

APPENDIX G

BENEFIT-COST RATIO CALCULATIONS



DRAFT NOVEMBER 2024
PRELIMINARY FEASIBILITY STUDY
U.S. 23 CORRIDOR STUDY, PID 112768

USER BENEFIT CALCULATIONS
Segment 15

3.5% daily truck percentage - US 23
3.0% daily truck percentage - intersections (all vehicles)

\$19.91 weighted average value of time - US 23
\$19.92 weighted average value of time - intersections/all vehicles

Values for Input into USDOT Cost-Benefit Spreadsheet

NB/SB Arterial Delay		No-Build	Concept D	Concept C	Concept B	Concept A
2030	\$16,869,776	\$0			\$11,773,273	\$16,869,776
2031	\$17,076,170	\$0			\$11,674,268	\$17,076,170
2032	\$17,282,563	\$0			\$11,575,264	\$17,282,563
2033	\$17,488,957	\$0			\$11,476,259	\$17,488,957
2034	\$17,695,351	\$0			\$11,377,254	\$17,695,351
2035	\$17,901,744	\$0			\$11,278,249	\$17,901,744
2036	\$18,108,138	\$0			\$11,179,244	\$18,108,138
2037	\$18,314,532	\$0			\$11,080,239	\$18,314,532
2038	\$18,520,925	\$0			\$10,981,234	\$18,520,925
2039	\$18,727,319	\$0			\$10,882,229	\$18,727,319
2040	\$18,933,712	\$0			\$10,783,225	\$18,933,712
2041	\$19,140,106	\$0			\$10,684,220	\$19,140,106
2042	\$19,346,500	\$0			\$10,585,215	\$19,346,500
2043	\$19,552,893	\$0			\$10,486,210	\$19,552,893
2044	\$19,759,287	\$0			\$10,387,205	\$19,759,287
2045	\$19,965,681	\$0			\$10,288,200	\$19,965,681
2046	\$20,172,074	\$0			\$10,189,195	\$20,172,074
2047	\$20,378,468	\$0			\$10,090,190	\$20,378,468
2048	\$20,584,862	\$0			\$9,991,186	\$20,584,862
2049	\$20,791,255	\$0			\$9,892,181	\$20,791,255
2050	\$20,997,649	\$0			\$9,793,176	\$20,997,649

SCALED NB/SB Arterial Delay		No-Build	Concept D	Concept C	Concept B	Concept A
2030	\$8,516,565	\$0			\$4,188,959	\$8,516,565
2031	\$8,711,816	\$0			\$4,263,118	\$8,711,816
2032	\$8,907,067	\$0			\$4,337,276	\$8,907,067
2033	\$9,102,317	\$0			\$4,411,435	\$9,102,317
2034	\$9,297,568	\$0			\$4,485,593	\$9,297,568
2035	\$9,492,819	\$0			\$4,559,752	\$9,492,819
2036	\$9,688,069	\$0			\$4,633,910	\$9,688,069
2037	\$9,883,320	\$0			\$4,708,069	\$9,883,320
2038	\$10,078,570	\$0			\$4,782,227	\$10,078,570
2039	\$10,273,821	\$0			\$4,856,386	\$10,273,821
2040	\$10,469,072	\$0			\$4,930,544	\$10,469,072
2041	\$10,664,322	\$0			\$5,004,703	\$10,664,322
2042	\$10,859,573	\$0			\$5,078,861	\$10,859,573
2043	\$11,054,824	\$0			\$5,153,020	\$11,054,824
2044	\$11,250,074	\$0			\$5,227,178	\$11,250,074
2045	\$11,445,325	\$0			\$5,301,337	\$11,445,325
2046	\$11,640,575	\$0			\$5,375,495	\$11,640,575
2047	\$11,835,826	\$0			\$5,449,654	\$11,835,826
2048	\$12,031,077	\$0			\$5,523,812	\$12,031,077
2049	\$12,226,327	\$0			\$5,597,971	\$12,226,327
2050	\$12,421,578	\$0			\$5,672,129	\$12,421,578

Intersection Delay		No-Build	Concept D	Concept C	Concept B	Concept A
2030	\$16,877,317	\$0			\$9,313,843	\$16,877,317
2031	\$17,394,101	\$0			\$9,349,642	\$17,394,101
2032	\$17,910,885	\$0			\$9,385,440	\$17,910,885
2033	\$18,427,668	\$0			\$9,421,239	\$18,427,668
2034	\$18,944,452	\$0			\$9,457,037	\$18,944,452
2035	\$19,461,236	\$0			\$9,492,836	\$19,461,236
2036	\$19,978,020	\$0			\$9,528,635	\$19,978,020
2037	\$20,494,803	\$0			\$9,564,433	\$20,494,803
2038	\$21,011,587	\$0			\$9,600,232	\$21,011,587
2039	\$21,528,371	\$0			\$9,636,030	\$21,528,371
2040	\$22,045,155	\$0			\$9,671,829	\$22,045,155
2041	\$22,561,939	\$0			\$9,707,627	\$22,561,939
2042	\$23,078,722	\$0			\$9,743,426	\$23,078,722
2043	\$23,595,506	\$0			\$9,779,224	\$23,595,506
2044	\$24,112,290	\$0			\$9,815,023	\$24,112,290
2045	\$24,629,074	\$0			\$9,850,822	\$24,629,074
2046	\$25,145,857	\$0			\$9,886,620	\$25,145,857
2047	\$25,662,641	\$0			\$9,922,419	\$25,662,641
2048	\$26,179,425	\$0			\$9,958,217	\$26,179,425
2049	\$26,696,209	\$0			\$9,994,016	\$26,696,209
2050	\$27,212,993	\$0			\$10,029,814	\$27,212,993

SCALED Intersection Delay		No-Build	Concept D	Concept C	Concept B	Concept A
2030	\$13,606,629	\$0			\$7,283,255	\$13,606,629
2031	\$14,316,302	\$0			\$7,355,572	\$14,316,302
2032	\$15,025,975	\$0			\$7,427,888	\$15,025,975
2033	\$15,735,649	\$0			\$7,500,204	\$15,735,649
2034	\$16,445,322	\$0			\$7,572,521	\$16,445,322
2035	\$17,155,000	\$0			\$7,644,837	\$17,155,000
2036	\$17,864,673	\$0			\$7,717,154	\$17,864,673
2037	\$18,574,346	\$0			\$7,789,470	\$18,574,346
2038	\$19,284,019	\$0			\$7,861,786	\$19,284,019
2039	\$20,000,000	\$0			\$7,934,103	\$20,000,000
2040	\$20,715,999	\$0			\$8,006,419	\$20,715,999
2041	\$21,431,998	\$0			\$8,078,736	\$21,431,998
2042	\$22,147,997	\$0			\$8,151,052	\$22,147,997
2043	\$22,863,996	\$0			\$8,223,368	\$22,863,996
2044	\$23,579,995	\$0			\$8,295,685	\$23,579,995
2045	\$24,295,994	\$0			\$8,368,001	\$24,295,994
2046	\$25,011,993	\$0			\$8,440,318	\$25,011,993
2047	\$25,727,992	\$0			\$8,512,634	\$25,727,992
2048	\$26,443,991	\$0			\$8,584,950	\$26,443,991
2049	\$27,159,990	\$0			\$8,657,267	\$27,159,990
2050	\$27,875,989	\$0			\$8,729,583	\$27,875,989

Safety		Concept D	Concept C	Concept B	Concept A
2031		\$ 250,033	\$ 226,399		
2032		\$ 255,034	\$ 230,927		
2033		\$ 260,135	\$ 235,546		
2034		\$ 265,337	\$ 240,257		
2035		\$ 270,644	\$ 245,062		
2036		\$ 276,057	\$ 249,963		
2037		\$ 281,578	\$ 254,962		
2038		\$ 287,210	\$ 260,061		
2039		\$ 292,954	\$ 265,263		
2040		\$ 298,813	\$ 270,568		
2041		\$ 304,789	\$ 275,979		
2042		\$ 310,885	\$ 281,499		
2043		\$ 317,103	\$ 287,129		
2044		\$ 323,445	\$ 292,871		
2045		\$ 329,914	\$ 298,729		
2046		\$ 336,512	\$ 304,703		
2047		\$ 343,242	\$ 310,797		
2048		\$ 350,107	\$ 317,013		
2049		\$ 357,109	\$ 323,354		
2050		\$ 364,251	\$ 329,821		

Safety		Concept D	Concept C	Concept B	Concept A
2031		\$ -	\$ -	\$ 250,033	\$ 226,399
2032		\$ -	\$ -	\$ 255,034	\$ 230,927
2033		\$ -	\$ -	\$ 260,135	\$ 235,546
2034		\$ -	\$ -	\$ 265,337	\$ 240,257
2035		\$ -	\$ -	\$ 270,644	\$ 245,062
2036		\$ -	\$ -	\$ 276,057	\$ 249,963
2037		\$ -	\$ -	\$ 281,578	\$ 254,962
2038		\$ -	\$ -	\$ 287,210	\$ 260,061
2039		\$ -	\$ -	\$ 292,954	\$ 265,263
2040		\$ -	\$ -	\$ 298,813	\$ 270,568
2041		\$ -	\$ -	\$ 304,789	\$ 275,979
2042		\$ -	\$ -	\$ 310,885	\$ 281,499
2043		\$ -	\$ -	\$ 317,103	\$ 287,129
2044		\$ -	\$ -	\$ 323,445	\$ 292,871
2045		\$ -	\$ -	\$ 329,914	\$ 298,729
2046		\$ -	\$ -	\$ 336,512	\$ 304,703
2047		\$ -	\$ -	\$ 343,242	\$ 310,797
2048		\$ -	\$ -	\$ 350,107	\$ 317,013
2049		\$ -	\$ -	\$ 357,109	\$ 323,354
2050		\$ -	\$ -	\$ 364,251	\$ 329,821

