Highway MM:
Corridor of Opportunity

HIGHWAY MM
CORRIDOR OF OPPORTUNITY

US DEPARTMENT OF TRANSPORTATION
BETTER UTILIZING INVESTMENTS TO LEVERAGE DEVELOPMENT (BUILD) 2025

Freight Connections

Pedestrian Safety

January 30, 2025
Benefit-Cost Analysis
Narrative

REPUBLIC
MISSOURI

BENEFIT-COST ANALYSIS SUPPLEMENTARY DOCUMENTATION

The purpose of this document is to describe methodologies, provide assumptions, and cite data sources used to prepare the Benefit-Cost Analysis (BCA) for the Highway MM: *Corridor of Opportunity* RAISE application.

The BCA for this grant application benefits and cost calculations for the RAISE grant application BCA ratio include two project locations, Hwy MM from I-44 to MO 360 (Component I) and Hwy MO 360 to Haile St (Component 2). The emissions savings were calculated with output from the OTO Travel Demand Model for all roadways in a local area analysis network and dependent on the build scenario for all original project components. The OTO Travel Demand Model was updated in 2024 to extend out to 2050 and specifically added in the Highway MM Corridor and current economic development.

Table 1 Summary of Benefits

Benefit-Cost Analysis Sumamry		
Benefits		Discounted
Travel Time Savings		$ 76,764,958
Safety		$ 27,991,888
Operations and Maintenance		$ 1,257,856
Emissions Reduction		
	NOn-Co2 Emissions Reduction	$ 332,359
	CO2 Emissions Reduction	$ 1,961,909
Health Benefits		$ 4,206,733
Amenity Facilities		$ 937,621
Total Benefits		$ 113,453,324
Total Project Costs		$ 29,094,228
Benefit Cost Ratio		3.81

Input values for the BCA can be found on the BCA Summary Tab in the BCA Calculation Workbook as well as the workspaces on each tab.

PROJECT DESCRIPTION NO BUILD AND BUILD SCENERIO IN BCA

The Highway MM: *Corridor of Opportunity* will enhance **safety**, **reduce congestion**, and add **capacity** to a rural route that has become the top regional transportation infrastructure project for the Springfield, Missouri Metropolitan Planning Organization.

Project Description at a Glance

- Widening of Highway MM to 4-lanes from 2-lanes
- Widening of bridge over MO 360 to accommodate 4-lanes and pedestrian facilities
- Add ADA sidewalks along corridor
- Pedestrian crosswalk and signal at Haile Street

Hwy MM is a nexus of intermodal freight facilities, warehouse distributors, and entities reliant on the Magellan pipeline located along the corridor. The corridor is growing with companies that

provide above average wages with manufacturing, construction, and warehouse employers. Destinations along the corridor are heavily frequented. Location data software Placer.ai ranks Convoy of Hope's Global Distribution Center #35 on a list of 251 most visited industrial properties in Missouri.

Originally built in 1921, Hwy MM is a 3.95-mile north/south rural minor arterial with two 12-ft wide lanes with no existing sidewalks that connects to US 60 at its south end and to I-44 at its north end. The 2024 AADT was approximately 13,658 vehicles per day based on data provided on MoDOT's Datazone website. The project location between I-44 and US 60, as well as the access it provides to existing and future traffic generators, make it subject to elevated levels of future freight congestion. Construction has accelerated along the corridor with new residential properties and commercial facilities such as Cox Health Center (medical center), Amazon STL3 Fulfillment Center (major warehouse employer), Walmart "Center Fill" Pharmacy Facility, and Convoy of Hope World Headquarters (humanitarian aid distribution center). Additional commercial, retail, housing developments, and a 78-acre Republic School District campus with two new schools are currently being constructed along the corridor.

Missouri Highway MM is significant because it connects Interstate 44 to MO 360 and US 60. Additionally, Hwy MM serves as a vital link to the surrounding communities Republic, Willard, Clever and Nixa through its connections to MO Highways B and ZZ. Future regional improvements to these state highways as well as Hwy 14 will only increase Hwy MM's use. To improve community connectivity and accommodate growing traffic, the project will upgrade the current two-lane arterial into a **divided four-lane road with a raised median**. These improvements will enhance traffic flow, better manage commuter and truck traffic, and create a safer corridor for residents and businesses.

The project boundaries are Highway MM from Interstate 44 to Haile Street.

