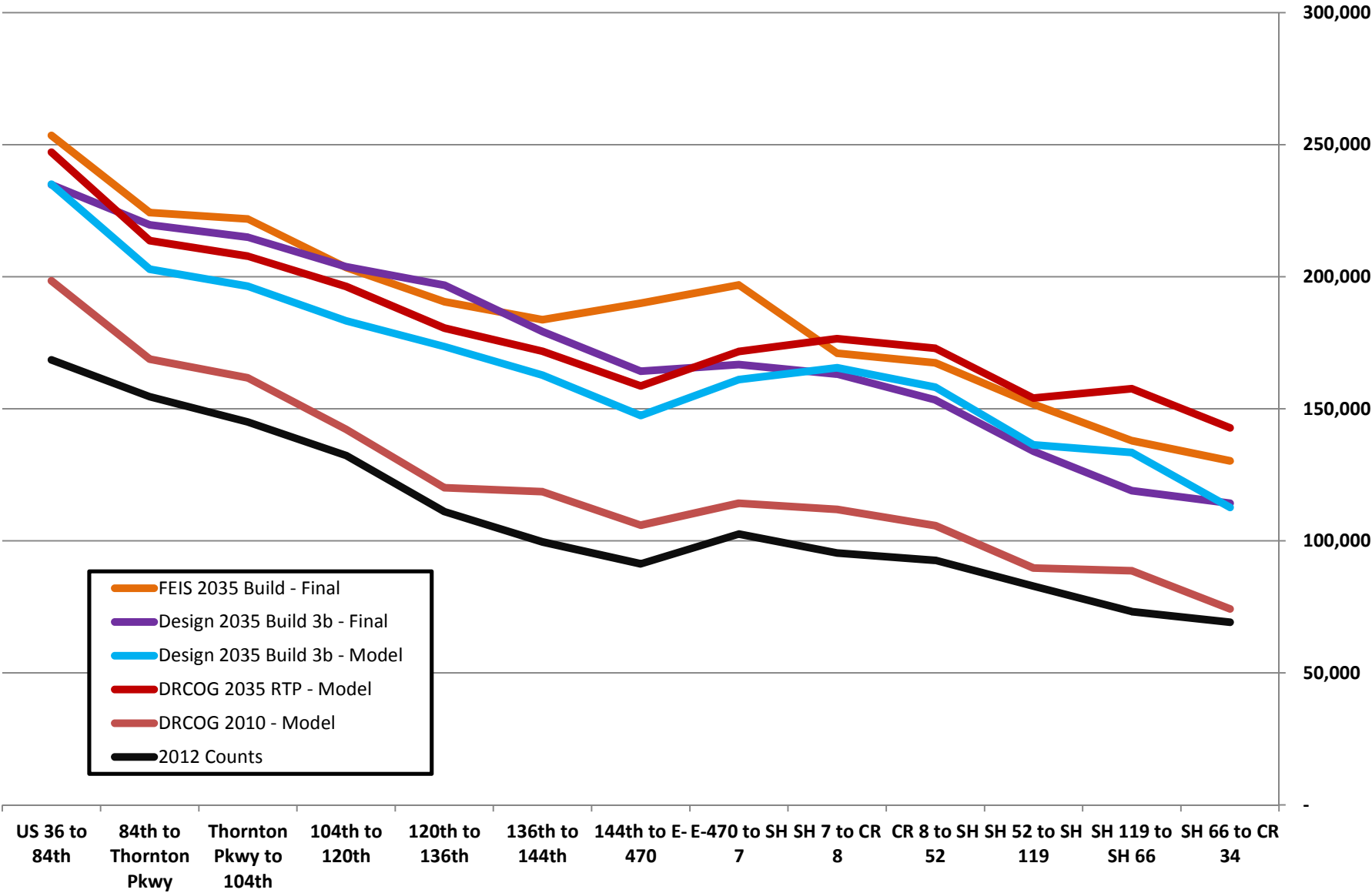


Length	I-25 Average Daily Traffic Volume	2004 Counts	2012 Counts	DRCOG MODEL		North I-25 Project ADT Projections - Raw Model - Jacobs			North I-25 Project ADT Projections - Final - CDM Smith			North I-25 FEIS ADT Projections		
				DRCOG 2010 - Model	DRCOG 2035 RTP - Model	Design 2010 - Model	Design 2035 Test Run - Model	Design 2035 Build 3b - Model	Design 2035 Hybrid No Build - Final	Design 2035 Build ROD 1, 2 - Final	Design 2035 Build 3b - Final	FEIS 2035 No Action - Final	FEIS 2035 Build - Model	FEIS 2035 Build - Final
1.0	North of CR 34	65,000	68,400	71,406	149,509	71,406	149,509	107,302	98,700	101,400	103,500	116,800	131,912	133,500
1.0	SH 66 to CR 34	65,100	69,200	74,207	142,807	74,207	142,807	112,628	108,900	111,900	114,200	118,700	116,753	130,300
3.0	SH 119 to SH 66	68,600	73,200	88,666	157,620	88,666	157,620	133,470	114,400	117,700	119,000	133,700	123,338	137,900
3.0	SH 52 to SH 119	77,000	82,800	89,686	154,031	89,686	154,031	136,378	128,200	131,500	133,900	149,200	130,990	151,700
3.0	CR 8 to SH 52	86,800	92,600	105,716	172,874	105,716	172,874	158,164	146,400	149,700	153,300	163,000	156,650	167,400
2.0	SH 7 to CR 8	89,000	95,400	111,929	176,551	111,929	176,551	165,529	155,200	158,700	163,100	166,100	166,301	171,000
2.0	E-470 to SH 7	96,700	102,600	114,260	171,654	114,260	171,654	161,068	157,800	163,500	166,700	188,100	188,502	196,900
1.0	144th to E-470	87,200	91,300	105,895	158,608	105,895	158,608	147,429	150,100	159,300	164,200	172,000	162,407	190,000
1.0	136th to 144th	83,300	99,600	118,658	171,800	118,658	171,800	162,776	164,100	176,100	179,200	167,500	182,134	183,700
1.0	120th to 136th	104,600	111,100	120,088	180,589	120,088	180,589	173,594	177,600	195,200	196,800	174,600	184,044	190,500
2.0	104th to 120th	132,500	132,300	142,256	196,281	142,256	196,281	183,237	182,200	203,300	203,800	189,700	197,782	203,500
5.0	Thornton Pkwy to 104th	154,800	145,000	161,739	207,813	161,739	207,813	196,359	190,900	214,200	215,000	211,000	207,831	221,900
2.0	84th to Thornton Pkwy	164,100	154,500	168,813	213,613	168,813	213,613	202,864	193,000	219,800	219,600	219,700	231,187	224,300
2.0	US 36 to 84th	180,700	168,500	198,456	247,096	198,456	247,096	235,035	206,210	234,844	234,844	246,400	255,848	253,500
	<b>Corridor VMT</b>	<b>2,725,490</b>	<b>2,823,070</b>	<b>3,169,125</b>	<b>4,926,908</b>	<b>3,169,125</b>	<b>4,926,908</b>	<b>4,452,819</b>	<b>4,226,270</b>	<b>4,485,004</b>	<b>4,551,724</b>	<b>4,706,550</b>	<b>4,649,722</b>	<b>4,947,430</b>

		Base	Future	Compound Annual Growth Rate (CAGR)	2035 VMT assuming CAGR applied to 2012 counts
2012 VMT Based on Counts		2,823,070			2,823,070
FEIS - 2004 to 2035 - Final	No Action	2,725,490	4,706,550	1.8%	4,234,000
	Build	2,725,490	4,947,430	1.9%	4,394,000
DRCOG Final RTP - 2010 to 2035		3,169,125	4,926,908	1.8%	4,237,000
Design - 2010 to 2035 - Model	Build - 3b	3,169,125	4,452,819	1.4%	3,860,000
Design - 2012 to 2035 - Final	Hybrid No Action	2,823,070	4,226,270	1.8%	4,226,000
	Build - ROD 1, 2	2,823,070	4,485,004	2.0%	4,485,000
	Build - 3b	2,823,070	4,551,724	2.1%	4,552,000



# North I-25 Corridor Daily Volumes by Segment



**MEETING**  
**MEMORANDUM**

**MULLER ENGINEERING COMPANY, INC.**  
Consulting Engineers  
777 South Wadsworth Blvd, Suite 4-100  
Lakewood, Colorado 80226  
(303) 988-4939

**Project**  
I-25 Reconstruction – Denver to Wyoming

**Meeting Date**  
March 27, 2014

**Client**  
Colorado Department of Transportation

**Issue Date**  
April 9, 2014

**Meeting Location**  
CDOT Loveland Residency  
2207 E. Highway 402, Loveland

**Project No.**  
MEC 12-003.01

**Attendees**  
See attached Attendance Roster

**Purpose**  
Continue coordination among three projects for traffic engineering tasks

The following is our understanding of the subject matter covered in this meeting. If this differs with your understanding, please notify us.

**Action Items**

<u>Item</u>	<u>Description</u>	<u>Due Date</u>
1.	Muller will collect mainline traffic counts on I-25 to obtain a data point for measuring traffic growth from 2010 to 2014.	6/1/2014
2.	Muller will schedule a meeting with DRCOG to review traffic forecast methodology and results from the T&R study ( <i>meeting was held on 4/7/2014</i> ).	4/15/2014
3.	Muller will send out a calendar update for future traffic engineering coordination meetings every other month (forth Tuesday preceding Project Manager's meeting).	4/9/2014

Discussion

1. Introductions – See attached sign-in sheet
2. Project Updates
  - a. SH 66 to SH 402 (Muller)
    1. The project's primary focus has been the completion of the Tolling and Revenue (T&R) Study from 84<sup>th</sup> Avenue to SH 14. The draft study was completed in December. Travel demand forecasts are currently being reviewed with MPO's.
    2. A concurrent traffic operations analysis for I-25 from 84<sup>th</sup> Avenue to SH 14 was also completed in December.

3. An Interchange Selection Study was completed for the SH 56 interchange. Recommendation is for a roundabout interchange. Interchange selection study underway for CR 34.
  - b. SH 402 to North of Crossroads (AECOM)
    1. Value engineering (VE) results for US 34/I-25 interchange were presented to Loveland. City Council is supportive of the proposed interchange layout and the fact that the footprint is significantly smaller than what was included in the FEIS. Loveland is interested in phasing of the project and implementation; however, that won't occur until the funding situation becomes clearer.
    2. Current estimate for US 34/I-25 interchange is \$230M.
  - c. North of Crossroads to SH 14 (Atkins)
    1. Currently evaluating if auxiliary lane improvements between interchanges on I-25 can be phased in over time.
    2. Also refining interchange layouts.
  - d. 120<sup>th</sup> Ave to SH 66 (TSH)
    1. Focus is on 120<sup>th</sup> Ave to SH 7 segment. Design team is evaluating lane configuration.
    2. Project will break ground next year. If Design-Bid-Build, then project will go to Ad in June 2015. If Design-Build then project will go to Ad before June 2015.
    3. Pre-survey conference will be held next week.
    4. SH 7 to SH 66 segment is on hold until managed lane configuration is determined. Ina responded that CDOT needs 100% concurrence for the lane conversion option from bordering local agencies. The Town of Mead recently passed a resolution against the lane conversion.
    5. Working on getting approval for Task Order #2 to fund design work.
    6. ROW purchasing is moving forward and a meeting with Region 1 regarding this will be held on March 31<sup>st</sup>.
    7. All interchanges will need an MIMR.
3. Tolling and Revenue Study Update (Ina Zisman)
  - a. Initial T&R Study was finalized in December; however, some questions came up with regard to the forecasted volumes. 2015 volume projections are fairly aggressive and the ADT values have been questioned given that 2015 is only one year away. Inspection of the land use model provided by DRCOG and NFRMPO shows a high amount of growth occurring between the base year (2009/10) and 2015. Mainline traffic counts will be conducted this spring to get a better assessment on growth patterns between 2010 and 2014 to see if the volumes are trending upwards as predicted by the model.
  - b. NFRMPO's 2035 projections for I-25 were also noticeably lower than the T&R volume projections in several segments of the corridor. The Muller/Jacobs team

conducted a detailed evaluation of the forecasted volumes from various sources (FEIS, NFRMPO, T&R Study, etc.) and concluded that the T&R study forecasts for 2035 are reasonable (see next agenda topic for further discussion).

- c. Ernst and Young is under contract with OMPD to create a “business plan” of how to move forward with managed lanes from an economic perspective. They are currently looking at an “Availability Model” where CDOT would take on some of the financial obligations in order to make it more attractive to a concessionaire. E&Y will finish their evaluation next month and will present their findings to HPTE at that time.
  - d. The project has received an extension of their RAMP funding to December 31<sup>st</sup>.
4. Corridor Traffic Volume Forecasts (Chris Primus / Karl Buchholz)
- a. Chris presented PowerPoint slides describing the process used to develop and compare the traffic forecasts in the corridor (PP slides are attached).
  - b. Volume and revenue forecasts were provided for nine scenarios; however, the comparison of the volume forecasts focused on the Build Scenarios for ROD 1 Revised with ROD 2, and Build Scenario 3b (TE lanes from 84<sup>th</sup> Ave to SH 14).
  - c. Chris stepped through the chronology of the forecasts dating back to the early stages of the EIS in 2004.
  - d. The CDM-Smith modeling process used for the T&R Study included the following steps:
    - 1. Interpolation of MPO 2009/10 and 2015 trip tables to produce 2012 trip table
    - 2. Development of a ‘stitched’ model of both NFR and DRCOG MPO regions for 2012, 2015, 2025, and 2035 (daytime hours only)
    - 3. Calibration of ‘window’ model to 2012 conditions (daytime hours only)
    - 4. Production of T&R forecasts with ‘window’ model for 2012, 2015, 2025, and 2035 Build scenario (daytime hours only)
  - e. Comparison of the T&R 2035 forecasts showed that the resulting traffic volume growth rates are higher than those in the NFRMPO Final RTP model but lower than the FEIS model results and lower than the historic traffic count growth from 2004 to 2012. The forecasted volumes closely trend with the historic growth rate recorded by CDOT’s ATR traffic counts from 2001 to 2013.
  - f. When comparing the volume forecasts on a corridor segment by segment basis, the T&R forecasted volumes also appear to be reasonable relative to the other volume forecasts (FEIS, NFRMPO Final RTP and historic traffic counts).
  - g. Discussion followed about what volume forecasts should be used for each project given that each project team is currently using a different methodology. One option would be to use the T&R Study volumes; however, with new MPO model updates currently underway (NFRMPO is currently working on their 2040 model) and the varied timeline for each project, it was decided that each project should take into account the most recent available data at the time of their traffic analysis. Each team will need to get approval from CDOT, FHWA and the MPO for the volume forecast methodology used for their project.

5. Interchange Selection Reports (Mark Connelly)
  - a. Mark stated that CDOT would like the interchange selection studies to include a three part analysis:
    1. Part 1 should include a high level, qualitative analysis of all reasonable interchange types.
    2. Part 2 should include a detailed analysis of operations, safety and costs for those interchanges passing the Part 1 analysis.
    3. Part 3 should include a Life Cycle Cost Analysis that considers cost elements such as maintenance, capital, ROW, as well as user benefits (e.g. travel time savings).
  - b. The SH 56/I-25 interchange Selection Study is an example of a recently approved report that contains the above elements. The format and content of other reports can be modified to meet the specific needs of the respective interchange; however, the above three elements should be included in all reports.
6. Other – Ina mentioned that the I-25 Concept of Operations may need to be modified at some point in the future, but not at this time, to reduce the number of recommended tolling zones in the corridor. The reason for this is based on feedback CDOT received from concessionaires that the number and frequency of proposed tolling points will drive up the operating expenses for the managed lanes because a transaction fee is charged to the operator every time a vehicle passes a tolling point regardless of whether the vehicle is tolled at that point.
7. Next Meetings – Future meetings will continue to occur every other month on the forth Thursday from 10:00 to 11:30 am (prior to the project managers meeting). Additional meetings will be scheduled if needed. The next meeting is May 22<sup>nd</sup>.

## Attachments

Agenda  
Sign in sheet  
PowerPoint Slides of Traffic Volume Forecast Comparison

Prepared By:  
Karl Buchholz, P.E.  
Traffic Engineering Task Manager

Reviewed By:  
A. Gray Clark, P.E.  
Project Manager

Distribution:  
All Attendees  
Project File

# MEETING AGENDA

**Project:** CDOT Region 4 – I-25 Reconstruction Projects  
*120<sup>th</sup> Avenue to SH 14*

**Meeting:** North I-25 Traffic Engineering Meeting

**Date/Time:** March 25, 2014 / 10:00 AM

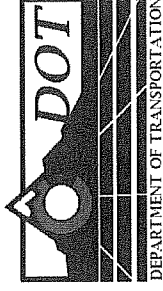
**Location:** CDOT Loveland Residency



1. Introductions
  
2. Project Updates
  - a. SH 66 to SH 402 – Muller/Jacobs
  - b. SH 402 to north of Crossroads Blvd – AECOM/FHU
  - c. North of Crossroads Blvd to SH 14 – Atkins/TSH
  - d. 120<sup>th</sup> Ave to SH 7 - TSH
  
3. Tolling and Revenue Study Update – Ina Zisman
  
4. Corridor Traffic Volume Forecasts – Karl Buchholz/Chris Primus
  
5. Interchange Selection Reports – Mark Connelly
  
6. Next Meeting(s)?
  
7. Other



# STATE OF COLORADO



**DEPARTMENT OF TRANSPORTATION**

Region Four  
2207 East Highway 402  
Loveland, CO 80537  
(970) 622-1270 Fax (970) 669-0289

**Project:** I-25 Reconstruction: SH 66 to SH 402; SH 402 to n/o Crossroads; n/o Crossroads to SH 14

**Meeting:** Traffic Engineering Coordination Meeting

**Date/Time:** March 27, 2014 / 10:00 am – 11:30 am

**Location:** CDOT Loveland Residency

Initial	Name	Agency	Address	Phone	E-Mail
<i>KB</i>	Buchholz, Karl	Muller	777 S Wadsworth Blvd Suite 4-100 Lakewood, CO 80226	303.988.4939	<a href="mailto:kbuchholz@mullereng.com">kbuchholz@mullereng.com</a>
<i>RL</i>	Christy, Rich	CDOT	2207 E Hwy 402 Loveland, CO 80537	970.688.1280	<a href="mailto:richard.christy@state.co.us">richard.christy@state.co.us</a>
<i>GC</i>	Clark, Gray	Muller	777 S Wadsworth Blvd Suite 4-100 Lakewood, CO 80226	303.988.4939	<a href="mailto:gclark@mullereng.com">gclark@mullereng.com</a>
<i>MC</i>	Connelly, Mark	CDOT	1420 2 <sup>nd</sup> Street Greeley, CO 80631	970.350.2283	<a href="mailto:mark.connelly@state.co.us">mark.connelly@state.co.us</a>
<i>MC</i>	Crow, Mike	CDOT	1420 2 <sup>nd</sup> Street Greeley, CO 80631	970-350-2121	<a href="mailto:m.crow@state.co.us">m.crow@state.co.us</a>
	DePinto, Ken	Atkins	4601 DTC Blvd, Suite 700 Denver, CO 80237	303.221.7275	<a href="mailto:Ken.DePinto@atkinsglobal.com">Ken.DePinto@atkinsglobal.com</a>
<i>Via Conf Call</i>	Eckman, Alan	AECOM	717 17th Street, 5th Floor Denver, CO 80202	303.376.2979	<a href="mailto:alan.eckman@aecom.com">alan.eckman@aecom.com</a>
<i>AF</i>	Flohr, James	CDOT	2207 E Hwy 402 Loveland, CO 80537	970.622.1268	<a href="mailto:james.flohr@state.co.us">james.flohr@state.co.us</a>
<i>RF</i>	Follmer, Rich	FHU	6300 S. Syracuse Way, Suite 600 Centennial, CO 80111	303.721.1440	<a href="mailto:rich.follmer@fhueng.com">rich.follmer@fhueng.com</a>
<i>AG</i>	Geissler, Abra	CDOT	1050 Lee Hill Drive Boulder, CO 80304	303.546.5649	<a href="mailto:abra.geissler@state.co.us">abra.geissler@state.co.us</a>
<i>WG</i>	Goff, Wes	Atkins	4601 DTC Blvd, Suite 700 Denver, CO 80237	303.221.7275	<a href="mailto:Wes.Goff@atkinsglobal.com">Wes.Goff@atkinsglobal.com</a>

Initial	Name	Agency	Address	Phone	E-Mail
	Harmelink, Donna	FHWA	12300 W. Dakota Ave., Ste. 180 Lakewood, CO 80228	720.963.3021	<a href="mailto:Donna.harmelink@dot.gov">Donna.harmelink@dot.gov</a>
	Hora, Myron	CDOT	1420 2 <sup>nd</sup> Street Greeley, CO 80631	970.350.2263	<a href="mailto:myron.hora@state.co.us">myron.hora@state.co.us</a>
	Marusin, Bob	TSH	5970 Greenwood Plaza Blvd., Suite 180 Greenwood Village, CO 80111	303.771.6200	<a href="mailto:Robert.marusin@tshengineering.com">Robert.marusin@tshengineering.com</a>
	Nguyen, Long	CDOT	1420 2 <sup>nd</sup> Street Greeley, CO 80631	970.350.2126	<a href="mailto:long.nguyen@state.co.us">long.nguyen@state.co.us</a>
<i>CP</i>	Primus, Chris	Jacobs	707 17 <sup>th</sup> St, Suite 2300 Denver, CO 80202	303-820-4875	<a href="mailto:Chris.primus@jacobs.com">Chris.primus@jacobs.com</a>
	Renner, Gabrielle	FHU	6300 S. Syracuse Way, Suite 600 Centennial, CO 80111	303.721.1440	<a href="mailto:Gabrielle.Renner@fhueng.com">Gabrielle.Renner@fhueng.com</a>
	Smith, Casey	Logan Simpson	123 N. College Ave., Ste. 206 Fort Collins, CO 80524	970.449.4100	<a href="mailto:CSmith@LOGANSIMPSON.COM">CSmith@LOGANSIMPSON.COM</a>
	Stewart, Corey	CDOT	1420 2 <sup>nd</sup> Street Greeley, CO 80631	970.350.2104	<a href="mailto:Corey.Stewart@STATE.CO.US">Corey.Stewart@STATE.CO.US</a>
	Thomas, Scott	Apex Design	1675 Larimer Street, Suite 480, Denver, CO 80202	303.339.0440	<a href="mailto:scott.thomas@apexdesignpc.com">scott.thomas@apexdesignpc.com</a>
<i>JKU</i>	Usher, James	CDOT	2207 E Hwy 402 Loveland, CO 80537	970.622.1282	<a href="mailto:James.Usher@STATE.CO.US">James.Usher@STATE.CO.US</a>
	Wessell, Matt	Atkins	4601 DTC Blvd, Suite 700 Denver, CO 80237	303.221.7275	<a href="mailto:matt.wessell@atkinsglobal.com">matt.wessell@atkinsglobal.com</a>
	Woolfall, David	TSH	5970 Greenwood Plaza Blvd., Suite 180 Greenwood Village, CO 80111	303.771.6200	<a href="mailto:david.woolfall@tshengineering.com">david.woolfall@tshengineering.com</a>
<i>JNC</i>	Zisman, Ina	CDOT	1420 2 <sup>nd</sup> Street Greeley, CO 80631	970.350.2121	<a href="mailto:Ina.zisman@state.co.us">Ina.zisman@state.co.us</a>
<i>KB</i>	<i>BORSHHEIM, KENTH</i>	<i>JACOBS</i>			
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# North I-25 Traffic Forecast Comparisons

March 27, 2014



# Agenda

- Terminology
- Forecast Chronology
- Process Overview
- VMT Comparisons
- Volume Comparisons
- Other

# Terminology

- Corridor VMT
- MPO Results
  - Raw Model
- Design (Model) Results
- Design (Final) Results
  - Adjusted Results
- FEIS (Final) Results
- Compound Annual Growth Rate (CAGR)
- Tolloed Express Lanes (TEL)

# Terminology Continued

- Build Scenario ROD 1, 2: Existing and
  - TEL lanes between US-36 and 120<sup>th</sup>
  - TEL lanes between 120<sup>th</sup> and SH 7,
  - TEL lanes between SH 56 and SH 66,
  - TEL lanes between SH 392 and SH 14
- Build Scenario 3b: Existing and
  - TEL lanes between US-36 and 120<sup>th</sup>
  - TEL lanes between 120<sup>th</sup> and SH 14

# Chronology Overview

	Timeframe	Event	Relevant data	
North I-25 EIS	Early 2000s	NFRMPO operates and maintains "2001 Series" model with 2030 horizon year		
	2004	EIS Collects and balances corridor traffic counts	Field Count 2004 Corridor VMT: 1,416,240	
	2005 -2006/2008	EIS Combines NFRMPO and DRCOG Models for DEIS/DEIS published		
	2007 ?	NFMPO updates model to "2005 series" with 2035 horizon year	2035 NFR Regional Households: 289,300 2035 NFR Regional Employment: 387,400	
	2008-2009	Combined model updated for FEIS with 2035 socio-economic data sets and 2035 RTP networks		
	2010/2011		CDM-Smith produces T&R estimates for FEIS; final traffic forecasts adjusted and balanced/FEIS & ROD published	
			2035 No-Action Results	Corridor 2035 VMT: 2,886,420
		2035 Preferred Alternative Results	Corridor 2035 VMT: 3,711,900	

# Chronology Overview

	Timeframe	Event	Relevant data	Notes
North I-25 EIS Design Project	2011	NFRMPO updates model to “2009 series” with 2035 outyear; same regional control totals	2035 NFR Regional Households: 289,300 2035 NFR Regional Employment: 387,400	In general, the 2009 series shifted growth away from the I-25 corridor, relative to the allocation of growth in the 2005 series
		Final 2035 RTP Results	Corridor 2035 VMT: 2,463,600	
	2012	CDOT initiates corridor design projects		
	2012	Muller collects and balances corridor traffic counts	Field Count 2012 Corridor VMT: 1,768,500	
	Spring and Summer 2013	Jacobs uses “2009 series” NFRMPO model to produce trip tables		
		Original 2035 RTP Test model results	Corridor 2035 VMT: 2,460,200	Matches NFRMPO Final
		2035 Build 3b model results with original S-E	Corridor 2035 VMT: 2,576,900	
		Final 2035 Build 3b model results with adjusted interim 2035 socio-economic data	Corridor 2035 VMT: 2,440,000	2035 socio-economic data adjacent to I-25 corridor was reviewed and adjusted; sub-district control totals maintained
	Fall 2013	CDM-Smith produces T&R estimates with multistep process		Summary of multistep process: 1. Interpolation of NFRMPO 2009 and 2015 trip tables to produce 2012 trip table 2. Development of ‘stitched’ model of both MPO regions for 2012, 2015, 2025, and 2035 (daytime hours only) 3. Calibration of ‘window’ model to 2012 conditions (daytime hours only) 4. Production of T&R forecasts with ‘window’ model for 2012, 2015, 2025, and 2035 Build scenario (daytime hours only)
		2035 No-Action forecasts	Corridor 2035 VMT: 2,736,700	
		2035 Build ROD 1, 2 forecasts	Corridor 2035 VMT: 2,791,300	
		2035 Build 3b forecasts	Corridor 2035 VMT: 2,884,600	



# CDM-Smith Process

1. Interpolation of MPO 2009/10 and 2015 trip tables to produce 2012 trip table
2. Development of 'stitched' model of both MPO regions for 2012, 2015, 2025, and 2035 (daytime hours only)
3. Calibration of 'window' model to 2012 conditions (daytime hours only)
4. Production of T&R forecasts with 'window' model for 2012, 2015, 2025, and 2035 Build scenario (daytime hours only)