Safety		Concept D	Concept C	Concept B	Concept A
2031		\$ -	\$ -	\$ 250,033	\$ 226,399
2032		\$ -	\$ -	\$ 255,034	\$ 230,927
2033		\$ -	\$ -	\$ 260,135	\$ 235,546
2034		\$ -	\$ -	\$ 265,337	\$ 240,257
2035		\$ -	\$ -	\$ 270,644	\$ 245,062
2036		\$ -	\$ -	\$ 276,057	\$ 249,963
2037		\$ -	\$ -	\$ 281,578	\$ 254,962
2038		\$ -	\$ -	\$ 287,210	\$ 260,061
2039		\$ -	\$ -	\$ 292,954	\$ 265,263
2040		\$ -	\$ -	\$ 298,813	\$ 270,568
2041		\$ -	\$ -	\$ 304,789	\$ 275,979
2042		\$ -	\$ -	\$ 310,885	\$ 281,499
2043		\$ -	\$ -	\$ 317,103	\$ 287,129
2044		\$ -	\$ -	\$ 323,445	\$ 292,871
2045		\$ -	\$ -	\$ 329,914	\$ 298,729
2046		\$ -	\$ -	\$ 336,512	\$ 304,703
2047		\$ -	\$ -	\$ 343,242	\$ 310,797
2048		\$ -	\$ -	\$ 350,107	\$ 317,013
2049		\$ -	\$ -	\$ 357,109	\$ 323,354
2050		\$ -	\$ -	\$ 364,251	\$ 329,821

Safety		Concept D	Concept C	Concept B	Concept A
2031		\$ -	\$ -	\$ 250,033	\$ 226,399
2032		\$ -	\$ -	\$ 255,034	\$ 230,927
2033		\$ -	\$ -	\$ 260,135	\$ 235,546
2034		\$ -	\$ -	\$ 265,337	\$ 240,257
2035		\$ -	\$ -	\$ 270,644	\$ 245,062
2036		\$ -	\$ -	\$ 276,057	\$ 249,963
2037		\$ -	\$ -	\$ 281,578	\$ 254,962
2038		\$ -	\$ -	\$ 287,210	\$ 260,061
2039		\$ -	\$ -	\$ 292,954	\$ 265,263
2040		\$ -	\$ -	\$ 298,813	\$ 270,568
2041		\$ -	\$ -	\$ 304,789	\$ 275,979
2042		\$ -	\$ -	\$ 310,885	\$ 281,499
2043		\$ -	\$ -	\$ 317,103	\$ 287,129
2044		\$ -	\$ -	\$ 323,445	\$ 292,871
2045		\$ -	\$ -	\$ 329,914	\$ 298,729
2046		\$ -	\$ -	\$ 336,512	\$ 304,703
2047		\$ -	\$ -	\$ 343,242	\$ 310,797
2048		\$ -	\$ -	\$ 350,107	\$ 317,013
2049		\$ -	\$ -	\$ 357,109	\$ 323,354
2050		\$ -	\$ -	\$ 364,251	\$ 329,821

3.1% USDOT Future Discounting Rate

Discounted Values to Current Dollars

NB/SB Arterial Delay		No-Build	Concept D	Concept C	Concept B	Concept A
2030	\$0	\$0	\$0	\$0	\$9,222,059	\$13,214,173
2031	\$0	\$0	\$0	\$0	\$8,869,552	\$12,973,659
2032	\$0	\$0	\$0	\$0	\$8,529,906	\$12,735,661
2033	\$0	\$0	\$0	\$0	\$8,202,666	\$12,500,247
2034	\$0	\$0	\$0	\$0	\$7,887,393	\$12,267,475
2035	\$0	\$0	\$0	\$0	\$7,583,663	\$12,037,400
2036	\$0	\$0	\$0	\$0	\$7,291,068	\$11,810,070
2037	\$0	\$0	\$0	\$0	\$7,009,211	\$11,585,528
2038	\$0	\$0	\$0	\$0	\$	

USER BENEFIT CALCULATIONS
Segment 1N

3.5% daily truck percentage - US 23
3.0% daily truck percentage - Intersections (all vehicles)

\$19.91 weighted average value of time - US 23
\$19.92 weighted average value of time - Intersections/all vehicles

Values for Input into USDOT Cost-Benefit Spreadsheet

Year	NB/SB Arterial Delay	SCALED NB/SB Arterial Delay				
		No-Build	Concept D	Concept C	Concept B	Concept A
2030	\$14,004,661	\$0	\$11,376,397	\$13,864,486	\$14,004,661	\$14,004,661
2031	\$14,325,231	\$0	\$11,579,563	\$13,974,902	\$14,325,231	\$14,325,231
2032	\$14,645,801	\$0	\$11,782,729	\$14,285,317	\$14,645,801	\$14,645,801
2033	\$14,966,371	\$0	\$11,985,894	\$14,595,733	\$14,966,371	\$14,966,371
2034	\$15,286,941	\$0	\$12,189,060	\$14,906,149	\$15,286,941	\$15,286,941
2035	\$15,607,511	\$0	\$12,392,225	\$15,216,565	\$15,607,511	\$15,607,511
2036	\$15,928,081	\$0	\$12,595,391	\$15,526,981	\$15,928,081	\$15,928,081
2037	\$16,248,651	\$0	\$12,798,556	\$15,837,397	\$16,248,651	\$16,248,651
2038	\$16,569,221	\$0	\$13,001,722	\$16,147,812	\$16,569,221	\$16,569,221
2039	\$16,889,791	\$0	\$13,204,888	\$16,458,228	\$16,889,791	\$16,889,791
2040	\$17,210,361	\$0	\$13,408,053	\$16,768,644	\$17,210,361	\$17,210,361
2041	\$17,530,931	\$0	\$13,611,219	\$17,079,060	\$17,530,931	\$17,530,931
2042	\$17,851,501	\$0	\$13,814,384	\$17,389,476	\$17,851,501	\$17,851,501
2043	\$18,172,071	\$0	\$14,017,550	\$17,699,892	\$18,172,071	\$18,172,071
2044	\$18,492,641	\$0	\$14,220,715	\$18,010,307	\$18,492,641	\$18,492,641
2045	\$18,813,211	\$0	\$14,423,881	\$18,320,723	\$18,813,211	\$18,813,211
2046	\$19,133,781	\$0	\$14,627,046	\$18,631,139	\$19,133,781	\$19,133,781
2047	\$19,454,351	\$0	\$14,830,212	\$18,941,555	\$19,454,351	\$19,454,351
2048	\$19,774,921	\$0	\$15,033,378	\$19,251,971	\$19,774,921	\$19,774,921
2049	\$20,095,491	\$0	\$15,236,543	\$19,562,387	\$20,095,491	\$20,095,491
2050	\$20,416,061	\$0	\$15,439,709	\$19,872,802	\$20,416,061	\$20,416,061

Year	NB/SB Arterial Delay	SCALED NB/SB Arterial Delay				
		No-Build	Concept D	Concept C	Concept B	Concept A
2030	\$8,456,340	\$0	\$6,222,315	\$8,116,164	\$8,456,340	\$8,456,340
2031	\$8,759,516	\$0	\$6,426,107	\$8,290,829	\$8,759,516	\$8,759,516
2032	\$9,063,511	\$0	\$6,629,900	\$8,465,494	\$9,063,511	\$9,063,511
2033	\$9,367,507	\$0	\$6,833,692	\$8,640,158	\$9,367,507	\$9,367,507
2034	\$9,671,503	\$0	\$7,037,484	\$8,814,823	\$9,671,503	\$9,671,503
2035	\$9,975,499	\$0	\$7,241,276	\$8,989,488	\$9,975,499	\$9,975,499
2036	\$10,279,495	\$0	\$7,445,069	\$9,164,153	\$10,279,495	\$10,279,495
2037	\$10,583,491	\$0	\$7,648,861	\$9,338,818	\$10,583,491	\$10,583,491
2038	\$10,887,487	\$0	\$7,852,653	\$9,513,483	\$10,887,487	\$10,887,487
2039	\$11,191,483	\$0	\$8,056,445	\$9,688,147	\$11,191,483	\$11,191,483
2040	\$11,495,479	\$0	\$8,260,238	\$9,862,812	\$11,495,479	\$11,495,479
2041	\$11,799,475	\$0	\$8,464,030	\$10,037,477	\$11,799,475	\$11,799,475
2042	\$12,103,471	\$0	\$8,667,822	\$10,212,142	\$12,103,471	\$12,103,471
2043	\$12,407,467	\$0	\$8,871,614	\$10,386,807	\$12,407,467	\$12,407,467
2044	\$12,711,463	\$0	\$9,075,406	\$10,561,472	\$12,711,463	\$12,711,463
2045	\$13,015,459	\$0	\$9,279,199	\$10,736,137	\$13,015,459	\$13,015,459
2046	\$13,319,455	\$0	\$9,482,991	\$10,910,801	\$13,319,455	\$13,319,455
2047	\$13,623,451	\$0	\$9,686,783	\$11,085,466	\$13,623,451	\$13,623,451
2048	\$13,927,447	\$0	\$9,890,575	\$11,260,131	\$13,927,447	\$13,927,447
2049	\$14,231,443	\$0	\$10,094,368	\$11,434,796	\$14,231,443	\$14,231,443
2050	\$14,535,439	\$0	\$10,298,160	\$11,609,461	\$14,535,439	\$14,535,439

