

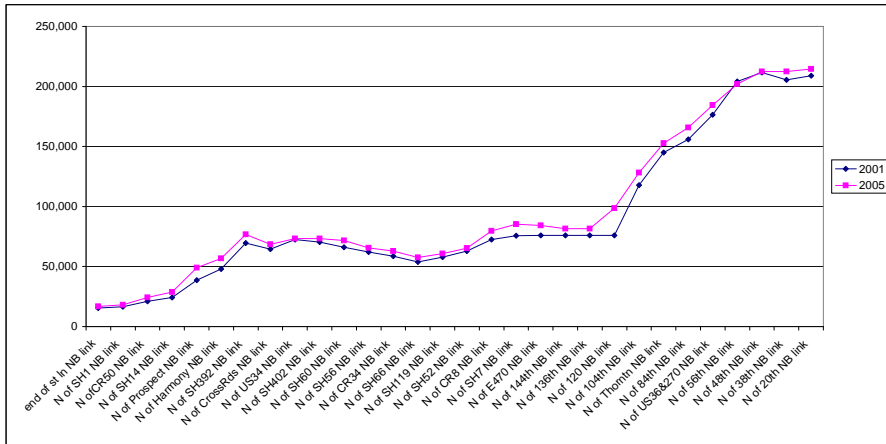
Base Year Daily Volumes, Speeds, and Congested Hours

LOCATION	Daily Volumes (2001)	Daily Volumes (2005)	SPEEDS (2001)	SPEEDS (2005)	CONGESTED HOURS (2001)	CONGESTED HOURS (2005)
Southbound						
end of st In SB link	7,697	8,414	9%	75	75	0
N of SH1 SB link	8,285	9,074	10%	64	64	0
N of CR50 SB link	10,596	12,242	16%	66	66	0
N of SH14 SB link	12,377	14,760	19%	64	64	0
N of Prospect SB link	19,707	24,137	22%	64	64	0
N of Harmony SB link	23,460	27,868	19%	64	64	0
N of SH392 SB link	33,689	36,863	9%	65	65	0
N of CrossRds SB link	31,826	33,420	5%	64	64	0
N of US34 SB link	35,614	37,112	4%	65	65	0
N of SH402 SB link	35,277	36,888	5%	65	65	0
N of SH60 SB link	32,710	35,642	9%	66	65	0
N of SH56 SB link	31,040	32,697	5%	66	66	0
N of CR34 SB link	29,351	31,528	7%	66	66	0
N of SH66 SB link	27,037	29,080	8%	66	66	0
N of SH119 SB link	29,070	30,660	5%	74	74	0
N of SH52 SB link	31,599	32,908	4%	73	65	0
N of CR8 SB link	36,550	40,247	10%	71	66	0
N of SH7 SB link	38,250	43,243	13%	70	74	0
N of E470 SB link	38,718	42,641	10%	74	73	0
N of 144th SB link	38,718	41,488	7%	74	66	0
N of 136th SB link	38,718	41,488	7%	66	65	0
N of 120th SB link	38,718	50,436	30%	66	58	1
N of 104th SB link	58,446	63,669	9%	63	52	3.5
N of Throtn SB link	71,300	75,606	6%	56	45	3.5
N of 84th SB link	75,232	79,310	5%	51	33	3.5
N of US36&270 SB link	85,199	88,076	3%	34		9
N of 56th SB link	104,601	97,820	-6%	42	27	12.5
N of 48th SB link	107,601	103,573	-4%	43	50	5.5
N of 38th SB link	94,903	97,962	3%	47	47	2
N of 20th SB link	99,621	102,379	3%	55	55	0

LOCATION	Daily Volumes (2001)	Daily Volumes (2005)	SPEEDS (2001)	SPEEDS (2005)	CONGESTED HOURS (2001)	CONGESTED HOURS (2005)
Northbound						
end of st In NB link	7,766	8,484	9%	75	75	0
N of SH1 NB link	8,329	9,095	9%	66	66	0
N of CR50 NB link	10,535	12,075	15%	66	66	0
N of SH14 NB link	11,956	14,096	18%	64	63	0
N of Prospect NB link	18,917	24,918	32%	66	60	1
N of Harmony NB link	24,438	29,030	19%	64	55	3
N of SH392 NB link	35,896	39,841	11%	65	44	10
N of CrossRds NB link	32,627	35,185	8%	65	48	9.5
N of US34 NB link	36,917	36,239	-2%	64	50	9
N of SH402 NB link	35,022	36,516	4%	65	35	12.5
N of SH60 NB link	33,284	35,963	8%	65	37	12.5
N of SH56 NB link	31,124	32,845	6%	66	46	10
N of CR34 NB link	29,326	31,439	7%	66	54	4
N of SH66 NB link	26,736	28,532	7%	66	58	3
N of SH119 NB link	28,772	30,154	5%	74	72	0
N of SH52 NB link	31,337	32,507	4%	73	63	0
N of CR8 NB link	35,896	39,441	10%	71	63	3
N of SH7 NB link	37,429	42,178	13%	70	53	4
N of E470 NB link	37,111	41,704	12%	74	40	6
N of 144th NB link	37,111	40,169	8%	74	57	0
N of 136th NB link	37,111	40,169	8%	66	51	3
N of 120 NB link	37,111	48,094	30%	66	48	5
N of 104th NB link	59,471	64,525	8%	62	42	9.5
N of Throtn NB link	73,562	77,008	5%	53	32	12.5
N of 84th NB link	80,691	86,575	7%	62	51	1
N of US36&270 NB link	91,304	96,343	6%	54	49	3
N of 56th NB link	99,451	104,264	5%	62	44	7.5
N of 48th NB link	103,913	108,819	5%	59	43	8.5
N of 38th NB link	110,620	114,506	4%	41	29	8.5
N of 20th NB link	109,204	112,230	3%	53	53	1

Daily Volumes (2001)	Daily Volumes (2005)
SB + NB	
15,463	16,898
16,614	18,169
21,131	24,317
24,333	28,856
38,624	49,055
47,898	56,898
69,585	76,704
64,453	68,605
72,531	73,351
70,299	73,404
65,994	71,605
62,164	65,542
58,677	62,967
53,779	57,612
57,842	60,814
62,936	65,415
72,446	79,688
75,679	85,421
75,829	84,345
75,829	81,657
75,829	81,657
75,829	98,530
117,917	128,194
144,862	152,614
155,923	165,885
176,503	184,419
204,052	202,084
211,514	212,392
205,523	212,468
208,825	214,609

9%



NoAction\_E Daily Volumes, Speeds, and Congested Hours

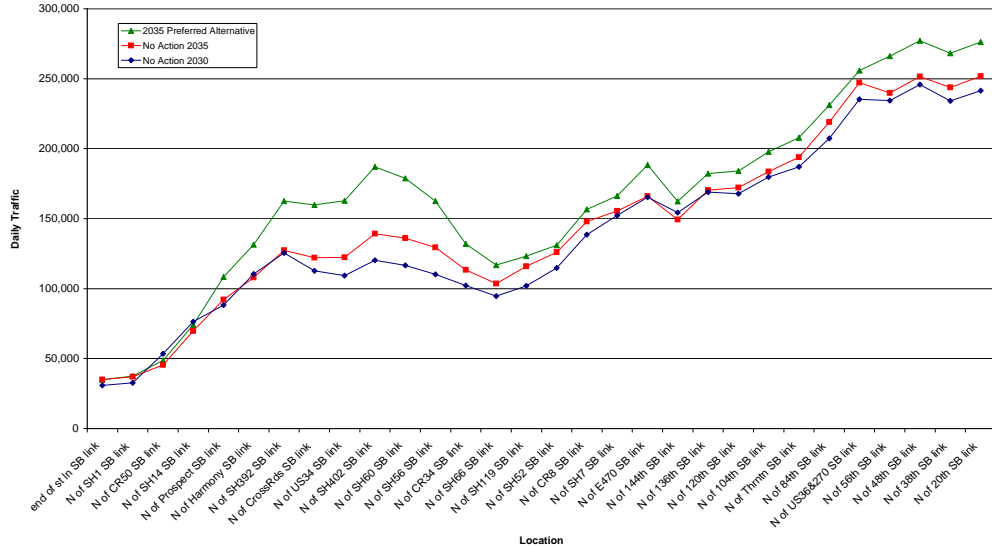
LOCATION	Daily Volumes (2030)	Daily Volumes (2035)	SPEEDS				CONGESTED HOURS	
			(2030)	(2035)	(2030)	(2035)	(2030)	(2035)
Southbound								
end of st In SB link	15,461	17,493	13%	75	75	0	0	
N of SH1 SB link	16,307	18,534	14%	64	64	0	0	
N of CR50 SB link	27,137	22,925	-16%	66	66	0	0	
N of SH14 SB link	38,848	34,849	-10%	62	62	0	0	
N of Prospect SB link	43,497	45,588	5%	58	58	0	1	
N of Harmony SB link	54,544	53,281	-2%	56	56	4	2	
N of SH392 SB link	61,507	62,235	1%	46	46	8.5	10	
N of CrossRds SB link	55,507	59,908	8%	49	49	4	9	
N of US34 SB link	54,890	60,744	11%	52	52	1	5	
N of SH402 SB link	60,180	69,417	15%	38	38	7.5	11	
N of SH60 SB link	57,684	66,645	16%	43	43	5	10	
N of SH56 SB link	55,066	64,442	17%	46	46	4	10	
N of CR34 SB link	51,146	57,039	12%	54	54	2	3	
N of SH66 SB link	47,699	52,380	10%	58	58	1	1	
N of SH119 SB link	51,696	58,669	13%	71	71	0	0	
N of SH52 SB link	58,129	64,221	10%	62	62	0	1	
N of CR8 SB link	70,066	75,391	8%	62	62	1	2	
N of SH7 SB link	76,276	79,238	4%	48	48	3.5	3.5	
N of E470 SB link	83,123	82,847	0%	41	41	9	5.5	
N of 144th SB link	79,370	76,361	-4%	52	52	3.5	2.5	
N of 136th SB link	85,585	85,873	0%	50	50	9	5.5	
N of 120th SB link	85,457	87,126	2%	46	46	9	9	
N of 104th SB link	90,636	91,581	1%	41	41	10	10	
N of Thorman SB link	95,634	96,466	1%	34	34	12.5	12.5	
N of 84th SB link	105,269	107,364	2%	39	39	2.5	3.5	
N of US36&270 SB link	119,855	122,376	2%	29	29	9	10	
N of 56th SB link	108,457	110,618	2%	15	15	12.5	12.5	
N of 48th SB link	115,457	118,163	2%	40	40	10	10	
N of 38th SB link	104,512	110,098	5%	49	49	7.5	9	
N of 20th SB link	110,770	116,742	5%	51	51	0	1	

LOCATION	Daily Volumes (2030)	Daily Volumes (2035)	SPEEDS				CONGESTED HOURS	
			(2030)	(2035)	(2030)	(2035)	(2030)	(2035)
Northbound								
end of st In NB link	15,461	17,493	13%	75	75	0	0	
N of SH1 NB link	16,278	18,612	14%	66	66	0	0	
N of CR50 NB link	26,390	22,546	-15%	66	66	0	0	
N of SH14 NB link	37,477	35,004	-7%	63	63	0	0	
N of Prospect NB link	44,783	46,539	4%	62	60	0	1	
N of Harmony NB link	55,865	54,728	-2%	50	55	5.5	3	
N of SH392 NB link	63,961	65,180	2%	40	44	10	10	
N of CrossRds NB link	57,268	62,273	9%	54	48	5	9.5	
N of US34 NB link	54,328	61,606	13%	57	50	1	9	
N of SH402 NB link	60,078	69,860	16%	49	35	5.5	12.5	
N of SH60 NB link	58,968	69,310	18%	50	37	9	12.5	
N of SH56 NB link	55,081	64,967	18%	55	46	4	10	
N of CR34 NB link	51,013	56,416	11%	59	54	1	4	
N of SH66 NB link	46,924	51,155	9%	62	58	0	3	
N of SH119 NB link	50,218	57,317	14%	73	72	0	0	
N of SH52 NB link	56,692	61,743	9%	64	63	0	0	
N of CR8 NB link	68,599	72,514	6%	60	63	1	3	
N of SH7 NB link	75,924	76,215	0%	55	53	3	4	
N of E470 NB link	82,251	83,127	1%	46	40	5	6	
N of 144th NB link	75,014	72,951	-3%	56	57	3	3	
N of 136th NB link	83,423	84,557	1%	53	51	4	5	
N of 120 NB link	82,444	85,097	3%	49	48	4	5	
N of 104th NB link	89,036	91,955	3%	44	42	8.5	9.5	
N of Thorman NB link	91,410	97,346	6%	33	32	8.5	12.5	
N of 84th NB link	102,078	111,636	9%	44	51	4	1	
N of US36&270 NB link	115,471	124,819	8%	37	49	7.5	4	
N of 56th NB link	125,965	129,270	3%	46	44	4	7.5	
N of 48th NB link	130,326	133,400	2%	46	43	7.5	8.5	
N of 38th NB link	129,678	133,719	3%	31	29	12.5	12.5	
N of 20th NB link	130,749	134,829	3%	54	53	0	1	

Daily Volumes (2030)	Daily Volumes (2035)	% Change
SB + NB		
30,922	34,986	13%
32,585	37,146	14%
53,527	45,471	-15%
76,325	69,853	-8%
88,280	92,127	4%
110,409	108,009	-2%
125,468	127,415	2%
112,775	122,181	8%
109,218	122,350	12%
120,258	139,277	16%
116,652	135,955	17%
110,147	129,409	17%
102,159	113,455	11%
94,623	103,535	9%
101,914	115,986	14%
114,821	125,964	10%
138,665	147,905	7%
152,200	155,453	2%
165,374	165,974	0%
154,384	149,312	-3%
169,008	170,430	1%
167,901	172,223	3%
179,672	183,536	2%
187,044	193,812	4%
207,347	219,000	6%
235,326	247,195	5%
234,422	239,888	2%
245,783	251,563	2%
234,190	243,817	4%
241,519	251,671	4%

5%

I-25 Mainline Daily Volume Projections (Model)



North I-25 EIS

FEIS Runs - Volume Comparison

LOCATION	FEIS No Act_d	FEIS PA-4 b	Difference (Absolute)	Difference (Percent)
<b>Southbound</b>				
end of st In SB link	17,493	17,493	-	0%
N of SH1 SB link	18,495	18,645	150	1%
N of CR50 SB link	23,126	24,324	1,198	5%
N of SH14 SB link	34,097	36,943	2,846	8%
N of Prospect SB link	44,628	50,702	6,074	14%
N of Harmony SB link	53,190	61,046	7,856	15%
N of SH392 SB link	62,162	74,927	12,765	21%
N of CrossRds SB link	59,864	71,988	12,124	20%
N of US34 SB link	60,742	73,256	12,514	21%
N of SH402 SB link	70,740	85,654	14,914	21%
N of SH60 SB link	66,810	81,158	14,348	21%
N of SH56 SB link	64,379	75,108	10,729	17%
N of CR34 SB link	56,930	62,514	5,584	10%
N of SH66 SB link	52,219	55,204	2,985	6%
N of SH119 SB link	58,426	58,630	204	0%
N of SH52 SB link	64,089	61,448	(2,641)	-4%
N of CR8 SB link	75,191	73,276	(1,915)	-3%
N of SH7 SB link	79,052	78,032	(1,019)	-1%
N of E470 SB link	82,657	90,041	7,384	9%
N of 144th SB link	76,123	75,497	(626)	-1%
N of 136th SB link	85,559	84,415	(1,144)	-1%
N of 120th SB link	87,003	85,807	(1,196)	-1%
N of 104th SB link	91,611	89,804	(1,807)	-2%
N of Thrmtn SB link	96,818	94,757	(2,061)	-2%
N of 84th SB link	107,683	104,932	(2,751)	-3%
N of US36&270 SB link	122,678	119,157	(3,521)	-3%
N of 56th SB link	110,294	110,434	140	0%
N of 48th SB link	117,784	117,650	(134)	0%
N of 38th SB link	108,739	108,310	(429)	0%
N of 20th SB link	115,248	114,779	(469)	0%

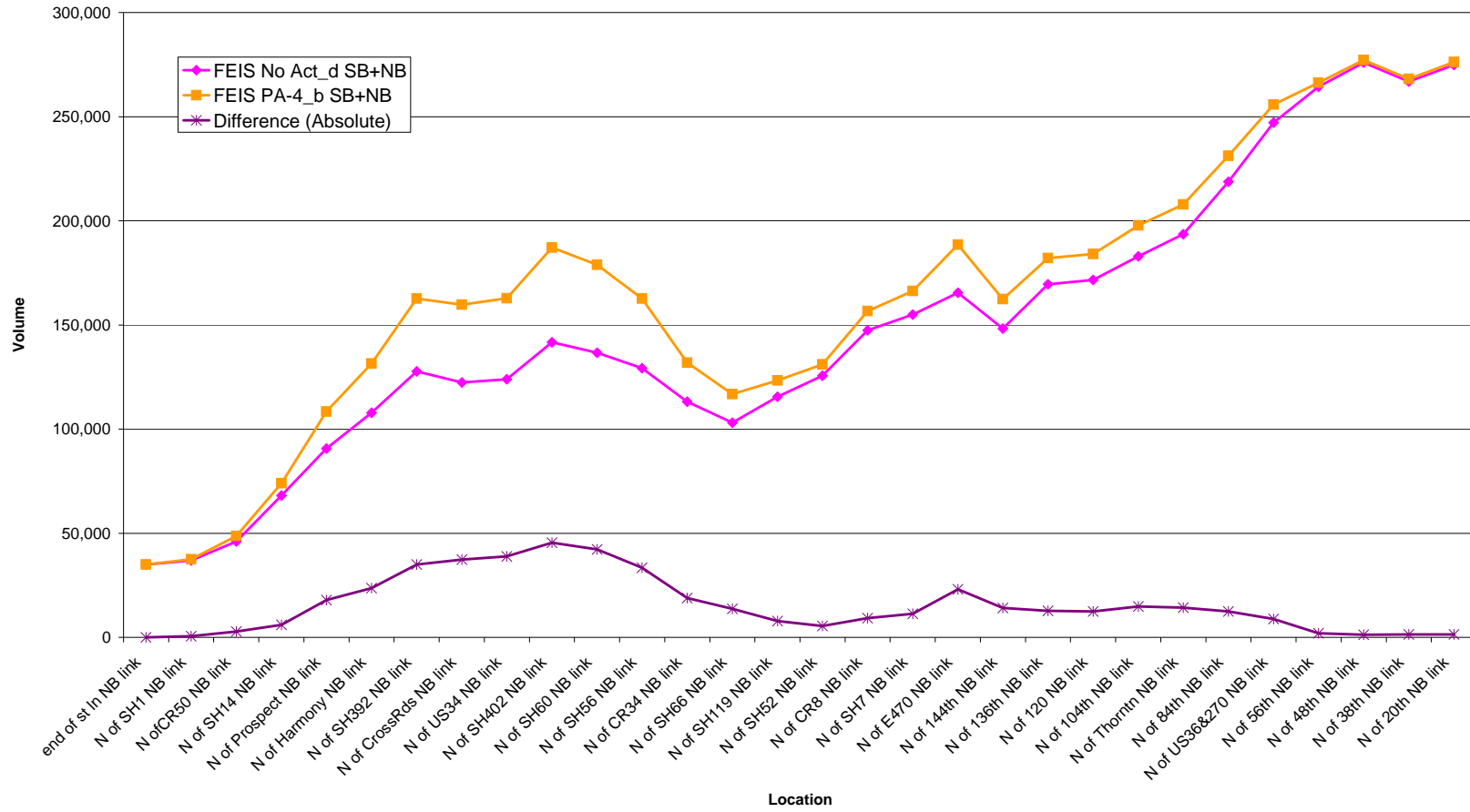
LOCATION	FEIS No Act_d	FEIS PA-4 b	Difference (Absolute)	Difference (Percent)
<b>Northbound</b>				
end of st In NB link	17,493	17,493	-	0%
N of SH1 NB link	18,440	18,784	344	2%
N of CR50 NB link	22,833	24,398	1,565	7%
N of SH14 NB link	33,984	37,097	3,113	9%
N of Prospect NB link	45,984	52,487	6,503	14%
N of Harmony NB link	54,639	62,847	8,208	15%
N of SH392 NB link	65,512	80,090	14,578	22%
N of CrossRds NB link	62,485	76,017	13,532	22%
N of US34 NB link	63,193	77,778	14,585	23%
N of SH402 NB link	70,955	87,496	16,541	23%
N of SH60 NB link	69,859	83,706	13,847	20%
N of SH56 NB link	64,813	76,217	11,404	18%
N of CR34 NB link	56,166	61,969	5,803	10%
N of SH66 NB link	50,860	54,120	3,260	6%
N of SH119 NB link	57,050	57,428	378	1%
N of SH52 NB link	61,439	59,634	(1,805)	-3%
N of CR8 NB link	72,190	70,522	(1,668)	-2%
N of SH7 NB link	75,924	75,416	(508)	-1%
N of E470 NB link	82,767	90,296	7,529	9%
N of 144th NB link	72,192	73,170	978	1%
N of 136th NB link	83,884	83,979	95	0%
N of 120 NB link	84,649	84,497	(152)	0%
N of 104th NB link	91,305	90,459	(846)	-1%
N of Thrmtn NB link	96,771	95,555	(1,216)	-1%
N of 84th NB link	111,055	108,736	(2,319)	-2%
N of US36&270 NB link	124,426	122,553	(1,873)	-2%
N of 56th NB link	128,734	128,931	197	0%
N of 48th NB link	132,870	132,679	(191)	0%
N of 38th NB link	132,777	133,009	232	0%
N of 20th NB link	134,251	134,595	344	0%

