

9.2 FINANCIAL FEASIBILITY OF FINAL CONFIGURATION

The calculated financial feasibility factors of the scenarios of the final configurations were used to refine the final alternative. Initial model runs for determining access locations, and even for determining the order of magnitude of feasibility, were conducted so that any recommended alternative could eventually pass the test of an investment grade Traffic and Revenue (T&R) study.

Several refinements to the initial assumptions were made in an attempt to increase the project's potential feasibility and to correspond to the assumptions used by the CTE in the Statewide Tolling Feasibility Study. Even though modifications were made to the input parameters, it is still believed that the assumptions in this study are conservative, and will hold up to a later test in a T&R study. The sections below describe refinements made during optimization of the financial feasibility analysis.

9.2.1 Toll Rate Optimization

Initially, the toll rate used in the financial feasibility calculation was based on a projected toll rate for 2025 and then interpolated to arrive at a potential opening year toll rate. The initial opening year toll rate for the peak hours was calculated to be \$0.12 per mile. This was based on a lower value of time of \$6 per hour, derived based on existing drivers' perception of existing traffic conditions. As traffic volumes and congestion increase, so does a drivers' value of time. The value of time analysis showed that an increase to \$15 per hour was justified during the peak hours (Section 5.3.2). With the updated value of time, the micro-simulation model was run for opening year conditions and then optimized. A new toll rate of \$0.18 per mile (In 2004 dollars) was developed. By calibrating the toll rate at both opening year and 2025, an accurate picture of the tolling rates over the 40-year bond life was produced.

Another refinement was to revise the schedule for toll rate increases. Initially, toll rate increases were assumed to occur every 5 years. This was based on past experience with cash collection systems that require more capital investment, and thus reduce the effective net revenue increase. Because this facility will use electronic toll collection, raising the toll rate annually will be easy. The benefit is that the cash flow can be accelerated, thus leveraging toll increases. The toll rate was, therefore assumed to be increased annually at 1.5% per year.

The toll collection period assumed in the analysis was also modified. Initially, the toll revenue analysis considered toll collection only during the AM and PM peak hours, accounting for toll collection during only 6 hours of a weekday. Most express lane corridors across the country implement a peak shoulder and off-peak toll period, allowing for toll collection for most of the day. Accordingly, revenue estimates were revised to consider off-peak tolls, including off-peak daytime, nighttime, and weekend

hours. Consistent with the lower demand during these non-peak periods, the toll rate in these periods was reduced.

The tolling schedule subsequently produced assumes three defined toll collection periods on weekdays: peak period, peak shoulder, and off-peak. The weekend consists of an off-peak period only. The AM and PM peak hour toll rate for an assumed 2008 opening year would be approximately \$0.18 in 2004 dollars. The projected 2025 AM and PM peak hour toll rate will be approximately \$0.28 in 2004 dollars. This would be an approximate cost of \$2.24 for opening year and \$3.50 in 2025 in 2004 dollars, to travel the entire corridor from Kipling Parkway to I-25. The proposed toll schedule is shown in Table 9.2.

Table 9.1
Toll Schedule
Final Configuration

Time Period	Hours	Opening Year 2008		2025	
		Toll Rate/Mile (\$)	Through Trip (\$)*	Toll Rate/Mile (\$)	Through Trip (\$)*
AM Off-Peak	5:00 - 5:30	0.06	0.71	0.10	1.25
AM Shoulder	5:30 - 6:30	0.10	1.25	0.14	1.75
AM Peak	6:30 - 8:00	0.18	2.24	0.28	3.50
AM Shoulder	8:00 - 9:00	0.10	1.25	0.14	1.75
AM Off-Peak	9:00 - 12:00	0.06	0.75	0.10	1.25
PM Off-Peak	12:00 - 2:00	0.06	0.75	0.10	1.25
PM Shoulder	2:00 - 3:00	0.10	1.25	0.14	1.75
PM Peak	3:00 - 6:00	0.18	2.24	0.28	3.50
PM Shoulder	6:00 - 7:00	0.10	1.25	0.14	1.75
PM Off-Peak	7:00 - 10:00	0.06	0.75	0.10	1.25

* Through trip assumes travel of the entire 12.5-mile express lane corridor length.

All dollar amounts are in 2004 dollars.

These values are shown strictly for analysis purposes; ultimately, it will be the responsibility of the CTE to determine the final toll structure, toll rates, and escalation schedule.

9.2.2 Roadway Design Capital Cost Estimates

The initial roadway typical section assumed complete reconstruction of the existing facility in order to add express lanes in the center. The initial typical section used preferred shoulder widths in accordance with AASHTO requirements. The typical section consisted of 8-foot inside shoulders and 12-foot outside shoulders in both the express lanes and general purpose lanes. Due to the high cost of reconstructing the entire pavement section, cost saving measures were considered. These measures included reducing the shoulder width, removing the proposed barrier section and replacing it with a 4-foot buffer separation, constructing a two-lane reversible facility,

and providing a single lane in each direction. Ultimately, it was determined that reusing the existing pavement and reducing the shoulder width while maintaining the barrier separation would provide a desirable balance between competing interests. The final recommended typical section consists of salvaging the existing pavement, paving the median, widening to the outside, and overlaying the entire section. The proposed shoulders were also reduced to 4-foot inside and 12-foot outside shoulders.

Based on only one express lane in each direction between Platte Canyon Road and Kipling Parkway, the C-470 express lanes will be constructed in the median on the existing facility and be separated from the general purpose lanes by a 4-foot painted median. Figure 9.4 shows the proposed typical sections for the C-470 express lanes for I-25 to Platte Canyon Road, and from Platte Canyon Road to Kipling Parkway.

The final cost estimate for this configuration consists of the reconstruction of the general purpose lanes in addition to the new express lanes, and all interchange accesses except Santa Fe Drive. The Santa Fe Drive Interchange improvements are being treated as a separate action because they have Independent utility from the express lanes. Therefore, the costs of the Santa Fe Drive Interchange reconstruction are not included in the express lanes cost estimate. The final construction cost is \$316,022,000 in 2004 dollars. These costs include all proposed direct access ramps and toll equipment capital costs. The roadway capital costs estimate is included in Appendix G.

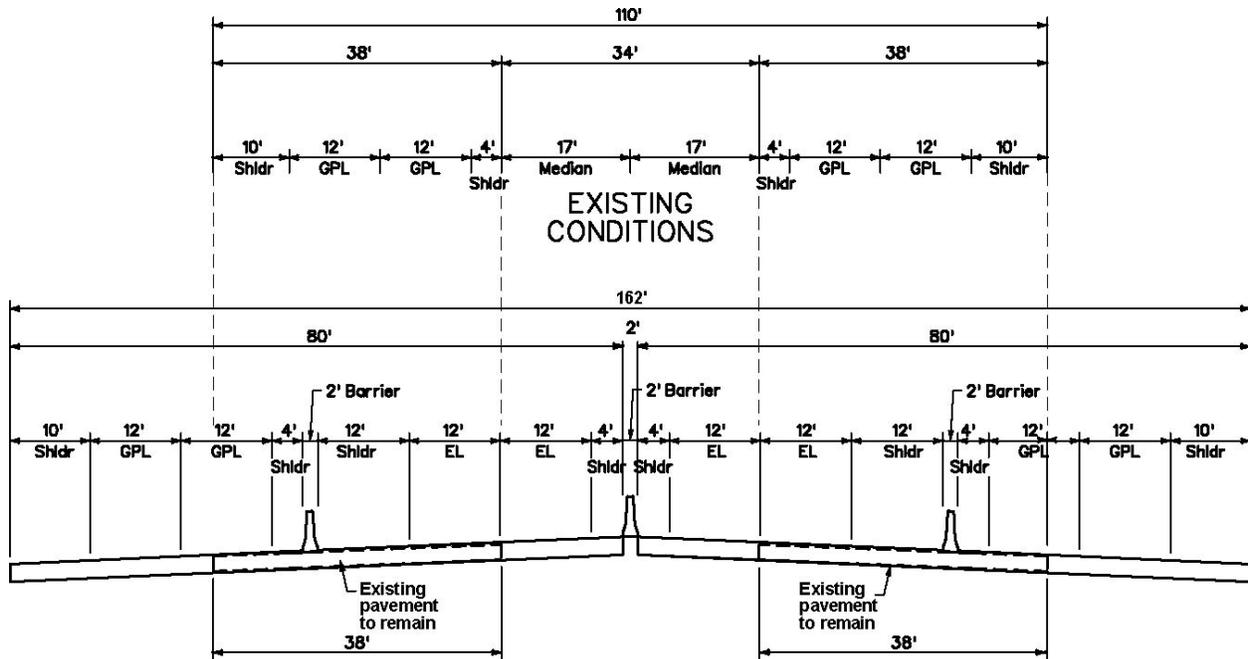
9.2.3 Toll Collection Fees

The CTE is currently negotiating with E-470 for a toll collection agreement. Though no final agreement has been reached, a toll transaction cost of \$0.12 per transaction for planning purposes only was assumed in these calculations. Only one transaction would be created when a vehicle enters the express lane facility. The transaction cost was based on an audit that E-470 performed on the Northwest Parkway, which identified a higher operating cost than originally predicted. E-470 is currently processing all of Northwest Parkway's toll transactions. This transaction includes the cost of processing each transaction, account maintenance, and mailing monthly billing statements.

