BENEFIT-COST ANALYSIS

Prepared for City of East Moline, Illinois
Greater Downtown Revitalization Project
2022 RAISE Grant Application
April 14, 2022

Introduction

A Benefit-Cost Analysis (BCA) was performed for the City of East Moline's "Greater Downtown Revitalization Project" for submission to the U.S. Department of Transportation (U.S. DOT). The BCA is required as part of the grant application for the 2022 RAISE program. The analysis was completed to determine the possible benefit-cost ratios of proposed street, bicycle, pedestrian, and transit improvements providing multi-modal connections to East Moline's downtown and The Bend areas. Recommended U.S. DOT methodologies for benefit-cost analysis were followed to provide the department with "apples-to-apples" comparisons and to make analysis strategy transparent. Benefit-cost methodologies were captured in "Benefit-Cost Analysis Guidance for Discretionary Grant Programs"[1]. Additional categories of monetized benefits and costs that are not shown in the guide have been developed using alternative strategies. Sources, detailed calculations, and rationale are identified in this report for determining monetized benefits/costs.

This BCA is based upon the difference between the "no-build" scenario and the proposed improvements scenario. The "no-build" scenario is for baseline projections if the project were to not take place and go without improvements to the existing roadway areas. The baseline projections were then used to estimate the proposed scenario where improvements for roadways were considered.

General Assumptions

Constant Dollar Values and Discount Rates

Benefit-cost investments for the projects are shown in constant 2020 dollar values. Most benefit evaluations and some costs were expressed in historical dollar values. To adjust and translate these monetized historical year values into 2020 dollars, the U.S. Bureau of Labor Statistics' Consumer Price Index (CPI) for Urban Consumers[2] was applied to historical values. Analyzing everything in a single base year of 2020 dollar values helps to further establish an "apples-to-apples" comparison of monetized benefits and costs for the U.S. DOT.

A real discount rate of 7.0% was used in this BCA as recommended by the U.S. DOT guidance for RAISE grants and the White House Office of Management and Budget (OMB Circular A-4)[3].

[1] US Department of Transportation: Benefit-Cost Analysis Guidance for Discretionary Grant Programs, March 2022; https://www.transportation.gov/sites/dot.gov/files/2022-03/Benefit%20Cost%20Analysis%20Guidance%202022%20%28Revised%29.pdf.
[2] U.S. Bureau of Labor Statistics. Consumer Price Index, All Urban Consumers, U.S. City Average, Series CUSR0000SA0. 1982-1984=100.
[3] White House Office of Management and Budget, Circular A-94, Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs (October 29, 1992). (https://www.whitehouse.gov/sites/default/files/omb/assets/omb/circulars/a004/a-4.pdf).

"As a default position, OMB Circular A-94 states that a real discount rate of 7 percent should be used as a base-case for regulatory analysis. The 7 percent rate is an estimate of the average before-tax rate of return to private capital in the U.S. economy. It is a broad measure that reflects the returns to real estate and small business capital as well as corporate capital. It approximates the opportunity cost of capital, and it is the appropriate discount rate whenever the main effect of a regulation is to displace or alter the use of capital in the private sector. The effects of regulation do not always fall exclusively or primarily on the allocation of capital. When regulation primarily and directly affects private consumption (e.g., through higher consumer prices for goods and services), a lower discount rate is appropriate. The alternative most often used is sometimes called the "social rate of time preference." This simply means the rate at which "society" discounts future consumption flows to their present value. If we take the rate that the average saver uses to discount future consumption as our measure of the social rate of time preference, then the real rate of return on long-term government debt may provide a fair approximation. Over the last thirty years, this rate has averaged around 3 percent in real terms on a pre-tax basis."[4]

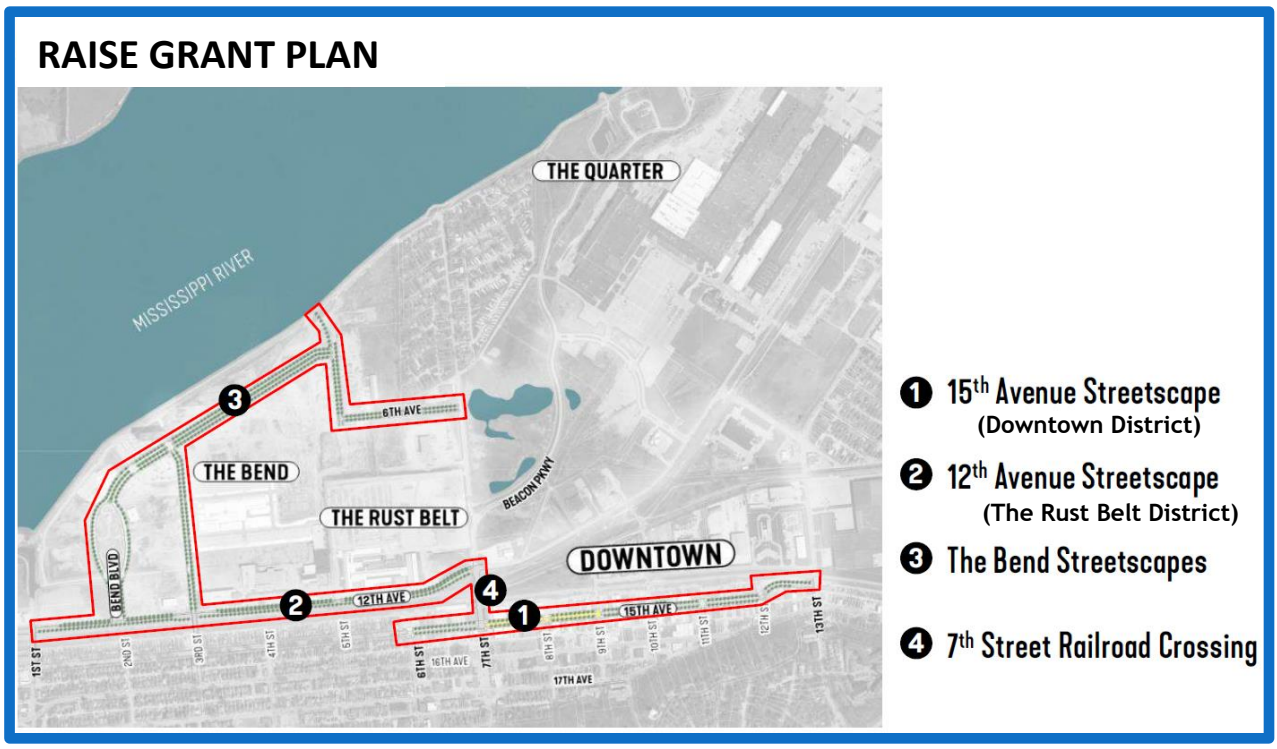
Evaluation Period

The evaluation period for the City of East Moline's "Greater Downtown Revitalization Project" includes both the construction and post-construction periods. The post-construction period considered was 20 years of operations and allows for benefit accrual to take place. The construction period is when capital investment costs are used. This study has assumed the construction period to take place during the years 2024-2027. Operations are assumed to begin in 2027 and designed for 20 years of operations through 2046.

Project Description

The revitalization project is comprised of three major areas: The Downtown District, Rust Belt District and Bend District. Visions for the project are to establish individuality between districts while at the same time connecting and unifying them. Success in establishing and improving these districts is contingent upon the following revitalization components for each area:

[4] White House Office of Management and Budget, Circular A-94, Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs (October 29, 1992). (https://www.whitehouse.gov/sites/default/files/omb/assets/omb/circulars/a004/a-4.pdf).