Build Scenario Characteristics:

- Widening road to a 4-lane primary arterial with raised medians
- 5-foot ADA sidewalks along one side of corridor
- Widening of bridge over MO 360 to accommodate 4-lanes and pedestrian facilities
- Addition of pedestrian crossing and signal at Haile Street

No Build Scenario Characteristics:

- 2-lane 3.95-mile north/south minor arterial (13,000 AADT) with two 12-foot wide lanes

Phase I

- Narrow shoulders and no pedestrian facilities
- 2-lane bridge over MO 360 with no pedestrian accommodations

TRAVEL DEMAND FORECASTING

The Ozarks Transportation Organization's (OTO) VISUM Regional Travel Demand Model was updated to model year 2050 in 2024. The OTO's model was previously updated in 2019 and revisions to the model reflect:

- Updated socio-economic conditions for the baseline model.
- Roadway improvements that have been constructed in the past five years.
- Identification of new committed projects where funding has been secured.
- New socio-economic conditions for the new horizon year of 2050.

The extent of the model includes the entirety of Greene and Christian Counties in southwest Missouri. The revised baseline model was compared to the traffic counts collected in 2023 throughout the OTO area. The model projections were compared with traffic counts at approximately 475 locations to validate the results. The OTO's consultant, Olsson & Associates, updated the model with completed projects and projects included in the FY25 – FY29 Statewide Transportation Improvement Program (STIP) for existing and committed projects scenarios in coordination with OTO planners.

OTO staff used 2020 PL Redistricting census blocks, US Census Bureau Population & Housing Estimates Program, LEHD Origin-Destination Employment Statistics (LODES), and local area residential building permits to develop baseline socio-economic conditions. Growth rates based on the last ten years were used to project population, housing units, and employment by industry for traffic analysis zones to the year 2050.

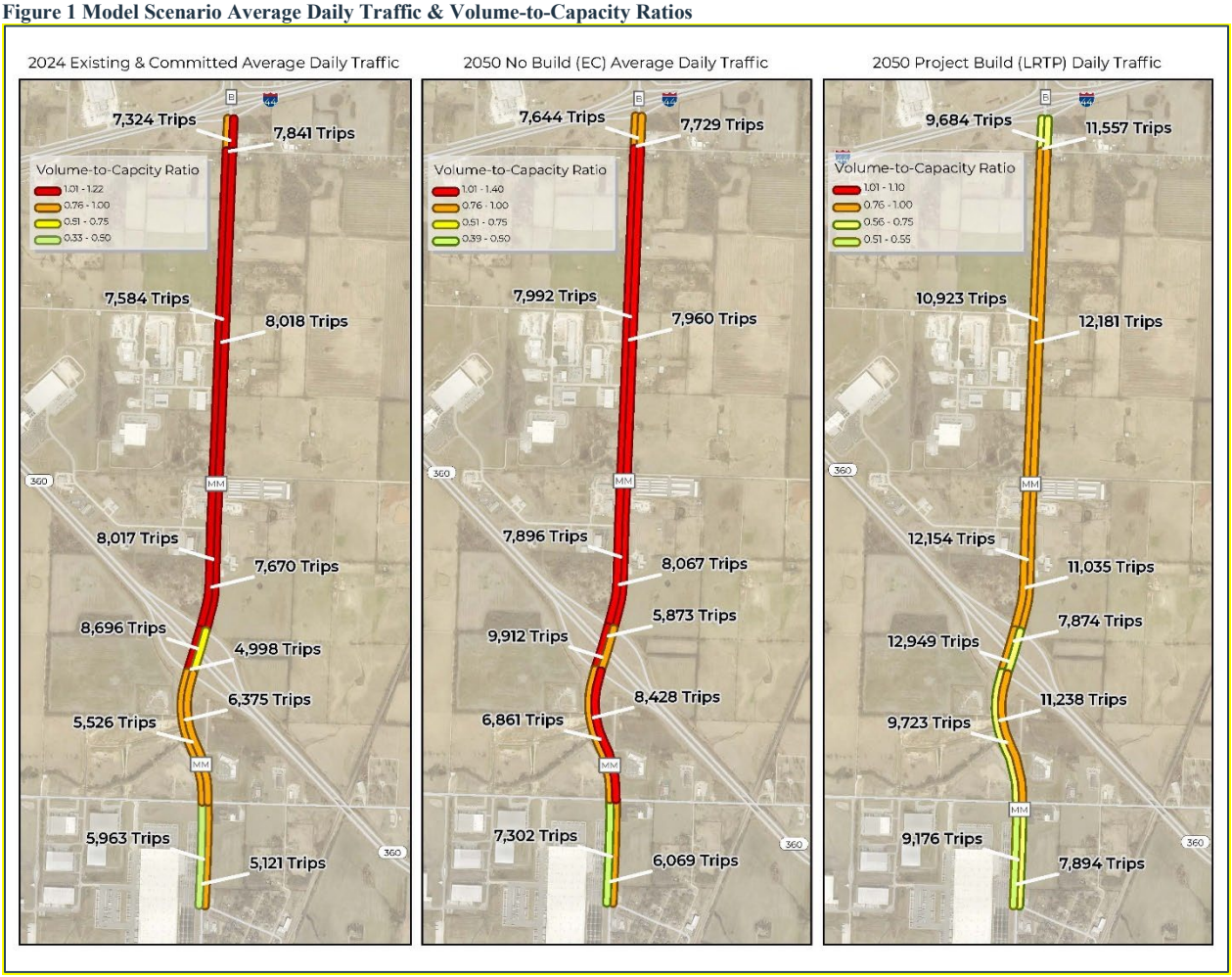
The OTO requested four model scenarios in the update deliverables. Those scenarios include:

- 2024 Baseline scenario,
- 2024 Existing plus Committed Projects,
- 2050 Existing plus Committed Projects and,
- 2050 Long Range Transportation Plan (LRTP) projection.

The 2050 LRTP Scenario includes not only the existing and committed projects but the fiscally constrained list of projects from the OTO Destination 2045 LRTP which includes the Hwy MM project build improvements and represents the **Build** scenario for the BCA.

The 2050 Existing and Committed Projects scenario does not include the Hwy MM project improvements and represents the **No-Build** scenario for the BCA.

Figure 1 Model Scenario Average Daily Traffic & Volume-to-Capacity Ratios



Model segment average daily traffic (ADT) projections in Figure 1 were used to calculate length weighted sums for the model scenarios to correspond with the MoDOT State of the System Segment lengths and 2023 AADT. OTO Travel Demand Model projections were used to project the traffic level for each individual year of the BCA project lifecycle beginning in 2024 for the calculation of travel time savings as well as safety and emissions benefits. Table 2 depicts the volumes for the no-build and build scenarios as well as 2023 MoDOT AADT.

OTO Travel Demand Model roadway capacities represent vehicles per lane per day (vplpd) for each link, directionally. A global link capacity system based on functional classification. Capacities used in the model were taken from research completed by the Florida DOT and the 2010 Highway Capacity Manual and widely used in the industry. Table 3 shows the link capacities by functional class and area type.

Table 2 Travel Demand Model Scenario Traffic Volumes

Corridor Segment*	2023 MoDOT AADT	No Build 2050 EC ADT	Project-Build 2050 LRTP ADT
Hwy MM – I-44 to MO360	13,578	15,919	23,012
Hwy MM – MO360 to Haile St	8,060	14,666	19,516

***Both sections share one segment in MoDOT GIS Data**

Table 3 OTO Travel Demand Model Roadway Capacities

Type Number	Facility Type	Urban Capacity (vplpd)	Rural Capacity (vplpd)
10	Interstate/Freeway	16,500	17,500
20	Expressway	8,875	9,950
30	Major (Multi-Lane) Arterial	7,900	8,450
40	Minor Arterial	7,100	7,800
50	Collector	6,500	6,500
90	Ramp	12,000	10,000

TRAVEL TIME SAVINGS

Assumptions:

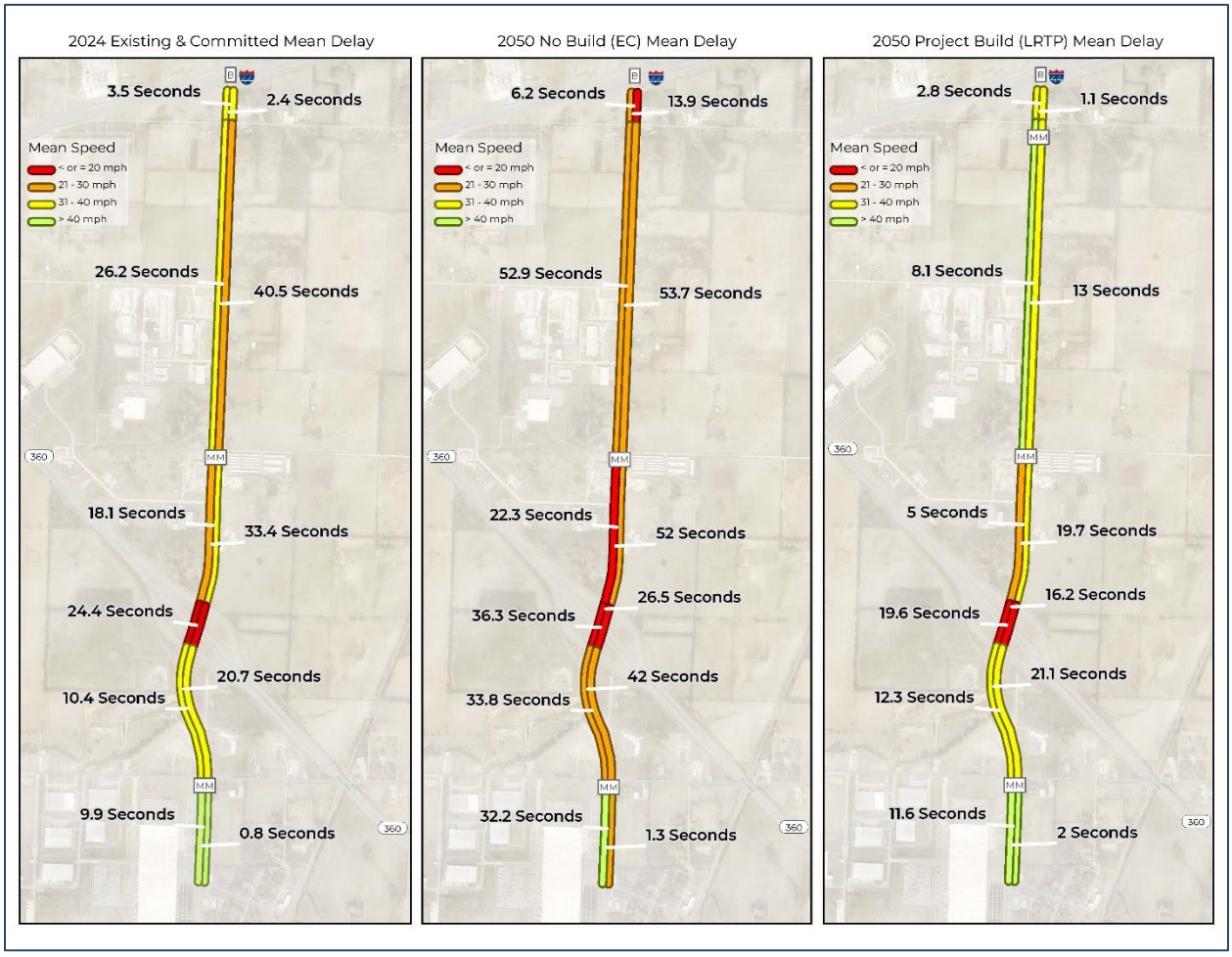
- Highway MM No Build scenario capacity will remain at 15,600 for rural sections south of FR 156 and North of FR 140. No Build Capacity will remain at 14,200 for urban areas between FR 156 and FR 140.

- Highway MM Build scenario capacity will double with the expansion to a four-lane arterial with raised medians to 31,200 for rural sections and 28,000 for urban.

- Mean delay will be greater in the No Build scenario reflecting longer travel times due to increased congestion as the volume-to-capacity ratio rises as illustrated in Figure 2.

- Differences in the modelled total mean delay between No Build 2050 EC and Build 2050 LRTP were used to calculate benefits incrementally across the analysis period.

Figure 2 OTO Travel Demand Model Mean Delay & Mean Speed



The modelled mean delay reflects the number of seconds it takes to traverse a segment based on speed limit, passenger car equivalent volumes, and roadway capacity. Table 4 depicts the summed mean delay for each project corridor and each scenario.

Table 4 OTO Travel Demand Model Scenario Total Mean Delay (Seconds)

Model Scenario	I44 to MO 360	MO 360 to Haile St
Total Mean Delay 2024 EC **Baseline**	124.06	86.82
Total Mean Delay 2050 EC **No Build**	201.09	171.9
Total Mean Delay 2050 LRTP **Project Build**	49.72	82.84

Other parameters used to calculate annual hours of delay between the baseline and the No Build and Build scenarios include traffic volume by vehicle type for 2023 from the Missouri Department of Transportation (MoDOT) AADT Map web application and hourly values of travel time savings by category and average vehicle occupancy rates for highway passenger vehicles from the 2025 US DOT Benefit Cost Analysis Guidance. Tables 5 and 6 contain the MoDOT vehicle volumes and BCA guidance rates, respectively.