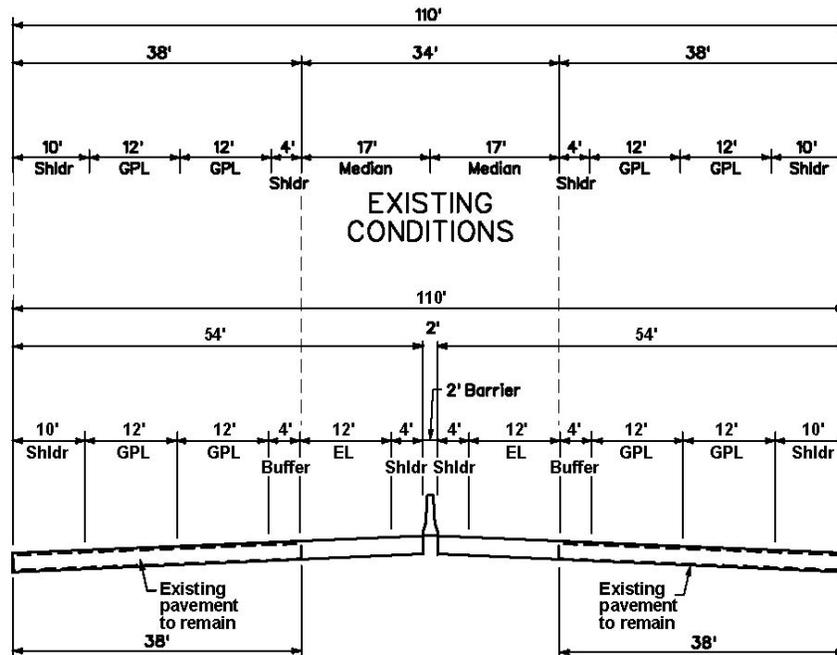
9.2.4 Financial Feasibility of Final Configuration

Incorporating the refinements and new assumptions described above, the financial feasibility was recalculated. Based on a capital construction cost of \$316 million and net revenue of \$196 to \$259 million in 2004 dollars, it is believed that the C-470 express lanes could support a bond sale of between 68 and 80 percent of the capital cost with toll revenue. This will require that approximately 20 to 32 percent of the construction cost will need to be funded through other sources. The CTE is in the process of preparing a complete funding package that would address the source of the required 20 to 32 percent supplemental funding. Potential strategies to close the funding gap include leveraging the toll revenue, and supplementing funding sources. The financial feasibility calculations for each scenario are shown in Tables 9.4, 9.5, 9.6, and 9.7.

Figure 9.4
Proposed Typical Section



Platte Canyon to I-25



Kipling to Platte Canyon

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Table 9.2
Financial Feasibility Analysis with 5.5% Bond Rate and 1.75 Senior Lien/ 2.19 Subordinate Lien

Calendar Year	Annual Transactions ¹	Gross Toll Revenue	Operation Costs ²	Recurring Maintenance Costs	Toll Operation and Recurring Maintenance Costs	Net Toll Revenue	Senior Lien Covered Net Revenue 1.75x's	Net Revenue after Senior Lien Debt Service	Subordinate Lien Covered Net Revenue 2.19x's	Net Revenue after Subordinate Lien Debt Service	Composite Coverage Rate (Net Toll Revenue / (Senior Lien + Subordinate Lien))	Covered Net Toll Revenue ⁵	Remaining Net Toll Revenue	Present Value Covered Net Toll Revenue
Year	# of transactions	\$	\$	\$	\$	\$	\$	\$	\$	\$	%	\$	\$	\$
2006														
2007														
2008	7,869,829	\$10,209,785.21	\$1,995,979.50	\$1,074,657.27	\$3,070,636.77	\$7,139,148.44	\$4,079,513.40	\$3,059,635.05	\$1,397,093.63	\$1,662,541.42	1.30	\$5,476,607.03	\$2,167,241.49	\$4,790,495.43
2009	7,987,877	\$10,978,632.60	\$2,041,693.20	\$1,106,896.98	\$3,148,590.18	\$7,830,042.42	\$4,474,309.95	\$3,355,732.46	\$1,532,297.93	\$1,823,434.54	1.30	\$6,006,607.88	\$2,376,977.16	\$4,980,187.26
2010	8,107,695	\$11,805,608.21	\$2,088,565.81	\$1,140,103.89	\$3,228,669.71	\$8,576,938.50	\$4,901,107.72	\$3,675,830.79	\$1,678,461.55	\$1,997,369.24	1.30	\$6,579,569.26	\$2,603,713.47	\$5,170,843.51
2011	8,229,310	\$12,695,123.76	\$2,136,628.94	\$1,174,307.01	\$3,310,935.95	\$9,384,187.81	\$5,362,393.03	\$4,021,794.77	\$1,836,435.97	\$2,185,358.80	1.30	\$7,198,829.00	\$2,848,771.30	\$5,362,574.39
2012	8,352,750	\$13,651,927.03	\$2,185,915.05	\$1,209,536.22	\$3,395,451.27	\$10,256,475.76	\$5,860,843.29	\$4,395,632.47	\$2,007,138.11	\$2,388,494.35	1.30	\$7,867,981.40	\$3,113,573.00	\$5,555,489.58
2013	8,478,041	\$14,681,127.59	\$2,236,457.55	\$1,245,822.31	\$3,482,279.86	\$11,198,847.73	\$6,399,341.56	\$4,799,506.17	\$2,191,555.33	\$2,607,950.84	1.30	\$8,590,896.89	\$3,399,650.20	\$5,749,698.33
2014	8,605,212	\$15,788,224.46	\$2,288,290.80	\$1,283,196.98	\$3,571,487.78	\$12,216,736.68	\$6,980,992.39	\$5,235,744.29	\$2,390,750.82	\$2,844,993.47	1.30	\$9,371,743.21	\$3,708,652.21	\$5,945,309.57
2015	8,734,290	\$16,979,135.88	\$2,341,450.14	\$1,321,692.89	\$3,663,143.03	\$13,315,992.85	\$7,609,138.77	\$5,706,854.08	\$2,605,869.44	\$3,100,984.64	1.30	\$10,215,008.21	\$4,042,354.97	\$6,142,431.95
2016	8,865,304	\$18,260,231.42	\$2,395,971.93	\$1,361,343.67	\$3,757,315.60	\$14,502,915.82	\$8,287,380.47	\$6,215,535.35	\$2,838,144.00	\$3,377,391.35	1.30	\$11,125,524.46	\$4,402,670.87	\$6,341,173.95
2017	8,998,284	\$19,638,366.48	\$2,451,893.54	\$1,402,183.98	\$3,854,077.52	\$15,784,288.95	\$9,019,593.69	\$6,764,695.27	\$3,088,901.95	\$3,675,793.32	1.30	\$12,108,495.64	\$4,791,659.15	\$6,541,643.97
2018	9,133,258	\$21,120,919.51	\$2,509,253.43	\$1,444,249.50	\$3,953,502.94	\$17,167,416.57	\$9,809,952.33	\$7,357,464.25	\$3,359,572.71	\$3,997,891.53	1.30	\$13,169,525.04	\$5,211,537.17	\$6,743,950.39
2019	9,270,257	\$22,715,832.06	\$2,568,091.17	\$1,487,576.99	\$4,055,668.16	\$18,660,163.90	\$10,662,950.80	\$7,997,213.10	\$3,651,695.48	\$4,345,517.62	1.30	\$14,314,646.28	\$5,664,692.61	\$6,948,201.68
2020	9,409,311	\$24,431,651.89	\$2,628,447.44	\$1,532,204.30	\$4,160,651.74	\$20,271,000.15	\$11,583,428.66	\$8,687,571.49	\$3,966,927.62	\$4,720,643.87	1.30	\$15,550,356.28	\$6,153,696.47	\$7,154,506.44
2021	9,550,450	\$26,277,579.42	\$2,690,364.11	\$1,578,170.43	\$4,268,534.53	\$22,009,044.88	\$12,576,597.08	\$9,432,447.81	\$4,307,053.79	\$5,125,394.01	1.30	\$16,883,650.87	\$6,681,317.20	\$7,362,973.52
2022	9,693,707	\$28,263,517.72	\$2,753,884.22	\$1,625,515.54	\$4,379,399.76	\$23,884,117.97	\$13,648,067.41	\$10,236,050.56	\$4,673,995.69	\$5,562,054.87	1.30	\$18,322,063.10	\$7,250,535.81	\$7,573,712.07
