

Appendix B - Benefit-Cost Analysis

The Benefit Cost Analysis (BCA) was performed in accordance with the ARRA guidance provided in the Federal Register. These benefits and costs were quantified in accordance with the Federal Register Volume 77, Number 20, Docket No. DOT-OST-2012-0012 and Circulars A-4 and A-94 (See <http://www.whitehouse.gov/omb/circulars/>).

The purpose of the BCA is to systemically compare the benefits and costs of constructing a six mile segment of Highway 71 on new location near Fort Smith, Arkansas, in Sebastian County, completing a portion of Future Interstate 49. The BCA compares the construction costs and road user benefits to the cost of not doing anything within the project area. The analysis considers that the project is constructed in 2013, open to traffic in 2014 and has a 20-year project life (2014 through 2033) for purposes of the BCA.

The analysis considered typical roadway construction costs in Arkansas. Table 1 summarizes the findings of the BCA analysis. Road User Benefits that were considered include the value of travel time savings, vehicle operating cost benefits, and the value to society of enhancing safety of the improved highway network. A three percent inflation rate was applied to calculate future benefits in current dollars. Additionally, three percent and seven percent discount rates were used to bring future benefits and costs to present value.

The additional benefits of completing the Interstate 49 corridor are not addressed in this analysis. Many benefits do not easily lend themselves to simple quantification. The economic benefits of completing a north-south interstate quality transportation corridor through Arkansas as well as providing a safer and more efficient transportation network for the region have not been quantified beyond the impacts of construction activities and travel time savings for this particular segment. Providing an improved transportation network in the region does make an impact in terms of improving the per capita income in areas of the country that are below the national average, which is a goal of the TIGER Discretionary Grant program.

The BCA was calculated using the following key factors for evaluation:

- Construction Costs
- Forecasted Traffic
- Travel Speeds and Congestion
- Historic Crash Data
- Vehicles Miles Traveled
- Traffic Distribution by Vehicle Type
- Value of Time

The Construction Cost Estimate for the six mile segment of Highway 71 is \$34.1 million. These costs reflect basic construction costs that would be incurred if the project were built using traditional construction methods and schedules, as described in the application. The project's construction cost is reported in Attachment 1.

For comparison of Build and No-Build transportation networks, vehicle miles traveled (VMT) within the study area was calculated. The VMT was then applied to the various user benefit and cost valuations. Attachment 2 shows calculations for the change in VMT.

The BCA Value of Time analysis quantifies the road user impacts that the six mile Highway 71 new location roadway improvements would have in terms of travel time savings by first determining the amount of travel time saved per VMT and then assigning a dollar value for this time. This includes differentiating time valuations by trip type. A vehicle occupancy rate of 1.1 persons per passenger car was assumed. All trucks were assumed to be operating for commercial purposes, for which 100% total compensation was assumed. A vehicle occupancy rate of 1.0 person per truck was used. Detailed worksheets showing factors considered for the Value of Time are included in Attachment 3.

The impacts of the Vehicle Operating Costs account for the actual cost to operate the vehicle, aside from the travel time costs. The detailed worksheets for this calculation are shown in Attachment 4.

The Value of Safety Improvements considers cost savings that can be attributed to the reduction in net system VMT as the result of building the project. Crash rate reductions were estimated by determining the net reduction in vehicle miles traveled in the existing network (no build) compared to the proposed network with the project in place, and then applying the appropriate crash rate. To ensure the best statistically relevant data were considered, statewide average crash rates based on facility type were applied when determining savings in Value of Safety. Detailed worksheets illustrating this analysis are included in Attachment 5.

Construction of this six mile segment of Highway 71 exhibits a net positive benefit cost ratio of 18.82, given a three percent discount rate. The sensitivity analysis conducted using a seven percent discount rate shows that the benefit cost ratio would be 12.69, still exhibiting a strong return to the public.

