

Year	Construction Costs			Travel Time Benefit			Vehicle Operation Cost Benefit			Safety Benefit		
	Non-Disc.	Disc (3%)	Disc. (7%)	Non-Disc.	Disc (3%)	Disc. (7%)	Non-Disc.	Disc (3%)	Disc. (7%)	Non-Disc.	Disc (3%)	Disc. (7%)
2015	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2016	\$9,230,000	\$8,961,165	\$8,626,168	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2017	\$11,180,000	\$10,538,222	\$9,765,045	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2018	\$5,590,000	\$5,115,642	\$4,563,105	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2019	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2020	\$0	\$0	\$0	\$4,510,782	\$3,891,040	\$3,216,125	\$5,927,787	\$5,113,361	\$4,226,430	\$5,633,530	\$4,859,533	\$4,016,629
2021	\$0	\$0	\$0	\$4,066,955	\$3,406,011	\$2,709,984	\$5,454,679	\$4,568,208	\$3,634,683	\$5,183,908	\$4,341,441	\$3,454,257
2022	\$0	\$0	\$0	\$3,623,128	\$2,945,935	\$2,256,302	\$4,981,572	\$4,050,474	\$3,102,273	\$4,734,286	\$3,849,407	\$2,948,275
2023	\$0	\$0	\$0	\$3,179,301	\$2,509,769	\$1,850,382	\$4,508,465	\$3,559,024	\$2,623,967	\$4,284,663	\$3,382,353	\$2,493,713
2024	\$0	\$0	\$0	\$2,735,474	\$2,096,513	\$1,487,916	\$4,035,357	\$3,092,765	\$2,194,967	\$3,835,041	\$2,939,240	\$2,086,008
2025	\$0	\$0	\$0	\$2,291,647	\$1,705,200	\$1,164,957	\$3,562,250	\$2,650,648	\$1,810,867	\$3,385,419	\$2,519,070	\$1,720,975
2026	\$0	\$0	\$0	\$1,847,819	\$1,334,904	\$877,886	\$3,089,142	\$2,231,662	\$1,467,629	\$2,935,797	\$2,120,882	\$1,394,776
2027	\$0	\$0	\$0	\$1,403,992	\$984,732	\$623,389	\$2,616,035	\$1,834,834	\$1,161,551	\$2,486,175	\$1,743,753	\$1,103,891
2028	\$0	\$0	\$0	\$960,165	\$653,826	\$398,434	\$2,142,928	\$1,459,229	\$889,239	\$2,036,552	\$1,386,793	\$845,097
2029	\$0	\$0	\$0	\$516,338	\$341,360	\$200,245	\$1,669,820	\$1,103,948	\$647,585	\$1,586,930	\$1,049,148	\$615,439
2030	\$0	\$0	\$0	\$72,511	\$46,542	\$26,281	\$1,196,713	\$768,124	\$433,744	\$1,137,308	\$729,995	\$412,213
2031	\$0	\$0	\$0	-\$371,316	-\$231,392	-\$125,778	\$723,606	\$450,927	\$245,110	\$687,686	\$428,543	\$232,943
2032	\$0	\$0	\$0	-\$815,143	-\$493,175	-\$258,054	\$250,498	\$151,555	\$79,301	\$238,063	\$144,032	\$75,365
2033	\$0	\$0	\$0	-\$1,258,971	-\$739,512	-\$372,484	-\$222,609	-\$130,759	-\$65,862	-\$211,559	-\$124,269	-\$62,593
2034	\$0	\$0	\$0	-\$1,702,798	-\$971,082	-\$470,838	-\$695,717	-\$396,757	-\$192,371	-\$661,181	-\$377,062	-\$182,822
2035	\$0	\$0	\$0	-\$2,146,625	-\$1,188,534	-\$554,729	-\$1,168,824	-\$647,150	-\$302,046	-\$1,110,803	-\$615,025	-\$287,053
2036	\$0	\$0	\$0	-\$2,590,452	-\$1,392,496	-\$625,628	-\$1,641,931	-\$882,619	-\$396,548	-\$1,560,426	-\$838,806	-\$376,863
2037	\$0	\$0	\$0	-\$3,034,279	-\$1,583,567	-\$684,877	-\$2,115,039	-\$1,103,823	-\$477,392	-\$2,010,048	-\$1,049,029	-\$453,694
2038	\$0	\$0	\$0	-\$3,478,106	-\$1,762,328	-\$733,696	-\$2,588,146	-\$1,311,392	-\$545,961	-\$2,459,670	-\$1,246,295	-\$518,860
2039	\$0	\$0	\$0	-\$3,921,933	-\$1,929,331	-\$773,196	-\$3,061,254	-\$1,505,934	-\$603,516	-\$2,909,292	-\$1,431,179	-\$573,557
TOTAL	\$26,000,000	\$24,615,029	\$22,954,318	\$5,888,489	\$9,624,415	\$10,212,624	\$28,665,332	\$25,056,327	\$19,933,650	\$27,242,379	\$23,812,525	\$18,944,139
							No Disc.	3% Disc.	7% Disc.			
							Costs	\$26,000,000	\$24,615,029	\$22,954,318		
							Benefits	\$61,796,200	\$58,493,267	\$49,090,414		
							B/C Ratio	2.38	2.38	2.14		