Downtown District

- Full street reconstruction
- Reconstructed/improved streetscaping in commercial district along 15th Avenue
- 2 blocks of curb-less street (Festival Street) on 15th Avenue from 7th to 9th Street.
- Wayfinding, signage and streetscaping to establish district
- Creation of amenity zones and destinations
- Green infrastructure/stormwater improvements and increased canopy/shade
- Landscaping and lighting
- Improve pedestrian safety, accessibility, and connectivity including upgraded pedestrian ADA ramps and widening sidewalk pathways

The Rust Belt District

- Provide multi-use path along 12th Avenue to improve connectivity
- Increase light for pedestrian safety
- New sidewalks/trails and streetscape on 7th Street, improving connections to the Bend and Downtown Districts
- Upgraded railroad street crossings and safety enhancement
    - Maintain active vehicular crossings
    - Convert passive pedestrian crossings at 7th Street to active crossings
- Integrated wayfinding

The Bend District

- New sidewalks and landscaping that fit with desired development
- Establish wayfinding system and gateways

- Continue to buildout street network – extensions of Bend Boulevard and 6th Avenue to 7th Street
- Connect to Rust Belt District
- Construct multi-modal connections including a bike route, transit route and pedestrian routes to connect to the Mississippi River.

These improvements are designed to improve mobility, enhance safety, reset the economic development environment, and create an attractive sense of place.

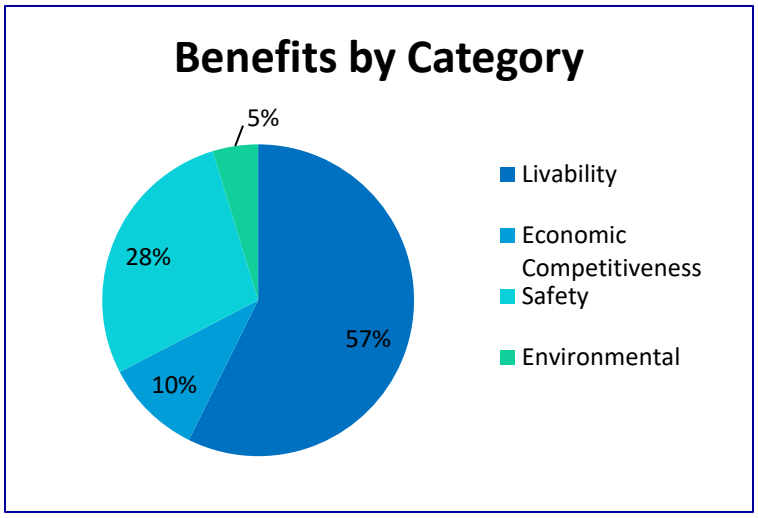
Results & Methodology

The analysis results in a positive return on investment for the 7 percent discount rate over the evaluation period. These discounted net-present values are based upon undiscounted costs and undiscounted benefits for the period. Undiscounted costs totaled $29.6 million dollars over the evaluation period and include both capital costs and operations/maintenance costs. Total undiscounted benefits totaled $126.1 million dollars over the 20-year period. Analysis yielded a benefit-cost ratio of 2.36 discounted at 7 percent. The cost summary table is on page 11 of this appendix. It should be noted that benefits do not include operation and maintenance (O&M) cost savings from proposed road improvements. The O&M costs for "no-build" situations would likely create an even larger savings benefit for the proposed improvements situation, further increasing the benefit-cost ratio.

Benefit-Cost Summary in 2020 Dollars	
	7% Discount
Total Benefits	$ 42,418,058
Total Costs	$ 17,992,219
Benefit-Cost Ratio	2.36

Benefits Summary in Constant 2020 Dollars			
Type of Impact	Benefit	Undiscounted Benefit	Value @ 7% Discount
Livability	Increased Property Value	$ 4,821,700	$ 2,806,273
	Health Benefits from Walking/Cycling	$ 67,470,073	$ 21,775,256
Economic Competitiveness	Vehicle Operating Costs (VMT Reduction)	$ 12,694,659	$ 4,097,068
Safety	Crash Reduction	$ 1,040,247	$ 420,370
	Sidewalk and Trail Improvements	$ 34,149,349	$ 11,021,343
Environmental	Reduced Emissions	$ 2,210,776	$ 1,114,435
	Reduced Noise & Congestion	$ 3,666,463	$ 1,183,312
	Total Benefits	**$126,104,251**	**$42,418,058**

The categorical pie chart below provides a conceptual visual of the percentages that each benefit provided compared to the overall improvement benefits.



Human health benefits were not estimated with monetary values such as the ones shown above. With the "Complete Streets" initiative and a portion of the proposed improvements, increased physical activity is linked to improved health and will have a positive impact on the community of East Moline.

Increased Property Value

Improved roadway/pedestrian-based infrastructure along East Moline's Downtown and The Bend districts will likely increase property value in both areas. The proposed implementation of the "Complete Streets" initiative along downtown 15th Avenue, Bend Boulevard, and 12th Avenue will make these areas more accessible for people on foot or bicycling. The National Complete Streets Coalition states that increased walkability leads to increased property values and has showed cases where property value increased $3,000-$9,000 because of "Complete Streets" projects (added trees, bike paths, sidewalks, green spaces, increased walkability, etc.)[5]. A conservative estimate of a 5 percent increase in property value due to accessibility for pedestrian travel and enhanced multi-modal infrastructure was applied to the existing downtown and The Bend property values in East Moline. An existing property value of $96.4 million in the downtown area and The Bend was obtained from correspondence with the City of East Moline.

For this analysis, the current value of property is considered the "no-build" scenario where improvements would not take place. Overall, the improvements are estimated to result in a 5 percent increase in downtown and The Bend properties. The increased property value benefit was considered a one-time "stock" benefit applied in 2027 (first year post-construction) in this

[5] "Economic Development." *Smart Growth America*. (2016). http://www.smartgrowthamerica.org/complete-streets/complete-streets-fundamentals/factsheets/economic-revitalization.

analysis and led to a total undiscounted benefit of $4,821,000. Property value benefits of $2.81 million were calculated for the 7 percent discount.

Reduced Average Daily Traffic (ADT) and Emission Reduction

A travel-related improvement contingent upon improved road infrastructure and pedestrian-based infrastructure is the reduction in Average Daily Traffic (ADT) along 12th Avenue and Downtown 15th Avenue. Impacts to ADT along these roads create a reduction benefit for Vehicle Operation Costs (VOC) and emission reductions.

VOC is directly related to the amount of Vehicle Miles Traveled (VMT). In this analysis, it was assumed there would be a 25% decrease in ADT. U.S. DOT FHWA Road Diet case studies showed "Complete Streets" programs with 18-29 percent volume reduction[6], as well as a case study with 36 percent reduction. A 25 percent reduction for the proposed improvements project in East Moline is considered conservative. The 25 percent reduction assumes that 25 percent of the traveling vehicle population will resort to walking, biking and other modes of transit in this area. ADT traffic information for these corridors was found in 2020 IDOT AADT mapping and averaged 8,325 vehicles/day in the project area along 12th Avenue and 1,125 vehicles/day along downtown 15th Avenue. The vehicles/day counts were multiplied by 365 to provide an annual estimate for the "no-build" scenario. The "no-build" scenario was based upon current ADT rates and is assumed to increase one percent per year over the project period. The reduction benefit of 20 percent of the current "no-build" scenario rates was used. This benefit of vehicles/year was then multiplied by the distances of 12th Avenue and 15th Avenue within the project corridor to obtain VMT reductions. Total distance in this area is 2.14 miles and was considered the total trip length. These reductions were multiplied by the U.S. DOT 2022 Vehicle Operating Costs Rates[7] used for cost/mile ($0.45/mile light vehicles $0.94/mile commercial trucks) to create the VOC savings.