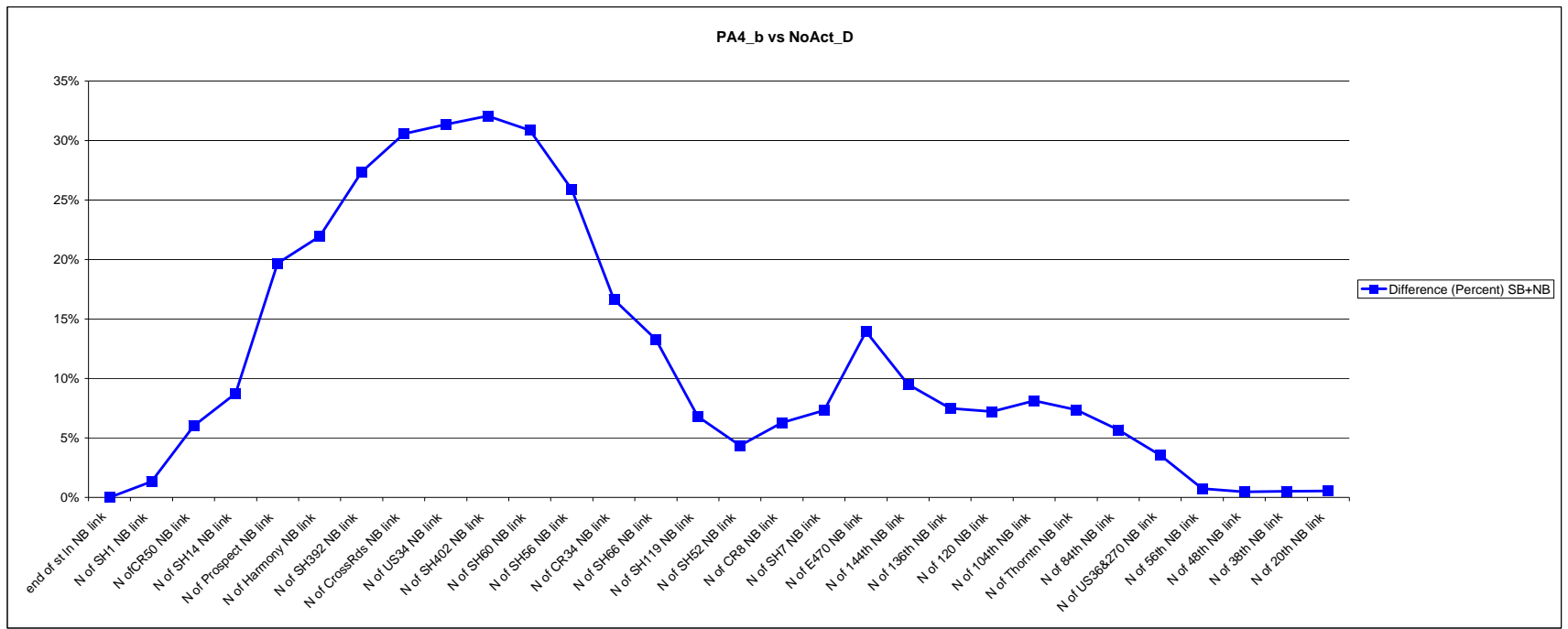
LOCATION	FEIS No Act_d	FEIS PA-4 b	Difference (Absolute)	Difference (Percent)	Average Difference
<b>SB+NB</b>					
end of st In NB link	34,986	34,986	-	0%	2%
N of SH1 NB link	36,935	37,429	494	1%	
N of CR50 NB link	45,959	48,722	2,763	6%	
N of SH14 NB link	68,081	74,040	5,959	9%	
N of Prospect NB link	90,612	108,453	17,841	20%	
N of Harmony NB link	107,829	131,498	23,669	22%	19%
N of SH392 NB link	127,674	162,622	34,948	27%	
N of CrossRds NB link	122,349	159,752	37,403	31%	
N of US34 NB link	123,935	162,781	38,846	31%	
N of SH402 NB link	141,695	187,132	45,437	32%	
N of SH60 NB link	136,669	178,846	42,177	31%	21%
N of SH56 NB link	129,192	162,642	33,450	26%	
N of CR34 NB link	113,096	131,912	18,816	17%	
N of SH66 NB link	103,079	116,753	13,674	13%	
N of SH119 NB link	115,476	123,338	7,862	7%	
N of SH52 NB link	125,528	130,990	5,462	4%	9%
N of CR8 NB link	147,381	156,650	9,269	6%	
N of SH7 NB link	154,976	166,301	11,325	7%	
N of E470 NB link	165,424	188,502	23,078	14%	
N of 144th NB link	148,315	162,407	14,092	10%	
N of 136th NB link	169,443	182,134	12,691	7%	6%
N of 120 NB link	171,652	184,044	12,392	7%	
N of 104th NB link	182,916	197,782	14,866	8%	
N of Thrmtn NB link	193,589	207,831	14,242	7%	
N of 84th NB link	218,738	231,187	12,449	6%	
N of US36&270 NB link	247,104	255,848	8,744	4%	3%
N of 56th NB link	264,303	266,227	1,924	1%	
N of 48th NB link	275,929	277,191	1,262	0%	
N of 38th NB link	266,791	268,181	1,390	1%	
N of 20th NB link	274,774	276,236	1,462	1%	

	FEIS No Act_d	FEIS PA-4 b	Difference (Absolute)	Difference (Percent)
<b>Southbound Managed Lanes summary</b>				
mgd_N of Prospect SB link		2,497	2,497	#DIV/0!
mgd_N of Harmony SB link		3,626	3,626	#DIV/0!
mgd_N of SH392 SB link		3,626	3,626	#DIV/0!
mgd_N of CrossRds SB link		5,638	5,638	#DIV/0!
mgd_N of US34 SB link		5,638	5,638	#DIV/0!
mgd_N of SH402 SB link		6,685	6,685	#DIV/0!
mgd_N of SH60 SB link		6,685	6,685	#DIV/0!
mgd_N of SH56 SB link		5,476	5,476	#DIV/0!
mgd_N of CR34 SB link		3,729	3,729	#DIV/0!
mgd_N of SH66 SB link		3,729	3,729	#DIV/0!
mgd_N of SH119 SB link		3,674	3,674	#DIV/0!
mgd_N of SH52 SB link		5,030	5,030	#DIV/0!
mgd_N of CR8 SB link		6,512	6,512	#DIV/0!
mgd_N of SH7 SB link		6,512	6,512	#DIV/0!
mgd_N of E470 SB link		4,157	4,157	#DIV/0!
mgd_N of 144th SB link		7,189	7,189	#DIV/0!
mgd_N of 136th SB link		7,189	7,189	#DIV/0!
mgd_N of 120th SB link		7,189	7,189	#DIV/0!
mgd_N of 104th SB link		9,007	9,007	#DIV/0!
mgd_N of Thrmtn SB link		9,007	9,007	#DIV/0!
mgd_N of 84th SB link		9,007	9,007	#DIV/0!
mgd_N of US36&270 SB link		8,797	8,797	#DIV/0!
mgd_N of 56th SB link	12,630	13,797	1,167	9%
mgd_N of 48th SB link	12,630	13,797	1,167	9%
mgd_N of 38th SB link	12,630	13,797	1,167	9%
mgd_N of 20th SB link	12,630	13,797	1,167	9%

	FEIS No Act_d	FEIS PA-4 b	Difference (Absolute)	Difference (Percent)
<b>Northbound Managed Lanes summary</b>				
mgd_N of Prospect NB link		2,767	2,767	#DIV/0!
mgd_N of Harmony NB link		3,979	3,979	#DIV/0!
mgd_N of SH392 NB link		3,979	3,979	#DIV/0!
mgd_N of CrossRds NB link		6,109	6,109	#DIV/0!
mgd_N of US34 NB link		6,109	6,109	#DIV/0!
mgd_N of SH402 NB link		7,297	7,297	#DIV/0!
mgd_N of SH60 NB link		7,297	7,297	#DIV/0!
mgd_N of SH56 NB link		5,841	5,841	#DIV/0!
mgd_N of CR34 NB link		3,700	3,700	#DIV/0!
mgd_N of SH66 NB link		3,700	3,700	#DIV/0!
mgd_N of SH119 NB link		3,606	3,606	#DIV/0!
mgd_N of SH52 NB link		4,878	4,878	#DIV/0!
mgd_N of CR8 NB link		6,340	6,340	#DIV/0!
mgd_N of SH7 NB link		6,340	6,340	#DIV/0!
mgd_N of E470 NB link		4,008	4,008	#DIV/0!
mgd_N of 144th NB link		6,551	6,551	#DIV/0!
mgd_N of 136th NB link		6,551	6,551	#DIV/0!
mgd_N of 120 NB link		6,551	6,551	#DIV/0!
mgd_N of 104th NB link		8,512	8,512	#DIV/0!
mgd_N of Thrmtn NB link		8,512	8,512	#DIV/0!
mgd_N of 84th NB link		8,512	8,512	#DIV/0!
mgd_N of US36&270 NB link		5,341	5,341	#DIV/0!
mgd_N of 56th NB link	12,645	13,065	420	3%
mgd_N of 48th NB link	12,645	13,065	420	3%
mgd_N of 38th NB link	12,645	13,065	420	3%
mgd_N of 20th NB link	12,645	13,065	420	3%

Daily I-25 Volumes





North I-25 EIS

FEIS Runs - Volume Comparison

Table with 5 columns: LOCATION, DEIS Package B, FEIS PA-4 b, Difference (Absolute), Difference (Percent). Contains 'Southbound' section with 34 rows of volume data.

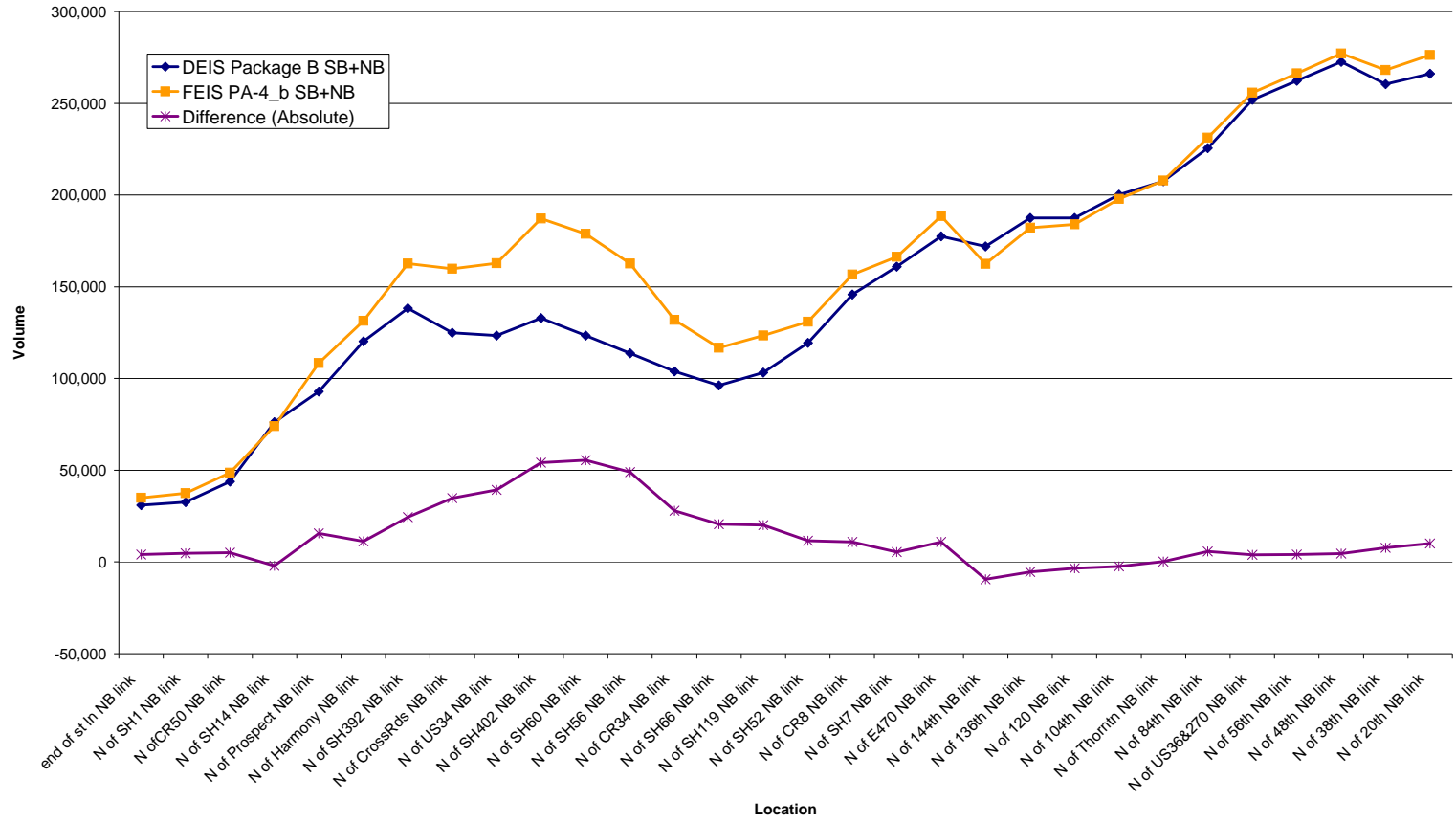
Table with 5 columns: LOCATION, DEIS Package B, FEIS PA-4 b, Difference (Absolute), Difference (Percent). Contains 'Northbound' section with 34 rows of volume data.

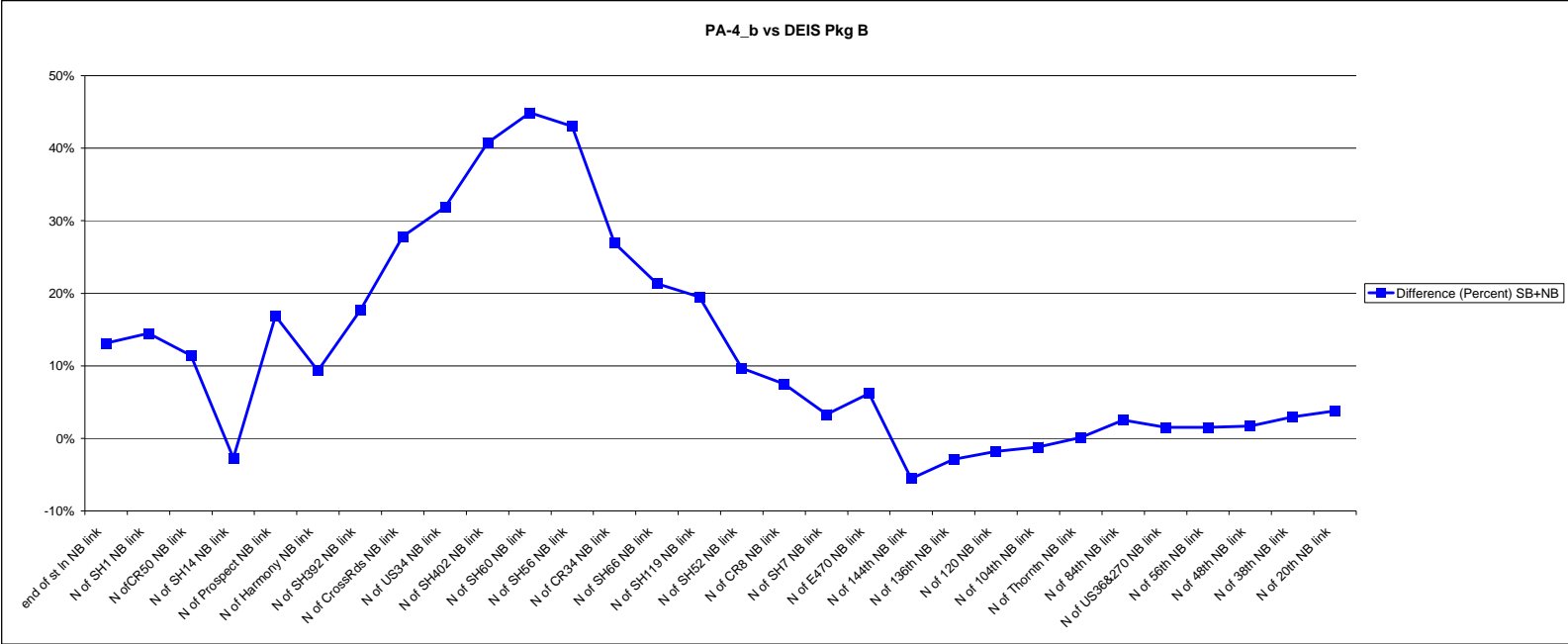
Table with 6 columns: LOCATION, DEIS Package B, FEIS PA-4 b, Difference (Absolute), Difference (Percent), Average Difference. Contains 'SB+NB' section with 34 rows of volume data and average difference values.

Table with 5 columns: LOCATION, DEIS Package B, FEIS PA-4 b, Difference (Absolute), Difference (Percent). Contains 'Southbound Managed Lanes summary' section with 25 rows of summary data.

Table with 5 columns: LOCATION, DEIS Package B, FEIS PA-4 b, Difference (Absolute), Difference (Percent). Contains 'Northbound Managed Lanes summary' section with 25 rows of summary data.

Daily I-25 Volumes







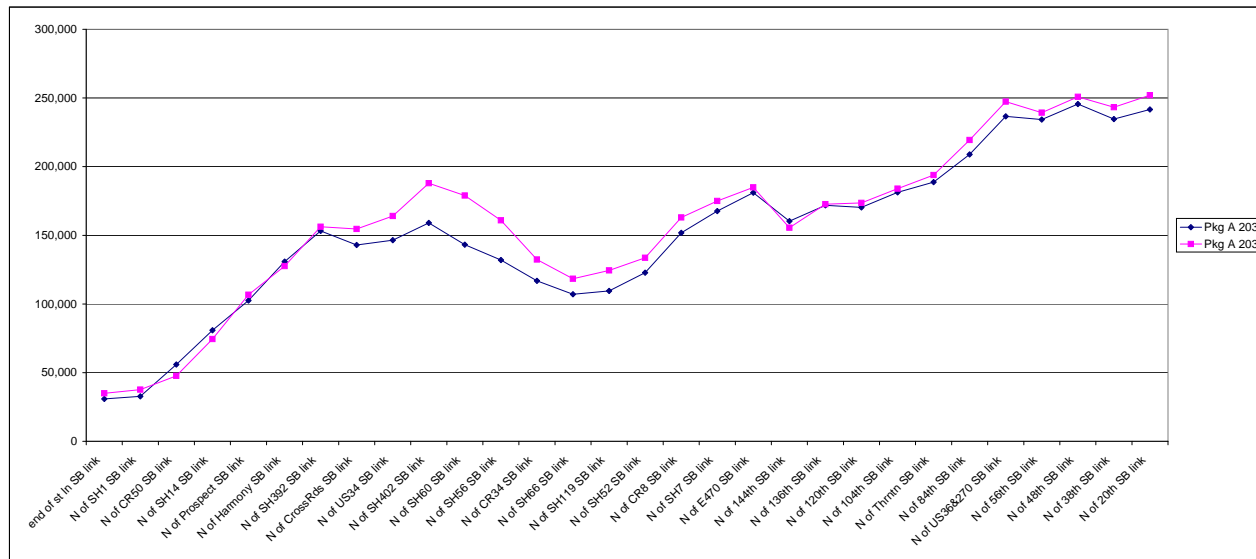
True PackageA

LOCATION	Daily Volumes (2030)	Daily Volumes (2035)	% Change	SPEEDS (2030)	SPEEDS (2035)	CONGESTED HOURS (2030)	CONGESTED HOURS (2035)
<b>Southbound</b>							
end of st in SB link	15,461	17,493	13%	75	75	0	0
N of SH1 SB link	16,379	18,689	14%	64	64	0	0
N of CR50 SB link	28,394	23,904	-16%	66	66	0	0
N of SH14 SB link	41,291	37,104	-10%	60	62	1	0
N of Prospect SB link	50,720	52,347	3%	63	63	0	0
N of Harmony SB link	64,612	62,755	-3%	61	62	0	0
N of SH392 SB link	74,967	76,142	2%	56	58	3	2
N of CrossRds SB link	70,166	75,626	8%	59	56	0	2
N of US34 SB link	71,895	80,729	12%	65	65	0	0
N of SH402 SB link	79,113	93,291	18%	64	60	0	1
N of SH60 SB link	71,322	88,327	24%	65	63	0	0
N of SH56 SB link	65,924	80,309	22%	63	56	0	4
N of CR34 SB link	58,565	66,819	14%	65	63	0	0
N of SH66 SB link	53,954	59,935	11%	65	64	0	0
N of SH119 SB link	55,588	63,008	13%	72	70	0	0
N of SH52 SB link	62,286	68,343	10%	62	60	1	1
N of CR8 SB link	76,789	83,184	8%	63	68	1	1
N of SH7 SB link	84,218	89,147	6%	60	58	1	1
N of E470 SB link	91,229	92,456	1%	55	50	1	2
N of 144th SB link	82,190	79,274	-4%	45	49	3.5	3.5
N of 136th SB link	86,875	86,793	0%	49	49	9	9
N of 120th SB link	86,541	87,582	1%	45	45	9	9
N of 104th SB link	91,338	91,622	0%	41	41	10	10
N of Thrtm SB link	96,300	96,468	0%	34	33	12.5	12.5
N of 84th SB link	106,093	107,533	1%	40	39	2.5	3.5
N of US36&270 SB link	120,440	122,271	2%	29	29	9	10
N of 56th SB link	108,331	110,463	2%	16	16	12.5	12.5
N of 48th SB link	115,359	118,053	2%	42	40	10	10
N of 38th SB link	104,377	110,316	6%	44	49	4	9
N of 20th SB link	110,676	117,038	6%	53	51	0	1

LOCATION	Daily Volumes (2030)	Daily Volumes (2035)	% Change	SPEEDS (2030)	SPEEDS (2035)	CONGESTED HOURS (2030)	CONGESTED HOURS (2035)
<b>Northbound</b>							
end of st in NB link	15,461	17,493	13%	75	75	0	0
N of SH1 NB link	16,348	18,919	16%	66	66	0	0
N of CR50 NB link	27,516	23,737	-14%	66	66	0	0
N of SH14 NB link	39,620	37,331	-6%	62	62	0	0
N of Prospect NB link	51,752	54,344	5%	65	65	0	0
N of Harmony NB link	66,180	64,876	-2%	60	62	1	0
N of SH392 NB link	78,219	80,080	2%	53	56	3.5	4
N of CrossRds NB link	72,743	79,006	9%	60	56	1	4
N of US34 NB link	74,559	83,277	12%	65	64	0	0
N of SH402 NB link	79,893	94,646	18%	63	60	0	1
N of SH60 NB link	71,869	90,679	26%	65	62	0	1
N of SH56 NB link	66,060	80,553	22%	62	56	0	4
N of CR34 NB link	58,328	65,696	13%	64	63	0	0
N of SH66 NB link	53,133	58,453	10%	65	65	0	0
N of SH119 NB link	53,940	61,448	14%	72	70	0	0
N of SH52 NB link	60,506	65,324	8%	63	62	0	1
N of CR8 NB link	75,039	79,817	6%	64	69	0	0
N of SH7 NB link	83,489	85,794	3%	62	60	1	1
N of E470 NB link	89,853	92,398	3%	57	50	1	2
N of 144th NB link	78,068	76,236	-2%	53	55	4	3
N of 136th NB link	84,961	85,830	1%	52	51	7.5	5
N of 120 NB link	83,785	86,029	3%	48	48	4	8.5
N of 104th NB link	89,974	92,262	3%	43	41	8.5	12.5
N of Thrtm NB link	92,422	97,420	5%	32	31	8.5	12.5
N of 84th NB link	102,782	111,853	9%	43	51	4	1
N of US36&270 NB link	116,180	125,064	8%	36	49	7.5	4
N of 56th NB link	125,978	128,824	2%	46	44	4	7.5
N of 48th NB link	130,186	132,796	2%	46	44	7.5	8.5
N of 38th NB link	130,273	132,896	2%	31	29	12.5	12.5
N of 20th NB link	130,933	134,953	3%	54	53	0	1