REFERENCES

- User Benefit Analysis for Highways, August 2003, AASHTO
- Manual on User Benefit Analysis for Highway and Bus Transit Improvements, 1977, AASHTO
- Circular A-94, Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs, Office of Management and Budget
- BCA.NET-Highway Project Benefit-Cost Analysis System User's Manual, Federal Highway Administration
- Memorandum: Department Guidance for the Valuation of Travel Time in Economic Analysis; Guidance for Conducting Economic Evaluations, April 9, 1997, US Department of Transportation, update of November 28, 2011
- Memorandum to Secretarial Officers Modal Administrators; Re: Treatment of the Economic Value of a Statistical Life in Departmental Analyses – 2011 Annual Revision; July 29, 2011
- Circular A-4: To the Heads of Executive Agencies and Establishments; Subject: Regulatory Analysis, September 17, 2003, Office of Management and Budget
- Federal Register (Volume 77, Number 20): Notice of Fund Availability for the Department of Transportation's National Infrastructure Investments Under the Full-Year Continuing Appropriations, 2012; and Request for Comments
- TIGER Benefit-Cost Analysis (BCA) Resource Guide (<http://www.dot.gov/tiger>)

ATTACHMENT 1

Highway 71 Construction and Maintenance Costs				
	Build	No-Build	DIFFERENCE	2013 Base Year \$
2012	\$0	\$0	\$0	
2013	\$34,100,000		\$34,100,000	\$34,100,000
2014			\$0	\$0
2015			\$0	\$0
2016			\$0	\$0
2017			\$0	\$0
2018			\$0	\$0
2019			\$0	\$0
2020			\$0	\$0
2021			\$0	\$0
2022			\$0	\$0
2023			\$0	\$0
2024			\$0	\$0
2025			\$0	\$0
2026			\$0	\$0
2027			\$0	\$0
2028			\$0	\$0
2029			\$0	\$0
2030			\$0	\$0
2031			\$0	\$0
2032			\$0	\$0
2033			\$0	\$0
Average maintenance costs are annualized				
Maintenance of Traffic costs are assumed to be negligible since highway is on new location				