An undiscounted VOC benefit savings of $12.7 million was calculated, while present benefit values of $4.1 million were calculated for the 7 percent discount. The detailed VOC cost savings table is shown on page 12 of this appendix.

Reduced ADT also creates emission reductions in the project area. The speed limit for 12th Ave. will change to 30 MPH from 35 MPH and 15th Avenue's speed limit will not change. Emission rates were analyzed at the current speed limit of 25 MPH for Downton 15th Avenue and the proposed speed limit of 30 MPH for 12th Avenue. The table at the top of the following page summarizes monetary values of emissions in accordance with the benefit-cost analysis values as recommended by the U.S. DOT and emissions rates taken from ICAAP emissions tables[8]. ICAAP

[6] "Case Studies - Safety | Federal Highway Administration." Case Studies - Safety | Federal Highway Administration. (http://safety.fhwa.dot.gov/road_diets/case_studies/).

[7] USDOT Benefit-Cost Analysis Guidance for Discretionary Grant Program, March 2022 Table A-5 Vehicle Operating Costs. (https://www.transportation.gov/sites/dot.gov/files/2022-03/Benefit%20Cost%20Analysis%20Guidance%202022%20%28Revised%29.pdf))

[8] Source: Iowa DOT, ICAAP emissions tables (http://www.iowadot.gov/systems_planning/icaap.htm).

emissions tables as calculated by the Iowa DOT were used for emissions calculations as East Moline is a part of the Bi-State Davenport Designated Urban Area and would share similar ridership and driving style to this area compared to larger Illinois cities.

Monetary Values of Emissions			
	Emission Rate at 30 MPH[9] (gram/ VMT)	Emission Rate at 25 MPH[9] (gram/ VMT)	$ / Metric Ton (2020 Dollars)
CO2	563.19	563.19	Varies[10]
NOx	1.796	1.806	Varies
PM	0.0327	0.0327	Varies
SOx	0.0091	0.0091	Varies

[9]Source: Iowa, ICAAP emissions tables (https://iowadot.gov/systems_planning/grant-programs/iowa-clean-air-attainment-program-icaap)

[10]Used 3% Social Cost of Carbon as outlined in 2022 Benefit-Cost Analysis Guidance for RAISE Grant Applicants. Dollar values were converted to 2020 dollars.

Emission Type	NO_x	SO_2	$PM_{2.5}$	CO_2
2021	$ 15,600.00	$ 41,500.00	$ 748,600.00	$ 50.00
2022	$ 15,800.00	$ 42,300.00	$ 761,600.00	$ 52.00
2023	$ 16,000.00	$ 43,100.00	$ 774,700.00	$ 53.00
2024	$ 16,200.00	$ 44,000.00	$ 788,100.00	$ 54.00
2025	$ 16,500.00	$ 44,900.00	$ 801,700.00	$ 55.00
2026	$ 16,800.00	$ 45,700.00	$ 814,500.00	$ 56.00
2027	$ 17,100.00	$ 46,500.00	$ 827,400.00	$ 57.00
2028	$ 17,400.00	$ 47,300.00	$ 840,600.00	$ 58.00
2029	$ 17,700.00	$ 48,200.00	$ 854,000.00	$ 59.00
2030	$ 18,100.00	$ 49,100.00	$ 867,600.00	$ 60.00
2031	$ 18,100.00	$ 49,100.00	$ 867,600.00	$ 61.00
2032	$ 18,100.00	$ 49,100.00	$ 867,600.00	$ 62.00
2033	$ 18,100.00	$ 49,100.00	$ 867,600.00	$ 63.00
2034	$ 18,100.00	$ 49,100.00	$ 867,600.00	$ 64.00
2035	$ 18,100.00	$ 49,100.00	$ 867,600.00	$ 66.00
2036	$ 18,100.00	$ 49,100.00	$ 867,600.00	$ 67.00
2037	$ 18,100.00	$ 49,100.00	$ 867,600.00	$ 68.00
2038	$ 18,100.00	$ 49,100.00	$ 867,600.00	$ 69.00
2039	$ 18,100.00	$ 49,100.00	$ 867,600.00	$ 70.00
2040	$ 18,100.00	$ 49,100.00	$ 867,600.00	$ 71.00
2041	$ 18,100.00	$ 49,100.00	$ 867,600.00	$ 72.00
2042	$ 18,100.00	$ 49,100.00	$ 867,600.00	$ 73.00
2043	$ 18,100.00	$ 49,100.00	$ 867,600.00	$ 75.00

2044	$ 18,100.00	$ 49,100.00	$ 867,600.00	$ 76.00
2045	$ 18,100.00	$ 49,100.00	$ 867,600.00	$ 77.00
2046	$ 18,100.00	$ 49,100.00	$ 867,600.00	$ 78.00
2047	$ 18,100.00	$ 49,100.00	$ 867,600.00	$ 79.00
2048	$ 18,100.00	$ 49,100.00	$ 867,600.00	$ 80.00
2049	$ 18,100.00	$ 49,100.00	$ 867,600.00	$ 81.00
2050	$ 18,100.00	$ 49,100.00	$ 867,600.00	$ 83.00

Present benefit values for emissions totaled $1.1 million and were calculated at the 7 percent discount except for CO_2 which was calculated at the 3 percent discount. The detailed emissions reduction benefit savings table is shown on page 13 of this appendix.

Reduction in Accidents

The Benefit-Cost Analysis assumes a 40 percent reduction in the number of accidents due to safety improvements along the roadway. The "Complete Streets" improvements include bicycle lanes and enhanced pedestrian walkways. The U.S. DOT FHWA Road Diet "Complete Streets" case studies showed strong reinforcement of crash reduction because of complete streets programs. Most studies found between 20 percent and 70 percent reduction for crash/injury incidents[11]. A conservative estimate of 40 percent was used for the analysis due to evidence through "Road Diet" documentation. The case studies show decreased speeding in these improved traffic areas.

The "no-build" scenario considers current crash data obtained from the Illinois DOT. Through provided historical data of crashes from the past 7 years along 12th Avenue and 15th Avenue, data was used to create average incidents per year for baseline projections. The table below shows Illinois DOT data.

2015-2021 Crash Injury Summary		
Crash Type	Incidents	Avg. Incidents/Yr
Unknown	0	0
Possible Injury/Unknown	5	0.7
Minor Injury	0	0
Major Injury	0	0
Fatal	0	0
Total Injury	11	1.6
Property Damage Only (PDO)	119	17

For the improvement scenario, the average incidents/year was calculated by multiplying 40 percent by the incidents/year values in the crash data table shown above. To obtain monetized values, the obtained data was converted to the U.S. DOT recommended MAIS scale which allows an "apples-

[11]"Case Studies - Safety | Federal Highway Administration." Case Studies - Safety | Federal Highway Administration. (http://safety.fhwa.dot.gov/road_diets/case_studies/).

to-apples" comparison. The MAIS scale conversion table can be found on page 14 of this appendix. Annual cost reduction benefits of approximately $52,012 were calculated and used for the 20-year post-construction period. An undiscounted accident cost savings of $1.04 million was calculated, while a present benefit value of $0.42 million was calculated for a 7 percent discount. The detailed crash reduction benefits table is shown on page 15 of this appendix.