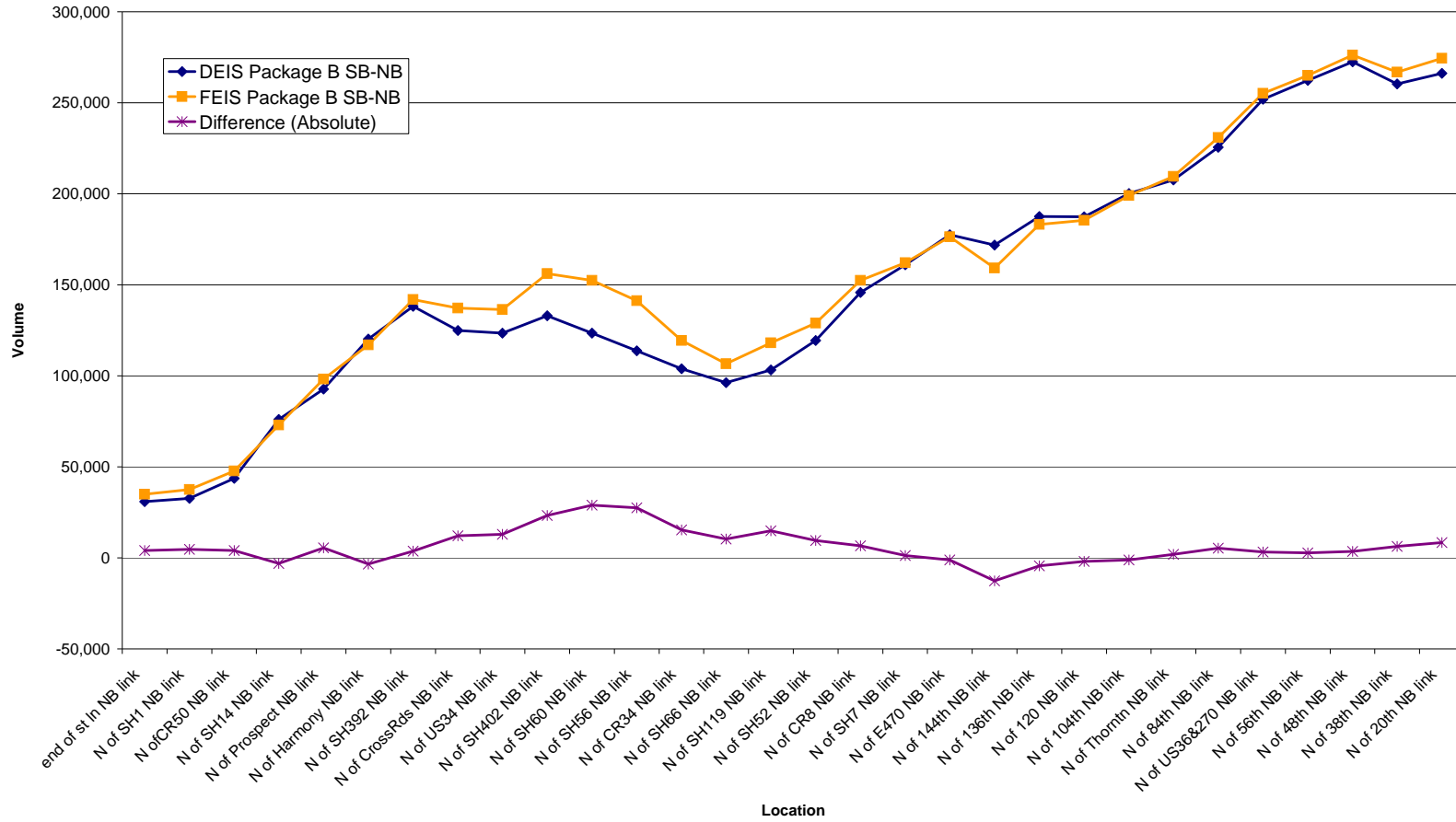
Daily Volumes (2030)	Daily Volumes (2035)	% Change
SB + NB	SB + NB	SB + NB
30,922	34,986	13%
32,727	37,608	15%
55,910	47,641	-15%
80,911	74,435	-8%
102,472	106,691	4%
130,792	127,631	-2%
153,186	156,222	2%
142,909	154,632	8%
146,454	164,006	12%
159,006	187,937	18%
143,191	179,006	25%
131,984	160,862	22%
116,893	132,315	13%
107,087	118,388	11%
109,528	124,456	14%
122,792	133,667	9%
151,828	163,001	7%
167,707	174,941	4%
181,082	184,854	2%
160,258	155,510	-3%
171,836	172,623	0%
170,326	173,611	2%
181,312	183,904	1%
188,722	193,888	3%
208,875	219,386	5%
236,620	247,335	5%
234,309	239,287	2%
245,545	250,849	2%
234,650	243,212	4%
241,609	251,991	4%

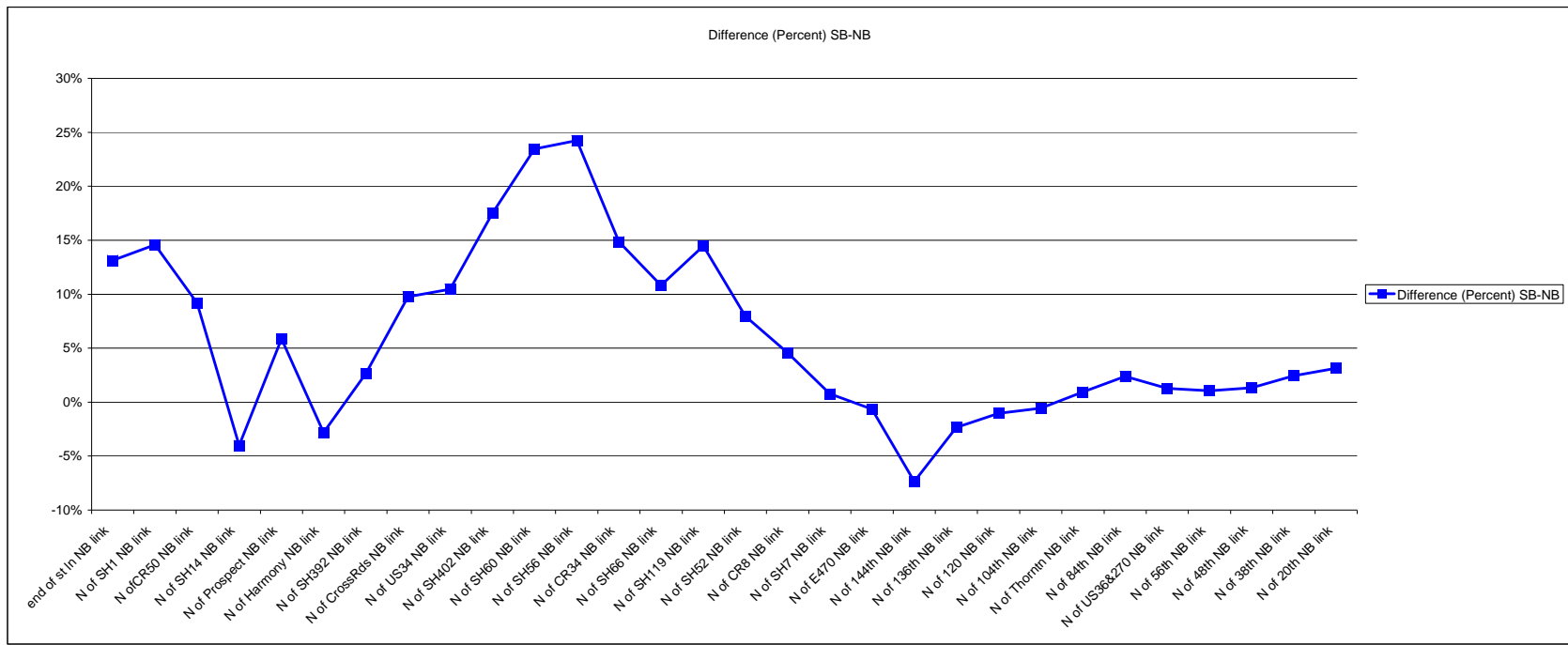
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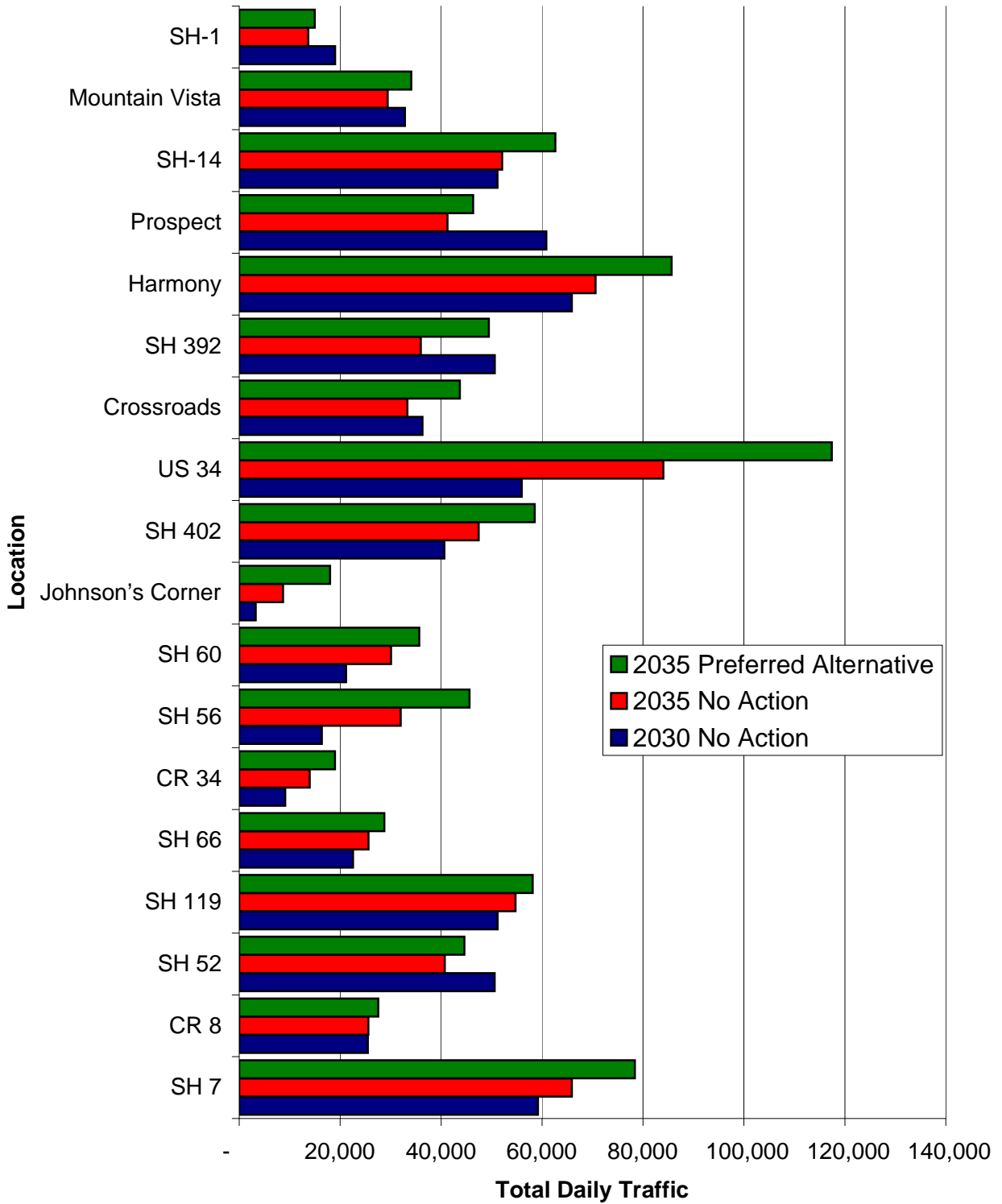


Daily I-25 Volumes



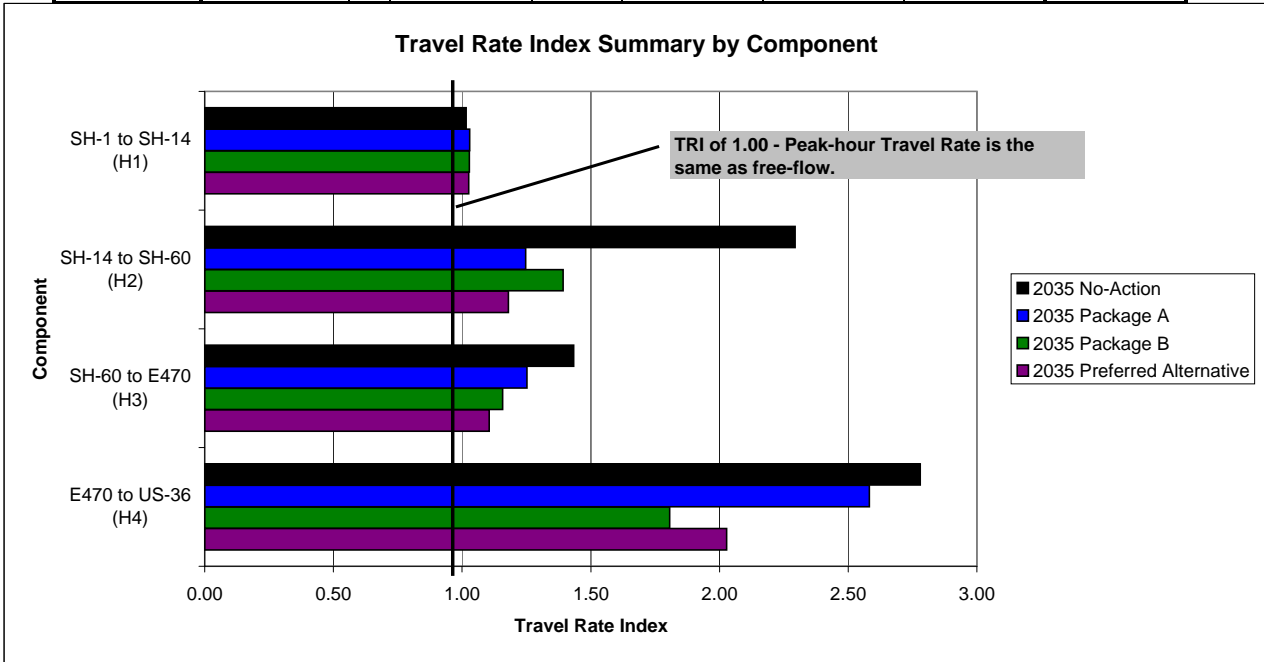


### Interchange Volumes



### Travel Rate Index Summary

		FT	Roadway Type	2001	2035 No-Action	2035 Package A	2035 Package B	Preferred Alternative	
<b>TRI</b>	E470 to US-36 (H4)	1	Freeway	1.29	2.78	2.58	1.81	2.03	4.00
	SH-60 to E470 (H3)	1	Freeway	1.05	1.43	1.25	1.16	1.10	3.00
	SH-14 to SH-60 (H2)	1	Freeway	1.02	2.29	1.25	1.39	1.18	2.00
	SH-1 to SH-14 (H1)	1	Freeway	1.00	1.02	1.03	1.03	1.03	1.00
		FT	Roadway Type	2001	2030 No-Action	2030 Package A	2030 Package B	2030 Package B	
<b>FF Time</b>	E470 to US-36 (H4)	1	Freeway		19.84	19.66	39.62	38.75	4.00
	SH-60 to E470 (H3)	1	Freeway		43.14	42.92	86.69	86.22	3.00
	SH-14 to SH-60 (H2)	1	Freeway		30.76	30.76	61.59	61.51	2.00
	SH-1 to SH-14 (H1)	1	Freeway		14.86	14.90	14.90	14.86	1.00
		FT	Roadway Type	2001	2030 No-Action	2030 Package A	2030 Package B	2030 Package B	
<b>AM Time</b>	E470 to US-36 (H4)	1	Freeway		55.17	50.77	71.59	78.58	4.00
	SH-60 to E470 (H3)	1	Freeway		61.85	53.74	100.37	95.27	3.00
	SH-14 to SH-60 (H2)	1	Freeway		70.55	38.37	85.76	72.61	2.00
	SH-1 to SH-14 (H1)	1	Freeway		15.10	15.33	15.31	15.24	1.00



North I-25 EIS

2035 Screenline volumes

South of SH-1	No-Action	Package A	Package B	Preferred Altern	Difference
sc5_pt1_287	9,324	9,050	9,181	9,527	203
sc5_pt2	943	909	907	894	-49
sc5_pt3	1,803	1,677	1,690	1,659	-144
sc5_pt4	2,432	2,388	2,277	3,009	577
sc5_pt5_i25	42,203	44,005	43,140	44,343	2,140
sc5_pt6	20	20	20	20	0
sc5_pt7_85	3,749	3,080	3,797	3,127	-622
Total	60,474	61,129	61,012	62,579	
I-25	42,203	44,005	43,140	44,343	
Arterials	18,271	17,124	17,872	18,236	
Arterial %		6%	2%	0%	
I-25 Balanced	35,805	37,565	37,565	37,565	
	24,669	23,564	23,447	25,014	
		4%	5%	-1%	

South of Harmony	NoAction	Preferred Altern	Difference		
sc6_pt1_287	54,623	50,401	55,168	53,683	-940
sc6pt10	8,128	8,063	7,809	7,067	-1,061
sc6pt11	385	359	357	468	83
sc6pt12	2,654	2,386	2,668	2,899	245
sc6pt13	758	735	766	839	81
sc6pt14	11,953	10,464	12,605	10,650	-1,303
sc6pt15	1,859	1,868	1,851	1,841	-18
sc6pt16	1,801	1,776	1,768	1,621	-180
sc6pt17	3,058	2,643	2,897	2,652	-406
sc6pt18	953	946	1,002	1,001	48
sc6pt19	1,124	1,134	1,133	1,194	70
sc6pt2	11,445	11,469	11,390	11,601	156
sc6pt20	2,751	2,753	2,754	2,746	-5
sc6pt21_85	20,492	19,194	20,243	19,047	-1,445
sc6pt3	19,121	18,338	20,351	19,181	60
sc6pt4_Timbr	35,577	34,599	31,722	30,938	-4,639
sc6pt5	18	11	7	56	38
sc6pt6	1,324	1,199	1,669	1,260	-64
sc6pt7	4,622	4,178	4,472	4,391	-231
sc6pt8_i25FR	131,869	159,836	145,803	168,080	36,211
sc6pt9	6,134	4,225	5,923	2,684	-3,450
Total	320,649	336,577	332,358	343,899	
I-25	131,869	159,836	145,803	168,080	
Arterials	188,780	176,741	186,555	175,819	
Arterial %		6%	1%	7%	
I-25 Balanced	104,840	136,612	131,190	145,850	
	215,809	199,965	201,168	198,049	
		7%	7%	8%	

South of US-34	No-Action	Preferred Altern	Difference		
sc4_pt1_287	37,530	31,894	36,008	34,767	-2,763
sc4_pt10	17,296	16,300	16,843	16,714	-582
sc4_pt11	17,826	17,028	17,762	18,775	949
sc4_pt12	9,154	7,467	8,501	8,312	-842
sc4_pt13	7,400	6,727	6,976	6,776	-624
sc4_pt14	21,493	20,895	21,371	21,284	-209
sc4_pt15	2,948	2,887	3,194	3,153	205
sc4_pt16	30,008	29,481	29,303	28,616	-1,392
sc4_pt17	14,672	14,611	15,085	14,922	250
sc4_pt18	5,778	5,673	5,589	5,557	-221
sc4_pt19	13	4	10	32	19
sc4_pt2	10,715	9,447	10,316	9,748	-967
sc4_pt20	7,068	7,047	7,156	8,691	1,623
sc4_pt21_85	51,355	48,405	49,977	48,367	-2,988
sc4_pt22	2	1	1	19	17
sc4_pt23	4,297	4,240	4,285	3,992	-305
sc4_pt3	13,112	11,518	12,466	12,381	-731
sc4_pt4	9,278	7,513	9,111	6,511	-2,767
sc4_pt5	3,849	2,569	3,380	2,553	-1,296
sc4_pt6_i25	148,562	191,651	164,143	194,814	46,252
sc4_pt7	9,760	5,883	9,464	6,743	-3,017
sc4_pt8	12,201	6,394	11,790	6,173	-6,028
sc4_pt9	1,893	638	1,573	832	-1,061
Total	436,210	448,273	444,304	459,732	
I-25	148,562	191,651	164,143	194,814	
Arterials	287,648	256,622	280,161	264,918	
Arterial %		11%	3%	8%	
I-25 Balanced	127,385	160,555	140,115	165,680	
	308,825	287,718	295,189	294,052	
		7%	4%	5%	

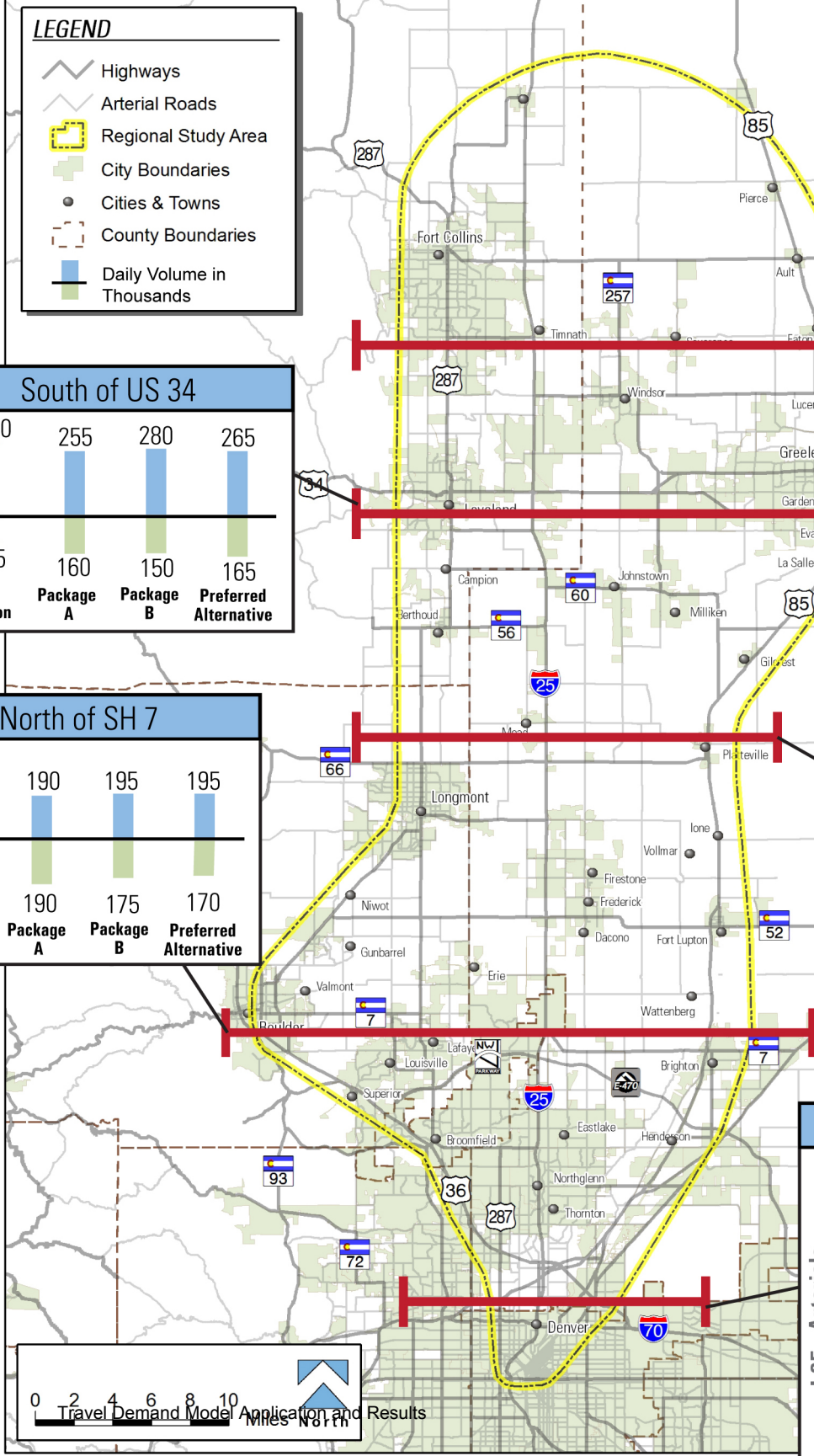
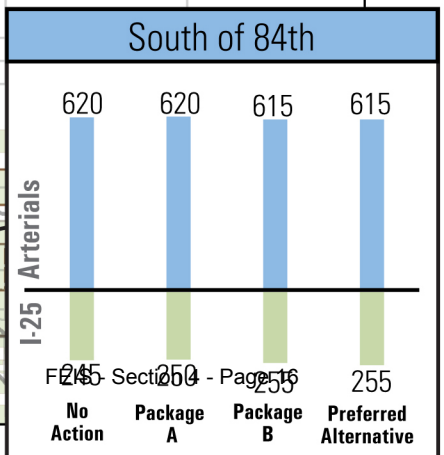
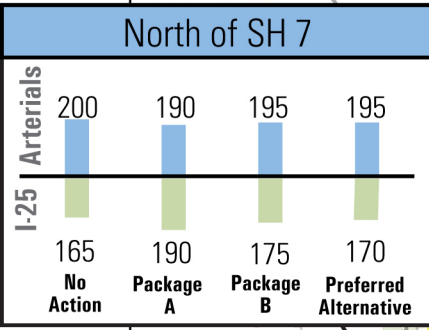
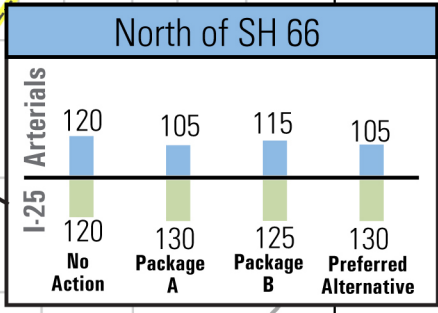
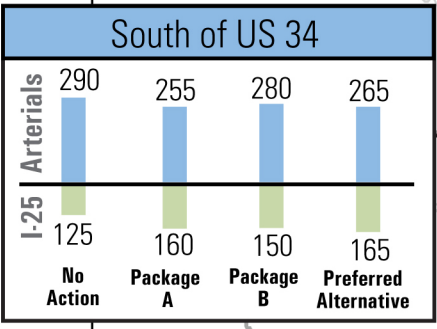
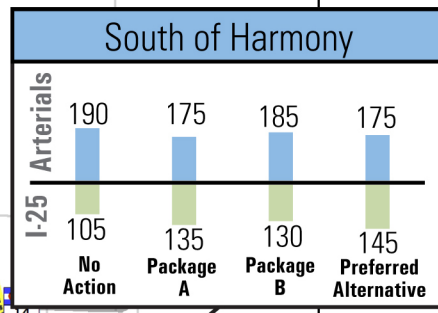
North of Sh-66	No-Action	Package A	Package B	Preferred Altern	Difference
sc1pt1	3,738	2,910	3,232	2,758	-980
sc1pt10_US85	56,983	51,746	54,433	51,474	-5,509
sc1pt11		96	113	528	178
sc1pt3_US287	50,751	42,721	48,973	43,226	-7,525
sc1pt4	2,033	1,223	1,642	1,001	-1,032
sc1pt5		7,410	7,609	7,533	-35
sc1pt6_i25 FR	103,944	118,394	115,972	124,427	20,483
sc1pt7	310	147	205	92	-218
sc1pt8	702	548	692	640	-62
sc1pt9	11	11	11	11	0
Total	226,390	225,206	232,882	231,690	
I-25	103,944	118,394	115,972	124,427	
Arterials	122,446	106,812	116,910	107,263	
Arterial %		13%	5%	12%	
I-25 Balanced	118,650	128,824	114,955	130,315	
	107,740	96,382	117,927	101,375	
		11%	-9%	6%	

