



Benefit-Cost Analysis
Supporting Documentation

“A Community Investment for Turner Diagonal”

A Joint Application by:

Unified Government of Wyandotte County and Kansas City, Kansas

Kansas Department of Transportation

4/27/2016

TIGER **BENEFIT COST ANALYSIS** Summary

Excel Tab

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Summary of Economic Benefits
Project: Turner Diagonal

Total Construction Cost (All Years)	\$	26,960,645
Annual Maintenance Costs (2018)	\$	15,070

Maintenance Cost Savings/Costs (2018)	\$21,890
Maintenance Cost Savings/Costs (2040)	\$48,292
Economic Impact from Jobs Creation (2020)	\$95,903,250
Economic Impact from Jobs Creation (2040)	\$290,641,947
CO2 Cost Savings/Costs (2018)	\$200,487
CO2 Cost Savings/Costs (2040)	\$320,066
Increased Tax Revenue (2020)	\$1,782,421
Increased Tax Revenue (2040)	\$10,874,460

3% Discount Rate	
Net Present Value Total Benefits	\$ 3,469,423,605
Internal Rate of Return	122%
Benefit/Cost Ratio	133.59
7% Discount Rate	
Net Present Value Total Benefits	\$ 2,071,714,214
Internal Rate of Return	113%
Benefit/Cost Ratio	85.18

Year	Calendar Year	Non-CO2 Costs	NPV CO2 Costs @ 3% Avg SCC	7% NPV Total Benefits	3% NPV Total Benefits
0	2016	\$0	\$0	\$0	\$0
1	2017	(\$13,495,393)	\$189,847	(\$12,402,211)	(\$12,891,223)
2	2018	(\$13,495,920)	\$188,978	(\$11,579,092)	(\$12,510,865)
3	2019	(\$16,143)	\$188,020	\$193,984	\$194,706
4	2020	(\$16,708)	\$186,978	\$74,716,678	\$86,986,150
5	2021	(\$17,293)	\$181,986	\$97,432,598	\$117,840,973
6	2022	(\$17,898)	\$180,896	\$117,369,933	\$147,468,536
7	2023	(\$18,525)	\$183,402	\$134,768,990	\$175,904,710
8	2024	(\$19,173)	\$182,076	\$149,844,716	\$203,177,302
9	2025	(\$19,844)	\$180,689	\$141,451,150	\$199,234,427
10	2026	(\$20,539)	\$179,247	\$133,528,114	\$195,368,031
11	2027	(\$21,258)	\$177,753	\$126,049,224	\$191,576,631
12	2028	(\$22,002)	\$176,211	\$118,989,575	\$187,858,775
13	2029	(\$22,772)	\$171,507	\$112,322,542	\$184,209,918
14	2030	(\$23,569)	\$169,963	\$106,032,255	\$180,634,983
15	2031	(\$24,394)	\$171,333	\$100,097,518	\$177,132,349
16	2032	(\$25,248)	\$169,633	\$94,492,575	\$173,694,686
17	2033	(\$26,131)	\$167,903	\$89,201,798	\$170,323,709
18	2034	(\$27,046)	\$166,144	\$84,207,571	\$167,018,128
19	2035	(\$27,992)	\$164,359	\$79,493,268	\$163,776,673
20	2036	(\$28,972)	\$162,551	\$75,043,191	\$160,598,102
21	2037	(\$29,986)	\$160,722	\$70,842,527	\$157,481,196
22	2038	(\$31,036)	\$158,875	\$66,877,291	\$154,424,760
23	2039	(\$32,122)	\$159,391	\$63,136,662	\$151,430,000
24	2040	(\$33,246)	\$157,451	\$59,603,358	\$148,490,945
Total		(\$27,513,210)	\$4,175,916	\$2,071,714,214	\$3,469,423,605

3% Discount Rate	
Net Present Value	\$3,469,423,605
Internal Rate of Return	122%
Benefit/Cost Ratio	133.59
7% Discount Rate	
Net Present Value	\$2,071,714,214
Internal Rate of Return	113%
Benefit/Cost Ratio	85.18