Year	Intersection Delay	SCALED Intersection Delay				
		No-Build	Concept D	Concept C	Concept B	Concept A
2030	\$14,010,922	\$0	\$10,272,264	\$13,236,752	\$14,010,922	\$14,010,922
2031	\$14,533,869	\$0	\$10,675,102	\$13,742,922	\$14,533,869	\$14,533,869
2032	\$15,056,817	\$0	\$11,077,941	\$14,249,092	\$15,056,817	\$15,056,817
2033	\$15,579,765	\$0	\$11,480,779	\$14,755,263	\$15,579,765	\$15,579,765
2034	\$16,102,713	\$0	\$11,883,618	\$15,261,433	\$16,102,713	\$16,102,713
2035	\$16,625,661	\$0	\$12,286,456	\$15,767,604	\$16,625,661	\$16,625,661
2036	\$17,148,609	\$0	\$12,689,295	\$16,273,774	\$17,148,609	\$17,148,609
2037	\$17,671,557	\$0	\$13,092,133	\$16,779,945	\$17,671,557	\$17,671,557
2038	\$18,194,505	\$0	\$13,494,972	\$17,286,115	\$18,194,505	\$18,194,505
2039	\$18,717,453	\$0	\$13,897,810	\$17,792,286	\$18,717,453	\$18,717,453
2040	\$19,240,401	\$0	\$14,300,649	\$18,298,457	\$19,240,401	\$19,240,401
2041	\$19,763,349	\$0	\$14,703,487	\$18,804,627	\$19,763,349	\$19,763,349
2042	\$20,286,297	\$0	\$15,106,326	\$19,310,797	\$20,286,297	\$20,286,297
2043	\$20,809,245	\$0	\$15,509,164	\$19,816,968	\$20,809,245	\$20,809,245
2044	\$21,332,193	\$0	\$15,912,003	\$20,323,138	\$21,332,193	\$21,332,193
2045	\$21,855,141	\$0	\$16,314,841	\$20,829,309	\$21,855,141	\$21,855,141
2046	\$22,378,089	\$0	\$16,717,680	\$21,335,479	\$22,378,089	\$22,378,089
2047	\$22,901,037	\$0	\$17,120,518	\$21,841,650	\$22,901,037	\$22,901,037
2048	\$23,424,084	\$0	\$17,523,357	\$22,347,820	\$23,424,084	\$23,424,084
2049	\$23,947,032	\$0	\$17,926,195	\$22,853,991	\$23,947,032	\$23,947,032
2050	\$24,470,080	\$0	\$18,329,034	\$23,360,161	\$24,470,080	\$24,470,080

Year	Intersection Delay	SCALED Intersection Delay				
		No-Build	Concept D	Concept C	Concept B	Concept A
2030	\$11,184,118	\$0	\$8,006,258	\$10,409,948	\$11,184,118	\$11,184,118
2031	\$11,510,765	\$0	\$8,230,813	\$10,605,336	\$11,510,765	\$11,510,765
2032	\$11,837,412	\$0	\$8,455,367	\$10,800,724	\$11,837,412	\$11,837,412
2033	\$12,164,059	\$0	\$8,679,921	\$10,996,112	\$12,164,059	\$12,164,059
2034	\$12,490,706	\$0	\$8,904,475	\$11,191,500	\$12,490,706	\$12,490,706
2035	\$12,817,353	\$0	\$9,129,029	\$11,386,888	\$12,817,353	\$12,817,353
2036	\$13,144,000	\$0	\$9,353,583	\$11,582,276	\$13,144,000	\$13,144,000
2037	\$13,470,647	\$0	\$9,578,137	\$11,777,664	\$13,470,647	\$13,470,647
2038	\$13,797,294	\$0	\$9,802,691	\$11,973,052	\$13,797,294	\$13,797,294
2039	\$14,123,941	\$0	\$10,027,246	\$12,168,440	\$14,123,941	\$14,123,941
2040	\$14,450,588	\$0	\$10,251,800	\$12,363,828	\$14,450,588	\$14,450,588
2041	\$14,777,235	\$0	\$10,476,354	\$12,559,216	\$14,777,235	\$14,777,235
2042	\$15,103,882	\$0	\$10,700,908	\$12,754,604	\$15,103,882	\$15,103,882
2043	\$15,430,529	\$0	\$10,925,462	\$12,949,992	\$15,430,529	\$15,430,529
2044	\$15,757,176	\$0	\$11,150,016	\$13,145,380	\$15,757,176	\$15,757,176
2045	\$16,083,823	\$0	\$11,374,570	\$13,340,768	\$16,083,823	\$16,083,823
2046	\$16,410,470	\$0	\$11,599,124	\$13,536,156	\$16,410,470	\$16,410,470
2047	\$16,737,117	\$0	\$11,823,678	\$13,731,544	\$16,737,117	\$16,737,117
2048	\$17,063,764	\$0	\$12,048,232	\$13,926,932	\$17,063,764	\$17,063,764
2049	\$17,390,411	\$0	\$12,272,787	\$14,122,320	\$17,390,411	\$17,390,411
2050	\$17,717,058	\$0	\$12,497,341	\$14,317,708	\$17,717,058	\$17,717,058

Year	ECAT Safety	SCALED ECAT Safety			
		Concept D	Concept C	Concept B	Concept A
2031	\$ 1,085,850	\$ 1,650,385	\$ 1,675,476	\$ 2,056,670	
2032	\$ 1,115,385	\$ 1,695,276	\$ 1,721,049	\$ 2,112,612	
2033	\$ 1,145,723	\$ 1,741,387	\$ 1,767,862	\$ 2,170,075	
2034	\$ 1,176,887	\$ 1,788,753	\$ 1,815,948	\$ 2,229,101	
2035	\$ 1,208,898	\$ 1,837,407	\$ 1,865,341	\$ 2,289,732	
2036	\$ 1,241,781	\$ 1,887,385	\$ 1,916,079	\$ 2,352,013	
2037	\$ 1,275,557	\$ 1,938,722	\$ 1,968,196	\$ 2,415,988	
2038	\$ 1,310,252	\$ 1,991,455	\$ 2,021,731	\$ 2,481,702	
2039	\$ 1,345,891	\$ 2,045,622	\$ 2,076,722	\$ 2,549,205	
2040	\$ 1,382,499	\$ 2,101,263	\$ 2,133,209	\$ 2,618,543	
2041	\$ 1,420,103	\$ 2,158,418	\$ 2,191,232	\$ 2,689,767	
2042	\$ 1,458,730	\$ 2,217,127	\$ 2,250,834	\$ 2,762,929	
2043	\$ 1,498,407	\$ 2,277,432	\$ 2,312,056	\$ 2,838,081	
2044	\$ 1,539,164	\$ 2,339,379	\$ 2,374,944	\$ 2,915,277	
2045	\$ 1,581,029	\$ 2,403,010	\$ 2,439,543	\$ 2,994,572	
2046	\$ 1,624,033	\$ 2,468,372	\$ 2,505,898	\$ 3,076,025	
2047	\$ 1,668,207	\$ 2,535,511	\$ 2,574,059	\$ 3,159,692	
2048	\$ 1,713,582	\$ 2,604,477	\$ 2,644,073	\$ 3,245,636	
2049	\$ 1,760,192	\$ 2,675,319	\$ 2,715,992	\$ 3,333,917	
2050	\$ 1,808,069	\$ 2,748,088	\$ 2,789,867	\$ 3,424,600	

Year	ECAT Safety	SCALED ECAT Safety			
		Concept D	Concept C	Concept B	Concept A
2031	\$ 1,085,850	\$ 1,650,385	\$ 1,675,476	\$ 2,056,670	
2032	\$ 1,115,385	\$ 1,695,276	\$ 1,721,049	\$ 2,112,612	
2033	\$ 1,145,723	\$ 1,741,387	\$ 1,767,862	\$ 2,170,075	
2034	\$ 1,176,887	\$ 1,788,753	\$ 1,815,948	\$ 2,229,101	
2035	\$ 1,208,898	\$ 1,837,407	\$ 1,865,341	\$ 2,289,732	
2036	\$ 1,241,781	\$ 1,887,385	\$ 1,916,079	\$ 2,352,013	
2037	\$ 1,275,557	\$ 1,938,722	\$ 1,968,196	\$ 2,415,988	
2038	\$ 1,310,252	\$ 1,991,455	\$ 2,021,731	\$ 2,481,702	
2039	\$ 1,345,891	\$ 2,045,622	\$ 2,076,722	\$ 2,549,205	
2040	\$ 1,382,499	\$ 2,101,263	\$ 2,133,209	\$ 2,618,543	
2041	\$ 1,420,103	\$ 2,158,418	\$ 2,191,232	\$ 2,689,767	
2042	\$ 1,458,730	\$ 2,217,127	\$ 2,250,834	\$ 2,762,929	
2043	\$ 1,498,407	\$ 2,277,432	\$ 2,312,056	\$ 2,838,081	
2044	\$ 1,539,164	\$ 2,339,379	\$ 2,374,944	\$ 2,915,277	
2045	\$ 1,581,029	\$ 2,403,010	\$ 2,439,543	\$ 2,994,572	
2046	\$ 1,624,033	\$ 2,468,372	\$ 2,505,898	\$ 3,076,025	
2047	\$ 1,668,207	\$ 2,535,511	\$ 2,574,059	\$ 3,159,692	
2048	\$ 1,713,582	\$ 2,604,477	\$ 2,644,073	\$ 3,245,636	
2049	\$ 1,760,192	\$ 2,675,319	\$ 2,715,992	\$ 3,333,917	
2050	\$ 1,808,069	\$ 2,748,088	\$ 2,789,867	\$ 3,424,600	

Year	ECAT Safety	SCALED ECAT Safety			
		Concept D	Concept C	Concept B	Concept A
2031	\$ 1,085,850	\$ 1,650,385	\$ 1,675,476	\$ 2,056,670	
2032	\$ 1,115,385	\$ 1,695,276	\$ 1,721,049	\$ 2,112,612	
2033	\$ 1,145,723	\$ 1,741,387	\$ 1,767,862	\$ 2,170,075	

USER BENEFIT CALCULATIONS
Segment 2

5% daily truck percentage - US 23
4% daily truck percentage - intersections (all vehicles)

\$20.41 weighted average value of time - US 23
\$20.25 weighted average value of time - intersections/all vehicles