# VMT Forecast Comparison

4,000,000

3,500,000

3,000,000

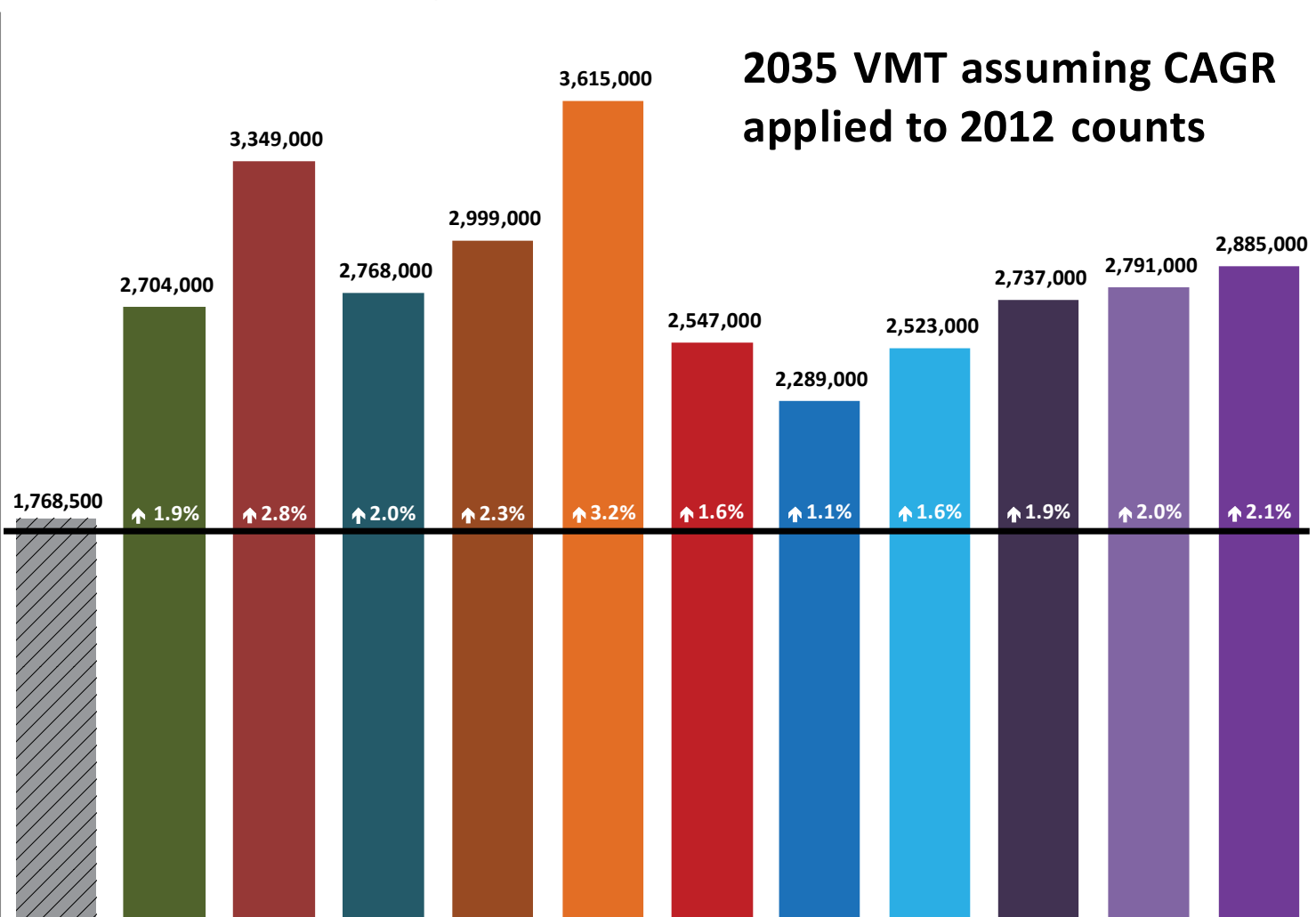
2,500,000

2,000,000

1,500,000

1,000,000

500,000

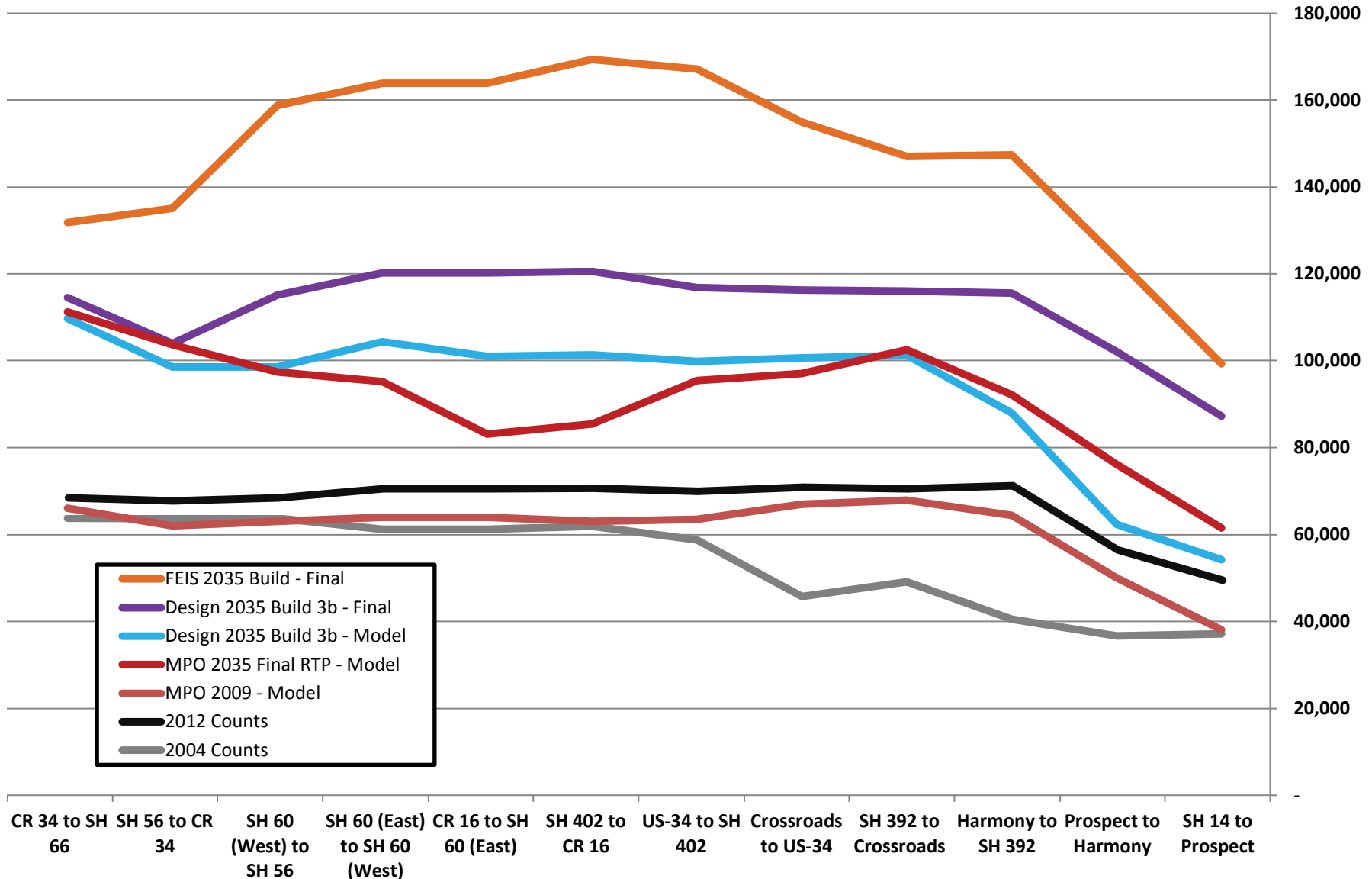


**2035 VMT assuming CAGR applied to 2012 counts**

2012 VMT Based on Counts	Households and Jobs - 2009 to 2035	2004 to 2012 Counts	Average CDOT ATR Data - 2001 to 2013	No Action FEIS 2004 to 2035 Final	Build	NFRMPO Final RTP - 2009 to 2035	No Action Design - 2009 to 2035 - Model	Build - 3b	Hybrid No Action Design - 2012 to 2035 - Final	Build - ROD 1, 2	Build - 3b
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# Segment Volume Comparison

## North I-25 Corridor Daily Volumes by Segment



# Discussion

## Appendix E – Traffic Operations Analysis Summary by Corridor Segment

<b><u>Segment</u></b>	<b><u>Sheet No.</u></b>
84 <sup>th</sup> Ave to 120 <sup>th</sup> Ave	1 - 3
120 <sup>th</sup> Ave to SH 7	4 - 6
SH 7 to SH 66	7 - 9
SH 66 to SH 56	10 - 12
SH 56 to SH 392	13 - 15
SH 392 to SH 14	16 - 18

**I-25 Managed Lanes - Traffic Operations Analysis (Composite of GP and TE Lanes<sup>4</sup>)**  
**84th Avenue to 120th Avenue**

Measures of Effectiveness <sup>2</sup> (MOE)	2015					2025					2035					
	AM		PM		Avg or Total <sup>1</sup>	AM		PM		Avg or Total <sup>1</sup>	AM		PM		Avg or Total <sup>1</sup>	
	SB	NB	SB	NB		SB	NB	SB	NB		SB	NB	SB	NB		
Travel Time per Veh (min)	No Action NA	9.2	7.2	7.9	9.8	▼ 8.5	10.0	8.0	8.9	10.4	▼ 9.3	8.9	8.3	9.1	11.2	▼ 9.4
	Existing Config X1	7.8	6.9	7.2	8.3	▲ 7.5	8.1	7.0	7.6	12.7	▼ 8.8	8.1	7.5	8.0	14.0	▼ 9.4
	EIS ROD <sup>5</sup> E1	7.7	6.8	7.2	7.4	▲ 7.3	7.7	6.9	7.5	9.4	▲ 7.8	8.1	6.9	7.5	9.9	▲ 8.1
	Scenario 3a	7.6	6.7	7.1	7.4	▲ 7.2	7.6	6.8	7.3	8.6	▲ 7.6	8.1	6.9	7.3	9.5	▲ 8.0
	Scenario 3b	7.6	6.7	7.1	7.5	▲ 7.2	7.8	6.9	7.3	8.8	▲ 7.7	8.0	6.9	7.4	9.2	▲ 7.9
	Scenario 3c	7.7	6.7	7.2	7.5	▲ 7.3	7.8	6.8	7.5	9.7	▲ 7.9	8.1	6.9	7.6	9.2	▲ 7.9
	Scenario 4a	7.5	6.7	7.1	7.5	▲ 7.2	7.7	6.8	7.3	9.0	▲ 7.7	8.3	6.9	7.3	9.0	▲ 7.9
	Scenario 4b	7.6	6.7	7.1	7.5	▲ 7.2	8.0	6.9	7.3	9.1	▲ 7.8	8.1	7.0	7.4	9.7	▲ 8.1
	Scenario 4c	7.7	6.7	7.2	7.4	▲ 7.2	7.9	6.7	7.5	9.3	▲ 7.8	8.3	6.8	7.6	10.0	▲ 8.2
Speed (mph)	No Action NA	37.1	46.3	42.5	33.9	▼ 40.0	34.3	41.9	38.4	31.8	▼ 36.6	37.9	39.9	37.4	29.6	▼ 36.2
	Existing Config X1	43.5	49.1	47.2	40.9	▲ 45.2	42.1	48.0	45.9	27.3	▼ 40.8	42.7	44.7	43.8	24.8	▼ 39.0
	EIS ROD <sup>5</sup> E1	44.6	49.9	47.7	45.2	▲ 46.9	44.5	48.3	46.1	36.5	▲ 43.9	42.7	48.7	45.6	35.0	▲ 43.0
	Scenario 3a	45.0	50.1	48.0	45.1	▲ 47.1	45.6	48.6	47.0	39.4	▲ 45.2	42.4	48.7	46.5	36.5	▲ 43.5
	Scenario 3b	45.3	49.9	47.5	44.7	▲ 46.9	43.8	48.2	46.9	39.0	▲ 44.5	42.9	48.5	46.1	37.3	▲ 43.7
	Scenario 3c	44.7	50.0	47.3	44.7	▲ 46.7	44.2	49.9	46.2	35.4	▲ 43.9	42.6	48.5	45.2	37.5	▲ 43.5
	Scenario 4a	45.5	50.0	47.7	45.0	▲ 47.1	45.0	48.3	47.1	37.8	▲ 44.6	41.8	48.5	46.6	38.2	▲ 43.8
	Scenario 4b	45.3	49.8	47.4	44.6	▲ 46.8	43.1	47.9	46.9	37.7	▲ 43.9	42.6	48.2	46.5	35.4	▲ 43.2
	Scenario 4c	44.4	49.9	47.9	45.4	▲ 46.9	43.7	50.1	46.1	36.8	▲ 44.2	41.9	49.3	45.6	34.4	▲ 42.8
Level of Service (LOS)	No Action NA	F	D	E	F	F	F	E	F	F	F	F	F	F	F	F
	Existing Config X1	E	D	D	E	D	E	D	E	F	E	E	D	E	F	F
	EIS ROD <sup>5</sup> E1	E	D	D	E	D	E	D	E	F	E	E	D	E	F	E
	Scenario 3a	E	D	D	E	D	E	D	D	F	E	F	D	E	F	E
	Scenario 3b	E	D	D	E	D	E	D	E	F	E	E	D	E	F	E
	Scenario 3c	E	D	D	E	D	E	D	E	F	E	E	D	E	F	E
	Scenario 4a	E	D	D	E	D	E	D	D	F	E	F	D	E	F	E
	Scenario 4b	E	D	D	E	D	E	D	E	F	E	E	D	E	F	E
	Scenario 4c	E	D	D	E	D	E	D	E	F	E	F	D	E	F	E
Average Density (pc/mi/n)	No Action NA	51.1	33.6	41.8	55.6	▼ 45.5	55.3	42.8	49.9	59.6	▼ 51.9	50.8	45.8	51.2	62.7	▼ 52.6
	Existing Config X1	37.3	27.1	30.6	39.7	▲ 33.7	41.3	29.6	35.1	62.6	▲ 42.2	41.5	33.9	37.6	68.3	▼ 45.3
	EIS ROD <sup>5</sup> E1	38.0	26.3	30.9	36.4	▲ 32.9	41.1	29.5	36.4	48.4	▲ 38.9	44.3	31.5	38.0	51.8	▲ 41.4
	Scenario 3a	37.2	26.0	30.2	36.5	▲ 32.5	39.8	29.6	34.9	45.9	▲ 37.6	45.5	31.4	36.1	50.8	▲ 41.0
	Scenario 3b	37.3	26.3	30.4	36.9	▲ 32.8	41.6	29.8	35.3	46.4	▲ 38.3	44.2	31.6	36.3	49.1	▲ 40.3
	Scenario 3c	38.1	26.1	31.0	36.9	▲ 33.0	40.9	28.7	36.6	49.8	▲ 39.0	44.5	31.5	37.9	48.5	▲ 40.6
	Scenario 4a	37.0	26.0	30.0	36.5	▲ 32.4	40.5	29.6	34.9	47.4	▲ 38.1	46.0	31.5	36.0	48.2	▲ 40.4
	Scenario 4b	37.2	26.5	30.5	36.8	▲ 32.7	42.6	29.9	35.4	47.6	▲ 38.8	44.6	31.7	36.6	51.1	▲ 41.0
	Scenario 4c	38.1	26.3	30.8	36.4	▲ 32.9	42.2	28.7	36.5	48.2	▲ 38.9	45.1	30.9	37.9	51.5	▲ 41.3
Veh Miles of Travel (veh-mi)	No Action NA	29 K	24 K	28 K	29 K	▼ 27 K	29 K	27 K	30 K	29 K	▼ 29 K	30 K	28 K	30 K	28 K	▼ 29 K
	Existing Config X1	34 K	24 K	30 K	33 K	▲ 30 K	36 K	29 K	34 K	35 K	▲ 34 K	36 K	30 K	34 K	35 K	▲ 34 K
	EIS ROD <sup>5</sup> E1	37 K	24 K	31 K	34 K	▲ 32 K	39 K	31 K	37 K	38 K	▲ 36 K	41 K	33 K	38 K	39 K	▲ 38 K
	Scenario 3a	37 K	25 K	31 K	35 K	▲ 32 K	41 K	31 K	37 K	39 K	▲ 37 K	42 K	33 K	37 K	40 K	▲ 38 K
	Scenario 3b	37 K	24 K	30 K	34 K	▲ 32 K	40 K	31 K	37 K	39 K	▲ 37 K	42 K	33 K	37 K	39 K	▲ 38 K
	Scenario 3c	37 K	24 K	31 K	34 K	▲ 32 K	39 K	31 K	37 K	38 K	▲ 36 K	42 K	33 K	38 K	39 K	▲ 38 K
	Scenario 4a	37 K	24 K	31 K	35 K	▲ 32 K	41 K	31 K	37 K	39 K	▲ 37 K	42 K	33 K	37 K	39 K	▲ 38 K
	Scenario 4b	37 K	24 K	30 K	34 K	▲ 32 K	40 K	31 K	37 K	38 K	▲ 36 K	42 K	33 K	38 K	39 K	▲ 38 K
	Scenario 4c	37 K	24 K	31 K	35 K	▲ 32 K	40 K	31 K	37 K	38 K	▲ 36 K	42 K	33 K	38 K	38 K	▲ 38 K
Veh Hours of Travel (veh-hrs)	No Action NA	790	510	650	850	▼ 700	860	650	770	910	▲ 800	790	700	790	960	▲ 810
	Existing Config X1	790	490	630	800	▲ 680	860	610	740	1,280	▼ 870	850	680	780	1,410	▼ 930
	EIS ROD <sup>5</sup> E1	830	490	640	760	▲ 680	880	640	800	1,030	▲ 840	960	670	830	1,110	▲ 890
	Scenario 3a	830	490	640	770	▲ 680	890	640	780	990	▲ 830	1,000	670	800	1,090	▲ 890
	Scenario 3b	820	490	640	770	▲ 680	920	640	790	990	▲ 840	990	670	810	1,050	▲ 880
	Scenario 3c	830	490	650	770	▲ 690	880	620	800	1,070	▲ 840	980	670	830	1,040	▲ 880
	Scenario 4a	820	490	640	770	▲ 680	900	640	780	1,020	▲ 840	1,010	670	800	1,020	▲ 880
	Scenario 4b	820	490	640	770	▲ 680	930	640	790	1,010	▲ 840	980	690	820	1,090	▼ 900
	Scenario 4c	840	490	640	760	▲ 680	910	620	800	1,020	▲ 840	1,000	670	830	1,110	▼ 900
Veh Hours of Delay (veh-hrs)	No Action NA	380	120	190	370	▼ 270	690	200	400	430	▲ 430	780	230	500	520	▲ 510
	Existing Config X1	390	90	130	260	▲ 220	810	130	490	1,150	▼ 650	1,360	180	570	1,340	▼ 860
	EIS ROD <sup>5</sup> E1	400	90	140	200	▲ 210	940	120	200	880	▲ 540	1,490	130	240	1,230	▼ 770
	Scenario 3a	360	90	130	200	▲ 200	850	130	180	820	▲ 500	1,470	130	190	1,360	▼ 790
	Scenario 3b	360	90	130	210	▲ 200	790	130	190	900	▲ 500	1,380	130	190	1,350	▼ 760
	Scenario 3c	390	90	140	210	▲ 210	960	110	200	880	▲ 540	1,390	130	230	1,180	▲ 730
	Scenario 4a	350	90	130	200	▲ 190	830	130	180	840	▲ 500	1,270	130	190	1,280	▲ 720
	Scenario 4b	350	90	130	210	▲ 200	790	130	190	890	▲ 500	1,470	150	200	1,280	▼ 780
	Scenario 4c	390	90	140	200	▲ 210	790	110	200	910	▲ 500	1,400	130	210	1,200	▲ 740

- Notes:  
 1. Total or Average of AM and PM peak hour plus NB and SB traffic  
 2. MOE results based on FREEVAL Methodology from 2010 Highway Capacity Manual, TRB  
 3. Traffic volume demand from CDM-Smith Tolling and Revenue Study, November 14, 2013  
 4. MOE results are a composite of both General Purpose and Tolle Express Lanes  
 5. EIS Phase 1 ROD Revised & ROD 2 E1

**I-25 Managed Lanes - Traffic Operations Analysis (General Purpose Lanes Only<sup>4</sup>)**  
**84th Avenue to 120th Avenue**

Measures of Effectiveness <sup>2</sup> (MOE)		2015					2025					2035				
		AM		PM		Avg or	AM		PM		Avg or	AM		PM		Avg or
		SB	NB	SB	NB	Total <sup>1</sup>	SB	NB	SB	NB	Total <sup>1</sup>	SB	NB	SB	NB	Total <sup>1</sup>
Travel Time per Veh (min)	No Action NA	9.2	7.2	7.9	9.8	▼ 8.5	10.0	8.0	8.9	10.4	▼ 9.3	8.9	8.3	9.1	11.2	▼ 9.4
	Existing Config X1	8.0	6.9	7.3	8.4	▲ 7.7	8.3	7.1	7.7	13.4	▼ 9.1	8.3	7.6	8.1	14.8	▼ 9.7
	EIS ROD <sup>5</sup> E1	7.9	6.8	7.3	7.6	▲ 7.4	8.0	7.0	7.7	9.8	▲ 8.1	8.5	7.1	7.7	10.4	▲ 8.4
	Scenario 3a	7.8	6.8	7.2	7.6	▲ 7.4	7.9	7.0	7.5	9.2	▲ 7.9	8.5	7.1	7.5	10.2	▲ 8.3
	Scenario 3b	7.8	6.8	7.2	7.7	▲ 7.4	8.1	7.1	7.5	9.3	▲ 8.0	8.3	7.1	7.6	9.8	▲ 8.2
	Scenario 3c	7.9	6.8	7.3	7.7	▲ 7.4	8.1	6.9	7.7	10.1	▲ 8.2	8.4	7.1	7.8	9.5	▲ 8.2
	Scenario 4a	7.7	6.8	7.2	7.7	▲ 7.4	8.0	7.0	7.5	9.6	▲ 8.0	8.7	7.1	7.5	9.6	▲ 8.2
	Scenario 4b	7.8	6.8	7.2	7.7	▲ 7.4	8.3	7.1	7.5	9.6	▲ 8.1	8.5	7.2	7.6	10.3	▲ 8.4
	Scenario 4c	7.9	6.8	7.3	7.6	▲ 7.4	8.2	6.9	7.7	9.9	▲ 8.2	8.7	7.0	7.8	10.6	▲ 8.5
Speed (mph)	No Action NA	37.0	46.2	42.7	34.0	▼ 40.0	34.4	41.7	38.3	31.9	▼ 36.6	38.1	40.1	37.3	29.7	▼ 36.3
	Existing Config X1	41.9	48.3	46.4	39.5	▲ 44.0	40.4	46.7	44.0	25.0	▼ 39.0	40.8	43.5	41.7	22.5	▼ 37.1
	EIS ROD <sup>5</sup> E1	42.4	49.3	46.3	43.8	▲ 45.5	42.5	47.4	43.9	34.1	▲ 42.0	39.7	47.3	43.8	32.2	▲ 40.8
	Scenario 3a	43.0	49.3	46.7	43.5	▲ 45.6	43.5	47.1	44.9	36.5	▲ 43.0	39.3	47.3	44.5	33.0	▲ 41.0
	Scenario 3b	43.0	49.3	46.6	43.2	▲ 45.5	41.7	47.0	44.8	36.2	▲ 42.4	40.3	47.1	44.4	34.2	▲ 41.5
	Scenario 3c	42.4	49.3	46.2	43.1	▲ 45.3	42.2	48.5	43.8	33.2	▲ 41.9	39.7	47.3	43.3	34.9	▲ 41.3
	Scenario 4a	43.1	49.3	46.8	43.4	▲ 45.7	42.7	47.1	44.9	34.9	▲ 42.4	38.7	47.2	44.6	34.9	▲ 41.4
	Scenario 4b	43.1	49.2	46.6	43.1	▲ 45.5	40.9	46.9	44.7	35.1	▲ 41.9	39.7	46.3	44.3	32.5	▲ 40.7
	Scenario 4c	42.3	49.3	46.3	43.7	▲ 45.4	41.2	48.4	43.9	34.0	▲ 41.9	38.8	47.7	43.4	31.5	▲ 40.4
Level of Service (LOS)	No Action NA	F	D	E	F	F	F	E	F	F	F	F	F	F	F	F
	Existing Config X1	E	D	D	E	E	F	D	E	F	F	F	E	E	F	F
	EIS ROD <sup>5</sup> E1	E	D	D	E	E	F	D	E	F	E	F	D	E	F	E
	Scenario 3a	E	D	D	E	E	E	D	E	F	E	F	D	E	F	E
	Scenario 3b	E	D	D	E	E	F	D	E	F	E	F	D	E	F	E
	Scenario 3c	E	D	D	E	E	F	D	E	F	E	F	D	E	F	E
	Scenario 4a	E	D	D	E	E	E	D	E	F	E	F	D	E	F	E
	Scenario 4b	E	D	D	E	E	F	D	E	F	E	F	D	E	F	E
	Scenario 4c	E	D	D	E	E	F	D	E	F	E	F	D	E	F	E
Average Density (pc/mi/m)	No Action NA	51.1	33.6	41.8	55.6	▼ 45.5	55.3	42.8	49.9	59.6	▼ 51.9	50.8	45.8	51.2	62.7	▼ 52.6
	Existing Config X1	41.2	28.4	33.3	43.5	▲ 36.6	45.7	32.3	38.6	70.7	▼ 46.8	46.0	36.9	41.4	77.8	▼ 50.5
	EIS ROD <sup>5</sup> E1	41.6	27.9	33.7	39.8	▲ 35.7	45.2	31.9	39.6	53.8	▲ 42.6	48.3	34.2	41.5	57.5	▲ 45.4
	Scenario 3a	40.5	27.7	33.0	40.0	▲ 35.3	43.2	32.1	37.6	50.7	▲ 40.9	49.3	34.3	39.3	56.4	▲ 44.8
	Scenario 3b	40.7	27.9	33.2	40.5	▲ 35.6	45.5	32.3	38.1	51.4	▲ 41.8	47.7	34.5	39.5	54.6	▲ 44.1
	Scenario 3c	41.7	27.8	33.9	40.4	▲ 35.9	45.0	30.9	39.7	55.3	▲ 42.7	48.3	34.2	41.5	53.3	▲ 44.3
	Scenario 4a	40.3	27.7	32.7	40.0	▲ 35.2	44.1	32.1	37.7	52.8	▲ 41.6	50.0	34.4	39.0	53.5	▲ 44.2
	Scenario 4b	40.5	28.0	33.2	40.4	▲ 35.5	46.8	32.5	38.2	53.0	▲ 42.6	48.5	34.1	39.5	57.3	▲ 44.9
	Scenario 4c	41.6	27.9	33.7	39.9	▲ 35.7	46.4	31.0	39.6	53.9	▲ 42.7	49.0	33.4	41.3	57.8	▲ 45.4
Veh Miles of Travel (veh-mi)	No Action NA	29 K	24 K	28 K	29 K	▲ 27 K	29 K	27 K	30 K	29 K	▲ 29 K	30 K	28 K	30 K	28 K	▼ 29 K
	Existing Config X1	28 K	23 K	26 K	29 K	▼ 26 K	30 K	25 K	28 K	29 K	▼ 28 K	29 K	27 K	28 K	29 K	▼ 28 K
	EIS ROD <sup>5</sup> E1	29 K	23 K	26 K	29 K	▼ 27 K	31 K	25 K	29 K	30 K	▲ 29 K	31 K	27 K	30 K	30 K	▲ 30 K
	Scenario 3a	30 K	23 K	26 K	29 K	▼ 27 K	32 K	25 K	29 K	30 K	▲ 29 K	32 K	27 K	30 K	30 K	▲ 30 K
	Scenario 3b	30 K	23 K	26 K	29 K	▼ 27 K	32 K	25 K	29 K	30 K	▲ 29 K	32 K	27 K	30 K	30 K	▲ 30 K
	Scenario 3c	30 K	23 K	26 K	29 K	▼ 27 K	31 K	25 K	29 K	30 K	▲ 29 K	32 K	27 K	30 K	30 K	▲ 30 K
	Scenario 4a	29 K	23 K	26 K	29 K	▼ 27 K	32 K	25 K	29 K	30 K	▲ 29 K	32 K	27 K	30 K	30 K	▲ 30 K
	Scenario 4b	30 K	23 K	26 K	29 K	▼ 27 K	32 K	25 K	29 K	30 K	▲ 29 K	32 K	26 K	30 K	30 K	▲ 30 K
	Scenario 4c	29 K	23 K	26 K	29 K	▼ 27 K	32 K	25 K	29 K	30 K	▲ 29 K	32 K	26 K	30 K	30 K	▲ 30 K
Veh Hours of Travel (veh-hrs)	No Action NA	792	512	648	847	▼ 700	857	653	773	908	▼ 798	787	698	793	956	▼ 808
	Existing Config X1	679	471	557	723	▲ 608	739	540	635	1,172	▼ 772	722	614	682	1,288	▼ 826
	EIS ROD <sup>5</sup> E1	696	462	567	658	▲ 596	735	530	662	885	▲ 703	787	568	696	935	▲ 746
	Scenario 3a	687	459	560	662	▲ 592	732	534	641	832	▲ 685	809	569	668	904	▲ 737
	Scenario 3b	690	462	564	670	▲ 596	762	537	650	837	▲ 696	800	573	673	871	▲ 729
	Scenario 3c	696	460	569	669	▲ 598	734	514	663	911	▲ 706	799	568	694	858	▲ 730
	Scenario 4a	683	459	556	661	▲ 590	745	533	642	868	▲ 697	822	571	663	854	▲ 727
	Scenario 4b	687	463	564	668	▲ 595	775	540	651	865	▲ 708	801	568	674	929	▲ 743
	Scenario 4c	694	461	565	659	▲ 595	765	516	662	885	▲ 707	820	555	691	953	▲ 755
Veh Hours of Delay (veh-hrs)	No Action NA	376	119	189	375	▼ 265	687	200	398	427	▲ 428	784	234	499	520	▲ 509
	Existing Config X1	374	93	128	250	▼ 211	785	121	474	1,116	▼ 624	1,343	173	560	1,291	▼ 842
	EIS ROD <sup>5</sup> E1	380	84	131	184	▲ 195	919	113	179	831	▼ 510	1,463	122	227	1,171	▼ 746
	Scenario 3a	334	83	125	187	▲ 182	832	116	162	786	▲ 474	1,436	122	173	1,316	▼ 762
	Scenario 3b	335	84	127	195	▲ 185	770	118	166	871	▲ 481	1,348	124	176	1,309	▼ 739
	Scenario 3c	370	83	132	194	▲ 195	942	100	182	833	▼ 514	1,350	122	215	1,120	▼ 702
	Scenario 4a	330	83	124	188	▲ 181	815	116	162	804	▲ 474	1,230	123	171	1,232	▼ 689
	Scenario 4b	334	84	127	193	▲ 184	763	119	167	854	▲ 476	1,434	131	177	1,232	▼ 744
	Scenario 4c	364	84	130	184	▲ 190	771	101	179	880	▲ 483	1,362	115	192	1,152	▼ 706