North of Sh-7	No-Action	Preferred Altern	Difference			
sc2_pt1	25,172	24,752	25,081	25,244	72	
sc2_pt10	6,061	4,511	5,197	5,373	-688	
sc2_pt11	10,678	10,341	10,522	10,547	-131	
sc2_pt12_85	69,748	66,959	67,915	67,857	-1,891	
sc2_pt2	2,776	35,419	33,252	34,804	36,834	1,415
sc2_pt3	17,034	16,337	16,738	15,074	-1,960	
sc2_pt5	5,158	4,590	5,032	4,619	-539	
sc2_pt6	6,672	5,461	6,193	5,479	-1,193	
sc2_pt7	5,409	4,915	4,865	4,824	-585	
sc2_pt8_i25	165,183	183,190	171,083	173,538	8,355	
SC2_pt9	974	514	721	692	-282	
sc2_pt4	16,700	16,502	16,626	16,885	185	
Total	364,208	371,324	364,777	366,966		
I-25	165,183	183,190	171,083	173,538		
Arterials	199,025	188,134	193,694	193,428		
Arterial %		5%	3%	3%		
I-25 Balanced	166,085	191,838	174,445	171,025		
	198,123	179,486	190,332	195,941		
		9%	4%	1%		

South of 84th Ave	No-Action	Preferred Altern	Difference		
sc3_pt1	66,497	65,882	65,897	67,394	897
sc3_pt10	9,451	9,492	8,865	11,629	2,178
sc3_pt11	8,833	8,824	8,530	9,557	724
sc3_pt12_i25	247,194	247,335	255,158	243,119	-4,075
sc3_pt13	24,109	24,104	24,087	25,859	1,750
sc3_pt14	4,310	4,292	4,048	4,800	490
sc3_pt15	13,199	13,132	12,845	13,323	124
sc3_pt16	28,271	28,676	28,707	29,997	1,726
sc3_pt17	3,211	3,179	3,029	5,321	2,110
sc3_pt18_85	154,087	152,804	152,544	155,063	966
sc3_pt19	5,175	5,214	4,930	5,852	677
sc3_pt2	7,103	7,076	7,010	7,214	111
sc3_pt3	38,667	38,414	38,272	40,541	1,874
sc3_pt4_36	161,173	161,230	159,823	157,340	-3,833
sc3_pt5	6,516	6,499	6,407	6,942	426
sc3_pt6	8,269	8,362	8,093	9,412	1,143
sc3_pt7	49,530	49,541	48,816	50,417	887
sc3_pt8	3,676	3,683	3,685	4,021	345
sc3_pt9	27,178	27,214	27,301	28,100	922
Total	866,449	864,953	868,047	875,891	
I-25	247,194	247,335	255,158	243,119	
Arterials	619,255	617,618	612,889	632,772	
Arterial %		0%	1%	-2%	
I-25 Balanced	246,405	248,222	253,465	253,465	
	620,044	616,731	614,582	622,426	
		1%	1%	0%	

### LEGEND

- Highways
- Arterial Roads
- Regional Study Area
- City Boundaries
- Cities & Towns
- County Boundaries
- Daily Volume in Thousands



0 2 4 6 8 10 Miles North

Travel Demand Model Application and Results



Daily Volumes on Arterials

Arterial	2005 Base Model		2035 No-Action		Total Growth		Total Growth Rate		Annual Growth Rate		Existing Counts		2035 Projections		2035 Projections - Revised		Growth rates		Diff from Model		2030 Adjusted Vol		
	West of	East of	West of	East of	West of	East of	West of	East of	West of	East of	West of	East of	West of	East of	West of	East of	west of	east of	west of	east of	west of	east of	
SH-1	7,949	3,452	11,101	4,593	3,152	1,141	1.40	1.33	1.1%	1.0%	9,900	200	13,700	300	13,400	800	1.35	4.00	0.21	-0.83	24,000	3,900	
CR-50	5,871	2,129	36,418	5,883	30,547	3,754	6.20	2.76	6.3%	3.4%	6,300	2,500	39,400	6,800	38,100	6,500	6.05	2.60	0.05	0.10	33,700	7,000	
SH-14	38,022	506	57,042	25,141	19,020	24,635	1.50	49.69	1.4%	13.9%	28,800	14,400	44,900	714,600	46,400	25,100	1.61	1.74	-0.19	0.00	60,000	24,100	west: 2003 count
Prospect	16,531	9,341	40,305	18,754	23,774	9,413	2.44	2.01	3.0%	2.4%	19,200	4,100	46,600	8,400	44,800	10,900	2.33	2.66	0.11	-0.42	59,800	25,800	
Harmony	37,042	10,879	86,250	39,364	49,208	28,485	2.33	3.62	2.9%	4.4%	36,600	12,700	86,300	46,200	86,000	43,700	2.35	3.44	0.00	0.11	73,500	33,900	
SH-392	15,569	27,409	34,058	48,842	18,489	21,433	2.19	1.78	2.6%	1.9%	11,400	18,800	24,600	33,100	27,300	36,600	2.39	1.95	-0.20	-0.25	34,800	43,900	
Crossroads	8,925	9,688	32,981	31,470	24,056	21,782	3.70	3.25	4.5%	4.0%	5,700	14,600	21,300	47,400	25,600	31,500	4.49	2.16	-0.22	0.00	29,500	21,700	
US-34	43,000	33,394	85,777	98,290	42,777	64,896	1.99	2.94	2.3%	3.7%	37,900	39,000	75,000	116,000	77,800	109,900	2.05	2.82	-0.09	0.12	67,800	84,600	
SH-402	12,631	2,513	54,235	21,966	41,604	19,453	4.29	8.74	5.0%	7.5%	14,900	4,100	64,400	35,900	56,500	22,000	3.79	5.37	0.04	0.00	42,500	20,200	
CR-16	251	127	2,766	9,033	2,515	8,906	11.02	71.13	8.3%	15.3%	500	800	5,500	57,300	3,000	9,700	6.00	12.13	0.08	0.07	2,000	2,100	
SH-60 (Johnson)	364	14,079	5,288	35,081	4,924	21,002	14.53	2.49	9.3%	3.1%	2,000	11,100	28,800	27,700	6,900	29,900	3.45	2.69	0.30	-0.15	4,200	19,600	
SH-56 (Berthoud)	6,383	1,094	29,479	26,059	23,096	24,965	4.62	23.82	5.2%	11.1%	6,600	1,500	30,200	35,300	29,900	26,500	4.53	17.67	0.01	0.02	14,200	6,000	
CR-34(Mead)	5,495	3,613	12,602	14,006	7,107	10,393	2.29	3.88	2.8%	4.6%	2,300	1,600	5,300	6,200	9,400	12,000	4.09	7.50	-0.25	-0.14	3,600	5,600	
SH-66	9,667	9,408	17,122	19,740	7,455	10,332	1.77	2.10	1.9%	2.5%	17,100	13,200	30,100	27,700	27,300	25,600	1.60	1.94	0.59	0.30	22,500	25,400	
SH-119	36,740	15,120	62,356	32,397	25,616	17,277	1.70	2.14	1.8%	2.6%	37,400	25,000	63,900	54,000	63,400	42,300	1.70	1.69	0.02	0.31	77,200	36,600	
SH-52	9,593	20,298	25,769	38,194	16,176	17,896	2.69	1.88	3.4%	2.1%	23,100	21,700	63,000	40,500	39,300	40,000	1.70	1.84	0.53	0.05	45,200	48,600	
CR-8(Weld Broomfield)	6,461	1,268	24,225	16,475	17,764	15,207	3.75	12.99	4.5%	8.9%					24,200	16,500	#DIV/0!	#DIV/0!	0.00	0.00	16,800	18,700	
SH-7	22,741	20,789	63,178	86,449	40,437	65,660	2.78	4.16	3.5%	4.9%	20,300	16,100	57,000	67,600	58,900	74,700	2.90	4.64	-0.07	-0.14	60,100	62,900	
E-470	13,297	7,219	61,418	64,583	48,121	57,364	4.62	8.95	5.2%	7.6%					61,400	64,600	#DIV/0!	#DIV/0!	0.00	0.00			
144th	7,991	8,098	54,624	52,244	46,633	44,146	6.84	6.45	6.6%	6.4%	7,100	6,700	54,900	43,100	54,300	47,000	7.65	7.01	-0.01	-0.10	43,100	40,600	west 2003, east 2005
136th	20,175	28,952	50,460	44,548	30,285	15,596	2.50	1.54	3.1%	1.4%	18,600	25,600	46,500	38,800	50,500	44,500	2.72	1.74	0.00	0.00	47,200	41,800	
120th	55,337	62,537	77,276	80,097	21,939	17,560	1.40	1.28	1.1%	0.8%	47,700	57,600	69,200	75,500	69,400	75,300	1.45	1.31	-0.10	-0.06	54,700	64,600	2001 counts
104th	55,130	62,081	72,254	78,414	17,124	16,333	1.31	1.26	0.9%	0.8%	52,100	67,600	70,700	88,600	69,900	86,300	1.34	1.28	-0.03	0.10	52,100	67,600	2001 counts
Thornton Pkwy	25,124	46,606	35,251	61,912	10,127	15,306	1.40	1.33	1.1%	1.0%	32,400	34,800	44,500	46,400	43,500	49,500	1.34	1.42	0.23	-0.20	34,500	51,200	2006 counts
84th	20,202	42,802	36,746	61,929	16,544	19,127	1.82	1.45	2.0%	1.2%	35,100	30,100	62,300	43,100	51,600	46,100	1.47	1.53	0.40	-0.26	40,800	33,400	west 2006 count, east 2005 count
													1,001,600	907,100	942,700	826,800							

Source: 2005 FEIS; 2035 FEIS No-Action

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Daily Volumes on Arterials

Arterial	2005 Base Model		035 Preferred Alternati		Total Growth		Total Growth Rate		Annual Growth Rate		Existing Counts		2035 Projections		2035 Projections - Revised		Growth rates		Diff from Model		2030 Adjusted Vol	
	West of	East of	West of	East of	West of	East of	West of	East of	West of	East of	West of	East of	West of	East of	West of	East of	west of	east of	west of	east of	west of	east of
SH-1	7,949	3,452	11,934	4,948	3,985	1,496	1.50	1.43	1.4%	1.2%	9,900	200	15,000	300	14,500	1,000	1.46	5.00	0.22	-0.80	24,200	3,200
CR-50	5,871	2,129	39,590	5,467	33,719	3,338	6.74	2.57	6.6%	3.2%	6,300	2,500	42,900	6,400	41,400	6,100	6.57	2.44	0.05	0.12	35,500	7,000
SH-14	38,022	506	61,366	30,552	23,344	30,046	1.61	60.38	1.6%	14.6%	27,500	14,400	45,700	858,800	48,300	30,600	1.76	2.13	-0.21	0.00	64,500	25,900
Prospect	16,531	9,341	46,789	20,600	30,258	11,259	2.83	2.21	3.5%	2.7%	19,200	4,100	53,900	9,100	51,700	12,200	2.69	2.98	0.10	-0.41	62,900	26,100
Harmony	37,042	10,879	95,949	31,749	58,907	20,870	2.59	2.92	3.2%	3.6%	36,600	12,700	94,200	36,700	94,800	35,100	2.59	2.76	-0.01	0.11	83,200	32,200
SH-392	15,569	27,409	34,639	51,813	19,070	24,404	2.22	1.89	2.7%	2.1%	11,400	18,800	25,400	35,100	27,900	39,100	2.45	2.08	-0.19	-0.25	34,800	49,000
Crossroads	8,925	9,688	36,854	36,860	27,929	27,172	4.13	3.80	4.8%	4.6%	5,700	14,600	23,300	56,300	28,400	36,900	4.98	2.53	-0.23	0.00	32,000	24,500
US-34	43,000	33,394	94,509	106,671	51,509	73,277	2.20	3.19	2.7%	3.9%	37,900	39,000	84,300	122,900	86,800	117,600	2.29	3.02	-0.08	0.10	69,400	96,500
SH-402	12,631	2,513	59,660	22,144	47,029	19,631	4.72	8.81	5.3%	7.5%	14,900	4,100	70,200	35,900	61,900	22,100	4.15	5.39	0.04	0.00	42,100	15,800
CR-16	251	127	3,592	13,466	3,341	13,339	14.31	106.03	9.3%	16.8%	500	800	7,200	84,400	3,800	14,100	7.60	17.63	0.06	0.05	3,400	5,700
SH-60 (Johnson)	364	14,079	3,581	37,008	3,217	22,929	9.84	2.63	7.9%	3.3%	2,000	11,100	19,600	29,400	12,400	31,700	6.20	2.86	2.46	-0.14	2,700	20,600
SH-56 (Berthoud)	6,383	1,094	35,780	29,619	29,397	28,525	5.61	27.07	5.9%	11.6%	6,600	1,500	36,800	40,400	36,400	30,000	5.52	20.00	0.02	0.01	17,200	8,300
CR-34(Mead)	5,495	3,613	13,624	14,727	8,129	11,114	2.48	4.08	3.1%	4.8%	2,300	1,600	5,700	6,500	10,400	12,700	4.52	7.94	-0.24	-0.14	4,100	6,300
SH-66	9,667	9,408	19,471	20,787	9,804	11,379	2.01	2.21	2.4%	2.7%	17,100	13,200	34,800	29,400	30,900	27,000	1.81	2.05	0.59	0.30	25,100	24,200
SH-119	36,740	15,120	65,589	32,858	28,849	17,738	1.79	2.17	2.0%	2.6%	37,400	25,000	67,700	54,000	67,000	42,700	1.79	1.71	0.02	0.30	83,400	39,300
SH-52	9,593	20,298	26,104	36,751	16,511	16,453	2.72	1.81	3.4%	2.0%	23,100	21,700	63,000	39,300	39,600	38,700	1.71	1.78	0.52	0.05	45,300	49,700
CR-8(Weld Broomfield)	6,461	1,268	23,718	14,873	17,257	13,605	3.67	11.73	4.4%	8.6%				23,700		14,900	#DIV/0!	#DIV/0!	0.00	0.00	17,000	19,600
SH-7	22,741	20,789	68,026	91,567	45,285	70,778	2.99	4.40	3.7%	5.1%	20,300	16,100	60,400	71,600	63,000	79,200	3.10	4.92	-0.07	-0.14	61,400	62,900
E-470	13,297	7,219	61,509	65,500	48,212	58,281	4.63	9.07	5.2%	7.6%				61,500		65,500	#DIV/0!	#DIV/0!	0.00	0.00		
144th	7,991	8,098	54,081	51,847	46,090	43,749	6.77	6.40	6.6%	6.4%	7,100	6,700	54,900	43,100	54,000	46,800	7.61	6.99	0.00	-0.10	43,800	40,700
136th	20,175	28,952	49,609	45,072	29,434	16,120	2.46	1.56	3.0%	1.5%	18,600	25,600	45,100	40,000	49,600	45,100	2.67	1.76	0.00	0.00	47,400	42,000
120th	55,337	62,537	77,352	82,555	22,015	20,018	1.40	1.32	1.1%	0.9%	47,700	57,600	69,200	78,100	69,500	77,900	1.46	1.35	-0.10	-0.06	54,800	63,500
104th	55,130	62,081	70,762	77,380	15,632	15,299	1.28	1.25	0.8%	0.7%	52,100	67,600	68,300	85,700	68,000	84,300	1.31	1.25	-0.04	0.09	53,600	67,600
Thornton Pkwy	25,124	46,606	37,625	55,522	12,501	8,916	1.50	1.19	1.4%	0.6%	32,400	34,800	48,500	41,400	46,700	42,600	1.44	1.22	0.24	-0.23	34,600	51,100
84th	20,202	42,802	37,769	64,099	17,567	21,297	1.87	1.50	2.1%	1.4%	35,100	30,100	64,100	45,700	52,700	48,500	1.50	1.61	0.40	-0.24	40,700	33,400
													1,055,100	951,700	1,010,100	846,300						

Source: 2005 FEIS Model Run ; 2035 FEIS PA-4\_b

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Daily Volumes on Arterials

Arterial	2005 Base Model		2035 Package A		Total Growth		Total Growth Rate		Annual Growth Rate		Existing Counts		2035 Projections		2035 Projections - Revised		Growth rates		Diff from Model		2030 Adjusted Vol	
	West of	East of	West of	East of	West of	East of	West of	East of	West of	East of	West of	East of	West of	East of	West of	East of	west of	east of	west of	east of	west of	east of
SH-1	7,949	3,452	11,209	4,710	3,260	1,258	1.41	1.36	1.2%	1.0%	9,900	200	14,200	300	13,700	900	1.38	4.50	0.22	-0.81	24,200	3,200
CR-50	5,871	2,129	36,792	3,585	30,921	1,456	6.27	1.68	6.3%	1.7%	6,300	2,500	39,400	4,100	38,300	4,100	6.08	1.64	0.04	0.14	35,500	7,000
SH-14	38,022	506	62,828	32,350	24,806	31,844	1.65	63.93	1.7%	14.9%	27,500	14,400	47,200	928,900	49,700	32,400	1.81	2.25	-0.21	0.00	64,500	25,900
Prospect	16,531	9,341	41,767	17,488	25,236	8,147	2.53	1.87	3.1%	2.1%	19,200	4,100	48,000	7,600	46,200	9,900	2.41	2.41	0.11	-0.43	62,900	26,100
Harmony	37,042	10,879	93,766	37,878	56,724	26,999	2.53	3.48	3.1%	4.2%	36,600	12,700	91,500	43,600	92,400	41,700	2.52	3.28	-0.01	0.10	83,200	32,200
SH-392	15,569	27,409	32,438	44,644	16,869	17,235	2.08	1.63	2.5%	1.6%	11,400	18,800	23,900	30,300	26,100	33,200	2.29	1.77	-0.20	-0.26	34,800	49,000
Crossroads	8,925	9,688	32,182	30,436	23,257	20,748	3.61	3.14	4.4%	3.9%	5,700	14,600	20,700	46,000	24,900	30,400	4.37	2.08	-0.23	0.00	32,000	24,500
US-34	43,000	33,394	93,971	105,854	50,971	72,460	2.19	3.17	2.6%	3.9%	37,900	39,000	81,900	122,900	85,400	117,200	2.25	3.01	-0.09	0.11	69,400	96,500
SH-402	12,631	2,513	56,706	21,917	44,075	19,404	4.49	8.72	5.1%	7.5%	14,900	4,100	66,300	35,900	59,000	21,900	3.96	5.34	0.04	0.00	42,100	15,800
CR-16	251	127	3,223	11,608	2,972	11,481	12.84	91.40	8.9%	16.2%	500	800	6,500	72,300	3,500	12,300	7.00	15.38	0.09	0.06	3,400	5,700
SH-60 (Johnson)	364	14,079	5,094	34,675	4,730	20,596	13.99	2.46	9.2%	3.0%	2,000	11,100	28,000	26,900	17,400	29,300	8.70	2.64	2.42	-0.16	2,700	20,600
SH-56 (Berthoud)	6,383	1,094	32,203	28,802	25,820	27,708	5.05	26.33	5.5%	11.5%	6,600	1,500	32,900	39,300	32,700	29,200	4.95	19.47	0.02	0.01	17,200	8,300
CR-34(Mead)	5,495	3,613	13,498	15,355	8,003	11,742	2.46	4.25	3.0%	4.9%	2,300	1,600	5,600	6,700	10,300	13,300	4.48	8.31	-0.24	-0.13	4,100	6,300
SH-66	9,667	9,408	19,061	18,837	9,394	9,429	1.97	2.00	2.3%	2.3%	17,100	13,200	33,800	26,100	30,200	24,400	1.77	1.85	0.58	0.30	25,100	24,200
SH-119	36,740	15,120	68,406	32,836	31,666	17,716	1.86	2.17	2.1%	2.6%	37,400	25,000	69,800	54,000	69,400	42,700	1.86	1.71	0.01	0.30	83,400	39,300
SH-52	9,593	20,298	25,940	35,406	16,347	15,108	2.70	1.74	3.4%	1.9%	23,100	21,700	63,000	38,200	39,400	37,500	1.71	1.73	0.52	0.06	45,300	49,700
CR-8(Weld Broomfield)	6,461	1,268	22,581	14,429	16,120	13,161	3.49	11.38	4.3%	8.4%				22,600		14,400	#DIV/0!	#DIV/0!	0.00	0.00	17,000	19,600
SH-7	22,741	20,789	63,717	88,465	40,976	67,676	2.80	4.26	3.5%	4.9%	20,300	16,100	57,000	67,600	59,100	75,700	2.91	4.70	-0.07	-0.14	61,400	62,900
E-470	13,297	7,219	62,028	67,367	48,731	60,148	4.66	9.33	5.3%	7.7%				62,000		67,400	#DIV/0!	#DIV/0!	0.00	0.00		
144th	7,991	8,098	51,372	50,882	43,381	42,784	6.43	6.28	6.4%	6.3%	7,100	6,700	51,700	41,900	51,100	45,700	7.20	6.82	-0.01	-0.10	43,800	40,700
136th	20,175	28,952	49,848	44,077	29,673	15,125	2.47	1.52	3.1%	1.4%	18,600	25,600	46,500	38,800	49,800	44,100	2.68	1.72	0.00	0.00	47,400	42,000
120th	55,337	62,537	78,452	75,061	23,115	12,524	1.42	1.20	1.2%	0.6%	47,700	57,600	71,600	70,600	71,200	70,400	1.49	1.22	-0.09	-0.06	54,800	63,500
104th	55,130	62,081	69,557	77,589	14,427	15,508	1.26	1.25	0.8%	0.7%	52,100	67,600	68,300	85,700	67,400	84,400	1.29	1.25	-0.03	0.09	53,600	67,600
Thornton Pkwy	25,124	46,606	30,142	59,359	5,018	12,753	1.20	1.27	0.6%	0.8%	32,400	34,800	38,500	43,800	38,000	45,700	1.17	1.31	0.26	-0.23	34,600	51,100
84th	20,202	42,802	34,430	58,504	14,228	15,702	1.70	1.37	1.8%	1.1%	35,100	30,100	58,900	41,800	49,300	43,800	1.40	1.46	0.43	-0.25	40,700	33,400
																	1,018,700	905,600	974,700	813,700		