Values for Input into USDOT Cost-Benefit Spreadsheet

Year	NB/SB Arterial Delay				
	No-Build	Concept D	Concept C	Concept B	Concept A
2030	\$49,562,721	\$0	\$41,025,665	\$33,825,924	\$49,562,721
2031	\$52,114,330	\$0	\$43,027,225	\$36,772,329	\$52,114,330
2032	\$54,665,939	\$0	\$45,028,784	\$39,718,734	\$54,665,939
2033	\$57,217,548	\$0	\$47,030,343	\$42,665,138	\$57,217,548
2034	\$59,769,157	\$0	\$49,031,902	\$45,611,543	\$59,769,157
2035	\$62,320,765	\$0	\$51,033,462	\$48,557,948	\$62,320,765
2036	\$64,872,374	\$0	\$53,035,021	\$51,504,353	\$64,872,374
2037	\$67,423,983	\$0	\$55,036,580	\$54,450,757	\$67,423,983
2038	\$69,975,592	\$0	\$57,038,139	\$57,397,162	\$69,975,592
2039	\$72,527,201	\$0	\$59,039,699	\$60,343,567	\$72,527,201
2040	\$75,078,810	\$0	\$61,041,258	\$63,289,972	\$75,078,810
2041	\$77,630,419	\$0	\$63,042,817	\$66,236,376	\$77,630,419
2042	\$80,182,027	\$0	\$65,044,376	\$69,182,781	\$80,182,027
2043	\$82,733,636	\$0	\$67,045,936	\$72,129,186	\$82,733,636
2044	\$85,285,245	\$0	\$69,047,495	\$75,075,590	\$85,285,245
2045	\$87,836,854	\$0	\$71,049,054	\$78,021,995	\$87,836,854
2046	\$90,388,463	\$0	\$73,050,613	\$80,968,400	\$90,388,463
2047	\$92,940,072	\$0	\$75,052,173	\$83,914,805	\$92,940,072
2048	\$95,491,681	\$0	\$77,053,732	\$86,861,209	\$95,491,681
2049	\$98,043,290	\$0	\$79,055,291	\$89,807,614	\$98,043,290
2050	\$100,594,898	\$0	\$81,056,850	\$92,754,019	\$100,594,898
ECAT Safety		Concept D	Concept C	Concept B	Concept A
2031		\$ 938,547	\$ 1,946,286	\$ 2,429,890	\$ 2,697,386
2032		\$ 951,687	\$ 1,973,534	\$ 2,463,909	\$ 2,735,149
2033		\$ 965,011	\$ 2,001,163	\$ 2,498,403	\$ 2,773,442
2034		\$ 978,521	\$ 2,029,180	\$ 2,533,381	\$ 2,812,270
2035		\$ 992,220	\$ 2,057,588	\$ 2,568,848	\$ 2,851,642
2036		\$ 1,006,111	\$ 2,086,394	\$ 2,604,812	\$ 2,891,565
2037		\$ 1,020,197	\$ 2,115,604	\$ 2,641,279	\$ 2,932,046
2038		\$ 1,034,479	\$ 2,145,222	\$ 2,678,257	\$ 2,973,095
2039		\$ 1,048,962	\$ 2,175,256	\$ 2,715,753	\$ 3,014,718
2040		\$ 1,063,648	\$ 2,205,709	\$ 2,753,773	\$ 3,056,924
2041		\$ 1,078,539	\$ 2,236,589	\$ 2,792,326	\$ 3,099,721
2042		\$ 1,093,638	\$ 2,267,901	\$ 2,831,419	\$ 3,143,118
2043		\$ 1,108,949	\$ 2,299,652	\$ 2,871,059	\$ 3,187,121
2044		\$ 1,124,474	\$ 2,331,847	\$ 2,911,254	\$ 3,231,741
2045		\$ 1,140,217	\$ 2,364,493	\$ 2,952,011	\$ 3,276,985
2046		\$ 1,156,180	\$ 2,397,596	\$ 2,993,339	\$ 3,322,863
2047		\$ 1,172,367	\$ 2,431,162	\$ 3,035,246	\$ 3,369,383
2048		\$ 1,188,780	\$ 2,465,198	\$ 3,077,739	\$ 3,416,554
2049		\$ 1,205,423	\$ 2,499,711	\$ 3,120,828	\$ 3,464,386
2050		\$ 1,222,299	\$ 2,534,707	\$ 3,164,519	\$ 3,512,888

Year	SCALED NB/SB Arterial Delay				
	No-Build	Concept D	Concept C	Concept B	Concept A
2030	\$29,283,333	\$0	\$22,515,550	\$20,113,238	\$29,283,333
2031	\$30,246,114	\$0	\$23,119,808	\$21,201,875	\$30,246,114
2032	\$31,208,895	\$0	\$23,724,066	\$22,290,512	\$31,208,895
2033	\$32,171,676	\$0	\$24,328,324	\$23,379,149	\$32,171,676
2034	\$33,134,458	\$0	\$24,932,582	\$24,467,785	\$33,134,458
2035	\$34,097,239	\$0	\$25,536,840	\$25,556,422	\$34,097,239
2036	\$35,060,020	\$0	\$26,141,098	\$26,645,059	\$35,060,020
2037	\$36,022,801	\$0	\$26,745,356	\$27,733,696	\$36,022,801
2038	\$36,985,582	\$0	\$27,349,614	\$28,822,332	\$36,985,582
2039	\$37,948,363	\$0	\$27,953,872	\$29,910,969	\$37,948,363
2040	\$38,911,144	\$0	\$28,558,130	\$30,999,606	\$38,911,144
2041	\$39,873,925	\$0	\$29,162,388	\$32,088,243	\$39,873,925
2042	\$40,836,706	\$0	\$29,766,646	\$33,176,879	\$40,836,706
2043	\$41,799,487	\$0	\$30,370,904	\$34,265,516	\$41,799,487
2044	\$42,762,268	\$0	\$30,975,162	\$35,354,153	\$42,762,268
2045	\$43,725,049	\$0	\$31,579,420	\$36,442,790	\$43,725,049
2046	\$44,687,830	\$0	\$32,183,678	\$37,531,427	\$44,687,830
2047	\$45,650,611	\$0	\$32,787,936	\$38,620,063	\$45,650,611
2048	\$46,613,392	\$0	\$33,392,194	\$39,708,700	\$46,613,392
2049	\$47,576,173	\$0	\$33,996,452	\$40,797,337	\$47,576,173
2050	\$48,538,954	\$0	\$34,600,710	\$41,885,974	\$48,538,954
ECAT Safety		Concept D	Concept C	Concept B	Concept A
2031		\$ 938,547	\$ 1,946,286	\$ 2,429,890	\$ 2,697,386
2032		\$ 951,687	\$ 1,973,534	\$ 2,463,909	\$ 2,735,149
2033		\$ 965,011	\$ 2,001,163	\$ 2,498,403	\$ 2,773,442
2034		\$ 978,521	\$ 2,029,180	\$ 2,533,381	\$ 2,812,270
2035		\$ 992,220	\$ 2,057,588	\$ 2,568,848	\$ 2,851,642
2036		\$ 1,006,111	\$ 2,086,394	\$ 2,604,812	\$ 2,891,565
2037		\$ 1,020,197	\$ 2,115,604	\$ 2,641,279	\$ 2,932,046
2038		\$ 1,034,479	\$ 2,145,222	\$ 2,678,257	\$ 2,973,095
2039		\$ 1,048,962	\$ 2,175,256	\$ 2,715,753	\$ 3,014,718
2040		\$ 1,063,648	\$ 2,205,709	\$ 2,753,773	\$ 3,056,924
2041		\$ 1,078,539	\$ 2,236,589	\$ 2,792,326	\$ 3,099,721
2042		\$ 1,093,638	\$ 2,267,901	\$ 2,831,419	\$ 3,143,118
2043		\$ 1,108,949	\$ 2,299,652	\$ 2,871,059	\$ 3,187,121
2044		\$ 1,124,474	\$ 2,331,847	\$ 2,911,254	\$ 3,231,741
2045		\$ 1,140,217	\$ 2,364,493	\$ 2,952,011	\$ 3,276,985
2046		\$ 1,156,180	\$ 2,397,596	\$ 2,993,339	\$ 3,322,863
2047		\$ 1,172,367	\$ 2,431,162	\$ 3,035,246	\$ 3,369,383
2048		\$ 1,188,780	\$ 2,465,198	\$ 3,077,739	\$ 3,416,554
2049		\$ 1,205,423	\$ 2,499,711	\$ 3,120,828	\$ 3,464,386
2050		\$ 1,222,299	\$ 2,534,707	\$ 3,164,519	\$ 3,512,888

Year	Intersection Delay				
	No-Build	Concept D	Concept C	Concept B	Concept A
2030	\$63,758,730	\$0	\$47,740,845	\$48,909,190	\$63,758,730
2031	\$66,570,763	\$0	\$49,689,427	\$52,093,040	\$66,570,763
2032	\$69,382,796	\$0	\$51,638,008	\$55,276,889	\$69,382,796
2033	\$72,194,829	\$0	\$53,586,590	\$58,460,738	\$72,194,829
2034	\$75,006,863	\$0	\$55,535,171	\$61,644,587	\$75,006,863
2035	\$77,818,896	\$0	\$57,483,753	\$64,828,437	\$77,818,896
2036	\$80,630,929	\$0	\$59,432,335	\$68,012,286	\$80,630,929
2037	\$83,442,963	\$0	\$61,380,916	\$71,196,135	\$83,442,963
2038	\$86,254,996	\$0	\$63,329,498	\$74,379,984	\$86,254,996
2039	\$89,067,029	\$0	\$65,278,079	\$77,563,834	\$89,067,029
2040	\$91,879,063	\$0	\$67,226,661	\$80,747,683	\$91,879,063
2041	\$94,691,097	\$0	\$69,175,243	\$83,931,532	\$94,691,097
2042	\$97,503,131	\$0	\$71,123,824	\$87,115,381	\$97,503,131
2043	\$100,315,165	\$0	\$73,072,406	\$90,299,231	\$100,315,165
2044	\$103,127,199	\$0	\$75,020,987	\$93,483,080	\$103,127,199
2045	\$105,939,233	\$0	\$76,969,569	\$96,666,929	\$105,939,233
2046	\$108,751,267	\$0	\$78,918,151	\$99,850,779	\$108,751,267
2047	\$111,563,301	\$0	\$80,866,732	\$103,034,628	\$111,563,301
2048	\$114,375,335	\$0	\$82,813,314	\$106,218,477	\$114,375,335
2049	\$117,187,369	\$0	\$84,763,896	\$109,402,326	\$117,187,369
2050	\$119,999,403	\$0	\$86,712,477	\$112,586,176	\$119,999,403
ECAT Safety		Concept D	Concept C	Concept B	Concept A
2031		\$ 938,547	\$ 1,946,286	\$ 2,429,890	\$ 2,697,386
2032		\$ 951,687	\$ 1,973,534	\$ 2,463,909	\$ 2,735,149
2033		\$ 965,011	\$ 2,001,163	\$ 2,498,403	\$ 2,773,442
2034		\$ 978,521	\$ 2,029,180	\$ 2,533,381	\$ 2,812,270
2035		\$ 992,220	\$ 2,057,588	\$ 2,568,848	\$ 2,851,642
2036		\$ 1,006,111	\$ 2,086,394	\$ 2,604,812	\$ 2,891,565
2037		\$ 1,020,197	\$ 2,115,604	\$ 2,641,279	\$ 2,932,046
2038		\$ 1,034,479	\$ 2,145,222	\$ 2,678,257	\$ 2,973,095
2039		\$ 1,048,962	\$ 2,175,256	\$ 2,715,753	\$ 3,014,718
2040		\$ 1,063,648	\$ 2,205,709	\$ 2,753,773	\$ 3,056,924
2041		\$ 1,078,539	\$ 2,236,589	\$ 2,792,326	\$ 3,099,721
2042		\$ 1,093,638	\$ 2,267,901	\$ 2,831,419	\$ 3,143,118
2043		\$ 1,108,949	\$ 2,299,652	\$ 2,871,059	\$ 3,187,121
2044		\$ 1,124,474	\$ 2,331,847	\$ 2,911,254	\$ 3,231,741
2045		\$ 1,140,217	\$ 2,364,493	\$ 2,952,011	\$ 3,276,985
2046		\$ 1,156,180	\$ 2,397,596	\$ 2,993,339	\$ 3,322,863
2047		\$ 1,172,367	\$ 2,431,162	\$ 3,035,246	\$ 3,369,383
2048		\$ 1,188,780	\$ 2,465,198	\$ 3,077,739	\$ 3,416,554
2049		\$ 1,205,423	\$ 2,499,711	\$ 3,120,828	\$ 3,464,386
2050		\$ 1,222,299	\$ 2,534,707	\$ 3,164,519	\$ 3,512,888