ATTACHMENT 2

Truck Percentage		21%																				
VMT Change per vehicle:		Thru	South End	North End																		
Urban Four-Lane Partially Divide		-4.38	-0.38	-4.38																		
Urban Four-Lane Freeway		-1.05	-1.05	-1.05																		
Urban Four Lane Undivided		-2.87	-2.87	-2.87																		
Urban Two Lane		-2.72	-2.72	1.28																		
Rural Four-Lane Freeway		6	6	6																		
Change in VMT																						
ADT																						
Year	Total ADT	DaysinYea	Thru		South End		North End		Urban Four-Lane Partially Divided					Urban Four-Lane Freeway		Urban Four Lane Undivided		Urban Two Lane		Rural Four-Lane Freeway		
			Car	Truck	Car	Truck	Car	Truck	Car	Truck	Car	Truck	Car	Truck	Car	Truck	Car	Truck	Car	Truck	Car	Truck
2013																						
2014	9,000	365	3555	945	1778	473	1778	473	-8771607	-2724908	-7448081	-4463658	15570900	-2331693	-724343	-1979870	-1186542	4139100				
2015	9,150	365	3614	961	1807	480	1807	480	-8917800	-2770323	-7572215	-4538052	15830415	-2370555	-736415	-2012867	-1206318	4208085				
2016	9,300	365	3674	977	1837	488	1837	488	-9063994	-2815738	-7696350	-4612447	16089930	-2409416	-748487	-2045865	-1226093	4277070				
2017	9,450	366	3733	992	1866	496	1866	496	-9235421	-2868992	-7841911	-4699682	16394238	-2454985	-762643	-2084558	-1249282	4357962				
2018	9,600	365	3792	1008	1896	504	1896	504	-9356381	-2906568	-7944619	-4761235	16608960	-2487139	-772632	-2111861	-1265645	4415040				
2019	9,750	365	3851	1024	1926	512	1926	512	-9502574	-2951983	-8068754	-4835630	16868475	-2526001	-784704	-2144859	-1285421	4484025				
2020	9,900	365	3911	1040	1955	520	1955	520	-9648768	-2997398	-8192889	-4910024	17127990	-2564862	-796777	-2177856	-1305196	4553010				
2021	10,050	366	3970	1055	1985	528	1985	528	-9821797	-3051150	-8339810	-4998074	17435142	-2610857	-811065	-2216911	-1328602	4634658				
2022	10,200	365	4029	1071	2015	536	2015	536	-9941155	-3088229	-8441158	-5058812	17647020	-2642585	-820922	-2243852	-1344748	4690980				
2023	10,350	365	4088	1087	2044	543	2044	543	-10087348	-3133644	-8565293	-5133207	17906535	-2681447	-832994	-2276850	-1364523	4759965				
2024	10,500	365	4148	1103	2074	551	2074	551	-10233542	-3179059	-8689427	-5207601	18166050	-2720309	-845066	-2309848	-1384299	4828950				
2025	10,650	366	4207	1118	2103	559	2103	559	-10408173	-3233308	-8837709	-5296467	18476046	-2766729	-859487	-2349264	-1407921	4911354				
2026	10,800	365	4266	1134	2133	567	2133	567	-10525928	-3269889	-8937697	-5356390	18685080	-2798032	-869211	-2375843	-1423850	4966920				
2027	10,950	365	4325	1150	2163	575	2163	575	-10672122	-3315304	-9061831	-5430784	18944595	-2836893	-881283	-2408841	-1443626	5035905				
2028	11,100	365	4385	1166	2192	583	2192	583	-10818315	-3360719	-9185966	-5505178	19204110	-2875755	-893356	-2441839	-1463402	5104890				
2029	11,250	366	4444	1181	2222	591	2222	591	-10994549	-3415466	-9335608	-5594859	19516950	-2922602	-907909	-2481617	-1487241	5188050				
2030	11,400	365	4503	1197	2252	599	2252	599	-11110702	-3451550	-9434235	-5653967	19723140	-2953478	-917501	-2507835	-1502953	5242860				
2031	11,550	365	4562	1213	2281	606	2281	606	-11256896	-3496965	-9558370	-5728361	19982655	-2992339	-929573	-2540833	-1522729	5311845				
2032	11,700	365	4622	1229	2311	614	2311	614	-11403089	-3542380	-9682505	-5802755	20242170	-3031201	-941645	-2573830	-1542505	5380830				
2033	11,850	366	4681	1244	2340	622	2340	622	-11580924	-3597624	-9833507	-5893251	20557854	-3078474	-956331	-2613970	-1566561	5464746				
2034	12,000	365	4740	1260	2370	630	2370	630	-11695476	-3633210	-9930774	-5951544	20761200	-3108924	-965790	-2639826	-1582056	5518800				