- Notes:  
1. Total or Average of AM and PM peak hour plus NB and SB traffic  
2. MOE results based on FREEVAL Methodology from 2010 Highway Capacity Manual, TRB  
3. Traffic volume demand from CDM-Smith Tolling and Revenue Study, November 14, 2013  
4. MOE results reflect only travel in general purpose lanes  
5. EIS Phase 1 ROD Revised & ROD 2 E1

**I-25 Managed Lanes - Traffic Operations Analysis (Tolled Express Lanes Only<sup>4</sup>)  
84th Avenue to 120th Avenue**

Measures of Effectiveness <sup>2</sup> (MOE)		2015					2025					2035				
		AM		PM		Avg or	AM		PM		Avg or	AM		PM		Avg or
		SB	NB	SB	NB	Total <sup>1</sup>	SB	NB	SB	NB	Total <sup>1</sup>	SB	NB	SB	NB	Total <sup>1</sup>
Travel Time per Veh (min)	No Action NA	9.2	7.2	7.9	9.8	▼ 8.5	10.0	8.0	8.9	10.4	▼ 9.3	8.9	8.3	9.1	11.2	▼ 9.4
	Existing Config X1	7.1	6.3	6.6	7.4	▲ 6.9	7.2	6.4	6.9	9.2	▼ 7.4	7.0	6.8	7.3	10.1	▼ 7.8
	EIS ROD <sup>5</sup> E1	6.8	6.1	6.4	6.5	▲ 6.5	6.4	6.3	6.6	7.7	▲ 6.8	6.9	6.2	6.5	8.3	▲ 7.0
	Scenario 3a	6.8	6.0	6.4	6.5	▲ 6.4	6.4	6.2	6.5	6.7	▲ 6.5	7.1	6.1	6.5	7.3	▲ 6.8
	Scenario 3b	6.7	6.0	6.4	6.5	▲ 6.4	6.7	6.2	6.5	6.8	▲ 6.6	7.0	6.1	6.5	7.3	▲ 6.7
	Scenario 3c	6.8	6.1	6.4	6.6	▲ 6.5	6.4	6.2	6.6	7.9	▲ 6.8	7.1	6.2	6.6	8.0	▲ 7.0
	Scenario 4a	6.8	6.0	6.4	6.4	▲ 6.4	6.4	6.2	6.5	6.9	▲ 6.5	7.1	6.1	6.5	7.2	▲ 6.7
	Scenario 4b	6.7	6.0	6.4	6.4	▲ 6.4	6.7	6.2	6.5	7.0	▲ 6.6	6.9	6.3	6.6	7.6	▲ 6.9
	Scenario 4c	6.8	6.0	6.4	6.4	▲ 6.4	6.6	6.0	6.6	7.0	▲ 6.6	7.1	6.1	6.6	7.7	▲ 6.9
Speed (mph)	No Action NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Existing Config X1	55.3	56.3	56.7	54.5	▼ 55.7	54.6	55.9	55.7	50.1	▼ 54.1	55.5	55.8	55.6	48.0	▼ 53.7
	EIS ROD <sup>5</sup> E1	56.0	56.0	56.7	53.9	▼ 55.7	56.4	55.0	56.2	49.9	▼ 54.3	55.3	55.5	56.3	48.9	▼ 54.0
	Scenario 3a	56.0	57.0	56.8	55.0	▲ 56.2	56.8	55.7	56.3	53.9	▲ 55.7	54.9	56.6	56.3	53.2	▲ 55.2
	Scenario 3b	55.9	57.0	56.7	54.9	▲ 56.1	55.8	55.7	56.3	53.2	▲ 55.3	55.0	56.6	56.3	53.4	▲ 55.3
	Scenario 3c	56.0	56.0	56.7	53.5	▼ 55.5	56.4	55.8	56.2	49.5	▼ 54.4	54.9	55.5	56.2	49.8	▼ 54.1
	Scenario 4a	56.0	57.0	56.8	55.0	▲ 56.2	56.4	55.8	56.3	53.4	▲ 55.5	54.8	56.6	56.3	53.6	▲ 55.3
	Scenario 4b	55.9	56.9	56.7	55.0	▲ 56.1	55.8	55.7	56.3	53.0	▲ 55.2	55.3	55.5	56.3	52.1	▼ 54.8
	Scenario 4c	55.9	57.0	56.7	55.3	▲ 56.2	55.9	56.7	56.2	53.0	▲ 55.4	54.7	56.6	56.2	52.0	▲ 54.9
Level of Service (LOS)	No Action NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Existing Config X1	C	A	B	B	B	C	B	C	C	C	C	B	C	C	C
	EIS ROD <sup>5</sup> E1	C	A	B	C	B	C	C	C	D	C	D	C	C	D	D
	Scenario 3a	C	A	B	C	B	D	C	C	D	C	D	C	C	D	D
	Scenario 3b	C	A	B	C	B	D	C	C	D	C	D	B	C	D	D
	Scenario 3c	C	A	B	C	B	C	C	C	D	C	D	C	C	D	D
	Scenario 4a	C	A	B	C	B	D	C	C	D	C	D	B	C	D	D
	Scenario 4b	C	A	B	C	B	D	B	C	D	C	D	C	D	D	D
	Scenario 4c	C	A	B	C	B	D	C	C	C	C	D	C	C	D	D
Average Density (pc/mi/m)	No Action NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Existing Config X1	19.1	4.1	12.2	14.0	▲ 12.3	20.7	13.0	19.2	20.3	▲ 18.3	21.9	11.9	18.3	22.8	▲ 18.7
	EIS ROD <sup>5</sup> E1	23.9	5.5	13.4	18.5	▼ 15.3	25.1	18.9	24.8	27.0	▼ 23.9	31.3	18.8	23.2	32.2	▼ 26.4
	Scenario 3a	24.7	6.1	14.2	19.6	▼ 16.1	27.4	19.2	24.9	29.1	▼ 25.2	34.4	18.2	23.7	33.6	▼ 27.5
	Scenario 3b	23.8	5.4	12.9	18.2	▼ 15.1	27.1	18.0	25.3	28.2	▼ 24.7	33.1	17.5	23.6	31.8	▼ 26.5
	Scenario 3c	24.1	5.9	14.0	18.9	▼ 15.7	25.1	19.5	25.0	27.9	▼ 24.4	32.4	18.4	23.8	32.5	▼ 26.8
	Scenario 4a	24.8	5.9	14.2	19.5	▼ 16.1	27.4	18.8	25.0	27.7	▼ 24.7	33.8	17.8	24.4	30.8	▼ 26.7
	Scenario 4b	24.2	5.0	12.7	18.0	▼ 15.0	26.7	17.2	25.0	26.3	▼ 23.8	31.9	22.8	26.1	29.4	▼ 27.6
	Scenario 4c	25.3	5.6	14.1	18.6	▼ 15.9	26.1	19.2	24.9	25.2	▼ 23.9	32.7	20.9	24.8	28.4	▼ 26.7
Veh Miles of Travel (veh-mi)	No Action NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Existing Config X1	6 K	1 K	4 K	4 K	▼ 4 K	6 K	4 K	6 K	6 K	▼ 6 K	7 K	4 K	6 K	6 K	▼ 6 K
	EIS ROD <sup>5</sup> E1	8 K	2 K	4 K	6 K	▲ 5 K	8 K	6 K	8 K	7 K	▲ 7 K	10 K	6 K	7 K	9 K	▲ 8 K
	Scenario 3a	8 K	2 K	5 K	6 K	▲ 5 K	9 K	6 K	8 K	9 K	▲ 8 K	11 K	6 K	8 K	10 K	▲ 8 K
	Scenario 3b	7 K	2 K	4 K	6 K	▲ 5 K	9 K	6 K	8 K	8 K	▲ 8 K	10 K	6 K	7 K	9 K	▲ 8 K
	Scenario 3c	8 K	2 K	4 K	6 K	▲ 5 K	8 K	6 K	8 K	8 K	▲ 7 K	10 K	6 K	8 K	9 K	▲ 8 K
	Scenario 4a	8 K	2 K	5 K	6 K	▲ 5 K	9 K	6 K	8 K	8 K	▲ 8 K	10 K	6 K	8 K	9 K	▲ 8 K
	Scenario 4b	8 K	2 K	4 K	5 K	▲ 5 K	8 K	5 K	8 K	8 K	▲ 7 K	10 K	7 K	8 K	8 K	▲ 8 K
	Scenario 4c	8 K	2 K	4 K	6 K	▲ 5 K	8 K	6 K	8 K	7 K	▲ 7 K	10 K	7 K	8 K	8 K	▲ 8 K
Veh Hours of Travel (veh-hrs)	No Action NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Existing Config X1	107	23	68	78	▲ 69	116	72	108	113	▲ 102	123	66	103	126	▲ 105
	EIS ROD <sup>5</sup> E1	134	31	75	103	▼ 86	141	105	139	150	▼ 134	176	104	131	178	▼ 147
	Scenario 3a	139	34	80	109	▼ 90	154	107	140	161	▼ 141	193	101	133	187	▼ 154
	Scenario 3b	134	30	73	101	▼ 84	153	100	142	157	▼ 138	186	97	133	176	▼ 148
	Scenario 3c	135	33	79	105	▼ 88	141	108	141	155	▼ 136	182	102	134	180	▼ 150
	Scenario 4a	140	33	80	108	▼ 90	154	104	141	154	▼ 138	190	99	137	171	▼ 149
	Scenario 4b	136	28	72	100	▼ 84	150	96	141	146	▼ 133	180	126	147	163	▼ 154
	Scenario 4c	142	31	79	103	▼ 89	147	107	140	140	▼ 133	184	116	140	158	▼ 149
Veh Hours of Delay (veh-hrs)	No Action NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Existing Config X1	17	2	7	12	▲ 9	21	7	14	36	▲ 20	18	6	14	52	▲ 23
	EIS ROD <sup>5</sup> E1	21	3	9	16	▼ 12	18	12	19	47	▼ 24	32	11	17	63	▼ 31
	Scenario 3a	21	3	9	15	▼ 12	18	11	19	30	▲ 19	39	9	18	49	▼ 28
	Scenario 3b	21	2	8	14	▼ 11	24	11	19	31	▲ 21	36	8	18	46	▼ 27
	Scenario 3c	21	3	9	17	▼ 13	18	11	19	51	▼ 25	36	11	18	61	▼ 32
	Scenario 4a	21	3	9	15	▼ 12	20	11	19	32	▲ 20	38	9	18	44	▼ 27
	Scenario 4b	21	2	8	14	▼ 11	24	10	19	33	▼ 21	33	14	20	46	▼ 28
	Scenario 4c	22	2	9	14	▼ 12	23	9	19	32	▲ 21	38	10	19	47	▼ 28

Notes:

1. Total or Average of AM and PM peak hour plus NB and SB traffic
2. MOE results based on FREEVAL Methodology from 2010 Highway Capacity Manual, TRB
3. Traffic volume demand from CDM-Smith Tolling and Revenue Study, November 14, 2013
4. MOE results reflect travel in tolled express lanes, plus general purpose lane travel where tolled express lanes do not exist
5. EIS Phase 1 ROD Revised & ROD 2 E1



**I-25 Managed Lanes - Traffic Operations Analysis (Composite of GP and TE Lanes<sup>4</sup>)  
120th Avenue to SH 7**

Measures of Effectiveness <sup>2</sup> (MOE)		2015					2025					2035				
		AM		PM		Avg or Total <sup>1</sup>	AM		PM		Avg or Total <sup>1</sup>	AM		PM		Avg or Total <sup>1</sup>
		SB	NB	SB	NB		SB	NB	SB	NB		SB	NB	SB	NB	
Travel Time per Veh (min)	No Action NA	7.9	6.7	7.5	7.2	▼ 7.3	11.0	7.2	8.0	7.5	▼ 8.4	12.1	7.5	8.4	7.4	▲ 8.9
	Existing Config X1	7.9	6.7	7.5	7.1	▼ 7.3	11.6	7.0	8.1	7.2	▼ 8.5	12.8	7.2	8.2	7.3	▲ 8.9
	EIS ROD <sup>5</sup> E1	7.1	6.5	6.9	6.9	▲ 6.9	8.2	6.8	7.2	7.3	▲ 7.4	8.0	7.2	7.5	9.2	▲ 8.0
	Scenario 3a	7.1	6.4	6.9	7.9	▶ 7.1	7.2	6.8	7.0	12.1	▼ 8.3	7.7	14.1	7.1	13.4	▼ 10.6
	Scenario 3b	7.0	6.5	6.8	7.0	▲ 6.8	8.3	6.8	7.0	7.5	▲ 7.4	9.5	7.0	7.2	7.7	▲ 7.9
	Scenario 3c	7.1	6.5	6.9	6.9	▲ 6.9	8.2	6.8	7.2	7.3	▲ 7.4	8.3	7.2	7.5	9.4	▲ 8.1
	Scenario 4a	7.1	6.4	6.9	7.9	▶ 7.1	7.2	7.1	7.0	12.3	▼ 8.4	7.6	15.2	7.1	14.4	▼ 11.0
	Scenario 4b	7.0	6.5	6.8	7.0	▲ 6.8	8.3	6.8	7.0	7.6	▲ 7.4	9.4	7.0	7.2	8.3	▲ 8.0
	Scenario 4c	7.1	6.5	6.9	7.0	▲ 6.9	7.9	6.8	7.2	7.5	▲ 7.4	8.1	7.0	7.4	9.1	▲ 7.9
Speed (mph)	No Action NA	45.9	53.2	49.4	49.5	▼ 49.5	33.7	49.2	45.5	47.4	▼ 44.0	30.8	47.1	43.7	48.4	▶ 42.5
	Existing Config X1	45.3	53.1	48.6	50.4	▼ 49.4	31.9	51.4	45.1	49.6	▼ 44.5	29.1	48.8	44.6	49.1	▶ 42.9
	EIS ROD <sup>5</sup> E1	51.3	55.4	52.9	51.9	▲ 52.9	45.5	52.7	51.0	49.3	▲ 49.6	46.0	50.3	49.4	40.4	▲ 46.4
	Scenario 3a	51.5	55.8	53.7	46.5	▶ 51.9	50.6	52.6	52.4	32.9	▶ 47.1	47.9	27.7	52.2	30.0	▼ 39.6
	Scenario 3b	52.3	55.8	54.3	51.1	▲ 53.4	44.7	52.3	52.4	47.5	▲ 49.2	39.7	51.0	51.1	46.9	▲ 47.2
	Scenario 3c	51.4	55.5	53.2	52.2	▲ 53.1	45.6	53.0	51.2	49.5	▲ 49.8	44.2	50.0	49.2	39.3	▲ 45.7
	Scenario 4a	52.0	55.7	54.3	46.5	▲ 52.1	50.6	50.5	52.5	32.2	▶ 46.5	47.8	26.0	51.7	28.5	▼ 38.5
	Scenario 4b	52.6	55.6	54.0	51.6	▲ 53.5	45.0	51.8	52.3	46.5	▲ 48.9	39.8	51.0	51.4	43.2	▲ 46.4
	Scenario 4c	51.5	55.4	53.9	51.4	▲ 53.1	47.1	53.0	51.2	47.9	▲ 49.8	45.2	51.9	49.6	40.0	▲ 46.7
Level of Service (LOS)	No Action NA	E	C	D	D	D	F	D	E	E	E	F	E	E	E	E
	Existing Config X1	E	C	D	D	D	F	D	E	D	E	F	E	E	E	E
	EIS ROD <sup>5</sup> E1	D	C	D	D	D	E	D	D	D	D	E	D	D	E	E
	Scenario 3a	D	C	C	D	D	D	D	D	F	D	E	F	D	F	E
	Scenario 3b	D	C	C	D	D	E	D	D	E	D	F	D	D	E	E
	Scenario 3c	D	C	D	D	D	E	D	D	D	D	E	D	D	E	E
	Scenario 4a	D	C	C	D	D	D	D	D	F	D	E	F	D	F	E
	Scenario 4b	D	C	D	D	D	E	D	D	E	D	E	D	D	E	E
	Scenario 4c	D	C	C	D	D	E	D	D	E	D	E	D	D	E	E
Average Density (pc/mi/m)	No Action NA	37.5	25.9	33.3	33.2	▼ 32.5	56.2	33.0	39.5	36.6	▼ 41.3	62.0	37.1	42.6	37.6	▼ 44.8
	Existing Config X1	37.9	25.4	33.5	32.4	▼ 32.3	59.2	31.3	40.2	34.1	▼ 41.2	65.1	35.1	41.9	36.2	▼ 44.6
	EIS ROD <sup>5</sup> E1	28.1	23.4	26.4	30.4	▲ 27.1	38.3	27.6	29.2	34.3	▲ 32.4	38.4	32.1	32.4	43.6	▲ 36.6
	Scenario 3a	27.4	22.6	25.3	31.8	▲ 26.8	32.0	27.0	27.4	47.9	▲ 33.6	36.2	55.5	28.7	53.3	▼ 43.4
	Scenario 3b	27.9	23.3	25.8	30.7	▲ 26.9	39.2	27.8	28.1	36.2	▲ 32.8	45.3	32.0	30.7	38.1	▲ 36.5
	Scenario 3c	28.2	23.1	26.0	30.4	▲ 26.9	38.3	26.7	29.0	34.4	▲ 32.1	40.2	32.3	31.6	44.2	▲ 37.1
	Scenario 4a	27.3	22.7	25.0	31.8	▲ 26.7	31.9	28.1	27.4	48.9	▲ 34.1	35.9	58.8	28.7	56.1	▼ 44.9
	Scenario 4b	27.7	23.7	26.2	30.8	▲ 27.1	39.2	28.6	28.4	36.8	▲ 33.2	44.7	31.8	30.5	41.2	▲ 37.1
	Scenario 4c	27.7	23.8	25.8	31.3	▲ 27.1	37.2	27.5	28.9	36.0	▲ 32.4	39.3	30.5	31.4	44.3	▲ 36.4
Veh Miles of Travel (veh-mi)	No Action NA	28 K	23 K	26 K	27 K	▼ 26 K	30 K	27 K	29 K	29 K	▼ 29 K	30 K	29 K	30 K	30 K	▼ 30 K
	Existing Config X1	28 K	23 K	26 K	28 K	▼ 26 K	30 K	27 K	29 K	29 K	▼ 29 K	30 K	29 K	30 K	30 K	▼ 30 K
	EIS ROD <sup>5</sup> E1	30 K	23 K	28 K	30 K	▲ 28 K	35 K	29 K	32 K	33 K	▲ 32 K	37 K	32 K	33 K	35 K	▲ 34 K
	Scenario 3a	30 K	23 K	28 K	30 K	▲ 28 K	35 K	29 K	32 K	34 K	▲ 33 K	38 K	32 K	32 K	36 K	▲ 35 K
	Scenario 3b	30 K	23 K	28 K	31 K	▲ 28 K	37 K	29 K	32 K	35 K	▲ 33 K	40 K	33 K	34 K	37 K	▲ 36 K
	Scenario 3c	30 K	23 K	28 K	30 K	▲ 28 K	35 K	29 K	32 K	33 K	▲ 32 K	38 K	32 K	33 K	35 K	▲ 34 K
	Scenario 4a	31 K	23 K	28 K	30 K	▲ 28 K	35 K	29 K	32 K	34 K	▲ 33 K	38 K	32 K	33 K	35 K	▲ 34 K
	Scenario 4b	30 K	23 K	28 K	30 K	▲ 28 K	37 K	29 K	32 K	34 K	▲ 33 K	39 K	33 K	34 K	36 K	▲ 35 K
	Scenario 4c	30 K	23 K	27 K	30 K	▲ 28 K	35 K	29 K	32 K	33 K	▲ 32 K	38 K	33 K	33 K	34 K	▲ 34 K
Veh Hours of Travel (veh-hrs)	No Action NA	600	430	530	550	▲ 530	900	550	630	610	▲ 670	990	620	680	620	▲ 730
	Existing Config X1	610	430	540	550	▲ 530	950	530	640	580	▶ 680	1,040	600	670	610	▲ 730
	EIS ROD <sup>5</sup> E1	590	420	520	580	▲ 530	770	550	620	670	▲ 650	810	640	670	870	▲ 750
	Scenario 3a	590	420	520	650	▼ 550	690	560	610	1,040	▼ 730	800	1,160	620	1,200	▼ 950
	Scenario 3b	580	420	510	600	▲ 530	820	560	620	740	▶ 690	1,000	640	660	800	▲ 780
	Scenario 3c	590	420	520	580	▲ 530	770	550	620	670	▲ 650	850	640	670	890	▲ 760
	Scenario 4a	590	420	510	650	▶ 540	690	580	610	1,050	▼ 730	790	1,210	630	1,240	▼ 970
	Scenario 4b	580	420	510	590	▲ 530	820	560	620	740	▶ 690	970	640	660	840	▲ 780
	Scenario 4c	590	420	510	590	▲ 530	750	550	620	690	▲ 650	830	630	670	860	▲ 750
Veh Hours of Delay (veh-hrs)	No Action NA	180	90	140	140	▼ 140	590	140	200	170	▶ 280	780	180	250	190	▲ 350
	Existing Config X1	190	80	140	130	▼ 140	690	120	210	150	▼ 290	890	160	260	160	▲ 370
	EIS ROD <sup>5</sup> E1	130	70	100	130	▲ 110	550	120	140	170	▲ 250	630	160	180	350	▲ 330
	Scenario 3a	130	70	100	200	▶ 130	200	120	130	720	▼ 290	520	750	140	1,050	▼ 620
	Scenario 3b	130	70	100	140	▲ 110	520	120	130	220	▲ 250	800	150	160	250	▲ 340
	Scenario 3c	130	70	100	130	▲ 110	530	110	140	180	▲ 240	690	160	170	370	▲ 350
	Scenario 4a	130	70	100	200	▶ 130	200	140	130	720	▼ 300	550	780	140	1,030	▼ 630
	Scenario 4b	130	70	100	140	▲ 110	540	120	130	220	▲ 250	790	150	160	300	▲ 350
	Scenario 4c	130	70	100	140	▲ 110	540	110	140	200	▲ 250	740	140	170	350	▲ 350

Notes:

1. Total or Average of AM and PM peak hour plus NB and SB traffic
2. MOE results based on FREEVAL Methodology from 2010 Highway Capacity Manual, TRB
3. Traffic volume demand from CDM-Smith Tolling and Revenue Study, November 14, 2013
4. MOE results are a composite of both General Purpose and Tolleed Express Lanes
5. EIS Phase 1 ROD Revised & ROD 2 E1