Year	Calendar Year	Non-CO2 Benefits			Non-CO2 Costs		Net non-CO2 Benefits	7% NPV Non-CO2 Benefits	3% NPV Non-CO2 Benefits	CO2 Reduced (Metric Tons)	3% SCC (2015\$)	Undiscounted CO2 Costs @ 3% Avg SCC	NPV CO2 Costs @ 3% Avg SCC	7% NPV Total Benefits	3% NPV Total Benefits
		Jobs Impact	Maint. Savings	Tax Revenue	Capital	Maintenance									
0	2016	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
1	2017	\$ -	\$ 21,890	\$ -	\$(13,480,323)	\$(15,070)	\$(13,473,503)	\$(12,592,058)	\$(13,081,070)	4,444	44	\$ 195,543	\$ 189,847	\$(12,402,211)	\$(12,891,223)
2	2018	\$ -	\$ 22,656	\$ -	\$(13,480,323)	\$(15,597)	\$(13,473,264)	\$(11,768,070)	\$(12,699,843)	4,455	45	\$ 200,487	\$ 188,978	\$(11,579,092)	\$(12,510,865)
3	2019	\$ -	\$ 23,449	\$ -	\$ -	\$(16,143)	\$ 7,306	\$ 5,964	\$ 6,686	4,466	46	\$ 205,455	\$ 188,020	\$ 193,984	\$ 194,706
4	2020	\$ 95,903,250	\$ 24,270	\$ 1,782,421	\$ -	\$(16,708)	\$ 97,693,233	\$ 74,529,699	\$ 86,799,172	4,478	47	\$ 210,446	\$ 186,978	\$ 74,716,678	\$ 86,986,150
5	2021	\$ 132,790,697	\$ 25,119	\$ 3,600,490	\$ -	\$(17,293)	\$136,399,013	\$ 97,250,611	\$ 117,658,987	4,489	47	\$ 210,972	\$ 181,986	\$ 97,432,598	\$ 117,840,973
6	2022	\$ 170,406,303	\$ 25,998	\$ 5,454,742	\$ -	\$(17,898)	\$175,869,145	\$ 117,189,037	\$ 147,287,640	4,500	48	\$ 215,959	\$ 180,896	\$ 117,369,933	\$ 147,468,536
7	2023	\$ 208,760,941	\$ 26,908	\$ 7,345,719	\$ -	\$(18,525)	\$216,115,044	\$ 134,585,588	\$ 175,721,308	4,511	50	\$ 225,562	\$ 183,402	\$ 134,768,990	\$ 175,904,710
8	2024	\$ 247,865,632	\$ 27,850	\$ 9,273,971	\$ -	\$(19,173)	\$257,148,280	\$ 149,662,640	\$ 202,995,227	4,523	51	\$ 230,648	\$ 182,076	\$ 149,844,716	\$ 203,177,302
9	2025	\$ 250,344,288	\$ 28,825	\$ 9,366,711	\$ -	\$(19,844)	\$259,719,979	\$ 141,270,460	\$ 199,053,738	4,534	52	\$ 235,759	\$ 180,689	\$ 141,451,150	\$ 199,234,427
10	2026	\$ 252,847,731	\$ 29,834	\$ 9,460,378	\$ -	\$(20,539)	\$262,317,404	\$ 133,348,866	\$ 195,188,784	4,545	53	\$ 240,893	\$ 179,247	\$ 133,528,114	\$ 195,368,031
11	2027	\$ 255,376,208	\$ 30,878	\$ 9,554,981	\$ -	\$(21,258)	\$264,940,810	\$ 125,871,470	\$ 191,398,878	4,557	54	\$ 246,052	\$ 177,753	\$ 126,049,224	\$ 191,576,631