Benefits per VHT and VMT

Value of Time

Automobiles

Trucks

Value of Time ¹	\$15.05	per hour	Value of Time ¹	\$25.80	per hour
Occupancy	1.1		Occupancy	1.05	
			Inventory Costs ²	\$1.03	
TOTAL COST	\$16.56	per VHT	TOTAL COST	\$28.12	per VHT

Vehicle Operating Costs

Automobiles

Trucks

Fuel Economy	25	MPG	Fuel Economy	6	MPG
Fuel Price	\$3.00	per gallon	Fuel Price	\$3.00	per gallon
Other Maint. ³	\$0.061	per mile	Other Maint. ⁶	\$0.150	per mile
Vehicle Life	10	years	Vehicle Life	5	years
Vehicle Cost	\$20,000		Vehicle Cost ⁶	\$150,000	
Salvage Value	\$2,000		Salvage Value	\$15,000	
Miles per Year	15,000	miles	Miles per Year ⁶	125,000	miles
Finance Rate	3.0%		Finance Rate	3.0%	
Owner. Cost ⁴	\$2,170	per year	Owner. Cost ⁶	\$29,928	per year
Insurance ⁵	\$1,092	per year	Insurance ⁶	\$6,500	per year
Fuel Cost	\$0.120	per VMT	Fuel Cost	\$0.500	per VMT
Other Maint.	\$0.061	per VMT	Other Maint.	\$0.150	per VMT
Ownership	\$0.145	per VMT	Ownership	\$0.239	per VMT
Insurance	\$0.073	per VMT	Insurance	\$0.052	per VMT
TOTAL COST	\$0.398	per VMT	TOTAL COST	\$0.941	per VMT

Safety Costs

All Vehicles

Cost of Crash¹

	Crash Rate (per MVM)⁷			AIS 0	\$0
	Build	No-Build	Crash Cost¹	AIS 1	\$28,200
Fatal Crashes	0.00965	0.00965	\$9,400,000	AIS 2	\$441,800
Non-Fatal Crash	2.224	2.224	\$129,490	AIS 3	\$987,000
	Crash Cost (per VMT)			AIS 4	\$2,500,400
Fatal Crashes	\$0.091	\$0.091		AIS 5	\$5,574,200
Non-Fatal Crash	\$0.288	\$0.288		AIS 6	\$9,400,000
TOTAL COST	\$0.379	\$0.379			

1 - Tiger Benefit Cost Analysis (BCA) Resource Guide, 2015, pages 2-3

2 - AASHTO, Equation 5-12, 3% interest rate, \$300,000 Value of Cargo

3 - AASHTO Table 5-4, Avg. of Maint. and Tires for 5 vehicle types, adjust for inflation

4 - AASHTO, Equation 5-6

5 - AASHTO, Table 5-4, Avg. of Insurance for 5 Vehicle Types, adjusted for inflation

