		COSTS:		BENEFITS:							TOTAL COSTS:	TOTAL BENEFITS:
		Construction	O & M	Safety	Travel Time	Emissions	Operating Costs	Pedestrian Amenities	Health Benefits	Emergency Medical Services	Discounted at 7%	Discounted at 7%
1	2022	$ 573,102.63	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 573,102.63	$ -
2	2023	$ 544,168.66	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 544,168.66	$ -
3	2024	$ 2,845,144.14	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,845,144.14	$ -
4	2025	$ 1,059,372.92	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,059,372.92	$ -
5	2026	$ 3,496,127.11	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,496,127.11	$ -
6	2027	$ 2,811,931.86	$ -	$ -	$ (1,110,175.74)	$ (161,162.31)	$ (56,826.35)	$ -	$ -	$ -	$ 2,811,931.86	$ (1,328,164.40)
7	2028	$ 2,733,092.65	$ -	$ -	$ (1,053,577.50)	$ (155,870.22)	$ (53,929.27)	$ -	$ -	$ -	$ 2,733,092.65	$ (1,263,376.99)
8	2029	$ 2,656,463.89	$2,484	$ 479,809.41	$ 1,568,002.09	$ 241,782.07	$ 80,261.02	$ 178,261.95	$ 228,075.45	$ 164,556.57	$ 2,658,948.28	$ 2,940,748.56
9	2030	$ -	$4,644	$ 896,840.02	$ 3,910,579.52	$ 611,342.53	$ 200,170.08	$ 359,798.84	$ 432,895.73	$ 312,334.51	$ 4,643.72	$ 6,723,961.23
10	2031	$ -	$4,340	$ 838,168.24	$ 3,711,212.97	$ 583,049.05	$ 189,965.14	$ 341,455.82	$ 410,826.13	$ 296,411.28	$ 4,339.92	$ 6,371,088.62
11	2032	$ -	$4,056	$ 783,334.81	$ 3,522,010.39	$ 556,189.33	$ 180,280.46	$ 324,047.95	$ 389,881.66	$ 281,299.84	$ 4,056.00	$ 6,037,044.44
12	2033	$ -	$3,791	$ 732,088.61	$ 3,342,453.61	$ 530,689.96	$ 171,089.53	$ 307,527.55	$ 370,004.98	$ 266,958.80	$ 3,790.66	$ 5,720,813.02
13	2034	$ -	$3,543	$ 684,194.96	$ 3,172,050.87	$ 506,481.26	$ 162,367.15	$ 291,849.39	$ 351,141.63	$ 253,348.88	$ 3,542.67	$ 5,421,434.15
14	2035	$ -	$3,311	$ 639,434.54	$ 3,010,335.49	$ 483,497.13	$ 154,089.46	$ 276,970.52	$ 333,239.96	$ 240,432.82	$ 3,310.91	$ 5,137,999.93
15	2036	$ -	$12,928	$ 597,602.37	$ 2,856,864.58	$ 462,481.49	$ 146,233.77	$ 262,850.19	$ 316,250.95	$ 228,175.23	$ 12,928.40	$ 4,870,458.59
16	2037	$ -	$2,892	$ 558,506.89	$ 2,711,217.82	$ 441,750.13	$ 138,778.58	$ 249,449.74	$ 300,128.05	$ 216,542.56	$ 2,891.87	$ 4,616,373.77
17	2038	$ -	$2,703	$ 521,969.06	$ 2,572,996.32	$ 422,064.78	$ 131,703.46	$ 236,732.46	$ 284,827.12	$ 205,502.93	$ 2,702.69	$ 4,375,796.14
18	2039	$ -	$2,526	$ 487,821.55	$ 2,441,821.54	$ 403,371.85	$ 124,989.05	$ 224,663.52	$ 270,306.26	$ 195,026.12	$ 2,525.88	$ 4,147,999.89
19	2040	$ -	$2,361	$ 455,907.99	$ 2,317,334.23	$ 385,620.51	$ 118,616.94	$ 213,209.88	$ 256,525.69	$ 185,083.42	$ 2,360.63	$ 3,932,298.65
20	2041	$ -	$2,206	$ 426,082.23	$ 2,199,193.44	$ 368,762.49	$ 112,569.69	$ 202,340.15	$ 243,447.66	$ 175,647.62	$ 2,206.20	$ 3,728,043.30
21	2042	$ -	$2,062	$ 398,207.70	$ 2,087,075.63	$ 352,752.03	$ 106,830.74	$ 192,024.58	$ 231,036.38	$ 166,692.87	$ 2,061.87	$ 3,534,619.93
22	2043	$ -	$8,051	$ 372,156.72	$ 1,980,673.74	$ 338,275.89	$ 101,384.36	$ 182,234.91	$ 219,257.84	$ 158,194.65	$ 8,051.16	$ 3,352,178.11
23	2044	$ -	$1,801	$ 347,810.02	$ 1,879,696.35	$ 323,822.15	$ 96,215.65	$ 172,944.34	$ 208,079.78	$ 150,129.68	$ 1,800.91	$ 3,178,697.97
24	2045	$ -	$1,683	$ 325,056.10	$ 1,783,866.93	$ 310,092.38	$ 91,310.45	$ 164,127.40	$ 197,471.59	$ 142,475.87	$ 1,683.10	$ 3,014,400.72
25	2046	$ -	$1,573	$ 303,790.74	$ 1,692,923.02	$ 297,049.47	$ 86,655.32	$ 155,759.97	$ 187,404.23	$ 135,212.26	$ 1,572.99	$ 2,858,795.01
26	2047	$ -	$1,470	$ 283,916.58	$ 1,606,615.55	$ 284,658.22	$ 82,237.52	$ 147,819.12	$ 177,850.11	$ 128,318.96	$ 1,470.08	$ 2,711,416.06
27	2048	$ -	$1,374	$ 265,342.60	$ 1,524,708.15	$ 272,885.22	$ 78,044.94	$ 140,283.10	$ 168,783.08	$ 121,777.08	$ 1,373.91	$ 2,571,824.18
28	2049	$ -	$642	$ 123,991.87	$ 723,488.25	$ 130,849.40	$ 37,033.05	$ 66,565.64	$ 80,089.15	$ 57,784.36	$ 642.01	$ 1,219,801.72
		$ 16,719,403.86	$ 70,439.97	$ 10,522,033.03	$ 48,451,367.24	$ 7,990,434.83	$ 2,480,070.75	$ 4,690,917.02	$ 5,657,523.43	$ 4,081,906.30	$ 16,789,843.83	$ 83,874,252.61

BCA Metric	Project Life Cycle
	Discounted
Total Benefits	$ 83,806,297
Total Cost	$ 16,721,888
Net Present Value (NPV)	$ 67,084,409
Benefit-Cost Ratio (BCR)	5.01

Present Value of Benefits	$ 83,806,297.03
Present Value of Costs	$ 16,721,888.25
Present Benefit-to-Cost Ratio	5.01