Year	SCALED Intersection Delay				
	No-Build	Concept D	Concept C	Concept B	Concept A
2030	\$44,414,102	\$0	\$31,311,894	\$33,183,100	\$44,414,102
2031	\$46,570,763	\$0	\$31,981,828	\$34,174,762	\$46,570,763
2032	\$48,727,425	\$0	\$32,651,762	\$35,166,424	\$48,727,425
2033	\$50,884,087	\$0	\$33,321,696	\$36,158,086	\$50,884,087
2034	\$53,040,749	\$0	\$33,991,630	\$37,149,747	\$53,040,749
2035	\$55,197,411	\$0	\$34,661,564	\$38,141,409	\$55,197,411
2036	\$57,354,073	\$0	\$35,331,497	\$39,133,071	\$57,354,073
2037	\$59,510,735	\$0	\$36,001,431	\$40,124,733	\$59,510,735
2038	\$61,667,397	\$0	\$36,671,365	\$41,116,394	\$61,667,397
2039	\$63,824,059	\$0	\$37,341,299	\$42,108,056	\$63,824,059
2040	\$65,980,721	\$0	\$38,011,233	\$43,099,718	\$65,980,721
2041	\$68,137,383	\$0	\$38,681,167	\$44,091,380	\$68,137,383
2042	\$70,294,045	\$0	\$39,351,101	\$45,083,042	\$70,294,045
2043	\$72,450,707	\$0	\$40,021,034	\$46,074,704	\$72,450,707
2044	\$74,607,369	\$0	\$40,690,968	\$47,066,366	\$74,607,369
2045	\$76,764,031	\$0	\$41,360,902	\$48,058,028	\$76,764,031
2046	\$78,920,693	\$0	\$42,030,836	\$49,049,690	\$78,920,693
2047	\$81,077,355	\$0	\$42,700,770	\$50,041,352	\$81,077,355
2048	\$83,234,017	\$0	\$43,370,704	\$51,033,014	\$83,234,017
2049	\$85,390,679	\$0	\$44,040,638	\$52,024,676	\$85,390,679
2050	\$87,547,341	\$0	\$44,710,572	\$53,016,338	\$87,547,341
ECAT Safety		Concept D	Concept C		

USER BENEFIT CALCULATIONS
Segment 3

4.4% daily truck percentage - US 23
3.5% daily truck percentage - intersections (all vehicles)

\$0.21 weighted average value of time - US 23
\$0.09 weighted average value of time - intersections/all vehicles

Values for Input into USDOT Cost-Benefit Spreadsheet

Year	NB/SB Arterial Delay				
	No-Build	Concept D	Concept C	Concept B	Concept A
2030	\$21,764,799	\$0	\$8,869,637	\$19,411,938	\$21,764,799
2031	\$23,191,483	\$0	\$10,054,182	\$20,726,744	\$23,191,483
2032	\$24,618,167	\$0	\$11,238,728	\$22,041,549	\$24,618,167
2033	\$26,044,851	\$0	\$12,423,273	\$23,356,355	\$26,044,851
2034	\$27,471,535	\$0	\$13,607,818	\$24,671,160	\$27,471,535
2035	\$28,898,219	\$0	\$14,792,363	\$25,985,965	\$28,898,219
2036	\$30,324,903	\$0	\$15,976,908	\$27,300,771	\$30,324,903
2037	\$31,751,587	\$0	\$17,161,453	\$28,615,576	\$31,751,587
2038	\$33,178,271	\$0	\$18,345,999	\$29,930,381	\$33,178,271
2039	\$34,604,955	\$0	\$19,530,544	\$31,245,187	\$34,604,955
2040	\$36,031,640	\$0	\$20,715,089	\$32,559,992	\$36,031,640
2041	\$37,458,324	\$0	\$21,899,634	\$33,874,797	\$37,458,324
2042	\$38,885,009	\$0	\$23,084,179	\$35,189,603	\$38,885,009
2043	\$40,311,693	\$0	\$24,268,725	\$36,504,408	\$40,311,693
2044	\$41,738,378	\$0	\$25,453,270	\$37,819,214	\$41,738,378
2045	\$43,165,062	\$0	\$26,637,815	\$39,134,019	\$43,165,062
2046	\$44,591,747	\$0	\$27,822,360	\$40,448,824	\$44,591,747
2047	\$46,018,431	\$0	\$29,006,905	\$41,763,630	\$46,018,431
2048	\$47,445,116	\$0	\$30,191,450	\$43,078,435	\$47,445,116
2049	\$48,871,799	\$0	\$31,375,996	\$44,393,240	\$48,871,799
2050	\$50,298,484	\$0	\$32,560,541	\$45,708,046	\$50,298,484

Year	SCALED NB/SB Arterial Delay				
	No-Build	Concept D	Concept C	Concept B	Concept A
2030	\$16,037,261	\$0	\$8,467,577	\$14,037,330	\$16,037,261
2031	\$16,672,494	\$0	\$8,965,668	\$14,582,669	\$16,672,494
2032	\$17,307,727	\$0	\$9,463,759	\$15,128,008	\$17,307,727
2033	\$17,942,960	\$0	\$9,961,850	\$15,673,347	\$17,942,960
2034	\$18,578,193	\$0	\$10,459,941	\$16,218,686	\$18,578,193
2035	\$19,213,426	\$0	\$10,958,032	\$16,764,025	\$19,213,426
2036	\$19,848,659	\$0	\$11,456,123	\$17,309,364	\$19,848,659
2037	\$20,483,892	\$0	\$11,954,214	\$17,854,703	\$20,483,892
2038	\$21,119,124	\$0	\$12,452,305	\$18,400,042	\$21,119,124
2039	\$21,754,357	\$0	\$12,950,396	\$18,945,381	\$21,754,357
2040	\$22,389,590	\$0	\$13,448,487	\$19,490,720	\$22,389,590
2041	\$23,024,823	\$0	\$13,946,578	\$20,036,059	\$23,024,823
2042	\$23,660,056	\$0	\$14,444,669	\$20,581,398	\$23,660,056
2043	\$24,295,289	\$0	\$14,942,760	\$21,126,737	\$24,295,289
2044	\$24,930,522	\$0	\$15,440,851	\$21,672,076	\$24,930,522
2045	\$25,565,755	\$0	\$15,938,942	\$22,217,415	\$25,565,755
2046	\$26,200,988	\$0	\$16,437,033	\$22,762,754	\$26,200,988
2047	\$26,836,221	\$0	\$16,935,124	\$23,308,093	\$26,836,221
2048	\$27,471,454	\$0	\$17,433,215	\$23,853,432	\$27,471,454
2049	\$28,106,687	\$0	\$17,931,306	\$24,398,771	\$28,106,687
2050	\$28,741,918	\$0	\$18,429,397	\$24,944,110	\$28,741,918

Year	Intersection Delay				
	No-Build	Concept D	Concept C	Concept B	Concept A
2030	\$31,856,906	\$0	\$6,559,651	\$26,974,708	\$31,856,906
2031	\$33,517,983	\$0	\$7,835,009	\$28,512,300	\$33,517,983
2032	\$35,179,060	\$0	\$9,110,367	\$30,049,891	\$35,179,060
2033	\$36,840,138	\$0	\$10,385,726	\$31,587,483	\$36,840,138
2034	\$38,501,215	\$0	\$11,661,084	\$33,125,074	\$38,501,215
2035	\$40,162,292	\$0	\$12,936,442	\$34,662,666	\$40,162,292
2036	\$41,823,370	\$0	\$14,211,800	\$36,200,258	\$41,823,370
2037	\$43,484,447	\$0	\$15,487,159	\$37,737,849	\$43,484,447
2038	\$45,145,524	\$0	\$16,762,517	\$39,275,441	\$45,145,524
2039	\$46,806,601	\$0	\$18,037,875	\$40,813,032	\$46,806,601
2040	\$48,467,679	\$0	\$19,313,233	\$42,350,624	\$48,467,679
2041	\$50,128,756	\$0	\$20,588,592	\$43,888,215	\$50,128,756
2042	\$51,789,833	\$0	\$21,863,950	\$45,425,807	\$51,789,833
2043	\$53,450,910	\$0	\$23,139,308	\$46,963,399	\$53,450,910
2044	\$55,111,988	\$0	\$24,414,666	\$48,500,991	\$55,111,988
2045	\$56,773,065	\$0	\$25,690,025	\$50,038,582	\$56,773,065
2046	\$58,434,142	\$0	\$26,965,383	\$51,576,173	\$58,434,142
2047	\$60,095,220	\$0	\$28,240,741	\$53,113,765	\$60,095,220
2048	\$61,756,297	\$0	\$29,515,099	\$54,651,357	\$61,756,297
2049	\$63,417,374	\$0	\$30,791,458	\$56,188,948	\$63,417,374
2050	\$65,078,452	\$0	\$32,066,816	\$57,726,540	\$65,078,452