ATTACHMENT 3

Total Value of Time						
	Freeway		Arterial			
	Auto	Truck	Auto	Truck		
Speed	65	65	30	30	(Average running, MPH)	
Hours/Mile	0.0154	0.0154	0.0333	0.0333	(Hours per Mile)	
Value of Hour	\$21.70	\$28.00	\$21.70	\$28.00	(Based on September 28, 2011 memo)	
Occupancy	1.1	1	1.1	1		
Time Cost per VMT (Hours/Mile*Value*Occupancy)						
	Auto	Truck				
Freeway	\$0.367	\$0.431				
Arterial	\$0.796	\$0.933				
Year	Change in Freeway VMT		Change in Arterial VMT		Increase in Cost	Benefit with Inflation
	Auto	Truck	Auto	Truck		
2013						
2014	12845993	3414758	-20683346	-5498105	-\$15,400,595.50	\$15,862,613
2015	13060092	3471670	-21028068	-5589740	-\$15,657,272.09	\$16,610,800
2016	13274192	3528583	-21372790	-5681375	-\$15,913,948.68	\$17,389,601
2017	13525246	3595319	-21777013	-5788826	-\$16,214,928.36	\$18,250,045
2018	13702392	3642408	-22062235	-5864645	-\$16,427,301.87	\$19,043,745
2019	13916492	3699321	-22406958	-5956280	-\$16,683,978.46	\$19,921,543
2020	14130592	3756233	-22751680	-6047915	-\$16,940,655.05	\$20,834,869
2021	14383992	3823593	-23159680	-6156371	-\$17,244,447.62	\$21,844,750
2022	14558792	3870059	-23441125	-6231185	-\$17,454,008.23	\$22,773,522
2023	14772891	3926971	-23785847	-6322820	-\$17,710,684.83	\$23,801,679
2024	14986991	3983884	-24130570	-6414455	-\$17,967,361.42	\$24,871,030
2025	15242738	4051867	-24542348	-6523915	-\$18,273,966.88	\$26,054,307
2026	15415191	4097709	-24820015	-6597725	-\$18,480,714.60	\$27,139,552
2027	15629291	4154622	-25164737	-6689360	-\$18,737,391.19	\$28,341,985
2028	15843391	4211534	-25509459	-6780996	-\$18,994,067.78	\$29,592,139
2029	16101484	4280141	-25925015	-6891460	-\$19,303,486.14	\$30,976,429
2030	16271591	4325360	-26198904	-6964266	-\$19,507,420.97	\$32,242,795
2031	16485690	4382272	-26543627	-7055901	-\$19,764,097.56	\$33,647,053
2032	16699790	4439185	-26888349	-7147536	-\$20,020,774.15	\$35,106,549
2033	16960230	4508415	-27307683	-7259004	-\$20,333,005.40	\$36,723,669
2034	17127990	4553010	-27577794	-7330806	-\$20,534,127.33	\$38,199,526

ATTACHMENT 3

Worksheet 5-2: Operating and Ownership Cost - General Freeway			
General Information		Site Information	
Analyst		Facility	Hwy 71
Agency/Company	AHTD	Segment	General Freeway
Project	TIGER 4	Analysis Time Period	annual
Date Performed	3/15/2012	Analysis Year	2013
		Segment Length (mi.)	6
Inputs			
	Finance Rate:	3.0%	
Autos		Trucks	
Speed (mph):		Speed (mph):	
without improvement	65	without improvement	65
with improvement	65	with improvement	65
Fuel Cost Per Gallon	\$3.42	Fuel Cost Per Gallon	\$3.83
Fuel Consumption per Mile (Table 5-5):		Fuel Consumption per Mile (Table 5-5):	
without improvement	0.039	without improvement	0.158
with improvement	0.039	with improvement	0.158
Other Operating Costs per Mile (Table 5-4) (tires, maintenance, etc.)	\$0.050	Other Operating Costs per Mile (tires, maintenance, etc.)	\$0.050
Vehicle Life (years)	6	Vehicle Life (years)	8
Vehicle Cost	\$25,000	Vehicle Cost	\$60,000
Salvage Value at End of Life	\$5,000	Salvage Value at End of Life	\$5,000
Miles per Year	15,000	Miles per Year	50,000
		Cargo Value	\$0
Insurance per Year (Table 5-3)	\$1,000	Insurance per Year	\$1,500
Calculations			
Autos		Trucks	
Fuel Cost per VMT (Equation 5-3):		Fuel Cost per VMT (Equation 5-3):	
without improvement	\$0.1334	without improvement	\$0.6051
with improvement	\$0.1334	with improvement	\$0.6051
(cost per gallon X gallons per mile)		(cost per gallon X gallons per mile)	
Total Operating Cost per VMT:		Total Operating Cost per VMT:	
without improvement	\$0.1834	without improvement	\$0.6551
with improvement	\$0.1834	with improvement	\$0.6551
(fuel cost per VMT + other oper. cost)		(fuel cost per VMT + other oper. cost)	
Amortized Vehicle Cost Per Year:	\$3,842	Amortized Vehicle Cost Per Year:	\$7,985
(Equation 5-6)		(Equation 5-6)	
Worksheet 5-2: Operating and Ownership Cost			
		Inventory Cost per Hour	\$0.0000
		(Equation 5-10)	
		Inventory Cost per Mile:	
		without improvement	\$0.0000
		with improvement	\$0.0000
		(cost per hour / miles per hour)	
Amortized Vehicle Cost per VMT	\$0.2561	Vehicle Cost per VMT	\$0.1597
Insurance Cost per VMT	\$0.0667	Insurance Cost per VMT	\$0.0300
Ownership Cost per VMT		Ownership Cost per VMT	
without improvement	\$0.3228	without improvement	\$0.1897
with improvement	\$0.3228	with improvement	\$0.1897
(vehicle + insurance)		(vehicle + insurance + inventory)	
Oper. and Ownership Cost per VMT		Oper. and Ownership Cost per VMT	
without improvement	\$0.5062	without improvement	\$0.8448
with improvement	\$0.5062	with improvement	\$0.8448
(operating + ownership)		(operating + ownership)	
Oper. and Ownership Savings / VMT	\$0.0000	Oper. and Ownership Savings / VMT	\$0.0000
(without - with)		(without - with)	
			This value is used as the per mile cost