Input	Monetized Value ($2020)	Source
General		
Discount Rate	7%	2022 Benefit-Cost Analysis Guidance for Discretionary Grant Programs
Discount Rate CO2 Emissions Only	3%	2022 Benefit-Cost Analysis Guidance for Discretionary Grant Programs
Discount Year	2020	2022 Benefit-Cost Analysis Guidance for Discretionary Grant Programs
Dollar Year	2020	2022 Benefit-Cost Analysis Guidance for Discretionary Grant Programs
Deflator	See "Deflator" Sheet	U.S. White House, Office of Management and Budget Table 10.1—Gross Domestic Product and Deflators Used in the Historical Tables: 1940–2027
First Year of Construction	2027	Route 30-Corridor Master Plan
First Year of Benefits	2029	Route 30-Corridor Master Plan
First Year Benefits Multiplier	0.5	Route 30-Corridor Master Plan
Analysis Period	20	2022 Benefit-Cost Analysis Guidance for Discretionary Grant Programs
Segment Length (Miles)	1.10	Route 30-Corridor Master Plan
Current Number of Lanes	3T	Route 30-Corridor Master Plan
Free Flow Speed (MPH)	35	Route 30-Corridor Master Plan
Weekday Peak Annualization Factor	260	2022 Benefit-Cost Analysis Guidance for Discretionary Grant Programs
General Annualization Factor	365.25	2022 Benefit-Cost Analysis Guidance for Discretionary Grant Programs
East Whiteland Township 2022 Population	13917	U.S. Census Bureau
30-year Population Average Annual Growth Rate	1.54%	Delaware Valley Regional Planning Commission County- and Municipal-Level Population Forecasts 2015-2045 (adopted July 28, 2016)
Costs		
East Whiteland Township Annual Maintenance budget (Planebrook to Church Road) ($2022)	$9,000	East Whiteland Township Public Works Department
PennDOT estimated cost of seal coating per mile ($2020)	$26,429	PennDOT Road Maintenance and Preservation
PennDOT estimated cost of resurfacing per mile ($2020)	$108,498	PennDOT Road Maintenance and Preservation
East Whiteland Township Annual Cost of Clearing/Maintaing Sidewalks per mile (2011)	$1,365	Sidwalk Finances, Onondaga County Sustainable Streets Project Reference Document (2011)
Safety		
K - Killed	$11,600,000	Table A-1, 2022 Benefit-Cost Analysis Guidance for Discretionary Grant Programs
A - Incapacitating	$554,800	Table A-1, 2022 Benefit-Cost Analysis Guidance for Discretionary Grant Programs
B- Non-incapacitating	$151,100	Table A-1, 2022 Benefit-Cost Analysis Guidance for Discretionary Grant Programs
C - Possible Injury	$77,200	Table A-1, 2022 Benefit-Cost Analysis Guidance for Discretionary Grant Programs
U - Injured (severity unknown)	$210,300	Table A-1, 2022 Benefit-Cost Analysis Guidance for Discretionary Grant Programs
O- No Injury	$3,900	Table A-1, 2022 Benefit-Cost Analysis Guidance for Discretionary Grant Programs
# Accidents Reported (Unknown Injured)	$159,800	Table A-1, 2022 Benefit-Cost Analysis Guidance for Discretionary Grant Programs
Property Damage Only per vehicle	$4,600	Table A-2, 2022 Benefit-Cost Analysis Guidance for Discretionary Grant Programs
Travel Time Savings		
Passenger Vehicle All Travel	1.67	Table A-4, 2022 Benefit-Cost Analysis Guidance for Discretionary Grant Programs
Passenger Vehicle Weekday Off-Peak Average Occupancy	1.58	Table A-4, 2022 Benefit-Cost Analysis Guidance for Discretionary Grant Programs
Passenger Vehicle Weekend Average Occupancy	2.02	Table A-4, 2022 Benefit-Cost Analysis Guidance for Discretionary Grant Programs
Passenger Vehicle Weekday Peak Average Occupancy	1.48	Table A-4, 2022 Benefit-Cost Analysis Guidance for Discretionary Grant Programs
Commercial Vehicle Average Occupancy	1	Bureau of Transportation Statistics
General Travel Time Value of Travel Time Savings (VTTS) Personal	$16.20	Table A-3, 2022 Benefit-Cost Analysis Guidance for Discretionary Grant Programs
VTTS Business	$29.40	Table A-3, 2022 Benefit-Cost Analysis Guidance for Discretionary Grant Programs
VTTS All Purposes	$17.80	Table A-3, 2022 Benefit-Cost Analysis Guidance for Discretionary Grant Programs
Walking, Cycling, Waiting, Standing, and Transfer Time	$32.40	Table A-3, 2022 Benefit-Cost Analysis Guidance for Discretionary Grant Programs
Commercial Vehicle Truck Drivers	$32.00	Table A-3, 2022 Benefit-Cost Analysis Guidance for Discretionary Grant Programs
Commercial Vehicle Bus Drivers	$33.60	Table A-3, 2022 Benefit-Cost Analysis Guidance for Discretionary Grant Programs
Construction Travel Delays (% of exsiting drive time)	115%	Route 30-Corridor Master Plan (Engineer Feedback)
Increaesd Dealy Post-Project Completion due to Induced Demand	1%	Ajustement to account for impact of induced demand on travel time savings
Environment		
CO2 monetized value per metric ton ($2020)	$52	Table A-10, 2022 Benefit-Cost Analysis Guidance for Discretionary Grant Programs
Nox monetized value per metric ton ($2020)	$15,600	Table A-10, 2022 Benefit-Cost Analysis Guidance for Discretionary Grant Programs
PM2.5 monetized value per metric ton ($2020)	$748,600	Table A-10, 2022 Benefit-Cost Analysis Guidance for Discretionary Grant Programs
Idling Fuel Use (gal/hr) Gasoline Passenger Vehicle with Load	0.44	U.S. Office of Energy Efficiency and Renewable Energy/Argonne National Laboratory (2014)
Idling Fuel Use (gal/hr) Diesel Commerical Vehicle with Load	1.125	U.S. Office of Energy Efficiency and Renewable Energy/Argonne National Laboratory (2014)
CO2 emissions per gallon of gasoline (grams)	8887	Greenhouse Gases Equivalencies Calculator - Calculations and References
CO2 emissions per gallon of diesel gasoline (grams)	10180	Greenhouse Gases Equivalencies Calculator - Calculations and References
Number of grams in a metric ton	1000000	Greenhouse Gases Equivalencies Calculator - Calculations and References
Operating Costs		
2021 Average Retail Gasoline Price (All Grades)	$3.100	U.S. Energy Administration, Weekly Retail Gasoline and Diesel Prices (2022).
2021 Average On-Highway Diesel Price (All Types)	$3.287	U.S. Energy Administration, Weekly Retail Gasoline and Diesel Prices (2022).
2021 to 2020 Price Deflator	1.04	U.S. Bureau of Economic Analysis, Table 1.1.9. Implicit Price Deflators for Gross Domestic Product
Pedestrian Amenities Benefits		
Expanded Sidewalk (per foot of added width)	$0.10	Table A-8, 2022 Benefit-Cost Analysis Guidance for Discretionary Grant Programs
Installation of Marked-Crosswalk on Roadway >10,000 vehicles per day	$0.18	Table A-8, 2022 Benefit-Cost Analysis Guidance for Discretionary Grant Programs
Installation of Signal for Pedestrian Crossing on Roadway with Volumnes >13,000 vehicles per day	$0.46	Table A-9, 2022 Benefit-Cost Analysis Guidance for Discretionary Grant Programs
Dedicated Cycling Lane (value per mile)	$1.69	Table A-9, 2022 Benefit-Cost Analysis Guidance for Discretionary Grant Programs
Step Free Access to Stop (value per user trip)	$0.30	Table A-10, 2022 Benefit-Cost Analysis Guidance for Discretionary Grant Programs
Step Free Access to Vehicle (value per user trip)	$0.39	Table A-10, 2022 Benefit-Cost Analysis Guidance for Discretionary Grant Programs
Additional Sidewalk added Length (miles)	1.89	Route 30-Corridor Master Plan
Width of Sidewalk added (Ft)	5	Route 30-Corridor Master Plan
Additional Designated bike lane added (miles)	1.89	Route 30-Corridor Master Plan
Percent of Americans Running, Jogging, or Trail Running	10.5%	U.S. Department of Transprotation Federal Highway Administration 2017 National Household Travel Survey
Estimated Daytime Population within 20-minute walk of Corridor	2241	ESRI Business Analyst Market Profile Analysis within 20-minute Walk Time of Route 30 (2022)
SEPTA Route 204 Average Daily Ridership	123	SEPTA 2020 Route Statistics Report
SEPTA Route 204 One Way Route Miles	15.2	SEPTA 2020 Route Statistics Report
Health and Wellness (Mortality Reduction) Benefits		
Route 30 AADT All Vehicles	17694	PennDOT Traffic Information Repository (TIRe) 2019
Rout 30 AADT Passenger Vehicles	16547	PennDOT Traffic Information Repository (TIRe) 2019
Route 30 AADT Commercial Vehicles	1147	PennDOT Traffic Information Repository (TIRe) 2019
Population Ages 20-74 Pedestrians	68%	Table A-8, 2022 Benefit-Cost Analysis Guidance for Discretionary Grant Programs
Population Ages 20-74 Cyclists	59%	Table A-8, 2022 Benefit-Cost Analysis Guidance for Discretionary Grant Programs
Value per induced walking trip	$7.08	Table A-9, 2022 Benefit-Cost Analysis Guidance for Discretionary Grant Programs
Length of average walking trip (miles)	0.86	Table A-9, 2022 Benefit-Cost Analysis Guidance for Discretionary Grant Programs
Value per induced cycling trip	$6.31	Table A-10, 2022 Benefit-Cost Analysis Guidance for Discretionary Grant Programs
Length of average cycling trip (miles)	2.38	Table A-10, 2022 Benefit-Cost Analysis Guidance for Discretionary Grant Programs
Average Daily Bicyclist Count	524	Delaware Valley Regional Planning Commission Chester Valley Trail Count, October 2018 (Adjusted for Seasonality)
Percent of Bicyclists Taking Route 30	60%	Estimate based on Bicyclist feedback using Planebrook Road to Connect to Chester Valley Trail