2023	9,839,113	\$30,400,126.42	\$2,819,052.07	\$1,674,281.01	\$4,493,333.08	\$25,906,793.34	\$14,803,881.91	\$11,102,911.43	\$5,069,822.57	\$6,033,088.86	1.30	\$19,873,704.48	\$7,864,562.27	\$7,786,831.63
2024	9,986,700	\$32,698,879.64	\$2,885,913.23	\$1,724,509.44	\$4,610,422.67	\$28,088,456.97	\$16,050,546.84	\$12,037,910.13	\$5,496,762.62	\$6,541,147.51	1.30	\$21,547,309.46	\$8,526,853.01	\$8,002,442.19
2025	10,136,500	\$35,137,014.47	\$2,954,514.57	\$1,776,244.72	\$4,730,759.29	\$30,406,255.18	\$17,375,002.96	\$13,031,252.22	\$5,950,343.48	\$7,080,908.74	1.30	\$23,325,346.44	\$9,230,470.32	\$8,211,171.82
2026	10,288,548	\$36,733,991.78	\$3,024,904.31	\$1,829,532.06	\$4,854,436.37	\$31,879,555.41	\$18,216,888.81	\$13,662,666.60	\$6,238,660.55	\$7,424,006.05	1.30	\$24,455,549.36	\$9,677,722.18	\$8,160,222.50
2027	10,442,876	\$38,403,551.70	\$3,097,132.05	\$1,884,418.02	\$4,981,550.07	\$33,422,001.63	\$19,098,286.65	\$14,323,714.98	\$6,540,509.13	\$7,783,205.86	1.30	\$25,638,795.77	\$10,145,964.78	\$8,109,045.57
2028	10,599,519	\$40,148,993.13	\$3,171,248.84	\$1,940,950.56	\$5,112,199.40	\$35,036,793.73	\$20,021,024.99	\$15,015,768.74	\$6,856,515.41	\$8,159,253.33	1.30	\$26,877,540.40	\$10,636,169.53	\$8,057,664.52
2029	10,758,512	\$41,973,764.87	\$3,247,307.17	\$1,999,179.08	\$5,246,486.25	\$36,727,278.62	\$20,987,016.35	\$15,740,262.27	\$7,187,334.37	\$8,552,927.90	1.30	\$28,174,350.72	\$11,149,352.44	\$8,006,101.93
2030	10,919,889	\$43,881,472.48	\$3,325,361.06	\$2,059,154.45	\$5,384,515.51	\$38,496,956.97	\$21,998,261.12	\$16,498,695.84	\$7,533,651.07	\$8,965,044.77	1.30	\$29,531,912.19	\$11,686,576.22	\$7,954,379.51
2031	11,083,688	\$45,875,885.40	\$3,405,466.09	\$2,120,929.09	\$5,526,395.18	\$40,349,490.23	\$23,056,851.56	\$17,292,638.67	\$7,896,182.04	\$9,396,456.63	1.30	\$30,953,033.60	\$12,248,952.39	\$7,902,518.09
2032	11,249,943	\$47,960,944.40	\$3,487,679.44	\$2,184,556.96	\$5,672,236.40	\$42,288,708.00	\$24,164,976.00	\$18,123,732.00	\$8,275,676.71	\$9,848,055.29	1.30	\$32,440,652.71	\$12,837,643.50	\$7,850,537.70
2033	11,418,692	\$50,140,769.32	\$3,572,059.92	\$2,250,093.67	\$5,822,153.59	\$44,318,615.73	\$25,324,923.27	\$18,993,692.45	\$8,672,918.93	\$10,320,773.53	1.30	\$33,997,842.20	\$13,453,865.49	\$7,798,457.58
2034	11,589,972	\$52,419,667.28	\$3,658,668.08	\$2,317,596.48	\$5,976,264.55	\$46,443,402.73	\$26,539,087.28	\$19,904,315.46	\$9,088,728.52	\$10,815,586.94	1.30	\$35,627,815.79	\$14,098,890.12	\$7,746,296.19
2035	11,763,822	\$54,802,141.16	\$3,747,566.17	\$2,387,124.37	\$6,134,690.54	\$48,667,450.62	\$27,809,971.79	\$20,857,478.84	\$9,523,962.94	\$11,333,515.90	1.30	\$37,333,934.73	\$14,774,047.51	\$7,694,071.27
2036	11,940,279	\$57,292,898.48	\$3,838,818.27	\$2,458,738.10	\$6,297,556.38	\$50,995,342.10	\$29,140,195.49	\$21,855,146.62	\$9,979,519.00	\$11,875,627.61	1.30	\$39,119,714.49	\$15,480,728.85	\$7,641,799.83
2037	12,119,384	\$59,896,860.71	\$3,932,490.32	\$2,532,500.25	\$6,464,990.56	\$53,431,870.15	\$30,532,497.23	\$22,899,372.92	\$10,456,334.67	\$12,443,038.25	1.30	\$40,988,831.90	\$16,220,389.15	\$7,589,498.22
2038	12,301,174	\$62,619,173.03	\$4,028,650.14	\$2,608,475.25	\$6,637,125.39	\$55,982,047.64	\$31,989,741.51	\$23,992,306.13	\$10,955,390.93	\$13,036,915.20	1.30	\$42,945,132.44	\$16,994,550.18	\$7,537,182.10
2039	12,485,692	\$65,465,214.45	\$4,127,367.53	\$2,686,729.51	\$6,814,097.04	\$58,651,117.41	\$33,514,924.23	\$25,136,193.18	\$11,477,713.78	\$13,658,479.40	1.30	\$44,992,638.01	\$17,804,803.50	\$7,484,866.52
2040	12,672,977	\$68,440,608.44	\$4,228,714.31	\$2,767,331.40	\$6,996,045.70	\$61,444,562.74	\$35,111,178.71	\$26,333,384.03	\$12,024,376.27	\$14,309,007.76	1.30	\$47,135,554.98	\$18,652,813.69	\$7,432,565.88
2041	12,863,072	\$71,551,234.10	\$4,332,764.38	\$2,850,351.34	\$7,183,115.72	\$64,368,118.38	\$36,781,781.93	\$27,586,336.45	\$12,596,500.66	\$14,989,835.79	1.30	\$49,378,282.60	\$19,540,321.65	\$7,380,294.02
2042	13,056,018	\$74,803,237.69	\$4,439,593.78	\$2,935,861.88	\$7,375,455.66	\$67,427,782.03	\$38,530,161.16	\$28,897,620.87	\$13,195,260.67	\$15,702,360.20	1.30	\$51,725,421.83	\$20,469,148.12	\$7,328,064.18
2043	13,251,858	\$78,203,044.84	\$4,549,280.76	\$3,023,937.73	\$7,573,218.49	\$70,629,826.35	\$40,359,900.77	\$30,269,925.58	\$13,821,883.83	\$16,448,041.75	1.30	\$54,181,784.59	\$21,441,197.28	\$7,275,889.07
2044	13,450,636	\$81,757,373.23	\$4,661,905.84	\$3,114,655.87	\$7,776,561.70	\$73,980,811.53	\$42,274,749.44	\$31,706,062.08	\$14,477,653.92	\$17,228,408.16	1.30	\$56,752,403.36	\$22,458,460.64	\$7,223,780.85
2045	13,652,396	\$85,473,245.84	\$4,777,551.87	\$3,208,095.54	\$7,985,647.41	\$77,487,598.43	\$44,278,627.68	\$33,208,970.76	\$15,163,913.59	\$18,045,057.17	1.30	\$59,442,541.26	\$23,523,020.95	\$7,171,751.16
Total	399,156,835	\$1,523,577,756.10	\$120,626,897.00	\$74,322,704.74	\$194,949,601.74	\$1,328,628,154.36	\$759,216,088.21	\$569,412,066.16	\$260,005,509.66	\$309,406,556.50		\$1,019,221,597.87	\$403,333,546.86	\$269,708,624.36