ATTACHMENT 3

Worksheet 5-2: Operating and Ownership Cost - General Arterial			
General Information		Site Information	
Analyst		Facility	Hwy 71
Agency/Company	AHTD	Segment	General Arterial
Project	TIGER 4	Analysis Time Period	annual
Date Performed	3/15/2012	Analysis Year	2013
		Segment Length (mi.)	6
Inputs			
	Finance Rate:	3.0%	
Autos		Trucks	
Speed (mph):		Speed (mph):	
without improvement	65	without improvement	65
with improvement	65	with improvement	65
Fuel Cost Per Gallon	\$3.42	Fuel Cost Per Gallon	\$3.83
Fuel Consumption per Mile (Table 5-5):		Fuel Consumption per Mile (Table 5-5):	
without improvement	0.042	without improvement	0.170
with improvement	0.042	with improvement	0.170
Other Operating Costs per Mile (Table 5-4) (tires, maintenance, etc.)	\$0.050	Other Operating Costs per Mile (tires, maintenance, etc.)	\$0.050
Vehicle Life (years)	6	Vehicle Life (years)	8
Vehicle Cost	\$25,000	Vehicle Cost	\$60,000
Salvage Value at End of Life	\$5,000	Salvage Value at End of Life	\$5,000
Miles per Year	15,000	Miles per Year	50,000
		Cargo Value	\$0
Insurance per Year (Table 5-3)	\$1,000	Insurance per Year	\$1,500
Calculations			
Autos		Trucks	
Fuel Cost per VMT (Equation 5-3):		Fuel Cost per VMT (Equation 5-3):	
without improvement	\$0.1436	without improvement	\$0.6511
with improvement	\$0.1436	with improvement	\$0.6511
(cost per gallon X gallons per mile)		(cost per gallon X gallons per mile)	
Total Operating Cost per VMT:		Total Operating Cost per VMT:	
without improvement	\$0.1936	without improvement	\$0.7011
with improvement	\$0.1936	with improvement	\$0.7011
(fuel cost per VMT + other oper. cost)		(fuel cost per VMT + other oper. cost)	
Amortized Vehicle Cost Per Year:	\$3,842	Amortized Vehicle Cost Per Year:	\$7,985
(Equation 5-6)		(Equation 5-6)	
Worksheet 5-2: Operating and Ownership Cost			
		Inventory Cost per Hour	\$0.0000
		(Equation 5-10)	
		Inventory Cost per Mile:	
		without improvement	\$0.0000
		with improvement	\$0.0000
		(cost per hour / miles per hour)	
Amortized Vehicle Cost per VMT	\$0.2561	Vehicle Cost per VMT	\$0.1597
Insurance Cost per VMT	\$0.0667	Insurance Cost per VMT	\$0.0300
Ownership Cost per VMT		Ownership Cost per VMT	
without improvement	\$0.3228	without improvement	\$0.1897
with improvement	\$0.3228	with improvement	\$0.1897
(vehicle + insurance)		(vehicle + insurance + inventory)	
Oper. and Ownership Cost per VMT		Oper. and Ownership Cost per VMT	
without improvement	\$0.5164	without improvement	\$0.8908
with improvement	\$0.5164	with improvement	\$0.8908
(operating + ownership)		(operating + ownership)	
Oper. and Ownership Savings / VMT	\$0.0000	Oper. and Ownership Savings / VMT	\$0.0000
(without - with)		(without - with)	