Year	SCALED Intersection Delay				
	No-Build	Concept D	Concept C	Concept B	Concept A
2030	\$23,502,709	\$0	\$8,166,372	\$21,320,156	\$23,502,709
2031	\$24,938,942	\$0	\$8,830,947	\$22,087,560	\$24,938,942
2032	\$26,375,175	\$0	\$9,495,523	\$22,854,964	\$26,375,175
2033	\$27,811,408	\$0	\$10,160,099	\$23,622,368	\$27,811,408
2034	\$29,247,641	\$0	\$10,824,674	\$24,389,772	\$29,247,641
2035	\$30,683,874	\$0	\$11,489,250	\$25,157,176	\$30,683,874
2036	\$32,120,107	\$0	\$12,153,826	\$25,924,581	\$32,120,107
2037	\$33,556,340	\$0	\$12,818,402	\$26,691,985	\$33,556,340
2038	\$34,992,573	\$0	\$13,482,977	\$27,459,389	\$34,992,573
2039	\$36,428,806	\$0	\$14,147,553	\$28,226,793	\$36,428,806
2040	\$37,865,039	\$0	\$14,812,129	\$28,994,197	\$37,865,039
2041	\$39,301,272	\$0	\$15,476,704	\$29,761,602	\$39,301,272
2042	\$40,737,505	\$0	\$16,141,280	\$30,529,006	\$40,737,505
2043	\$42,173,738	\$0	\$16,805,856	\$31,296,410	\$42,173,738
2044	\$43,609,971	\$0	\$17,470,431	\$32,063,814	\$43,609,971
2045	\$45,046,204	\$0	\$18,135,007	\$32,831,218	\$45,046,204
2046	\$46,482,437	\$0	\$18,799,583	\$33,598,623	\$46,482,437
2047	\$47,918,670	\$0	\$19,464,159	\$34,366,027	\$47,918,670
2048	\$49,354,903	\$0	\$20,128,734	\$35,133,431	\$49,354,903
2049	\$50,791,136	\$0	\$20,793,310	\$35,900,835	\$50,791,136
2050	\$52,227,369	\$0	\$21,457,886	\$36,668,239	\$52,227,369

Year	ECAT Safety				
	Concept D	Concept C	Concept B	Concept A	
2031	\$ 1,078,817	\$ 1,040,129	\$ 1,634,641	\$ 1,763,747	
2032	\$ 1,098,775	\$ 1,059,372	\$ 1,664,882	\$ 1,098,775	
2033	\$ 1,119,103	\$ 1,078,970	\$ 1,695,683	\$ 1,829,609	
2034	\$ 1,139,806	\$ 1,098,931	\$ 1,727,053	\$ 1,863,457	
2035	\$ 1,160,892	\$ 1,119,261	\$ 1,759,003	\$ 1,897,930	
2036	\$ 1,182,369	\$ 1,139,968	\$ 1,791,545	\$ 1,933,042	
2037	\$ 1,204,243	\$ 1,161,057	\$ 1,824,688	\$ 1,968,803	
2038	\$ 1,226,521	\$ 1,182,537	\$ 1,858,445	\$ 2,005,226	
2039	\$ 1,249,212	\$ 1,204,414	\$ 1,892,826	\$ 2,042,323	
2040	\$ 1,272,322	\$ 1,226,695	\$ 1,927,844	\$ 2,080,106	
2041	\$ 1,295,860	\$ 1,249,389	\$ 1,963,509	\$ 2,118,588	
2042	\$ 1,319,834	\$ 1,272,503	\$ 1,999,834	\$ 2,157,782	
2043	\$ 1,344,250	\$ 1,296,044	\$ 2,036,830	\$ 2,197,701	
2044	\$ 1,369,119	\$ 1,320,021	\$ 2,074,512	\$ 2,238,358	
2045	\$ 1,394,448	\$ 1,344,441	\$ 2,112,890	\$ 2,279,768	
2046	\$ 1,420,245	\$ 1,369,313	\$ 2,151,979	\$ 2,321,944	
2047	\$ 1,446,520	\$ 1,394,646	\$ 2,191,790	\$ 2,364,900	
2048	\$ 1,473,280	\$ 1,420,447	\$ 2,232,338	\$ 2,408,650	
2049	\$ 1,500,536	\$ 1,446,725	\$ 2,273,637	\$ 2,453,210	
2050	\$ 1,528,296	\$ 1,473,489	\$ 2,315,699	\$ 2,498,595	

Year	SCALED ECAT Safety				
	Concept D	Concept C	Concept B	Concept A	
2031	\$ 1,078,817	\$ 1,040,129	\$ 1,634,641	\$ 1,763,747	
2032	\$ 1,098,775	\$ 1,059,372	\$ 1,664,882	\$ 1,098,775	
2033	\$ 1,119,103	\$ 1,078,970	\$ 1,695,683	\$ 1,829,609	
2034	\$ 1,139,806	\$ 1,098,931	\$ 1,727,053	\$ 1,863,457	
2035	\$ 1,160,892	\$ 1,119,261	\$ 1,759,003	\$ 1,897,930	
2036	\$ 1,182,369	\$ 1,139,968	\$ 1,791,545	\$ 1,933,042	
2037	\$ 1,204,243	\$ 1,161,057	\$ 1,824,688	\$ 1,968,803	
2038	\$ 1,226,521	\$ 1,182,537	\$ 1,858,445	\$ 2,005,226	
2039	\$ 1,249,212	\$ 1,204,414	\$ 1,892,826	\$ 2,042,323	
2040	\$ 1,272,322	\$ 1,226,695	\$ 1,927,844	\$ 2,080,106	
2041	\$ 1,295,860	\$ 1,249,389	\$ 1,963,509	\$ 2,118,588	
2042	\$ 1,319,834	\$ 1,272,503	\$ 1,999,834	\$ 2,157,782	
2043	\$ 1,344,250	\$ 1,296,044	\$ 2,036,830	\$ 2,197,701	
2044	\$ 1,369,119	\$ 1,320,021	\$ 2,074,512	\$ 2,238,358	
2045	\$ 1,394,448	\$ 1,344,441	\$ 2,112,890	\$ 2,279,768	
2046	\$ 1,420,245	\$ 1,369,313	\$ 2,151,979	\$ 2,321,944	
2047	\$ 1,446,520	\$ 1,394,646	\$ 2,191,790	\$ 2,364,900	
2048	\$ 1,473,280	\$ 1,420,447	\$ 2,232,338	\$ 2,408,650	
2049	\$ 1,500,536	\$ 1,446,725	\$ 2,273,637	\$ 2,453,210	
2050	\$ 1,528,296	\$ 1,473,489	\$ 2,315,699	\$ 2,498,595	

Year	Intersection Safety				
	Concept D	Concept C	Concept B	Concept A	
2031	\$ 1,078,817	\$ 1,040,129	\$ 1,634,641	\$ 1,763,747	
2032	\$ 1,098,775	\$ 1,059,372	\$ 1,664,882	\$ 1,098,775	
2033	\$ 1,119,103	\$ 1,078,970	\$ 1,695,683	\$ 1,829,609	
2034	\$ 1,139,806	\$ 1,098,931	\$ 1,727,053	\$ 1,863,457	
2035	\$ 1,160,892	\$ 1,119,261	\$ 1,759,003	\$ 1,897,930	
2036	\$ 1,182,369	\$ 1,139,968	\$ 1,791,545	\$ 1,933,042	
2037	\$ 1,204,243	\$ 1,161,057	\$ 1,824,688	\$ 1,968,803	
2038	\$ 1,226,521	\$ 1,182,537	\$ 1,858,445	\$ 2,005,226	
2039	\$ 1,249,212	\$ 1,204,414	\$ 1,892,826	\$ 2,042,323	
2040	\$ 1,272,322	\$ 1,226,695	\$ 1,927,844	\$ 2,080,106	
2041	\$ 1,295,860	\$ 1,249,389	\$ 1,963,509	\$ 2,118,588	
2042	\$ 1,319,834	\$ 1,272,503	\$ 1,999,834	\$ 2,157,782	
2043	\$ 1,344,250	\$ 1,296,044	\$ 2,036,830	\$ 2,197,701	
2044	\$ 1,369,119	\$ 1,320,021	\$ 2,074,512	\$ 2,238,358	
2045	\$ 1,394,448	\$ 1,344,441	\$ 2,112,890	\$ 2,279,768	
2046	\$ 1,420,245	\$ 1,369,313	\$ 2,151,979	\$ 2,321,944	
2047	\$ 1,446,520	\$ 1,394,646	\$ 2,191,790	\$ 2,364,900	
2048	\$ 1,473,280	\$ 1,420,447	\$		

USER BENEFIT CALCULATIONS
Segment 4

10.4% daily truck percentage - US 23
8.5% daily truck percentage - intersections (all vehicles)

\$22.22 weighted average value of time - US 23
\$21.76 weighted average value of time - intersections/all vehicles

Values for Input into USDOT Cost-Benefit Spreadsheet

Table with columns: NB/SB Arterial Delay, No-Build, Concept D, Concept C, Concept B, Concept A. Rows 2030-2050.

Table with columns: SCALED NB/SB Arterial Delay, No-Build, Concept D, Concept C, Concept B, Concept A. Rows 2030-2050.

Table with columns: Intersection Delay, No-Build, Concept D, Concept C, Concept B, Concept A. Rows 2030-2050.

Table with columns: SCALED Intersection Delay, No-Build, Concept D, Concept C, Concept B, Concept A. Rows 2030-2050.

Table with columns: ECAT Safety, Concept D, Concept C, Concept B, Concept A. Rows 2031-2050.

Table with columns: ECAT Safety, Concept D, Concept C, Concept B, Concept A. Rows 2031-2050.