**I-25 Managed Lanes - Traffic Operations Analysis (General Purpose Lanes Only<sup>4</sup>)**  
**120th Avenue to SH 7**

Measures of Effectiveness <sup>2</sup> (MOE)		2015					2025					2035				
		AM		PM		Avg or Total <sup>1</sup>	AM		PM		Avg or Total <sup>1</sup>	AM		PM		Avg or Total <sup>1</sup>
		SB	NB	SB	NB		SB	NB	SB	NB		SB	NB	SB	NB	
Travel Time per Veh (min)	No Action NA	7.9	6.7	7.5	7.2	▼ 7.3	11.0	7.2	8.0	7.5	▼ 8.4	12.1	7.5	8.4	7.4	▲ 8.9
	Existing Config X1	7.9	6.7	7.5	7.1	▼ 7.3	11.6	7.0	8.1	7.2	▼ 8.5	12.8	7.2	8.2	7.3	▲ 8.9
	EIS ROD <sup>5</sup> E1	7.3	6.5	7.0	7.0	▲ 7.0	8.4	6.9	7.4	7.4	▲ 7.5	8.3	7.3	7.7	9.4	▲ 8.2
	Scenario 3a	7.3	6.5	7.0	8.2	▼ 7.3	7.5	7.0	7.2	13.3	▼ 8.8	8.1	15.2	7.3	15.1	▼ 11.4
	Scenario 3b	7.2	6.5	6.9	7.1	▲ 6.9	8.6	6.9	7.2	7.7	▲ 7.6	10.0	7.2	7.4	8.0	▲ 8.2
	Scenario 3c	7.3	6.5	7.0	7.0	▲ 7.0	8.4	6.9	7.4	7.4	▲ 7.5	8.6	7.3	7.7	9.6	▲ 8.3
	Scenario 4a	7.3	6.5	7.0	8.2	▼ 7.3	7.5	7.3	7.2	13.5	▼ 8.9	8.0	16.3	7.3	16.1	▼ 11.9
	Scenario 4b	7.2	6.5	6.9	7.1	▲ 6.9	8.6	6.9	7.2	7.8	▲ 7.6	9.9	7.1	7.4	8.6	▲ 8.3
	Scenario 4c	7.3	6.5	7.0	7.1	▲ 7.0	8.1	6.9	7.4	7.6	▲ 7.5	8.4	7.1	7.6	9.3	▲ 8.1
Speed (mph)	No Action NA	46.0	53.1	49.1	49.5	▼ 49.4	33.7	49.4	45.5	47.6	▼ 44.1	30.7	47.4	43.6	48.0	▲ 42.4
	Existing Config X1	45.7	53.5	49.0	50.4	▼ 49.7	32.0	51.0	45.0	49.7	▼ 44.4	29.1	49.1	44.6	48.8	▲ 42.9
	EIS ROD <sup>5</sup> E1	50.2	55.0	52.5	51.0	▲ 52.2	44.0	51.7	49.8	48.4	▲ 48.5	44.2	49.2	47.7	38.4	▲ 44.9
	Scenario 3a	50.2	55.2	52.7	44.8	▶ 50.7	48.5	51.0	50.7	29.6	▼ 45.0	44.7	25.3	50.0	26.3	▼ 36.6
	Scenario 3b	50.8	55.0	53.1	50.3	▲ 52.3	43.1	51.5	50.7	45.7	▲ 47.8	36.9	49.4	49.2	44.6	▲ 45.0
	Scenario 3c	50.2	55.1	52.6	50.9	▲ 52.2	44.0	52.0	49.8	48.1	▲ 48.5	42.1	48.9	47.8	37.5	▲ 44.1
	Scenario 4a	50.2	55.2	52.8	44.8	▶ 50.8	48.5	49.5	50.7	29.0	▼ 44.4	44.9	23.7	50.0	24.8	▼ 35.9
	Scenario 4b	50.9	54.9	53.0	50.3	▲ 52.3	43.1	51.2	50.6	45.2	▲ 47.5	37.2	50.0	49.3	41.3	▲ 44.5
	Scenario 4c	50.3	54.9	53.0	50.3	▲ 52.1	45.2	51.8	49.9	46.8	▲ 48.4	43.0	50.4	48.0	38.4	▲ 45.0
Level of Service (LOS)	No Action NA	E	C	D	D	D	F	D	E	E	E	F	E	E	E	E
	Existing Config X1	E	C	D	D	D	F	D	E	D	E	F	E	E	E	E
	EIS ROD <sup>5</sup> E1	D	C	D	D	D	E	D	D	E	E	E	D	E	F	E
	Scenario 3a	D	C	D	D	D	E	D	D	F	E	E	F	D	F	F
	Scenario 3b	D	C	D	D	D	E	D	D	E	E	F	D	D	E	E
	Scenario 3c	D	C	D	D	D	E	D	D	E	D	E	D	D	F	E
	Scenario 4a	D	C	D	D	D	E	D	D	F	E	E	F	D	F	F
	Scenario 4b	D	C	D	D	D	E	D	D	E	E	F	D	D	F	E
	Scenario 4c	D	C	D	D	D	E	D	D	E	E	E	D	D	F	E
Average Density (pc/mi/m)	No Action NA	37.5	25.9	33.3	33.2	▼ 32.5	56.2	33.0	39.5	36.6	▼ 41.3	62.0	37.1	42.6	37.6	▶ 44.8
	Existing Config X1	37.9	25.4	33.5	32.4	▼ 32.3	59.2	31.3	40.2	34.1	▼ 41.2	65.1	35.1	41.9	36.2	▶ 44.6
	EIS ROD <sup>5</sup> E1	30.7	24.2	28.1	32.3	▲ 28.8	41.8	29.8	32.1	36.8	▲ 35.1	42.6	34.7	35.5	47.7	▲ 40.1
	Scenario 3a	30.2	23.7	27.5	35.0	▲ 29.1	35.5	29.6	30.2	55.1	▶ 37.6	40.2	63.2	31.7	62.5	▼ 49.4
	Scenario 3b	30.4	24.2	27.6	32.9	▲ 28.8	43.2	30.1	30.9	39.8	▲ 36.0	51.2	34.7	33.8	42.3	▲ 40.5
	Scenario 3c	30.8	24.0	28.0	32.4	▲ 28.8	41.8	29.1	32.0	37.1	▲ 35.0	44.7	34.8	34.8	48.6	▲ 40.7
	Scenario 4a	30.2	23.8	27.3	35.0	▲ 29.0	35.4	30.7	30.2	56.1	▶ 38.1	40.0	66.8	31.7	65.8	▼ 51.1
	Scenario 4b	30.3	24.4	27.8	32.9	▲ 28.8	43.3	30.6	31.3	40.2	▲ 36.3	50.4	34.5	33.6	45.4	▲ 41.0
	Scenario 4c	30.4	24.6	27.7	33.4	▲ 29.0	40.8	29.9	31.8	38.8	▲ 35.3	43.7	33.4	34.6	48.4	▲ 40.0
Veh Miles of Travel (veh-mi)	No Action NA	28 K	23 K	26 K	27 K	▲ 26 K	30 K	27 K	29 K	29 K	▲ 29 K	30 K	29 K	30 K	30 K	▲ 30 K
	Existing Config X1	28 K	23 K	26 K	28 K	▲ 26 K	30 K	27 K	29 K	29 K	▲ 29 K	30 K	29 K	30 K	30 K	▲ 30 K
	EIS ROD <sup>5</sup> E1	26 K	23 K	25 K	28 K	▶ 26 K	31 K	26 K	27 K	30 K	▲ 29 K	32 K	29 K	29 K	31 K	▲ 30 K
	Scenario 3a	26 K	22 K	25 K	26 K	▼ 25 K	29 K	26 K	26 K	28 K	▼ 27 K	30 K	27 K	27 K	28 K	▼ 28 K
	Scenario 3b	27 K	23 K	25 K	28 K	▲ 26 K	32 K	26 K	27 K	31 K	▲ 29 K	32 K	29 K	29 K	32 K	▲ 30 K
	Scenario 3c	26 K	22 K	25 K	28 K	▶ 26 K	31 K	26 K	27 K	30 K	▲ 29 K	32 K	29 K	28 K	31 K	▲ 30 K
	Scenario 4a	26 K	22 K	24 K	26 K	▼ 25 K	28 K	26 K	26 K	27 K	▼ 27 K	30 K	27 K	27 K	28 K	▼ 28 K
	Scenario 4b	27 K	23 K	26 K	28 K	▲ 26 K	32 K	27 K	27 K	30 K	▲ 29 K	32 K	29 K	29 K	32 K	▲ 30 K
	Scenario 4c	26 K	22 K	25 K	28 K	▶ 25 K	31 K	26 K	27 K	30 K	▲ 29 K	32 K	28 K	28 K	31 K	▲ 30 K
Veh Hours of Travel (veh-hrs)	No Action NA	599	431	532	551	▼ 528	899	549	631	607	▼ 671	990	617	681	625	▲ 728
	Existing Config X1	606	426	535	550	▼ 529	946	534	642	579	▼ 675	1,040	595	670	613	▲ 730
	EIS ROD <sup>5</sup> E1	526	410	484	548	▲ 492	706	508	548	622	▲ 596	715	591	608	807	▲ 680
	Scenario 3a	511	401	467	590	▲ 492	588	501	512	932	▶ 633	667	1,072	533	1,057	▼ 832
	Scenario 3b	527	410	478	555	▲ 493	740	510	538	668	▲ 614	875	588	587	709	▲ 690
	Scenario 3c	528	407	480	549	▲ 491	707	496	545	626	▲ 594	752	592	595	821	▲ 690
	Scenario 4a	512	403	462	590	▲ 492	587	520	513	948	▶ 642	663	1,132	533	1,116	▼ 861
	Scenario 4b	525	412	483	555	▲ 494	741	519	543	674	▲ 619	860	585	583	765	▲ 698
	Scenario 4c	520	409	475	555	▲ 490	688	500	544	642	▲ 594	735	561	592	801	▲ 672
Veh Hours of Delay (veh-hrs)	No Action NA	185	87	139	141	▼ 138	589	141	199	172	▼ 276	777	177	252	189	▲ 349
	Existing Config X1	190	83	140	133	▼ 137	694	124	207	147	▼ 293	889	156	257	163	▲ 366
	EIS ROD <sup>5</sup> E1	128	71	101	128	▲ 107	541	114	138	169	▲ 240	624	154	174	341	▲ 323
	Scenario 3a	125	68	97	192	▶ 120	194	117	121	693	▼ 281	501	719	131	1,010	▼ 590
	Scenario 3b	123	71	96	135	▲ 106	516	115	127	209	▲ 242	782	151	152	233	▲ 330
	Scenario 3c	129	70	100	129	▲ 107	521	109	137	173	▲ 235	680	158	168	358	▲ 341
	Scenario 4a	125	69	95	192	▶ 120	192	133	121	699	▼ 286	532	753	131	993	▼ 602
	Scenario 4b	123	72	98	135	▲ 107	533	119	130	216	▲ 250	779	145	150	290	▲ 341
	Scenario 4c	126	72	96	135	▲ 107	533	111	136	190	▲ 242	724	137	166	339	▲ 341

- Notes:  
1. Total or Average of AM and PM peak hour plus NB and SB traffic  
2. MOE results based on FREEVAL Methodology from 2010 Highway Capacity Manual, TRB  
3. Traffic volume demand from CDM-Smith Tolling and Revenue Study, November 14, 2013  
4. MOE results reflect only travel in general purpose lanes  
5. EIS Phase 1 ROD Revised & ROD 2 E1

**I-25 Managed Lanes - Traffic Operations Analysis (Tolled Express Lanes Only<sup>4</sup>)**  
**120th Avenue to SH 7**

Measures of Effectiveness <sup>2</sup> (MOE)		2015					2025					2035				
		AM		PM		Avg or	AM		PM		Avg or	AM		PM		Avg or
		SB	NB	SB	NB	Total <sup>1</sup>	SB	NB	SB	NB	Total <sup>1</sup>	SB	NB	SB	NB	Total <sup>1</sup>
Travel Time per Veh (min)	No Action NA	7.9	6.7	7.5	7.2	▼ 7.3	11.0	7.2	8.0	7.5	▼ 8.4	12.1	7.5	8.4	7.4	▼ 8.9
	Existing Config X1	7.9	6.7	7.5	7.1	▼ 7.3	11.6	7.0	8.1	7.2	▼ 8.5	12.8	7.2	8.2	7.3	▼ 8.9
	EIS ROD <sup>5</sup> E1	6.1	5.7	6.0	5.9	▲ 5.9	6.4	6.0	6.2	6.0	▲ 6.2	6.6	6.1	6.3	7.9	▲ 6.7
	Scenario 3a	6.0	5.5	5.8	5.7	▲ 5.8	6.0	5.7	6.0	7.0	▲ 6.2	6.3	8.3	6.0	8.0	▲ 7.2
	Scenario 3b	5.9	5.5	5.8	5.7	▲ 5.7	6.2	5.7	6.0	6.1	▲ 6.0	7.1	5.7	6.1	6.2	▲ 6.3
	Scenario 3c	6.1	5.7	6.0	5.9	▲ 5.9	6.4	6.0	6.2	6.1	▲ 6.2	6.7	6.1	6.4	7.7	▲ 6.7
	Scenario 4a	6.0	5.5	5.8	5.7	▲ 5.8	6.0	5.7	6.0	7.2	▲ 6.2	6.3	8.6	6.0	8.4	▲ 7.3
	Scenario 4b	5.9	5.5	5.8	5.7	▲ 5.7	6.1	5.7	5.9	6.2	▲ 6.0	7.0	5.7	6.0	6.5	▲ 6.3
	Scenario 4c	6.1	5.7	6.0	6.0	▲ 6.0	6.4	6.0	6.2	6.3	▲ 6.2	6.8	6.1	6.3	7.2	▲ 6.6
Speed (mph)	No Action NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Existing Config X1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	EIS ROD <sup>5</sup> E1	63.6	64.6	64.2	64.0	▲ 64.1	62.8	63.7	63.7	62.9	▲ 63.3	62.3	63.8	63.3	61.9	▼ 62.8
	Scenario 3a	63.8	65.1	64.7	64.2	▼ 64.5	64.0	64.3	63.9	62.0	▼ 63.5	62.8	60.1	63.8	61.2	▲ 62.0
	Scenario 3b	63.3	65.0	63.8	64.2	▲ 64.1	62.2	64.1	62.8	62.7	▲ 62.9	60.5	64.1	62.5	62.2	▲ 62.3
	Scenario 3c	63.6	64.6	64.2	64.0	▲ 64.1	62.8	63.7	63.7	62.9	▲ 63.3	61.8	63.8	63.1	61.6	▼ 62.6
	Scenario 4a	63.8	65.1	64.7	64.3	▼ 64.5	64.0	64.2	63.9	61.8	▼ 63.5	62.8	60.0	63.7	60.9	▲ 61.9
	Scenario 4b	64.1	64.9	64.7	64.2	▼ 64.5	63.3	64.0	63.8	62.5	▼ 63.4	61.9	64.1	63.6	61.7	▼ 62.8
	Scenario 4c	63.6	64.6	64.4	63.7	▲ 64.1	62.8	63.7	63.7	62.3	▲ 63.1	61.6	63.6	63.3	61.4	▲ 62.5
Level of Service (LOS)	No Action NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Existing Config X1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	EIS ROD <sup>5</sup> E1	A	A	A	A	A	A	A	B	A	A	B	A	A	A	B
	Scenario 3a	B	A	A	A	A	B	A	B	B	B	C	B	B	C	C
	Scenario 3b	A	A	A	A	A	B	A	B	B	B	C	A	B	B	B
	Scenario 3c	A	A	A	A	A	A	A	B	A	A	B	A	B	B	B
	Scenario 4a	B	A	A	A	A	B	A	B	B	B	C	B	B	C	B
	Scenario 4b	A	A	A	A	A	B	A	B	A	A	B	A	B	B	B
	Scenario 4c	A	A	A	A	A	A	A	B	A	A	B	B	B	A	B
Average Density (pc/mi/m)	No Action NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Existing Config X1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	EIS ROD <sup>5</sup> E1	10.0	1.9	5.4	5.7	▲ 5.7	10.2	7.3	11.2	7.7	▲ 9.1	14.7	8.4	10.6	10.5	▲ 11.0
	Scenario 3a	12.1	3.3	8.4	9.9	▼ 8.4	16.3	10.2	15.3	17.9	▼ 14.9	22.1	14.3	14.7	23.8	▼ 18.7
	Scenario 3b	9.2	2.4	5.8	7.0	▲ 6.1	12.5	8.0	13.5	12.4	▲ 11.6	20.2	9.4	12.6	15.8	▲ 14.5
	Scenario 3c	9.9	2.3	6.2	6.0	▲ 6.1	10.3	8.9	11.9	8.1	▲ 9.8	15.6	8.1	11.7	11.3	▲ 11.7
	Scenario 4a	12.8	3.0	8.4	9.9	▼ 8.5	16.4	9.2	15.4	17.2	▼ 14.6	20.8	13.2	15.1	21.4	▼ 17.6
	Scenario 4b	9.6	1.9	5.0	6.5	▲ 5.7	12.8	6.3	12.6	10.6	▲ 10.6	17.6	8.9	13.3	12.7	▲ 13.1
	Scenario 4c	10.8	2.0	5.9	6.4	▲ 6.3	10.9	8.4	11.8	8.1	▲ 9.8	15.6	11.7	12.3	10.0	▲ 12.4
Veh Miles of Travel (veh-mi)	No Action NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Existing Config X1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	EIS ROD <sup>5</sup> E1	4 K	1 K	2 K	2 K	▼ 2 K	4 K	3 K	4 K	3 K	▼ 3 K	6 K	3 K	4 K	4 K	▼ 4 K
	Scenario 3a	5 K	1 K	3 K	4 K	▲ 3 K	6 K	4 K	6 K	7 K	▲ 6 K	9 K	5 K	6 K	9 K	▲ 7 K
	Scenario 3b	4 K	1 K	2 K	3 K	▼ 2 K	5 K	3 K	5 K	5 K	▲ 4 K	7 K	4 K	5 K	6 K	▲ 5 K
	Scenario 3c	4 K	1 K	2 K	2 K	▼ 2 K	4 K	3 K	5 K	3 K	▼ 4 K	6 K	3 K	5 K	4 K	▼ 4 K
	Scenario 4a	5 K	1 K	3 K	4 K	▲ 3 K	6 K	4 K	6 K	6 K	▲ 6 K	8 K	5 K	6 K	8 K	▲ 7 K
	Scenario 4b	4 K	1 K	2 K	2 K	▼ 2 K	5 K	2 K	5 K	4 K	▼ 4 K	7 K	3 K	5 K	5 K	▼ 5 K
	Scenario 4c	4 K	1 K	2 K	2 K	▼ 2 K	4 K	3 K	5 K	3 K	▼ 4 K	6 K	4 K	5 K	4 K	▼ 5 K
Veh Hours of Travel (veh-hrs)	No Action NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Existing Config X1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	EIS ROD <sup>5</sup> E1	61	12	33	34	▲ 35	63	44	69	46	▲ 55	90	50	65	62	▲ 67
	Scenario 3a	74	20	51	59	▼ 51	100	61	94	107	▼ 90	135	85	90	142	▼ 113
	Scenario 3b	56	14	36	42	▲ 37	77	48	83	74	▲ 70	124	56	77	94	▲ 88
	Scenario 3c	61	14	38	36	▲ 37	63	53	73	48	▲ 59	96	48	72	67	▲ 71
	Scenario 4a	78	18	51	59	▼ 52	100	55	95	102	▼ 88	128	78	93	127	▼ 106
	Scenario 4b	59	11	31	39	▲ 35	78	38	77	63	▲ 64	108	53	81	76	▲ 79
	Scenario 4c	66	12	36	38	▲ 38	67	50	72	48	▲ 59	96	70	75	60	▲ 75
Veh Hours of Delay (veh-hrs)	No Action NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Existing Config X1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	EIS ROD <sup>5</sup> E1	3	0	1	1	▲ 1	5	2	3	3	▲ 3	9	2	4	8	▲ 6
	Scenario 3a	5	1	2	4	▼ 3	6	3	7	23	▼ 10	15	26	6	42	▼ 23
	Scenario 3b	3	0	2	2	▲ 2	7	3	6	9	▲ 6	22	3	6	12	▲ 11
	Scenario 3c	3	0	1	1	▲ 1	5	3	4	4	▲ 4	12	2	5	9	▲ 7
	Scenario 4a	5	1	2	4	▼ 3	6	3	7	23	▼ 10	14	25	7	40	▼ 22
	Scenario 4b	3	0	1	2	▲ 2	6	2	5	8	▲ 5	16	2	5	13	▲ 9
	Scenario 4c	4	0	1	2	▲ 2	5	3	4	5	▲ 4	13	4	5	10	▲ 8

Notes:

- Total or Average of AM and PM peak hour plus NB and SB traffic
- MOE results based on FREEVAL Methodology from 2010 Highway Capacity Manual, TRB
- Traffic volume demand from CDM-Smith Tolling and Revenue Study, November 14, 2013
- MOE results reflect travel in tolled express lanes, plus general purpose lane travel where tolled express lanes do not exist
- EIS Phase 1 ROD Revised & ROD 2 E1

I-25 Managed Lanes - Traffic Operations Analysis (Composite of GP and TE Lanes<sup>4</sup>)

SH 7 to SH 66

Measures of Effectiveness <sup>2</sup> (MOE)		2015					2025					2035				
		AM		PM		Avg or Total <sup>1</sup>	AM		PM		Avg or Total <sup>1</sup>	AM		PM		Avg or Total <sup>1</sup>
		SB	NB	SB	NB		SB	NB	SB	NB		SB	NB	SB	NB	
Travel Time per Veh (min)	No Action NA	15.4	14.9	15.2	17.1	15.7	20.2	16.0	16.2	25.7	19.5	22.6	21.5	17.3	31.8	23.3
	Existing Config X1	15.4	14.9	15.2	17.0	15.6	20.2	15.8	16.2	25.3	19.4	22.6	21.2	17.4	31.8	23.3
	EIS ROD <sup>5</sup> E1	15.5	14.9	15.2	17.5	15.8	21.2	16.0	16.2	27.3	20.2	23.0	23.2	17.5	36.0	24.9
	Scenario 3a	17.6	15.9	16.4	19.3	17.3	25.4	17.1	16.5	19.5	19.6	25.8	19.1	19.1	22.0	21.5
	Scenario 3b	14.6	14.4	14.5	15.6	14.8	17.6	14.6	14.7	19.7	16.6	20.8	15.3	15.2	25.4	19.2
	Scenario 3c	15.5	14.9	15.2	17.6	15.8	21.0	16.0	16.2	28.2	20.4	22.7	25.8	17.1	38.3	26.0
	Scenario 4a	17.2	16.2	16.7	19.7	17.5	26.3	18.1	17.4	22.7	21.1	30.7	22.5	20.6	26.7	25.2
	Scenario 4b	14.7	14.6	14.8	15.9	15.0	17.8	15.1	15.0	23.5	17.8	21.6	19.2	15.5	31.9	22.1
	Scenario 4c	15.5	14.9	15.3	17.5	15.8	21.1	16.0	16.4	25.9	19.9	23.5	21.3	17.7	31.5	23.5
Speed (mph)	No Action NA	54.5	57.3	54.7	49.9	54.1	40.1	53.3	51.0	33.7	44.5	36.3	40.8	47.7	28.2	38.3
	Existing Config X1	54.4	57.4	54.7	50.2	54.2	40.2	53.8	51.4	34.4	45.0	36.3	41.2	47.8	28.2	38.4
	EIS ROD <sup>5</sup> E1	53.6	57.1	54.9	48.5	53.5	38.3	53.0	51.3	32.2	43.7	35.8	38.1	47.4	25.2	36.6
	Scenario 3a	46.7	52.9	50.8	44.0	48.6	33.4	49.1	50.0	43.6	44.0	33.2	44.4	44.2	38.5	40.1
	Scenario 3b	57.0	59.2	57.5	54.2	57.0	46.5	58.1	56.9	44.0	51.4	39.7	55.6	55.1	35.7	46.5
	Scenario 3c	53.4	57.0	55.0	48.4	53.5	38.5	53.1	51.4	31.3	43.6	36.3	34.8	48.1	23.9	35.8
	Scenario 4a	48.4	52.1	50.0	43.2	48.4	32.5	47.1	48.0	38.1	41.4	28.2	38.2	41.3	33.4	35.3
	Scenario 4b	57.1	58.2	57.0	53.4	56.4	45.9	56.3	56.0	37.9	49.0	38.5	45.6	53.8	29.0	41.7
	Scenario 4c	53.9	57.1	54.5	48.6	53.5	38.4	53.1	50.4	33.4	43.8	35.1	40.9	46.7	28.3	37.8
Level of Service (LOS)	No Action NA	C	C	C	D	C	E	D	D	F	E	F	E	D	F	F
	Existing Config X1	C	C	C	D	C	E	D	D	F	E	F	E	D	F	F
	EIS ROD <sup>5</sup> E1	C	C	C	D	D	F	D	D	F	E	F	F	D	F	F
	Scenario 3a	D	C	D	E	D	F	D	D	E	E	F	E	E	F	E
	Scenario 3b	C	B	C	C	C	D	C	C	E	D	E	C	C	F	D
	Scenario 3c	C	C	C	D	D	F	D	D	F	E	F	F	D	F	F
	Scenario 4a	D	C	D	E	D	F	D	D	F	E	F	E	E	F	F
	Scenario 4b	C	B	C	D	C	D	C	C	E	D	E	D	C	F	E
	Scenario 4c	C	C	C	D	D	F	D	D	F	E	F	E	E	F	F
Average Density (pc/mi/m)	No Action NA	24.7	20.6	23.7	32.4	25.4	42.9	27.2	29.2	56.3	38.9	50.8	41.2	34.1	67.1	48.3
	Existing Config X1	24.7	20.6	23.7	32.2	25.3	43.0	26.6	29.1	55.1	38.4	50.8	40.5	34.3	67.1	48.2
	EIS ROD <sup>5</sup> E1	25.6	20.8	24.0	34.3	26.2	45.8	27.4	29.4	59.3	40.4	52.2	45.1	34.8	73.3	51.3
	Scenario 3a	31.7	24.8	27.8	37.6	30.5	50.1	29.9	29.5	40.1	37.4	52.9	37.8	37.0	47.4	43.8
	Scenario 3b	19.8	16.8	18.7	25.1	20.1	33.2	19.5	20.5	37.9	27.8	40.6	24.0	23.7	49.5	34.4
	Scenario 3c	25.5	20.8	23.9	34.8	26.3	45.5	27.6	29.1	61.4	40.9	51.3	49.0	33.6	76.1	52.5
	Scenario 4a	30.6	25.8	28.6	38.5	30.9	51.8	32.6	31.8	45.7	40.5	61.1	44.6	40.8	53.5	50.0
	Scenario 4b	19.9	17.3	19.8	26.2	20.8	33.5	21.3	21.9	44.8	30.4	43.3	31.1	24.9	58.9	39.5
	Scenario 4c	25.5	20.8	24.0	34.5	26.2	45.7	27.4	29.9	57.7	40.2	53.2	41.9	35.5	67.5	49.5
Veh Miles of Travel (veh-mi)	No Action NA	49 K	43 K	48 K	59 K	50 K	63 K	53 K	55 K	69 K	60 K	67 K	61 K	60 K	69 K	64 K
	Existing Config X1	49 K	43 K	48 K	59 K	50 K	63 K	53 K	54 K	70 K	60 K	67 K	61 K	60 K	69 K	65 K
	EIS ROD <sup>5</sup> E1	50 K	43 K	48 K	61 K	51 K	64 K	54 K	55 K	70 K	61 K	69 K	63 K	61 K	68 K	65 K
	Scenario 3a	50 K	43 K	48 K	58 K	50 K	57 K	54 K	55 K	65 K	58 K	63 K	62 K	60 K	72 K	64 K
	Scenario 3b	51 K	44 K	49 K	62 K	51 K	67 K	55 K	57 K	78 K	64 K	74 K	66 K	62 K	87 K	72 K
	Scenario 3c	50 K	43 K	48 K	61 K	51 K	64 K	54 K	56 K	70 K	61 K	69 K	62 K	60 K	67 K	64 K
	Scenario 4a	50 K	43 K	48 K	58 K	50 K	57 K	53 K	55 K	63 K	57 K	59 K	60 K	59 K	66 K	61 K
	Scenario 4b	51 K	44 K	48 K	62 K	51 K	67 K	54 K	57 K	75 K	63 K	72 K	64 K	62 K	78 K	69 K
	Scenario 4c	50 K	43 K	48 K	61 K	51 K	64 K	54 K	55 K	71 K	61 K	68 K	63 K	61 K	70 K	66 K
Veh Hours of Travel (veh-hrs)	No Action NA	900	750	870	1,180	930	1,570	990	1,070	2,060	1,420	1,860	1,500	1,250	2,450	1,770
	Existing Config X1	900	750	870	1,180	930	1,570	980	1,060	2,020	1,410	1,860	1,490	1,250	2,460	1,770
	EIS ROD <sup>5</sup> E1	940	760	880	1,260	960	1,680	1,010	1,080	2,170	1,490	1,920	1,650	1,280	2,680	1,880
	Scenario 3a	1,080	820	950	1,330	1,050	1,720	1,100	1,110	1,500	1,360	1,900	1,400	1,350	1,870	1,630
	Scenario 3b	890	740	850	1,150	910	1,450	940	1,000	1,780	1,290	1,870	1,180	1,130	2,450	1,660
	Scenario 3c	940	760	880	1,270	960	1,670	1,010	1,080	2,240	1,500	1,890	1,790	1,250	2,780	1,930
	Scenario 4a	1,040	830	950	1,340	1,040	1,760	1,130	1,150	1,660	1,430	2,100	1,560	1,420	1,980	1,770
	Scenario 4b	890	750	850	1,160	910	1,470	960	1,010	1,990	1,360	1,880	1,400	1,150	2,690	1,780
	Scenario 4c	930	760	880	1,260	960	1,670	1,010	1,100	2,110	1,470	1,950	1,540	1,300	2,470	1,820
Veh Hours of Delay (veh-hrs)	No Action NA	200	140	190	340	220	670	240	290	1,090	570	1,110	630	400	1,890	1,010
	Existing Config X1	200	140	190	340	220	670	230	280	1,030	550	1,150	610	400	1,780	990
	EIS ROD <sup>5</sup> E1	220	140	190	380	230	760	240	290	1,360	660	1,180	760	420	2,290	1,160
	Scenario 3a	350	200	260	490	330	1,540	330	320	1,110	830	2,420	520	680	1,840	1,370
	Scenario 3b	160	120	150	250	170	490	160	180	750	400	950	250	240	2,110	890
	Scenario 3c	220	140	190	400	240	750	240	290	1,400	670	1,140	910	390	2,490	1,230
	Scenario 4a	320	210	270	510	330	1,600	370	360	1,320	910	2,440	730	750	2,140	1,520
	Scenario 4b	170	120	160	270	180	510	180	200	1,030	480	1,020	480	260	2,360	1,030
	Scenario 4c	220	140	190	390	240	760	240	300	1,270	640	1,250	640	430	1,970	1,070