Summary of Costs by Year						
		2020 Real Dollars	2020 Real Dollars Discounted at 7%	Baseline O&M ($ 2020)	Project O&M ($2020)	Project O&M Discounted at 7%
1	2022	$ 656,145.20	$ 573,102.63	$7,414	$0	$0
1	2023	$ 666,630.01	$ 544,168.66	$7,414	$0	$0
1	2024	$ 3,729,403.58	$ 2,845,144.14	$7,414	$0	$0
1	2025	$ 1,485,825.32	$ 1,059,372.92	$7,414	$0	$0
1	2026	$ 5,246,744.06	$ 3,496,127.11	$7,414	$0	$0
1	2027	$ 4,515,348.10	$ 2,811,931.86	$7,414	$0	$0
1	2028	$ 4,695,962.02	$ 2,733,092.65	$36,446	$0	$0
0.5	2029	$ 4,883,800.51	$ 2,656,463.89	$7,414	$9,135	$2,484
1	2030	$ -		$7,414	$9,135	$4,644
1	2031	$ -		$7,414	$9,135	$4,340
1	2032	$ -		$7,414	$9,135	$4,056
1	2033	$ -		$7,414	$9,135	$3,791
1	2034	$ -		$7,414	$9,135	$3,543
1	2035	$ -		$7,414	$9,135	$3,311
1	2036	$ -		$7,414	$38,167	$12,928
1	2037	$ -		$7,414	$9,135	$2,892
1	2038	$ -		$36,446	$9,135	$2,703
1	2039	$ -		$7,414	$9,135	$2,526
1	2040	$ -		$7,414	$9,135	$2,361
1	2041	$ -		$7,414	$9,135	$2,206
1	2042	$ -		$126,598	$9,135	$2,062
1	2043	$ -		$7,414	$38,167	$8,051
1	2044	$ -		$7,414	$9,135	$1,801
1	2045	$ -		$7,414	$9,135	$1,683
1	2046	$ -		$7,414	$9,135	$1,573
1	2047	$ -		$7,414	$9,135	$1,470
1	2048	$ -		$7,414	$9,135	$1,374
0.5	2049	$ -		$67,006	$9,135	$642
Total		$ 25,879,859	$ 16,719,404	$ 444,434	$ 249,897	$ 70,440

RAISE PROJECT SCHEDULE AND COST (Nominal Dollars)								
	2022	2023	2024	2025	2026	2027	2028	2029
Preliminary Engineering/Final Design	$707,555	$735,857	$765,291	$795,903				
Utilities			$2,562,382					
Right-of-Way			$882,441	$917,739	$954,449			
Construction					$5,231,461	$5,440,720	$5,658,348	$5,884,682
Yearly Total	$ 707,555	$ 735,857	$ 4,210,115	$ 1,713,642	$ 6,185,910	$ 5,440,720	$ 5,658,348	$ 5,884,682

Project Costs	2022 ($)
Preliminary Engineering/Final Design	$2,830,220
Utilities	$2,369,066
Right-of-Way	$2,447,600
Construction	$17,887,500
Assumed Inflation Rate	4%

Passenger and Pedestrian Safety Rt. 30 Project Corridor

KABCO Level	No-Build Alternative		After Project Improvements		
CRASH SEVERITY LEVEL	Estimated Annual Crashes by Severity with No-Build Alternative	Estimated Annual Economic Loss	Estimated Annual Crashes by Severity	Estimated Annual Economic Loss	Estimated Annual Savings
K - Killed	0.24	$ 2,764,581.50	0.16	$ 1,896,502.91	$ 868,078.59
A - Incapacitating	0.24	$ 132,223.26	0.16	$ 90,705.16	$ 41,518.10
B - Non-incapacitating	3.34	$ 504,154.80	2.29	$ 345,850.19	$ 158,304.61
C - Possible Injury	2.14	$ 165,588.90	1.47	$ 113,593.98	$ 51,994.91
U - Injured (Severity Unknown)	7.15	$ 1,503,598.68	4.90	$ 1,031,468.69	$ 472,129.99
# Accidents Reported (Unknown if I	0.71	$ 114,253.48	0.49	$ 78,377.89	$ 35,875.59
Property Damage Only	94.38	$ 434,134.63	64.74	$ 297,816.35	$ 136,318.27
TOTAL	**108.20**	**$ 5,618,535.24**	**74.23**	**$ 3,854,315.18**	**$ 1,764,220.07**
Period in Years	5				
Average Crashes Per Year	108.20				