6 - From <http://www.thetruckersreport.com/infographics/cost-of-trucking/>

7 - Based on 2012 statewide average crash rates in urban areas

Estimates of VMT and VHT

	Output from CARTS Travel Demand Model (Lonoke County)					
	Daily VMT			Daily VHT		
	Build	No-Build	Reduction	Build	No-Build	Reduction
2010	2,060,609	2,133,894	73,285	46,672	48,153	1,481
2030	2,977,113	2,985,341	8,228	73,828	73,840	12
	Estimates of VMT and VHT by years using linear interpolation					
	Daily VMT			Daily VHT		
	Build ¹	No-Build	Reduction	Build ¹	No-Build	Reduction
2015	2,346,756	2,346,756	0	54,575	54,575	0
2016	2,389,328	2,389,328	0	55,859	55,859	0
2017	2,431,900	2,431,900	0	57,143	57,143	0
2018	2,474,473	2,474,473	0	58,428	58,428	0
2019	2,517,045	2,517,045	0	59,712	59,712	0
2020	2,518,861	2,559,618	40,757	60,250	60,997	747
2021	2,564,686	2,602,190	37,504	61,608	62,281	673
2022	2,610,511	2,644,762	34,251	62,966	63,565	600
2023	2,656,337	2,687,335	30,998	64,323	64,850	526
2024	2,702,162	2,729,907	27,745	65,681	66,134	453
2025	2,747,987	2,772,479	24,492	67,039	67,418	379
2026	2,793,812	2,815,052	21,239	68,397	68,703	306
2027	2,839,637	2,857,624	17,987	69,755	69,987	232
2028	2,885,463	2,900,196	14,734	71,112	71,271	159
2029	2,931,288	2,942,769	11,481	72,470	72,556	85
2030	2,977,113	2,985,341	8,228	73,828	73,840	12
2031	3,022,938	3,027,913	4,975	75,186	75,124	-61
2032	3,068,763	3,070,486	1,722	76,544	76,409	-135
2033	3,114,589	3,113,058	-1,531	77,901	77,693	-208
2034	3,160,414	3,155,630	-4,783	79,259	78,977	-282
2035	3,206,239	3,198,203	-8,036	80,617	80,262	-355
2036	3,252,064	3,240,775	-11,289	81,975	81,546	-429
2037	3,297,889	3,283,347	-14,542	83,333	82,830	-502
2038	3,343,715	3,325,920	-17,795	84,690	84,115	-576
2039	3,389,540	3,368,492	-21,048	86,048	85,399	-649

1. VMT and VHT for build scenario is equal to no-build until project opens.

Construction and Maintenance Costs

Year	Build			No-Build			ANNUAL COST (Current Dollars)
	Activity	Costs	User Delay	Activity	Costs	User Delay	
2015		\$0	\$0		\$0	\$0	\$0
2016	ROW, C&E	\$9,230,000	\$0		\$0	\$0	\$9,230,000
2017	Const & Eng	\$11,180,000	\$0		\$0	\$0	\$11,180,000
2018	Const & Eng	\$5,590,000	\$0		\$0	\$0	\$5,590,000
2019		\$0	\$0		\$0	\$0	\$0
2020		\$0	\$0		\$0	\$0	\$0
2021		\$0	\$0		\$0	\$0	\$0
2022		\$0	\$0		\$0	\$0	\$0
2023		\$0	\$0		\$0	\$0	\$0
2024		\$0	\$0		\$0	\$0	\$0
2025		\$0	\$0		\$0	\$0	\$0
2026		\$0	\$0		\$0	\$0	\$0
2027		\$0	\$0		\$0	\$0	\$0
2028		\$0	\$0		\$0	\$0	\$0
2029		\$0	\$0		\$0	\$0	\$0
2030		\$0	\$0		\$0	\$0	\$0
2031		\$0	\$0		\$0	\$0	\$0
2032		\$0	\$0		\$0	\$0	\$0
2033		\$0	\$0		\$0	\$0	\$0
2034		\$0	\$0		\$0	\$0	\$0
2035		\$0	\$0		\$0	\$0	\$0
2036		\$0	\$0		\$0	\$0	\$0
2037		\$0	\$0		\$0	\$0	\$0
2038		\$0	\$0		\$0	\$0	\$0
2039		\$0	\$0		\$0	\$0	\$0