Table 5 Parameters Utilized to Calculate Travel Time Benefits

MoDOT 2023 Traffic Volumes	I44 to MO 360	MO 360 to Haile St
Average Annual Daily Traffic	13,578	8,060
Motorcycle	196	139
Passenger Car	7,914	4,171
PU Truck	3,910	2,463
Bus	87	90
Single Unit Truck	650	482
Combo Semi Trailer	821	715

Source: MoDOT AADT Map

Table 6 Recommended Parameter Values 2025 BCA Guidance

Recommended Monetized Values	
Recommended Hourly Values of Travel Time Savings (2023 $ per person-hour)	
General Travel Time – All Purposes	$21.10
Commercial Vehicle Operators – Truck Drivers	$35.70
Commercial Operators – Bus Drivers	$42.60
Average Vehicle Occupancy Rates	
Passenger Vehicles – All Travel	1.52

Source: Tables A-2 & A-3 2025 US DOT Benefit Cost Analysis Guidance

The annual hours of delay were calculated using the 2024 EC Baseline mean delay and Future Year AADT for 2024 – 2027.

((Future Year No Build AADT * (Baseline Mean Dealy[seconds]) * 365) / 3600)

The annual rate of growth/decline in mean delay between the 2024 EC Baseline and both the 2050 EC No Build and 2050 LRTP Build scenarios was applied to the 2027 baseline hours of delay year over year through the 20-year BCA lifecycle starting in 2028.

(2027 Baseline annual hours of delay * 1 + ((2050 EC No Build Mean Delay[seconds] – 2024 EC Baseline Mean Delay[seconds])/2024 EC Baseline Mean Delay [seconds])/(2050 – 2024))

-

(2027 Baseline annual hours of delay * 1 + ((2050 LRTP Build Mean Delay[seconds] – 2024 EC Baseline Mean Delay[seconds])/2024 EC Baseline Mean Delay [seconds])/(2050 – 2024))

=

Annual Difference in Mean Delay

This formula was copied to each subsequent spreadsheet cell through 2050 to produce the year over year difference between the No Build and Project Build scenarios. The difference in the

annual hours of delay between the 2050 EC No Build and 2050 LRTP Build scenarios were used to calculate monetized travel time savings benefits.

(Annual Difference in Delay * Passenger Car and PU Truck Volume % * Monetized Value of General Travel – All Purposes * Passenger Vehicle Occupancy – All Travel)

+

(Annual Difference in Delay * Single Unit and Combo Semi Truck Volume % * Monetized Value of Commercial Vehicle Operators – Truck Drivers)

+

(Annual Difference in Delay * Bus Volume % * Monetized Hourly Value of Commercial Vehicle Operators – Bus Drivers)

=

Annual Value of Travel Time Savings

The Annual Value of Travel Time Savings reflect benefits to additional users using the rule of half for each year of the BCA lifecycle.

There are undiscounted **Travel Time Savings** of **$91,662,442** over the 20-year period for I44 to MO 360 and undiscounted **Travel Time Savings** of **$57,227,749** for MO 360 to Haile St. resulting in a total discounted **Travel Time Savings** value of **$83,312,364**.

SAFETY ANALYSIS

Assumptions:

- There will be a decrease in crashes of all severity types after the two-lane rural highway is converted to a divided four-lane arterial with raised medians.
- All project segments will see a reduction in crash severity due to a reduction in speed limit from 55 mph to 45 mph.

Five years of crash data from 1/1/2019 to 12/31/2023 were exported from MoDOT's data zone crash statistics map and used to calculate a baseline of annual averages for fatal, suspected serious injury, minor injury, and property damage only crashes. The following table summarizes the five years of crash history at project locations of on the Hwy MM corridor.

The increased safety from the No Build to Build scenario results in crash reduction producing positive discounted **Safety Benefit of $41,974,893** savings over the 20-year period.

CRASH HISTORY

Table 6 Five-Year Crash History by Severity 2019 - 2023

Location	Fatality	Disabling/Suspected Serious Injury	Minor Injury	PDO	Total
Hwy MM – I-44 to MO360	0	3	12	37	52
Hwy MM – MO360 to Haile St.	1	3	10	23	37

Source: https://modatazone.modot.org/index.php/safety

CRASH REDUCTION FACTORS

The OTO's on-staff engineer used Interactive Highway Design Model (IHSDM) software to calculate predicted crash frequencies for rural two-lane highways and four-lane arterial with raised medians to reflect the No Build and Build scenarios. Roadway characteristics for the No Build and Build were entered for each roadway segment and intersection comprising the project locations.