	Expected Average Annual Crashes Per Year: Current Conditions	Projected Average Annual Crashes Per Year: Improved Condition	Changes in Annual Crashes per Year	
Fatal & Injury	13.82	9.48	-4.34	-31%
Property Damage Only	94.38	64.74	-29.63	-31%
TOTAL	108.20	74.23	-33.97	-31%

Transporation Improvements (Countermeasure)	Crash Modification Factor	CMF Clearninghouse ID	Crash Type	Crash Severity	Area Type	Total CMF
Increase 2 to 4 lanes	0.314	7566	All	All	Urban	
Access Management	0.697	5044	All	All	Urban	
Install Bike Lanes	0.435	10737	All	All	Urban	
Install Sidewalks	0.41	9240	All	All	Urban	**0.314** Dominant Effect Method

PennDOT and USDOT Crash Severity Levels and Monetized Values		
Crash Severity Level	Assumed KABCO Equivalent	Monetized Value
FATAL	K - Killed	########## ######
SUSP SERIOUS	A - Incapacitating	$554,800
SUSP MINOR	B - Non-incapacitating	$151,100
POSSIBLE INJURY	C - Possible Injury	$77,200
UNK SEVERITY	U - Injured (Severity Un	$210,300
UNK IF INJURED	# Accidents Reported (U	$159,800
PDO	Property Damage Only	$4,600

Year Multiplier for Discounted Benefit	Year	Annual Safety Savings	Discounted (7%)
1	2022		
1	2023		
1	2024		
1	2025		
1	2026		
1	2027		
1	2028		
0.5	2029	1,764,220	$ 479,809
1	2030	1,764,220	$ 896,840
1	2031	1,764,220	$ 838,168
1	2032	1,764,220	$ 783,335
1	2033	1,764,220	$ 732,089
1	2034	1,764,220	$ 684,195
1	2035	1,764,220	$ 639,435
1	2036	1,764,220	$ 597,602
1	2037	1,764,220	$ 558,507
1	2038	1,764,220	$ 521,969
1	2039	1,764,220	$ 487,822
1	2040	1,764,220	$ 455,908
1	2041	1,764,220	$ 426,082
1	2042	1,764,220	$ 398,208
1	2043	1,764,220	$ 372,157
1	2044	1,764,220	$ 347,810
1	2045	1,764,220	$ 325,056
1	2046	1,764,220	$ 303,791
1	2047	1,764,220	$ 283,917
1	2048	1,764,220	$ 265,343
0.5	2049	1,764,220	$ 123,992
		Total	**$ 10,522,033**

Historic PennDOT Crash Data 2013-2017 Rt. 30 Planebrook to Church Road (Intersections Excluded)								
CRASH SEVERITY LEVEL (KABCO Scale)	Historic Accident by Type (%)	2015	2016	2017	2018	2019	2020	5-Year Total (2015-2020)
K - Killed	0%	1	0	0	0	0	0	1
A - Incapacitating	0%	0	0	0	1	0	0	1
B - Non-incapacitating	3%	2	3	0	2	5	2	14
C - Possible Injury	2%	3	2	0	0	3	1	9
U - Injured (Severity Unknown)	7%	10	10	2	3	1	4	30
# Accidents Reported (Unknown if I	1%	2	0	0	0	0	1	3
Property Damage Only	87%	79	82	79	58	57	41	396
TOTAL	**100%**	**97**	**97**	**81**	**64**	**66**	**49**	**454**

Historic PennDOT Crash Data 2013-2017 Rt. 30 Planebrook to Church Road (Intersections Excluded)								
CRASH SEVERITY LEVEL (KABCO Scale)	Historic Accident by Type (%)	2015	2016	2017	2018	2019	2020	5-Year Total (2015-2020)
K - Killed	1%	1	0	0	0	0	0	1
A - Incapacitating	0%	0	0	0	1	0	0	1
B - Non-incapacitating	2%	1	2	0	1	3	2	11
C - Possible Injury	2%	2	2	0	0	2	1	12
U - Injured (Severity Unknown)	5%	5	7	2	2	1	4	25
# Accidents Reported (Unknown if I	2%	2	0	0	0	0	1	4
Property Damage Only	10%	12	11	8	5	6	3	56
TOTAL	**23%**	**23**	**22**	**10**	**9**	**12**	**11**	**87**
Planebrook Road Intersection								
CRASH SEVERITY LEVEL (KABCO Scale)	Historic Accident by Type (%)	2015	2016	2017	2018	2019	2020	5-Year Total (2015-2020)
K - Killed	0%	0	0	0	0	0	0	0
A - Incapacitating	0%	0	0	0	0	0	0	0
B - Non-incapacitating	29%	0	0	0	0	2	0	2
C - Possible Injury	14%	0	0	0	0	1	0	1
U - Injured (Severity Unknown)	14%	1	0	0	0	0	0	1
# Accidents Reported (Unknown if I	0%	0	0	0	0	0	0	0
Property Damage Only	43%	0	1	1	0	1	0	3
TOTAL	**100%**	**1**	**1**	**1**	**0**	**4**	**0**	**7**
Sproul Road Intersection								
CRASH SEVERITY LEVEL (KABCO Scale)	Historic Accident by Type (%)	2015	2016	2017	2018	2019	2020	5-Year Total (2015-2020)
K - Killed	0%	0	0	0	0	0	0	0
A - Incapacitating	0%	0	0	0	0	0	0	0
B - Non-incapacitating	6%	0	0	0	1	0	0	1
C - Possible Injury	6%	1	0	0	0	0	0	1
U - Injured (Severity Unknown)	31%	3	1	0	1	0	0	5
# Accidents Reported (Unknown if I	0%	0	0	0	0	0	0	0
Property Damage Only	56%	1	1	1	3	2	1	9
TOTAL	**100%**	**5**	**2**	**1**	**5**	**2**	**1**	**16**
Church Road Intersection								
CRASH SEVERITY LEVEL (KABCO Scale)	Historic Accident by Type (%)	2015	2016	2017	2018	2019	2020	5-Year Total (2015-2020)
K - Killed	0%	0	0	0	0	0	0	0
A - Incapacitating	0%	0	0	0	0	0	0	0
B - Non-incapacitating	20%	1	1	0	0	0	0	2
C - Possible Injury	0%	0	0	0	0	0	0	0
U - Injured (Severity Unknown)	30%	1	2	0	0	0	0	3
# Accidents Reported (Unknown if I	0%	0	0	0	0	0	0	0
Property Damage Only	50%	3	1	0	0	1	0	5
TOTAL	**100%**	**5**	**4**	**0**	**0**	**1**	**0**	**10**
Supplemental Data from East Whiteland Police Department RMS-CODY System								
CRASH SEVERITY LEVEL (KABCO Scale)	Historic Accident by Type (%)	2015	2016	2017	2018	2019	2020	5-Year Total (2015-2020)
K - Killed	0%	0	0	0	0	0	0	0
A - Incapacitating	0%	0	0	0	0	0	0	0
B - Non-incapacitating	0%	0	0	0	0	0	0	0
C - Possible Injury	0%	0	0	0	0	0	0	0
U - Injured (Severity Unknown)	0%	0	0	0	0	0	0	0
# Accidents Reported (Unknown if I	0%	0	0	0	0	0	0	0
Property Damage Only	100%	63	68	69	50	47	37	334
TOTAL	**100%**	**63**	**68**	**69**	**50**	**47**	**37**	**334**