12	2028	\$ 257,929,970	\$ 31,959	\$ 9,650,531	\$ -	\$(22,002)	\$267,590,459	\$ 118,813,364	\$ 187,682,564	4,568	55	\$ 251,235	\$ 176,211	\$ 118,989,575	\$ 187,858,775
13	2029	\$ 260,509,270	\$ 33,077	\$ 9,747,037	\$ -	\$(22,772)	\$270,266,612	\$ 112,151,036	\$ 184,038,412	4,579	55	\$ 251,863	\$ 171,507	\$ 112,322,552	\$ 184,209,918
14	2030	\$ 263,114,363	\$ 34,235	\$ 9,844,507	\$ -	\$(23,569)	\$272,969,536	\$ 105,862,292	\$ 180,465,021	4,591	56	\$ 257,084	\$ 169,963	\$ 106,032,255	\$ 180,634,983
15	2031	\$ 265,745,507	\$ 35,433	\$ 9,942,952	\$ -	\$(24,394)	\$275,699,498	\$ 99,926,196	\$ 176,961,017	4,602	58	\$ 266,931	\$ 171,333	\$ 100,087,518	\$ 177,132,349
16	2032	\$ 268,402,962	\$ 36,673	\$ 10,042,381	\$ -	\$(25,248)	\$278,456,769	\$ 94,322,942	\$ 173,525,052	4,614	59	\$ 272,212	\$ 169,833	\$ 94,492,575	\$ 173,694,686
17	2033	\$ 271,086,991	\$ 37,957	\$ 10,142,805	\$ -	\$(26,131)	\$281,241,622	\$ 89,033,895	\$ 170,155,807	4,625	60	\$ 277,518	\$ 167,903	\$ 89,201,798	\$ 170,323,709
18	2034	\$ 273,797,861	\$ 39,285	\$ 10,244,233	\$ -	\$(27,046)	\$284,054,334	\$ 84,041,428	\$ 166,851,984	4,637	61	\$ 282,848	\$ 166,144	\$ 84,207,571	\$ 167,018,128
19	2035	\$ 276,535,840	\$ 40,660	\$ 10,346,676	\$ -	\$(27,992)	\$286,895,183	\$ 79,328,909	\$ 163,612,314	4,648	62	\$ 288,204	\$ 164,359	\$ 79,493,268	\$ 163,776,673
20	2036	\$ 279,301,198	\$ 42,084	\$ 10,450,142	\$ -	\$(28,972)	\$289,764,452	\$ 74,880,641	\$ 160,435,551	4,660	63	\$ 293,584	\$ 162,551	\$ 75,043,191	\$ 160,598,102
21	2037	\$ 282,094,210	\$ 43,556	\$ 10,554,644	\$ -	\$(29,986)	\$292,662,424	\$ 70,681,805	\$ 157,320,474	4,672	64	\$ 298,990	\$ 160,722	\$ 70,842,527	\$ 157,481,196
22	2038	\$ 284,915,152	\$ 45,081	\$ 10,660,190	\$ -	\$(31,036)	\$295,589,388	\$ 66,718,416	\$ 154,265,885	4,683	65	\$ 304,421	\$ 158,875	\$ 66,877,291	\$ 154,424,760
23	2039	\$ 287,764,304	\$ 46,659	\$ 10,766,792	\$ -	\$(32,122)	\$298,545,633	\$ 62,977,271	\$ 151,270,609	4,695	67	\$ 314,572	\$ 159,391	\$ 63,136,662	\$ 151,430,000
24	2040	\$ 290,641,947	\$ 48,292	\$ 10,874,460	\$ -	\$(33,246)	\$301,531,453	\$ 59,445,907	\$ 148,333,494	4,707	68	\$ 320,066	\$ 157,451	\$ 59,603,358	\$ 148,490,945
Totals							\$ 2,087,538,299	\$ 3,465,247,889				\$ 6,097,344	\$ 4,175,916	\$2,071,714,214	\$ 3,469,423,605