Table with columns: ECAT Safety, Concept D, Concept C, Concept B, Concept A. Rows 2031-2050.

Table with columns: ECAT Safety, Concept D, Concept C, Concept B, Concept A. Rows 2031-2050.

3.1% USDOT Future Discounting Rate

Table with columns: NB/SB Arterial Delay, No-Build, Concept D, Concept C, Concept B, Concept A. Rows 2030-2050.

Table with columns: SCALED NB/SB Arterial Delay, No-Build, Concept D, Concept C, Concept B, Concept A. Rows 2030-2050.

Table with columns: Intersection Delay, No-Build, Concept D, Concept C, Concept B, Concept A. Rows 2030-2050.

Table with columns: SCALED Intersection Delay, No-Build, Concept D, Concept C, Concept B, Concept A. Rows 2030-2050.

Summary table for NB/SB Arterial Delay: Congestion, Safety, Total Benefit, Low Cost, High Cost.

Summary table for SCALED NB/SB Arterial Delay: Congestion, Safety, Total Benefit, Low Cost, High Cost.

Summary table for Intersection Delay: Congestion, Safety, Total Benefit, Low Cost, High Cost.

Summary table for SCALED Intersection Delay: Congestion, Safety, Total Benefit, Low Cost, High Cost.

Table with columns: Segment 4, Max B/C, Min B/C.

Table with columns: Segment 4, Max B/C, Min B/C.

Table with columns: Segment 4, Max B/C, Min B/C.

Table with columns: Segment 4, Max B/C, Min B/C.

USER BENEFIT CALCULATIONS
Segment 5

9% daily truck percentage - US 23
9% daily truck percentage - intersections (all vehicles)

\$21.69
\$21.93 weighted average value of time - US 23
weighted average value of time - intersections/all vehicles

Values for Input into USDOT Cost-Benefit Spreadsheet

Table with columns: NB/SB Arterial Delay, No-Build, Concept E, Concept D, Concept C, Concept B, Concept A. Rows 2030-2050.

Table with columns: SCALED NB/SB Arterial Delay, No-Build, Concept E, Concept D, Concept C, Concept B, Concept A. Rows 2030-2050.

Table with columns: Intersection Delay, No-Build, Concept E, Concept D, Concept C, Concept B, Concept A. Rows 2030-2050.

Table with columns: SCALED Intersection Delay, No-Build, Concept E, Concept D, Concept C, Concept B, Concept A. Rows 2030-2050.

Table with columns: ECAT Safety, Concept E, Concept D, Concept C, Concept B, Concept A. Rows 2031-2050.

Table with columns: ECAT Safety, Concept E, Concept D, Concept C, Concept B, Concept A. Rows 2031-2050.

Table with columns: ECAT Safety, Concept E, Concept D, Concept C, Concept B, Concept A. Rows 2031-2050.

Table with columns: ECAT Safety, Concept E, Concept D, Concept C, Concept B, Concept A. Rows 2031-2050.

3.1% USDOT Future Discounting Rate

Table with columns: NB/SB Arterial Delay, No-Build, Concept E, Concept D, Concept C, Concept B, Concept A. Rows 2030-2050.

Table with columns: SCALED NB/SB Arterial Delay, No-Build, Concept E, Concept D, Concept C, Concept B, Concept A. Rows 2030-2050.

Table with columns: Intersection Delay, No-Build, Concept E, Concept D, Concept C, Concept B, Concept A. Rows 2030-2050.

Table with columns: SCALED Intersection Delay, No-Build, Concept E, Concept D, Concept C, Concept B, Concept A. Rows 2030-2050.

Table with columns: Congestion Safety, Total Benefit, Low Cost, High Cost. Rows 2030-2050.

Table with columns: Congestion Safety, Total Benefit, Low Cost, High Cost. Rows 2030-2050.

Table with columns: Congestion Safety, Total Benefit, Low Cost, High Cost. Rows 2030-2050.

Table with columns: Congestion Safety, Total Benefit, Low Cost, High Cost. Rows 2030-2050.

Table with columns: Segment 5, Max B/C, Min B/C. Rows 1.80, 1.33.

Table with columns: Segment 5, Max B/C, Min B/C. Rows 1.40, 1.04.

Table with columns: Segment 5, Max B/C, Min B/C. Rows 2.28, 1.68.

Table with columns: Segment 5, Max B/C, Min B/C. Rows 1.93, 1.42.

all values in current year dollars

USER BENEFIT CALCULATIONS
Segment 6

12.4% daily truck percentage - US 23
11.0% daily truck percentage - intersections (all vehicles)

\$22.89 weighted average value of time - US 23
\$22.60 weighted average value of time - intersections/all vehicles

Values for Input into USDOT Cost-Benefit Spreadsheet

Year	NB/SB Arterial Delay				
	No-Build	Concept D	Concept C	Concept B	Concept A
2030	\$30,775,687	\$0	\$25,763,510	\$29,810,588	\$30,775,687
2031	\$31,760,234	\$0	\$26,562,952	\$30,472,930	\$31,760,234
2032	\$32,744,780	\$0	\$27,362,394	\$31,335,273	\$32,744,780
2033	\$33,729,327	\$0	\$28,161,837	\$32,197,615	\$33,729,327
2034	\$34,713,873	\$0	\$28,961,279	\$33,059,958	\$34,713,873
2035	\$35,698,420	\$0	\$29,760,722	\$33,922,300	\$35,698,420
2036	\$36,682,966	\$0	\$30,560,164	\$34,784,643	\$36,682,966
2037	\$37,667,513	\$0	\$31,359,606	\$35,646,985	\$37,667,513
2038	\$38,652,059	\$0	\$32,159,049	\$36,509,327	\$38,652,059
2039	\$39,636,605	\$0	\$32,958,491	\$37,371,670	\$39,636,605
2040	\$40,621,152	\$0	\$33,757,934	\$38,234,012	\$40,621,152
2041	\$41,605,698	\$0	\$34,557,376	\$39,096,355	\$41,605,698
2042	\$42,590,245	\$0	\$35,356,819	\$39,958,697	\$42,590,245
2043	\$43,574,791	\$0	\$36,156,261	\$40,821,040	\$43,574,791
2044	\$44,559,338	\$0	\$36,955,703	\$41,683,382	\$44,559,338
2045	\$45,543,884	\$0	\$37,755,146	\$42,545,725	\$45,543,884
2046	\$46,528,431	\$0	\$38,554,588	\$43,408,067	\$46,528,431
2047	\$47,512,977	\$0	\$39,354,031	\$44,270,410	\$47,512,977
2048	\$48,497,524	\$0	\$40,153,473	\$45,132,752	\$48,497,524
2049	\$49,482,070	\$0	\$40,952,916	\$45,995,095	\$49,482,070
2050	\$50,466,616	\$0	\$41,752,358	\$46,857,437	\$50,466,616

Year	ECAT Safety				
	Concept D	Concept C	Concept B	Concept A	
2031	\$ 461,108	\$ 814,728	\$ 989,156	\$ 1,007,745	
2032	\$ 470,146	\$ 830,697	\$ 1,008,544	\$ 1,027,497	
2033	\$ 479,360	\$ 846,979	\$ 1,028,311	\$ 1,047,636	
2034	\$ 488,756	\$ 863,580	\$ 1,048,466	\$ 1,068,170	
2035	\$ 498,336	\$ 880,506	\$ 1,069,016	\$ 1,089,106	
2036	\$ 508,103	\$ 897,764	\$ 1,089,969	\$ 1,110,452	
2037	\$ 518,062	\$ 915,360	\$ 1,111,332	\$ 1,132,217	
2038	\$ 528,216	\$ 933,301	\$ 1,133,114	\$ 1,154,409	
2039	\$ 538,569	\$ 951,594	\$ 1,155,323	\$ 1,177,035	
2040	\$ 549,125	\$ 970,245	\$ 1,177,968	\$ 1,200,105	
2041	\$ 559,888	\$ 989,262	\$ 1,201,056	\$ 1,223,627	
2042	\$ 570,861	\$ 1,008,651	\$ 1,224,596	\$ 1,247,610	
2043	\$ 582,050	\$ 1,028,421	\$ 1,248,599	\$ 1,272,063	
2044	\$ 593,458	\$ 1,048,578	\$ 1,273,071	\$ 1,296,996	
2045	\$ 605,090	\$ 1,069,130	\$ 1,298,023	\$ 1,322,417	
2046	\$ 616,950	\$ 1,090,085	\$ 1,323,465	\$ 1,348,336	
2047	\$ 629,042	\$ 1,111,450	\$ 1,349,404	\$ 1,374,764	
2048	\$ 641,371	\$ 1,133,235	\$ 1,375,853	\$ 1,401,709	
2049	\$ 653,942	\$ 1,155,446	\$ 1,402,819	\$ 1,429,183	
2050	\$ 666,760	\$ 1,178,093	\$ 1,430,315	\$ 1,457,195	

Category	Concept D	Concept C	Concept B	Concept A
Congestion	\$385,091,680	\$436,405,515	\$463,250,829	\$463,250,829
Safety	\$ 6,317,174	\$ 11,161,773	\$ 13,551,432	\$ 13,806,104
Total Benefit	\$391,408,854	\$447,567,288	\$476,802,261	\$477,056,933
Low Cost	\$ 55,000,000	\$ 65,000,000	\$ 195,000,000	\$ 290,000,000
High Cost	\$ 75,000,000	\$ 85,000,000	\$ 255,000,000	\$ 375,000,000