Economic Competitiveness: Travel Time Savings Rt. 30 Project Corridor

INFRA improvements; assume increased delay of 115% during construction period

Increase in construction delay: 1.15

		No Build						Build		
	Peak Period	Vehicle Count	Total Delay (Seconds/ Vehicle)	Total Persons	Total Delay (Hours/day)	Total Hours Delayed per Year	Hourly Value of Travel Time	Total Time Value of Delay	Estimated Reduction in Delay	Travel Time Savings
Passenger Vehicle	AM	6,769	368.5	10,053	1,388.3	509,020	$17.30	$8,805,929	-57%	$5,020,380
Passenger Vehicle	PM	7,500	466.5	11,600	1,317.6	342,580	$47.80	$6,087,826	-46%	$2,792,681
Commercial Vehicle	AM	210	386.5	210	24.9	6,481	$32.00	$207,400	-57%	$118,301
Commercial Vehicle	PM	80	466.5	80	9.5	2,488	$32.00	$79,009	-46%	$45,041
Total		14,555	427.3	21,402	2,541	660,598		$11,884,664	-42%	$7,391,814

Job Travel Time Data Job for Antecfed Inputs

			No Build						Build						
Year Multiplier for Discounted Benefit	Year	Passenger Vehicle Count	Commercial Vehicle Count	Total Passenger Vehicle Occupants	Total Commercial Vechile Occupants	Total Hours Delayed per Year Passenger Vehicles	Total Hours Delayed per Year Commercial Vehicles	Total Time Value of Delay: No Build	Total Hours Delayed per Year Passenger Vehicles	Total Hours Delayed per Year Commercia l Vehicles	Annual Travel Time Savings Passenger Vehicles	Annual Travel Time Savings Commercial Vehicles	Total Time Value of Delay: Build	Value of Travel Time Savings	Discounted ($2020) at 7%
1	2022														
1	2023														
1	2024														
1	2025														
1	2026														
1	2027	14,265	290	21,112	290	661,587	8,960	$ 11,884,664	749,105	10,293	(87,518)	(1,340)	$ 13,667,366	$ (1,782,700)	$ (1,110,176)
1	2028	14,485	294	21,438	294	661,654	9,089	$ 12,068,382	760,903	10,452	(99,248)	(1,362)	$ 13,878,536	$ (1,810,242)	$ (1,053,578)
0.5	2029	14,485	294	21,438	294	661,654	9,089	$ 12,068,382	760,903	10,452	(99,248)	(1,362)	$ 13,878,536	$ (1,810,242)	$ (982,334)
0.5	2029	14,709	299	21,770	299	671,877	9,229	$ 12,254,737	756,535	3,524	415,342	5,705	$ 4,679,079	$ 7,575,658	$ 2,060,328
1	2030	14,936	304	22,106	304	682,257	9,372	$ 12,446,972	780,498	3,578	421,758	5,793	$ 4,751,370	$ 7,695,602	$ 3,910,240
1	2031	15,167	308	22,447	308	692,798	9,516	$ 12,635,333	264,523	3,634	428,275	5,881	$ 4,824,779	$ 7,811,554	$ 3,711,213
1	2032	15,402	313	22,794	313	703,502	9,663	$ 12,833,564	268,610	3,690	434,892	5,974	$ 4,899,322	$ 7,932,242	$ 3,522,010
1	2033	15,640	318	23,146	318	714,373	9,813	$ 13,029,811	272,760	3,747	441,611	6,066	$ 4,975,016	$ 8,054,795	$ 3,342,454
1	2034	15,881	323	23,504	323	725,408	9,964	$ 13,230,121	276,974	3,805	448,424	6,160	$ 5,051,830	$ 8,179,291	$ 3,172,051
1	2035	16,126	328	23,867	328	736,616	10,118	$ 13,435,542	281,253	3,863	455,363	6,255	$ 5,129,793	$ 8,305,749	$ 3,010,335
1	2036	16,376	333	24,236	333	747,998	10,275	$ 13,643,121	285,598	3,923	462,398	6,352	$ 5,209,169	$ 8,433,952	$ 2,856,865
1	2037	16,629	338	24,610	338	759,553	10,433	$ 13,853,905	290,011	3,984	469,542	6,450	$ 5,289,670	$ 8,564,235	$ 2,711,218
1	2038	16,886	343	24,991	343	771,288	10,595	$ 14,067,949	294,492	4,046	476,796	6,549	$ 5,371,296	$ 8,696,653	$ 2,572,996
1	2039	17,146	349	25,377	349	783,204	10,758	$ 14,285,298	298,041	4,108	484,163	6,651	$ 5,454,186	$ 8,830,932	$ 2,441,817
1	2040	17,411	354	25,769	354	795,305	10,924	$ 14,506,006	303,682	4,171	491,643	6,752	$ 5,538,456	$ 8,967,282	$ 2,317,334
1	2041	17,680	359	26,167	359	807,592	11,093	$ 14,730,123	308,413	4,236	499,238	6,858	$ 5,624,236	$ 9,105,888	$ 2,199,193
1	2042	17,954	365	26,571	365	820,069	11,265	$ 14,957,703	313,217	4,301	506,952	6,964	$ 5,711,539	$ 9,246,584	$ 2,087,076
1	2043	18,233	371	26,982	371	832,740	11,439	$ 15,188,800	317,953	4,367	514,785	7,073	$ 5,799,937	$ 9,389,463	$ 1,980,674
1	2044	18,517	376	27,399	376	845,605	11,615	$ 15,423,464	322,867	4,435	522,738	7,180	$ 5,888,956	$ 9,534,510	$ 1,879,686
1	2045	18,799	382	27,822	382	858,670	11,795	$ 15,661,758	327,856	4,503	530,814	7,291	$ 5,979,941	$ 9,681,816	$ 1,783,867
1	2046	19,089	388	28,252	388	871,936	11,977	$ 15,903,753	332,921	4,573	539,015	7,404	$ 6,072,231	$ 9,831,521	$ 1,692,923
1	2047	19,384	394	28,688	394	885,408	12,162	$ 16,149,464	338,065	4,644	547,343	7,518	$ 6,166,148	$ 9,983,296	$ 1,606,616
1	2048	19,683	400	29,131	400	899,087	12,350	$ 16,398,953	343,289	4,715	555,800	7,635	$ 6,261,415	$ 10,137,539	$ 1,524,768
0.5	2049	19,988	406	29,582	406	912,978	12,541	$ 16,652,316	348,591	4,788	564,387	7,752	$ 6,358,353	$ 10,294,163	$ 723,488
							TOTAL:	$337,306,984				TOTAL	$ 156,460,706	$ 180,846,257	$ 48,451,367