4 EL Barrier Separated Partial Reconstruct in 2006 Dollars	Present Value Net Revenue ³	Capital Costs ⁴	Feasibility Factor
	\$0.06		5.50%
	\$269,708,624.36		\$335,267,740

- ¹ Assumes \$0.02 Annual increase in transactions based on 2025 projected values that are interpolated to arrive at yearly projections
- ² Assumes \$0.12 Transaction fee for E-470 Back Office Operation plus liability insurance, highway patrol, roadside assistance, ITS equipment operations, and toll audit and system inspection
- ³ Assumes \$0.06 Proxy rate for all in cost of borrowing (Current Market Rate)
- ⁴ Assumes 4 EL with narrow shoulders related capital costs in 2006 Dollars including Quebec Direct Access and excluding Santa Fe Drive Interchange improvements
- ⁵ Assumes \$1.30 Composite coverage for all debt

Assumes contracting letting and project financing would begin on January 1, 2006



Table 9.3
Financial Feasibility Analysis with 6.0% Bonding Rate and 1.75 Senior Lien/ 2.19 Subordinate Lien

Calendar Year	Annual Transactions ¹	Gross Toll Revenue	Operation Costs ²	Recurring Maintenance Costs	Toll Operation and Recurring Maintenance Costs	Net Toll Revenue	Senior Lien Covered Net Revenue 1.75x's	Net Revenue after Senior Lien Debt Service	Subordinate Lien Covered Net Revenue 2.19x's	Net Revenue after Subordinate Lien Debt Service	Composite Coverage Rate (Net Toll Revenue / (Senior Lien + Subordinate Lien))	Covered Net Toll Revenue ⁵	Remaining Net Toll Revenue	Present Value Covered Net Toll Revenue 6.00%
Year	# of transactions	\$	\$	\$	\$	\$	\$	\$	\$	\$	%	\$	\$	\$
2006														
2007														
2008	7,869,829	\$10,209,785.21	\$1,995,979.50	\$1,074,657.27	\$3,070,636.77	\$7,139,148.44	\$4,079,513.40	\$3,059,635.05	\$1,397,093.63	\$1,662,541.42	1.30	\$5,476,607.03	\$2,167,241.49	\$4,734,203.43
2009	7,987,877	\$10,978,632.60	\$2,041,693.20	\$1,106,896.98	\$3,148,590.18	\$7,830,042.42	\$4,474,309.95	\$3,355,732.46	\$1,532,297.93	\$1,823,434.54	1.30	\$6,006,607.88	\$2,376,977.16	\$4,898,450.83
2010	8,107,695	\$11,805,608.21	\$2,088,565.81	\$1,140,103.89	\$3,228,669.71	\$8,576,938.50	\$4,901,107.72	\$3,675,830.79	\$1,678,461.55	\$1,997,369.24	1.30	\$6,579,569.26	\$2,603,713.47	\$5,061,987.51
2011	8,229,310	\$12,695,123.76	\$2,136,628.94	\$1,174,307.01	\$3,310,935.95	\$9,384,187.81	\$5,362,393.03	\$4,021,794.77	\$1,836,435.97	\$2,185,358.80	1.30	\$7,198,829.00	\$2,848,771.30	\$5,224,919.44
2012	8,352,750	\$13,651,927.03	\$2,185,915.05	\$1,209,536.22	\$3,395,451.27	\$10,256,475.76	\$5,860,843.29	\$4,395,632.47	\$2,007,138.11	\$2,388,494.35	1.30	\$7,867,981.40	\$3,113,573.00	\$5,387,350.11
2013	8,478,041	\$14,681,127.59	\$2,236,457.55	\$1,245,822.31	\$3,482,279.86	\$11,198,847.73	\$6,399,341.56	\$4,799,506.17	\$2,191,555.33	\$2,607,950.84	1.30	\$8,590,896.89	\$3,399,650.20	\$5,549,380.67
2014	8,605,212	\$15,788,224.46	\$2,288,290.80	\$1,283,196.98	\$3,571,487.78	\$12,216,736.68	\$6,980,992.39	\$5,235,744.29	\$2,390,750.82	\$2,844,993.47	1.30	\$9,371,743.21	\$3,708,652.21	\$5,711,110.00
2015	8,734,290	\$16,979,135.88	\$2,341,450.14	\$1,321,692.89	\$3,663,143.03	\$13,315,992.85	\$7,609,138.77	\$5,706,854.08	\$2,605,869.44	\$3,100,984.64	1.30	\$10,215,008.21	\$4,042,354.97	\$5,872,634.88
2016	8,865,304	\$18,260,231.42	\$2,395,971.93	\$1,361,343.67	\$3,757,315.60	\$14,502,915.82	\$8,287,380.47	\$6,215,535.35	\$2,838,144.00	\$3,377,391.35	1.30	\$11,125,524.46	\$4,402,670.87	\$6,034,050.04
2017	8,998,284	\$19,638,366.48	\$2,451,893.54	\$1,402,183.98	\$3,854,077.52	\$15,784,288.95	\$9,019,593.69	\$6,764,695.27	\$3,088,901.95	\$3,675,793.32	1.30	\$12,108,495.64	\$4,791,659.15	\$6,195,448.33
2018	9,133,258	\$21,120,919.51	\$2,509,253.43	\$1,444,249.50	\$3,953,502.94	\$17,167,416.57	\$9,809,952.33	\$7,357,464.25	\$3,359,572.71	\$3,997,891.53	1.30	\$13,169,525.04	\$5,211,537.17	\$6,356,920.74
2019	9,270,257	\$22,715,832.06	\$2,568,091.17	\$1,487,576.99	\$4,055,668.16	\$18,660,163.90	\$10,662,950.80	\$7,997,213.10	\$3,651,695.48	\$4,345,517.62	1.30	\$14,314,646.28	\$5,664,692.61	\$6,518,556.59
2020	9,409,311	\$24,431,651.89	\$2,628,447.44	\$1,532,204.30	\$4,160,651.74	\$20,271,000.15	\$11,583,428.66	\$8,687,571.49	\$3,966,927.62	\$4,720,643.87	1.30	\$15,550,356.28	\$6,153,696.47	\$6,680,443.53
2021	9,550,450	\$26,277,579.42	\$2,690,364.11	\$1,578,170.43	\$4,268,534.53	\$22,009,044.88	\$12,576,597.08	\$9,432,447.81	\$4,307,053.79	\$5,125,394.01	1.30	\$16,883,650.87	\$6,681,317.20	\$6,842,667.72
2022	9,693,707	\$28,263,517.72	\$2,753,884.22	\$1,625,515.54	\$4,379,399.76	\$23,884,117.97	\$13,648,067.41	\$10,236,050.56	\$4,673,995.69	\$5,562,054.87	1.30	\$18,322,063.10	\$7,250,535.81	\$7,005,313.86
2023	9,839,113	\$30,400,126.42	\$2,819,052.07	\$1,674,281.01	\$4,493,333.08	\$25,906,793.34	\$14,803,881.91	\$11,102,911.43	\$5,069,822.57	\$6,033,088.86	1.30	\$19,873,704.48	\$7,864,562.27	\$7,168,465.27
2024	9,986,700	\$32,698,879.64	\$2,885,913.23	\$1,724,509.44	\$4,610,422.67	\$28,088,456.97	\$16,050,546.84	\$12,037,910.13	\$5,496,762.62	\$6,541,147.51	1.30	\$21,547,309.46	\$8,526,853.01	\$7,332,204.03
2025	10,136,500	\$35,137,014.47	\$2,954,514.57	\$1,776,244.72	\$4,730,759.29	\$30,406,255.18	\$17,375,002.96	\$13,031,252.22	\$5,950,343.48	\$7,080,908.74	1.30	\$23,325,346.44	\$9,230,470.32	\$7,487,963.70
2026	10,288,548	\$36,733,991.78	\$3,024,904.31	\$1,829,532.06	\$4,854,436.37	\$31,879,555.41	\$18,216,888.81	\$13,662,666.60	\$6,238,660.55	\$7,424,006.05	1.30	\$24,455,549.36	\$9,677,722.18	\$7,406,400.37
2027	10,442,876	\$38,403,551.70	\$3,097,132.05	\$1,884,418.02	\$4,981,550.07	\$33,422,001.63	\$19,098,286.65	\$14,323,714.98	\$6,540,509.13	\$7,783,205.86	1.30	\$25,638,795.77	\$10,145,964.78	\$7,325,234.29
2028	10,599,519	\$40,148,993.13	\$3,171,248.84	\$1,940,950.56	\$5,112,199.40	\$35,036,793.73	\$20,021,024.99	\$15,015,768.74	\$6,856,515.41	\$8,159,253.33	1.30	\$26,877,540.40	\$10,636,169.53	\$7,244,485.62
2029	10,758,512	\$41,973,764.87	\$3,247,307.17	\$1,999,179.08	\$5,246,486.25	\$36,727,278.62	\$20,987,016.35	\$15,740,262.27	\$7,187,334.37	\$8,552,927.90	1.30	\$28,174,350.72	\$11,149,352.44	\$7,164,173.30
2030	10,919,889	\$43,881,472.48	\$3,325,361.06	\$2,059,154.45	\$5,384,515.51	\$38,496,956.97	\$21,998,261.12	\$16,498,695.84	\$7,533,651.07	\$8,965,044.77	1.30	\$29,531,912.19	\$11,686,576.22	\$7,084,315.10
2031	11,083,688	\$45,875,885.40	\$3,405,466.09	\$2,120,929.09	\$5,526,395.18	\$40,349,490.23	\$23,056,851.56	\$17,292,638.67	\$7,896,182.04	\$9,396,456.63	1.30	\$30,953,033.60	\$12,248,952.39	\$7,004,927.66
2032	11,249,943	\$47,960,944.40	\$3,487,679.44	\$2,184,556.96	\$5,672,236.40	\$42,288,708.00	\$24,164,976.00	\$18,123,732.00	\$8,275,676.71	\$9,848,055.29	1.30	\$32,440,652.71	\$12,837,643.50	\$6,926,026.58
2033	11,418,692	\$50,140,769.32	\$3,572,059.92	\$2,250,093.67	\$5,822,153.59	\$44,318,615.73	\$25,324,923.27	\$18,993,692.45	\$8,672,918.93	\$10,320,773.53	1.30	\$33,997,842.20	\$13,453,865.49	\$6,847,626.42
2034	11,589,972	\$52,419,667.28	\$3,658,668.08	\$2,317,596.48	\$5,976,264.55	\$46,443,402.73	\$26,539,087.28	\$19,904,315.46	\$9,088,728.52	\$10,815,586.94	1.30	\$35,627,815.79	\$14,098,890.12	\$6,769,740.76
2035	11,763,822	\$54,802,141.16	\$3,747,566.17	\$2,387,124.37	\$6,134,690.54	\$48,667,450.62	\$27,809,971.79	\$20,857,478.84	\$9,523,962.94	\$11,333,515.90	1.30	\$37,333,934.73	\$14,774,047.51	\$6,692,382.25
2036	11,940,279	\$57,292,898.48	\$3,838,818.27	\$2,458,738.10	\$6,297,556.38	\$50,995,342.10	\$29,140,195.49	\$21,855,146.62	\$9,979,519.00	\$11,875,627.61	1.30	\$39,119,714.49	\$15,480,728.85	\$6,615,562.64
2037	12,119,384	\$59,896,860.71	\$3,932,490.32	\$2,532,500.25	\$6,464,990.56	\$53,431,870.15	\$30,532,497.23	\$22,899,372.92	\$10,456,334.67	\$12,443,038.25	1.30	\$40,988,831.90	\$16,220,389.15	\$6,539,292.84
2038	12,301,174	\$62,619,173.03	\$4,028,650.14	\$2,608,475.25	\$6,637,125.39	\$55,982,047.64	\$31,989,741.51	\$23,992,306.13	\$10,955,390.93	\$13,036,915.20	1.30	\$42,945,132.44	\$16,994,550.18	\$6,463,582.93
2039	12,485,692	\$65,465,214.45	\$4,127,367.53	\$2,686,729.51	\$6,814,097.04	\$58,651,117.41	\$33,514,924.23	\$25,136,193.18	\$11,477,713.78	\$13,658,479.40	1.30	\$44,992,638.01	\$17,804,803.50	\$6,388,442.22
2040	12,672,977	\$68,440,608.44	\$4,228,714.31	\$2,767,331.40	\$6,996,045.70	\$61,444,562.74	\$35,111,178.71	\$26,333,384.03	\$12,024,376.27	\$14,309,007.76	1.30	\$47,135,554.98	\$18,652,813.69	\$6,313,879.27
2041	12,863,072	\$71,551,234.10	\$4,332,764.38	\$2,850,351.34	\$7,183,115.72	\$64,368,118.38	\$36,781,781.93	\$27,586,336.45	\$12,596,500.66	\$14,989,835.79	1.30	\$49,378,282.60	\$19,540,321.65	\$6,239,901.93
2042	13,056,018	\$74,803,237.69	\$4,439,593.78	\$2,935,861.88	\$7,375,455.66	\$67,427,782.03	\$38,530,161.16	\$28,897,620.87	\$13,195,260.67	\$15,702,360.20	1.30	\$51,725,421.83	\$20,469,148.12	\$6,166,517.37
2043	13,251,858	\$78,203,044.84	\$4,549,280.76	\$3,023,937.73	\$7,573,218.49	\$70,629,826.35	\$40,359,900.77	\$30,269,925.58	\$13,821,883.83	\$16,448,041.75	1.30	\$54,181,784.59	\$21,441,197.28	\$6,093,732.11
2044	13,450,636	\$81,757,373.23	\$4,661,905.84	\$3,114,655.87	\$7,776,561.70	\$73,980,811.53	\$42,274,749.44	\$31,706,062.08	\$14,477,653.92	\$17,228,408.16	1.30	\$56,752,403.36	\$22,458,460.64	\$6,021,552.06
2045	13,652,396	\$85,473,245.84	\$4,777,551.87	\$3,208,095.54	\$7,985,647.41	\$77,487,598.43	\$44,278,627.68	\$33,208,970.76	\$15,163,913.59	\$18,045,057.17	1.30	\$59,442,541.26	\$23,523,020.95	\$5,949,982.52
Total	399,156,835	\$1,523,577,756.10	\$120,626,897.00	\$74,322,704.74	\$194,949,601.74	\$1,328,628,154.36	\$759,216,088.21	\$569,412,066.16	\$260,005,509.66	\$309,406,556.50		\$1,019,221,597.87	\$403,333,546.86	\$243,319,828.92