Notes:

1. Total or Average of AM and PM peak hour plus NB and SB traffic
2. MOE results based on FREEVAL Methodology from 2010 Highway Capacity Manual, TRB
3. Traffic volume demand from CDM-Smith Tolling and Revenue Study, November 14, 2013
4. MOE results are a composite of both General Purpose and Tolleed Express Lanes
5. EIS Phase 1 ROD Revised & ROD 2 E1

**I-25 Managed Lanes - Traffic Operations Analysis (General Purpose Lanes Only<sup>4</sup>)**  
**SH 7 to SH 66**

Measures of Effectiveness <sup>2</sup> (MOE)		2015					2025					2035				
		AM		PM		Avg or	AM		PM		Avg or	AM		PM		Avg or
		SB	NB	SB	NB	Total <sup>1</sup>	SB	NB	SB	NB	Total <sup>1</sup>	SB	NB	SB	NB	Total <sup>1</sup>
Travel Time per Veh (min)	No Action NA	15.4	14.9	15.2	17.1	▲ 15.7	20.2	16.0	16.2	25.7	▼ 19.5	22.6	21.5	17.3	31.8	▼ 23.3
	Existing Config X1	15.4	14.9	15.2	17.0	▲ 15.6	20.2	15.8	16.2	25.3	▼ 19.4	22.6	21.2	17.4	31.8	▼ 23.3
	EIS ROD <sup>5</sup> E1	15.5	14.9	15.2	17.5	▲ 15.8	21.2	16.0	16.2	27.3	▼ 20.2	23.0	23.2	17.5	36.0	▼ 24.9
	Scenario 3a	18.3	16.3	17.1	20.6	▼ 18.1	27.7	18.2	17.5	21.4	▼ 21.2	28.9	20.6	20.6	25.0	▼ 23.8
	Scenario 3b	14.8	14.6	14.7	16.0	▲ 15.0	18.0	15.0	15.1	20.8	▲ 17.2	21.9	15.9	15.7	27.8	▲ 20.3
	Scenario 3c	15.5	14.9	15.2	17.6	▲ 15.8	21.0	16.0	16.2	28.2	▼ 20.4	22.7	25.8	17.1	38.3	▼ 26.0
	Scenario 4a	17.9	16.5	17.3	20.8	▼ 18.1	28.5	18.9	18.3	24.6	▼ 22.6	34.0	23.8	22.0	29.7	▼ 27.4
	Scenario 4b	14.9	14.7	14.9	16.2	▲ 15.2	18.2	15.3	15.3	24.1	▲ 18.2	22.3	19.5	15.9	33.6	▼ 22.8
	Scenario 4c	15.5	14.9	15.3	17.5	▲ 15.8	21.1	16.0	16.4	25.9	▼ 19.9	23.5	21.3	17.7	31.5	▼ 23.5
Speed (mph)	No Action NA	54.2	57.0	54.9	49.7	▲ 54.0	40.1	53.2	51.2	33.8	▼ 44.6	36.3	40.7	47.8	28.2	▼ 38.3
	Existing Config X1	54.2	57.1	54.9	50.1	▲ 54.1	40.1	53.8	51.3	34.4	▼ 44.9	36.3	41.2	47.7	28.3	▼ 38.4
	EIS ROD <sup>5</sup> E1	53.6	56.9	54.7	48.6	▲ 53.5	38.4	53.2	51.1	32.2	▼ 43.7	35.8	38.0	47.3	25.2	▼ 36.6
	Scenario 3a	44.9	51.7	48.7	41.1	▼ 46.6	30.4	46.1	47.1	39.6	▼ 40.8	29.3	40.9	40.5	33.2	▼ 36.0
	Scenario 3b	56.4	58.2	56.9	53.2	▲ 56.2	45.3	56.6	55.4	41.6	▲ 49.7	37.5	53.4	53.4	32.2	▲ 44.1
	Scenario 3c	53.7	56.9	54.8	48.2	▲ 53.4	38.6	53.1	51.4	31.2	▼ 43.6	36.3	34.7	48.2	23.9	▼ 35.8
	Scenario 4a	46.4	51.1	48.3	40.8	▼ 46.7	29.5	44.7	45.3	34.5	▼ 38.5	25.0	35.4	38.1	29.0	▼ 31.9
	Scenario 4b	56.1	57.9	56.3	52.5	▲ 55.7	44.7	55.6	54.7	36.2	▲ 47.8	37.1	44.2	52.7	27.0	▲ 40.3
	Scenario 4c	53.6	57.0	54.6	48.5	▲ 53.4	38.4	53.3	50.6	33.4	▼ 43.9	35.2	40.9	46.7	28.3	▼ 37.8
Level of Service (LOS)	No Action NA	C	C	C	D	C	E	D	D	F	E	F	E	D	F	F
	Existing Config X1	C	C	C	D	C	E	D	D	F	E	F	E	D	F	F
	EIS ROD <sup>5</sup> E1	C	C	C	D	D	F	D	D	F	E	F	F	D	F	F
	Scenario 3a	E	D	D	E	D	F	D	D	F	E	F	E	E	F	F
	Scenario 3b	C	B	C	D	C	E	C	C	E	D	E	D	D	F	E
	Scenario 3c	C	C	C	D	D	F	D	D	F	E	F	F	D	F	F
	Scenario 4a	D	D	D	E	D	F	E	E	F	F	F	F	F	F	F
	Scenario 4b	C	C	C	D	C	E	C	C	F	D	F	D	D	F	E
	Scenario 4c	C	C	C	D	D	F	D	D	F	E	F	E	E	F	F
Average Density (pc/mi/m)	No Action NA	24.7	20.6	23.7	32.4	▲ 25.4	42.9	27.2	29.2	56.3	▼ 38.9	50.8	41.2	34.1	67.1	▼ 48.3
	Existing Config X1	24.7	20.6	23.7	32.2	▲ 25.3	43.0	26.6	29.1	55.1	▼ 38.4	50.8	40.5	34.3	67.1	▼ 48.2
	EIS ROD <sup>5</sup> E1	25.6	20.8	24.0	34.3	▼ 26.2	45.8	27.4	29.4	59.3	▼ 40.4	52.2	45.1	34.8	73.3	▼ 51.3
	Scenario 3a	35.7	27.2	31.3	43.2	▼ 34.3	58.5	34.4	34.0	47.2	▼ 43.5	63.4	44.0	43.3	57.3	▼ 52.0
	Scenario 3b	21.3	18.0	20.2	27.3	▲ 21.7	35.6	21.4	22.5	42.2	▲ 30.4	45.0	26.5	26.0	57.0	▲ 38.6
	Scenario 3c	25.5	20.8	23.9	34.8	▼ 26.3	45.5	27.6	29.1	61.4	▼ 40.9	51.3	49.0	33.6	76.1	▼ 52.5
	Scenario 4a	34.5	27.9	31.9	43.8	▼ 34.5	60.5	36.9	36.7	53.9	▼ 47.0	72.8	51.5	47.4	64.8	▼ 59.1
	Scenario 4b	21.5	18.3	20.9	28.1	▲ 22.2	36.1	22.9	23.8	48.9	▲ 32.9	46.7	33.8	27.1	65.9	▲ 43.4
	Scenario 4c	25.5	20.8	24.0	34.5	▼ 26.2	45.7	27.4	29.9	57.7	▼ 40.2	53.2	41.9	35.5	67.5	▼ 49.5
Veh Miles of Travel (veh-mi)	No Action NA	49 K	43 K	48 K	59 K	▲ 50 K	63 K	53 K	55 K	69 K	▲ 60 K	67 K	61 K	60 K	69 K	▲ 64 K
	Existing Config X1	49 K	43 K	48 K	59 K	▲ 50 K	63 K	53 K	54 K	70 K	▲ 60 K	67 K	61 K	60 K	69 K	▲ 65 K
	EIS ROD <sup>5</sup> E1	50 K	43 K	48 K	61 K	▲ 51 K	64 K	54 K	55 K	70 K	▲ 61 K	69 K	63 K	61 K	68 K	▲ 65 K
	Scenario 3a	43 K	39 K	41 K	48 K	▼ 43 K	47 K	44 K	43 K	50 K	▼ 46 K	49 K	49 K	47 K	51 K	▼ 49 K
	Scenario 3b	46 K	40 K	44 K	56 K	▼ 47 K	62 K	47 K	48 K	67 K	▼ 56 K	65 K	54 K	53 K	70 K	▲ 61 K
	Scenario 3c	50 K	43 K	48 K	61 K	▲ 51 K	64 K	54 K	56 K	70 K	▲ 61 K	69 K	62 K	60 K	67 K	▲ 64 K
	Scenario 4a	43 K	39 K	41 K	49 K	▼ 43 K	47 K	45 K	44 K	50 K	▼ 47 K	48 K	49 K	48 K	50 K	▼ 49 K
	Scenario 4b	46 K	41 K	45 K	57 K	▼ 47 K	62 K	49 K	50 K	68 K	▲ 57 K	66 K	57 K	55 K	68 K	▲ 62 K
	Scenario 4c	50 K	43 K	48 K	61 K	▲ 51 K	64 K	54 K	55 K	71 K	▲ 61 K	68 K	63 K	61 K	70 K	▲ 66 K
Veh Hours of Travel (veh-hrs)	No Action NA	904	754	867	1,185	▼ 927	1,569	992	1,066	2,055	▼ 1,421	1,858	1,503	1,249	2,450	▼ 1,765
	Existing Config X1	903	753	867	1,184	▼ 927	1,572	981	1,063	2,020	▼ 1,409	1,859	1,488	1,254	2,459	▼ 1,765
	EIS ROD <sup>5</sup> E1	940	762	883	1,257	▼ 961	1,678	1,005	1,084	2,169	▼ 1,484	1,916	1,654	1,283	2,682	▼ 1,884
	Scenario 3a	963	750	845	1,179	▼ 934	1,549	945	919	1,275	▲ 1,172	1,675	1,200	1,156	1,536	▲ 1,392
	Scenario 3b	820	690	776	1,047	▲ 833	1,367	822	866	1,618	▲ 1,168	1,728	1,018	1,001	2,176	▲ 1,481
	Scenario 3c	935	760	883	1,274	▼ 963	1,667	1,010	1,082	2,244	▼ 1,501	1,889	1,792	1,249	2,782	▼ 1,928
	Scenario 4a	926	770	855	1,197	▼ 937	1,587	1,012	980	1,455	▲ 1,258	1,906	1,397	1,248	1,734	▼ 1,571
	Scenario 4b	822	705	802	1,081	▲ 852	1,381	881	911	1,877	▲ 1,262	1,784	1,301	1,037	2,525	▼ 1,662
	Scenario 4c	934	762	878	1,264	▼ 960	1,672	1,007	1,095	2,113	▼ 1,472	1,946	1,538	1,300	2,471	▼ 1,814
Veh Hours of Delay (veh-hrs)	No Action NA	203	140	187	343	▲ 218	672	238	287	1,095	▼ 573	1,114	629	396	1,886	▲ 1,006
	Existing Config X1	203	139	187	337	▲ 216	672	227	285	1,029	▲ 553	1,146	611	400	1,776	▲ 983
	EIS ROD <sup>5</sup> E1	220	142	193	385	▼ 235	761	241	292	1,364	▼ 665	1,176	757	416	2,294	▼ 1,161
	Scenario 3a	346	196	258	487	▼ 322	1,509	322	302	1,096	▼ 807	2,379	501	661	1,793	▼ 1,334
	Scenario 3b	160	116	146	251	▲ 168	486	157	180	740	▲ 391	942	241	238	2,067	▲ 872
	Scenario 3c	218	142	191	397	▼ 237	751	244	288	1,402	▼ 671	1,142	906	390	2,486	▼ 1,231
	Scenario 4a	312	207	266	500	▼ 321	1,560	366	351	1,304	▼ 895	2,398	719	733	2,110	▼ 1,490
	Scenario 4b	163	122	157	271	▲ 178	504	182	199	1,021	▲ 476	1,012	480	256	2,338	▲ 1,022
	Scenario 4c	219	142	193	389	▼ 235	758	241	303	1,268	▼ 643	1,246	639	432	1,971	▲ 1,072

- Notes:  
1. Total or Average of AM and PM peak hour plus NB and SB traffic  
2. MOE results based on FREEVAL Methodology from 2010 Highway Capacity Manual, TRB  
3. Traffic volume demand from CDM-Smith Tolling and Revenue Study, November 14, 2013  
4. MOE results reflect only travel in general purpose lanes  
5. EIS Phase 1 ROD Revised & ROD 2 E1

I-25 Managed Lanes - Traffic Operations Analysis (Tolled Express Lanes Only<sup>4</sup>)

SH 7 to SH 66

Measures of Effectiveness <sup>2</sup> (MOE)		2015					2025					2035				
		AM		PM		Avg or	AM		PM		Avg or	AM		PM		Avg or
		SB	NB	SB	NB	Total <sup>1</sup>	SB	NB	SB	NB	Total <sup>1</sup>	SB	NB	SB	NB	Total <sup>1</sup>
Travel Time per Veh (min)	No Action NA	15.4	14.9	15.2	17.1	▼ 15.7	20.2	16.0	16.2	25.7	▼ 19.5	22.6	21.5	17.3	31.8	▼ 23.3
	Existing Config X1	15.4	14.9	15.2	17.0	▼ 15.6	20.2	15.8	16.2	25.3	▼ 19.4	22.6	21.2	17.4	31.8	▼ 23.3
	EIS ROD <sup>5</sup> E1	15.5	14.9	15.2	17.5	▼ 15.8	21.2	16.0	16.2	27.3	▼ 20.2	23.0	23.2	17.5	36.0	▼ 24.9
	Scenario 3a	13.1	12.5	12.5	12.9	▲ 12.8	14.9	12.7	13.1	12.9	▲ 13.4	14.9	13.3	13.5	14.9	▲ 14.2
	Scenario 3b	12.4	12.5	12.4	12.6	▲ 12.5	13.1	12.5	12.5	12.9	▲ 12.8	13.3	12.6	12.5	15.6	▲ 13.5
	Scenario 3c	15.5	14.9	15.2	17.6	▼ 15.8	21.0	16.0	16.2	28.2	▼ 20.4	22.7	25.8	17.1	38.3	▼ 26.0
	Scenario 4a	13.1	13.0	12.9	13.7	▲ 13.2	16.0	13.4	13.8	15.6	▲ 14.7	17.4	16.3	14.5	17.3	▲ 16.4
	Scenario 4b	12.7	12.8	12.7	13.1	▲ 12.8	13.4	13.0	12.8	17.8	▲ 14.3	13.8	16.3	12.9	20.4	▲ 15.9
	Scenario 4c	15.5	14.9	15.3	17.5	▼ 15.8	21.1	16.0	16.4	25.9	▼ 19.9	23.5	21.3	17.7	31.5	▼ 23.5
Speed (mph)	No Action NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Existing Config X1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	EIS ROD <sup>5</sup> E1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Scenario 3a	64.7	67.4	67.0	65.5	▼ 66.2	61.1	66.7	65.1	65.0	▼ 64.5	61.2	64.2	65.1	63.2	▼ 63.4
	Scenario 3b	67.3	67.7	67.5	67.2	▲ 67.4	65.1	67.4	67.0	66.2	▲ 66.4	64.9	67.0	67.0	63.6	▲ 65.6
	Scenario 3c	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Scenario 4a	66.1	67.2	66.8	65.6	▼ 66.4	60.6	66.8	64.9	64.7	▼ 64.3	60.8	63.8	64.5	63.7	▼ 63.2
	Scenario 4b	67.1	67.6	67.4	67.0	▲ 67.3	65.0	67.3	67.0	66.2	▲ 66.4	64.5	67.1	67.0	62.2	▲ 65.2
	Scenario 4c	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Level of Service (LOS)	No Action NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Existing Config X1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	EIS ROD <sup>5</sup> E1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Scenario 3a	A	A	A	A	A	B	B	B	B	B	B	B	B	C	B
	Scenario 3b	A	A	A	A	A	A	A	A	B	A	A	B	A	C	B
	Scenario 3c	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Scenario 4a	A	A	A	A	A	B	A	B	B	B	B	B	B	B	B
	Scenario 4b	A	A	A	A	A	A	A	A	A	A	A	A	A	B	A
	Scenario 4c	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Average Density (pc/mi/n)	No Action NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Existing Config X1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	EIS ROD <sup>5</sup> E1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Scenario 3a	8.0	4.8	7.6	10.8	▼ 7.8	12.1	11.0	13.3	16.2	▼ 13.1	16.4	14.3	14.1	23.5	▼ 17.1
	Scenario 3b	4.8	3.8	5.0	6.9	▲ 5.1	6.0	8.4	9.5	11.7	▲ 8.9	10.3	11.8	9.4	19.3	▲ 12.7
	Scenario 3c	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Scenario 4a	7.9	4.1	6.7	9.8	▼ 7.1	12.1	8.4	11.9	14.3	▼ 11.7	13.6	11.2	12.2	17.5	▲ 13.6
	Scenario 4b	5.0	3.0	3.4	5.5	▲ 4.2	6.3	5.3	7.2	8.0	▲ 6.7	6.8	6.7	7.7	11.4	▲ 8.2
	Scenario 4c	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Veh Miles of Travel (veh-mi)	No Action NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Existing Config X1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	EIS ROD <sup>5</sup> E1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Scenario 3a	7 K	5 K	7 K	10 K	▲ 7 K	10 K	10 K	12 K	15 K	▲ 12 K	14 K	13 K	13 K	21 K	▲ 15 K
	Scenario 3b	5 K	4 K	5 K	7 K	▼ 5 K	5 K	8 K	9 K	11 K	▲ 8 K	9 K	11 K	9 K	17 K	▲ 12 K
	Scenario 3c	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Scenario 4a	7 K	4 K	6 K	9 K	▲ 7 K	10 K	8 K	11 K	13 K	▲ 11 K	12 K	10 K	11 K	16 K	▲ 12 K
	Scenario 4b	5 K	3 K	3 K	5 K	▼ 4 K	6 K	5 K	7 K	8 K	▼ 6 K	6 K	6 K	7 K	10 K	▼ 7 K
	Scenario 4c	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Veh Hours of Travel (veh-hrs)	No Action NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Existing Config X1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	EIS ROD <sup>5</sup> E1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Scenario 3a	112	68	107	154	▼ 110	170	157	186	230	▼ 186	230	204	198	334	▼ 241
	Scenario 3b	68	54	70	98	▲ 72	84	119	133	166	▲ 126	144	167	132	274	▲ 179
	Scenario 3c	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Scenario 4a	111	58	94	139	▼ 100	170	119	167	203	▼ 165	191	159	171	248	▲ 192
	Scenario 4b	70	42	48	78	▲ 60	89	75	101	114	▲ 95	95	95	109	162	▲ 115
	Scenario 4c	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Veh Hours of Delay (veh-hrs)	No Action NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Existing Config X1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	EIS ROD <sup>5</sup> E1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Scenario 3a	9	2	3	7	▼ 5	34	5	13	13	▼ 16	45	16	18	49	▼ 32
	Scenario 3b	2	1	2	3	▲ 2	6	3	4	7	▲ 5	12	5	4	46	▲ 17
	Scenario 3c	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Scenario 4a	4	1	3	6	▲ 4	36	4	12	11	▼ 16	40	13	17	28	▼ 25
	Scenario 4b	2	1	1	2	▲ 2	6	2	3	4	▲ 4	9	2	3	21	▲ 9
	Scenario 4c	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:

1. Total or Average of AM and PM peak hour plus NB and SB traffic
2. MOE results based on FREEVAL Methodology from 2010 Highway Capacity Manual, TRB
3. Traffic volume demand from CDM-Smith Tolling and Revenue Study, November 14, 2013
4. MOE results reflect travel in tolled express lanes, plus general purpose lane travel where tolled express lanes do not exist
5. EIS Phase 1 ROD Revised & ROD 2 E1