NPV of Benefits 7%

0	2016	\$ -	\$ -	\$ -	\$ -	\$ -
1	2017	\$ 21,890	\$ 210,305	\$(13,495,393)	\$(12,612,516)	
2	2018	\$ 22,656	\$ 208,767	\$(13,495,920)	\$(11,787,859)	
3	2019	\$ 23,449	\$ 207,162	\$(16,143)	\$(13,178)	
4	2020	\$ 97,709,941	\$ 74,729,425	\$(16,708)	\$(12,747)	
5	2021	\$ 136,416,306	\$ 97,444,927	\$(17,293)	\$(12,330)	
6	2022	\$ 175,887,043	\$ 117,381,860	\$(17,898)	\$(11,926)	
7	2023	\$ 216,133,569	\$ 134,780,527	\$(18,525)	\$(11,536)	
8	2024	\$ 257,167,453	\$ 149,855,875	\$(19,173)	\$(11,159)	
9	2025	\$ 259,739,824	\$ 141,461,944	\$(19,844)	\$(10,794)	
10	2026	\$ 262,337,943	\$ 133,538,555	\$(20,539)	\$(10,441)	
11	2027	\$ 264,962,068	\$ 126,059,323	\$(21,258)	\$(10,099)	
12	2028	\$ 267,612,460	\$ 118,999,344	\$(22,002)	\$(9,769)	
13	2029	\$ 270,289,384	\$ 112,331,992	\$(22,772)	\$(9,449)	
14	2030	\$ 272,993,105	\$ 106,041,395	\$(23,569)	\$(9,140)	
15	2031	\$ 275,723,892	\$ 100,106,360	\$(24,394)	\$(8,841)	
16	2032	\$ 278,482,016	\$ 94,501,127	\$(25,248)	\$(8,552)	
17	2033	\$ 281,267,753	\$ 89,210,070	\$(26,131)	\$(8,272)	
18	2034	\$ 284,081,390	\$ 84,215,573	\$(27,046)	\$(8,002)	
19	2035	\$ 286,923,176	\$ 79,501,008	\$(27,992)	\$(7,740)	
20	2036	\$ 289,793,424	\$ 75,050,678	\$(28,972)	\$(7,487)	
21	2037	\$ 292,692,410	\$ 70,849,769	\$(29,986)	\$(7,242)	
22	2038	\$ 295,620,423	\$ 66,884,297	\$(31,036)	\$(7,005)	
23	2039	\$ 298,577,755	\$ 63,143,438	\$(32,122)	\$(6,776)	
24	2040	\$ 301,564,699	\$ 59,609,912	\$(33,246)	\$(6,554)	
Totals		\$2,096,323,632		\$(24,609,417)	\$ 2,071,714,214	85.18

3% Discount Rate	
Net Present Value	\$3,469,423,605
Internal Rate of Return	122%
Benefit/Cost Ratio	133.59
7% Discount Rate	
Net Present Value	\$2,071,714,214
Internal Rate of Return	113%
Benefit/Cost Ratio	85.18

NPV of Benefits 3%

0	2016	\$ -	\$ -	\$ -	\$ -	
1	2017	\$ 21,890	\$ 211,100	\$(13,495,393)	\$(13,102,323)	
2	2018	\$ 22,656	\$ 210,334	\$(13,495,920)	\$(12,721,199)	
3	2019	\$ 23,449	\$ 209,479	\$(16,143)	\$(14,773)	
4	2020	\$ 97,709,941	\$ 87,000,995	\$(16,708)	\$(14,845)	
5	2021	\$ 136,416,306	\$ 117,855,891	\$(17,293)	\$(14,917)	
6	2022	\$ 175,887,043	\$ 147,483,526	\$(17,898)	\$(14,990)	
7	2023	\$ 216,133,569	\$ 175,919,773	\$(18,525)	\$(15,062)	
8	2024	\$ 257,167,453	\$ 203,192,438	\$(19,173)	\$(15,136)	
9	2025	\$ 259,739,824	\$ 199,249,636	\$(19,844)	\$(15,209)	
10	2026	\$ 262,337,943	\$ 195,383,314	\$(20,539)	\$(15,283)	
11	2027	\$ 264,962,068	\$ 191,591,988	\$(21,258)	\$(15,357)	
12	2028	\$ 267,612,460	\$ 187,874,207	\$(22,002)	\$(15,432)	
13	2029	\$ 270,289,384	\$ 184,225,425	\$(22,772)	\$(15,506)	
14	2030	\$ 272,993,105	\$ 180,650,565	\$(23,569)	\$(15,582)	
15	2031	\$ 275,723,892	\$ 177,148,007	\$(24,394)	\$(15,657)	
16	2032	\$ 278,482,016	\$ 173,710,419	\$(25,248)	\$(15,733)	
17	2033	\$ 281,267,753	\$ 170,339,519	\$(26,131)	\$(15,810)	
18	2034	\$ 284,081,390	\$ 167,034,014	\$(27,046)	\$(15,887)	
19	2035	\$ 286,923,176	\$ 163,792,637	\$(27,992)	\$(15,964)	
20	2036	\$ 289,793,424	\$ 160,614,143	\$(28,972)	\$(16,041)	
21	2037	\$ 292,692,410	\$ 157,497,315	\$(29,986)	\$(16,119)	
22	2038	\$ 295,620,423	\$ 154,440,957	\$(31,036)	\$(16,197)	
23	2039	\$ 298,577,755	\$ 151,446,276	\$(32,122)	\$(16,276)	
24	2040	\$ 301,564,699	\$ 148,507,300	\$(33,246)	\$(16,355)	
Totals		\$3,495,589,258		\$(26,165,653)	\$ 3,469,423,605	133.59