Environmental Sustainability: Idling Emissions Reductions Rt. 30 Project Corridor

	CO_2 metric tons/hr Idling	No_x metric tons/hr Idling	$PM_{2.5}$ metric tons/hr Idling
Average Passenger Vehicle (Light Duty Gasoline Fueled Vehicle)	0.00391028	0.00000379	0.00000004
Average Commercial Vehicle (Heavy Duty Diesel Fuled Vehicle)	0.01145250	0.00002721	0.00000104

See Emissions Data tab for detailed inputs

	Year Multiplier for Discounted Benefit	Year	Passenger Vehicle Delay Hours Avoided	Commercial Vehicle Delay Hours Avoided	CO2 Metric Tons Avoided	No_x Metric Tons Avoided	$PM_{2.5}$ Metric Tons Avoided	CO_2 Emissions Savings	NO_x Emissions Savings	$PM_{2.5}$ Emissions Savings	Total Emissions Savings	CO_2 Discounted at 3%	All other Emissions Discounted (7%)	Total Emission Benefits Discounted
	1	2022												
	1	2023												
	1	2024												
	1	2025												
	1	2026												
Construction	1	2027	(66,039)	(1,343)	(274)	(0.29)	(0.00)	$ (15,596)	$ (4,818)	$ (233,611)	$ (254,025)	$ (12,681)	$ (148,482)	$ (161,162)
Construction	1	2028	(67,060)	(1,363)	(278)	(0.29)	(0.00)	$ (16,114)	$ (4,980)	$ (240,977)	$ (262,072)	$ (12,721)	$ (143,149)	$ (155,870)
Construction Ends 6/30/2029	0.5	2029	(67,060)	(1,363)	(278)	(0.29)	(0.00)	$ (16,670)	$ (5,068)	$ (244,821)	$ (266,559)	$ (12,776)	$ (135,923)	$ (74,350)
Benefits Begin 7/1/2029	0.5	2029	280,637	5,705	1,163	1.22	0.02	$ 70,925	$ 21,573	$ 1,040,882	$ 1,133,380	$ 54,358	$ 577,905	$ 316,132
	1	2030	284,972	5,793	1,181	1.24	0.02	$ 73,202	$ 22,402	$ 1,073,053	$ 1,168,656	$ 54,469	$ 556,874	$ 611,343
	1	2031	289,375	5,883	1,199	1.26	0.02	$ 75,531	$ 22,748	$ 1,089,632	$ 1,187,911	$ 54,566	$ 528,484	$ 583,049
	1	2032	293,846	5,974	1,217	1.28	0.02	$ 77,916	$ 23,099	$ 1,106,467	$ 1,207,482	$ 54,649	$ 501,541	$ 556,189
	1	2033	298,386	6,066	1,236	1.30	0.02	$ 80,356	$ 23,456	$ 1,123,561	$ 1,227,373	$ 54,718	$ 475,972	$ 530,690
	1	2034	302,996	6,160	1,255	1.32	0.02	$ 82,853	$ 23,819	$ 1,140,920	$ 1,247,592	$ 54,775	$ 451,706	$ 506,481
	1	2035	307,677	6,255	1,275	1.34	0.02	$ 85,408	$ 24,187	$ 1,158,548	$ 1,268,142	$ 54,820	$ 428,677	$ 483,497
	1	2036	312,431	6,352	1,294	1.36	0.02	$ 89,316	$ 24,560	$ 1,176,447	$ 1,290,323	$ 55,659	$ 406,823	$ 462,481
	1	2037	317,258	6,450	1,314	1.38	0.02	$ 92,010	$ 24,940	$ 1,194,623	$ 1,311,573	$ 55,668	$ 386,082	$ 441,750
	1	2038	322,160	6,549	1,335	1.40	0.02	$ 94,767	$ 25,325	$ 1,213,080	$ 1,333,172	$ 55,665	$ 366,399	$ 422,065
	1	2039	327,137	6,651	1,355	1.42	0.02	$ 97,586	$ 25,716	$ 1,231,822	$ 1,355,125	$ 55,652	$ 347,720	$ 403,372
	1	2040	332,191	6,753	1,376	1.44	0.02	$ 100,470	$ 26,114	$ 1,250,854	$ 1,377,438	$ 55,628	$ 329,993	$ 385,621
	1	2041	337,324	6,858	1,398	1.47	0.02	$ 103,420	$ 26,517	$ 1,270,180	$ 1,400,116	$ 55,593	$ 313,169	$ 368,762
	1	2042	342,535	6,964	1,419	1.49	0.02	$ 106,437	$ 26,927	$ 1,289,804	$ 1,423,167	$ 55,549	$ 297,203	$ 352,752
	1	2043	347,827	7,071	1,441	1.51	0.02	$ 110,964	$ 27,343	$ 1,309,731	$ 1,448,037	$ 56,224	$ 282,052	$ 338,276
	1	2044	353,201	7,180	1,463	1.53	0.02	$ 114,141	$ 27,765	$ 1,329,966	$ 1,471,873	$ 56,150	$ 267,672	$ 323,822
	1	2045	358,658	7,291	1,486	1.56	0.02	$ 117,391	$ 28,194	$ 1,350,514	$ 1,496,099	$ 56,066	$ 254,026	$ 310,092
	1	2046	364,200	7,404	1,509	1.58	0.02	$ 120,713	$ 28,630	$ 1,371,380	$ 1,520,723	$ 55,974	$ 241,075	$ 297,049
	1	2047	369,826	7,518	1,532	1.61	0.02	$ 124,111	$ 29,072	$ 1,392,568	$ 1,545,750	$ 55,873	$ 228,785	$ 284,658
	1	2048	375,540	7,635	1,556	1.63	0.02	$ 127,584	$ 29,521	$ 1,414,083	$ 1,571,188	$ 55,764	$ 217,121	$ 272,885
	0.5	2049	381,342	7,752	1,580	1.66	0.02	$ 131,135	$ 29,977	$ 1,435,930	$ 1,597,043	$ 55,647	$ 206,052	$ 130,849
													Total	**$ 7,990,434.83**

Operating Cost Savings: Idling Reductions Rt. 30 Project Corridor

	Idling Fuel Use (gal/hr)	2021 Average Gasoline/ Diesel Price (2020 $)
Average Passenger Vehicle (Light Duty Gasoline Fueled Vehicle)	0.440	$2.98
Average Commercial Vehicle (Heavy Duty Diesel Fuled Vehicle)	1.125	$3.16

