MID-STATES CORRIDOR

APPENDIX EE: ECONOMIC IMPACTS

Mid-States Corridor
Tier 1 Environmental Impact Statement

Prepared for

Indiana Department of Transportation

Mid-States Regional Development Authority

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INDIANA DEPARTMENT OF TRANSPORTATION INDOT

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IMPACT AREAS

This appendix provides details and background to the analyses in **Section 3.4**. Also, in **Section 3.4,** results are presented at the route level. In this Appendix, we provide results for individual facility types within each route grouping.

Highway user costs and benefits

Table 1 summarizes the vehicle miles traveled (VMT) and operating costs for auto and trucks. These are given individually for each route and facility type combination. Vehicle operating costs are proportional to miles traveled, and include such items as fuel, maintenance and insurance. [1]

TABLE 1: YEAR 2045 AVERAGE DAILY USER COSTS BY VEHICLE-MILES TRAVELED

Alternative	Auto		Truck		Total	
	Vehicle Miles Traveled (1,000s)	Operating Cost (Millions)[1]	Vehicle Miles Traveled (1,000s)	Operating Cost (Millions)[1]	Vehicle Miles Traveled (1,000s)	Operating Cost (Millions)[1]
No Build	12,368	$2,065	647	$342	13,015	$2,408
B2	12,417	$2,074	655	$346	13,072	$2,420
B3	12,443	$2,078	655	$346	13,098	$2,424
C2	12,445	$2,078	653	$346	13,098	$2,424
C3	12,452	$2,079	651	$344	13,103	$2,424
M2	12,406	$2,072	650	$344	13,055	$2,415
M3	12,406	$2,072	649	$343	13,055	$2,415
O2	12,435	$2,077	651	$345	13,086	$2,421
O3	12,475	$2,083	649	$343	13,124	$2,427
P2	12,409	$2,072	650	$344	13,059	$2,416
P3	12,403	$2,071	648	$343	13,051	$2,414

1. Daily operating cost per 1,000 mi = $167 for auto and $529 for truck.
Sources: 2045 Forecast Year Assignment, Mid-States Corridor Travel Demand Model. Cost/mile provided by TREDIS Model.

[1] VMT and VHT estimates in **Table 1** and **Table 2** are for all trips with one or both trip ends in the Study Area. It excludes trips which simply "pass through" the Study Area, and both begin and end outside of the Study Area. These diverted trips would result in a reduction in VMT and VHT outside of the Study Area. The changes in VMT and VHT outside of the Study Area cannot be readily determined.

Table 2 summarizes the alternative level vehicle hours of travel (VHT) and corresponding travel time cost for autos and trucks. Travel time costs are proportional to VHT.

TABLE 2: YEAR 2045 AVERAGE DAILY USER COSTS BY VEHICLE-HOURS TRAVELED

Alternative	Auto		Truck		Total	
	Vehicle Hours Traveled (1,000s)	Time Cost (1,000s)[1]	Vehicle Hours Traveled (1,000s)	Time Cost (1,000s)[1]	Vehicle Hours Traveled (1,000s)	Time Cost (1,000s)[1]
No Build	293	$6,353	11.9	$361	305.0	$6,715
B2	293	$6,359	11.9	$361	305.3	$6,720
B3	294	$6,380	11.9	$363	306.3	$6,743
C2	293	$6,351	11.8	$358	304.8	$6,709
C3	294	$6,382	11.9	$361	306.4	$6,744
M2	292	$6,336	11.8	$358	304.1	$6,694
M3	293	$6,357	11.9	$361	305.2	$6,717
O2	293	$6,348	11.8	$360	304.7	$6,707
O3	295	$6,398	11.9	$362	307.1	$6,760
P2	292	$6,338	11.8	$358	304.2	$6,696
P3	293	$6,358	11.9	$361	305.2	$6,719

1. Daily time cost per hour = $21.7 for auto and $30.4 for truck

Source: Travel Demand Model (Daily VHT), TREDIS Model (cost/hour).

The higher costs for build routes in **Table 1** reflect higher VMT for the route alternatives. Some travelers would make longer trips within the same travel time budget. There also would be induced trips due to growth within the Study Area. The economic development induced by the new highway results in additional jobs and households locating in the area. This increase in households and jobs would cause added travel. These benefits would attract many motorists from other routes within the Study Area to the new Mid-States Corridor, even if the trip is longer. These longer trips increase VMT and, in most cases, VHT.