4 EL Barrier Separated Partial Reconstruct in 2006 Dollars	Present Value Net Revenue ³	Capital Costs ⁴	Feasibility Factor
	6.00%		6.00%
	\$243,319,829	\$335,267,740	0.73

- ¹ Assumes 1.5% Annual increase in transactions based on 2025 projected values that are interpolated to arrive at yearly projections PV(2006) of EL O&M Costs = \$59,763,134
- ² Assumes \$0.12 Transaction fee for E-470 Back Office Operation plus liability insurance, highway patrol, roadside assistance, ITS equipment operations, and toll audit and system inspection PV(2004) of EL O&M Costs = \$56,332,486
- ³ Assumes 6.00% Proxy rate for all in cost of borrowing (Current Market Rate plus 50 basis points) Total 40 Year GPL O&M Costs= \$140,100,793.57
- ⁴ Assumes 4 EL with narrow shoulders related capital costs in 2006 Dollars including Quebec Direct Access and excluding Santa Fe Drive Interchange improvements PV(2004) of GPL O&M Costs = \$40,483,417
- ⁵ Assumes 1.30 Composite coverage for all debt PV(2006) of GPL O&M Costs = \$42,948,857

Assumes contracting letting and project financing would begin on January 1, 2006

Note: All values are in 2006 Dollars



Table 9.4
Financial Feasibility Analysis with 5.5% Bonding Rate and 1.75 Senior Lien/ 2.99 Subordinate Lien

Calendar Year	Annual Transactions ¹	Gross Toll Revenue	Operation Costs ²	Recurring Maintenance Costs	Toll Operation and Recurring Maintenance Costs	Net Toll Revenue	Senior Lien Covered Net Revenue 1.75x's	Net Revenue after Senior Lien Debt Service	Subordinate Lien Covered Net Revenue 2.99x's	Net Revenue after Subordinate Lien Debt Service	Composite Coverage Rate (Net Toll Revenue/(Senior Lien + Subordinate Lien))	Covered Net Toll Revenue ⁵	Remaining Net Toll Revenue	Present Value Covered Net Toll Revenue
Year	# of transactions	\$	\$	\$	\$	\$	\$	\$	\$	\$	%	\$	\$	\$
2006		\$0.00	\$0.00			\$0.00	\$0.00	\$0.00	\$0.00	\$0.00				
2007		\$0.00	\$0.00			\$0.00	\$0.00	\$0.00	\$0.00	\$0.00				
2008	7,869,829	\$10,209,785.21	\$1,995,979.50	\$1,074,657.27	\$3,070,636.77	\$7,139,148.44	\$4,079,513.40	\$3,059,635.05	\$1,023,289.31	\$2,036,345.73	1.40	\$5,102,802.71	\$2,848,978.36	\$4,463,521.47
2009	7,987,877	\$10,978,632.60	\$2,041,693.20	\$1,106,896.98	\$3,148,590.18	\$7,830,042.42	\$4,474,309.95	\$3,355,732.46	\$1,122,318.55	\$2,233,413.91	1.40	\$5,596,628.50	\$3,124,689.39	\$4,640,265.94
2010	8,107,695	\$11,805,608.21	\$2,088,565.81	\$1,140,103.89	\$3,228,669.71	\$8,576,938.50	\$4,901,107.72	\$3,675,830.79	\$1,229,374.84	\$2,446,455.94	1.40	\$6,130,482.56	\$3,422,748.85	\$4,817,909.00
2011	8,229,310	\$12,695,123.76	\$2,136,628.94	\$1,174,307.01	\$3,310,935.95	\$9,384,187.81	\$5,362,393.03	\$4,021,794.77	\$1,345,081.86	\$2,676,712.91	1.40	\$6,707,474.90	\$3,744,893.13	\$4,996,553.34
2012	8,352,750	\$13,651,927.03	\$2,185,915.05	\$1,209,536.22	\$3,395,451.27	\$10,256,475.76	\$5,860,843.29	\$4,395,632.47	\$1,470,111.19	\$2,925,521.27	1.40	\$7,330,954.48	\$4,092,992.00	\$5,176,301.15
2013	8,478,041	\$14,681,127.59	\$2,236,457.55	\$1,245,822.31	\$3,482,279.86	\$11,198,847.73	\$6,399,341.56	\$4,799,506.17	\$1,605,186.01	\$3,194,320.16	1.40	\$8,004,527.57	\$4,469,058.89	\$5,357,254.25
2014	8,605,212	\$15,788,224.46	\$2,288,290.80	\$1,283,196.98	\$3,571,487.78	\$12,216,736.68	\$6,980,992.39	\$5,235,744.29	\$1,751,085.05	\$3,484,659.24	1.40	\$8,732,077.44	\$4,875,261.90	\$5,539,514.09
2015	8,734,290	\$16,979,135.88	\$2,341,450.14	\$1,321,692.89	\$3,663,143.03	\$13,315,992.85	\$7,609,138.77	\$5,706,854.08	\$1,908,646.85	\$3,798,207.23	1.40	\$9,517,785.62	\$5,313,935.65	\$5,723,181.94
2016	8,865,304	\$18,260,231.42	\$2,395,971.93	\$1,361,343.67	\$3,757,315.60	\$14,502,915.82	\$8,287,380.47	\$6,215,535.35	\$2,078,774.36	\$4,136,760.99	1.40	\$10,366,154.83	\$5,787,594.08	\$5,908,358.86
2017	8,998,284	\$19,638,366.48	\$2,451,893.54	\$1,402,183.98	\$3,854,077.52	\$15,784,288.95	\$9,019,593.69	\$6,764,695.27	\$2,262,439.89	\$4,502,255.38	1.40	\$11,282,033.58	\$6,298,944.19	\$6,095,145.85
2018	9,133,258	\$21,120,919.51	\$2,509,253.43	\$1,444,249.50	\$3,953,502.94	\$17,167,416.57	\$9,809,952.33	\$7,357,464.25	\$2,460,690.38	\$4,896,773.86	1.40	\$12,270,642.71	\$6,850,900.86	\$6,283,643.90
2019	9,270,257	\$22,715,832.06	\$2,568,091.17	\$1,487,576.99	\$4,055,668.16	\$18,660,163.90	\$10,662,950.80	\$7,997,213.10	\$2,674,653.21	\$5,322,559.89	1.40	\$13,337,604.01	\$7,446,602.84	\$6,473,954.07
2020	9,409,311	\$24,431,651.89	\$2,628,447.44	\$1,532,204.30	\$4,160,651.74	\$20,271,000.15	\$11,583,428.66	\$8,687,571.49	\$2,905,542.30	\$5,782,029.19	1.40	\$14,488,970.96	\$8,089,429.87	\$6,666,177.56
2021	9,550,450	\$26,277,579.42	\$2,690,364.11	\$1,578,170.43	\$4,268,534.53	\$22,009,044.88	\$12,576,597.08	\$9,432,447.81	\$3,154,664.82	\$6,277,782.99	1.40	\$15,731,261.89	\$8,783,021.25	\$6,860,415.78
2022	9,693,707	\$28,263,517.72	\$2,753,884.22	\$1,625,515.54	\$4,379,399.76	\$23,884,117.97	\$13,648,067.41	\$10,236,050.56	\$3,423,428.28	\$6,812,622.28	1.40	\$17,071,495.69	\$9,531,295.74	\$7,056,770.42