Health Benefits for Walking & Cycling

A travel related improvement expected because of the improved road infrastructure and pedestrian -based infrastructure is the reduction in ADT along 12th Avenue and Downtown 15th Avenue. This reduction of traveling vehicle population is due to the predicted use of walking and biking in this area. The 25% vehicle reduction was split in half between walkers and bikers. Using the US DOT Benefit-Cost Analysis Guidance for Discretionary Grant Programs March 2022 Table A-12, the health benefit was calculated by multiplying the trips by the Value per Induced Trips. The overall undiscounted health benefit was $67.5 million, and the overall discounted health benefit was $21.8 million. The detailed health benefits table is shown on page 16 of this appendix.

Safety Benefit for Adding or Widening Sidewalks & Multi-Use Path

To increase connectivity and safety, this project will add a 10' wide multi-use path the length of 12th Avenue, extend the width of the sidewalk on 7th Street to 10' and widen both sides of the sidewalk by 8' along 15th Avenue. Using U.S. DOT Benefit-Cost Analysis Guidance for Discretionary Grant Programs March 2022 Table A-8 & A-9, the safety benefit was calculated by multiplying the trips by the Value per Person Mile Walked or Cycled. The overall undiscounted safety benefit was $34.1 million, and the overall discounted safety benefit was $11.0 million. The detailed safety benefits table is shown on page 17 of this appendix.

Reduction Noise and Congestion

This benefit is the 25 percent reduction in the above Reduced ADT Section of the traveling vehicle population due to increased walking, biking, and utilization of other modes of transit in this area due to the "Complete Streets" initiative. This will result in less noise and congestion. Using U.S. DOT Benefit-Cost Analysis Guidance for Discretionary Grant Programs March 2022 Table A-13, the noise and congestion environmental benefit was calculated by multiplying the reduction in vehicle miles traveled by the Value Cost per Mile Traveled. The overall undiscounted environmental benefit was $3.7 million, and the overall discounted environmental benefit was $1.2 million. The detailed environmental benefits table is shown on page 18 of this appendix.

Costs Summary Table (2020 Dollars)

Cost Summary in Constant 2020 Dollars					
		Cost of Improvements	**Maintenance**		**NPV of Costs**
Project Year	Analysis Year	Capital Costs Undiscounted	O&M Costs Undiscounted	Total Costs Undiscounted	Total Costs @ 7% Discount
1	2020	$ -	$ -	$ -	$ -
2	2021	$ -	$ -	$ -	$ -
3	2022	$ -	$ -	$ -	$ -
4	2023	$ -	$ -	$ -	$ -
5	2024	$ -	$ -	$ -	$ -
6	2025	$ 3,999,903	$ -	$ 3,999,903	$ 2,665,304
7	2026	$ 10,848,343	$ -	$ 10,848,343	$ 6,755,803
8	2027	$ 11,787,287	$ -	$ 11,787,287	$ 6,860,308
9	2028	$ 3,009,703	$ -	$ 3,009,703	$ 1,637,079
10	2029	$ -	$ -	$ -	$ -
11	2030	$ -	$ -	$ -	$ -
12	2031	$ -	$ -	$ -	$ -
13	2032	$ -	$ -	$ -	$ -
14	2033	$ -	$ 30,000	$ 30,000	$ 11,635
15	2034	$ -	$ -	$ -	$ -
16	2035	$ -	$ -	$ -	$ -
17	2036	$ -	$ -	$ -	$ -
18	2037	$ -	$ -	$ -	$ -
19	2038	$ -	$ 100,000	$ 100,000	$ 27,651
20	2039	$ -	$ -	$ -	$ -
21	2040	$ -	$ -	$ -	$ -
22	2041	$ -	$ -	$ -	$ -
23	2042	$ -	$ -	$ -	$ -
24	2043	$ -	$ -	$ -	$ -
25	2044	$ -	$ -	$ -	$ -
26	2045	$ -	$ 200,000	$ 200,000	$ 34,439
Totals		**$ 29,645,236**	**$ 330,000**	**$ 29,975,236**	**$ 17,992,219**

Note: O&M costs savings due to improvements and not having a “no-build” situation would further increase benefits. An annual O&M savings was not used due to lack of available information on current cost of operations and maintenance on the roadways.

Reduced ADT - Vehicle Operating Costs Savings Benefits Table (2020 Dollars)

Project Year	Analysis Year	ADT[1] x 365 (No-Build)	365*ADT After (25% Reduction[2])	Reduction Benefit	12th Ave Annual VMT Savings	ADT[1] x 365 (No-Build)	365*ADT After (25% Reduction[2])	Reduction Benefit	15th Ave Annual VMT Savings	Total Annual VMT Savings	Weighted$/Mile[3]	Cost Savings Undiscounted	Total VMT Benefits @ 7% Discount
1	2020	3,008,540	2,256,405	752,135	1,045,468	406,559	304,920	101,640	76,230	1,121,697	0.48	$ -	$ -
2	2021	3,038,625	2,278,969	759,656	1,055,922	410,625	307,969	102,656	76,992	1,132,914	0.48	$ -	$ -
3	2022	3,069,011	2,301,758	767,253	1,066,481	414,731	311,048	103,683	77,762	1,144,244	0.48	$ -	$ -
4	2023	3,099,701	2,324,776	774,925	1,077,146	418,879	314,159	104,720	78,540	1,155,686	0.48	$ -	$ -
5	2024	3,130,698	2,348,024	782,675	1,087,918	423,067	317,301	105,767	79,325	1,167,243	0.48	$ -	$ -
6	2025	3,162,005	2,371,504	790,501	1,098,797	427,298	320,474	106,825	80,118	1,178,915	0.48	$ -	$ -
7	2026	3,193,625	2,395,219	798,406	1,109,785	431,571	323,678	107,893	80,920	1,190,704	0.48	$ -	$ -
8	2027	3,225,562	2,419,171	806,390	1,120,883	435,887	326,915	108,972	81,729	1,202,611	0.48	$ 576,531.92	$ 335,546.83
9	2028	3,257,817	2,443,363	814,454	1,132,092	440,246	330,184	110,061	82,546	1,214,638	0.48	$ 582,297.24	$ 316,731.12
10	2029	3,290,395	2,467,797	822,599	1,143,412	444,648	333,486	111,162	83,372	1,226,784	0.48	$ 588,120.22	$ 298,970.49
11	2030	3,323,299	2,492,475	830,825	1,154,847	449,095	336,821	112,274	84,205	1,239,052	0.48	$ 594,001.42	$ 282,205.79
12	2031	3,356,532	2,517,399	839,133	1,166,395	453,585	340,189	113,396	85,047	1,251,442	0.48	$ 599,941.43	$ 266,381.17
13	2032	3,390,098	2,542,573	847,524	1,178,059	458,121	343,591	114,530	85,898	1,263,957	0.48	$ 605,940.85	$ 251,443.91
14	2033	3,423,999	2,567,999	856,000	1,189,840	462,703	347,027	115,676	86,757	1,276,596	0.48	$ 612,000.25	$ 237,344.25
15	2034	3,458,239	2,593,679	864,560	1,201,738	467,330	350,497	116,832	87,624	1,289,362	0.48	$ 618,120.26	$ 224,035.23
16	2035	3,492,821	2,619,616	873,205	1,213,755	472,003	354,002	118,001	88,501	1,302,256	0.48	$ 624,301.46	$ 211,472.50
17	2036	3,527,749	2,645,812	881,937	1,225,893	476,723	357,542	119,181	89,386	1,315,278	0.48	$ 630,544.47	$ 199,614.23
18	2037	3,563,027	2,672,270	890,757	1,238,152	481,490	361,118	120,373	90,279	1,328,431	0.48	$ 636,849.92	$ 188,420.91
19	2038	3,598,657	2,698,993	899,664	1,250,533	486,305	364,729	121,576	91,182	1,341,716	0.48	$ 643,218.42	$ 177,855.25
20	2039	3,634,644	2,725,983	908,661	1,263,039	491,168	368,376	122,792	92,094	1,355,133	0.48	$ 649,650.60	$ 167,882.06
21	2040	3,670,990	2,753,243	917,748	1,275,669	496,080	372,060	124,020	93,015	1,368,684	0.48	$ 656,147.11	$ 158,468.11
22	2041	3,707,700	2,780,775	926,925	1,288,426	501,041	375,780	125,260	93,945	1,382,371	0.48	$ 662,708.58	$ 149,582.05
23	2042	3,744,777	2,808,583	936,194	1,301,310	506,051	379,538	126,513	94,885	1,396,195	0.48	$ 669,335.66	$ 141,194.27
24	2043	3,782,225	2,836,669	945,556	1,314,323	511,111	383,334	127,778	95,833	1,410,156	0.48	$ 676,029.02	$ 133,276.84
25	2044	3,820,047	2,865,035	955,012	1,327,466	516,223	387,167	129,056	96,792	1,424,258	0.48	$ 682,789.31	$ 125,803.37
26	2045	3,858,247	2,893,686	964,562	1,340,741	521,385	391,039	130,346	97,760	1,438,501	0.48	$ 689,617.20	$ 118,748.97
27	2046	3,896,830	2,922,622	974,207	1,354,148	526,599	394,949	131,650	98,737	1,452,886	0.48	$ 696,513.38	$ 112,090.15
		VMT Savings along 12th Avenue (1.39 miles)				VMT Savings along 15th Avenue (0.75 miles)						**$ 12,694,658.72**	**$ 4,097,067.52**