Table 2 shows that some route alternatives result in decreased VHT and travel time cost. This is seen in the expressway versions of Routes P, M and O. These routes provide a more direct connection to I-69 than Routes B and C. This, in combination with the higher speeds on these roads, leads to a decrease in VHT even as VMT increases.

Table 3 summarizes the crashes and associated costs for each route alternative. The total crashes are slightly lower for build alternatives. The lower crashes are primarily due to travel being diverted to safer, higher classification roads. **Table 4** and **Table 5** provide more details on the crash rates and crash cost per crash type for each of the alternatives.

TABLE 3: YEAR 2045 ANNUAL CRASH COSTS

Alternative	Property Damage		Fatal/Injury		Total	
	Crash-Involved Vehicles number (1000s)	Crash-Involved Vehicles cost (Millions)	Fatalities and Injuries Number (1000s)	Fatalities and Injuries Cost (Millions)	Total Number (1000s)	Total Cost (Millions)
No Build	60.2	$271	17.1	$4,902	77.3	$5,173
B2	60.2	$271	17.0	$4,897	77.2	$5,167
B3	60.3	$271	17.1	$4,907	77.4	$5,178
C2	60.0	$270	17.0	$4,882	77.0	$5,152
C3	60.3	$271	17.1	$4,910	77.4	$5,181
M2	60.1	$270	17.0	$4,892	77.1	$5,162
M3	60.1	$270	17.0	$4,892	77.1	$5,162
O2	59.9	$270	17.0	$4,878	76.9	$5,148
O3	60.1	$271	17.0	$4,893	77.1	$5,164
P2	59.8	$269	16.9	$4,868	76.8	$5,137
P3	59.8	$269	16.9	$4,865	76.7	$5,134

Sources: TREDIS Model (crash costs and crash rates)

TABLE 4: YEAR 2045 CRASH RATES

Alternative	Auto			Truck		
	Fatalities Per 100m VMT	Injuries Per 100m VMT	Crash-Involved Vehicles Per 100m VMT	Fatalities Per 100m VMT	Injuries Per 100m VMT	Crash-Involved Vehicles Per 100m VMT
No Build	1.12	136.8	477.4	0.37	19.2	179.3
B2	1.11	136.1	475.0	0.37	19.1	178.4
B3	1.11	136.1	475.0	0.37	19.1	178.4
C2	1.11	135.5	472.7	0.37	19.0	177.5
C3	1.11	136.1	475.0	0.37	19.1	178.4
M2	1.11	136.1	475.0	0.37	19.1	178.4
M3	1.11	136.1	475.0	0.37	19.1	178.4
O2	1.11	135.5	472.7	0.37	19.0	177.5
O3	1.11	135.5	472.7	0.37	19.0	177.5
P2	1.11	135.5	472.7	0.37	19.0	177.5
P3	1.11	135.5	472.7	0.37	19.0	177.5

Sources: TREDIS Model with modification based on functional class

TABLE 5: YEAR 2045 CRASH COSTS PER CRASH TYPE

Alternative	Auto and Truck		
	Cost per Fatality ($1,000)	Cost per Injury ($1,000)	Cost per Crash-Involved Vehicle ($1000)
No Build	10,900.0	197.6	4.5
B2	10,900.0	197.6	4.5
B3	10,900.0	197.6	4.5
C2	10,900.0	197.6	4.5
C3	10,900.0	197.6	4.5
M2	10,900.0	197.6	4.5
M3	10,900.0	197.6	4.5
O2	10,900.0	197.6	4.5
O3	10,900.0	197.6	4.5
P2	10,900.0	197.6	4.5
P3	10,900.0	197.6	4.5

Sources: TREDIS Model

Local property tax impacts

This section provides a more detailed explanation of the steps undertaken to evaluate the local property tax impacts due to the Mid-States Corridor project.

Below are the steps taken to integrate the parcel information with the Mid-States Corridor right-of-way shapefiles and to evaluate the assessed value of right-of-way for each alternative.