Assumes 25% of construction in 2017, 50% of construction in 2018, and 25% in 2019

Assumes right-of way acquisition = 14% of construction costs

Assumes engineering = 10% of project costs

Travel Time Benefits

Year	Reduction of VHT		Benefit per Auto VHT	Benefit per Truck VHT	DALIY BENEFIT (Current Dollars)	ANNUAL BENEFIT (Current Dollars)
	Auto	Truck				
2015	0.0	0.0	\$16.555	\$28.117	\$0	\$0
2016	0.0	0.0	\$16.555	\$28.117	\$0	\$0
2017	0.0	0.0	\$16.555	\$28.117	\$0	\$0
2018	0.0	0.0	\$16.555	\$28.117	\$0	\$0
2019	0.0	0.0	\$16.555	\$28.117	\$0	\$0
2020	746.5	0.0	\$16.555	\$28.117	\$12,358	\$4,510,782
2021	673.0	0.0	\$16.555	\$28.117	\$11,142	\$4,066,955
2022	599.6	0.0	\$16.555	\$28.117	\$9,926	\$3,623,128
2023	526.1	0.0	\$16.555	\$28.117	\$8,710	\$3,179,301
2024	452.7	0.0	\$16.555	\$28.117	\$7,494	\$2,735,474
2025	379.3	0.0	\$16.555	\$28.117	\$6,278	\$2,291,647
2026	305.8	0.0	\$16.555	\$28.117	\$5,063	\$1,847,819
2027	232.3	0.0	\$16.555	\$28.117	\$3,847	\$1,403,992
2028	158.9	0.0	\$16.555	\$28.117	\$2,631	\$960,165
2029	85.5	0.0	\$16.555	\$28.117	\$1,415	\$516,338
2030	12.0	0.0	\$16.555	\$28.117	\$199	\$72,511
2031	-61.5	0.0	\$16.555	\$28.117	-\$1,017	-\$371,316
2032	-134.9	0.0	\$16.555	\$28.117	-\$2,233	-\$815,143
2033	-208.4	0.0	\$16.555	\$28.117	-\$3,449	-\$1,258,971
2034	-281.8	0.0	\$16.555	\$28.117	-\$4,665	-\$1,702,798
2035	-355.3	0.0	\$16.555	\$28.117	-\$5,881	-\$2,146,625
2036	-428.7	0.0	\$16.555	\$28.117	-\$7,097	-\$2,590,452
2037	-502.2	0.0	\$16.555	\$28.117	-\$8,313	-\$3,034,279
2038	-575.6	0.0	\$16.555	\$28.117	-\$9,529	-\$3,478,106
2039	-649.0	0.0	\$16.555	\$28.117	-\$10,745	-\$3,921,933