The IHSDM Crash Prediction Module (CPM) is intended as a faithful implementation of the Highway Safety Manual (HSM) Part C predictive methods. The HSM Part C method for estimating crash frequencies relies on safety performance functions (SPF) that estimate predicted crash frequency as a function of traffic volume and roadway characteristics (e.g., number of lanes, median type, intersection control, number of approach legs).'
https://highways.dot.gov/safety/data-analysis-tools/highway-safety-manual

A multi-year analysis was run for each scenario using 2024 as a base year covering 25 years through 2050. This resulted in predicted crash frequencies fatal and Injury crashes (FI) and property damage only crashes (PDO) for each year in the analysis period. Comparisons of the expected crash frequencies for each year in the No Build and Build roadway conditions were used to calculate crash reduction factors (CRF) for each year in the analysis period. MoDOT crash severity levels were converted to the KABCO equivalent to calculate safety benefits based on KABCO level, presented below, recommended monetized values in Table A-1 of the 2025 US DOT Benefit Cost Analysis Guidance.

Table 7 MoDOT Crash Severity Level Conversion to KABCO

MoDOT (MAIS) Level	KABCO Level
Fatal	(K) - Killed
Suspected Serious Injury	(A) - Incapacitating
Minor Injury	(B) - Non-incapacitating
-	(C) - Possible Injury
PDO	(O) - No Injury
-	(U) - Injured (Severity Unknown)

The calculation of CRF with treatment is as follows:

$$CRF = 1 - \frac{\text{Predicted crash frequency with treatment (Build)}}{\text{Predicted crash frequency without treatment (No Build)}}$$

Applying the values for predicted crash frequencies for the No Build and Build scenarios for each year in the multi-year analysis resulted in annual CRFs used to calculate yearly safety benefits across the BCA lifecycle.

Table 9 ISHDM Multi-Year Analysis CRFs

I44 to MO 360

Year	KABC CRF	PDO CRF
2024	0.45	0.36
2025	0.44	0.34
2026	0.42	0.32
2027	0.41	0.31
2028	0.39	0.29
2029	0.38	0.27
2030	0.36	0.25
2031	0.35	0.24
2032	0.34	0.22
2033	0.32	0.20
2034	0.31	0.19
2035	0.30	0.17
2036	0.28	0.15
2037	0.27	0.14
2038	0.26	0.12
2039	0.24	0.11
2040	0.23	0.09
2041	0.21	0.07
2042	0.20	0.06
2043	0.19	0.04
2044	0.18	0.03
2045	0.16	0.01
2046	0.15	0.00
2047	0.14	-0.02
2048	0.13	-0.04

MO 360 to Haile St

Year	KABC CRF	PDO CRF
2024	0.55	0.42
2025	0.54	0.41
2026	0.53	0.39
2027	0.51	0.38
2028	0.50	0.36
2029	0.48	0.35
2030	0.47	0.34
2031	0.46	0.32
2032	0.45	0.31
2033	0.44	0.30
2034	0.42	0.29
2035	0.42	0.28
2036	0.41	0.27
2037	0.40	0.25
2038	0.38	0.25
2039	0.38	0.24
2040	0.38	0.23
2041	0.36	0.22
2042	0.36	0.21
2043	0.35	0.20
2044	0.34	0.18
2045	0.34	0.18
2046	0.32	0.17
2047	0.32	0.16
2048	0.30	0.15

The annual safety benefit for each segment was calculated by applying the CRFs for that year to the annual averages for that location's crash severity levels and subsequently monetizing the crash severity level reduction to sum benefits for all locations for each year.

EMISSIONS ANALYSIS

Assumptions:

- Zero emission electric vehicles will grow to 2% of all passenger vehicles by 2028 and increase by 1% per year throughout the analysis period reaching 20% by 2048.
- The annual difference in vehicle hours of delay between the No Build and Build model scenarios were calculated incrementally for each year in the analysis period and used to determine grams of pollutants and fuel consumption.
- Multiplied grams of NOx, PM2.5, and CO2 released per gallon of gasoline (8,897) and diesel (10,180) for light duty and heavy duty traffic, respectively.
- Grams were converted to US short tons by dividing by 907,185 (the number of grams per short ton).
- Multiplied the difference in short tons in the No Build and Build scenarios by the cost of Non-CO2, and CO2 by calendar year.

The emissions benefit calculation is based on the OTO 2050 Travel Demand Model runs for the 2050 EC No-Build and 2050 LRTP Build scenarios. The yearly difference in vehicle hours of delay between the No-Build and Build scenarios was used to calculate emission benefits. Idle emission rates in grams per hour were applied to the difference in vehicle hours of delay for the percentage of heavy-duty trucks and light duty passenger vehicles. Emission rates were derived from the EPA. The following tables provide the values for emission rates and short ton to metric ton conversion.