1. Query out Indiana parcel data that intersects any working alignment. (Indiana map data - https://maps.indiana.edu/layerGallery.html?category=Land).
2. Join 2018 real parcel appraisal value of land & improvements (Indiana map data) by parcel ID.
3. Calculate the acres of each joined parcel.
4. Intersect the right-of-way (ROW) with the with the previously joined data file.
5. Identify the overlap of the acres of each parcel and ROW overlap.
6. Divide the parcel overlap acres by the overall parcel acres to get a fraction percentage.
7. Flag all 600 level "tax exempt" records.
8. Adjust the assessed value of some of the parcels which have unrealistic assessed value per acre.
9. Visually inspect the ROW for areas without value or without a parcel geometry. Assign value and parcel geometry based on the similar parcels adjacent.
10. Multiply the assessed value of the taxable parcels by the area fraction percentage calculated previously to get the proportion of tax impact.

Table 6 summarizes the assessed property value of the right-of-way for each alternative by county.

TABLE 6: ASSESSED PROPERTY VALUE OF RIGHT-OF-WAY

Alternatives	Assessed value of Right of way (1,000s)[1]							
	Daviess	Dubois	Greene	Lawrence	Martin	Orange	Pike	Grand Total
B2	$5,380	$5,449					$340	$11,170
B3	$5,247	$4,349					$340	$9,936
C2	$2,700	$6,745			$113			$9,558
C3	$2,276	$4,688			$94			$7,058
M2		$6,749		$12,617	$4,505			$23,871
M3		$4,689		$12,348	$3,678			$20,715
O2		$8,571		$5,033		$3,660		$17,264
O3		$6,607		$330		$3,379		$10,316
P2e	$1,081	$6,763	$33		$3,638			$11,516
P2w	$2,369	$6,763	$33		$2,943			$12,107
P3e	$912	$4,689	$13		$3,066			$8,680
P3w	$1,743	$4,689	$13		$2,454			$8,899

1. Assessed value as of 2018

Source: INDIANA MAP website (Assessed value of parcels) - https://maps.indiana.edu/layerGallery.html?category=Land

The assessed property values of right-of-way for each alternative by each county was multiplied by the county tax rate to get the total loss in property tax. To be conservative, the tax rate for Daviess, Dubois, Lawrence, Martin and Orange counties is assumed to be 2.04 percent, which is the state median tax rate. This conservative assumption was used because tax rates can vary across the county by type of property impacted. 2020 tax rates are used for this calculation. **Table 7** summarizes the local property tax loss for each alternative by county.

TABLE 7: LOCAL PROPERTY TAX LOSS ESTIMATE

Alternatives	Property Tax Loss (1,000s)							
	Daviess	Dubois	Greene	Lawrence	Martin	Orange	Pike	Grand Total
B2	$110	$111					$9	$230
B3	$107	$89					$9	$205
C2	$55	$138			$2			$195
C3	$46	$96			$2			$144
M2		$138		$257	$92			$487
M3		$96		$252	$75			$423
O2		$175		$103		$75		$352
O3		$135		$7		$69		$210
P2e	$22	$138	$1		$74			$235
P2w	$48	$138	$1		$60			$247
P3e	$19	$96	$0		$63			$177
P3w	$36	$96	$0		$50			$182

1. Tax Rate for year 2020

Source: STATS INDIANA (tax rate) - (https://www.stats.indiana.edu/dms4/propertytaxes.asp)

Project spending

Table 8 summarizes the facility type, project length, total cost and cost per mile for each alternative. The total project cost has a wide range across build alternatives in part due to the varying project lengths.

TABLE 8: MID-STATES CORRIDOR TOTAL COST ESTIMATES

Mid-States Corridor Total Cost Estimates				
Alternative	**Facility Type**	**Miles**	**Total Cost (Millions)**	**Cost/Mile (Millions)**
B2	Expressway	33.4	$576	$17.3
B3	Super-2	33.4	$449	$13.4
C2	Expressway	41	$759	$18.5
C3	Super-2	41	$554	$13.5
M2	Expressway	62	$1,395	$22.5
M3	Super-2	62	$1,105	$17.8
O2	Expressway	53	$1,320	$24.9
O3	Super-2	53	$1,074	$20.3
P2	Expressway	54	$1,016	$18.8
P3	Super-2	54	$735	$13.6

Estimates include all construction costs, 20% construction contingency and non-construction costs (right-of-way, utility relocations, preliminary engineering, environmental permitting/mitigation and construction engineering.