2023	9,839,113	\$30,400,126.42	\$2,819,052.07	\$1,674,281.01	\$4,493,333.08	\$25,906,793.34	\$14,803,881.91	\$11,102,911.43	\$3,713,348.31	\$7,389,563.13	1.40	\$18,517,230.22	\$10,338,473.01	\$7,255,343.56
2024	9,986,700	\$32,698,879.64	\$2,885,913.23	\$1,724,509.44	\$4,610,422.67	\$28,088,456.97	\$16,050,546.84	\$12,037,910.13	\$4,026,056.90	\$8,011,853.23	1.40	\$20,076,603.74	\$11,209,096.80	\$7,456,237.69
2025	10,136,500	\$35,137,014.47	\$2,954,514.57	\$1,776,244.72	\$4,730,759.29	\$30,406,255.18	\$17,375,002.96	\$13,031,252.22	\$4,358,278.33	\$8,672,973.89	1.40	\$21,733,281.30	\$12,134,047.02	\$7,650,720.53
2026	10,288,548	\$36,733,991.78	\$3,024,904.31	\$1,829,532.06	\$4,854,436.37	\$31,879,555.41	\$18,216,888.81	\$13,662,666.60	\$4,569,453.71	\$9,093,212.89	1.40	\$22,786,342.52	\$12,721,988.36	\$7,603,248.74
2027	10,442,876	\$38,403,551.70	\$3,097,132.05	\$1,884,418.02	\$4,981,550.07	\$33,422,001.63	\$19,098,286.65	\$14,323,714.98	\$4,790,540.13	\$9,533,174.86	1.40	\$23,888,826.77	\$13,337,523.38	\$7,555,564.88
2028	10,599,519	\$40,148,993.13	\$3,171,248.84	\$1,940,950.56	\$5,112,199.40	\$35,036,793.73	\$20,021,024.99	\$15,015,768.74	\$5,021,996.23	\$9,993,772.51	1.40	\$25,043,021.22	\$13,981,929.05	\$7,507,690.83
2029	10,758,512	\$41,973,764.87	\$3,247,307.17	\$1,999,179.08	\$5,246,486.25	\$36,727,278.62	\$20,987,016.35	\$15,740,262.27	\$5,264,301.76	\$10,475,960.50	1.40	\$26,251,318.12	\$14,656,541.00	\$7,459,647.63
2030	10,919,889	\$43,881,472.48	\$3,325,361.06	\$2,059,154.45	\$5,384,515.51	\$38,496,956.97	\$21,998,261.12	\$16,498,695.84	\$5,517,958.48	\$10,980,737.37	1.40	\$27,516,219.60	\$15,362,756.22	\$7,411,455.51
2031	11,083,688	\$45,875,885.40	\$3,405,466.09	\$2,120,929.09	\$5,526,395.18	\$40,349,490.23	\$23,056,851.56	\$17,292,638.67	\$5,783,491.19	\$11,509,147.47	1.40	\$28,840,342.75	\$16,102,035.87	\$7,363,133.87
2032	11,249,943	\$47,960,944.40	\$3,487,679.44	\$2,184,556.96	\$5,672,236.40	\$42,288,708.00	\$24,164,976.00	\$18,123,732.00	\$6,061,448.83	\$12,062,283.17	1.40	\$30,226,424.83	\$16,875,908.21	\$7,314,701.39
2033	11,418,692	\$50,140,769.32	\$3,572,059.92	\$2,250,093.67	\$5,822,153.59	\$44,318,615.73	\$25,324,923.27	\$18,993,692.45	\$6,352,405.50	\$12,641,286.95	1.40	\$31,677,328.78	\$17,685,971.65	\$7,266,175.99
2034	11,589,972	\$52,419,667.28	\$3,658,668.08	\$2,317,596.48	\$5,976,264.55	\$46,443,402.73	\$26,539,087.28	\$19,904,315.46	\$6,656,961.69	\$13,247,353.77	1.40	\$33,196,048.97	\$18,533,898.02	\$7,217,574.86
2035	11,763,822	\$54,802,141.16	\$3,747,566.17	\$2,387,124.37	\$6,134,690.54	\$48,667,450.62	\$27,809,971.79	\$20,857,478.84	\$6,975,745.43	\$13,881,733.41	1.40	\$34,785,717.22	\$19,421,435.84	\$7,168,914.53
2036	11,940,279	\$57,292,898.48	\$3,838,818.27	\$2,458,738.10	\$6,297,556.38	\$50,995,342.10	\$29,140,195.49	\$21,855,146.62	\$7,309,413.58	\$14,545,733.03	1.40	\$36,449,609.07	\$20,350,413.93	\$7,120,210.87
2037	12,119,384	\$59,896,860.71	\$3,932,490.32	\$2,532,500.25	\$6,464,990.56	\$53,431,870.15	\$30,532,497.23	\$22,899,372.92	\$7,658,653.15	\$15,240,719.77	1.40	\$38,191,150.38	\$21,322,744.97	\$7,071,479.09
2038	12,301,174	\$62,619,173.03	\$4,028,650.14	\$2,608,475.25	\$6,637,125.39	\$55,982,047.64	\$31,989,741.51	\$23,992,306.13	\$8,024,182.65	\$15,968,123.48	1.40	\$40,013,924.16	\$22,340,429.44	\$7,022,733.80
2039	12,485,692	\$65,465,214.45	\$4,127,367.53	\$2,686,729.51	\$6,814,097.04	\$58,651,117.41	\$33,514,924.23	\$25,136,193.18	\$8,406,753.57	\$16,729,439.61	1.40	\$41,921,677.80	\$23,405,559.55	\$6,973,989.00
2040	12,672,977	\$68,440,608.44	\$4,228,714.31	\$2,767,331.40	\$6,996,045.70	\$61,444,562.74	\$35,111,178.71	\$26,333,384.03	\$8,807,151.85	\$17,526,232.18	1.40	\$43,918,330.56	\$24,520,323.50	\$6,925,258.13
2041	12,863,072	\$71,551,234.10	\$4,332,764.38	\$2,850,351.34	\$7,183,115.72	\$64,368,118.38	\$36,781,781.93	\$27,586,336.45	\$9,226,199.48	\$18,360,136.97	1.40	\$46,007,981.41	\$25,687,009.81	\$6,876,554.07
2042	13,056,018	\$74,803,237.69	\$4,439,593.78	\$2,935,861.88	\$7,375,455.66	\$67,427,782.03	\$38,530,161.16	\$28,897,620.87	\$9,664,756.14	\$19,232,864.73	1.40	\$48,194,917.30	\$26,908,011.95	\$6,827,889.17
2043	13,251,858	\$78,203,044.84	\$4,549,280.76	\$3,023,937.73	\$7,573,218.49	\$70,629,826.35	\$40,359,900.77	\$30,269,925.58	\$10,123,720.93	\$20,146,204.65	1.40	\$50,483,621.70	\$28,185,833.11	\$6,779,275.25
2044	13,450,636	\$81,757,373.23	\$4,661,905.84	\$3,114,655.87	\$7,776,561.70	\$73,980,811.53	\$42,274,749.44	\$31,706,062.08	\$10,604,034.14	\$21,102,027.94	1.40	\$52,878,783.58	\$29,523,091.23	\$6,730,723.66
2045	13,652,396	\$85,473,245.84	\$4,777,551.87	\$3,208,095.54	\$7,985,647.41	\$77,487,598.43	\$44,278,627.68	\$33,208,970.76	\$11,106,679.18	\$22,102,291.57	1.40	\$55,385,306.86	\$30,922,524.24	\$6,682,245.25
Total	399,156,835	\$1,523,577,756.10	\$120,626,897.00	\$74,322,704.74	\$194,949,601.74	\$1,328,628,154.36	\$759,216,088.21	\$569,412,066.16	\$190,438,818.11	\$378,973,248.04		\$949,654,906.32	\$530,207,893.15	\$251,299,735.93