Segment 6	Max B/C	Min B/C
	7.12	5.22
	6.89	5.27
	2.45	1.87
	1.65	1.27

Year	SCALED NB/SB Arterial Delay				
	No-Build	Concept D	Concept C	Concept B	Concept A
2030	\$19,317,078	\$0	\$14,988,533	\$18,151,979	\$19,317,078
2031	\$19,684,475	\$0	\$15,264,282	\$18,415,821	\$19,684,475
2032	\$20,051,873	\$0	\$15,540,031	\$18,679,663	\$20,051,873
2033	\$20,419,270	\$0	\$15,815,779	\$18,943,505	\$20,419,270
2034	\$20,786,667	\$0	\$16,091,528	\$19,207,348	\$20,786,667
2035	\$21,154,064	\$0	\$16,367,277	\$19,471,190	\$21,154,064
2036	\$21,521,461	\$0	\$16,643,025	\$19,735,032	\$21,521,461
2037	\$21,888,858	\$0	\$16,918,774	\$19,998,874	\$21,888,858
2038	\$22,256,255	\$0	\$17,194,523	\$20,262,717	\$22,256,255
2039	\$22,623,652	\$0	\$17,470,272	\$20,526,559	\$22,623,652
2040	\$22,991,050	\$0	\$17,746,020	\$20,790,401	\$22,991,050
2041	\$23,358,448	\$0	\$18,021,769	\$21,054,243	\$23,358,448
2042	\$23,725,845	\$0	\$18,297,518	\$21,318,086	\$23,725,845
2043	\$24,093,242	\$0	\$18,573,266	\$21,581,928	\$24,093,242
2044	\$24,460,639	\$0	\$18,849,015	\$21,845,770	\$24,460,639
2045	\$24,828,036	\$0	\$19,124,764	\$22,109,612	\$24,828,036
2046	\$25,195,434	\$0	\$19,400,513	\$22,373,455	\$25,195,434
2047	\$25,562,831	\$0	\$19,676,261	\$22,637,297	\$25,562,831
2048	\$25,930,228	\$0	\$19,952,010	\$22,901,139	\$25,930,228
2049	\$26,297,625	\$0	\$20,227,759	\$23,164,981	\$26,297,625
2050	\$26,665,023	\$0	\$20,503,507	\$23,428,824	\$26,665,023

Year	SCALED ECAT Safety				
	Concept D	Concept C	Concept B	Concept A	
2031	\$ 461,108	\$ 814,728	\$ 989,156	\$ 1,007,745	
2032	\$ 470,146	\$ 830,697	\$ 1,008,544	\$ 1,027,497	
2033	\$ 479,360	\$ 846,979	\$ 1,028,311	\$ 1,047,636	
2034	\$ 488,756	\$ 863,580	\$ 1,048,466	\$ 1,068,170	
2035	\$ 498,336	\$ 880,506	\$ 1,069,016	\$ 1,089,106	
2036	\$ 508,103	\$ 897,764	\$ 1,089,969	\$ 1,110,452	
2037	\$ 518,062	\$ 915,360	\$ 1,111,332	\$ 1,132,217	
2038	\$ 528,216	\$ 933,301	\$ 1,133,114	\$ 1,154,409	
2039	\$ 538,569	\$ 951,594	\$ 1,155,323	\$ 1,177,035	
2040	\$ 549,125	\$ 970,245	\$ 1,177,968	\$ 1,200,105	
2041	\$ 559,888	\$ 989,262	\$ 1,201,056	\$ 1,223,627	
2042	\$ 570,861	\$ 1,008,651	\$ 1,224,596	\$ 1,247,610	
2043	\$ 582,050	\$ 1,028,421	\$ 1,248,599	\$ 1,272,063	
2044	\$ 593,458	\$ 1,048,578	\$ 1,273,071	\$ 1,296,996	
2045	\$ 605,090	\$ 1,069,130	\$ 1,298,023	\$ 1,322,417	
2046	\$ 616,950	\$ 1,090,085	\$ 1,323,465	\$ 1,348,336	
2047	\$ 629,042	\$ 1,111,450	\$ 1,349,404	\$ 1,374,764	
2048	\$ 641,371	\$ 1,133,235	\$ 1,375,853	\$ 1,401,709	
2049	\$ 653,942	\$ 1,155,446	\$ 1,402,819	\$ 1,429,183	
2050	\$ 666,760	\$ 1,178,093	\$ 1,430,315	\$ 1,457,195	

Category	Concept D	Concept C	Concept B	Concept A
Congestion	\$203,285,706	\$238,507,837	\$263,309,394	\$263,309,394
Safety	\$ 6,317,174	\$ 11,161,773	\$ 13,551,432	\$ 13,806,104
Total Benefit	\$209,602,880	\$249,669,610	\$276,860,826	\$277,115,498
Low Cost	\$ 55,000,000	\$ 65,000,000	\$ 195,000,000	\$ 290,000,000
High Cost	\$ 75,000,000	\$ 85,000,000	\$ 255,000,000	\$ 375,000,000

Segment 6	Max B/C	Min B/C
	3.81	2.79
	3.84	2.94
	1.42	1.09
	0.96	0.74

Year	Intersection Delay				
	No-Build	Concept D	Concept C	Concept B	Concept A
2030	\$46,936,879	\$0	\$36,971,702	\$44,764,004	\$46,936,879
2031	\$48,089,578	\$0	\$37,899,840	\$45,808,563	\$48,089,578
2032	\$49,242,276	\$0	\$38,827,978	\$46,853,123	\$49,242,276
2033	\$50,394,974	\$0	\$39,756,116	\$47,897,683	\$50,394,974
2034	\$51,547,672	\$0	\$40,684,254	\$48,942,242	\$51,547,672
2035	\$52,700,370	\$0	\$41,612,392	\$49,986,802	\$52,700,370
2036	\$53,853,068	\$0	\$42,540,530	\$51,031,362	\$53,853,068
2037	\$55,005,766	\$0	\$43,468,668	\$52,075,921	\$55,005,766
2038	\$56,158,464	\$0	\$44,396,806	\$53,120,481	\$56,158,464
2039	\$57,311,162	\$0	\$45,324,944	\$54,165,040	\$57,311,162
2040	\$58,463,860	\$0	\$46,253,082	\$55,209,600	\$58,463,860
2041	\$59,616,558	\$0	\$47,181,220	\$56,254,160	\$59,616,558
2042	\$60,769,256	\$0	\$48,109,358	\$57,298,719	\$60,769,256
2043	\$61,921,954	\$0	\$49,037,496	\$58,343,279	\$61,921,954
2044	\$63,074,652	\$0	\$49,965,634	\$59,387,838	\$63,074,652
2045	\$64,227,350	\$0	\$50,893,772	\$60,432,398	\$64,227,350
2046	\$65,380,048	\$0	\$51,821,910	\$61,476,958	\$65,380,048
2047	\$66,532,746	\$0	\$52,750,048	\$62,521,517	\$66,532,746
2048	\$67,685,444	\$0	\$53,678,187	\$63,566,077	\$67,685,444
2049	\$68,838,142	\$0	\$54,606,325	\$64,610,637	\$68,838,142
2050	\$69,990,840	\$0	\$55,534,463	\$65,655,196	\$69,990,840

Year	SCALED Intersection Delay				
	No-Build	Concept D	Concept C	Concept B	Concept A
2030	\$29,637,422	\$0	\$21,370,858	\$27,464,546	\$29,637,422
2031	\$30,890,120	\$0	\$21,593,091	\$27,812,948	\$30,890,120
2032	\$32,142,818	\$0	\$21,815,325	\$28,161,349	\$32,142,818
2033	\$33,395,516	\$0	\$22,037,559	\$28,509,751	\$33,395,516
2034	\$34,648,214	\$0	\$22,259,793	\$28,858,152	\$34,648,214
2035	\$35,900,912	\$0	\$22,482,027	\$29,206,554	\$35,900,912
2036	\$37,153,610	\$0	\$22,704,260	\$29,554,955	\$37,153,610
2037	\$38,406,308	\$0	\$22,926,494	\$29,903,357	\$38,406,308
2038	\$39,659,006	\$0	\$23,148,728	\$30,251,758	\$39,659,006
2039	\$40,911,704	\$0	\$23,370,962	\$30,600,160	\$40,911,704
2040	\$42,164,402	\$0	\$23,593,196	\$30,948,561	\$42,164,402
2041	\$43,417,100	\$0	\$23,815,430	\$31,296,963	\$43,417,100
2042	\$44,669,798	\$0	\$24,037,663	\$31,645,364	\$44,669,798
2043	\$45,922,496	\$0	\$24,259,897	\$31,993,766	\$45,922,496
2044	\$47,175,194	\$0	\$24,482,131	\$32,342,167	\$47,175,194
2045	\$48,427,892	\$0	\$24,704,365	\$32,690,569	\$48,427,892
2046	\$49,680,590	\$0	\$24,926,599	\$33,038,970	\$49,680,590
2047	\$50,933,288	\$0	\$25,148,832	\$33,387,372	\$50,933,288
2048	\$52,185,986	\$0	\$25,371,066	\$33,735,773	\$52,185,986
2049	\$53,438,684	\$0	\$25,593,300	\$34,084,175	\$53,438,684
2050	\$54,691,382	\$0	\$25,815,534	\$34,432,576	\$54,691,382

Category	Concept D	Concept C	Concept B	Concept A
Congestion	\$528,611,759	\$631,344,879	\$668,285,160	\$668,285,160
Safety	\$ 6,317,174	\$ 11,161,773	\$ 13,551,432	\$ 13,806,104
Total Benefit	\$534,928,933	\$642,506,652	\$681,836,592	\$682,091,264
Low Cost	\$ 55,000,000	\$ 65,000,000	\$ 195,000,000	\$ 290,000,000
High Cost	\$ 75,000,000	\$ 85,000,000	\$ 255,000,000	\$ 375,000,0

USER BENEFIT CALCULATIONS
Segment 7

16.5% daily truck percentage - US 23
16.0% daily truck percentage - intersections (all vehicles)

\$24.27 weighted average value of time - US 23
\$24.27 weighted average value of time - intersections/all vehicles

Values for Input into USDOT Cost-Benefit Spreadsheet

Table with columns: NB/SB Arterial Delay, ECAT Safety, Congestion, Safety, Total Benefit, Low Cost, High Cost, Segment 7. Rows include years 2030-2050 and summary rows.

Table with columns: SCALED NB/SB Arterial Delay, ECAT Safety, Congestion, Safety, Total Benefit, Low Cost, High Cost, Segment 7. Rows include years 2030-2050 and summary rows.

Table with columns: Intersection Delay, Congestion, Safety, Total Benefit, Low Cost, High Cost, Segment 7. Rows include years 2030-2050 and summary rows.

Table with columns: SCALED Intersection Delay, Congestion, Safety, Total Benefit, Low Cost, High Cost, Segment 7. Rows include years 2030-2050 and summary rows.