This value is used as the per mile cost

ATTACHMENT 3

Total Ownership and Operating Costs						
Ownership Costs per VMT						
	Auto	Truck				
Freeway	\$0.506	\$0.845	(From Unit Cost Worksheets)			
Arterial	\$0.516	\$0.891	(From Unit Cost Worksheets)			
Year	Change in Freeway VMT		Change in Arterial VMT		Increase in Cost	Benefit with Inflation
	Auto	Truck	Auto	Truck		
2013						
2014	12845993	3414758	-20683346	-5498105	-\$6,192,088	\$6,377,851
2015	13060092	3471670	-21028068	-5589740	-\$6,295,290	\$6,678,673
2016	13274192	3528583	-21372790	-5681375	-\$6,398,491	\$6,991,804
2017	13525246	3595319	-21777013	-5788826	-\$6,519,506	\$7,337,761
2018	13702392	3642408	-22062235	-5864645	-\$6,604,894	\$7,656,883
2019	13916492	3699321	-22406958	-5956280	-\$6,708,096	\$8,009,817
2020	14130592	3756233	-22751680	-6047915	-\$6,811,297	\$8,377,036
2021	14383992	3823593	-23159680	-6156371	-\$6,933,442	\$8,783,077
2022	14558792	3870059	-23441125	-6231185	-\$7,017,700	\$9,156,507
2023	14772891	3926971	-23785847	-6322820	-\$7,120,902	\$9,569,896
2024	14986991	3983884	-24130570	-6414455	-\$7,224,103	\$9,999,848
2025	15242738	4051867	-24542348	-6523915	-\$7,347,379	\$10,475,606
2026	15415191	4097709	-24820015	-6597725	-\$7,430,506	\$10,911,949
2027	15629291	4154622	-25164737	-6689360	-\$7,533,707	\$11,395,409
2028	15843391	4211534	-25509459	-6780996	-\$7,636,909	\$11,898,055
2029	16101484	4280141	-25925015	-6891460	-\$7,761,316	\$12,454,634
2030	16271591	4325360	-26198904	-6964266	-\$7,843,312	\$12,963,799
2031	16485690	4382272	-26543627	-7055901	-\$7,946,513	\$13,528,407
2032	16699790	4439185	-26888349	-7147536	-\$8,049,715	\$14,115,224
2033	16960230	4508415	-27307683	-7259004	-\$8,175,253	\$14,765,416
2034	17127990	4553010	-27577794	-7330806	-\$8,256,118	\$15,358,811