Table 10 Average Idle Emissions Rates (grams per hour)

Light Duty Gasoline Vehicles	
Volatile Organic Compounds (VOC)	2.683
Nitrogen Oxide (NOx)	3.515
Particulate Matter (PM2.5)	N/A
Sulfer Dioxide	N/A
Heavy Duty Diesel Vehicle	
Volatile Organic Compounds (VOC)	3.455
Nitrogen Oxide (NOx)	33.763
Particulate Matter (PM2.5)	1.1
Sulfer Dioxide	N/A

Idling Vehicle Emissions for Passenger Cars, Light-Duty Trucks, and Heavy-Duty Trucks, EPA, October 2008

Table 11 Unit Conversions

Grams per US Short Ton	907,185
Metric Ton to Short Ton	1.1

The damage costs for NOx and PM2.5 emissions were calculated based on the yearly value per metric ton in Table A-6 in the 2025 US DOT BCA Guidance for Discretionary Grant Programs.

Table 12 Idling Fuel Use Supporting Data Parameters

Vehicle Type	Fuel Type	Engine Size (Liter)	Gross Vehicle Weight	Idling Fuel Use (Gal/Hr with No Load)
Compact Sedan	Gas	2	-	0.16
Large Sedan	Gas	4.6	-	0.39
Compact Sedan	Diesel	2	-	0.17
Medium Heavy Truck	Gas	5-7	19,700-26,000	0.84
Delivery Truck	Diesel	-	19,500	0.84
Tow Truck	Diesel	-	26,000	0.59
Medium Heavy Truck	Diesel	6-10	23,000-33,000	0.44
Transit Bus	Diesel	-	30,000	0.97
Combination Truck	Diesel	-	32,000	0.49
Bucket Truck	Diesel	-	37,000	0.9
Tractor Semi-Trailer	Diesel	-	80,000	0.64

https://www.energy.gov/eere/vehicles/fact-861-february-23-2015-idle-fuel-consumption-selected-gasoline-and-diesel-vehicles

Idling Fuel Use for passenger cars used the average gas use for Compact and Large Sedans (0.275) and the value for truck type applied to the 2023 MoDOT AADT vehicle type percentage.

Table 13 2023 MoDOT Volume by Vehicle Type

Volume by Vehicle Type	I-44 to MO360	MO360 to Haile St	Idling Fuel Use (Gal/Hr with No Load)
AADT	13,578	8,060	-
AAWDT	14,202	8,430	-
Mcycle	196	139	-
Passenger Car	7,914	4,171	0.275
PU Truck	3,910	2,463	0.84
Bus	87	90	0.97
Single Unit Truck	650	482	0.84
Comb Semi Trailer	821	715	0.64

Damage costs for CO_2, NOx, and $PM_{2.5}$ emissions were calculated based on the yearly value per metric ton in the 2025 US DOT BCA Guidance for Discretionary Grant Programs.

There are discounted **CO2 Emission Reduction Benefits** of **$1,961,909** and **Non-CO2 Emission Reduction Benefits** of **$332,359**.

OPERATING & MAINTENANCE COSTS

Operating and Maintenance Costs for the Highway MM corridor were provided by MoDOT. Baseline per lane-mile costs for patching, mowing, signing, snow removal, signals, and a 10-year resurfacing cycle were calculated and applied to the existing No-Build lane-miles (7.6) to create a base year value. A three percent rate of inflation was applied year-over-year throughout the analysis period. The per lane-mile costs were then applied to the Project-Build lane-miles (14.09) and inflated at three percent year-over-year through the analysis period. The No-Build costs were subtracted from the Project-Build costs resulting in $1,220,028 Discounted Total.

Table 14 Cost of Maintenance Mile

,

Operations and Maintenance Cost				
Project Benefit Year	Year	No-Build O&M	d O&M	Net Difference Cost
	2024			
	2025			
	2026			
	2027			
	2028			
1	2029	$ 76,234	$ 152,468	$ 76,234
2	2030	$ 78,521	$ 157,042	$ 78,521
3	2031	$ 80,877	$ 161,754	$ 80,877
4	2032	$ 83,303	$ 166,606	$ 83,303
5	2033	$ 85,802	$ 171,605	$ 85,802
6	2034	$ 88,376	$ 176,753	$ 88,376
7	2035	$ 91,028	$ 182,055	$ 91,028
8	2036	$ 93,758	$ 187,517	$ 93,758
9	2037	$ 96,571	$ 193,142	$ 96,571
10	2038	$ 99,468	$ 198,937	$ 99,468
11	2039	$ 102,452	$ 204,905	$ 102,452
12	2040	$ 105,526	$ 211,052	$ 105,526
13	2041	$ 108,692	$ 217,384	$ 108,692
14	2042	$ 111,953	$ 223,905	$ 111,953
15	2043	$ 115,311	$ 230,622	$ 115,311
16	2044	$ 118,770	$ 237,541	$ 118,770
17	2045	$ 122,334	$ 244,667	$ 122,334
18	2046	$ 126,004	$ 252,007	$ 126,004
19	2047	$ 129,784	$ 259,567	$ 129,784
20	2048	$ 133,677	$ 267,354	$ 133,677
Total Costs		$2,048,442	$4,096,884	$2,048,442