4 EL Barrier Separated Partial Reconstruct in 2006 Dollars	Present Value Net Revenue ³	Capital Costs ⁴	Feasibility Factor
	5.50%		5.50%
	\$251,299,736		0.75

- ¹ Assumes 1.5% Annual increase in transactions based on 2025 projected values that are interpolated to arrive at yearly projections
- ² Assumes \$0.12 Transaction fee for E-470 Back Office Operation plus liability insurance, highway patrol, roadside assistance, ITS equipment operations, and toll audit and system inspection
- ³ Assumes 5.50% Proxy rate for all in cost of borrowing (Current Market Rate)
- ⁴ Assumes 4 EL with narrow shoulders related capital costs in 2006 Dollars including Quebec Direct Access and excluding Santa Fe Drive Interchange improvements
- ⁵ Assumes 1.4 Composite coverage for all debt

Assumes contracting letting and project financing would begin on January 1, 2006
Note: All values are in 2006 Dollars

Table 9.5
Financial Feasibility Analysis with 6.0% Bonding Rate and 1.75 Senior Lien/ 2.99 Subordinate Lien

Calendar Year	Annual Transactions ¹	Gross Toll Revenue	Operation Costs ²	Recurring Maintenance Costs	Toll Operation and Recurring Maintenance Costs	Net Toll Revenue	Senior Lien Covered Net Revenue 1.75x's	Net Revenue after Senior Lien Debt Service	Subordinate Lien Covered Net Revenue 2.99x's	Net Revenue after Subordinate Lien Debt Service	Composite Coverage Rate (Net Toll Revenue / (Senior Lien + Subordinate Lien))	Covered Net Toll Revenue ⁵	Remaining Net Toll Revenue	Present Value Covered Net Toll Revenue
Year	# of transactions	\$	\$	\$	\$	\$	\$	\$	\$	\$	%	\$	\$	\$
2006														
2007														
2008	7,869,829	\$10,209,785.21	\$1,995,979.50	\$1,074,657.27	\$3,070,636.77	\$7,139,148.44	\$4,079,513.40	\$3,059,635.05	\$1,023,289.31	\$2,036,345.73	1.40	\$5,102,802.71	\$2,848,978.36	\$4,411,071.67
2009	7,987,877	\$10,978,632.60	\$2,041,693.20	\$1,106,896.98	\$3,148,590.18	\$7,830,042.42	\$4,474,309.95	\$3,355,732.46	\$1,122,318.55	\$2,233,413.91	1.40	\$5,596,628.50	\$3,124,689.39	\$4,564,108.41
2010	8,107,695	\$11,805,608.21	\$2,088,565.81	\$1,140,103.89	\$3,228,669.71	\$8,576,938.50	\$4,901,107.72	\$3,675,830.79	\$1,229,374.84	\$2,446,455.94	1.40	\$6,130,482.56	\$3,422,748.85	\$4,716,482.94
2011	8,229,310	\$12,695,123.76	\$2,136,628.94	\$1,174,307.01	\$3,310,935.95	\$9,384,187.81	\$5,362,393.03	\$4,021,794.77	\$1,345,081.86	\$2,676,712.91	1.40	\$6,707,474.90	\$3,744,893.13	\$4,868,293.99
2012	8,352,750	\$13,651,927.03	\$2,185,915.05	\$1,209,536.22	\$3,395,451.27	\$10,256,475.76	\$5,860,843.29	\$4,395,632.47	\$1,470,111.19	\$2,925,521.27	1.40	\$7,330,954.48	\$4,092,992.00	\$5,019,638.01
2013	8,478,041	\$14,681,127.59	\$2,236,457.55	\$1,245,822.31	\$3,482,279.86	\$11,198,847.73	\$6,399,341.56	\$4,799,506.17	\$1,605,186.01	\$3,194,320.16	1.40	\$8,004,527.57	\$4,469,058.89	\$5,170,609.21
2014	8,605,212	\$15,788,224.46	\$2,288,290.80	\$1,283,196.98	\$3,571,487.78	\$12,216,736.68	\$6,980,992.39	\$5,235,744.29	\$1,751,085.05	\$3,484,659.24	1.40	\$8,732,077.44	\$4,875,261.90	\$5,321,299.75
2015	8,734,290	\$16,979,135.88	\$2,341,450.14	\$1,321,692.89	\$3,663,143.03	\$13,315,992.85	\$7,609,138.77	\$5,706,854.08	\$1,908,646.85	\$3,798,207.23	1.40	\$9,517,785.62	\$5,313,935.65	\$5,471,799.79
2016	8,865,304	\$18,260,231.42	\$2,395,971.93	\$1,361,343.67	\$3,757,315.60	\$14,502,915.82	\$8,287,380.47	\$6,215,535.35	\$2,078,774.36	\$4,136,760.99	1.40	\$10,366,154.83	\$5,787,594.08	\$5,622,197.61
2017	8,998,284	\$19,638,366.48	\$2,451,893.54	\$1,402,183.98	\$3,854,077.52	\$15,784,288.95	\$9,019,593.69	\$6,764,695.27	\$2,262,439.89	\$4,502,255.38	1.40	\$11,282,033.58	\$6,298,944.19	\$5,772,579.69
2018	9,133,258	\$21,120,919.51	\$2,509,253.43	\$1,444,249.50	\$3,953,502.94	\$17,167,416.57	\$9,809,952.33	\$7,357,464.25	\$2,460,690.38	\$4,896,773.86	1.40	\$12,270,642.71	\$6,850,900.86	\$5,923,030.85
2019	9,270,257	\$22,715,832.06	\$2,568,091.17	\$1,487,576.99	\$4,055,668.16	\$18,660,163.90	\$10,662,950.80	\$7,997,213.10	\$2,674,653.21	\$5,322,559.89	1.40	\$13,337,604.01	\$7,446,602.84	\$6,073,634.29
2020	9,409,311	\$24,431,651.89	\$2,628,447.44	\$1,532,204.30	\$4,160,651.74	\$20,271,000.15	\$11,583,428.66	\$8,687,571.49	\$2,905,542.30	\$5,782,029.19	1.40	\$14,488,970.96	\$8,089,429.87	\$6,224,471.68
2021	9,550,450	\$26,277,579.42	\$2,690,364.11	\$1,578,170.43	\$4,268,534.53	\$22,009,044.88	\$12,576,597.08	\$9,432,447.81	\$3,154,664.82	\$6,277,782.99	1.40	\$15,731,261.89	\$8,783,021.25	\$6,375,623.31
2022	9,693,707	\$28,263,517.72	\$2,753,884.22	\$1,625,515.54	\$4,379,399.76	\$23,884,117.97	\$13,648,067.41	\$10,236,050.56	\$3,423,428.28	\$6,812,622.28	1.40	\$17,071,495.69	\$9,531,295.74	\$6,527,168.07
2023	9,839,113	\$30,400,126.42	\$2,819,052.07	\$1,674,281.01	\$4,493,333.08	\$25,906,793.34	\$14,803,881.91	\$11,102,911.43	\$3,713,348.31	\$7,389,563.13	1.40	\$18,517,230.22	\$10,338,473.01	\$6,679,183.63
2024	9,986,700	\$32,698,879.64	\$2,885,913.23	\$1,724,509.44	\$4,610,422.67	\$28,088,456.97	\$16,050,546.84	\$12,037,910.13	\$4,026,056.90	\$8,011,853.23	1.40	\$20,076,603.74	\$11,209,096.80	\$6,831,746.45
2025	10,136,500	\$35,137,014.47	\$2,954,514.57	\$1,776,244.72	\$4,730,759.29	\$30,406,255.18	\$17,375,002.96	\$13,031,252.22	\$4,358,278.33	\$8,672,973.89	1.40	\$21,733,281.30	\$12,134,047.02	\$6,976,874.78
2026	10,288,548	\$36,733,991.78	\$3,024,904.31	\$1,829,532.06	\$4,854,436.37	\$31,879,555.41	\$18,216,888.81	\$13,662,666.60	\$4,569,453.71	\$9,093,212.89	1.40	\$22,786,342.52	\$12,721,988.36	\$6,900,878.54
2027	10,442,876	\$38,403,551.70	\$3,097,132.05	\$1,884,418.02	\$4,981,550.07	\$33,422,001.63	\$19,098,286.65	\$14,323,714.98	\$4,790,540.13	\$9,533,174.86	1.40	\$23,888,826.77	\$13,337,523.38	\$6,825,252.43
2028	10,599,519	\$40,148,993.13	\$3,171,248.84	\$1,940,950.56	\$5,112,199.40	\$35,036,793.73	\$20,021,024.99	\$15,015,768.74	\$5,021,996.23	\$9,993,772.51	1.40	\$25,043,021.22	\$13,981,929.05	\$6,750,015.24
2029	10,758,512	\$41,973,764.87	\$3,247,307.17	\$1,999,179.08	\$5,246,486.25	\$36,727,278.62	\$20,987,016.35	\$15,740,262.27	\$5,264,301.76	\$10,475,960.50	1.40	\$26,251,318.12	\$14,656,541.00	\$6,675,184.61
2030	10,919,889	\$43,881,472.48	\$3,325,361.06	\$2,059,154.45	\$5,384,515.51	\$38,496,956.97	\$21,998,261.12	\$16,498,695.84	\$5,517,958.48	\$10,980,737.37	1.40	\$27,516,219.60	\$15,362,756.22	\$6,600,777.11
2031	11,083,688	\$45,875,885.40	\$3,405,466.09	\$2,120,929.09	\$5,526,395.18	\$40,349,490.23	\$23,056,851.56	\$17,292,638.67	\$5,783,491.19	\$11,509,147.47	1.40	\$28,840,342.75	\$16,102,035.87	\$6,526,808.24
2032	11,249,943	\$47,960,944.40	\$3,487,679.44	\$2,184,556.96	\$5,672,236.40	\$42,288,708.00	\$24,164,976.00	\$18,123,732.00	\$6,061,448.83	\$12,062,283.17	1.40	\$30,226,424.83	\$16,875,908.21	\$6,453,292.53
2033	11,418,692	\$50,140,769.32	\$3,572,059.92	\$2,250,093.67	\$5,822,153.59	\$44,318,615.73	\$25,324,923.27	\$18,993,692.45	\$6,352,405.50	\$12,641,286.95	1.40	\$31,677,328.78	\$17,685,971.65	\$6,380,243.55
2034	11,589,972	\$52,419,667.28	\$3,658,668.08	\$2,317,596.48	\$5,976,264.55	\$46,443,402.73	\$26,539,087.28	\$19,904,315.46	\$6,656,961.69	\$13,247,353.77	1.40	\$33,196,048.97	\$18,533,898.02	\$6,307,673.96
2035	11,763,822	\$54,802,141.16	\$3,747,566.17	\$2,387,124.37	\$6,134,690.54	\$48,667,450.62	\$27,809,971.79	\$20,857,478.84	\$6,975,745.43	\$13,881,733.41	1.40	\$34,785,717.22	\$19,421,435.84	\$6,235,595.53
2036	11,940,279	\$57,292,898.48	\$3,838,818.27	\$2,458,738.10	\$6,297,556.38	\$50,995,342.10	\$29,140,195.49	\$21,855,146.62	\$7,309,413.58	\$14,545,733.03	1.40	\$36,449,609.07	\$20,350,413.93	\$6,164,019.22
2037	12,119,384	\$59,896,860.71	\$3,932,490.32	\$2,532,500.25	\$6,464,990.56	\$53,431,870.15	\$30,532,497.23	\$22,899,372.92	\$7,658,653.15	\$15,240,719.77	1.40	\$38,191,150.38	\$21,322,744.97	\$6,092,955.19
2038	12,301,174	\$62,619,173.03	\$4,028,650.14	\$2,608,475.25	\$6,637,125.39	\$55,982,047.64	\$31,989,741.51	\$23,992,306.13	\$8,024,182.65	\$15,968,123.48	1.40	\$40,013,924.16	\$22,340,429.44	\$6,022,412.84
2039	12,485,692	\$65,465,214.45	\$4,127,367.53	\$2,686,729.51	\$6,814,097.04	\$58,651,117.41	\$33,514,924.23	\$25,136,193.18	\$8,406,753.57	\$16,729,439.61	1.40	\$41,921,677.80	\$23,405,559.55	\$5,952,400.84
2040	12,672,977	\$68,440,608.44	\$4,228,714.31	\$2,767,331.40	\$6,996,045.70	\$61,444,562.74	\$35,111,178.71	\$26,333,384.03	\$8,807,151.85	\$17,526,232.18	1.40	\$43,918,330.56	\$24,520,323.50	\$5,882,927.17
2041	12,863,072	\$71,551,234.10	\$4,332,764.38	\$2,850,351.34	\$7,183,115.72	\$64,368,118.38	\$36,781,781.93	\$27,586,336.45	\$9,226,199.48	\$18,360,136.97	1.40	\$46,007,981.41	\$25,687,009.81	\$5,813,999.13
2042	13,056,018	\$74,803,237.69	\$4,439,593.78	\$2,935,861.88	\$7,375,455.66	\$67,427,782.03	\$38,530,161.16	\$28,897,620.87	\$9,664,756.14	\$19,232,864.73	1.40	\$48,194,917.30	\$26,908,011.95	\$5,745,623.41
2043	13,251,858	\$78,203,044.84	\$4,549,280.76	\$3,023,937.73	\$7,573,218.49	\$70,629,826.35	\$40,359,900.77	\$30,269,925.58	\$10,123,720.93	\$20,146,204.65	1.40	\$50,483,621.70	\$28,185,833.11	\$5,677,806.09
2044	13,450,636	\$81,757,373.23	\$4,661,905.84	\$3,114,655.87	\$7,776,561.70	\$73,980,811.53	\$42,274,749.44	\$31,706,062.08	\$10,604,034.14	\$21,102,027.94	1.40	\$52,878,783.58	\$29,523,091.23	\$5,610,552.67
2045	13,652,396	\$85,473,245.84	\$4,777,551.87	\$3,208,095.54	\$7,985,647.41	\$77,487,598.43	\$44,278,627.68	\$33,208,970.76	\$11,106,679.18	\$22,102,291.57	1.40	\$55,385,306.86	\$30,922,524.24	\$5,543,868.09
Total	399,156,835	\$1,523,577,756.10	\$120,626,897.00	\$74,322,704.74	\$194,949,601.74	\$1,328,628,154.36	\$759,216,088.21	\$569,412,066.16	\$190,438,818.11	\$378,973,248.04		\$949,654,906.32	\$530,207,893.15	\$226,712,100.51