Source: 2005 FEIS Model Run ; 2035 FEIS PA-4\_b

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Daily Volumes on Arterials

Arterial	2005 Base Model		2035 Package B		Total Growth		Total Growth Rate		Annual Growth Rate		Existing Counts		2035 Projections		2035 Projections - Revised		Growth rates		Diff from Model		2030 Adjusted Vol	
	West of	East of	West of	East of	West of	East of	West of	East of	West of	East of	West of	East of	West of	East of	West of	East of	west of	east of	west of	east of	west of	east of
SH-1	7,949	3,452	11,272	4,225	3,323	773	1.42	1.22	1.2%	0.7%	9,900	200	14,200	200	13,700	600	1.38	3.00	0.22	-0.86	24,200	3,200
CR-50	5,871	2,129	33,671	3,629	27,800	1,500	5.74	1.70	6.0%	1.8%	6,300	2,500	36,200	4,300	35,100	4,100	5.57	1.64	0.04	0.13	35,500	7,000
SH-14	38,022	506	60,199	31,548	22,177	31,042	1.58	62.35	1.5%	14.8%	27,500	14,400	44,300	904,900	47,000	31,500	1.71	2.19	-0.22	0.00	64,500	25,900
Prospect	16,531	9,341	40,662	16,427	24,131	7,086	2.46	1.76	3.0%	1.9%	19,200	4,100	46,600	7,200	45,000	9,200	2.34	2.24	0.11	-0.44	62,900	26,100
Harmony	37,042	10,879	91,407	39,764	54,365	28,885	2.47	3.66	3.1%	4.4%	36,600	12,700	91,500	46,200	91,200	43,900	2.49	3.46	0.00	0.10	83,200	32,200
SH-392	15,569	27,409	31,751	41,918	16,182	14,509	2.04	1.53	2.4%	1.4%	11,400	18,800	23,200	28,500	25,400	30,900	2.23	1.64	-0.20	-0.26	34,800	49,000
Crossroads	8,925	9,688	31,529	24,140	22,604	14,452	3.53	2.49	4.3%	3.1%	5,700	14,600	20,200	36,500	24,200	24,100	4.25	1.65	-0.23	0.00	32,000	24,500
US-34	43,000	33,394	86,820	105,984	43,820	72,590	2.02	3.17	2.4%	3.9%	37,900	39,000	77,200	122,900	79,500	117,200	2.10	3.01	-0.08	0.11	69,400	96,500
SH-402	12,631	2,513	53,362	20,914	40,731	18,401	4.22	8.32	4.9%	7.3%	14,900	4,100	62,600	33,900	55,600	20,900	3.73	5.10	0.04	0.00	42,100	15,800
CR-16	251	127	2,811	13,667	2,560	13,540	11.20	107.61	8.4%	16.9%	500	800	5,600	86,600	3,100	14,300	6.20	17.88	0.10	0.05	3,400	5,700
SH-60 (Johnson)	364	14,079	5,532	30,430	5,168	16,351	15.20	2.16	9.5%	2.6%	2,000	11,100	30,400	24,000	18,800	25,700	9.40	2.32	2.40	-0.16	2,700	20,600
SH-56 (Berthoud)	6,383	1,094	30,628	25,249	24,245	24,155	4.80	23.08	5.4%	11.0%	6,600	1,500	32,000	34,300	31,400	25,700	4.76	17.13	0.03	0.02	17,200	8,300
CR-34(Mead)	5,495	3,613	13,153	14,654	7,658	11,041	2.39	4.06	2.9%	4.8%	2,300	1,600	5,400	6,500	10,000	12,600	4.35	7.88	-0.24	-0.14	4,100	6,300
SH-66	9,667	9,408	17,466	19,523	7,799	10,115	1.81	2.08	2.0%	2.5%	17,100	13,200	31,000	27,700	27,900	25,500	1.63	1.93	0.60	0.31	25,100	24,200
SH-119	36,740	15,120	64,994	32,780	28,254	17,660	1.77	2.17	1.9%	2.6%	37,400	25,000	65,800	54,000	65,700	42,700	1.76	1.71	0.01	0.30	83,400	39,300
SH-52	9,593	20,298	25,341	34,528	15,748	14,230	2.64	1.70	3.3%	1.8%	23,100	21,700	61,200	37,100	38,800	36,500	1.68	1.68	0.53	0.06	45,300	49,700
CR-8(Weld Broomfield)	6,461	1,268	21,461	14,322	15,000	13,054	3.32	11.29	4.1%	8.4%						14,300	#DIV/0!	#DIV/0!	0.00	0.00	17,000	19,600
SH-7	22,741	20,789	68,270	91,999	45,529	71,210	3.00	4.43	3.7%	5.1%	20,300	16,100	60,400	71,600	63,100	79,500	3.11	4.94	-0.08	-0.14	61,400	62,900
E-470	13,297	7,219	60,726	66,764	47,429	59,545	4.57	9.25	5.2%	7.7%						60,700	#DIV/0!	#DIV/0!	0.00	0.00		
144th	7,991	8,098	52,148	50,899	44,157	42,801	6.53	6.29	6.5%	6.3%	7,100	6,700	53,300	41,900	52,300	45,700	7.37	6.82	0.00	-0.10	43,800	40,700
136th	20,175	28,952	49,694	43,277	29,519	14,325	2.46	1.49	3.0%	1.3%	18,600	25,600	45,100	37,700	49,700	43,300	2.67	1.69	0.00	0.00	47,400	42,000
120th	55,337	62,537	78,300	77,924	22,963	15,387	1.41	1.25	1.2%	0.7%	47,700	57,600	71,600	73,000	71,100	73,000	1.49	1.27	-0.09	-0.06	54,800	63,500
104th	55,130	62,081	70,477	79,135	15,347	17,054	1.28	1.27	0.8%	0.8%	52,100	67,600	68,300	88,600	67,900	86,600	1.30	1.28	-0.04	0.09	53,600	67,600
Thornton Pkwy	25,124	46,606	31,615	59,294	6,491	12,688	1.26	1.27	0.8%	0.8%	32,400	34,800	40,800	43,800	39,900	45,700	1.23	1.31	0.26	-0.23	34,600	51,100
84th	20,202	42,802	35,163	58,593	14,961	15,791	1.74	1.37	1.9%	1.1%	35,100	30,100	60,600	41,800	50,100	43,800	1.43	1.46	0.42	-0.25	40,700	33,400
													1,002,400	910,600	956,800	808,200						

Source: 2005 FEIS Model Run ; 2035 FEIS PA-4\_b

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FEIS Results  
Regional VMT, VHT, Average Speed

Facility Type	2005 Base			No-Action			Package A			Package B			Preferred Alternative			Phase 1		
	VMT	VHT	Speed	VMT	VHT	Speed	VMT	VHT	Speed	VMT	VHT	Speed	VMT	VHT	Speed	VMT	VHT	Speed
Freeway	27,161,691	487,352	56	46,765,699	1,022,294	46	47,827,149	1,023,998	47	47,305,876	1,019,929	46	47,802,847	1,018,204	47	47,157,981	1,023,643	46
Expressway	5,615,087	122,271	46	12,364,430	348,341	36	12,159,072	341,949	36	12,285,513	344,658	36	12,183,293	341,923	36	12,277,828	344,158	36
Principal	23,749,189	757,718	31	44,431,812	1,612,111	28	44,066,162	1,596,181	28	44,217,051	1,595,088	28	44,119,827	1,589,852	28	44,361,823	1,600,969	28
Minor	9,223,708	312,267	30	11,978,585	507,234	24	11,757,228	496,710	24	11,912,285	502,402	24	11,763,992	495,287	24	11,968,070	504,747	24
Other	11,316,914	576,206	20	20,159,595	1,119,659	18	20,155,406	1,120,595	18	20,091,735	1,113,828	18	20,083,991	1,113,613	18	20,142,109	1,117,111	18
Total	77,066,590	2,255,814	34	135,700,122	4,609,639	29	135,965,018	4,579,433	30	135,812,460	4,575,904	30	135,953,949	4,558,878	30	135,907,812	4,590,628	30

Study Area VMT, VHT, Average Speed

Facility Type	2005 Base			No-Action			Package A			Package B			Preferred Alternative			Phase 1		
	VMT	VHT	Speed	VMT	VHT	Speed	VMT	VHT	Speed	VMT	VHT	Speed	VMT	VHT	Speed	VMT	VHT	Speed
Freeway	10,696,000	190,000	56	16,666,000	363,000	46	17,663,000	364,000	49	17,162,000	360,000	48	17,739,000	361,000	49	17,071,000	365,000	47
Expressway	3,430,000	69,000	50	6,169,000	146,000	42	5,976,000	142,000	42	6,102,000	143,000	43	6,002,000	141,000	43	6,097,000	144,000	42
Principal Arter	7,763,000	246,000	32	15,919,000	551,000	29	15,682,000	542,000	29	15,792,000	541,000	29	15,660,000	536,000	29	15,904,000	547,000	29
Minor Arterial	4,422,000	148,000	30	6,067,000	251,000	24	5,857,000	242,000	24	6,008,000	247,000	24	5,860,000	240,000	24	6,062,000	249,000	24
Collector	1,326,000	58,000	23	2,729,000	141,000	19	2,675,000	138,000	19	2,681,000	137,000	20	2,655,000	137,000	19	2,715,000	140,000	19
Ramp	441,000	14,000	32	702,000	25,000	28	747,000	27,000	28	717,000	25,000	29	733,000	26,000	28	720,000	25,000	29
Centroid Confr	2,189,000	130,000	17	4,158,000	240,000	17	4,158,000	240,000	17	4,154,000	240,000	17	4,156,000	240,000	17	4,160,000	240,000	17
Total	30,267,000	855,000	35	52,410,000	1,717,000	31	52,758,000	1,695,000	31	52,616,000	1,693,000	31	52,805,000	1,681,000	31	52,729,000	1,710,000	31
	19,571,000	665,000	29	35,744,000	1,354,000	26	35,095,000	1,331,000	26	35,454,000	1,333,000	27	35,066,000	1,320,000	27	35,658,000	1,345,000	27

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North I-25

eastern mobility study

commodity flows

front range counties

adams, arapahoe, denver, douglas, el paso, huerfano, jeffco, larimer, pueblo, weld  
note no boulder!?

	1998	2025		
tons	180508	387396	1.146143	0.028688
adams	17091	40319		
denver	58259	102819		
larimer	9114	24178		
weld	11724	24978		
	96188	192294	0.999148	
trucks	2004	2035		
	8000	19225.75		

calculated

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# TECHNICAL MEMORANDUM

## TRAFFIC AND REVENUE ASSESSMENT OF

### PROJECT CONFIGURATION ALTERNATIVES

This technical memorandum presents an overview of the traffic and revenue analyses associated with evaluating scenarios containing alternative combinations of general purpose (GP) and Toll Express Lanes (TEL) along the North I-25 corridor. The tolling scenarios have evolved over time and three separate analyses have been conducted. The first set of scenarios were evaluated in late 2006, the second set in mid-2009, and the third set in early 2010. The results of the three analyses are summarized and presented below.

#### OVERVIEW

In 2006, WSA studied several scenarios along North I-25, involving varying combinations of GP lanes and TELs and different toll rates. The latest policy about TELs for the I-25 North corridor, provides that TELs would operate as separate lanes in which high-occupancy vehicles (HOVs) of two or more occupants may travel free of charge, while single-occupant vehicles (SOVs) may use the lanes for a posted fee, charged on a per-mile basis. The TEL per-mile toll rate may vary by location, direction of travel, and time-of-day. In mid-2009, WSA analyzed six new scenarios. The six scenarios assumed various combinations of GP lanes and TELs, ranging from zero to one TEL in each direction, and between two and three GP lanes in each direction. One configuration also included the extension of the two existing reversible HOT lanes north from their current terminus at 84<sup>th</sup> Avenue.

In early 2010, WSA analyzed three additional scenarios. However, because a new year 2035 traffic model was available, the analysis was done at year 2035 levels (the two prior analyses were conducted at year 2030 levels). Of the three scenarios, two included differing combinations of GP and TEL lanes, while the third evaluated free passage for vehicles with three or more occupants in the TELs.

Motorists' willingness to pay to use a TEL facility is a function of the congestion levels in the toll-free lanes, the time savings potential offered by the express lanes, and the users value of time. For the study of TELs, WSA developed a corridor-specific approach to estimate tolled traffic and revenue in the I-25 North EIS study area. The traffic and revenue estimation process for the managed-lane projects was a multi-step process that incorporated actual traffic counts, travel time information collected from travel time runs, the regional travel demand model, and a

windowed micro-model of the corridor. Major work elements of this forecasting process included the following:

- § Develop an Existing Traffic Profile;
- § Develop Corridor Pricing Micro-Models;
- § Estimate Market Share;
- § Toll Sensitivity Testing;
- § Initial Estimates of Tolled Traffic and Revenue; and
- § Final Estimates of Tolled Traffic and Revenue.

Each of these steps was described in detail in a Technical Memorandum developed in March 2007 and is therefore not discussed in this document.

## PREVIOUS TOLL SCENARIO TRAFFIC AND REVENUE ANALYSES

In 2006, 2009 and again in 2010, WSA analyzed a number of TEL scenarios, including alternatives with differing GP and TEL configurations and toll rates, with the goal of optimizing traffic operations, particularly in the TELs. The three studies are discussed below.

### 2006 TRAFFIC AND REVENUE ANALYSIS

This study included five different scenarios, all of which bore the following common characteristics:

- § One buffer-separated managed lane per direction from 84<sup>th</sup> Avenue in the south to S.R. 14 in the north. Two barrier-separated managed lanes per direction were assumed between S.R. 60 and Harmony Road (S.R. 68). In one scenario, the existing reversible HOT lanes that currently exist south of 84<sup>th</sup> Avenue were extended to 120<sup>th</sup> Avenue, with the buffer-separated, non-reversible lanes commencing north of that point.
- § Slip ramp access/egress to/from the north was assumed to be provided north of 84<sup>th</sup> Avenue, 120<sup>th</sup> Avenue, S.R. 7, S.R. 66, S.R. 60, US-34 and C.R. 32. Access/egress to/from the south was assumed to be provided south of S.R. 14, S.R. 44, C.R. 32, US-34, S.R. 60, S.R. 66, S.R. 119, S.R. 52, E-470 and 120<sup>th</sup> Avenue. Slip ramp access between 84<sup>th</sup> Avenue and 120<sup>th</sup> Avenue was modified under some scenarios.

The five scenarios each included toll rates for each of following ten time periods:

- § AM Pre-Shoulder - 6:30-7:00 a.m.
- § AM Peak - 7:00-8:00 a.m.
- § AM Post Shoulder - 8:00-9:00 a.m.
- § Midday1 - 9:00 a.m.-11:30 a.m.
- § Midday2 - 11:30 a.m.-3:00 p.m.
- § PM Pre-Shoulder - 3:00-5:00 p.m.
- § PM Peak - 5:00-6:00 p.m.



§ PM Post Shoulder - 6:00-7:00 p.m.

§ Evening – 7:00 p.m.-11:00 p.m.

§ Overnight – 11:00 p.m.-6:30 a.m.

In addition to analyzing toll rates that varied by time period, the analysis also assumed that during the peak and shoulder periods, toll rates varied between the segments north of and south of the interchange with Highway E-470. This was due to a sizeable disparity in traffic demand north and south of this interchange. In order to adequately manage TEL demand south of E-470 under the scenarios tested, it was necessary to impose toll rates far higher than those needed north of E-470. Charging similar rates north of E-470 where overall demand is lower might have reduced TEL volumes so that the facilities would be significantly underutilized.

Each scenario was analyzed for “hot spots,” those locations where mainline lane volumes in the TELs would exceed 1,600 vehicles per hour (VPH) during any time period, as well as locations where slip ramp volumes were excessive, typically exceeding 500 to 600 VPH.

**Base Case Scenario** - After presenting the results to Colorado Department of Transportation (CDOT) project staff, some general modifications were made and three scenarios were advanced for further analysis. The first of these, referred to as the Base Case, and known as Scenario 2 among the original set of five, represents the base upon which all but one of the additional alternatives examined in this report were developed. The Base Case highway configuration consists of three GP lanes plus one TEL per direction between 84th Avenue and S.R. 66; two GP lanes and one TEL per direction between S.R. 66 and S.R. 56; two GP lanes and two TELs per direction between S.R. 56 and S.R. 68; and two GP lanes and one TEL per direction between S.R. 68 and Mountain Vista Drive.

Table 1 presents the assumed 2030 per-mile toll rates under the Base Case. In an attempt to reduce demand in the “hot spots” which predominantly occurred between 84<sup>th</sup> Avenue and E-470 under a previously studied lower toll rate scenario, rates from \$0.750 to \$3.00 per mile were tested on segments south of E-470 during peak and shoulder periods, and the rates shown in Table 1 represent the final selected set of rates used in the Base Case analysis.

**Assessment of Traffic “Hot Spots”** - Under the Base Case scenario a southbound “hot spot” occurred between 120th and 84th Avenues during the a.m. peak hour, with 1,700 vehicles in the lane. At this toll rate, there were zero single-occupant vehicles (SOVs) in the traffic stream, indicating that a higher rate (charged only to SOVs) would not be effective in mitigating congestion along this segment. During the p.m. peak hour, a northbound “hot spot” occurred along the same stretch of I-25, with 2,000 vehicles using the managed lanes, all of them being high occupancy vehicles (HOVs). A southbound a.m. “hot spot” of 1,700 vehicles per hour also occurred between E-470 and 120th Avenue, and the slip ramp just north of this location, south of E-470, carried 700 vehicles, which is approaching capacity for such a ramp.

North of E-470, the segment between C.R. 32 and S.R. 44 in the Fort Collins area carried 1,800 vehicles in the a.m. northbound and 1,700 vehicles in the p.m. southbound, and the segment

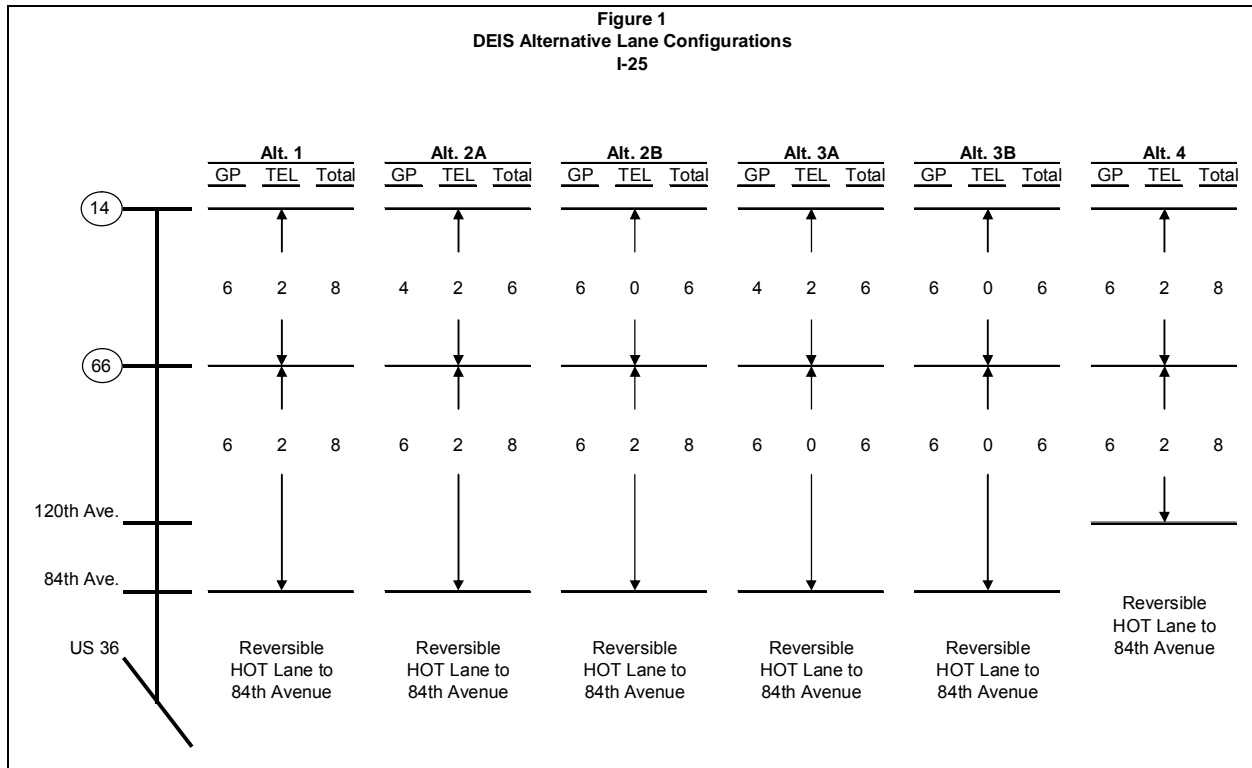
between S.R. 7 and S.R. 52 in the p.m. northbound carried 1,700 vehicles. It might be possible to manage demand along these segments north of E-470 with slightly higher tolls, as the existing tolls under this scenario were much lower along these segments than they were south of E-470, and these “hot spots” included a large proportion of SOVs. A number of slip ramps carried volumes between 500 and 700 vehicles.

**Table 1**  
**2030 Per-Mile Toll Rates by Time Period and Direction**  
**Base Case Scenario**  
 I-25 North

Hour(s)		Per-Mile Toll Rate			
		Northbound		Southbound	
Beginning	Ending	Toll Rate	Comment	Toll Rate	Comment
6:30	7:00	\$ 0.050	----	\$ 0.050	North of E-470
		----	----	0.500	South of E-470
7:00	8:00	\$ 0.125	----	\$ 0.125	North of E-470
		----	----	1.750	South of E-470
8:00	9:00	\$ 0.050	----	\$ 0.050	North of E-470
		----	----	0.500	South of E-470
15:00	17:00	\$ 0.075	North of E-470	\$ 0.075	----
		0.750	South of E-470	----	----
17:00	18:00	\$ 0.100	North of E-470	\$ 0.125	----
		1.500	South of E-470	----	----
18:00	19:00	\$ 0.050	North of E-470	\$ 0.050	----
		0.150	South of E-470	----	----
23:00	6:30	\$ 0.050	----	\$ 0.050	----
		----	----	----	----
9:00	11:30	\$ 0.050	----	\$ 0.050	----
		----	----	----	----
11:30	15:00	\$ 0.050	----	\$ 0.050	----
		----	----	----	----
19:00	23:00	\$ 0.050	----	\$ 0.050	----
		----	----	----	----

2009 TRAFFIC AND REVENUE ANALYSIS

Following up on the results of the scenarios evaluated in 2006, WSA examined a variety of new GP lane and TEL configurations, ranging from no managed lanes at all north of 84<sup>th</sup> Avenue, to three GP lanes and one TEL per direction running continuously from 84<sup>th</sup> Avenue to the northern end of the corridor. Unlike the Base Case scenario, none of these new alternatives contained segments with more than one TEL per direction. All of the new alternatives involved overall configurations of between six and eight total lanes at all points. The GP/TEL configurations for each of the six alternatives analyzed in 2009 are shown in Figure 1.