[1]Average Daily Traffic (ADT) values were averaged along both 12th Avenue and 15th Avenue with Illinois DOT AADT Maps. 1% annual increase in traffic was applied. (http://www.gettingaroundillinois.com/gai.htm?mt=aadt).

[2] US DOT FHWA Road Diet case studies showed cases for "Complete Streets" programs with 18-29% volume reduction, as well as a case with 36% reduction. A conservative estimate of 25% reduction was estimated due to increased use of other modes of transportation. (http://safety.fhwa.dot.gov/road_diets/case_studies/roaddiet_cs.pdf).

[3] USDOT Benefit-Cost Analysis Guidance for Discretionary Grant Program, March 2022 Table A-5 Vehicle Operating Costs. (https://www.transportation.gov/sites/dot.gov/files/2022-03/Benefit%20Cost%20Analysis%20Guidance%202022%20%28Revised%29.pdf))

[4]The Truck Percentage is 6% for 12th Street and 3% for 15th Avenue.

Reduced ADT - Emission Reduction Benefits Table (2020 Dollars)

Project Year	Analysis Year	Total VMT Savings/Yr @ 25 MPH	Total VMT Savings/Yr @ 30 MPH	CO2 (Metric Tons/Yr)	CO2 ($/Metric Ton)	NOx (Metric Tons/Yr)	NOx ($/Metric Ton)	PM2.5 (Metric Tons/Yr)	PM2.5 ($/Metric Ton)	SO2 (Metric Tons/Yr)	SO2 ($/Metric Ton)	Undiscounted Total Non-CO2 Emissions	NPV CO2 at 3% Avg SCC	Total Emissions Benefits @ 7% Discount
1	2020	76,230	$ 1,045,467.51	631.73		2.01		0.037		0.010				
2	2021	76,992	$ 1,055,922.19	638.05		2.03		0.037		0.010				
3	2022	77,762	$ 1,066,481.41	644.43		2.06		0.037		0.010				
4	2023	78,540	$ 1,077,146.22	650.87		2.08		0.038		0.011				
5	2024	79,325	$ 1,087,917.69	657.38		2.10		0.038		0.011				
6	2025	80,118	$ 1,098,796.86	663.95		2.12		0.039		0.011				
7	2026	80,920	$ 1,109,784.83	670.59		2.14		0.039		0.011				
8	2027	81,729	$ 1,120,882.68	677.30	$ 38,606.03	2.16	$ 36,948.10	0.039	$ 32,537.83	0.011	$ 508.89	$ 69,994.81	$ 30,475.95	$ 71,213.57
9	2028	82,546	$ 1,132,091.51	684.07	$ 39,676.16	2.18	$ 37,972.27	0.040	$ 33,387.50	0.011	$ 522.82	$ 71,882.58	$ 30,408.47	$ 69,507.84
10	2029	83,372	$ 1,143,412.42	690.91	$ 40,763.83	2.20	$ 38,998.48	0.040	$ 34,258.92	0.011	$ 538.09	$ 73,795.49	$ 30,332.12	$ 67,846.01
11	2030	84,205	$ 1,154,846.55	697.82	$ 41,869.29	2.23	$ 40,278.60	0.041	$ 35,152.54	0.011	$ 553.62	$ 75,984.76	$ 30,247.27	$ 66,347.08
12	2031	85,047	$ 1,166,395.01	704.80	$ 42,992.79	2.25	$ 40,681.39	0.041	$ 35,504.07	0.011	$ 559.16	$ 76,744.61	$ 30,154.28	$ 64,229.80
13	2032	85,898	$ 1,178,058.96	711.85	$ 44,134.56	2.27	$ 41,088.20	0.041	$ 35,859.11	0.012	$ 564.75	$ 77,512.06	$ 30,053.49	$ 62,218.24
14	2033	86,757	$ 1,189,839.55	718.97	$ 45,294.87	2.29	$ 41,499.08	0.042	$ 36,217.70	0.012	$ 570.40	$ 78,287.18	$ 29,945.25	$ 60,306.36
15	2034	87,624	$ 1,201,737.95	726.16	$ 46,473.98	2.32	$ 41,914.07	0.042	$ 36,579.88	0.012	$ 576.10	$ 79,070.05	$ 29,829.88	$ 58,488.50
16	2035	88,501	$ 1,213,755.33	733.42	$ 48,405.55	2.34	$ 42,333.21	0.043	$ 36,945.68	0.012	$ 581.86	$ 79,860.75	$ 30,164.74	$ 57,216.34
17	2036	89,386	$ 1,225,892.88	740.75	$ 49,630.36	2.36	$ 42,756.54	0.043	$ 37,315.13	0.012	$ 587.68	$ 80,659.36	$ 30,027.18	$ 55,561.87
18	2037	90,279	$ 1,238,151.81	748.16	$ 50,874.82	2.39	$ 43,184.11	0.043	$ 37,688.28	0.012	$ 593.56	$ 81,465.95	$ 29,883.60	$ 53,986.43
19	2038	91,182	$ 1,250,533.33	755.64	$ 52,139.21	2.41	$ 43,615.95	0.044	$ 38,065.17	0.012	$ 599.49	$ 82,280.61	$ 29,734.26	$ 52,485.54
20	2039	92,094	$ 1,263,038.66	763.20	$ 53,423.80	2.43	$ 44,052.11	0.044	$ 38,445.82	0.012	$ 605.49	$ 83,103.42	$ 29,579.46	$ 51,054.97
21	2040	93,015	$ 1,275,669.05	770.83	$ 54,728.87	2.46	$ 44,492.63	0.045	$ 38,830.28	0.012	$ 611.54	$ 83,934.45	$ 29,419.46	$ 49,690.73
22	2041	93,945	$ 1,288,425.74	778.54	$ 56,054.70	2.48	$ 44,937.56	0.045	$ 39,218.58	0.013	$ 617.66	$ 84,773.79	$ 29,254.52	$ 48,389.09
23	2042	94,885	$ 1,301,309.99	786.32	$ 57,401.56	2.51	$ 45,386.93	0.046	$ 39,610.77	0.013	$ 623.83	$ 85,621.53	$ 29,084.90	$ 47,146.49
24	2043	95,833	$ 1,314,323.09	794.19	$ 59,563.95	2.53	$ 45,840.80	0.046	$ 40,006.87	0.013	$ 630.07	$ 86,477.75	$ 29,301.52	$ 46,350.31
25	2044	96,792	$ 1,327,466.32	802.13	$ 60,961.72	2.56	$ 46,299.21	0.047	$ 40,406.94	0.013	$ 636.37	$ 87,342.53	$ 29,115.66	$ 45,208.45
26	2045	97,760	$ 1,340,740.99	810.15	$ 62,381.49	2.58	$ 46,762.20	0.047	$ 40,811.01	0.013	$ 642.74	$ 88,215.95	$ 28,925.97	$ 44,116.36
27	2046	98,737	$ 1,354,148.40	818.25	$ 63,823.55	2.61	$ 47,229.83	0.048	$ 41,219.12	0.013	$ 649.16	$ 89,098.11	$ 28,732.66	$ 43,071.26
Totals					**$ 1,009,201.11**		**$ 856,271.28**		**$ 748,061.19**		**$ 11,773.27**	**$ 1,616,105.74**	**$ 594,670.65**	**$ 1,114,435.24**