AMENITY BENEFITS

The BCA Guidance provides recommendations for pedestrian facilities. Benefits were quantified for the following project improvements, based on a conservative AADT along the sidewalk and trail additions and a 1% annual increase sidewalk and 2% increase on the shared use path:

- Average walker trip mile .86 mile
- Expanded or new sidewalk width – 5-ft
- Expanded or new trail width – 10-ft
- Reduction of Traffic Speed by 1 mph – 10 mph reduction for sidewalk calculations
- Days per year sidewalk and trail in use – 340 days (to account for severe weather occurrence)
- Total Pedestrian Facility Improvement Value Sidewalk - $1.45
- Total Pedestrian Facility Improvement Value Shared Use Path - $1.10

The corridor currently does not have sidewalks available for pedestrians. A conservative estimate of 100 AADT from Haile Street to MO 360, and 30 AADT from MO 360 to I-44 was assumed. The positive discounted **Amenity Benefit** of **$937,621** is realized along the corridor.

Table 15 Pedestrian Facility Inputs

Pedestrian Facility Inputs										
Segment	Number of Walkers Per Segment	Expand or new Sidewalk (per foot of added Width)		Expand or new Sidewalk (per foot of added Width)	Reducing Traffic Speed by 1 mph (for speeds greater than <45 mph)		Valute Reducing Traffic Speed by 1 mph (for speeds greater than <45 mph)	Total Pedestrian Facility Improvement $ Value	Trip Mile	Days Per Year
Pedestrian Improvement Haile Street to MO 360	100	5'	$0.11	$0.55	10	$0.10	$1.00	$1.55	0.86	340
Pedestrian Improvement MO 360 to I-44	50	5'	$0.11	$0.55	10	$0.10	$1.00	$1.55	0.86	340

Values from November 2024 BCA Guidance. Pedstrians from estimate of daily walkers. Springfield, MO trail counts average weekly walkers from March to September 2020 1,560. Total average usage of trail segment in Springfield area from March to September 56,160. Numbers used here are conservative and below the local average.

HEALTH BENEFITS OF INDUCED ACTIVE TRANSPORATION VALUES

The BCA Guidance provides recommendations for Mortality Reduction Benefits of Induced Active Transportation Values.

Table 16 Mortality Reduction Benefit Input – Pedestrian

Mortality Reduction Benefit Criteria - Pedestrian						
Segment	Number of Walkers	Days per Year	Induced Walking Trips	Applicable Age Range	Benefit	Total Value of New Trips
Sidewalk - Haile Street - MO 360	100	340	0.89	0.68	$ 7.63	$ 148,152.96
Sidewalk - MO 360 to I-44	30	340	0.89	0.68	$ 7.63	$ 44,445.89

Values from November 2024 BCA Guidance. Pedestrians from estimate of daily walkers. Springfield, MO trail counts average weekly walkers from March to September 2020 1,560. Total average usage of trail segment in Springfield area from March to September 56,160. Numbers used here are conservative and below the local average.

Table 17 Mortality Reduction Benefit Input – Bicyclist

Mortality Reduction Benefit Criteria - Bicyclist						
Segment	Number of Bicyclists	Days per Year	Induced Biking Trips	Applicable Age Range	Benefit	Total Value of New Trips
Sidewalk -Haile Street - MO 360	15	340	2.38	0.59	$ 6.80	$ 48,697.66
Sidewalk - MO 360 to I-44	10	340	2.38	0.59	$ 6.80	$ 32,465.10

The Ozark Greenways (ozarkgreenways.org) is a regional nonprofit that maintains and advocates for trails in the Springfield, MO region. The organization has trail counts on Springfield region trails. Using these trail count baselines, the BCA utilized bicycle and pedestrian counts that were below the local average to ensure conservative factors were applied. The BCA worksheet has a tab with the trail counts for comparison (Springfield Region Trail Counts). In addition, the national average factor of .59 for bicyclists and 0.68 for pedestrians were applied since the local trail counts did not differentiate between visitor age. The **Health Benefits** for Pedestrians and Bicyclists is **$4,206,733.**