**I-25 Managed Lanes - Traffic Operations Analysis (Composite of GP and TE Lanes<sup>4</sup>)**  
**SH 66 to SH 56**

Measures of Effectiveness <sup>2</sup> (MOE)		2015					2025					2035				
		AM		PM		Avg or Total <sup>1</sup>	AM		PM		Avg or Total <sup>1</sup>	AM		PM		Avg or Total <sup>1</sup>
		SB	NB	SB	NB		SB	NB	SB	NB		SB	NB	SB	NB	
Travel Time per Veh (min)	No Action NA	7.9	8.1	8.2	10.1	▼ 8.6	8.4	10.1	9.3	11.7	▼ 9.9	10.5	17.7	10.6	18.0	▼ 14.2
	Existing Config X1	7.8	8.1	8.2	10.2	▼ 8.6	8.4	10.1	9.3	11.8	▼ 9.9	10.6	17.7	10.6	19.4	▼ 14.6
	EIS ROD <sup>5</sup> E1	7.6	7.8	7.8	8.7	▲ 8.0	8.1	9.0	8.0	9.4	▲ 8.6	9.4	20.3	9.8	18.1	▼ 14.5
	Scenario 3a	7.5	7.6	7.5	8.1	▲ 7.7	7.7	7.6	7.4	8.7	▲ 7.9	8.1	10.4	8.0	11.4	▲ 9.5
	Scenario 3b	7.6	7.7	7.5	8.5	▲ 7.8	7.8	7.7	7.6	9.0	▲ 8.0	8.0	10.2	8.3	11.9	▲ 9.6
	Scenario 3c	7.6	7.6	7.5	8.4	▲ 7.8	7.9	7.5	7.6	8.7	▲ 7.9	9.1	10.0	8.8	11.5	▲ 9.8
	Scenario 4a	7.9	8.1	8.2	9.9	▼ 8.5	8.4	10.2	9.3	11.3	▼ 9.8	12.1	17.7	10.6	17.0	▼ 14.4
	Scenario 4b	7.9	8.1	8.3	10.2	▼ 8.6	8.4	10.1	9.3	11.6	▼ 9.9	10.7	17.4	10.4	19.7	▼ 14.6
	Scenario 4c	7.9	8.1	8.3	10.4	▼ 8.7	8.4	10.2	9.3	11.8	▼ 9.9	10.7	17.5	10.8	19.5	▼ 14.6
Speed (mph)	No Action NA	54.6	52.0	52.0	41.9	▼ 50.1	50.5	42.2	45.7	36.1	▼ 43.6	40.3	24.6	39.9	23.7	▼ 32.1
	Existing Config X1	54.3	52.1	52.1	41.5	▼ 50.0	50.4	42.2	45.6	35.7	▼ 43.5	40.4	24.6	39.3	22.0	▼ 31.6
	EIS ROD <sup>5</sup> E1	56.8	54.0	54.2	48.9	▲ 53.5	52.6	47.9	53.0	45.8	▲ 49.8	44.7	22.4	44.0	24.5	▼ 33.9
	Scenario 3a	57.1	56.0	57.3	52.7	▲ 55.8	54.3	55.0	56.9	48.5	▲ 53.7	52.6	41.0	53.3	37.5	▲ 46.1
	Scenario 3b	56.8	55.9	55.5	49.5	▲ 54.4	54.3	54.9	55.5	47.0	▲ 52.9	52.8	41.8	51.0	35.9	▲ 45.4
	Scenario 3c	56.8	55.9	57.2	50.8	▲ 55.2	52.6	55.9	56.6	49.0	▲ 53.5	46.3	42.9	48.1	36.7	▲ 43.5
	Scenario 4a	54.5	52.2	51.9	42.6	▼ 50.3	50.5	41.6	44.9	37.6	▼ 43.7	35.4	24.7	39.9	25.2	▼ 31.3
	Scenario 4b	54.8	52.2	50.8	41.1	▼ 49.7	49.6	42.4	45.8	36.5	▼ 43.6	39.7	25.0	40.5	21.7	▼ 31.7
	Scenario 4c	54.6	52.4	50.8	40.6	▼ 49.6	49.6	41.7	45.8	35.8	▼ 43.2	39.7	24.9	39.5	21.9	▼ 31.5
Level of Service (LOS)	No Action NA	C	D	D	E	D	D	E	E	F	E	F	F	F	F	F
	Existing Config X1	C	D	D	F	D	D	E	E	F	E	F	F	F	F	F
	EIS ROD <sup>5</sup> E1	C	C	C	D	C	D	D	D	E	D	D	F	E	F	F
	Scenario 3a	C	C	C	D	C	C	C	C	D	C	D	E	D	F	E
	Scenario 3b	C	C	C	D	C	C	C	C	E	D	D	E	D	F	E
	Scenario 3c	C	C	C	D	C	C	C	C	D	C	D	E	D	F	E
	Scenario 4a	C	D	D	E	D	D	E	E	F	E	F	F	F	F	F
	Scenario 4b	C	D	D	F	D	D	E	E	F	E	F	F	F	F	F
	Scenario 4c	C	D	D	F	D	D	F	E	F	E	F	F	F	F	F
Average Density (pc/mi/m)	No Action NA	25.5	28.7	29.5	44.8	▼ 32.1	30.8	44.2	38.1	55.2	▼ 42.1	45.1	76.1	49.3	81.2	▼ 62.9
	Existing Config X1	25.3	28.8	29.6	45.7	▼ 32.3	30.7	44.1	37.8	55.9	▼ 42.1	45.3	75.9	49.4	87.7	▼ 64.6
	EIS ROD <sup>5</sup> E1	21.8	24.7	24.5	32.9	▲ 26.0	26.6	34.0	26.5	37.3	▲ 31.1	34.9	69.4	37.7	66.6	▲ 52.2
	Scenario 3a	20.8	22.0	20.7	28.0	▲ 22.9	23.4	23.6	21.9	33.2	▲ 25.5	27.4	40.4	27.9	47.7	▲ 35.8
	Scenario 3b	21.7	22.6	21.5	31.3	▲ 24.3	24.0	24.9	22.7	35.3	▲ 26.7	26.5	39.8	29.7	51.2	▲ 36.8
	Scenario 3c	21.7	21.9	21.0	30.1	▲ 23.7	26.0	22.8	22.3	32.4	▲ 25.9	31.7	37.5	30.3	47.1	▲ 36.7
	Scenario 4a	25.9	28.8	29.9	44.0	▼ 32.1	31.4	44.6	38.9	53.1	▼ 42.0	50.4	75.8	50.0	77.1	▼ 63.3
	Scenario 4b	25.6	28.7	29.7	46.0	▼ 32.5	31.2	44.2	38.2	55.1	▼ 42.2	45.6	74.7	48.1	89.9	▼ 64.6
	Scenario 4c	25.5	29.0	29.7	47.3	▼ 32.9	31.2	45.1	38.2	56.0	▼ 42.6	45.9	75.1	50.0	88.5	▼ 64.9
Veh Miles of Travel (veh-mi)	No Action NA	17 K	19 K	19 K	23 K	▼ 20 K	20 K	23 K	22 K	25 K	▼ 22 K	23 K	23 K	25 K	24 K	▼ 24 K
	Existing Config X1	17 K	19 K	19 K	24 K	▼ 20 K	20 K	23 K	22 K	25 K	▼ 22 K	23 K	23 K	25 K	24 K	▼ 24 K
	EIS ROD <sup>5</sup> E1	18 K	19 K	19 K	24 K	▲ 20 K	20 K	23 K	22 K	26 K	▼ 23 K	23 K	24 K	26 K	25 K	▼ 24 K
	Scenario 3a	18 K	19 K	20 K	24 K	▲ 20 K	20 K	24 K	23 K	27 K	▲ 24 K	24 K	30 K	27 K	33 K	▲ 28 K
	Scenario 3b	18 K	19 K	20 K	24 K	▲ 20 K	20 K	24 K	23 K	28 K	▲ 24 K	24 K	30 K	27 K	33 K	▲ 28 K
	Scenario 3c	18 K	19 K	20 K	24 K	▲ 20 K	20 K	24 K	23 K	26 K	▲ 23 K	24 K	28 K	27 K	30 K	▲ 27 K
	Scenario 4a	17 K	19 K	19 K	23 K	▼ 20 K	20 K	23 K	22 K	25 K	▼ 22 K	22 K	23 K	25 K	24 K	▼ 24 K
	Scenario 4b	18 K	19 K	19 K	24 K	▼ 20 K	20 K	23 K	22 K	25 K	▼ 23 K	23 K	23 K	25 K	24 K	▼ 24 K
	Scenario 4c	17 K	19 K	19 K	24 K	▼ 20 K	20 K	23 K	22 K	25 K	▼ 23 K	23 K	23 K	25 K	24 K	▼ 24 K
Veh Hours of Travel (veh-hrs)	No Action NA	320	360	370	560	▼ 400	390	550	480	690	▼ 530	570	940	620	1,010	▼ 790
	Existing Config X1	320	360	370	570	▼ 410	390	550	480	700	▼ 530	570	940	630	1,090	▼ 810
	EIS ROD <sup>5</sup> E1	310	350	360	490	▲ 380	380	490	420	560	▲ 460	520	1,050	580	1,040	▼ 800
	Scenario 3a	310	340	350	460	▲ 370	370	440	410	560	▲ 450	450	730	510	870	▲ 640
	Scenario 3b	310	340	360	490	▲ 380	370	440	420	590	▲ 460	450	710	530	910	▲ 650
	Scenario 3c	310	340	350	480	▲ 370	380	430	410	540	▲ 440	510	660	560	830	▲ 640
	Scenario 4a	320	360	370	550	▼ 400	390	560	490	660	▼ 530	620	940	620	960	▼ 790
	Scenario 4b	320	360	380	580	▼ 410	400	550	480	690	▼ 530	580	930	610	1,120	▼ 810
	Scenario 4c	320	360	380	590	▼ 410	400	560	480	700	▼ 540	580	930	630	1,100	▼ 810
Veh Hours of Delay (veh-hrs)	No Action NA	70	90	100	220	▼ 120	110	220	170	330	▼ 210	250	610	270	670	▼ 450
	Existing Config X1	70	90	100	230	▼ 120	110	220	170	340	▼ 210	250	610	270	740	▼ 470
	EIS ROD <sup>5</sup> E1	60	80	80	150	▲ 90	90	160	100	190	▲ 140	180	720	220	690	▼ 450
	Scenario 3a	60	70	70	120	▲ 80	80	90	80	170	▲ 110	110	350	120	470	▲ 260
	Scenario 3b	60	70	70	140	▲ 90	80	100	80	190	▲ 110	110	320	140	610	▲ 300
	Scenario 3c	60	70	70	130	▲ 80	90	80	80	160	▲ 100	170	280	180	480	▲ 280
	Scenario 4a	70	90	100	220	▼ 120	110	220	170	310	▼ 200	310	610	270	610	▼ 450
	Scenario 4b	70	90	100	230	▼ 120	110	220	170	330	▼ 210	260	600	260	770	▼ 470
	Scenario 4c	70	90	100	250	▼ 130	110	230	170	340	▼ 210	260	600	280	750	▼ 470

- Notes:  
1. Total or Average of AM and PM peak hour plus NB and SB traffic  
2. MOE results based on FREEVAL Methodology from 2010 Highway Capacity Manual, TRB  
3. Traffic volume demand from CDM-Smith Tolling and Revenue Study, November 14, 2013  
4. MOE results are a composite of both General Purpose and Tolle Express Lanes  
5. EIS Phase 1 ROD Revised & ROD 2 E1

I-25 Managed Lanes - Traffic Operations Analysis (General Purpose Lanes Only<sup>4</sup>)

SH 66 to SH 56

Measures of Effectiveness <sup>2</sup> (MOE)		2015					2025					2035				
		AM		PM		Avg or Total <sup>1</sup>	AM		PM		Avg or Total <sup>1</sup>	AM		PM		Avg or Total <sup>1</sup>
		SB	NB	SB	NB		SB	NB	SB	NB		SB	NB	SB	NB	
Travel Time per Veh (min)	No Action NA	7.9	8.1	8.2	10.1	▼ 8.6	8.4	10.1	9.3	11.7	▼ 9.9	10.5	17.7	10.6	18.0	▼ 14.2
	Existing Config X1	7.8	8.1	8.2	10.2	▼ 8.6	8.4	10.1	9.3	11.8	▼ 9.9	10.6	17.7	10.6	19.4	▼ 14.6
	EIS ROD <sup>5</sup> E1	7.7	7.9	7.9	8.9	▲ 8.1	8.1	9.1	8.2	9.6	▲ 8.8	9.5	21.6	10.0	19.6	▼ 15.2
	Scenario 3a	7.6	7.7	7.7	8.4	▲ 7.9	7.9	8.0	7.8	9.2	▲ 8.2	8.4	11.4	8.5	12.7	▲ 10.3
	Scenario 3b	7.7	7.8	7.7	8.8	▲ 8.0	7.9	8.1	7.9	9.5	▲ 8.4	8.3	11.1	8.8	13.3	▲ 10.4
	Scenario 3c	7.7	7.7	7.7	8.7	▲ 8.0	8.0	7.9	7.9	9.1	▲ 8.2	9.3	10.8	9.2	12.6	▲ 10.5
	Scenario 4a	7.9	8.1	8.2	9.9	▼ 8.5	8.4	10.2	9.3	11.3	▼ 9.8	12.1	17.7	10.6	17.0	▼ 14.4
	Scenario 4b	7.9	8.1	8.3	10.2	▼ 8.6	8.4	10.1	9.3	11.6	▼ 9.9	10.7	17.4	10.4	19.7	▼ 14.6
	Scenario 4c	7.9	8.1	8.3	10.4	▼ 8.7	8.4	10.2	9.3	11.8	▼ 9.9	10.7	17.5	10.8	19.5	▼ 14.6
Speed (mph)	No Action NA	54.1	52.2	51.5	42.0	▼ 50.0	50.4	42.0	45.4	36.2	▼ 43.5	40.2	24.5	39.6	23.8	▼ 32.0
	Existing Config X1	54.2	52.2	51.4	41.5	▼ 49.8	50.4	42.1	45.7	35.9	▼ 43.5	40.0	24.5	39.6	22.1	▼ 31.6
	EIS ROD <sup>5</sup> E1	55.4	53.7	53.6	47.5	▲ 52.6	52.5	46.6	51.6	44.2	▲ 48.7	44.1	20.4	42.2	22.0	▼ 32.2
	Scenario 3a	55.7	54.9	55.3	50.4	▲ 54.1	53.9	53.1	54.3	46.3	▲ 51.9	50.6	37.4	50.0	33.5	▲ 42.9
	Scenario 3b	55.5	54.6	54.8	48.4	▲ 53.3	53.6	52.3	53.7	44.5	▲ 51.0	50.9	38.5	48.3	31.8	▲ 42.4
	Scenario 3c	55.4	54.9	55.1	48.9	▲ 53.6	52.7	53.3	53.8	46.6	▲ 51.6	44.4	39.2	44.9	33.0	▲ 40.4
	Scenario 4a	53.9	52.3	51.5	42.6	▼ 50.1	50.2	41.8	45.3	37.4	▼ 43.7	35.3	24.6	39.7	25.2	▼ 31.2
	Scenario 4b	54.0	52.3	51.3	41.4	▼ 49.8	50.1	42.2	45.3	36.5	▼ 43.5	39.7	25.0	40.5	21.7	▼ 31.7
	Scenario 4c	54.1	52.1	51.3	40.5	▼ 49.5	50.1	41.5	45.4	35.9	▼ 43.2	39.6	24.8	39.2	21.9	▼ 31.4
Level of Service (LOS)	No Action NA	C	D	D	E	D	D	E	E	F	E	F	F	F	F	F
	Existing Config X1	C	D	D	F	D	D	E	E	F	E	F	F	F	F	F
	EIS ROD <sup>5</sup> E1	C	C	C	E	D	D	E	D	E	D	E	F	E	F	F
	Scenario 3a	C	C	C	D	C	C	D	C	E	D	D	F	D	F	E
	Scenario 3b	C	C	C	D	D	C	D	C	E	D	D	F	D	F	E
	Scenario 3c	C	C	C	D	C	D	D	C	E	D	E	E	E	F	E
	Scenario 4a	C	D	D	E	D	D	E	E	F	E	F	F	F	F	F
	Scenario 4b	C	D	D	F	D	D	E	E	F	E	F	F	F	F	F
	Scenario 4c	C	D	D	F	D	D	F	E	F	E	F	F	F	F	F
Average Density (pc/mi/m)	No Action NA	25.5	28.7	29.5	44.8	▼ 32.1	30.8	44.2	38.1	55.2	▼ 42.1	45.1	76.1	49.3	81.2	▼ 62.9
	Existing Config X1	25.3	28.8	29.6	45.7	▼ 32.3	30.7	44.1	37.8	55.9	▼ 42.1	45.3	75.9	49.4	87.7	▼ 64.6
	EIS ROD <sup>5</sup> E1	22.7	25.7	25.8	35.4	▲ 27.4	27.4	36.0	29.0	40.6	▲ 33.2	36.9	78.0	41.1	76.6	▼ 58.2
	Scenario 3a	22.3	23.9	23.3	31.4	▲ 25.2	25.5	27.1	25.1	37.6	▲ 28.8	30.6	47.5	32.2	57.0	▲ 41.9
	Scenario 3b	22.7	24.3	23.8	34.2	▲ 26.3	25.8	28.4	25.9	40.1	▲ 30.0	29.8	46.6	34.1	61.2	▲ 42.9
	Scenario 3c	22.6	23.8	23.4	33.3	▲ 25.8	27.1	26.1	25.6	36.8	▲ 28.9	35.1	44.0	35.3	56.0	▲ 42.6
	Scenario 4a	25.9	28.8	29.9	44.0	▼ 32.1	31.4	44.6	38.9	53.1	▼ 42.0	50.4	75.8	50.0	77.1	▼ 63.3
	Scenario 4b	25.6	28.7	29.7	46.0	▼ 32.5	31.2	44.2	38.2	55.1	▼ 42.2	45.6	74.7	48.1	89.9	▼ 64.6
	Scenario 4c	25.5	29.0	29.7	47.3	▼ 32.9	31.2	45.1	38.2	56.0	▼ 42.6	45.9	75.1	50.0	88.5	▼ 64.9
Veh Miles of Travel (veh-mi)	No Action NA	17 K	19 K	19 K	23 K	▲ 20 K	20 K	23 K	22 K	25 K	▲ 22 K	23 K	23 K	25 K	24 K	▲ 24 K
	Existing Config X1	17 K	19 K	19 K	24 K	▲ 20 K	20 K	23 K	22 K	25 K	▲ 22 K	23 K	23 K	25 K	24 K	▲ 24 K
	EIS ROD <sup>5</sup> E1	17 K	18 K	18 K	22 K	▲ 19 K	19 K	22 K	20 K	23 K	▲ 21 K	22 K	21 K	23 K	22 K	▼ 22 K
	Scenario 3a	16 K	17 K	17 K	21 K	▼ 18 K	18 K	19 K	18 K	23 K	▼ 20 K	20 K	23 K	21 K	25 K	▼ 23 K
	Scenario 3b	17 K	18 K	17 K	22 K	▼ 18 K	18 K	20 K	19 K	23 K	▼ 20 K	20 K	24 K	22 K	25 K	▲ 23 K
	Scenario 3c	17 K	17 K	17 K	21 K	▼ 18 K	19 K	18 K	18 K	22 K	▼ 20 K	21 K	22 K	21 K	24 K	▼ 22 K
	Scenario 4a	17 K	19 K	19 K	23 K	▲ 20 K	20 K	23 K	22 K	25 K	▲ 22 K	22 K	23 K	25 K	24 K	▲ 24 K
	Scenario 4b	18 K	19 K	19 K	24 K	▲ 20 K	20 K	23 K	22 K	25 K	▲ 23 K	23 K	23 K	25 K	24 K	▲ 24 K
	Scenario 4c	17 K	19 K	19 K	24 K	▲ 20 K	20 K	23 K	22 K	25 K	▲ 23 K	23 K	23 K	25 K	24 K	▲ 24 K
Veh Hours of Travel (veh-hrs)	No Action NA	323	359	374	559	▼ 404	391	552	483	687	▼ 528	572	945	625	1,008	▼ 787
	Existing Config X1	321	360	375	570	▼ 406	390	550	479	696	▼ 529	575	943	625	1,087	▼ 807
	EIS ROD <sup>5</sup> E1	304	337	345	465	▲ 363	368	473	388	528	▲ 439	497	1,014	549	988	▼ 762
	Scenario 3a	294	314	307	414	▲ 332	337	358	332	495	▲ 380	405	625	424	745	▲ 550
	Scenario 3b	302	320	318	451	▲ 348	345	375	346	527	▲ 398	399	613	455	797	▲ 566
	Scenario 3c	303	314	314	440	▲ 342	363	345	343	480	▲ 383	471	573	473	720	▲ 559
	Scenario 4a	324	360	373	550	▼ 402	392	558	486	665	▼ 525	622	944	623	960	▼ 787
	Scenario 4b	325	359	376	576	▼ 409	396	553	485	690	▼ 531	579	932	610	1,118	▼ 810
	Scenario 4c	323	362	376	591	▼ 413	396	563	484	698	▼ 535	583	933	634	1,097	▼ 812
Veh Hours of Delay (veh-hrs)	No Action NA	74	91	99	224	▼ 122	110	220	170	332	▼ 208	251	614	271	666	▼ 451
	Existing Config X1	73	92	99	232	▼ 124	109	219	167	339	▼ 208	253	614	271	744	▼ 470
	EIS ROD <sup>5</sup> E1	64	78	81	150	▲ 93	92	158	102	195	▲ 137	184	718	218	687	▼ 452
	Scenario 3a	60	68	65	116	▲ 77	77	86	75	168	▲ 101	112	339	121	454	▲ 257
	Scenario 3b	63	70	69	139	▲ 85	81	95	81	192	▲ 112	109	308	141	594	▲ 288
	Scenario 3c	63	68	67	133	▲ 83	90	83	80	161	▲ 103	173	271	177	462	▲ 271
	Scenario 4a	74	91	99	215	▼ 120	111	225	172	310	▼ 204	314	612	270	615	▼ 453
	Scenario 4b	74	91	100	235	▼ 125	113	220	171	330	▼ 208	258	599	257	771	▼ 471
	Scenario 4c	74	93	100	249	▼ 129	113	229	170	340	▼ 213	261	602	279	753	▼ 474

Notes:

1. Total or Average of AM and PM peak hour plus NB and SB traffic
2. MOE results based on FREEVAL Methodology from 2010 Highway Capacity Manual, TRB
3. Traffic volume demand from CDM-Smith Tolling and Revenue Study, November 14, 2013
4. MOE results reflect only travel in general purpose lanes
5. EIS Phase 1 ROD Revised & ROD 2 E1



**I-25 Managed Lanes - Traffic Operations Analysis (Tolled Express Lanes Only<sup>4</sup>)**  
**SH 66 to SH 56**

Measures of Effectiveness <sup>2</sup> (MOE)		2015					2025					2035				
		AM		PM		Avg or	AM		PM		Avg or	AM		PM		Avg or
		SB	NB	SB	NB	Total <sup>1</sup>	SB	NB	SB	NB	Total <sup>1</sup>	SB	NB	SB	NB	Total <sup>1</sup>
Travel Time per Veh (min)	No Action NA	7.9	8.1	8.2	10.1	▼ 8.6	8.4	10.1	9.3	11.7	▼ 9.9	10.5	17.7	10.6	18.0	▼ 14.2
	Existing Config X1	7.8	8.1	8.2	10.2	▼ 8.6	8.4	10.1	9.3	11.8	▼ 9.9	10.6	17.7	10.6	19.4	▼ 14.6
	EIS ROD <sup>5</sup> E1	6.5	6.5	6.5	6.8	▲ 6.6	6.6	7.0	6.6	7.4	▲ 6.9	7.4	10.4	7.3	9.2	▲ 8.6
	Scenario 3a	6.2	6.2	6.2	6.2	▲ 6.2	6.2	6.2	6.2	6.2	▲ 6.2	6.2	6.9	6.3	7.1	▲ 6.6
	Scenario 3b	6.2	6.2	6.2	6.2	▲ 6.2	6.2	6.2	6.2	6.3	▲ 6.2	6.2	6.7	6.3	7.0	▲ 6.6
	Scenario 3c	6.3	6.3	6.3	6.4	▲ 6.3	6.3	6.4	6.4	6.5	▲ 6.4	7.3	6.8	7.1	7.5	▲ 7.2
	Scenario 4a	7.9	8.1	8.2	9.9	▼ 8.5	8.4	10.2	9.3	11.3	▼ 9.8	12.1	17.7	10.6	17.0	▼ 14.4
	Scenario 4b	7.9	8.1	8.3	10.2	▼ 8.6	8.4	10.1	9.3	11.6	▼ 9.9	10.7	17.4	10.4	19.7	▼ 14.6
	Scenario 4c	7.9	8.1	8.3	10.4	▼ 8.7	8.4	10.2	9.3	11.8	▼ 9.9	10.7	17.5	10.8	19.5	▼ 14.6
Speed (mph)	No Action NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Existing Config X1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	EIS ROD <sup>5</sup> E1	70.0	69.6	70.0	69.6	▲ 69.8	70.0	69.5	70.0	69.7	▲ 69.8	70.0	69.7	70.0	69.9	▲ 69.9
	Scenario 3a	67.6	67.5	67.6	67.3	▼ 67.5	67.4	67.2	67.3	67.1	▲ 67.3	67.2	62.7	67.1	62.8	▼ 65.0
	Scenario 3b	67.6	67.6	67.6	67.3	▼ 67.5	67.5	67.3	67.4	67.0	▼ 67.3	67.3	63.3	67.2	62.8	▼ 65.1
	Scenario 3c	68.9	68.0	68.7	67.8	▲ 68.3	68.8	67.8	68.6	67.7	▲ 68.2	68.6	64.3	68.5	61.7	▼ 65.8
	Scenario 4a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Scenario 4b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Scenario 4c	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Level of Service (LOS)	No Action NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Existing Config X1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	EIS ROD <sup>5</sup> E1	A	A	A	A	A	A	A	A	A	A	A	B	B	B	B
	Scenario 3a	A	A	A	A	A	A	A	B	A	A	A	B	B	B	B
	Scenario 3b	A	A	A	A	A	A	A	A	A	A	A	B	A	B	B
	Scenario 3c	A	A	A	A	A	A	B	A	A	A	A	B	B	B	B
	Scenario 4a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Scenario 4b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Scenario 4c	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Average Density (pc/mi/n)	No Action NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Existing Config X1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	EIS ROD <sup>5</sup> E1	1.5	1.6	2.0	3.8	▲ 2.2	1.3	2.9	4.5	4.7	▲ 3.3	2.8	5.7	4.8	7.5	▲ 5.2
	Scenario 3a	2.8	3.8	6.4	7.1	▼ 5.0	4.0	10.9	11.2	8.9	▼ 8.8	6.7	14.8	12.5	17.4	▼ 12.8
	Scenario 3b	1.7	3.2	5.2	5.1	▲ 3.8	3.4	9.5	9.9	8.9	▼ 7.9	7.3	13.6	10.5	16.5	▼ 12.0
	Scenario 3c	1.7	3.7	5.6	6.0	▼ 4.3	1.8	11.8	9.8	8.6	▼ 8.0	5.6	12.9	11.7	15.3	▼ 11.4
	Scenario 4a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Scenario 4b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Scenario 4c	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Veh Miles of Travel (veh-mi)	No Action NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Existing Config X1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	EIS ROD <sup>5</sup> E1	1 K	1 K	1 K	2 K	▼ 1.1	1 K	1 K	2 K	2 K	▼ 1.7	1 K	3 K	2 K	4 K	▼ 2.6
	Scenario 3a	1 K	2 K	3 K	3 K	▲ 2.4	2 K	5 K	5 K	4 K	▲ 4.2	3 K	7 K	6 K	8 K	▲ 5.8
	Scenario 3b	1 K	2 K	3 K	2 K	▲ 1.8	2 K	5 K	5 K	4 K	▲ 3.8	3 K	6 K	5 K	7 K	▲ 5.5
	Scenario 3c	1 K	2 K	3 K	3 K	▲ 2.1	1 K	6 K	5 K	4 K	▲ 3.8	3 K	6 K	6 K	7 K	▲ 5.2
	Scenario 4a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Scenario 4b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Scenario 4c	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Veh Hours of Travel (veh-hrs)	No Action NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Existing Config X1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	EIS ROD <sup>5</sup> E1	11	11	14	27	▲ 16	9	21	32	33	▲ 24	20	40	34	53	▲ 37
	Scenario 3a	20	27	46	51	▼ 36	29	77	79	63	▼ 62	47	104	89	123	▼ 91
	Scenario 3b	12	23	37	36	▲ 27	24	67	70	63	▼ 56	51	96	75	116	▼ 85
	Scenario 3c	12	26	40	43	▼ 30	13	83	69	61	▼ 56	40	91	83	108	▼ 81
	Scenario 4a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Scenario 4b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Scenario 4c	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Veh Hours of Delay (veh-hrs)	No Action NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Existing Config X1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	EIS ROD <sup>5</sup> E1	-	-	-	0	▲ 0	-	0	-	0	▲ 0	-	0	-	-	▲ 0
	Scenario 3a	0	1	1	1	▼ 1	1	2	2	2	▼ 2	1	13	2	16	▼ 8
	Scenario 3b	0	1	1	1	▼ 1	1	2	2	2	▼ 1	1	9	2	15	▼ 7
	Scenario 3c	0	0	1	1	▲ 0	0	1	1	1	▲ 1	1	6	1	16	▼ 6
	Scenario 4a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Scenario 4b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Scenario 4c	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:

1. Total or Average of AM and PM peak hour plus NB and SB traffic
2. MOE results based on FREEVAL Methodology from 2010 Highway Capacity Manual, TRB
3. Traffic volume demand from CDM-Smith Tolling and Revenue Study, November 14, 2013
4. MOE results reflect travel in tolled express lanes, plus general purpose lane travel where tolled express lanes do not exist
5. EIS Phase 1 ROD Revised & ROD 2 E1