MAIS Crash Data Conversion Calculations

NO-BUILD	No Injury		Possible Injury		Non-incapacitating		Incapacitating		Killed		Injured Severity Unknown		Property Damage Only		
MAIS Accident Scale	**0**	2020 $ Value	**1.6**	2020 $ Value	**0**	2020 $ Value	**0**	2020 $ Value	**0**	2020 $ Value	**0**	2020 $ Value	**17**	2020 $ Value	
0	0.000000	$ -	0.36829571	$ -	0.0000	$ -	0.00	$ -	0.000000	$ -	0.00	$ -	N/A	N/A	
1	0.000000	$ -	1.08343714	$ 35,428.39	0.0000	$ -	0.00	$ -	0.000000	$ -	0.00	$ -	N/A	N/A	
2	0.000000	$ -	0.10043	$ 51,450.29	0.0000	$ -	0.00	$ -	0.000000	$ -	0.00	$ -	N/A	N/A	
3	0.000000	$ -	0.01683	$ 19,261.94	0.0000	$ -	0.00	$ -	0.000000	$ -	0.00	$ -	N/A	N/A	
4	0.000000	$ -	0.00223143	$ 6,469.80	0.00000	$ -	0.00	$ -	0.000000	$ -	0.00	$ -	N/A	N/A	
5	0.000000	$ -	0.00020429	$ 1,320.44	0.0000	$ -	0.00	$ -	0.000000	$ -	0.00	$ -	N/A	N/A	
Fatality	0.000000	$ -	0.000000	$ -	0.00000	$ -	0.00	$ -	0.000000	$ -	0.00	$ -	N/A	N/A	
	0.0	**$ -**	**1.6**	**$ 113,930.86**	**0.0**	**$ -**	**0.0**	**$ -**	**0.0**	**$ -**	**0.0**	**$ -**	**3.5**	**$ 16,100.00**	**$ 130,030.86**

Notes: This case assumes that improvements are NOT built and crash/injury stays consistent with historical data given by Illinois Department of Transportation crash data from 2015-2021.
This table has converted available IDOT crash data (shown on a KABCO scale) into MAIS Data in accordance to the U.S. DOT's. RAISE BENEFIT-COST ANALYSIS GUIDANCE FOR DISCRETIONARY GRANT PROGRAMS.
This table, provided by the National Highway Traffic Safety Administration (NHTSA), makes a conversion from available reported data into re-interpreted AIS data for apples-to-apples comparisons for the U.S. DOT.
Property Damage Only (PDO) - This is not originally part of the AIS conversion table but has been added to this table to account for PDO damage costs. Monetary values for injury/PDO are given by U.S. DOT's.
RAISE BENEFIT-COST ANALYSIS GUIDANCE FOR DISCRETIONARY GRANT PROGRAMS and amounts have been converted to 2020 dollars.

REDUCTION OF 40%[1]	No Injury		Possible Injury				Incapacitating		Killed		Injured Severity Unknown		Property Damage Only		
MAIS Accident Scale	**0**	2020 $ Value	**0.6**	2020 $ Value	**0**	2020 $ Value	**0**	2020 $ Value	**0**	2020 $ Value	**0**	2020 $ Value	**6.8**	2020 $ Value	
0	0.000000	$ -	0.14731829	$ -	0.000000	$ -	0.00	$ -	0.000000	$ -	0.00	$ -	N/A	N/A	
1	0.000000	$ -	0.43337486	$ 14,171.36	0.000000	$ -	0.00	$ -	0.000000	$ -	0.00	$ -	N/A	N/A	
2	0.000000	$ -	0.040172	$ 20,580.12	0.000000	$ -	0.00	$ -	0.000000	$ -	0.00	$ -	N/A	N/A	
3	0.000000	$ -	0.006732	$ 7,704.77	0.000000	$ -	0.00	$ -	0.000000	$ -	0.00	$ -	N/A	N/A	
4	0.000000	$ -	0.00089257	$ 2,587.92	0.000000	$ -	0.00	$ -	0.000000	$ -	0.00	$ -	N/A	N/A	
5	0.000000	$ -	8.1714E-05	$ 528.18	0.000000	$ -	0.00	$ -	0.000000	$ -	0.00	$ -	N/A	N/A	
Fatality	0.000000	$ -	0.000000	$ -	0.000000	$ -	0.00	$ -	0.000000	$ -	0.00	$ -	N/A	N/A	
	0.0	**$ -**	**0.62857143**	**$ 45,572.35**	**0.00**	**$ -**	**0.00**	**$ -**	**0.0**	**$ -**	**0.00**	**$ -**	**1.4**	**$ 6,440.00**	**$ 52,012.35**

Annual Reduction Savings

[1]Assumption: US DOT FHWA Road Diet "Complete Street" case studies showed strong support for crash reduction as a result of the complete streets program. Most case studies found reductions between 20% and 70% for crash/injury incidents. A conservative estimate of 40% reduction was used for analysis of crash reduction due to improvements project and is strongly reinforced by "Road Diet" documentation. (http://safety.fhwa.dot.gov/road_diets/case_studies/roaddiet_cs.pdf)

Crash Reduction Benefits (2020 Dollars)