Each of these scenarios was modeled based on the same parameters as the Base Case, including per-mile rates, trip tables, etc. The one exception was Alternative 4, in which the existing reversible HOT lanes were extended to 120<sup>th</sup> Avenue. This alternative was descended from one studied in 2006, known at that time as Scenario 3 (“Reversible Alternative”). In the 2006 study, this scenario included a different set of toll rates, and these rates were also used in the current study for Alternative 4. The toll rates used for Alternative 4 are displayed in Table 2.

Every alternative assumed that any TELs would tie in with the two existing reversible TELs that begin south of 84<sup>th</sup> Avenue. The result of each alternative configuration was examined to determine the impact of each configuration on the location of any potential traffic “hot spots” on the TELs.

**Table 2**  
**2030 Per-Mile Toll Rates by Time Period and Direction**  
**Alternative 4 - Reversible HOT Lanes to 120th Avenue**  
I-25 North

Hour(s)		Per-Mile Toll Rate					
		Northbound			Southbound		
Beginning	Ending	Toll Rate	Comment	Toll Rate	Comment	Toll Rate	Comment
6:30	7:00	\$ 0.050	----	\$ 0.050	North of E-470		
		----	----	0.275	South of E-470		
7:00	8:00	\$ 0.125	----	\$ 0.125	North of E-470		
		----	----	0.350	South of E-470		
8:00	9:00	\$ 0.050	----	\$ 0.050	North of E-470		
		----	----	0.200	South of E-470		
15:00	17:00	\$ 0.075	North of E-470	\$ 0.075	----		----
		0.350	South of E-470	----	----		----
17:00	18:00	\$ 0.100	North of E-470	\$ 0.125	----		----
		0.400	South of E-470	----	----		----
18:00	19:00	\$ 0.050	North of E-470	\$ 0.050	----		----
		0.100	South of E-470	----	----		----
23:00	6:30	\$ 0.050	----	\$ 0.050	----		----
		----	----	----	----		----
9:00	11:30	\$ 0.050	----	\$ 0.050	----		----
		----	----	----	----		----
11:30	15:00	\$ 0.050	----	\$ 0.050	----		----
		----	----	----	----		----
19:00	23:00	\$ 0.050	----	\$ 0.050	----		----
		----	----	----	----		----

**Assessment of Traffic “Hot Spots”** – The traffic profile of each of the six alternatives was analyzed to identify any “hot spots” where mainline lane volumes in the TELs exceeded 1,600 vehicles per hour (VPH) during any time period, as well as locations where slip ramp volumes were excessive, typically exceeding 600 VPH. For each of the alternatives, the location and

severity of any “hot spots” were compared with the incidence of “hot spots” in the previously discussed Base Case.

§ **Alternative 1 – Six GP Lanes and Two TELs** – This scenario consisted of six general purpose lanes (three in each direction) and two TELs (one in each direction) for the entire length of the project. Along the southern end of the corridor, this alternative was unchanged from the Base Case. This was reflected in the fact that the “hot spots” seen in the Base Case remain under this alternative. Specifically, the southbound a.m. peak volume of 1,800 vehicles between 120<sup>th</sup> Avenue and 84<sup>th</sup> Avenue remained virtually unchanged, as did the southbound a.m. volume of 1,700 vehicles between E-470 and 120<sup>th</sup> Avenue. The southernmost “hot spot,” between 84<sup>th</sup> and 120<sup>th</sup> Avenues, consisted entirely of HOVs, indicating that no level of pricing would reduce southbound TEL congestion over this stretch. The northbound p.m. “hot spot” between 84<sup>th</sup> Avenue and 120<sup>th</sup> Avenue, with 2,000 vehicles, also remained. All of the Base Case “hot spots” north of E-470 disappeared under this alternative, including both northbound and southbound congestion in both the a.m. and p.m. peak periods, likely the result of providing one additional GP lane in each direction.

§ **Alternative 2A – Six GP Lanes South of E-470, Four GP Lanes North of E-470, Two TELs Throughout** – This alternative differed from Alternative 1 in the provision of two fewer GP lanes (one in each direction) north of S.R. 66. It is nearly identical to the Base Case in providing six GP lanes south of S.R. 66 and four GP lanes north of S.R. 66, with the primary difference being that it lacks any segments with more than two total TELs, whereas the Base Case contained four GP lanes and four TELs (two of each per direction) over the segment between S.R. 56 and S.R. 68.

Owing to its similarity to the Base Case configuration, Alternative 2A performed nearly identically to the Base Case. All of the “hot spots” seen under the Base Case remained under this scenario. None of these “hot spot” locations occurred over segments that previously had additional TEL capacity, nor were they affected by the removal of “bottlenecks” where the TEL capacity dropped from two lanes to one in each direction, that previously existed under the Base Case. This suggests that, all else being equal, the additional TEL capacity between S.R. 56 and S.R. 68 did not have any discernible impact on volumes in either the TELs or the GP lanes.

§ **Alternative 2B – Two TELs South of E-470, No TELs North of E-470, Six GP Lanes Throughout** – This alternative included six GP lanes throughout, with two TELs running from 84<sup>th</sup> Avenue until a terminus at S.R. 66, and no TELs north of that location. Once again, this configuration was identical to the Base Case south of E-470, and this was reflected in the TEL performance along that stretch, where “hot spots” were found at the identical locations, and carrying nearly identical volumes as the Base Case in both the a.m. and p.m. peak periods.

North of E-470, Alternative 2B resulted in a bottleneck in the TEL at its terminus south of S.R. 66. In the p.m. peak period, a “hot spot” occurred at the last northbound slip ramp, where all TEL traffic is forced to rejoin the GP lanes. Northbound slip ramp volume increased to 700 vehicles during the p.m. peak, up from 200 vehicles under the Base Case and likely greater than the ramp’s capacity.

§ **Alternative 3A – Six GP, No TELs South of E-470; Four GP, Two TELs North of E-470**

– This configuration provided six total lanes throughout the project, with no TELs on the south end and two TELs (one in each direction) on the north end. This is a net reduction in capacity over all of the previous alternatives, and over the Base Case. It most closely resembles alternative 2A, with the same number of GP lanes as that scenario, and the southern section TELs simply removed. In the a.m. peak, TEL congestion on the northern section (where the TELs remain) was similar to the Base Case and Alternative 2A, with a “hot spot” between C.R. 32 and C.R. 44. In addition, a new northbound slip ramp “hot spot” appeared at the beginning of the truncated TEL, north of S.R. 66. Likewise in the p.m. peak period, the only change over the Base Case was the appearance of new slip ramp “hot spots”, both in the northbound and southbound directions, at the TEL southern terminus, north of S.R. 66. The new p.m. slip ramp “hot spots” north of S.R. 66 were relatively severe, with 1,200 northbound vehicles accessing the TEL (up from 600 under the Base Case) and 600 southbound vehicles exiting (up from 300 under the Base Case).

§ **Alternative 3B – Six GP, No TELs** – Under this configuration, TELs were entirely eliminated throughout the project corridor. Six GP lanes were provided from 84th Avenue to the project’s northern terminus. As no TELs were provided, there were no “hot spots” to observe.

§ **Alternative 4 – Reversible HOT Lanes to 120th Avenue, Six GP Lanes and Two TELs Thereafter** – Of the six alternatives analyzed, this alternative was the only one which extended the existing reversible HOT lanes north to 120th Avenue from its terminus at 84th Avenue. This was fundamentally different from the other proposed TELs because reversible lanes would effectively offer double the capacity in the peak direction, compared with non-reversible lanes. Under this alternative, the reversible lanes would give way to a pair of standard non-reversible TELs from 120th Avenue to the northern end of the corridor, along with six GP lanes (three in each direction) throughout. This scenario also used a different schedule of tolls, shown in Table 2. These tolls are based on a similar scenario from the 2006 study, known at that time as Scenario 3 (“Reversible Alternative”).

In the a.m. peak period, the increased HOT lane capacity between 84<sup>th</sup> Avenue and 120<sup>th</sup> Avenue drew substantial additional demand, with southbound peak volumes along that segment increasing from 1,800 vehicles to 2,600 vehicles as compared with the Base Case. Most of the increase came from SOVs, which did not use that segment at all under the Base Case. Because there were two lanes under Alternative 4, 2,600 vehicles is well below the “hot spot” threshold. However, this added demand would cause additional a.m. peak congestion upstream, where only one lane would be provided. The southbound slip ramp

south of 120<sup>th</sup> Avenue had a projected a.m. peak volume of 1,100 vehicles, approximately double its capacity. The mainline TEL carried 2,000 southbound vehicles between E-470 and 120<sup>th</sup> Avenue, and 1,700 vehicles between C.R. 52 and C.R. 7. The latter of these was an entirely new “hot spot” (it did not exist under the Base Case) while the former was an existing “hot spot” that became more congested under this alternative. Further north on the project, previously existing *northbound* a.m. “hot spots” (both mainline TEL and slip ramps) in the Fort Collins area no longer appeared, as a result of the additional GP lanes compared with the Base Case.

In the p.m. peak period, a similar pattern was seen. Along the northbound stretch of I-25 between 84<sup>th</sup> Avenue and 120<sup>th</sup> Avenue, a Base Case “hot spot” carrying 2,000 vehicles in one lane, carried 2,500 vehicles in two lanes. The increased demand came from SOVs (under the Base Case this stretch was comprised entirely of HOVs), and is within the capacity of the two reversible HOT lanes. However, this increased demand once again causes a ripple effect further north, with the 120<sup>th</sup> Avenue northbound slip ramp over capacity at 1,100 vehicles, and a new “hot spot” appearing between 120<sup>th</sup> Avenue and E-470, where 1,800 vehicles are forecasted. Similar to the a.m. peak results for this alternative, the Base Case southbound “hot spots” that occurred in the Fort Collins area no longer existed, as a result of the additional GP lanes in this area.

#### 2010 TRAFFIC AND REVENUE ANALYSIS

Following up on the results of the six scenarios evaluated in mid-2009, four new scenarios were evaluated. A new 2035 traffic model was developed by DRCOG and the analysis of these scenarios was performed at year 2035 levels. Because this analysis used a new travel demand model with somewhat different travel patterns and traffic demand, and because of considerably different combinations of GP lanes and TELs, it was necessary to perform new toll sensitivity analyses. Toll rates ranging from \$0.050 to \$0.500 per mile were tested. The resulting traffic volumes were plotted by direction for each time period, and toll rates that maximized revenue were identified. Traffic in the managed lanes at these toll levels were checked to determine if they exceeded the desired maximum volume of 1,600 vehicles per lane per hour. If so, higher toll levels were selected, attempting to manage demand. It should be noted that while traffic volumes for the new TELs are described below, traffic demand in the existing HOV 2+ reversible lanes is estimated to increase from an average weekday volume in August 2010 of approximately 11,700 south of I-76 to approximately 21,800 by year 2035, an average annual increase of 2.5 percent.

A description of the four scenarios follows, including toll rates by time period and travel direction.

***Phase 1/Option 1/HOV2+ Toll-Free and Phase 1/Option 1/3+ Toll-Free*** – These scenarios consist of six GP lanes (three per direction) from 84<sup>th</sup> Avenue to S.R. 66 and four GP lanes (two per direction) from S.R. 66 north to S.R. 392. North of S.R. 392 to Prospect Road there is one acceleration/deceleration lane and two GP lanes per direction. The TELs are discontinuous, with

approximately four miles of TELs (one lane per direction) between 84<sup>th</sup> Avenue and 120<sup>th</sup> Avenue in the south, and an additional one lane per direction of approximately nine miles between S.R. 66 and S.R. 60 in the north.

Table 3 presents the toll rates by time period that were selected under the Phase 1/Option 1/HOV2+ toll-free scenario. For each time period, per-mile toll rates vary by direction and by

**Table 3**  
**2035 Per-Mile Toll Rates by Time Period and Direction**  
**Phasing Option 1, Phase 1, HOV 2+ Free**  
I-25 North

Hour(s)		Per-Mile Toll Rate <sup>(1)</sup>			
		Southern Section		Northern Section	
Beginning	Ending	Northbound	Southbound	Northbound	Southbound
6:30	7:00	\$ 0.050	\$ 0.200	\$ 0.050	\$ 0.050
7:00	8:00	\$ 0.050	HOV Only	\$ 0.050	\$ 0.100
8:00	9:00	\$ 0.050	\$ 0.125	\$ 0.050	\$ 0.050
15:00	17:00	HOV Only	\$ 0.100	\$ 0.125	\$ 0.050
17:00	18:00	HOV Only	\$ 0.125	\$ 0.175	\$ 0.100
18:00	19:00	HOV Only	\$ 0.050	\$ 0.050	\$ 0.050
23:00	6:30	\$ 0.050	\$ 0.050	\$ 0.050	\$ 0.050
9:00	11:30	\$ 0.050	\$ 0.050	\$ 0.050	\$ 0.050
11:30	15:00	\$ 0.050	\$ 0.050	\$ 0.050	\$ 0.050
19:00	23:00	\$ 0.050	\$ 0.050	\$ 0.050	\$ 0.050

<sup>(1)</sup> Tolls are calculated based on the per-mile rates times distance traveled in the TELs, with a minimum toll of \$0.25.



TEL section – Southern and Northern. Under this scenario, vehicles with two or more passengers (HOV2+) are permitted to use the TELs toll-free.

Table 4 presents the toll rates by time period that were selected under the Phase 1/Option 1/HOV3+ toll-free scenario. In this scenario, only vehicles with three or more passengers (HOV3+) are permitted to use the TELs toll-free.

**Alternative 1A** – This scenario consists of the following configuration:

- § 84th Avenue to E-470: 3 GP/1 TEL per direction; E-470 to S.R. 7: 4 GP/1 TEL per direction;
- § S.R. 7 to Johnson’s Corner (C.R. 16): 3 GP/1 TEL per direction;
- § Johnson’s Corner to C.R. 18: 4 GP/1 TEL per direction; and
- § C.R. 18 to S.R. 14: 3 GP/1 TEL per direction.

Under this scenario, HOV2+ vehicles are permitted to use the TELs toll-free.

Table 5 presents the selected toll rates for Alternative 1A. In general, because of the need to manage the higher traffic demand volumes south of E-470, per-mile toll rates in the a.m. southbound and p.m. northbound are generally higher for trips south of E-470 than north of E-470.

**Alternative 1B** – This scenario consists of the same GP and TEL project configuration as Alternative 1A. The difference is that only vehicles with three or more occupants (HOV3+) are permitted to use the TELs toll-free. In Phase 1/Option 1 and Alternative 1A, vehicles with two or more occupants could travel toll-free in the TELs. This appears to be impractical by 2035 due to the increasing number of HOV2 vehicles in the corridor. An HOV2 policy provides little excess capacity for SOV “buy-in” to the managed lanes, thereby restricting the toll revenue generated and the ability to use pricing to manage demand.

Table 6 presents the selected toll rates for Alternative 1B. Compared with Alternative 1A toll rates (Table 5), the southbound a.m. rates under Alternative 1B are slightly higher north of E-470 in order to manage the SOV buy-in demand. During the northbound p.m. periods a similar situation occurs. During the off-peak time periods and directions of travel, optimum toll rates between scenarios 1A and 1B are the same.

#### ASSESSMENT OF TRAFFIC “HOT SPOTS”

The locations and severity of traffic “hot spots” under the three aforementioned new scenarios, during the a.m. and p.m. peak hours are described below. The peak morning hour is defined as the hour between 7:00 am and 8:00 am. The evening peak hour is between 5:00 pm to 6:00 pm. “Hot Spots” have been defined as mainline segments where volumes exceed 1,600 vph, and ramps where volumes exceed 600 vph.

**Phase 1/Option 1/HOV2+ Toll-Free and Phase 1/Option 1/HOV3+ Toll-Free** – Under an HOV2+ toll-free scenario there is no morning peak hour “hot spot” in the southern TEL

**Table 4**  
**2035 Per-Mile Toll Rates by Time Period and Direction**  
**Phasing Option 1, Phase 1, HOV 3+ Free**  
 I-25 North

Hour(s)		Per-Mile Toll Rate <sup>(1)</sup>			
		Southern Section		Northern Section	
Beginning	Ending	Northbound	Southbound	Northbound	Southbound
6:30	7:00	\$ 0.050	\$ 0.200	\$ 0.050	\$ 0.100
7:00	8:00	\$ 0.100	\$ 0.350	\$ 0.100	\$ 0.150
8:00	9:00	\$ 0.100	\$ 0.150	\$ 0.050	\$ 0.100
15:00	17:00	\$ 0.225	\$ 0.125	\$ 0.200	\$ 0.075
17:00	18:00	\$ 0.350	\$ 0.150	\$ 0.250	\$ 0.150
18:00	19:00	\$ 0.175	\$ 0.100	\$ 0.075	\$ 0.050
23:00	6:30	\$ 0.050	\$ 0.050	\$ 0.050	\$ 0.050
9:00	11:30	\$ 0.075	\$ 0.125	\$ 0.050	\$ 0.050
11:30	15:00	\$ 0.150	\$ 0.125	\$ 0.075	\$ 0.075
19:00	23:00	\$ 0.050	\$ 0.050	\$ 0.050	\$ 0.050

<sup>(1)</sup> Tolls are calculated based on the per-mile rates times distance traveled in the TELs, with a minimum toll of \$0.25.

**Table 5**  
**2035 Per-Mile Toll Rates by Time Period and Direction**  
**Alternative 1A - HOV 2+ Toll-Free**  
 I-25 North

Hour(s)		Per-Mile Toll Rate <sup>(1)</sup>			
		Northbound		Southbound	
Beginning	Ending	Toll Rate	Comment	Toll Rate	Comment
6:30	7:00	\$ 0.050	---	\$ 0.075	North of E-470
		---	---	0.200	South of E-470
7:00	8:00	\$ 0.100	---	\$ 0.075	North of E-470
		---	---	0.500	South of E-470
8:00	9:00	\$ 0.050	---	\$ 0.050	North of E-470
		---	---	0.150	South of E-470
15:00	17:00	\$ 0.050	North of E-470	\$ 0.075	---
		0.500	South of E-470	---	---
17:00	18:00	\$ 0.100	North of E-470	\$ 0.125	---
		0.500	South of E-470	---	---
18:00	19:00	\$ 0.050	North of E-470	\$ 0.050	---
		0.175	South of E-470	---	---
23:00	6:30	\$ 0.050	---	\$ 0.050	---
		---	---	---	---
9:00	11:30	\$ 0.050	---	\$ 0.050	---
		---	---	---	---
11:30	15:00	\$ 0.050	---	\$ 0.050	---
		---	---	---	---
19:00	23:00	\$ 0.050	---	\$ 0.050	---
		---	---	---	---

<sup>(1)</sup> Tolls are calculated based on the per-mile rates times distance traveled in the TELs, with a minimum toll of \$0.50.

**Table 6**  
**2035 Per-Mile Toll Rates by Time Period and Direction**  
**Alternative 1B - HOV 3+ Toll-Free**  
 I-25 North

Hour(s)		Per-Mile Toll Rate			
		Northbound		Southbound	
Beginning	Ending	Toll Rate	Comment	Toll Rate	Comment
6:30	7:00	\$ 0.050	---	\$ 0.100	---
		---	---	---	---
7:00	8:00	\$ 0.075	---	\$ 0.125	North of E-470
		---	---	0.250	South of E-470
8:00	9:00	\$ 0.050	---	\$ 0.050	---
		---	---	---	---
15:00	17:00	\$ 0.100	---	\$ 0.050	---
		---	---	---	---
17:00	18:00	\$ 0.150	North of E-470	\$ 0.075	---
		0.250	South of E-470	---	---
18:00	19:00	\$ 0.050	---	\$ 0.050	---
		---	---	---	---
23:00	6:30	\$ 0.050	---	\$ 0.050	---
		---	---	---	---
9:00	11:30	\$ 0.050	---	\$ 0.050	---
		---	---	---	---
11:30	15:00	\$ 0.050	---	\$ 0.050	---
		---	---	---	---
19:00	23:00	\$ 0.050	---	\$ 0.050	---
		---	---	---	---

(running between 84<sup>th</sup> Avenue and 120<sup>th</sup> Avenue). However, because this TEL contains only a single segment with slip ramps at either end, hot spots occur at the slip ramps at either end of the segment. The southbound entrance ramp carries the entire 1,500 vehicles (nearly 2.5 times its assumed capacity), while the exit ramp south of the TEL segment carries 900 vph. The remaining 600 vehicles continue onto the existing reversible HOT lanes to the south. In the northbound direction, volume in the southern TEL is projected at 1,400 vph, which would exceed the capacity of both the entering and exiting slip ramps.

Of particular concern with the southern TEL is the fact that nearly all of the traffic forecasted to use the TEL is HOV2 or HOV3+ traffic; because these vehicles would use the lane free of charge, no level of pricing would alleviate the expected congestion in the TEL.

The northern TEL (running between S.R. 66 and S.R. 60) also experiences ramp “hot spots” during the morning period. This TEL, which also contains only one segment, carries 1,100 vph in both the northbound and southbound directions, exceeding slip ramp capacities. Unlike the southern TEL, about half of the traffic in each direction using this TEL is expected to consist of SOVs, suggesting that a higher toll rate may be one solution to alleviate the expected congestion.

In the evening peak hour, Phase 1/Option 1 under an HOV2+ scenario is expected to produce similar results, with the directions of the most severe hot spots reversed from southbound to northbound. The southern TEL is estimated to carry 1,900 vph in the northbound direction, exceeding the TEL maximum service volume; the northern exit slip ramp, which will carry all 1,900 vehicles; and the southern entrance slip ramp, which will carry 1,100 vehicles (the remaining 800 continue from the reversible HOT lanes to the south). In the southbound direction, the southern TEL carries 1,600 vehicles, with all of these vehicles using the slip ramps immediately north and south of this segment, exceeding the maximum service volume of both ramps. As was the case in the morning peak hour, most or all of this traffic comprises HOV2 and HOV3+ traffic.

At the northern TEL, estimated evening peak hour southbound volume is 1,200 vph; northbound volume is 1,600 vph. Neither of these volumes is expected to exceed the main lane capacity, but both will exceed the capacity of their respective entrance and exit slip ramps. Approximately one third of the traffic in each direction is comprised of SOVs.

Under an HOV3+ toll-free scenario there is no morning peak hour “hot spot” in the southern TEL (running between 84<sup>th</sup> Avenue and 120<sup>th</sup> Avenue). However, hot spots occur at the slip ramps at either end of the segment. The southbound entrance ramp carries the entire 1,300 vehicles (more than twice the assumed capacity), while the exit ramp south of the TEL segment carries an acceptable 600 vph. The remaining 700 vehicles continue onto the existing reversible HOT lanes to the south. In the northbound direction, volume in the southern TEL is projected at 1,000 vph, which exceeds the capacity of both the entering and exiting slip ramps.

However, unlike the HOV2+ toll-free scenario, nearly 80 percent of all traffic using the southern TEL is either an SOV or HOV2 “buy-in” vehicle. Ramp demand could be managed through higher tolls. However, this would lower the TEL mainline demand well below its maximum of 1,600.

The northern TEL (running between S.R. 66 and S.R. 60) also experiences ramp “hot spots” during the morning period. This TEL, which also contains only one segment, carries 700 vph in both the northbound and southbound directions, slightly exceeding slip ramp capacities. Like the southern TEL, about 80 percent of the traffic in each direction using this TEL is estimated to consist of SOVs or HOV2 “buy-in” vehicles.

In the evening peak hour, Phase 1/Option 1 under an HOV3+ scenario is expected to produce similar results, with the directions of the most severe hot spots reversed from southbound to northbound. The southern TEL is estimated to carry 1,500 vph in the northbound direction. The northern exit slip ramp will carry all 1,500 vehicles; and the southern entrance slip ramp, which will carry 900 vehicles (the remaining 600 continue from the reversible HOT lanes to the south). In the southbound direction, the southern TEL carries 1,200 vehicles, with all of these vehicles using the slip ramps immediately north and south of this segment, exceeding the maximum service volume of both ramps. Nearly two-thirds to three-quarters of this traffic consists of SOV or HOV2 “buy-in” vehicles.