TURNER DIAGONAL COST & BENEFIT CALCULATIONS

Year	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
Economic Impact Ramp-Up				20%	40%	60%	80%	100%															
Economic Impact Ramp-Up				50%	63%	75%	88%	100%															
CONSTRUCTION COSTS FOR PROJECT																							
Total Construction Cost	\$26,960,645																						
Percent of Cost per year	50%	50%																					
	\$13,480,323	\$13,480,323	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
MAINTENANCE COSTS FOR PROJECT																							
Maintenance Cost per Lane Mile	\$11,000																						
Total Project Lane Miles	1.37																						
	\$15,070	\$15,597	\$16,143	\$16,708	\$17,293	\$17,898	\$18,525	\$19,173	\$19,844	\$20,539	\$21,258	\$22,002	\$22,772	\$23,569	\$24,394	\$25,248	\$26,131	\$27,046	\$27,992	\$28,972	\$29,986	\$31,036	\$32,122
MAINTENANCE SAVINGS FROM REDUCED LANE MILES																							
Maintenance Cost per Lane Mile	\$11,000																						
Reduction in Lane Miles	1.99																						
	\$21,890	\$22,656	\$23,449	\$24,270	\$25,119	\$25,998	\$26,908	\$27,850	\$28,825	\$29,834	\$30,878	\$31,959	\$33,077	\$34,235	\$35,433	\$36,673	\$37,957	\$39,285	\$40,660	\$42,084	\$43,556	\$45,081	\$46,659
ECONOMIC IMPACT FROM JOBS CREATION																							
North																							
Land developed (sqft)	4,325,000																						
Sqft/job created	2,000																						
Total jobs created	2,163																						
Average Annual Salary	34,700.00	35,047.00	35,397.47	35,751.44	36,108.96	36,470.05	36,834.75	37,203.10	37,575.13	37,950.88	38,330.39	38,713.69	39,100.83	39,491.84	39,886.76	40,285.62	40,688.48	41,095.36	41,506.32	41,921.38	42,340.59	42,764.00	43,191.64
Economic Impact with ramp-up			\$15,462,500	\$31,234,250	\$47,319,888	\$63,724,116	\$80,451,697	\$97,256,214	\$114,268,776	\$131,489,464	\$148,889,464	\$166,438,358	\$184,105,542	\$201,871,616	\$219,727,108	\$237,662,528	\$255,667,296	\$273,732,032	\$291,847,440	\$310,003,120	\$328,298,680	\$346,734,800	\$365,312,000
South																							
Total jobs created	4,500																						
Average Annual Salary	34,700.00	35,047.00	35,397.47	35,751.44	36,108.96	36,470.05	36,834.75	37,203.10	37,575.13	37,950.88	38,330.39	38,713.69	39,100.83	39,491.84	39,886.76	40,285.62	40,688.48	41,095.36	41,506.32	41,921.38	42,340.59	42,764.00	43,191.64
Economic Impact with ramp-up			\$80,440,751	\$101,556,448	\$123,086,414	\$145,036,825	\$167,413,935	\$189,088,075	\$210,778,955	\$232,486,745	\$254,212,612	\$275,957,228	\$297,720,326	\$319,491,398	\$341,270,032	\$363,056,736	\$384,849,920	\$406,651,104	\$428,460,896	\$450,278,704	\$472,105,136	\$493,940,704	\$515,785,920
Total Economic Impact with ramp-up			\$95,903,250	\$132,790,697	\$170,406,303	\$208,760,941	\$247,865,632	\$286,344,288	\$325,247,731	\$364,575,208	\$404,299,970	\$444,418,358	\$484,938,684	\$525,859,940	\$567,178,544	\$608,904,264	\$651,037,264	\$693,579,232	\$736,530,272	\$779,891,136	\$823,662,416	\$867,844,800	\$912,447,600
INCREASED REVENUE FROM TAX GENERATION																							
Land developed (sqft)	4,325,000																						
Taxes generated per sqft	2.00	2.02	2.04	2.06	2.08	2.10	2.12	2.14	2.17	2.19	2.21	2.23	2.25	2.28	2.30	2.32	2.35	2.37	2.39	2.42	2.44	2.46	2.49
Total Tax Generation with ramp-up			\$1,782,421	\$3,600,490	\$5,454,742	\$7,345,719	\$9,273,971	\$11,249,711	\$13,273,971	\$15,346,711	\$17,469,971	\$19,643,711	\$21,867,971	\$24,142,711	\$26,467,971	\$28,843,711	\$31,269,971	\$33,747,711	\$36,276,971	\$38,857,711	\$41,489,971	\$44,173,711	\$46,909,971
ENVIRONMENTAL SAVINGS																							
Reduction in Lane Miles	1.99																						
Total Ramp Traffic	5,594,720	5,608,707	5,622,729	5,636,785	5,650,877	5,665,005	5,679,167	5,693,365	5,707,598	5,721,867	5,736,172	5,750,512	5,764,889	5,779,301	5,793,749	5,808,234	5,822,754	5,837,311	5,851,904	5,866,534	5,881,200	5,895,903	5,910,643
Total Miles Avoided	11,133,493	11,161,327	11,189,230	11,217,203	11,245,246	11,273,359	11,301,542	11,329,796	11,358,121	11,386,516	11,414,982	11,443,520	11,472,129	11,500,809	11,529,561	11,558,385	11,587,281	11,616,249	11,645,290	11,674,403	11,703,589	11,732,848	11,762,180
Total Fuel Consumption Avoided	4,444,16	4,455,27	4,466,40	4,477,57	4,488,76	4,499,99	4,511,24	4,522,52	4,533,82	4,545,16	4,556,52	4,567,91	4,579,33	4,590,78	4,602,25	4,613,76	4,625,29	4,636,86	4,648,45	4,660,07	4,671,72	4,683,40	4,695,11
Tons of CO2 Avoided	4,444,16	4,455,27	4,466,40	4,477,57	4,488,76	4,499,99	4,511,24	4,522,52	4,533,82	4,545,16	4,556,52	4,567,91	4,579,33	4,590,78	4,602,25	4,613,76	4,625,29	4,636,86	4,648,45	4,660,07	4,671,72	4,683,40	4,695,11
3% SCC (2015\$)	44	45	46	47	47	48	48	50	51	52	53	54	55	55	56	58	59	60	61	62	63	64	67
	\$195,543	\$200,487	\$205,455	\$210,446	\$215,972	\$221,999	\$228,562	\$235,759	\$243,648	\$252,295	\$260,752	\$270,067	\$279,189	\$289,167	\$299,052	\$308,904	\$318,774	\$328,614	\$338,484	\$348,344	\$358,244	\$368,174	\$378,134