Crash Reduction Savings Benefits in 2020 Dollars			
Project Year	Analysis Year	Crash Reduction (40%)	Total Benefits @ 7% Discount
1	2020	$ -	$ -
2	2021	$ -	$ -
3	2022	$ -	$ -
4	2023	$ -	$ -
5	2024	$ -	$ -
6	2025	$ -	$ -
7	2026	$ -	$ -
8	2027	$ 52,012.35	$ 37,084.08
9	2028	$ 52,012.35	$ 34,658.02
10	2029	$ 52,012.35	$ 32,390.67
11	2030	$ 52,012.35	$ 30,271.66
12	2031	$ 52,012.35	$ 28,291.27
13	2032	$ 52,012.35	$ 26,440.44
14	2033	$ 52,012.35	$ 24,710.69
15	2034	$ 52,012.35	$ 23,094.10
16	2035	$ 52,012.35	$ 21,583.27
17	2036	$ 52,012.35	$ 20,171.28
18	2037	$ 52,012.35	$ 18,851.67
19	2038	$ 52,012.35	$ 17,618.38
20	2039	$ 52,012.35	$ 16,465.78
21	2040	$ 52,012.35	$ 15,388.58
22	2041	$ 52,012.35	$ 14,381.85
23	2042	$ 52,012.35	$ 13,440.98
24	2043	$ 52,012.35	$ 12,561.66
25	2044	$ 52,012.35	$ 11,739.87
26	2045	$ 52,012.35	$ 10,971.84
27	2046	$ 52,012.35	$ 10,254.06
Totals		**$ 1,040,246.91**	**$ 420,370.16**

Health Benefits of Walking & Cycling (2020 Dollars)

Project Year	Analysis Year	12th Ave Annual VMT Savings	15th Ave Annual VMT Savings	12th Ave 50% Ped Miles Travel	12th Ave 50% Cycle Miles Travel	15th Ave 50% Ped Miles Travel	15th Ave 50% Cycle Miles Travel	$/Person Mile Walked	$/Cycling Mile for Separated Trail	Cost Savings Undiscounted	Total VMT Benefits @ 7% Discount
1	2020	376,067.5	50,820					$ 7.08	$ 6.31	$ -	$ -
2	2021	379,828.1	51,328					$ 7.08	$ 6.31	$ -	$ -
3	2022	383,626.4	51,841					$ 7.08	$ 6.31	$ -	$ -
4	2023	387,462.7	52,360					$ 7.08	$ 6.31	$ -	$ -
5	2024	391,337.3	52,883					$ 7.08	$ 6.31	$ -	$ -
6	2025	395,250.7	53,412					$ 7.08	$ 6.31	$ -	$ -
7	2026	399,203.2	53,946					$ 7.08	$ 6.31	$ -	$ -
8	2027	403,195.2	54,486	201,598	201,598	27,243	27,243	$ 7.08	$ 6.31	$ 3,064,174.61	$ 1,783,377.52
9	2028	407,227.2	55,031	203,614	203,614	27,515	27,515	$ 7.08	$ 6.31	$ 3,094,816.36	$ 1,683,375.04
10	2029	411,299.4	55,581	205,650	205,650	27,791	27,791	$ 7.08	$ 6.31	$ 3,125,764.52	$ 1,588,980.18
11	2030	415,412.4	56,137	207,706	207,706	28,068	28,068	$ 7.08	$ 6.31	$ 3,157,022.17	$ 1,499,878.49
12	2031	419,566.6	56,698	209,783	209,783	28,349	28,349	$ 7.08	$ 6.31	$ 3,188,592.39	$ 1,415,773.15
13	2032	423,762.2	57,265	211,881	211,881	28,633	28,633	$ 7.08	$ 6.31	$ 3,220,478.31	$ 1,336,384.01
14	2033	427,999.8	57,838	214,000	214,000	28,919	28,919	$ 7.08	$ 6.31	$ 3,252,683.10	$ 1,261,446.58
15	2034	432,279.8	58,416	216,140	216,140	29,208	29,208	$ 7.08	$ 6.31	$ 3,285,209.93	$ 1,190,711.26
16	2035	436,602.6	59,000	218,301	218,301	29,500	29,500	$ 7.08	$ 6.31	$ 3,318,062.03	$ 1,123,942.41
17	2036	440,968.7	59,590	220,484	220,484	29,795	29,795	$ 7.08	$ 6.31	$ 3,351,242.65	$ 1,060,917.60
18	2037	445,378.3	60,186	222,689	222,689	30,093	30,093	$ 7.08	$ 6.31	$ 3,384,755.07	$ 1,001,426.89
19	2038	449,832.1	60,788	224,916	224,916	30,394	30,394	$ 7.08	$ 6.31	$ 3,418,602.62	$ 945,272.11
20	2039	454,330.5	61,396	227,165	227,165	30,698	30,698	$ 7.08	$ 6.31	$ 3,452,788.65	$ 892,266.20
21	2040	458,873.8	62,010	229,437	229,437	31,005	31,005	$ 7.08	$ 6.31	$ 3,487,316.54	$ 842,232.58
22	2041	463,462.5	62,630	231,731	231,731	31,315	31,315	$ 7.08	$ 6.31	$ 3,522,189.70	$ 795,004.59
23	2042	468,097.1	63,256	234,049	234,049	31,628	31,628	$ 7.08	$ 6.31	$ 3,557,411.60	$ 750,424.89
24	2043	472,778.1	63,889	236,389	236,389	31,944	31,944	$ 7.08	$ 6.31	$ 3,592,985.72	$ 708,344.99
25	2044	477,505.9	64,528	238,753	238,753	32,264	32,264	$ 7.08	$ 6.31	$ 3,628,915.57	$ 668,624.71
26	2045	482,280.9	65,173	241,140	241,140	32,587	32,587	$ 7.08	$ 6.31	$ 3,665,204.73	$ 631,131.74
27	2046	487,103.7	65,825	243,552	243,552	32,912	32,912	$ 7.08	$ 6.31	$ 3,701,856.78	$ 595,741.17
										$ 67,470,073.03	**$ 21,775,256.11**

Note: US DOT Benefit-Cost Analysis Guidance for Discretionary Grant Programs March 2022 Table A-12 was referenced when calculating benefits.

Safety Benefits of Adding Sidewalk & Multi-Use Trail (2020 Dollars)