ATTACHMENT 4

Calculation of Safety Costs per VMT			
Accident Costs			
Fatal	\$6,200,000		
Non-Fatal	\$85,408		
Statewide Average Crash Rates (Crashes per MVM)			
	Total	Fatal	Non-Fatal
Urban Four-Lane Partially Divided	2.17	0.00102	2.16898
Urban Four-Lane Freeway	1.12	0.00070	1.11930
Urban Four Lane Undivided	4.59	0.00095	4.58905
Urban Two Lane	1.01	0.00274	1.00726
Rural Four-Lane Freeway	0.39	0.00075	0.38925
Costs per VMT			
	Fatal	Non-Fatal	Total
Urban Four-Lane Partially Divided	\$0.0063	\$0.1852	\$0.1916
Urban Four-Lane Freeway	\$0.0043	\$0.0956	\$0.0999
Urban Four Lane Undivided	\$0.0059	\$0.3919	\$0.3978
Urban Two Lane	\$0.0170	\$0.0860	\$0.1030
Rural Four-Lane Freeway	\$0.0047	\$0.0332	\$0.0379

ATTACHMENT 4

Total Safety Costs							
Safety Costs per VMT							
		Total					
Urban Four-Lane Partially Divided		\$0.192					
Urban Four-Lane Freeway		\$0.100					
Urban Four Lane Undivided		\$0.398					
Urban Two Lane		\$0.103					
Rural Four-Lane Freeway		\$0.038					
Total Change in VMT (All Modes)							
Year	Urban Four-Lane Partially Divided	Urban Four-Lane Freeway	Urban Four Lane Undivided	Urban Two Lane	Rural Four-Lane Freeway	Total Cost	Benefit with Inflation
2013							
2014	-11103300	-3449250	-9427950	-5650200	19710000	-\$6,057,678	\$6,239,409
2015	-11288355	-3506738	-9585083	-5744370	20038500	-\$6,158,640	\$6,533,701
2016	-11473410	-3564225	-9742215	-5838540	20367000	-\$6,259,601	\$6,840,035
2017	-11690406	-3631635	-9926469	-5948964	20752200	-\$6,377,988	\$7,178,482
2018	-11843520	-3679200	-10056480	-6026880	21024000	-\$6,461,524	\$7,490,677
2019	-12028575	-3736688	-10213613	-6121050	21352500	-\$6,562,485	\$7,835,950
2020	-12213630	-3794175	-10370745	-6215220	21681000	-\$6,663,446	\$8,195,198
2021	-12432654	-3862215	-10556721	-6326676	22069800	-\$6,782,940	\$8,592,426
2022	-12583740	-3909150	-10685010	-6403560	22338000	-\$6,865,369	\$8,957,749
2023	-12768795	-3966638	-10842143	-6497730	22666500	-\$6,966,330	\$9,362,165
2024	-12953850	-4024125	-10999275	-6591900	22995000	-\$7,067,291	\$9,782,784
2025	-13174902	-4092795	-11186973	-6704388	23387400	-\$7,187,892	\$10,248,215
2026	-13323960	-4139100	-11313540	-6780240	23652000	-\$7,269,214	\$10,675,086
2027	-13509015	-4196588	-11470673	-6874410	23980500	-\$7,370,175	\$11,148,051
2028	-13694070	-4254075	-11627805	-6968580	24309000	-\$7,471,137	\$11,639,787
2029	-13917150	-4323375	-11817225	-7082100	24705000	-\$7,592,843	\$12,184,285
2030	-14064180	-4369050	-11942070	-7156920	24966000	-\$7,673,059	\$12,682,398
2031	-14249235	-4426538	-12099203	-7251090	25294500	-\$7,774,020	\$13,234,750
2032	-14434290	-4484025	-12256335	-7345260	25623000	-\$7,874,982	\$13,808,828
2033	-14659398	-4553955	-12447477	-7459812	26022600	-\$7,997,795	\$14,444,907
2034	-14804400	-4599000	-12570600	-7533600	26280000	-\$8,076,904	\$15,025,421