**Alternative 1A** – Under this alternative, the TELs are continuous from 84th Avenue to S.R. 14. One effect of this configuration is that there is less pressure on individual slip ramps to and from the TELs, as drivers have numerous locations to enter and exit the TELs. The result is that no individual slip ramp carries volumes as high as those seen under the Phase 1/Option 1 scenario.

In the morning peak hour, the only mainline TEL “hot spot” occurs in the southbound direction between 84<sup>th</sup> Avenue and 104<sup>th</sup> Avenue (the southernmost segment of the TEL). The projected volume through this segment is 1,700 vph, slightly above the assumed free flow capacity. Among slip ramps, the highest southbound volume is just south of this mainline location, where the projected volume is 900 vph, with an additional 800 vehicles continuing south onto the existing reversible HOT lanes. There are two other southbound slip ramps that exceed the assumed 600 vph capacity in the morning peak hour. One is the TEL entrance ramp at 104<sup>th</sup> Avenue, forecasted to carry 700 vph, and the other is the entrance ramp south of S.R. 14, forecasted to carry 900 vehicles. In the northbound direction, the slip ramps at 84<sup>th</sup> Avenue, S.R. 60, and S.R. 402 are projected to exceed capacity, with the highest projected volume at the 84<sup>th</sup> Avenue entrance ramp, forecasted to carry 1,000 vph in the morning peak hour.

In the evening peak hour, the mainline “hot spot” between 84<sup>th</sup> Avenue and 104<sup>th</sup> Avenue switches from southbound to northbound, and the projected volume is 1,900 vph. The slip ramp that precedes this location is projected to carry 1,100 of these vehicles, making it the most congested northbound slip ramp in this period. A second mainline “hot spot” occurs between U.S. 34 and C.R. 32, with a projected volume of 1,700 vph. There are three other northbound slip

ramp “hot spots” with the most congested projected to carry 800 vph. In the southbound direction, there are no mainline “hot spots,” but three slip ramp “hot spots” are projected, including the most severe, south of 84<sup>th</sup> Avenue, where 1,600 vph are projected. The other two ramps have projected peak hour volumes of 700 vph.

**Alternative 1B** – Under this alternative, HOV2 traffic is treated the same way as toll-paying, SOV traffic. Compared with Alternative 1A, hot spots are both less frequent and less severe.

In the morning peak hour, the only hot spots occurred at the southernmost slip ramps, where the new TELs tie into the existing reversible HOT lanes to the south. In the southbound direction, 900 vehicles per hour are forecasted to use the southernmost exit slip ramp, with an additional 700 vehicles continuing on to the south. In the northbound direction, 800 vph are projected.

In the evening peak hour, the same two slip ramp “hot spots” occur, though both are more severe than in the morning. The northbound slip ramp carries 1,100 vph, which merge with an additional 600 vehicles continuing from the reversible HOT lanes to south. This creates a slight hot spot along the mainline of 1,700 vehicles of which three-quarters are “buy-ins”. In the southbound direction, 1,500 vph are projected to use the exit slip ramp.

## TOLL REVENUE

Revenue generated from the Base Case in the year 2006 study, the six alternatives from the year 2009 study, and the four alternatives from the current study are presented in Table 7.

**Table 7**  
**Estimated 2030/2035 Toll Express Lane (TEL) Revenue**  
I-25 North

Year of Study	Number	Scenario	GP Lanes	TELs	Estimated Toll Revenue	
					2030	2035
2006	Base Case	6 (S. of S.R. 66) / 4 (N. of S.R. 66)		2 (except 4 between S.R. 56 and S.R. 68)	\$ 4,695,000	n.a.
2009	Alt. 1	6		2	\$ 1,402,000	n.a.
2009	Alt. 2A	6 (S. of S.R. 66) / 4 (N. of S.R. 66)		2	\$ 4,692,000	n.a.
2009	Alt. 2B	6		2 (S. of S.R. 66) / 0 (N. of S.R. 66)	\$ 1,675,000	n.a.
2009	Alt. 3A	6 (S. of S.R. 66) / 4 (N. of S.R. 66)		0 (S. of S.R. 66) / 2 (N. of S.R. 66)	\$ 3,414,000	n.a.
2009	Alt. 3B	6		0	\$ -	n.a.
2009	Alt. 4	6		Reversible HOT lanes to 120th Ave., then 2	\$ 2,322,000	n.a.
2010	Option 1/Phase 1/HOV2+ Free	6 (S. of S.R. 66) / 4 (N. of S.R. 66)		2 (between 84th Ave. and 120th Ave. / between S.R. 66 and S.R. 60)	\$	1,904,000
2010	Option 1/Phase 1/HOV3+ Free	6 (S. of S.R. 66) / 4 (N. of S.R. 66)		2 (between 84th Ave. and 120th Ave. / between S.R. 66 and S.R. 60)	\$	6,294,000
2010	Alt. 1A/HOV2+ Free	6 (84th Ave. to E-470, S.R. 7 to Johnsons Corner, S.R. 18 to C.R. 14) / 8 (E-470 to S.R. 7, Johnsons Corner to S.R. 18)		2	n.a.	\$ 2,787,000
2010	Alt. 1B/HOV3+ Free	6 (84th Ave. to E-470, S.R. 7 to Johnsons Corner, S.R. 18 to C.R. 14) / 8 (E-470 to S.R. 7, Johnsons Corner to S.R. 18)		2	n.a.	\$ 10,515,000

n.a. - not applicable







	YEAR	2035 TIME PERIOD				DIV	TOLL RATE	COMBINED	SCENARIO																				
		20th		30th					Park				40th				1-70				(W-40th)				E. 80th				176
Total	108.4	8.8	97.7	22.3		120.0	6.5	113.5	0.2	27.9	141.2	33.6	107.6	11.0	5.5	124.0	4.8	128.8	16.2	112.5	11.0	123.5	1.1	19.4	102.9	8.6	15.8	26.2	
CV	12.8	1.0	11.8	2.9		14.7	0.8	13.9	0.0	3.6	17.5	4.0	13.5	1.4	0.7	15.6	0.6	16.2	2.0	14.2	1.5	15.7	0.1	2.3	13.3	0.9	1.8	3.2	
SOV	74.5	6.1	68.2	15.5		83.7	4.5	79.2	0.2	19.4	98.4	23.3	78.1	7.6	3.6	86.4	3.2	89.6	11.3	78.3	7.3	85.2	0.8	13.7	71.2	5.3	10.2	18.3	
HOV2	16.9	1.4	14.2	3.2		17.4	1.0	16.4	0.0	3.9	20.2	5.1	15.1	1.5	0.9	17.5	0.7	18.2	2.4	15.8	1.7	17.5	0.2	2.8	14.6	2.0	3.0	3.8	
HOV3	4.1	0.3	3.4	0.8		4.3	0.3	4.0	0.0	1.1	5.1	1.2	3.9	0.4	0.2	4.5	0.2	4.7	0.6	4.1	0.5	4.6	0.0	0.7	3.9	0.5	0.7	0.9	
SB																													
Total			1.9		3.2																	6.1							
SOV			0.2		0.8																	1.0							
HOV2			1.3		1.9																	3.3							
HOV3			0.3		0.5																	0.8							
Total			3.3		4.8																	8.1							
SOV			0.1		0.6																	0.6							
HOV2			2.6		3.3																	5.9							
HOV3			0.7		0.9																	1.5							
SB																													
Total	114.4	8.6	102.5	26.4		128.9	8.0	120.9	0.9	14.9	135.5	3.9	118.3	3.7	17.2	131.3	5.1	133.2	14.7	113.2	14.7	127.9	2.9	20.3	2.9	104.7	35.9		
CV	13.5	1.0	12.5	3.3		15.8	0.9	14.9	0.0	3.7	17.4	3.7	17.7	1.7	1.0	16.6	0.6	17.2	2.2	14.5	1.8	16.3	2.5	0.3	13.4	4.3			
SOV	79.0	5.9	73.0	18.7		91.7	5.6	86.1	0.9	10.7	117.4	2.5	110.6	2.6	11.8	94.2	4.5	97.8	12.7	81.4	9.9	91.3	14.6	2.1	74.6	24.7			
HOV2	17.6	1.3	13.7	3.6		17.2	1.2	16.0	0.0	4.4	18.8	4.8	13.2	1.6	2.6	16.4	0.7	17.5	2.5	13.8	2.4	16.2	2.6	0.4	13.3	5.6			
HOV3	4.3	0.3	3.3	0.9		4.2	0.3	3.9	0.0	1.1	5.1	1.2	3.9	0.4	0.7	4.1	0.2	4.3	0.7	3.4	0.6	4.1	0.6	0.1	3.4	1.4			

YEAR	2035 TIME PERIOD				AM2	TOLL RATE	COMBINED	SCENARIO		75 NB & 250 SB SOUTH OF E470, 125 SB NORTH OF E470				(W-48th)				E. 58th				176					
	20h	40h	60h	80h				Park	48th	1-70	11	0.3	8.5	0.5	9.0	1.1	7.8	1.1	9.0	0.0	1.3	7.6	0.8	1.0	1.8		
Total	7.9	0.9	6.4	1.6	8.0	0.5	7.5	0.1	2.0	9.4	2.3	7.1	1.1	0.3	8.5	0.5	9.0	1.1	7.8	1.1	9.0	0.0	1.3	7.6	0.8	1.0	1.8
CV	1.0	0.1	0.8	0.2	1.0	0.1	1.0	0.0	0.3	1.3	0.3	1.0	0.1	0.0	1.2	0.1	1.2	0.1	1.1	0.2	1.3	0.0	0.2	1.1	0.1	0.1	0.2
SOV	5.7	0.6	4.7	1.2	5.9	0.4	5.5	0.0	1.4	6.9	1.7	5.2	0.8	0.2	6.2	0.3	6.5	0.8	5.7	0.8	6.5	0.0	1.0	5.5	0.6	0.7	1.3
HOV2	1.0	0.1	0.8	0.2	1.0	0.1	0.9	0.0	0.3	1.2	0.3	0.9	0.1	0.0	1.1	0.1	1.2	0.2	1.0	0.1	1.1	0.0	0.2	1.0	0.1	0.1	0.2
HOV3	0.3	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
SB																											
Total			0.7		1.5																	2.1					
SOV			0.4		1.0																	1.4					
HOV2			0.1		0.2																	0.3					
HOV3			0.2		0.3																	0.5					
Total			0.0		0.0																	0.0					
SOV			0.0		0.0																	0.0					
HOV2			0.0		0.0																	0.0					
HOV3			0.0		0.0																	0.0					
SB																											
Total	7.3	0.7	6.6	1.6	8.2	1.0	7.2	6.2	1.5	7.7	2.2	0.8	5.9	0.3	1.0	7.2	1.7	5.5	0.7	1.0	6.2	0.8	0.2	5.2	2.5	2.5	
CV	0.8	0.1	0.8	0.2	1.0	0.1	0.9	0.7	0.2	0.9	0.3	0.1	0.7	0.0	0.1	0.9	0.2	0.7	0.1	0.1	0.9	0.0	0.2	0.8	0.1	0.7	
SOV	4.0	0.4	3.6	0.9	4.7	0.6	3.7	3.2	0.8	4.0	1.6	0.6	4.3	0.2	0.7	5.2	1.2	4.0	0.5	0.5	4.5	0.6	0.1	3.8	1.8	1.8	
HOV2	0.9	0.1	0.8	0.2	1.0	0.1	0.9	0.8	0.2	0.9	0.3	0.1	0.7	0.0	0.1	0.9	0.2	0.7	0.1	0.1	0.8	0.1	0.0	0.7	0.3	0.3	
HOV3	0.2	0.0	0.2	0.1	0.2	0.0	0.2	0.0	0.0	0.2	0.1	0.0	0.2	0.0	0.0	0.2	0.1	0.2	0.0	0.0	0.2	0.0	0.0	0.2	0.1	0.1	

125 NEIS

125 GP Lanes

	YEAR	2035 TIME PERIOD				PM2	TOLL RATE	COMBINED	SCENARIO																							
		125 SOUTH OF E470, 75 SB NORTH OF E470, 150 NB NORTH OF E470							Park				4th				1-7th				(W-4th)				E 58th				176			
		20th							Park				4th				1-7th				(W-4th)				E 58th				176			
Total	8.1	0.9	7.2	1.5		8.7		1.0	7.8	0.3	2.0	9.4	1.8	7.6	0.6	0.4	8.5	0.2	8.8	1.5	7.3	0.6	7.9	0.0	1.1	6.7	0.6	1.2	1.7			
CV	0.9	0.1	0.8	0.2		1.0		0.1	0.9	0.0	0.2	1.1	0.2	0.9	0.1	0.0	1.1	0.0	1.1	0.2	0.9	0.1	1.0	0.0	0.1	0.8	0.1	0.1	0.2			
SOV	5.6	0.6	5.9	1.0		6.0		0.7	5.3	0.2	1.3	6.4	1.2	5.2	0.4	0.2	5.8	0.1	5.9	1.0	4.9	0.4	5.3	0.0	0.8	4.5	0.4	0.8	1.1			
HOV2	1.3	0.1	1.2	0.2		1.4		0.2	1.2	0.1	0.3	1.5	0.3	1.2	0.1	0.1	1.3	0.0	1.4	0.2	1.1	0.1	1.3	0.0	0.1	1.1	0.1	0.2	0.3			
HOV3	0.3	0.0	0.3	0.1		0.3		0.0	0.3	0.0	0.1	0.4	0.1	0.3	0.0	0.0	0.4	0.0	0.4	0.1	0.3	0.0	0.3	0.0	0.0	0.3	0.1	0.1	0.1			
SB																																
Total			0.0			0.0																	0.0									
SOV			0.0			0.0																	0.0									
HOV2			0.0			0.0																	0.0									
HOV3			0.0			0.0																	0.0									
Total			0.3			0.9																	1.2									
SOV			0.1			0.5																	0.6									
HOV2			0.0			0.1																	0.2									
HOV3			0.2			0.3																	0.4									
SB																																
Total	8.9	0.8	7.8	1.8		9.6		0.8	8.8	7.3	2.5	9.8	1.9	1.1	8.9	0.4	1.8	11.1	1.4	9.7	1.7	11.3	1.6	0.3	9.5	2.8						
CV	1.0	0.1	1.0	0.2		1.2		0.1	1.1	0.9	0.3	1.2	0.2	0.1	1.1	0.0	0.2	1.4	0.2	1.2	0.2	1.5	1.5	0.2	0.0	1.3	0.3					
SOV	3.0	1.2	4.2	0.3		4.2		0.9	3.4	4.6	0.6	5.2	4.4	0.6	3.7	0.5	4.3	0.8	3.5	0.8	4.3	4.2	0.7	1.6	0.7	4.3						
HOV2	1.4	0.1	1.3	0.3		1.5		0.1	1.4	1.2	0.4	1.6	0.3	0.2	1.5	0.1	0.3	1.8	0.2	1.6	0.3	1.9	0.2	0.0	1.6	0.4						
HOV3	0.3	0.0	0.1	0.0		0.1		0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.0	0.0	0.1	0.1						
SB																																

	YEAR	2035 TIME PERIOD				DVT	TOLL RATE	COMBINED	SCENARIO																										
		20th		33rd					Park				48th				1-70				(W-48th)				E. 58th				176						
Total	107.8	8.8	97.9	23.3		121.2		6.7	114.6	0.4	27.6	141.8	33.7	108.1	11.1	5.4	124.6	4.7	129.3	16.4	112.9	10.8	123.7	1.1	19.6	103.0	8.1	15.2	26.2						
CV	12.8	1.0	11.7	2.9		14.7		0.8	13.9	0.0	3.5	17.4	4.0	13.3	1.4	0.7	15.5	0.6	16.1	2.0	14.1	1.5	15.5	0.1	2.3	13.1	0.9	1.8	3.2						
SOV	74.1	6.1	67.4	15.8		83.3		4.6	78.7	0.3	18.7	97.1	23.2	73.8	1.6	1.6	85.0	0.7	88.2	11.3	78.9	7.2	84.1	0.8	11.6	69.8	5.5	10.2	17.9						
HOV2	16.8	1.3	15.4	3.7		19.0		1.0	18.0	0.1	4.4	22.3	5.2	17.0	1.7	0.9	19.6	0.7	20.4	2.6	17.8	1.7	19.5	0.2	3.0	16.2	1.2	2.4	4.2						
HOV3	4.1	0.3	3.4	0.9		4.3		0.3	4.0	0.0	1.0	5.1	1.2	3.9	0.4	0.2	4.5	0.2	4.7	0.6	4.1	0.5	4.6	0.0	0.6	3.9	0.5	0.8	0.9						
SB																																			
Total			1.1	2.3																			3.4												
SOV			0.6	1.5																			2.1												
HOV2			0.1	0.3																			0.5												
HOV3			0.3	0.5																			0.8												
Total			1.3	3.1																			4.4												
SOV			0.5	1.7																			2.2												
HOV2			0.1	0.5																			0.6												
HOV3			0.7	0.9																			1.6												
SB																																			
Total	114.2	8.8	104.1	26.0		130.1		7.8	122.3	0.9	27.6	141.8	33.7	108.1	11.1	5.4	124.6	4.7	129.3	16.4	112.9	10.8	123.7	1.1	19.6	103.0	8.1	15.2	26.2						
CV	13.5	1.0	12.4	3.2		15.6		0.9	14.7	0.0	3.5	17.4	4.0	13.3	1.4	0.7	15.5	0.6	16.1	2.2	14.2	1.8	16.0	0.2	2.5	13.2	4.3								
SOV	78.7	6.1	72.1	17.8		90.0		5.4	84.5	0.5	18.7	97.1	23.2	73.8	1.6	1.6	85.0	0.7	88.2	11.3	78.9	7.2	84.1	0.8	11.6	69.8	5.5	10.2	17.9						
HOV2	17.8	1.3	16.3	4.2		20.5		1.2	19.3	0.1	4.4	22.3	5.2	17.0	1.7	0.9	19.6	0.7	20.4	2.6	17.8	1.7	19.5	0.2	3.0	16.2	1.2	2.4	4.2						
HOV3	4.3	0.3	3.2	0.9		4.1		0.3	3.8	0.0	1.0	5.1	1.2	3.9	0.4	0.2	4.0	0.2	4.7	0.6	3.3	0.6	4.0	0.0	0.6	3.9	0.5	0.8	0.9						

	YEAR	2035 TIME PERIOD				AM2	TOLL RATE	COMBINED	SCENARIO 050 NB & 100 SB FOR NORTHERN PORTION, 050 NB & HOV ONLY SB FOR SOUTHERN PORTION																				
		20th		40th					Park		40th		1-70		(W-40th)		E-58th		176										
Total	8.0	0.9	6.1	1.6		7.7		0.6	7.1	0.0	2.0	9.1	2.2	6.9	1.0	0.3	8.2	0.5	8.7	1.1	7.6	1.1	8.7	0.1	1.3	7.3	0.8	1.0	1.8
CV	1.0	0.1	0.8	0.2		1.1		0.1	1.0	0.0	0.3	1.3	0.3	1.0	0.1	0.0	1.2	0.1	1.3	0.1	1.2	0.1	1.3	0.0	0.2	1.1	0.1	0.1	0.2
SOV	5.7	0.6	4.8	1.3		6.1		0.4	5.7	0.0	1.6	7.3	1.6	5.7	0.8	0.2	6.6	0.4	7.0	0.8	6.2	0.8	7.0	0.0	1.1	5.8	0.6	0.8	1.4
HOV2	1.1	0.1	0.3	0.1		0.4		0.1	0.4	0.0	0.1	0.4	0.3	0.2	0.1	0.0	0.2	0.1	0.3	0.1	0.2	0.1	0.4	0.0	0.1	0.3	0.1	0.1	0.1
HOV3	0.3	0.0	0.1	0.0		0.1		0.0	0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0
SB																													
Total			1.1			1.7																	2.8						
SOV			0.2			0.6																	0.9						
HOV2			0.7			0.9																	1.5						
HOV3			0.2			0.2																	0.4						
Total			0.0			0.0																	0.0						
SOV			0.0			0.0																	0.0						
HOV2			0.0			0.0																	0.0						
HOV3			0.0			0.0																	0.0						
SB																													
Total	7.4	0.7	6.6	1.6		8.2		0.9	7.3		7.7		2.3	0.9	5.9	0.4	1.0		7.2		1.7	5.5	0.8	6.2		0.8	0.2	5.3	2.5
CV	0.9	0.1	0.8	0.2		1.0		0.1	0.9		0.9		0.3	0.1	0.7	0.0	0.1		0.9		0.2	0.7	0.1	0.8		0.1	0.0	0.6	0.3
SOV	5.4	0.5	4.8	1.1		6.0		0.7	5.3		5.6		1.7	0.6	4.3	0.3	0.7		5.2		1.2	4.0	0.6	4.5		0.6	0.2	3.8	1.8
HOV2	0.9	0.1	0.8	0.2		1.0		0.1	0.9		0.8		0.3	0.1	0.7	0.0	0.1		0.9		0.2	0.7	0.1	0.8		0.1	0.0	0.7	0.3
HOV3	0.2	0.0	0.2	0.1		0.3		0.0	0.2		0.2		0.1	0.0	0.2	0.0	0.0		0.2		0.1	0.2	0.0	0.2		0.0	0.0	0.2	0.1

	YEAR	2035 TIME PERIOD				PM2	TOLL RATE	COMBINED	SCENARIO 175 NB & 100 SB FOR NORTHERN PORTION, HOV ONLY NB & 125 SB FOR SOUTHERN PORTION																							
		Park							4th				1-7th				(W-4th)				E. 5th				176							
		2th	3th	4th	5th				Park				4th				1-7th				(W-4th)				E. 5th				176			
Total	8.1	0.8	7.3	1.5		8.8		1.0	7.7	0.4	2.1	9.4	1.8	7.6	0.6	0.4	8.6	0.2	8.8	1.5	7.3	0.7	7.9	0.0	1.1	6.8	0.7	1.4	1.7			
CV	0.9	0.1	0.8	0.2		1.0		0.1	0.9	0.0	0.3	1.1	0.2	0.9	0.1	0.0	1.1	0.0	1.1	0.2	0.9	0.1	1.0	0.0	0.1	0.8	0.1	0.1	0.2			
SOV	5.6	0.6	5.0	1.0		6.0		0.7	5.3	0.3	1.4	6.4	1.3	5.2	0.4	0.3	5.8	0.1	5.9	1.0	4.9	0.4	5.3	0.0	0.8	4.5	0.3	0.8	1.1			
HOV2	1.3	0.1	1.2	0.2		1.4		0.2	1.2	0.1	0.3	1.5	0.3	1.2	0.1	0.1	1.3	0.0	1.4	0.2	1.1	0.1	1.3	0.0	0.2	1.1	0.3	0.4	0.3			
HOV3	0.3	0.0	0.3	0.1		0.3		0.0	0.3	0.0	0.1	0.4	0.1	0.3	0.0	0.0	0.4	0.0	0.4	0.1	0.3	0.0	0.4	0.0	0.0	0.3	0.1	0.1	0.1			
SB																																
Total		0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
SOV		0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
HOV2		0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
HOV3		0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
SB																																
Total		0.9	1.4																				2.3	0.1	1.8	0.4						
SOV		0.0	0.1																				0.1	0.7	0.2							
HOV2		0.0	0.1																				0.0	0.0	0.0							
HOV3		0.0	0.2																				0.0	0.0	0.0							
SB																																
Total	9.0	0.8	7.3	1.7		9.0		0.8	8.2	0.8	2.5	9.3	1.2	8.2	0.5	1.8	10.4		1.3	9.1	1.7	10.8	1.4	0.3	9.1	2.8						
CV	1.1	0.1	1.0	0.2		1.2		0.1	1.1	0.9	0.4	1.3	0.2	1.2	0.1	0.2	1.5		0.2	1.3	0.2	1.5	0.2	0.0	1.3	0.3						
SOV	6.2	0.5	5.7	1.4		7.1		0.6	6.5	5.5	2.1	7.5	1.4	6.8	0.3	1.3	8.4		1.0	7.4	1.1	8.5	1.1	0.2	7.1	1.9						
HOV2	1.3	0.1	0.5	0.1		0.6		0.1	0.5	0.3	0.1	0.4	0.3	0.2	0.2	0.1	0.4		0.1	0.3	0.3	0.6	0.1	0.0	0.5	0.4						
HOV3	0.3	0.0	0.1	0.0		0.1		0.0	0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.1		0.0	0.1	0.1	0.2	0.0	0.0	0.1	0.1						