	Value	Unit	Data Source
General			
Total Construction Cost	\$26,960,645		
Maintenance Cost per Lane Mile	\$11,000	\$/lane mile	
Existing Lane Miles	3.36	miles	
Proposed Lane Miles	1.37	miles	
Total 2016 Ramp Traffic	15,328	AADT	
Traffic Growth Rate	0.25%		
Percentage of Trucks/Heavy Vehicles	3.00%		
Total Land Turned Back with the project	49.8	acres	
Potential Land Developed	4,325,000	sqft	
Tax Generation	\$2.00	\$/sqft of developed land	
Sqft per Job Created	2,000	sqft/job	1 job created for every 2,000 sqft developed
South Jobs Created	4,500		per Greg Kindle
			http://www.bls.gov/regions/mountain-plains/news-release/occupationalemploymentandwages_kansas_city.htm
Average Annual Salary	\$34,700.00		
Annual Salary Growth	1.00%		Calculated wage growth based on other work for UG
General Annual Escalation	3.50%		
Tax Generation Escalation	1.00%		5-year average CPI
Environmental			
			TIGER BCA Resource Guide 2016 (https://www.transportation.gov/tiger/2016-bca-resource-guide)
CO2	varies		
NOX	\$8,010	\$/metric ton (2015)	TIGER BCA Resource Guide 2016
Sulfur Monoxide	\$47,341	\$/metric ton (2015)	TIGER BCA Resource Guide 2016
VOCs	\$2,032	\$/metric ton (2015)	TIGER BCA Resource Guide 2016
PMI	\$366,414	\$/metric ton (2015)	TIGER BCA Resource Guide 2016
CO2 emitted per gallon of motor gasoline burned	0.00892	tons	http://www.epa.gov/growpower/pubs/calcmeth.htm
Fuel Consumption per mile (car)	0.041	gallons/mile	AASHTO User Benefit Book
Fuel Consumption per mile (truck)	0.166	gallons/mile	AASHTO User Benefit Book