Assumes that only a minimal portion of reduced VHT will be from trucks

Vehicle Operating Benefits

Year	Reduction of VMT		Benefit per Auto VMT	Benefit per Truck VMT	DALIY BENEFIT (2014)	ANNUAL BENEFIT (2014)
	Auto	Truck				
2015	0	0	\$0.398	\$0.941	\$0	\$0
2016	0	0	\$0.398	\$0.941	\$0	\$0
2017	0	0	\$0.398	\$0.941	\$0	\$0
2018	0	0	\$0.398	\$0.941	\$0	\$0
2019	0	0	\$0.398	\$0.941	\$0	\$0
2020	40757	0	\$0.398	\$0.941	\$16,241	\$5,927,787
2021	37504	0	\$0.398	\$0.941	\$14,944	\$5,454,679
2022	34251	0	\$0.398	\$0.941	\$13,648	\$4,981,572
2023	30998	0	\$0.398	\$0.941	\$12,352	\$4,508,465
2024	27745	0	\$0.398	\$0.941	\$11,056	\$4,035,357
2025	24492	0	\$0.398	\$0.941	\$9,760	\$3,562,250
2026	21239	0	\$0.398	\$0.941	\$8,463	\$3,089,142
2027	17987	0	\$0.398	\$0.941	\$7,167	\$2,616,035
2028	14734	0	\$0.398	\$0.941	\$5,871	\$2,142,928
2029	11481	0	\$0.398	\$0.941	\$4,575	\$1,669,820
2030	8228	0	\$0.398	\$0.941	\$3,279	\$1,196,713
2031	4975	0	\$0.398	\$0.941	\$1,982	\$723,606
2032	1722	0	\$0.398	\$0.941	\$686	\$250,498
2033	-1531	0	\$0.398	\$0.941	-\$610	-\$222,609
2034	-4783	0	\$0.398	\$0.941	-\$1,906	-\$695,717
2035	-8036	0	\$0.398	\$0.941	-\$3,202	-\$1,168,824
2036	-11289	0	\$0.398	\$0.941	-\$4,498	-\$1,641,931
2037	-14542	0	\$0.398	\$0.941	-\$5,795	-\$2,115,039
2038	-17795	0	\$0.398	\$0.941	-\$7,091	-\$2,588,146
2039	-21048	0	\$0.398	\$0.941	-\$8,387	-\$3,061,254

Assumes that only a minimal portion of reduced VMT will be from trucks

Safety Benefits

Year	Build VMT	No-Build VMT	Build Cost per Mile	No-Build Cost per Mile	DALIY BENEFIT (Current Dollars)	ANNUAL BENEFIT (Current Dollars)
	All	All				
2015	2,346,756	2,346,756	\$0.379	\$0.379	\$0	\$0
2016	2,389,328	2,389,328	\$0.379	\$0.379	\$0	\$0
2017	2,431,900	2,431,900	\$0.379	\$0.379	\$0	\$0
2018	2,474,473	2,474,473	\$0.379	\$0.379	\$0	\$0
2019	2,517,045	2,517,045	\$0.379	\$0.379	\$0	\$0
2020	2,518,861	2,559,618	\$0.379	\$0.379	\$15,434	\$5,633,530
2021	2,564,686	2,602,190	\$0.379	\$0.379	\$14,202	\$5,183,908
2022	2,610,511	2,644,762	\$0.379	\$0.379	\$12,971	\$4,734,286
2023	2,656,337	2,687,335	\$0.379	\$0.379	\$11,739	\$4,284,663
2024	2,702,162	2,729,907	\$0.379	\$0.379	\$10,507	\$3,835,041
2025	2,747,987	2,772,479	\$0.379	\$0.379	\$9,275	\$3,385,419
2026	2,793,812	2,815,052	\$0.379	\$0.379	\$8,043	\$2,935,797
2027	2,839,637	2,857,624	\$0.379	\$0.379	\$6,811	\$2,486,175
2028	2,885,463	2,900,196	\$0.379	\$0.379	\$5,580	\$2,036,552
2029	2,931,288	2,942,769	\$0.379	\$0.379	\$4,348	\$1,586,930
2030	2,977,113	2,985,341	\$0.379	\$0.379	\$3,116	\$1,137,308
2031	3,022,938	3,027,913	\$0.379	\$0.379	\$1,884	\$687,686
2032	3,068,763	3,070,486	\$0.379	\$0.379	\$652	\$238,063
2033	3,114,589	3,113,058	\$0.379	\$0.379	-\$580	-\$211,559
2034	3,160,414	3,155,630	\$0.379	\$0.379	-\$1,811	-\$661,181
2035	3,206,239	3,198,203	\$0.379	\$0.379	-\$3,043	-\$1,110,803
2036	3,252,064	3,240,775	\$0.379	\$0.379	-\$4,275	-\$1,560,426
2037	3,297,889	3,283,347	\$0.379	\$0.379	-\$5,507	-\$2,010,048
2038	3,343,715	3,325,920	\$0.379	\$0.379	-\$6,739	-\$2,459,670
2039	3,389,540	3,368,492	\$0.379	\$0.379	-\$7,971	-\$2,909,292