	Year Multiplier for Discounted Benefit	Year	Annual Passenger Vehicle Hours Delay Avoided	Annual Commercial Vehicle Hours Delay Avoided	Total Passenger Vehicle Operating Cost Savings	Total Commercial Vehicle Operating Cost Savings	Discounted (7%)
	1	2022					
	1	2023					
	1	2024					
	1	2025					
	1	2026					
Construction	1	2027	(66,039)	(1,343)	-$86,484	-$4,767	-$56,826
Construction	1	2028	(67,060)	(1,363)	-$87,820	-$4,840	-$53,929
Construction Ends 6/30/2029	0.5	2029	(67,060)	(1,363)	-$87,820	-$4,840	-$25,201
Benefits Begin 7/1/2029	0.5	2029	280,637	5,705	$367,518	$20,256	$105,462
	1	2030	284,972	5,793	$373,196	$20,568	$200,170
	1	2031	289,375	5,883	$378,962	$20,886	$189,965
	1	2032	293,846	5,974	$384,817	$21,209	$180,280
	1	2033	298,386	6,066	$390,763	$21,537	$171,090
	1	2034	302,996	6,160	$396,800	$21,869	$162,367
	1	2035	307,677	6,255	$402,930	$22,207	$154,089
	1	2036	312,431	6,352	$409,156	$22,550	$146,234
	1	2037	317,258	6,450	$415,477	$22,899	$138,779
	1	2038	322,160	6,549	$421,896	$23,253	$131,703
	1	2039	327,137	6,651	$428,415	$23,612	$124,989
	1	2040	332,191	6,753	$435,034	$23,977	$118,617
	1	2041	337,324	6,858	$441,755	$24,347	$112,570
	1	2042	342,535	6,964	$448,580	$24,723	$106,831
	1	2043	347,827	7,071	$455,510	$25,105	$101,384
	1	2044	353,201	7,180	$462,548	$25,493	$96,216
	1	2045	358,658	7,291	$469,694	$25,887	$91,310
	1	2046	364,200	7,404	$476,951	$26,287	$86,655
	1	2047	369,826	7,518	$484,320	$26,693	$82,238
	1	2048	375,540	7,635	$491,803	$27,105	$78,045
	0.5	2049	381,342	7,752	$499,401	$27,524	$37,033
						Total	$2,480,070.75

Pedestrian and Cyclist Improvements Rt. 30 Project Corridor

	Input
Miles of Added Sidewalk	1.89
Width of expanded Sidewalk (ft)	5
Value of Expanded Sidewalk	$0.50
Number of Induced Pedestrian Trips	85,945

	Input
Number of Installed Marked Crosswalks	9
Estimated Crosswalks per trip	4
Number of Uses	85,945
Value of Crosswalk per Use	$0.18

	Input
Number of Signalized Intersections	9
Estimated Pedestrian Signals per Trip	4
Number of Uses	85,945
Value per Singal Use	$0.46

	Input
Miles of New Designated Bike Lanes	1.89
Number of Induced Cycling Trips	114,835
Miles per trip	1.89
Value per Cycling Miles	$1.69

	Input
Annual SEPTA Route 204 Riders	44,925.75
Estimated Number of User Trips at Project Segment (2020)	3,247
Value of Step Free Access to Bus Stop	$0.30
Value of Step Free Access to Vehicle	$0.39

Year Multiplier for Discounted Benefit	Year	Daytime Population Estimate within 20-minute Walk of Route 30 Corridor	Annual Number of Pedestrian Trips	Annual Number of Cyclist Trips	Annual Number of SEPTA Trips	Annual Benefit of Sidewalks	Annual Benefit of Crosswalks	Annual Benefit of Pedestrian Crossing Signals	Annual Benefit of Designated Bike Lanes	Annual Benefit of Step Free Access to Bus Stop	Annual Benefit of Step Free Access to Bus	Discounted (7%)
0	2022	2,241	85,945	114,835	3,348							
0	2023	2,276	87,273	116,609	3,400							
0	2024	2,311	88,621	118,410	3,452							
0	2025	2,346	89,991	120,240	3,505							
0	2026	2,383	91,381	122,098	3,560							
0	2027	2,420	92,793	123,984	3,615							
0	2028	2,457	94,226	125,899	3,670							
0.5	2029	2,495	95,682	127,845	3,727	$ 41,143	$ 68,891	176,055.23	$ 366,793	$ 1,118	$ 1,454	$ 178,262
1	2030	2,533	97,160	129,820	3,785	$ 41,779	$ 69,956	178,775.28	$ 414,658	$ 1,135	$ 1,476	$ 359,799
1	2031	2,573	98,662	131,826	3,843	$ 42,424	$ 71,036	181,537.35	$ 421,064	$ 1,153	$ 1,499	$ 341,456
1	2032	2,612	100,186	133,862	3,903	$ 43,080	$ 72,134	184,342.10	$ 427,569	$ 1,171	$ 1,522	$ 324,048
1	2033	2,653	101,734	135,930	3,963	$ 43,746	$ 73,248	187,190.18	$ 434,175	$ 1,189	$ 1,546	$ 307,528
1	2034	2,694	103,306	138,031	4,024	$ 44,421	$ 74,380	190,082.27	$ 440,883	$ 1,207	$ 1,569	$ 291,849
1	2035	2,735	104,902	140,163	4,086	$ 45,108	$ 75,529	193,019.03	$ 447,695	$ 1,226	$ 1,594	$ 276,971
1	2036	2,778	106,522	142,329	4,149	$ 45,805	$ 76,696	196,001.17	$ 454,612	$ 1,245	$ 1,618	$ 262,850
1	2037	2,820	108,168	144,528	4,213	$ 46,512	$ 77,881	199,029.39	$ 461,636	$ 1,264	$ 1,643	$ 249,450
1	2038	2,864	109,839	146,761	4,279	$ 47,231	$ 79,084	202,104.38	$ 468,768	$ 1,284	$ 1,669	$ 236,732
1	2039	2,908	111,536	149,028	4,345	$ 47,961	$ 80,306	205,226.89	$ 476,010	$ 1,303	$ 1,694	$ 224,664
1	2040	2,953	113,260	151,330	4,412	$ 48,702	$ 81,547	208,397.64	$ 483,365	$ 1,324	$ 1,721	$ 213,210
1	2041	2,999	115,009	153,669	4,480	$ 49,454	$ 82,807	211,617.38	$ 490,833	$ 1,344	$ 1,747	$ 202,340
1	2042	3,045	116,786	156,043	4,549	$ 50,218	$ 84,086	214,886.86	$ 498,416	$ 1,365	$ 1,774	$ 192,025
1	2043	3,092	118,591	158,454	4,619	$ 50,994	$ 85,385	218,206.86	$ 506,116	$ 1,386	$ 1,802	$ 182,235
1	2044	3,140	120,423	160,902	4,691	$ 51,782	$ 86,704	221,578.15	$ 513,936	$ 1,407	$ 1,829	$ 172,944
1	2045	3,189	122,283	163,388	4,763	$ 52,582	$ 88,044	225,001.53	$ 521,876	$ 1,429	$ 1,858	$ 164,127
1	2046	3,238	124,173	165,912	4,837	$ 53,394	$ 89,404	228,477.80	$ 529,939	$ 1,451	$ 1,886	$ 155,760
1	2047	3,288	126,091	168,475	4,912	$ 54,219	$ 90,786	232,007.77	$ 538,127	$ 1,473	$ 1,916	$ 147,819
1	2048	3,339	128,039	171,078	4,988	$ 55,057	$ 92,188	235,592.29	$ 546,441	$ 1,496	$ 1,945	$ 140,283
0.5	2049	3,390	130,017	173,721	5,065	$ 55,908	$ 93,613	239,232.18	$ 554,883	$ 1,519	$ 1,975	$ 66,566
					Total	$ 1,011,519	$ 1,693,707	$ 4,328,362	$ 9,997,795	$ 27,490	$ 35,736	$ 4,690,917