2005	33157	
2006	35777	7.9%
2007	36211	1.2%
2008	36691	1.3%
2009	34652	-5.6%
2010	36677	5.8%
2011	37036	1.0%
2012	35876	-3.1%
2013	37789	5.3%
2014	35724	-5.5%

0.8% 10-yr avg
-0.7% 5-yr avg

2005	185.3	
2006	190.1	2.6%
2007	194.479	2.3%
2008	201.15	3.4%
2009	200.959	-0.1%
2010	205.378	2.2%
2011	213.5	4.0%
2012	218.502	2.3%
2013	221.612	1.4%
2014	222.656	0.5%
2015	222.278	-0.2%

1.8% 10-yr avg
1.0% 5-yr avg

\$33,157	Source: 2005 ACS, 1-year est.
\$35,777	Source: 2006 ACS, 1-year est.
\$36,211	Source: 2007 ACS, 1-year est.
\$36,691	Source: 2008 ACS, 1-year est.
\$36,652	Source: 2009 ACS, 1-year est.
\$34,652	Source: 2010 ACS, 1-year est.
\$36,677	Source: 2011 ACS, 1-year est.
\$37,036	Source: 2012 ACS, 1-year est.
\$35,876	Source: 2013 ACS, 1-year est.
\$37,789	Source: 2014 ACS, 1-year est.
\$35,724	Source: 2014 ACS, 1-year est.

Annual averages U.S., Denver, Kansas City, and St. Louis

Consumer Price Indexes for All Urban Consumers (CPI-U), U.S. city average and selected metropolitan areas, annual average and percent change, 1995-2015 (1982=100)

Year	U.S. city average		Denver, CO		Kansas City, MO-KS		St. Louis, MO-IL	
	Annual average	12 month percent change	Annual average	12 month percent change	Annual average	12 month percent change	Annual average	12 month percent change
1995	152.4	2.8	147.9	4.3	145.3	2.8	145.2	2.8
1996	156.9	3.0	153.1	3.5	151.6	4.3	149.6	3.0
1997	160.5	2.3	158.1	3.3	155.8	2.8	152.9	2.2
1998	163.0	1.6	161.9	2.4	157.8	1.3	154.5	1.0
1999	166.6	2.2	166.6	2.9	160.1	1.5	157.6	2.0
2000	172.2	3.4	173.2	4.0	166.6	4.1	163.1	3.5
2001	177.1	2.8	181.3	4.7	172.2	3.4	167.3	2.6
2002	179.9	1.6	184.8	1.9	174.0	1.0	169.1	1.1
2003	184.0	2.3	186.8	1.1	177.0	1.7	173.4	2.5
2004	188.9	2.7	187.0	0.1	180.7	2.1	180.3	4.0
2005	195.3	3.4	190.9	2.1	185.3	2.5	186.2	3.3
2006	201.6	3.2	197.7	3.6	190.1	2.6	189.5	1.8
2007	207.342	2.8	202.029	2.2	194.479	2.3	193.231	2.0
2008	215.303	3.8	209.903	3.9	201.150	3.4	198.700	2.8
2009	214.537	-0.4	208.548	-0.6	200.959	-0.1	198.472	-0.1
2010	218.056	1.6	212.447	1.9	205.378	2.2	203.187	2.4
2011	224.939	3.2	220.288	3.7	213.500	4.0	209.776	3.2
2012	229.594	2.1	224.568	1.9	218.502	2.3	214.768	2.4
2013	232.957	1.5	230.791	2.8	221.612	1.4	217.965	1.5
2014	236.736	1.6	237.200	2.8	222.656	0.5	220.217	1.0
2015	237.017	0.1	239.990	1.2	222.278	-0.2	219.321	-0.4