	YEAR	2035 TIME PERIOD				DV	TOLL RATE	COMBINED	SCENARIO																							
		20th		30th					Park				40th				1-70				(W-40th)				E. 58th				176			
Total	108.4	8.8	97.6	23.6			121.3	6.8	114.5	0.4	27.4	141.5	33.9	107.6	11.0	5.5	124.0	4.8	128.8	16.1	112.7	10.9	123.6	1.2	19.4	103.0	8.9	15.8	26.5			
CV	12.8	1.0	11.8	3.0			14.8	0.8	14.0	0.0	3.6	17.5	4.1	13.5	1.4	0.7	15.6	0.6	16.2	1.9	14.3	1.5	15.7	0.1	2.3	13.3	0.9	1.8	3.3			
SOV	74.5	6.0	68.1	16.3			84.5	4.7	79.8	0.3	19.0	98.5	23.5	78.1	7.6	1.6	86.2	3.3	89.5	11.2	78.4	7.3	85.6	0.8	13.7	71.1	5.6	10.3	18.5			
HOV2	17.0	1.4	14.3	3.4			17.7	1.1	16.6	0.1	3.8	20.4	5.2	15.2	1.6	0.9	17.6	0.7	18.3	2.4	15.9	1.7	17.6	0.2	2.8	14.7	2.0	3.0	3.8			
HOV3	4.1	0.3	3.5	0.9			4.4	0.3	4.1	0.0	1.0	5.1	1.2	3.9	0.4	0.2	4.6	0.2	4.8	0.6	4.2	0.5	4.6	0.1	0.7	3.9	0.5	0.7	0.9			
SB																																
Total			2.0		3.2																		6.2									
SOV			0.3		0.9																		1.2									
HOV2			1.3		1.8																		3.2									
HOV3			0.3		0.5																		0.8									
Total			3.3		4.7																		8.0									
SOV			0.1		0.6																		0.7									
HOV2			2.6		3.3																		5.8									
HOV3			0.7		0.8																		1.5									
SB																																
Total	114.4	8.8	102.3	25.8			128.0	7.8	120.3			107.6	31.2				131.2			18.0	113.2	14.8	128.0	20.3	3.0	104.7	35.9					
CV	13.5	1.0	12.5	3.2			15.7	0.9	14.8			13.3	4.0				14.0			2.2	14.4	1.8	16.2	2.5	0.4	13.4	4.3					
SOV	78.9	6.1	72.8	18.2			91.0	5.4	85.6			76.8	22.4				94.0			12.6	81.4	9.9	91.3	14.6	2.1	74.6	24.6					
HOV2	17.6	1.4	13.7	3.5			17.2	1.2	16.0			14.1	3.8				17.8			2.5	14.0	2.4	16.4	2.6	0.4	13.4	5.6					
HOV3	4.3	0.3	3.3	0.9			4.2	0.3	3.9			3.4	0.9				4.4			0.7	3.5	0.7	4.1	0.6	0.1	3.4	1.4					

	1					2					3		4	
Southbound	WSA: HOT (Original)					JACOBS PA-4 HOV (Original)					(Jacobs Daily Total) x (WSA Percentages)		(Jacobs Daily Total) - (WSA Managed Lanes)	
North of	GP Lanes	Managed Lanes	WSA Daily Total	GP Lanes Percentage	Managed Lanes Percentage	GP Lanes	Managed Lanes	Jacobs Daily Total	GP Lanes Percentage	Managed Lanes Percentage	GP Lanes	Managed Lanes	WSA Managed Lanes (Original)	GP Lanes
SH14	39.6	0.0	39.6	100.0%	0.0%	36.6	0.0	36.6	100.0%	0.0%	36.6	0.0	0.0	36.6
Prospect	47.4	7.9	55.3	85.7%	14.3%	51.6	2.4	54.0	95.5%	4.5%	46.3	7.7	7.9	46.1
Harmony	56.8	10.3	67.1	84.6%	15.4%	63.6	3.7	67.3	94.5%	5.5%	57.0	10.3	10.3	57.0
SH392	69.6	10.3	79.9	87.1%	12.9%	76.7	3.7	80.4	95.4%	4.6%	70.0	10.4	10.3	70.1
CrossRds	66.3	14.2	80.5	82.4%	17.6%	72.3	5.5	77.8	92.9%	7.1%	64.1	13.7	14.2	63.6
US34	65.3	14.2	79.5	82.1%	17.9%	76.7	5.5	82.2	93.3%	6.7%	67.5	14.7	14.2	68.0
SH402	79.1	14.6	93.7	84.4%	15.6%	87.2	6.5	93.8	93.0%	7.0%	79.1	14.6	14.6	79.2
SH60	69.8	14.6	84.4	82.7%	17.3%	82.2	6.5	88.8	92.6%	7.4%	73.4	15.4	14.6	74.2
SH56	71.1	9.0	80.1	88.8%	11.2%	75.4	5.4	80.8	93.3%	6.7%	71.7	9.1	9.0	71.8
CR34	55.6	9.0	64.6	86.1%	13.9%	62.8	3.6	66.4	94.6%	5.4%	57.2	9.3	9.0	57.4
SH66	48.9	9.0	57.9	84.5%	15.5%	55.7	3.6	59.3	93.9%	6.1%	50.1	9.2	9.0	50.3
SH119	52.4	8.1	60.5	86.6%	13.4%	58.6	3.5	62.1	94.3%	5.7%	53.8	8.3	8.1	54.0
SH52	58.2	13.0	71.2	81.7%	18.3%	61.6	4.9	66.5	92.6%	7.4%	54.3	12.1	13.0	53.5
CR8	67.0	17.5	84.5	79.3%	20.7%	73.0	6.1	79.2	92.2%	7.8%	62.8	16.4	17.5	61.7
SH7	74.8	17.5	92.3	81.0%	19.0%	77.9	6.1	84.0	92.7%	7.3%	68.1	15.9	17.5	66.5
E470	99.1	11.1	110.2	89.9%	10.1%	88.9	4.0	93.0	95.7%	4.3%	83.6	9.4	11.1	81.9
144th	78.2	19.6	97.8	80.0%	20.0%	76.0	7.2	83.2	91.4%	8.6%	66.5	16.7	19.6	63.6
136th	90.4	19.6	110.0	82.2%	17.8%	84.9	7.2	92.1	92.2%	7.8%	75.7	16.4	19.6	72.5
120th	90.1	19.6	109.7	82.1%	17.9%	86.1	7.2	93.2	92.3%	7.7%	76.6	16.7	19.6	73.6
104th	93.3	23.1	116.4	80.2%	19.8%	90.4	8.4	98.8	91.5%	8.5%	79.2	19.6	23.1	75.7
Thrntn	98.5	23.1	121.6	81.0%	19.0%	93.9	8.4	102.3	91.8%	8.2%	82.8	19.4	23.1	79.2
84th	102.2	23.1	125.3	81.6%	18.4%	96.4	8.4	104.8	92.0%	8.0%	85.5	19.3	23.1	81.7
US36&270	129.2	2.7	131.9	98.0%	2.0%	117.1	7.4	124.5	94.0%	6.0%	122.0	2.5	2.7	121.8
<b>TOTALS</b>	<b>1,702.9</b>	<b>311.1</b>	<b>2,014.0</b>			<b>1,745.8</b>	<b>125.2</b>	<b>1,871.0</b>			<b>1,583.9</b>	<b>287.1</b>	<b>311.1</b>	<b>1,559.9</b>

### Volume Comparisons

2 vs 1			
GP Lanes	Managed Lanes	Total	
8.3%	0.0%	8%	
-8.2%	224.3%	2%	
-10.7%	180.8%	0%	
-9.3%	180.8%	-1%	
-8.3%	157.5%	3%	
-14.8%	157.5%	-3%	
-9.3%	123.3%	0%	
-15.1%	123.3%	-5%	
-5.7%	67.3%	-1%	
-11.5%	149.9%	-3%	
-12.3%	149.9%	-2%	
-10.6%	130.5%	-3%	
-5.5%	165.9%	7%	
-8.3%	184.6%	7%	
-3.9%	184.6%	10%	
11.5%	174.5%	19%	
2.9%	173.7%	18%	
6.5%	173.7%	19%	
4.7%	173.7%	18%	
3.2%	176.1%	18%	
4.9%	176.1%	19%	
6.0%	176.1%	20%	
10.3%	-63.6%	6%	
<b>AVERA</b>	<b>-3.3%</b>	<b>145.2%</b>	<b>6.8%</b>

	WSA: HOT (Original)					JACOBS PA-4 HOV (Original)					(Jacobs Daily Total) x (WSA Percentages)		(Jacobs Daily Total) - (WSA Managed Lanes)	
Northbound	GP Lanes	Managed Lanes	WSA Daily Total	GP Lanes Percentage	Managed Lanes Percentage	GP Lanes	Managed Lanes	Jacobs Daily Total	GP Lanes Percentage	Managed Lanes Percentage	GP Lanes	Managed Lanes	WSA Managed Lanes (Original)	GP Lanes
SH14	34.5	0.0	34.5	100.0%	0.0%	36.7	0.0	36.7	100.0%	0.0%	36.7	0.0	0.0	36.7
Prospect	48.3	4.1	52.4	92.2%	7.8%	52.9	2.5	55.5	95.4%	4.6%	51.1	4.3	4.1	51.4
Harmony	58.7	12.0	70.7	83.0%	17.0%	65.1	4.1	69.2	94.1%	5.9%	57.5	11.8	12.0	57.2
SH392	74.8	12.0	86.8	86.2%	13.8%	81.7	4.1	85.8	95.2%	4.8%	73.9	11.9	12.0	73.8
CrossRds	70.4	16.5	86.9	81.0%	19.0%	76.1	5.9	82.1	92.8%	7.2%	66.5	15.6	16.5	65.6
US34	70.2	16.5	86.7	81.0%	19.0%	78.8	5.9	84.8	93.0%	7.0%	68.7	16.1	16.5	68.3
SH402	82.0	16.8	98.8	83.0%	17.0%	88.5	7.0	95.5	92.7%	7.3%	79.2	16.2	16.8	78.7
SH60	73.7	16.8	90.5	81.4%	18.6%	83.7	7.0	90.7	92.3%	7.7%	73.9	16.8	16.8	73.9
SH56	74.5	10.0	84.5	88.2%	11.8%	76.8	5.6	82.4	93.2%	6.8%	72.7	9.8	10.0	72.4
CR34	56.7	10.0	66.7	85.0%	15.0%	62.3	3.4	65.7	94.8%	5.2%	55.9	9.9	10.0	55.7
SH66	49.1	10.0	59.1	83.1%	16.9%	54.7	3.4	58.2	94.1%	5.9%	48.3	9.8	10.0	48.2
SH119	52.3	8.7	61.0	85.7%	14.3%	57.6	3.5	61.1	94.3%	5.7%	52.4	8.7	8.7	52.4
SH52	58.6	12.9	71.5	82.0%	18.0%	59.9	4.7	64.7	92.7%	7.3%	53.0	11.7	12.9	51.8
CR8	66.2	16.9	83.1	79.7%	20.3%	70.4	6.0	76.4	92.1%	7.9%	60.9	15.5	16.9	59.5
SH7	73.4	16.9	90.3	81.3%	18.7%	74.9	6.0	80.9	92.5%	7.5%	65.8	15.1	16.9	64.0
E470	100.7	10.4	111.1	90.6%	9.4%	88.2	3.9	92.1	95.7%	4.3%	83.5	8.6	10.4	81.7
144th	75.2	17.1	92.3	81.5%	18.5%	72.4	6.7	79.1	91.6%	8.4%	64.4	14.7	17.1	62.0
136th	89.9	17.1	107.0	84.0%	16.0%	82.6	6.7	89.3	92.5%	7.5%	75.0	14.3	17.1	72.2
120th	91.9	17.1	109.0	84.3%	15.7%	83.8	6.7	90.4	92.6%	7.4%	76.3	14.2	17.1	73.3
104th	94.8	21.9	116.7	81.2%	18.8%	89.9	8.2	98.0	91.7%	8.3%	79.6	18.4	21.9	76.1
Thrntn	99.0	21.9	120.9	81.9%	18.1%	91.6	8.2	99.7	91.8%	8.2%	81.7	18.1	21.9	77.8
84th	105.9	21.9	127.8	82.9%	17.1%	95.6	8.2	103.7	92.1%	7.9%	86.0	17.8	21.9	81.8
US36&270	129.6	2.8	132.4	97.9%	2.1%	115.1	4.9	120.0	95.9%	4.1%	117.5	2.5	2.8	117.2
<b>TOTALS</b>	<b>1,730.4</b>	<b>310.3</b>	<b>2,040.7</b>			<b>1,739.4</b>	<b>122.7</b>	<b>1,862.1</b>			<b>1,580.3</b>	<b>281.8</b>	<b>310.3</b>	<b>1,551.8</b>

2 vs 1			
GP Lanes	Managed Lanes	Total	
-6.0%	0.0%	-6%	
-8.7%	60.8%	-6%	
-9.9%	193.8%	2%	
-8.4%	193.8%	1%	
-7.5%	177.6%	6%	
-11.0%	177.6%	2%	
-7.4%	141.5%	3%	
-12.0%	141.5%	0%	
-3.0%	78.1%	3%	
-9.0%	190.3%	1%	
-10.3%	190.3%	2%	
-9.2%	149.8%	0%	
-2.2%	171.6%	11%	
-5.9%	180.1%	9%	
-2.0%	180.1%	12%	
14.2%	165.5%	21%	
3.8%	156.7%	17%	
8.8%	156.7%	20%	
9.7%	156.7%	21%	
5.5%	167.8%	19%	
8.1%	167.8%	21%	
10.8%	167.8%	23%	
12.6%	-43.2%	10%	
<b>AVERA</b>	<b>-1.7%</b>	<b>144.5%</b>	<b>10%</b>

South of:	Existing	No-Action	Package A	Package B General Purpose	Package B Managed	Package B Total Volume	Preferred Alternative General Purpose	Preferred Alternative Managed	Preferred Alternative Total Volume
SH 1	19,080	31,640	37,565	37,565	0	37,565	37,565	0	37,565
Mountain Vista	24,730	50,995	57,725	57,725	0	57,725	57,725	0	57,725
SH 14	40,840	72,345	93,017	83,570	8,420	91,990	84,745	12,890	97,635
Prospect	46,290	90,710	114,452	86,685	22,025	108,710	102,495	19,475	121,970
Harmony	61,230	104,840	136,612	108,325	22,865	131,190	126,035	19,815	145,850
SH 392	57,660	103,725	137,388	105,065	26,900	131,965	122,115	23,385	145,500
Crossroads Blvd.	63,930	113,315	150,515	108,225	26,685	134,910	128,480	25,015	153,495
US 34	64,400	127,385	160,555	124,400	24,715	149,115	140,920	24,760	165,680
SH 402	63,283	120,925	156,846	113,735	31,625	145,360	136,610	31,400	168,010
CR 16	63,810	122,035	154,477	112,165	26,190	138,355	132,935	29,580	162,515
SH 60	65,080	124,255	144,868	108,205	22,440	130,645	133,680	23,630	157,310
SH 56	64,980	116,825	128,008	100,260	20,620	120,880	114,425	19,070	133,495
CR 34	65,080	118,650	128,824	105,095	16,860	121,955	114,315	16,000	130,315
SH 66	68,610	133,720	145,226	117,715	17,145	134,860	123,310	14,590	137,900
SH 119	77,010	149,185	167,299	132,330	24,175	156,505	130,035	21,620	151,655
SH 52	86,770	163,035	188,611	137,625	32,905	170,530	137,030	30,350	167,380
CR 8	89,030	166,085	191,838	143,905	30,540	174,445	143,040	27,985	171,025
SH 7	96,660	188,060	202,863	176,270	24,055	200,325	175,385	21,520	196,905
E-470	87,170	171,990	176,295	157,460	32,535	189,995	159,995	30,000	189,995
144th Avenue	83,310	167,460	171,424	144,480	39,205	183,685	147,015	36,670	183,685
136th Avenue	104,550	174,640	178,124	156,345	34,110	190,455	158,880	31,575	190,455
120th Avenue	132,480	189,715	192,294	165,280	38,250	203,530	167,815	35,715	203,530
104th Avenue	154,780	211,020	213,558	174,415	47,520	221,935	176,950	44,985	221,935
Thornton Pkwy.	164,100	219,710	220,646	200,735	23,600	224,335	200,735	23,600	224,335
84th Avenue	180,670	246,405	248,222	247,870	5,595	253,465	247,870	5,595	253,465

**Rounded:**

South of:	Existing	No-Action	Package A	Package B General Purpose	Package B Managed	Package B Total Volume	Preferred Alternative General Purpose	Preferred Alternative Managed	Preferred Alternative Total Volume
SH 1	19,100	31,600	37,600	37,600	0	37,600	37,600	0	37,600
Mountain Vista	24,700	51,000	57,700	57,700	0	57,700	57,700	0	57,700
SH 14	40,800	72,300	93,000	83,600	8,400	92,000	84,700	12,900	97,600
Prospect	46,300	90,700	114,500	86,700	22,000	108,700	102,500	19,500	122,000
Harmony	61,200	104,800	136,600	108,300	22,900	131,200	126,000	19,800	145,900
SH 392	57,700	103,700	137,400	105,100	26,900	132,000	122,100	23,400	145,500
Crossroads Blvd.	63,900	113,300	150,500	108,200	26,700	134,900	128,500	25,000	153,500
US 34	64,400	127,400	160,600	124,400	24,700	149,100	140,900	24,800	165,700
SH 402	63,300	120,900	156,800	113,700	31,600	145,400	136,600	31,400	168,000
CR 16	63,800	122,000	154,500	112,200	26,200	138,400	132,900	29,600	162,500
SH 60	65,100	124,300	144,900	108,200	22,400	130,600	133,700	23,600	157,300
SH 56	65,000	116,800	128,000	100,300	20,600	120,900	114,400	19,100	133,500
CR 34	65,100	118,700	128,800	105,100	16,900	122,000	114,300	16,000	130,300
SH 66	68,600	133,700	145,200	117,700	17,100	134,900	123,300	14,600	137,900
SH 119	77,000	149,200	167,300	132,300	24,200	156,500	130,000	21,600	151,700
SH 52	86,800	163,000	188,600	137,600	32,900	170,500	137,000	30,400	167,400
CR 8	89,000	166,100	191,800	143,900	30,500	174,400	143,000	28,000	171,000
SH 7	96,700	188,100	202,900	176,300	24,100	200,300	175,400	21,500	196,900
E-470	87,200	172,000	176,300	157,500	32,500	190,000	160,000	30,000	190,000
144th Avenue	83,300	167,500	171,400	144,500	39,200	183,700	147,000	36,700	183,700
136th Avenue	104,600	174,600	178,100	156,300	34,100	190,500	158,900	31,600	190,500
120th Avenue	132,500	189,700	192,300	165,300	38,300	203,500	167,800	35,700	203,500
104th Avenue	154,800	211,000	213,600	174,400	47,500	221,900	177,000	45,000	221,900
Thornton Pkwy.	164,100	219,700	220,600	200,700	23,600	224,300	200,700	23,600	224,300
84th Avenue	180,700	246,400	248,200	247,900	5,600	253,500	247,900	5,600	253,500

## **Induced Development due to Highway Widening – Summary of Research**

The limited research that has been done on induced development suggests it is a real phenomenon. Induced development is likely to occur with many roadway projects, but how much induced development would occur for a given project cannot be reliably determined<sup>1</sup>.

A study that looked at land use impacts of highway capacity expansion projects in several California corridors concluded that highway capacity expansion stimulates development activity, both residential and non-residential, in the corridors served by the expanded facilities<sup>1</sup>.

Below are summary/findings of the studies listed on the references:

New Highways, Urban Development and Induced Travel: This study looks at affect of highway improvements on urban growth patterns. The case study is construction of new toll roads in Orange County. The study concludes that “the evidence from Orange County suggests rather strongly that new highways change the geographic pattern of accessibility, that those changes are reflected in home sales prices, and thus that it is reasonable to conclude that new highways will also create changes in development patterns.”

Research on Relationships between Transportation Infrastructure and Increases in Vehicle Miles Traveled: The Effects of Highway Capacity Expansion on Land Development: This study analyzes several effects of highway capacity expansion on development by examining projects from Austin, Texas. The results showed that the expansions had no impact on development activity.

Road Expansion, Urban Growth, and Induced Travel: A Path Analysis: This study includes effect of road improvements on urban development. It states that developers are well aware of roadway projects slated for construction and position themselves to take advantage of planned improvements.

Md.’s Lesson: Widen the Roads, Drivers Will Come: This is a Washington Post article about how I-270 got very congested again in less than 8 years after opening; and it talks about the reasons behind it such as induced demand and induced development. There is also reference to some studies about induced demand and development. A quote from the article: “In the long run, increased traffic also may result from accelerated development encouraged by the improved highway, with new homes and stores drawing more drivers to the area”. There is also some quantitative information about growth - 13,642 new homes got approval to be built along a stretch of the improvement.

Highways and Sprawl in North Carolina: This study looks at relationship between road investments and growth by reviewing the growth of North Carolina’s 1551 census tracts during the 1990s compared with the location of major road improvements. The study found that “Road improvements, primarily urban and rural widenings, had a minor effect on growth,

increasing tract decade-long growth rates by 50-550 persons per decade per mile of investment, about 2-14 percentage points above the baseline decade growth rate.

The Impact of Highways and Other Major Road Improvements on Urban Growth in Ohio:

From the abstract: This study carefully reviewed growth in 20 Ohio urbanized areas to assess the link between urban growth and road investment. Almost 2,500 census tracts were analyzed including 138 separate major road projects. The analysis indicates that growth in Ohio is complex and depends heavily on the underlying local economy. Growth occurred primarily where there was room for it. Factors other than road investments (e.g., population density, school quality, housing quality, water, sewer, etc.) appeared to be the primary drivers of local growth. About 70 percent of the population growth took place in census tracts without major road improvements. In the few cases where growth seemed to have a statistically significant impact, the effect on traffic was about the size of locating one fast food restaurant along the road. A reasonable explanation for the weak relationship between roads and growth is that major road improvements are built to accommodate prior growth, not spur it.

**References:**

1. Induced Traffic and Induced Development: A Literature Review, Reid Ewing and Allan Lichtenstein, 2002
2. New Highways, Urban Development and Induced Travel, Boarnet et al., 2000
3. Research on Relationships between Transportation Infrastructure and Increases in Vehicle Miles Traveled: The Effects of Highway Capacity Expansion on Land Development, Kockelman et al., 2001
4. Road Expansion, Urban Growth, and Induced Travel: A Path Analysis, Robert Cervero, 2001
5. Md.'s Lesson: Widen the Roads, Drivers Will Come, Washington Post, 1999
6. Highways and Sprawl in North Carolina, David D. Hartgen, 2003
7. The Impact of Highways and Other Major Road Improvements on Urban Growth in Ohio, David D. Hartgen, 2003