4 EL Barrier Separated Partial Reconstruct in 2006 Dollars	Present Value Net Revenue ³	Capital Costs ⁴	Feasibility Factor
	6.00%		6.00%
	\$226,712,101		\$ 335,267,740

- ¹ Assumes 1.5% Annual increase in transactions based on 2025 projected values that are interpolated to arrive at yearly projections
- ² Assumes \$0.12 Transaction fee for E-470 Back Office Operation plus liability insurance, highway patrol, roadside assistance, ITS equipment operations, and toll audit and system inspection
- ³ Assumes 6.00% Proxy rate for all in cost of borrowing (Current Market Rate plus 50 basis points)
- ⁴ Assumes 4 EL with narrow shoulders related capital costs in 2006 Dollars including Quebec Direct Access and excluding Santa Fe Drive Interchange improvements
- ⁵ Assumes 1.3 Composite coverage for all debt

Assumes contracting letting and project financing would begin on January 1, 2006
Note: All values are in 2006 Dollars



9.3 TRAFFIC OPERATIONS OF LOCAL ARTERIAL NETWORK

In addition to evaluating the traffic operations in the C-470 express lanes and the general purpose lanes; the surface street network was also analyzed to determine whether the proposed facility would cause any adverse effects to arterial capacity or signal operations. Potential impacts were identified by comparing the operations of the express lane alternative to the 2025 No-Actions Alternative. The analysis of the surface street network looked specifically at intersection delay and LOS.

The LOS analysis indicates that 56 of the 67 intersections in the study area operate at LOS D or better during the AM peak hour, and 45 intersections during the PM peak hour. Those intersections projected to operate at LOS E or worse are the major arterial signalized intersections located along County Line Road from Broadway to Yosemite Street, and along Dry Creek Road from University Boulevard to Yosemite Street. Locations where the overall intersection delay was larger than the No-Action Alternative were evaluated to determine potential improvements to mitigate the increase in delay. The analysis identified the locations noted below as having some degradation of operations as a result of the express lanes:

- Lucent Boulevard/County Line Road
- Broadway/County Line Road
- University Boulevard/County Line Road
- Quebec Street/County Line Road
- Colorado Boulevard/Dry Creek Road

To mitigate the increased delay and congestion as a result of the express lanes, the following intersection improvements are recommended. It is important to note that the improvements identified below are in addition to the improvements outlined in the County Line Road EA that are assumed to be pre-existing.

Lucent Boulevard/County Line Road

- Construct an additional westbound left turn lane along County Line Road.

Broadway/County Line Road

- Construct a 450 foot right turn acceleration lane on County Line Road west of Broadway.
- Construct a 550 foot right turn acceleration lane on County Line Road east of Broadway.
- Construct a continuous northbound right turn lane between the C-470 westbound off-ramp and County Line Road.
- Construct a 300 foot right turn auxiliary lane on southbound Broadway between County Line Road and C-470.

University Boulevard/County Line Road

- Construct a continuous northbound right turn lane between the C-470 westbound off-ramp and County Line Road.
- Construct a 600 foot right turn acceleration lane on University Boulevard south of County Line Road.
- Construct a 500 foot acceleration lane for the northbound to eastbound right turn lane.

Colorado Boulevard/Dry Creek Road

- Construct a 175 foot southbound right turn deceleration lane along Colorado Boulevard.
- Construct a 200 foot right turn acceleration lane on Dry Creek Road west of Colorado Boulevard.
- Construct a 400 foot right turn acceleration lane on Dry Creek Road east of Colorado Boulevard.

Quebec Street/County Line Road

- Construct a continuous southbound right turn acceleration/deceleration lane on Quebec Street north of County Line Road.

As noted previously in Chapter 9.1, the proposed express lane access at Colorado Boulevard received considerable attention from local residents and stakeholders who voiced both support and opposition to the concept. Extensive analysis and outreach were performed to address the public's concerns and identify potential impacts.

Results of the traffic impact analysis for Colorado Boulevard between University Boulevard and Dry Creek Road indicate all the intersections along Colorado Boulevard operate acceptably with the proposed express lane access in place. The intersections are all projected to have enough reserve capacity to handle additional traffic despite increased volumes along Colorado Boulevard due to the proposed T-ramp access. The alternative provision of an access at University or complete elimination of access in the vicinity of Colorado Boulevard would translate to an increased burden on already congested intersections on major streets, higher out-of-way trips, and significant congestion on C-470. These detrimental effects due to providing access at other locations or completely eliminating the access to express lanes in this area are not offset by the benefits of lower volumes on Colorado Boulevard. A significant portion of the additional volume (due to the T-ramps) is south of Dry Creek Road. The T-ramp serves residents adjacent to Colorado Boulevard, which helps reduce out-of-way trips on adjacent streets. The T-ramp access also provides better and more reliable access to C-470. A summary of the Colorado Boulevard analysis is in Appendix F.

9.4 ROW REQUIREMENTS

As part of the roadway design, an assessment of necessary ROW acquisition was completed to estimate a cost to acquire the properties identified. In locations where ROW impacts were identified, impacted property owners were contacted and invited to

attend public meetings. The majority of the ROW impacts required only minor ROW acquisitions from each parcel and no impact to any structures. The projected ROW impacts for C-470 between I-25 and Kipling Parkway is 58 parcels, totaling 20.36 acres.

9.5 HIGH-OCCUPANCY VEHICLE COMPONENT

The original application by CDOT to the FHWA's VPPP proposed the study of High Occupancy Toll lanes along the C-470 corridor. Based on results from the C-470 user survey and regional vehicle occupancy studies performed by DRCOG, fewer than 6 percent of Denver commuters carpool daily. Also, underutilization of HOV facilities around the county is causing many of them to be converted to HOT lane facilities to optimize the benefit of the capital investment. Such a conversion is currently being implemented on the I-25 HOV lanes from downtown Denver to US 36.

A HOT lane facility carries with it several additional characteristics that must be considered when evaluating whether to allow HOVs to ride free in express lanes. HOT lanes require additional enforcement to catch violators because automated HOT technology does not yet exist. Manual enforcement has many adverse consequences and operational challenges, as well as additional operation costs. Manual enforcement typically requires an enforcement viewing area adjacent to the express lanes, thus requiring additional roadway width, resulting in increased capital cost. Manual enforcement is difficult when identifying the number of vehicle occupants when vehicles are traveling through the enforcement zone at high speeds. Also, the larger footprint of HOT lanes translates to more environmental impacts, greater ROW impacts, and increased construction and operational cost. Operationally, enforcement becomes a major challenge – both logistically and financially. Debate is still ongoing as to how best to separate single occupancy vehicles and HOVs and ensure efficient, equitable enforcement.

Another consideration in this assessment is how free HOV use would affect revenue generation. A quick assessment would be to assume that a maximum of 6 percent of potential express lane users would be removed from the revenue stream. This equates to approximately \$14 million in lost revenue over 40 years, reducing the feasibility factor by 5 percent. This minor reduction in revenue probably has a negligible effect on the feasibility rating.

Given all these considerations, it is believed that the decision of whether HOVs would be tolled or allowed to use the facility free would ultimately be a policy decision made by the CTE.

9.6 TRANSIT COMPONENT

Due to a lack of reliability and the congestion on the corridor, metro Denver's transit agency, the RTD, has eliminated bus service on C-470. Existing bus routes that do exist in the area use the less congested side streets.

With the resultant predictable travel times, express lanes would allow for bus service to be resumed along the corridor. Discussions were held with RTD throughout the access screening process to ensure the proposed access configuration met the needs of existing and proposed RTD facilities. Two park-n-Ride facilities are currently located along the eastern portion of C-470 at University Boulevard and Santa Fe Drive/Mineral Avenue. As part of the ensuing FasTracks project, the existing light rail line along Santa Fe Drive will be extended to Lucent Boulevard creating a new park-n-Ride location along C-470. RTD staff noted that the proposed Lucent Boulevard, park-n-Ride would be the origin for most of the potential bus service along the corridor. RTD has not yet identified a need to develop a direct access from the C-470 express lanes into the park-n-Ride facility at Lucent Boulevard; however, if desired, the proposed slip ramp access east of Lucent Boulevard would be adequate.

RTD deemed the University Avenue location too close to the I-25/DTC area to provide express bus service. It is believed that the majority of drivers will choose to drive instead of park and take a bus. However, the express lane design would not preclude the creation of a bus-only slip ramp access east of University Avenue to facilitate access to the express lanes in the future, if deemed necessary. The low cost associated with removing the center barrier to provide access to the express lanes makes the concept relatively easy to implement.

It has been assumed in all financial calculations that RTD buses would be excluded from paying a toll, consistent with historical practice in the region. However, it is anticipated that commercial buses would be required to pay a toll based on the number of axles.