**I-25 Managed Lanes - Traffic Operations Analysis (Composite of GP and TE Lanes<sup>4</sup>)**  
**SH 56 to SH 392**

Measures of Effectiveness <sup>2</sup> (MOE)		2015					2025					2035				
		AM		PM		Avg or Total <sup>1</sup>	AM		PM		Avg or Total <sup>1</sup>	AM		PM		Avg or Total <sup>1</sup>
		SB	NB	SB	NB		SB	NB	SB	NB		SB	NB	SB	NB	
Travel Time per Veh (min)	No Action NA	13.1	15.4	18.8	17.0	▼ 16.1	13.9	19.3	24.0	20.0	▼ 19.3	16.3	21.3	32.3	22.5	▼ 23.1
	Existing Config X1	13.1	15.4	18.3	17.2	▼ 16.0	13.9	19.4	24.2	20.2	▼ 19.4	16.3	21.5	29.7	22.7	▼ 22.6
	EIS ROD <sup>5</sup> E1	13.0	14.9	18.3	16.3	▼ 15.6	13.6	18.3	24.6	19.4	▼ 19.0	15.2	21.4	29.7	21.8	▼ 22.1
	Scenario 3a	12.6	13.5	14.4	14.0	▲ 13.6	12.9	14.0	15.0	14.8	▲ 14.2	13.7	19.2	19.5	19.3	▲ 18.0
	Scenario 3b	12.6	13.6	14.6	14.3	▲ 13.8	12.9	14.2	14.9	15.0	▲ 14.3	13.4	18.7	21.1	19.3	▲ 18.2
	Scenario 3c	12.6	13.5	14.4	14.1	▲ 13.7	13.1	13.6	14.8	14.8	▲ 14.1	13.6	18.8	19.9	19.0	▲ 17.9
	Scenario 4a	13.2	15.5	18.9	17.1	▼ 16.2	13.9	19.4	23.8	20.8	▼ 19.5	16.3	23.3	30.9	23.7	▼ 23.6
	Scenario 4b	13.2	15.4	18.2	17.3	▼ 16.0	13.9	19.5	24.0	20.9	▼ 19.6	16.3	23.1	29.3	23.6	▼ 23.1
	Scenario 4c	13.1	15.4	18.9	17.5	▼ 16.2	13.9	19.5	24.3	20.8	▼ 19.6	16.4	23.0	28.5	23.8	▼ 22.9
Speed (mph)	No Action NA	54.4	46.7	38.0	42.3	▼ 45.4	51.9	37.4	30.7	36.4	▼ 39.1	43.9	34.2	24.3	32.1	▼ 33.6
	Existing Config X1	54.3	46.8	39.0	42.1	▼ 45.6	51.2	37.2	30.3	35.9	▼ 38.7	43.9	33.8	25.9	31.9	▼ 33.9
	EIS ROD <sup>5</sup> E1	55.0	48.8	39.3	44.9	▼ 47.0	52.8	39.8	30.6	38.3	▼ 40.4	47.3	34.6	26.5	34.3	▼ 35.7
	Scenario 3a	57.1	54.0	49.7	51.6	▲ 53.1	55.3	51.9	48.1	49.0	▲ 51.1	52.5	38.4	38.5	38.7	▲ 42.0
	Scenario 3b	57.1	53.8	49.0	50.5	▲ 52.6	55.3	51.3	48.8	48.7	▲ 51.0	53.7	39.5	35.8	38.9	▲ 42.0
	Scenario 3c	57.3	53.4	49.7	51.5	▲ 53.0	55.1	53.5	48.8	49.2	▲ 51.7	52.9	39.3	38.0	39.3	▲ 42.4
	Scenario 4a	54.5	46.9	37.9	42.0	▼ 45.3	51.3	37.0	30.7	34.9	▼ 38.5	43.5	31.2	25.2	30.9	▼ 32.7
	Scenario 4b	54.6	46.8	39.2	41.3	▼ 45.5	51.3	36.9	30.6	34.9	▼ 38.4	43.5	31.4	26.2	30.9	▼ 33.0
	Scenario 4c	54.2	46.9	37.8	41.2	▼ 45.0	51.2	36.9	30.3	34.9	▼ 38.3	43.6	31.7	26.7	30.7	▼ 33.2
Level of Service (LOS)	No Action NA	C	E	F	E	E	D	F	F	F	F	E	F	F	F	F
	Existing Config X1	C	E	F	E	E	D	F	F	F	F	E	F	F	F	F
	EIS ROD <sup>5</sup> E1	C	D	E	E	E	D	F	F	F	E	E	F	F	F	F
	Scenario 3a	C	C	D	D	D	C	D	D	D	D	D	E	E	E	E
	Scenario 3b	C	D	D	D	D	C	D	D	D	D	C	E	F	E	E
	Scenario 3c	C	C	D	D	D	C	D	D	D	D	D	E	F	E	E
	Scenario 4a	C	E	F	E	E	D	F	F	F	F	E	F	F	F	F
	Scenario 4b	C	E	F	E	E	D	F	F	F	F	E	F	F	F	F
	Scenario 4c	C	E	F	F	E	D	F	F	F	F	E	F	F	F	F
Average Density (pc/mi/m)	No Action NA	24.9	36.1	49.3	43.4	▼ 38.4	29.3	52.0	59.2	53.5	▼ 48.5	41.4	57.1	70.8	59.6	▼ 57.2
	Existing Config X1	24.9	36.2	48.4	43.9	▼ 38.3	29.4	52.4	59.3	54.4	▼ 48.9	41.4	57.4	67.7	60.2	▼ 56.7
	EIS ROD <sup>5</sup> E1	23.3	33.1	44.8	39.0	▼ 35.0	27.6	45.7	55.8	47.4	▼ 44.1	35.4	53.6	63.8	53.5	▼ 51.6
	Scenario 3a	19.7	25.7	31.2	28.1	▲ 26.2	22.3	28.2	33.2	32.0	▲ 28.9	26.6	44.2	44.5	43.5	▲ 39.7
	Scenario 3b	20.3	26.1	31.8	29.7	▲ 27.0	22.3	29.0	33.1	32.2	▲ 29.2	25.5	42.5	48.0	43.6	▲ 39.9
	Scenario 3c	20.2	25.5	31.1	28.6	▲ 26.4	23.6	26.6	32.7	31.4	▲ 28.6	26.5	43.1	45.3	43.2	▲ 39.5
	Scenario 4a	25.0	36.5	49.4	43.8	▼ 38.7	29.5	52.8	58.9	55.8	▼ 49.2	41.4	62.3	69.3	62.4	▼ 58.8
	Scenario 4b	25.1	36.3	47.7	44.5	▼ 38.4	29.4	53.0	59.2	55.9	▼ 49.4	41.6	61.7	67.5	62.4	▼ 58.3
	Scenario 4c	24.8	36.4	49.4	45.3	▼ 39.0	29.4	53.0	59.7	55.7	▼ 49.4	41.7	61.5	66.2	62.7	▼ 58.0
Veh Miles of Travel (veh-mi)	No Action NA	29 K	37 K	40 K	40 K	▼ 36 K	33 K	42 K	38 K	42 K	▼ 39 K	39 K	42 K	36 K	41 K	▼ 40 K
	Existing Config X1	29 K	37 K	40 K	40 K	▼ 36 K	33 K	42 K	38 K	42 K	▼ 39 K	39 K	42 K	37 K	41 K	▼ 40 K
	EIS ROD <sup>5</sup> E1	29 K	37 K	41 K	40 K	▼ 37 K	33 K	42 K	40 K	43 K	▼ 40 K	40 K	43 K	40 K	42 K	▼ 41 K
	Scenario 3a	29 K	38 K	47 K	42 K	▲ 39 K	34 K	46 K	53 K	47 K	▲ 45 K	42 K	53 K	57 K	52 K	▲ 51 K
	Scenario 3b	29 K	38 K	47 K	42 K	▲ 39 K	34 K	46 K	53 K	48 K	▲ 45 K	42 K	53 K	56 K	53 K	▲ 51 K
	Scenario 3c	29 K	38 K	47 K	42 K	▲ 39 K	34 K	47 K	53 K	48 K	▲ 45 K	42 K	53 K	57 K	53 K	▲ 51 K
	Scenario 4a	29 K	37 K	40 K	40 K	▼ 36 K	33 K	42 K	38 K	42 K	▼ 39 K	39 K	42 K	37 K	41 K	▼ 40 K
	Scenario 4b	29 K	37 K	40 K	40 K	▼ 36 K	33 K	42 K	38 K	42 K	▼ 39 K	39 K	41 K	37 K	41 K	▼ 40 K
	Scenario 4c	29 K	37 K	40 K	40 K	▼ 36 K	33 K	42 K	38 K	42 K	▼ 39 K	39 K	42 K	37 K	41 K	▼ 40 K
Veh Hours of Travel (veh-hrs)	No Action NA	530	790	1,050	940	▼ 830	630	1,120	1,250	1,150	▼ 1,040	890	1,220	1,490	1,280	▼ 1,220
	Existing Config X1	530	790	1,030	950	▼ 830	640	1,130	1,260	1,170	▼ 1,050	890	1,230	1,430	1,290	▲ 1,210
	EIS ROD <sup>5</sup> E1	530	760	1,050	900	▼ 810	630	1,060	1,320	1,110	▼ 1,030	840	1,230	1,500	1,240	▲ 1,200
	Scenario 3a	510	700	950	810	▲ 740	610	890	1,100	960	▲ 890	790	1,380	1,470	1,350	▼ 1,250
	Scenario 3b	510	700	960	830	▲ 750	610	900	1,090	980	▲ 900	780	1,340	1,570	1,360	▼ 1,260
	Scenario 3c	510	710	950	820	▲ 750	610	870	1,080	970	▲ 880	790	1,350	1,500	1,340	▼ 1,250
	Scenario 4a	530	790	1,050	950	▼ 830	640	1,140	1,250	1,200	▼ 1,060	900	1,330	1,460	1,330	▼ 1,260
	Scenario 4b	530	790	1,020	970	▼ 830	640	1,140	1,250	1,200	▼ 1,060	900	1,320	1,420	1,330	▼ 1,240
	Scenario 4c	530	790	1,050	980	▼ 840	640	1,140	1,260	1,200	▼ 1,060	900	1,310	1,400	1,340	▼ 1,240
Veh Hours of Delay (veh-hrs)	No Action NA	120	260	480	370	▼ 310	170	520	720	560	▼ 490	340	630	980	690	▼ 660
	Existing Config X1	120	260	460	380	▼ 310	170	530	730	580	▼ 500	340	630	900	700	▲ 640
	EIS ROD <sup>5</sup> E1	110	230	460	330	▼ 280	160	450	810	510	▼ 480	270	620	1,000	640	▲ 630
	Scenario 3a	90	160	280	210	▲ 190	120	230	370	290	▲ 250	200	650	1,060	620	▲ 630
	Scenario 3b	100	170	290	230	▲ 200	120	250	390	300	▲ 270	180	610	1,190	630	▼ 650
	Scenario 3c	100	160	280	220	▲ 190	130	210	360	290	▲ 250	200	620	1,110	610	▲ 640
	Scenario 4a	120	260	480	380	▼ 310	170	530	710	610	▼ 510	340	740	940	740	▼ 690
	Scenario 4b	120	260	450	390	▼ 310	170	540	720	610	▼ 510	340	720	890	750	▼ 680
	Scenario 4c	120	260	490	410	▼ 320	170	540	730	610	▼ 510	340	720	860	750	▼ 670

- Notes:  
1. Total or Average of AM and PM peak hour plus NB and SB traffic  
2. MOE results based on FREEVAL Methodology from 2010 Highway Capacity Manual, TRB  
3. Traffic volume demand from CDM-Smith Tolling and Revenue Study, November 14, 2013  
4. MOE results are a composite of both General Purpose and Tolleed Express Lanes  
5. EIS Phase 1 ROD Revised & ROD 2 E1

**I-25 Managed Lanes - Traffic Operations Analysis (General Purpose Lanes Only<sup>4</sup>)**  
**SH 56 to SH 392**

Measures of Effectiveness <sup>2</sup> (MOE)		2015					2025					2035				
		AM		PM		Avg or Total <sup>1</sup>	AM		PM		Avg or Total <sup>1</sup>	AM		PM		Avg or Total <sup>1</sup>
		SB	NB	SB	NB		SB	NB	SB	NB		SB	NB	SB	NB	
Travel Time per Veh (min)	No Action NA	13.1	15.4	18.8	17.0	▼ 16.1	13.9	19.3	24.0	20.0	▼ 19.3	16.3	21.3	32.3	22.5	▼ 23.1
	Existing Config X1	13.1	15.4	18.3	17.2	▼ 16.0	13.9	19.4	24.2	20.2	▼ 19.4	16.3	21.5	29.7	22.7	▼ 22.6
	EIS ROD <sup>5</sup> E1	13.0	14.9	18.3	16.3	▼ 15.6	13.6	18.3	24.7	19.4	▼ 19.0	15.2	21.5	29.9	21.9	▼ 22.1
	Scenario 3a	12.7	13.7	15.1	14.4	▲ 14.0	13.1	14.7	16.1	15.5	▲ 14.9	14.1	21.0	21.9	21.2	▲ 19.6
	Scenario 3b	12.7	13.8	15.3	14.7	▲ 14.1	13.1	14.9	16.1	15.7	▲ 15.0	13.9	20.6	23.8	21.2	▲ 19.9
	Scenario 3c	12.7	13.7	15.1	14.5	▲ 14.0	13.2	14.3	15.9	15.5	▲ 14.7	14.1	20.6	22.4	20.9	▲ 19.5
	Scenario 4a	13.2	15.5	18.9	17.1	▼ 16.2	13.9	19.4	23.8	20.8	▼ 19.5	16.3	23.3	30.9	23.7	▼ 23.6
	Scenario 4b	13.2	15.4	18.2	17.3	▼ 16.0	13.9	19.5	24.0	20.9	▼ 19.6	16.3	23.1	29.3	23.6	▼ 23.1
	Scenario 4c	13.1	15.4	18.9	17.5	▼ 16.2	13.9	19.5	24.3	20.8	▼ 19.6	16.4	23.0	28.5	23.8	▼ 22.9
Speed (mph)	No Action NA	54.5	46.9	37.9	42.2	▼ 45.4	51.6	37.4	30.6	36.3	▼ 39.0	43.7	34.1	24.3	32.2	▼ 33.6
	Existing Config X1	54.5	46.9	38.9	41.9	▼ 45.6	51.5	37.3	30.4	35.8	▼ 38.8	43.7	33.8	26.0	31.9	▼ 33.9
	EIS ROD <sup>5</sup> E1	55.0	48.6	38.8	44.4	▼ 46.7	52.5	39.6	29.9	37.7	▼ 39.9	47.0	34.1	25.9	33.6	▼ 35.2
	Scenario 3a	56.7	52.8	47.3	50.4	▲ 51.8	54.8	49.3	44.6	46.7	▲ 48.9	50.9	34.8	33.6	35.1	▲ 38.6
	Scenario 3b	56.5	52.8	46.7	49.4	▲ 51.4	54.8	48.7	44.9	46.3	▲ 48.7	51.6	35.6	31.0	35.0	▲ 38.3
	Scenario 3c	56.5	52.7	47.3	50.0	▲ 51.6	54.3	50.7	45.0	46.9	▲ 49.2	50.9	35.6	32.9	35.5	▲ 38.7
	Scenario 4a	54.4	46.6	37.8	41.9	▼ 45.2	51.5	37.1	30.7	35.0	▼ 38.6	43.7	31.2	25.2	30.9	▼ 32.8
	Scenario 4b	54.4	46.8	39.1	41.5	▼ 45.5	51.5	37.0	30.5	34.8	▼ 38.5	43.6	31.5	26.2	30.8	▼ 33.0
	Scenario 4c	54.5	46.7	37.7	41.1	▼ 45.0	51.6	36.9	30.2	35.0	▼ 38.4	43.5	31.6	26.8	30.6	▼ 33.1
Level of Service (LOS)	No Action NA	C	E	F	E	E	D	F	F	F	F	E	F	F	F	F
	Existing Config X1	C	E	F	E	E	D	F	F	F	F	E	F	F	F	F
	EIS ROD <sup>5</sup> E1	C	D	F	E	E	D	F	F	F	F	E	F	F	F	F
	Scenario 3a	C	D	E	D	D	C	D	E	E	D	D	F	F	F	F
	Scenario 3b	C	D	E	D	D	C	D	E	E	D	D	F	F	F	F
	Scenario 3c	C	D	E	D	D	C	D	E	E	D	D	F	F	F	F
	Scenario 4a	C	E	F	E	E	D	F	F	F	F	E	F	F	F	F
	Scenario 4b	C	E	F	E	E	D	F	F	F	F	E	F	F	F	F
	Scenario 4c	C	E	F	F	E	D	F	F	F	F	E	F	F	F	F
Average Density (pc/mi/m)	No Action NA	24.9	36.1	49.3	43.4	▼ 38.4	29.3	52.0	59.2	53.5	▼ 48.5	41.4	57.1	70.8	59.6	▼ 57.2
	Existing Config X1	24.9	36.2	48.4	43.9	▼ 38.3	29.4	52.4	59.3	54.4	▼ 48.9	41.4	57.4	67.7	60.2	▼ 56.7
	EIS ROD <sup>5</sup> E1	23.5	33.4	46.1	39.6	▼ 35.6	27.8	46.6	58.1	48.8	▼ 45.4	36.3	54.9	66.5	55.2	▼ 53.2
	Scenario 3a	20.6	27.6	35.4	30.9	▲ 28.6	23.9	32.2	38.6	36.1	▲ 32.7	29.7	52.0	53.6	51.1	▲ 46.6
	Scenario 3b	21.0	27.8	35.9	32.2	▲ 29.2	23.9	33.0	38.5	36.5	▲ 33.0	28.8	50.1	58.2	51.4	▲ 47.1
	Scenario 3c	21.0	27.5	35.3	31.5	▲ 28.8	24.7	30.4	38.0	35.6	▲ 32.2	29.6	50.7	54.7	50.7	▲ 46.4
	Scenario 4a	25.0	36.5	49.4	43.8	▼ 38.7	29.5	52.8	58.9	55.8	▼ 49.2	41.4	62.3	69.3	62.4	▼ 58.8
	Scenario 4b	25.1	36.3	47.7	44.5	▼ 38.4	29.4	53.0	59.2	55.9	▼ 49.4	41.6	61.7	67.5	62.4	▼ 58.3
	Scenario 4c	24.8	36.4	49.4	45.3	▼ 39.0	29.4	53.0	59.7	55.7	▼ 49.4	41.7	61.5	66.2	62.7	▼ 58.0
Veh Miles of Travel (veh-mi)	No Action NA	29 K	37 K	40 K	40 K	▲ 36 K	33 K	42 K	38 K	42 K	▲ 39 K	39 K	42 K	36 K	41 K	▼ 40 K
	Existing Config X1	29 K	37 K	40 K	40 K	▲ 36 K	33 K	42 K	38 K	42 K	▲ 39 K	39 K	42 K	37 K	41 K	▼ 40 K
	EIS ROD <sup>5</sup> E1	29 K	37 K	40 K	40 K	▲ 36 K	33 K	41 K	39 K	41 K	▲ 39 K	39 K	41 K	38 K	41 K	▼ 40 K
	Scenario 3a	28 K	35 K	40 K	37 K	▼ 35 K	31 K	38 K	41 K	40 K	▼ 37 K	36 K	42 K	42 K	42 K	▲ 40 K
	Scenario 3b	28 K	35 K	40 K	38 K	▼ 35 K	31 K	38 K	41 K	40 K	▼ 38 K	35 K	42 K	42 K	42 K	▲ 40 K
	Scenario 3c	28 K	35 K	40 K	38 K	▼ 35 K	32 K	37 K	40 K	40 K	▼ 37 K	36 K	42 K	42 K	42 K	▲ 40 K
	Scenario 4a	29 K	37 K	40 K	40 K	▲ 36 K	33 K	42 K	38 K	42 K	▲ 39 K	39 K	42 K	37 K	41 K	▼ 40 K
	Scenario 4b	29 K	37 K	40 K	40 K	▲ 36 K	33 K	42 K	38 K	42 K	▲ 39 K	39 K	41 K	37 K	41 K	▼ 40 K
	Scenario 4c	29 K	37 K	40 K	40 K	▲ 36 K	33 K	42 K	38 K	42 K	▲ 39 K	39 K	42 K	37 K	41 K	▼ 40 K
Veh Hours of Travel (veh-hrs)	No Action NA	529	787	1,053	943	▼ 828	634	1,119	1,254	1,155	▼ 1,040	894	1,221	1,493	1,278	▼ 1,222
	Existing Config X1	528	788	1,034	954	▼ 826	636	1,128	1,258	1,172	▼ 1,048	894	1,229	1,428	1,291	▼ 1,210
	EIS ROD <sup>5</sup> E1	527	756	1,032	896	▼ 803	626	1,043	1,295	1,093	▼ 1,014	825	1,217	1,472	1,224	▼ 1,184
	Scenario 3a	488	661	839	739	▲ 682	568	770	911	861	▲ 777	707	1,213	1,241	1,191	▲ 1,088
	Scenario 3b	496	665	854	772	▲ 697	568	789	908	870	▲ 784	686	1,170	1,345	1,196	▲ 1,099
	Scenario 3c	497	659	838	753	▲ 687	588	730	900	852	▲ 767	707	1,186	1,266	1,182	▲ 1,085
	Scenario 4a	531	794	1,053	951	▼ 832	638	1,136	1,249	1,198	▼ 1,055	896	1,329	1,460	1,331	▼ 1,254
	Scenario 4b	533	790	1,021	967	▼ 827	637	1,138	1,253	1,201	▼ 1,057	899	1,317	1,424	1,334	▼ 1,243
	Scenario 4c	527	793	1,053	984	▼ 839	636	1,140	1,263	1,197	▼ 1,059	902	1,313	1,397	1,342	▼ 1,238
Veh Hours of Delay (veh-hrs)	No Action NA	117	260	483	375	▼ 309	167	521	719	565	▼ 493	337	626	981	691	▼ 659
	Existing Config X1	117	261	460	384	▼ 305	168	527	726	580	▼ 500	336	635	903	703	▼ 644
	EIS ROD <sup>5</sup> E1	113	231	460	327	▼ 283	156	453	810	514	▼ 483	271	624	1,000	637	▲ 633
	Scenario 3a	93	162	272	208	▲ 184	124	228	357	287	▲ 249	193	623	1,012	602	▲ 608
	Scenario 3b	96	164	284	228	▲ 193	123	241	380	295	▲ 260	181	591	1,141	614	▲ 632
	Scenario 3c	96	163	272	216	▲ 187	132	202	344	281	▲ 240	192	598	1,063	592	▲ 611
	Scenario 4a	118	265	485	381	▼ 312	169	534	714	610	▼ 507	337	736	939	744	▼ 689
	Scenario 4b	119	262	450	394	▼ 306	168	537	721	614	▼ 510	339	725	893	746	▼ 676
	Scenario 4c	116	264	486	407	▼ 318	167	539	733	609	▼ 512	342	720	864	755	▼ 670

Notes:

1. Total or Average of AM and PM peak hour plus NB and SB traffic
2. MOE results based on FREEVAL Methodology from 2010 Highway Capacity Manual, TRB
3. Traffic volume demand from CDM-Smith Tolling and Revenue Study, November 14, 2013
4. MOE results reflect only travel in general purpose lanes
5. EIS Phase 1 ROD Revised & ROD 2 E1

**I-25 Managed Lanes - Traffic Operations Analysis (Tolled Express Lanes Only<sup>4</sup>)**  
**SH 56 to SH 392**

Measures of Effectiveness <sup>2</sup> (MOE)		2015					2025					2035				
		AM		PM		Avg or	AM		PM		Avg or	AM		PM		Avg or
		SB	NB	SB	NB	Total <sup>1</sup>	SB	NB	SB	NB	Total <sup>1</sup>	SB	NB	SB	NB	Total <sup>1</sup>
Travel Time per Veh (min)	No Action NA	13.1	15.4	18.8	17.0	▼ 16.1	13.9	19.3	24.0	20.0	▼ 19.3	16.3	21.3	32.3	22.5	▼ 23.1
	Existing Config X1	13.1	15.4	18.3	17.2	▼ 16.0	13.9	19.4	24.2	20.2	▼ 19.4	16.3	21.5	29.7	22.7	▼ 22.6
	EIS ROD <sup>5</sup> E1	12.6	13.9	16.7	14.9	▼ 14.5	13.1	17.1	21.2	18.0	▼ 17.4	14.6	19.4	25.1	20.1	▼ 19.8
	Scenario 3a	10.6	10.7	10.8	10.8	▲ 10.7	10.7	11.0	11.2	10.9	▲ 11.0	10.7	12.1	12.9	11.8	▲ 11.9
	Scenario 3b	10.6	10.7	11.0	10.8	▲ 10.8	10.7	11.0	11.0	10.9	▲ 10.9	10.8	11.8	13.4	11.9	▲ 12.0
	Scenario 3c	10.6	10.8	10.9	10.8	▲ 10.8	10.7	11.0	11.2	10.9	▲ 11.0	10.7	11.8	13.0	11.7	▲ 11.8
	Scenario 4a	13.2	15.5	18.9	17.1	▼ 16.2	13.9	19.4	23.8	20.8	▼ 19.5	16.3	23.3	30.9	23.7	▼ 23.6
	Scenario 4b	13.2	15.4	18.2	17.3	▼ 16.0	13.9	19.5	24.0	20.9	▼ 19.6	16.3	23.1	29.3	23.6	▼ 23.1
	Scenario 4c	13.1	15.4	18.9	17.5	▼ 16.2	13.9	19.5	24.3	20.8	▼ 19.6	16.4	23.0	28.5	23.8	▼ 22.9
Speed (mph)	No Action NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Existing Config X1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	EIS ROD <sup>5</sup> E1	67.6	67.2	67.1	67.5	▼ 67.3	67.5	67.5	67.1	68.8	▲ 67.7	67.4	69.2	67.0	70.0	▲ 68.4
	Scenario 3a	68.5	68.3	67.4	67.9	▲ 68.0	68.0	67.4	66.5	67.4	▼ 67.3	67.6	65.1	65.0	65.9	▼ 65.9
	Scenario 3b	68.4	68.3	66.8	67.8	▲ 67.8	67.9	67.4	66.7	67.2	▼ 67.3	67.5	65.2	64.3	65.6	▼ 65.7
	Scenario 3c	68.4	68.1	67.0	67.9	▲ 67.8	67.8	67.5	66.5	67.4	▼ 67.3	67.5	65.3	65.1	66.0	▼ 66.0
	Scenario 4a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Scenario 4b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Scenario 4c	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Level of Service (LOS)	No Action NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Existing Config X1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	EIS ROD <sup>5</sup> E1	A	A	A	A	A	A	A	A	A	A	A	B	C	B	B
	Scenario 3a	A	A	A	A	A	A	A	B	A	A	A	B	C	B	B
	Scenario 3b	A	A	A	A	A	A	A	B	A	A	A	B	C	B	B
	Scenario 3c	A	A	A	A	A	A	B	B	A	A	A	B	C	B	B
	Scenario 4a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Scenario 4b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Scenario 4c	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Average Density (pc/mi/n)	No Action NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Existing Config X1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	EIS ROD <sup>5</sup> E1	0.2	0.4	1.5	0.8	▲ 0.7	0.4	1.0	2.1	1.6	▲ 1.3	1.3	1.2	2.1	1.6	▲ 1.6
	Scenario 3a	1.8	3.5	9.3	5.6	▼ 5.1	3.2	10.1	15.4	8.4	▼ 9.3	6.8	13.7	19.2	13.2	▼ 13.2
	Scenario 3b	1.3	3.1	8.9	4.6	▼ 4.5	3.2	9.5	15.6	9.1	▼ 9.4	8.1	14.2	18.8	13.9	▼ 13.7
	Scenario 3c	1.4	3.8	9.5	5.6	▼ 5.1	2.1	11.7	15.5	9.5	▼ 9.7	7.1	13.8	19.7	13.4	▼ 13.5
	Scenario 4a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Scenario 4b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Scenario 4c	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Veh Miles of Travel (veh-mi)	No Action NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Existing Config X1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	EIS ROD <sup>5</sup> E1	0 K	0 K	1 K	1 K	▼ 0.6	0 K	1 K	2 K	1 K	▼ 1.0	1 K	1 K	2 K	1 K	▼ 1.3
	Scenario 3a	1 K	3 K	8 K	5 K	▲ 4.1	3 K	8 K	12 K	7 K	▲ 7.5	5 K	11 K	15 K	10 K	▲ 10.4
	Scenario 3b	1 K	3 K	7 K	4 K	▲ 3.6	3 K	8 K	12 K	7 K	▲ 7.5	7 K	11 K	14 K	11 K	▲ 10.8
	Scenario 3c	1 K	3 K	8 K	5 K	▲ 4.1	2 K	10 K	12 K	8 K	▲ 7.8	6 K	11 K	15 K	11 K	▲ 10.7
	Scenario 4a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Scenario 4b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Scenario 4c	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Veh Hours of Travel (veh-hrs)	No Action NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Existing Config X1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	EIS ROD <sup>5</sup> E1	3	5	18	9	▲ 9	5	12	25	19	▲ 15	15	15	25	20	▲ 19
	Scenario 3a	21	42	112	68	▼ 61	38	123	185	102	▼ 112	81	166	230	159	▼ 159
	Scenario 3b	16	38	107	56	▼ 54	39	115	186	110	▼ 112	97	172	225	168	▼ 165
	Scenario 3c	17	47	114	68	▼ 61	25	142	185	115	▼ 117	85	167	235	162	▼ 162
	Scenario 4a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Scenario 4b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Scenario 4c	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Veh Hours of Delay (veh-hrs)	No Action NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Existing Config X1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	EIS ROD <sup>5</sup> E1	0	0	1	1	▲ 0	0	1	1	1	▲ 1	1	0	1	-	▲ 1
	Scenario 3a	1	1	5	2	▼ 2	1	6	15	4	▼ 7	3	22	46	16	▼ 22
	Scenario 3b	0	1	7	2	▼ 3	1	6	13	5	▼ 6	4	20	52	19	▼ 24
	Scenario 3c	0	2	7	2	▼ 3	1	7	15	5	▼ 7	4	19	47	16	▼ 21
	Scenario 4a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Scenario 4b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Scenario 4c	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:

- Total or Average of AM and PM peak hour plus NB and SB traffic
- MOE results based on FREEVAL Methodology from 2010 Highway Capacity Manual, TRB
- Traffic volume demand from CDM-Smith Tolling and Revenue Study, November 14, 2013
- MOE results reflect travel in tolled express lanes, plus general purpose lane travel where tolled express lanes do not exist
- EIS Phase 1 ROD Revised & ROD 2 E1

**I-25 Managed Lanes - Traffic Operations Analysis (Composite of GP and TE Lanes<sup>4</sup>)  
SH 392 to SH 14**

Measures of Effectiveness <sup>2</sup> (MOE)		2015					2025					2035				
		AM		PM		Avg or Total <sup>1</sup>	AM		PM		Avg or Total <sup>1</sup>	AM		PM		Avg or Total <sup>1</sup>
		SB	NB	SB	NB		SB	NB	SB	NB		SB	NB	SB	NB	
Travel Time per Veh (min)	No Action NA	8.0	8.9	9.7	10.0	9.2	8.5	10.1	10.0	12.2	10.2	9.0	10.8	9.6	12.2	10.4
	Existing Config X1	8.0	8.9	11.1	10.1	9.5	8.5	10.0	12.8	12.2	10.9	8.9	10.8	17.9	12.0	12.4
	EIS ROD <sup>5</sup> E1	7.9	8.4	9.3	8.9	8.6	8.2	8.6	9.2	9.7	8.9	8.2	10.0	12.3	11.1	10.4
	Scenario 3a	7.9	8.2	9.0	8.7	8.5	8.0	8.4	9.0	9.3	8.7	8.2	9.1	10.0	9.8	9.3
	Scenario 3b	7.9	8.2	9.0	8.8	8.5	8.0	8.4	9.0	9.4	8.7	8.1	8.8	10.1	10.0	9.3
	Scenario 3c	7.9	8.2	9.0	8.7	8.5	8.0	8.3	9.0	9.3	8.7	8.1	9.1	9.7	9.9	9.2
	Scenario 4a	8.0	9.0	11.4	10.1	9.6	8.5	10.1	13.3	12.2	11.0	9.0	10.9	18.8	12.1	12.7
	Scenario 4b	8.0	8.9	11.0	10.1	9.5	8.5	10.0	14.6	12.3	11.4	9.0	10.9	22.5	12.1	13.6
	Scenario 4c	8.0	8.9	9.9	10.2	9.3	8.5	10.0	9.9	12.3	10.2	9.0	10.9	9.5	12.1	10.4
Speed (mph)	No Action NA	57.4	50.5	45.3	45.2	49.6	54.1	43.4	44.0	36.5	44.5	50.2	40.3	46.0	36.2	43.2
	Existing Config X1	57.3	49.4	40.1	44.8	47.9	52.8	44.1	35.1	36.1	42.0	50.2	40.3	26.6	36.6	38.4
	EIS ROD <sup>5</sup> E1	57.8	54.6	48.6	50.9	53.0	56.5	52.4	49.8	47.8	51.6	55.4	44.4	37.8	40.6	44.6
	Scenario 3a	57.6	54.8	50.2	53.4	54.0	56.9	54.1	51.1	49.1	52.8	56.0	50.1	46.4	46.4	49.7
	Scenario 3b	57.6	54.7	50.1	52.5	53.7	57.0	54.3	51.0	48.9	52.8	56.5	52.3	45.7	46.0	50.1
	Scenario 3c	57.7	55.0	50.2	52.6	53.9	56.8	54.5	51.1	49.5	53.0	56.4	50.1	47.3	46.0	50.0
	Scenario 4a	57.4	49.8	39.3	44.7	47.8	52.9	42.9	34.1	36.1	41.5	50.3	40.5	25.9	36.7	38.4
	Scenario 4b	57.5	49.7	40.0	44.0	47.8	52.7	43.5	31.5	36.2	41.0	50.2	40.5	22.9	36.7	37.6
	Scenario 4c	57.2	49.9	44.6	43.6	48.8	52.7	44.2	44.0	36.2	44.3	50.2	39.9	46.6	36.3	43.3
Level of Service (LOS)	No Action NA	C	C	D	E	D	C	E	E	F	E	D	E	E	F	E
	Existing Config X1	C	C	E	E	D	C	D	F	F	E	D	E	F	F	F
	EIS ROD <sup>5</sup> E1	B	C	D	D	C	C	C	D	D	D	C	D	E	E	D
	Scenario 3a	B	C	D	C	C	C	C	D	D	C	C	D	D	D	D
	Scenario 3b	B	C	D	C	C	C	C	D	D	C	C	C	E	D	D
	Scenario 3c	B	C	D	C	C	C	C	D	D	C	C	D	D	D	D
	Scenario 4a	C	D	F	E	D	C	E	F	F	E	D	E	F	F	F
	Scenario 4b	C	D	E	E	D	C	D	F	F	E	D	E	F	F	F
	Scenario 4c	C	D	E	E	D	C	D	E	F	E	D	E	D	F	E
Average Density (pc/mi/m)	No Action NA	19.6	25.8	34.6	36.0	29.0	25.0	35.2	37.3	50.7	37.0	30.2	41.0	35.8	51.1	39.5
	Existing Config X1	19.6	26.0	44.6	36.7	31.7	25.2	34.4	51.5	51.1	40.5	30.1	41.0	66.9	50.2	47.1
	EIS ROD <sup>5</sup> E1	16.2	20.6	30.2	26.6	23.4	20.3	22.8	30.2	31.7	26.3	21.6	32.4	43.5	39.9	34.4
	Scenario 3a	16.1	19.6	28.4	24.9	22.2	19.7	20.7	28.8	29.6	24.7	20.9	27.1	34.5	33.7	29.0
	Scenario 3b	16.1	19.6	28.7	25.5	22.5	19.6	21.0	28.5	30.1	24.8	20.6	25.2	35.3	34.5	28.9
	Scenario 3c	16.2	19.5	28.4	25.2	22.3	19.8	20.4	28.3	29.4	24.5	20.8	26.9	33.7	34.1	28.9
	Scenario 4a	18.7	26.5	45.4	36.7	31.8	25.2	35.6	53.2	51.1	41.3	31.3	41.3	68.4	50.7	47.9
	Scenario 4b	19.8	26.2	44.1	37.0	31.8	25.3	34.9	57.8	51.6	42.4	31.7	41.3	76.5	50.7	50.0
	Scenario 4c	19.5	26.4	36.1	37.8	30.0	25.1	34.6	37.2	51.3	37.0	30.8	41.5	34.7	51.0	39.5
Veh Miles of Travel (veh-mi)	No Action NA	15 K	18 K	22 K	23 K	19 K	19 K	21 K	23 K	26 K	22 K	22 K	23 K	23 K	26 K	23 K
	Existing Config X1	15 K	18 K	25 K	23 K	20 K	19 K	21 K	25 K	26 K	23 K	22 K	23 K	25 K	26 K	24 K
	EIS ROD <sup>5</sup> E1	15 K	19 K	27 K	23 K	21 K	19 K	21 K	28 K	28 K	24 K	23 K	26 K	31 K	30 K	27 K
	Scenario 3a	15 K	19 K	28 K	23 K	21 K	19 K	22 K	30 K	28 K	25 K	23 K	27 K	32 K	31 K	28 K
	Scenario 3b	15 K	19 K	28 K	24 K	21 K	19 K	22 K	30 K	28 K	25 K	23 K	27 K	32 K	31 K	29 K
	Scenario 3c	15 K	19 K	28 K	24 K	21 K	19 K	22 K	30 K	28 K	25 K	23 K	27 K	33 K	31 K	28 K
	Scenario 4a	15 K	18 K	25 K	23 K	20 K	19 K	21 K	25 K	26 K	23 K	22 K	23 K	25 K	26 K	24 K
	Scenario 4b	15 K	18 K	25 K	23 K	20 K	19 K	21 K	25 K	26 K	23 K	22 K	23 K	24 K	26 K	24 K
	Scenario 4c	15 K	18 K	22 K	23 K	20 K	19 K	21 K	23 K	26 K	22 K	22 K	23 K	23 K	26 K	23 K
Veh Hours of Travel (veh-hrs)	No Action NA	260	360	480	500	400	350	490	520	700	520	430	570	500	710	550
	Existing Config X1	260	370	620	510	440	360	480	720	710	570	430	570	930	700	660
	EIS ROD <sup>5</sup> E1	260	340	550	460	400	340	410	570	580	480	410	580	820	740	640
	Scenario 3a	260	340	550	440	400	340	410	580	570	480	410	540	700	660	580
	Scenario 3b	260	340	550	450	400	340	410	590	580	480	410	520	710	680	580
	Scenario 3c	260	340	550	450	400	340	410	580	570	480	410	540	690	670	580
	Scenario 4a	260	370	630	510	440	360	500	740	710	580	440	570	950	700	670
	Scenario 4b	260	370	620	520	440	360	490	800	710	590	440	570	1,060	700	690
	Scenario 4c	260	370	500	530	420	360	480	520	710	520	440	580	490	710	560
Veh Hours of Delay (veh-hrs)	No Action NA	50	100	170	180	130	80	190	200	340	200	120	240	170	340	220
	Existing Config X1	50	100	570	190	230	80	180	670	350	320	120	240	1,130	340	460
	EIS ROD <sup>5</sup> E1	40	80	290	120	130	70	100	200	190	140	80	210	580	310	300
	Scenario 3a	40	70	200	110	110	60	90	190	170	130	80	150	450	220	230
	Scenario 3b	40	70	180	110	100	60	90	170	180	130	80	130	530	240	250
	Scenario 3c	40	70	170	110	100	70	90	180	170	130	80	150	480	230	240
	Scenario 4a	50	110	620	190	240	80	190	750	350	340	130	240	1,130	350	460
	Scenario 4b	50	110	640	190	250	90	180	740	350	340	130	240	1,260	350	500
	Scenario 4c	50	110	190	200	140	80	180	200	350	200	130	240	160	350	220

Notes:

1. Total or Average of AM and PM peak hour plus NB and SB traffic
2. MOE results based on FREEVAL Methodology from 2010 Highway Capacity Manual, TRB
3. Traffic volume demand from CDM-Smith Tolling and Revenue Study, November 14, 2013
4. MOE results are a composite of both General Purpose and Tolleed Express Lanes
5. EIS Phase 1 ROD Revised & ROD 2 E1

**I-25 Managed Lanes - Traffic Operations Analysis (General Purpose Lanes Only<sup>4</sup>)**  
**SH 392 to SH 14**

Measures of Effectiveness <sup>2</sup> (MOE)		2015					2025					2035				
		AM		PM		Avg or	AM		PM		Avg or	AM		PM		Avg or
		SB	NB	SB	NB	Total <sup>1</sup>	SB	NB	SB	NB	Total <sup>1</sup>	SB	NB	SB	NB	Total <sup>1</sup>
Travel Time per Veh (min)	No Action NA	8.0	8.9	9.7	10.0	9.2	8.5	10.1	10.0	12.2	10.2	9.0	10.8	9.6	12.2	10.4
	Existing Config X1	8.0	8.9	11.1	10.1	9.5	8.5	10.0	12.8	12.2	10.9	8.9	10.8	17.9	12.0	12.4
	EIS ROD <sup>5</sup> E1	7.9	8.4	9.5	9.0	8.7	8.2	8.7	9.5	9.9	9.1	8.3	10.2	12.9	11.5	10.7
	Scenario 3a	7.9	8.3	9.3	8.8	8.6	8.1	8.6	9.3	9.6	8.9	8.3	9.4	10.5	10.2	9.6
	Scenario 3b	7.9	8.3	9.3	8.9	8.6	8.1	8.6	9.3	9.7	8.9	8.3	9.1	10.7	10.4	9.6
	Scenario 3c	7.9	8.3	9.3	8.8	8.6	8.1	8.5	9.3	9.6	8.9	8.3	9.4	10.2	10.3	9.6
	Scenario 4a	8.0	9.0	11.4	10.1	9.6	8.5	10.1	13.3	12.2	11.0	9.0	10.9	18.8	12.1	12.7
	Scenario 4b	8.0	8.9	11.0	10.1	9.5	8.5	10.0	14.6	12.3	11.4	9.0	10.9	22.5	12.1	13.6
	Scenario 4c	8.0	8.9	9.9	10.2	9.3	8.5	10.0	9.9	12.3	10.2	9.0	10.9	9.5	12.1	10.4
Speed (mph)	No Action NA	56.7	50.0	45.2	45.0	49.2	53.5	43.4	44.1	36.5	44.4	50.3	40.3	45.9	36.3	43.2
	Existing Config X1	56.7	50.0	39.9	44.6	47.8	53.5	44.1	35.3	36.3	42.3	50.5	40.3	26.5	36.9	38.6
	EIS ROD <sup>5</sup> E1	57.9	53.6	47.4	50.7	52.4	55.9	51.7	47.9	46.1	50.4	55.0	43.1	35.5	38.9	43.1
	Scenario 3a	58.0	54.3	48.6	51.9	53.2	56.2	53.0	48.6	47.5	51.3	54.9	48.1	43.9	44.5	47.9
	Scenario 3b	58.0	54.3	48.3	51.4	53.0	56.2	52.8	49.0	46.9	51.2	55.0	49.8	43.1	43.6	47.9
	Scenario 3c	57.9	54.4	48.6	51.6	53.1	56.1	53.3	49.1	47.7	51.6	54.9	48.2	45.0	44.2	48.1
	Scenario 4a	56.6	49.5	39.1	44.6	47.5	53.4	43.1	34.2	36.3	41.8	50.1	40.2	25.8	36.7	38.2
	Scenario 4b	56.6	49.8	40.2	44.3	47.7	53.3	43.8	31.4	36.1	41.2	50.1	40.2	23.0	36.6	37.5
	Scenario 4c	56.7	49.7	44.4	43.9	48.7	53.4	44.0	44.2	36.2	44.5	50.1	40.2	46.8	36.5	43.4
Level of Service (LOS)	No Action NA	C	C	D	E	D	C	E	E	F	E	D	E	E	F	E
	Existing Config X1	C	C	E	E	D	C	D	F	F	E	D	E	F	F	F
	EIS ROD <sup>5</sup> E1	B	C	D	D	C	C	C	D	D	D	C	E	F	E	E
	Scenario 3a	B	C	D	D	C	C	C	D	D	D	C	D	E	E	D
	Scenario 3b	B	C	D	D	C	C	C	D	D	D	C	D	E	E	D
	Scenario 3c	B	C	D	D	C	C	C	D	D	D	C	D	E	E	D
	Scenario 4a	C	D	F	E	D	C	E	F	F	E	D	E	F	F	F
	Scenario 4b	C	D	E	E	D	C	D	F	F	E	D	E	F	F	F
	Scenario 4c	C	D	E	E	D	C	D	E	F	E	D	E	D	F	E
Average Density (pc/mi/m)	No Action NA	19.6	25.8	34.6	36.0	29.0	25.0	35.2	37.3	50.7	37.0	30.2	41.0	35.8	51.1	39.5
	Existing Config X1	19.6	26.0	44.6	36.7	31.7	25.2	34.4	51.5	51.1	40.5	30.1	41.0	66.9	50.2	47.1
	EIS ROD <sup>5</sup> E1	16.5	21.3	32.9	28.0	24.7	21.1	24.4	33.5	34.6	28.4	23.5	35.1	48.9	44.2	37.9
	Scenario 3a	16.5	20.6	31.7	26.6	23.9	20.8	23.0	32.7	32.9	27.3	23.1	30.4	39.5	37.8	32.7
	Scenario 3b	16.5	20.6	32.0	27.2	24.1	20.7	23.3	32.4	33.5	27.5	23.0	28.5	40.4	38.9	32.7
	Scenario 3c	16.6	20.5	31.7	27.0	23.9	20.8	22.8	32.1	32.7	27.1	23.2	30.3	38.5	38.3	32.6
	Scenario 4a	18.7	26.5	45.4	36.7	31.8	25.2	35.6	53.2	51.1	41.3	31.3	41.3	68.4	50.7	47.9
	Scenario 4b	19.8	26.2	44.1	37.0	31.8	25.3	34.9	57.8	51.6	42.4	31.7	41.3	76.5	50.7	50.0
	Scenario 4c	19.5	26.4	36.1	37.8	30.0	25.1	34.6	37.2	51.3	37.0	30.8	41.5	34.7	51.0	39.5
Veh Miles of Travel (veh-mi)	No Action NA	15 K	18 K	22 K	23 K	19 K	19 K	21 K	23 K	26 K	22 K	22 K	23 K	23 K	26 K	23 K
	Existing Config X1	15 K	18 K	25 K	23 K	20 K	19 K	21 K	25 K	26 K	23 K	22 K	23 K	25 K	26 K	24 K
	EIS ROD <sup>5</sup> E1	15 K	18 K	24 K	22 K	20 K	18 K	20 K	25 K	25 K	22 K	20 K	23 K	27 K	27 K	24 K
	Scenario 3a	15 K	18 K	24 K	22 K	19 K	18 K	19 K	25 K	24 K	22 K	20 K	23 K	27 K	26 K	24 K
	Scenario 3b	15 K	18 K	24 K	22 K	20 K	18 K	19 K	25 K	25 K	22 K	20 K	22 K	27 K	26 K	24 K
	Scenario 3c	15 K	18 K	24 K	22 K	19 K	18 K	19 K	25 K	24 K	22 K	20 K	23 K	27 K	26 K	24 K
	Scenario 4a	15 K	18 K	25 K	23 K	20 K	19 K	21 K	25 K	26 K	23 K	22 K	23 K	25 K	26 K	24 K
	Scenario 4b	15 K	18 K	25 K	23 K	20 K	19 K	21 K	25 K	26 K	23 K	22 K	23 K	24 K	26 K	24 K
	Scenario 4c	15 K	18 K	22 K	23 K	20 K	19 K	21 K	23 K	26 K	22 K	22 K	23 K	23 K	26 K	23 K
Veh Hours of Travel (veh-hrs)	No Action NA	263	364	481	503	403	354	490	519	701	516	429	570	501	707	552
	Existing Config X1	263	366	624	512	441	355	480	716	707	564	428	570	932	695	656
	EIS ROD <sup>5</sup> E1	254	335	510	438	384	329	384	519	541	443	370	544	755	683	588
	Scenario 3a	251	325	492	418	372	325	364	506	514	427	363	477	610	590	510
	Scenario 3b	252	325	495	427	375	324	368	502	525	430	361	449	623	607	510
	Scenario 3c	252	324	491	424	373	326	361	500	512	425	363	476	597	597	508
	Scenario 4a	264	372	634	512	445	356	497	738	707	575	442	573	952	701	667
	Scenario 4b	264	369	616	516	441	356	486	802	714	589	441	573	1,055	702	693
	Scenario 4c	262	371	503	527	416	355	483	519	710	517	441	575	488	705	552
Veh Hours of Delay (veh-hrs)	No Action NA	50	104	171	180	126	84	187	199	341	203	120	241	173	341	219
	Existing Config X1	50	105	571	186	228	84	178	665	345	318	119	241	1,133	338	458
	EIS ROD <sup>5</sup> E1	44	78	289	121	133	67	100	201	184	138	79	209	563	303	289
	Scenario 3a	43	73	200	108	106	64	89	182	165	125	78	149	444	215	222
	Scenario 3b	43	73	180	113	102	64	91	163	173	123	77	129	520	229	239
	Scenario 3c	44	72	170	111	99	65	86	174	163	122	78	148	473	220	230
	Scenario 4a	51	109	624	186	242	84	191	752	347	344	126	244	1,133	351	463
	Scenario 4b	51	107	637	190	246	85	182	744	354	341	126	244	1,264	345	495
	Scenario 4c	50	108	187	197	135	84	180	201	351	204	126	245	162	351	221

Notes:

- Total or Average of AM and PM peak hour plus NB and SB traffic
- MOE results based on FREEVAL Methodology from 2010 Highway Capacity Manual, TRB
- Traffic volume demand from CDM-Smith Tolling and Revenue Study, November 14, 2013
- MOE results reflect only travel in general purpose lanes
- EIS Phase 1 ROD Revised & ROD 2 E1

**I-25 Managed Lanes - Traffic Operations Analysis (Tolled Express Lanes Only<sup>4</sup>)**  
**SH 392 to SH 14**

Measures of Effectiveness <sup>2</sup> (MOE)		2015					2025					2035				
		AM		PM		Avg or Total <sup>1</sup>	AM		PM		Avg or Total <sup>1</sup>	AM		PM		Avg or Total <sup>1</sup>
		SB	NB	SB	NB		SB	NB	SB	NB		SB	NB	SB	NB	
Travel Time per Veh (min)	No Action NA	8.0	8.9	9.7	10.0	▼ 9.2	8.5	10.1	10.0	12.2	▼ 10.2	9.0	10.8	9.6	12.2	▼ 10.4
	Existing Config X1	8.0	8.9	11.1	10.1	▼ 9.5	8.5	10.0	12.8	12.2	▼ 10.9	8.9	10.8	17.9	12.0	▼ 12.4
	EIS ROD <sup>5</sup> E1	7.0	7.1	7.2	7.2	▲ 7.1	7.1	7.1	7.2	7.4	▲ 7.2	7.2	7.7	8.5	8.3	▲ 7.9
	Scenario 3a	7.0	7.1	7.3	7.2	▲ 7.2	7.1	7.2	7.4	7.5	▲ 7.3	7.2	7.4	7.4	7.5	▲ 7.4
	Scenario 3b	7.0	7.1	7.3	7.2	▲ 7.2	7.1	7.2	7.4	7.5	▲ 7.3	7.2	7.3	7.4	7.7	▲ 7.4
	Scenario 3c	7.0	7.1	7.3	7.2	▲ 7.2	7.1	7.2	7.4	7.5	▲ 7.3	7.2	7.4	7.4	7.5	▲ 7.4
	Scenario 4a	8.0	9.0	11.4	10.1	▼ 9.6	8.5	10.1	13.3	12.2	▼ 11.0	9.0	10.9	18.8	12.1	▼ 12.7
	Scenario 4b	8.0	8.9	11.0	10.1	▼ 9.5	8.5	10.0	14.6	12.3	▼ 11.4	9.0	10.9	22.5	12.1	▼ 13.6
	Scenario 4c	8.0	8.9	9.9	10.2	▼ 9.3	8.5	10.0	9.9	12.3	▼ 10.2	9.0	10.9	9.5	12.1	▼ 10.4
Speed (mph)	No Action NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Existing Config X1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	EIS ROD <sup>5</sup> E1	67.6	67.7	66.9	67.4	▲ 67.4	67.3	67.6	66.7	66.2	▲ 66.9	67.0	64.3	61.0	63.1	▼ 63.8
	Scenario 3a	67.7	67.8	66.4	67.5	▼ 67.3	67.4	66.8	65.8	65.7	▼ 66.4	66.5	65.7	65.5	64.8	▲ 65.6
	Scenario 3b	67.6	67.8	66.4	67.5	▼ 67.3	67.3	66.8	65.8	65.3	▼ 66.3	66.5	66.2	65.5	64.2	▲ 65.6
	Scenario 3c	67.6	67.8	66.4	67.5	▼ 67.3	67.3	66.8	65.8	65.7	▼ 66.4	66.5	65.7	65.5	65.0	▲ 65.7
	Scenario 4a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Scenario 4b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Scenario 4c	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Level of Service (LOS)	No Action NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Existing Config X1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	EIS ROD <sup>5</sup> E1	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	Scenario 3a	A	A	A	A	A	A	A	A	A	A	A	A	B	A	A
	Scenario 3b	A	A	A	A	A	A	A	A	A	A	A	A	B	A	A
	Scenario 3c	A	A	A	A	A	A	A	A	A	A	A	A	B	A	A
	Scenario 4a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Scenario 4b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Scenario 4c	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Average Density (pc/mi/in)	No Action NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Existing Config X1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	EIS ROD <sup>5</sup> E1	0.7	1.2	5.0	2.4	▲ 2.3	1.6	3.1	7.0	5.4	▲ 4.3	4.6	4.6	9.0	7.1	▲ 6.3
	Scenario 3a	0.8	1.9	7.2	3.5	▼ 3.3	2.1	5.7	10.0	7.1	▼ 6.2	6.0	8.1	11.4	8.8	▼ 8.6
	Scenario 3b	0.7	1.8	7.2	3.3	▼ 3.3	2.3	5.5	10.9	7.5	▼ 6.6	6.5	9.5	11.2	9.8	▼ 9.2
	Scenario 3c	0.7	2.0	7.4	3.5	▼ 3.4	2.0	6.1	10.2	7.4	▼ 6.4	6.3	8.3	11.6	8.9	▼ 8.8
	Scenario 4a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Scenario 4b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Scenario 4c	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Veh Miles of Travel (veh-mi)	No Action NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Existing Config X1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	EIS ROD <sup>5</sup> E1	0 K	1 K	3 K	1 K	▼ 1.2	1 K	2 K	4 K	3 K	▼ 2.2	2 K	2 K	4 K	3 K	▼ 3.1
	Scenario 3a	0 K	1 K	4 K	2 K	▲ 1.7	1 K	3 K	5 K	4 K	▲ 3.2	3 K	4 K	6 K	4 K	▲ 4.3
	Scenario 3b	0 K	1 K	4 K	2 K	▲ 1.7	1 K	3 K	5 K	4 K	▲ 3.3	3 K	5 K	6 K	5 K	▲ 4.6
	Scenario 3c	0 K	1 K	4 K	2 K	▲ 1.8	1 K	3 K	5 K	4 K	▲ 3.2	3 K	4 K	6 K	4 K	▲ 4.4
	Scenario 4a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Scenario 4b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Scenario 4c	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Veh Hours of Travel (veh-hrs)	No Action NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Existing Config X1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	EIS ROD <sup>5</sup> E1	5	9	38	18	▲ 18	12	24	53	42	▲ 33	35	36	68	55	▲ 48
	Scenario 3a	6	15	55	27	▼ 26	16	44	77	54	▼ 48	46	62	87	68	▼ 66
	Scenario 3b	6	14	55	25	▼ 25	18	42	84	57	▼ 50	50	72	86	75	▼ 71
	Scenario 3c	6	16	57	27	▼ 26	15	47	78	57	▼ 49	48	63	89	68	▼ 67
	Scenario 4a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Scenario 4b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Scenario 4c	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Veh Hours of Delay (veh-hrs)	No Action NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Existing Config X1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	EIS ROD <sup>5</sup> E1	0	0	2	1	▲ 1	0	1	2	2	▲ 1	1	4	15	10	▼ 8
	Scenario 3a	0	0	3	1	▼ 1	1	2	5	4	▼ 3	2	4	6	6	▲ 5
	Scenario 3b	0	0	3	1	▼ 1	1	2	5	4	▼ 3	3	4	6	8	▲ 5
	Scenario 3c	0	1	3	1	▼ 1	1	2	5	4	▼ 3	2	4	6	6	▲ 5
	Scenario 4a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Scenario 4b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Scenario 4c	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:

1. Total or Average of AM and PM peak hour plus NB and SB traffic
2. MOE results based on FREEVAL Methodology from 2010 Highway Capacity Manual, TRB
3. Traffic volume demand from CDM-Smith Tolling and Revenue Study, November 14, 2013
4. MOE results reflect travel in tolled express lanes, plus general purpose lane travel where tolled express lanes do not exist
5. EIS Phase 1 ROD Revised & ROD 2 E1

## **APPENDIX F - DETAILED TRAFFIC OPERATIONS ANALYSIS OUTPUT**

Appendix F sheets are included under separate cover