Project Year	Analysis Year	12th Ave Annual VMT Savings	15th Ave Annual VMT Savings	12th Ave 50% Ped Miles Travel	12th Ave 50% Cycle Miles Travel	15th Ave 50% Ped Miles Travel	15th Ave 50% Cycle Miles Travel	$/Person Mile Walked	$/Cycling Mile for Separated Trail	Cost Savings Undiscounted	Total VMT Benefits @ 7% Discount
1	2020	376,067.5	50,820					$ 7.08	$ 6.31	$ -	$ -
2	2021	379,828.1	51,328					$ 7.08	$ 6.31	$ -	$ -
3	2022	383,626.4	51,841					$ 7.08	$ 6.31	$ -	$ -
4	2023	387,462.7	52,360					$ 7.08	$ 6.31	$ -	$ -
5	2024	391,337.3	52,883					$ 7.08	$ 6.31	$ -	$ -
6	2025	395,250.7	53,412					$ 7.08	$ 6.31	$ -	$ -
7	2026	399,203.2	53,946					$ 7.08	$ 6.31	$ -	$ -
8	2027	403,195.2	54,486	201,598	201,598	27,243	27,243	$ 7.08	$ 6.31	$ 3,064,174.61	$ 1,783,377.52
9	2028	407,227.2	55,031	203,614	203,614	27,515	27,515	$ 7.08	$ 6.31	$ 3,094,816.36	$ 1,683,375.04
10	2029	411,299.4	55,581	205,650	205,650	27,791	27,791	$ 7.08	$ 6.31	$ 3,125,764.52	$ 1,588,980.18
11	2030	415,412.4	56,137	207,706	207,706	28,068	28,068	$ 7.08	$ 6.31	$ 3,157,022.17	$ 1,499,878.49
12	2031	419,566.6	56,698	209,783	209,783	28,349	28,349	$ 7.08	$ 6.31	$ 3,188,592.39	$ 1,415,773.15
13	2032	423,762.2	57,265	211,881	211,881	28,633	28,633	$ 7.08	$ 6.31	$ 3,220,478.31	$ 1,336,384.01
14	2033	427,999.8	57,838	214,000	214,000	28,919	28,919	$ 7.08	$ 6.31	$ 3,252,683.10	$ 1,261,446.58
15	2034	432,279.8	58,416	216,140	216,140	29,208	29,208	$ 7.08	$ 6.31	$ 3,285,209.93	$ 1,190,711.26
16	2035	436,602.6	59,000	218,301	218,301	29,500	29,500	$ 7.08	$ 6.31	$ 3,318,062.03	$ 1,123,942.41
17	2036	440,968.7	59,590	220,484	220,484	29,795	29,795	$ 7.08	$ 6.31	$ 3,351,242.65	$ 1,060,917.60
18	2037	445,378.3	60,186	222,689	222,689	30,093	30,093	$ 7.08	$ 6.31	$ 3,384,755.07	$ 1,001,426.89
19	2038	449,832.1	60,788	224,916	224,916	30,394	30,394	$ 7.08	$ 6.31	$ 3,418,602.62	$ 945,272.11
20	2039	454,330.5	61,396	227,165	227,165	30,698	30,698	$ 7.08	$ 6.31	$ 3,452,788.65	$ 892,266.20
21	2040	458,873.8	62,010	229,437	229,437	31,005	31,005	$ 7.08	$ 6.31	$ 3,487,316.54	$ 842,232.58
22	2041	463,462.5	62,630	231,731	231,731	31,315	31,315	$ 7.08	$ 6.31	$ 3,522,189.70	$ 795,004.59
23	2042	468,097.1	63,256	234,049	234,049	31,628	31,628	$ 7.08	$ 6.31	$ 3,557,411.60	$ 750,424.89
24	2043	472,778.1	63,889	236,389	236,389	31,944	31,944	$ 7.08	$ 6.31	$ 3,592,985.72	$ 708,344.99
25	2044	477,505.9	64,528	238,753	238,753	32,264	32,264	$ 7.08	$ 6.31	$ 3,628,915.57	$ 668,624.71
26	2045	482,280.9	65,173	241,140	241,140	32,587	32,587	$ 7.08	$ 6.31	$ 3,665,204.73	$ 631,131.74
27	2046	487,103.7	65,825	243,552	243,552	32,912	32,912	$ 7.08	$ 6.31	$ 3,701,856.78	$ 595,741.17
										$ 67,470,073.03	**$ 21,775,256.11**

Note: US DOT Benefit-Cost Analysis Guidance for Discretionary Grant Programs March 2022 Table A-8 & A-9 was referenced when calculating benefits.

Reduction of Noise and Congestion (2020 Dollars)

Project Year	Analysis Year	12th Ave Annual VMT Savings	15th Ave Annual VMT Savings	$/VMT Congestion	$/VMT Noise	Cost Savings Undiscounted	Total VMT Benefits @ 7% Discount
1	2020	$ 145,467.51	$ 76,229.89	$ 0.138	$ 0.00046	$ -	$ -
2	2021	$ 1,055,922.19	$ 76,992.19	$ 0.138	$ 0.00046	$ -	$ -
3	2022	$ 1,066,481.41	$ 77,762.11	$ 0.138	$ 0.00046	$ -	$ -
4	2023	$ 1,077,146.22	$ 78,539.73	$ 0.138	$ 0.00046	$ -	$ -
5	2024	$ 1,087,917.69	$ 79,325.13	$ 0.138	$ 0.00046	$ -	$ -
6	2025	$ 1,098,796.86	$ 80,118.38	$ 0.138	$ 0.00046	$ -	$ -
7	2026	$ 1,109,784.83	$ 80,919.56	$ 0.138	$ 0.00046	$ -	$ -
8	2027	$ 1,120,882.68	$ 81,728.76	$ 0.138	$ 0.00046	$ 166,513.58	$ 96,912.42
9	2028	$ 1,132,091.51	$ 82,546.05	$ 0.138	$ 0.00046	$ 168,178.72	$ 91,478.08
10	2029	$ 1,143,412.42	$ 83,371.51	$ 0.138	$ 0.00046	$ 169,860.50	$ 86,348.47
11	2030	$ 1,154,846.55	$ 84,205.22	$ 0.138	$ 0.00046	$ 171,559.11	$ 81,506.50
12	2031	$ 1,166,395.01	$ 85,047.27	$ 0.138	$ 0.00046	$ 173,274.70	$ 76,936.04
13	2032	$ 1,178,058.96	$ 85,897.75	$ 0.138	$ 0.00046	$ 175,007.45	$ 72,621.87
14	2033	$ 1,189,839.55	$ 86,756.72	$ 0.138	$ 0.00046	$ 176,757.52	$ 68,549.61
15	2034	$ 1,201,737.95	$ 87,624.29	$ 0.138	$ 0.00046	$ 178,525.10	$ 64,705.71
16	2035	$ 1,213,755.33	$ 88,500.53	$ 0.138	$ 0.00046	$ 180,310.35	$ 61,077.35
17	2036	$ 1,225,892.88	$ 89,385.54	$ 0.138	$ 0.00046	$ 182,113.45	$ 57,652.45
18	2037	$ 1,238,151.81	$ 90,279.39	$ 0.138	$ 0.00046	$ 183,934.58	$ 54,419.61
19	2038	$ 1,250,533.33	$ 91,182.19	$ 0.138	$ 0.00046	$ 185,773.93	$ 51,368.04
20	2039	$ 1,263,038.66	$ 92,094.01	$ 0.138	$ 0.00046	$ 187,631.67	$ 48,487.59
21	2040	$ 1,275,669.05	$ 93,014.95	$ 0.138	$ 0.00046	$ 189,507.99	$ 45,768.66
22	2041	$ 1,288,425.74	$ 93,945.10	$ 0.138	$ 0.00046	$ 191,403.07	$ 43,202.19
23	2042	$ 1,301,309.99	$ 94,884.55	$ 0.138	$ 0.00046	$ 193,317.10	$ 40,779.64
24	2043	$ 1,314,323.09	$ 95,833.40	$ 0.138	$ 0.00046	$ 195,250.27	$ 38,492.93
25	2044	$ 1,327,466.32	$ 96,791.73	$ 0.138	$ 0.00046	$ 197,202.77	$ 36,334.45
26	2045	$ 1,340,740.99	$ 97,759.65	$ 0.138	$ 0.00046	$ 199,174.80	$ 34,297.00
27	2046	$ 1,354,148.40	$ 98,737.24	$ 0.138	$ 0.00046	$ 201,166.55	$ 32,373.81
						$ 3,666,463.18	**$ 1,183,312.41**

Note: U.S. DOT Benefit-Cost Analysis Guidance for Discretionary Grant Programs March 2022 Table A-13 was referenced when calculating benefits