Pedestrian and Cyclist Improvements Rt. 30 Project Corridor

	Walking	Cyclists
Cycling/Walking Trips taken by persons aged 20-74 as a % of total trips	68%	59%
Value per Induced Trip	$7.08	$6.31
Adjustment for Segment Length (Cycling Only)	n.a.	0.79

Year Multiplier for Dicounted Benefit	Year	Annual Number of Induced Walking Trips	Annual Number of Induced Cycling Trips	Annual Value of Mortality Reduction	Discounted (7%)
1	2022	85,945	114,835	$841,292	
1	2023	87,273	116,609	$854,290	
1	2024	88,621	118,410	$867,489	
1	2025	89,991	120,240	$880,891	
1	2026	91,381	122,098	$894,501	
1	2027	92,793	123,984	$908,321	
1	2028	94,226	125,899	$922,355	
0.5	2029	95,682	127,845	$838,615	$ 228,075
1	2030	97,160	129,820	$851,571	$ 432,896
1	2031	98,662	131,826	$864,728	$ 410,826
1	2032	100,186	133,862	$878,088	$ 389,882
1	2033	101,734	135,930	$891,655	$ 370,005
1	2034	103,306	138,031	$905,431	$ 351,142
1	2035	104,902	140,163	$919,420	$ 333,240
1	2036	106,522	142,329	$933,625	$ 316,251
1	2037	108,168	144,528	$948,049	$ 300,128
1	2038	109,839	146,761	$962,696	$ 284,827
1	2039	111,536	149,028	$977,570	$ 270,306
1	2040	113,260	151,330	$992,673	$ 256,526
1	2041	115,009	153,669	$1,008,010	$ 243,448
1	2042	116,786	156,043	$1,023,584	$ 231,036
1	2043	118,591	158,454	$1,039,398	$ 219,258
1	2044	120,423	160,902	$1,055,457	$ 208,080
1	2045	122,283	163,388	$1,071,764	$ 197,472
1	2046	124,173	165,912	$1,088,323	$ 187,404
1	2047	126,091	168,475	$1,105,137	$ 177,850
1	2048	128,039	171,078	$1,122,211	$ 168,783
0.5	2049	130,017	173,721	$1,139,550	$ 80,089
				Total	**$ 5,657,523**

Reduction in Emergency Medical Service Delays Rt. 30 Project Corridor

	Inputs
Population served by EMS provider 2022	13,917
Percent of Responses Travel Route 30	80%
Number of Cardiac Arrest per Year Treated by EMS	0.059%
Average Response Time (min)	8
Response Time with Route 30 Improvements (min)	7.50
Survival Probability with No Delay	0.1107
Survival Probability with Rt. 30 Congestion	0.1233
Recommended Monetized Value of Human Life (FEMA 2011)	$ 6,600,000

Year Multiplier for Benefit Discount	Year	Population Served by EMS Provider	Number of Cardiac Arrest per Year Treated by EMS	Number of Deaths per Year Due to Cardiac Arrests No Delay	Number of Deaths per Year Due to Cardiac Arrests with Delay	Increase in Number of Deaths Due to Delay	Dollar Value of Potential Cost of Lives Saved Due to Reduced Response Time	Discounted (7%)
0	2022	13,917	6.51	5.79	5.71	0.08	$543,487	
0	2023	14,132	6.61	5.88	5.80	0.08	$551,884	
0	2024	14,350	6.72	5.97	5.89	0.08	$560,411	
0	2025	14,572	6.82	6.07	5.98	0.09	$569,069	
0	2026	14,797	6.93	6.16	6.07	0.09	$577,861	
0	2027	15,026	7.03	6.25	6.16	0.09	$586,789	
0	2028	15,258	7.14	6.35	6.26	0.09	$595,855	
0.5	2029	15,494	7.25	6.45	6.36	0.09	$605,061	$ 164,557
1	2030	15,733	7.36	6.55	6.46	0.09	$614,409	$ 312,335
1	2031	15,976	7.48	6.65	6.55	0.09	$623,902	$ 296,411
1	2032	16,223	7.59	6.75	6.66	0.10	$633,541	$ 281,300
1	2033	16,474	7.71	6.86	6.76	0.10	$643,329	$ 266,959
1	2034	16,728	7.83	6.96	6.86	0.10	$653,269	$ 253,349
1	2035	16,987	7.95	7.07	6.97	0.10	$663,362	$ 240,433
1	2036	17,249	8.07	7.18	7.08	0.10	$673,611	$ 228,175
1	2037	17,516	8.20	7.29	7.19	0.10	$684,018	$ 216,543
1	2038	17,786	8.32	7.40	7.30	0.11	$694,586	$ 205,503
1	2039	18,061	8.45	7.52	7.41	0.11	$705,317	$ 195,026
1	2040	18,340	8.58	7.63	7.52	0.11	$716,214	$ 185,083
1	2041	18,623	8.72	7.75	7.64	0.11	$727,280	$ 175,648
1	2042	18,911	8.85	7.87	7.76	0.11	$738,516	$ 166,693
1	2043	19,203	8.99	7.99	7.88	0.11	$749,926	$ 158,195
1	2044	19,500	9.13	8.12	8.00	0.12	$761,513	$ 150,130
1	2045	19,801	9.27	8.24	8.12	0.12	$773,278	$ 142,476
1	2046	20,107	9.41	8.37	8.25	0.12	$785,225	$ 135,212
1	2047	20,418	9.56	8.50	8.38	0.12	$797,357	$ 128,319
1	2048	20,733	9.70	8.63	8.51	0.12	$809,676	$ 121,777
0.5	2049	21,054	9.85	8.76	8.64	0.12	$822,186	$ 57,784
						Total	**$18,860,935**	**$ 4,081,906**

Travel Time Data

		2017				2027 Pass-through				2027 Development				With Project	Delay Reduction	
	% Commercial Vehicles	Total Vehicles per Hour	Passenger Vehicles	Commercial Vehicles	Total Delay (Seconds/vehicle)	Vehicles per Hour	Passenger Vehicles	Commercial Vehicles	Total Delay (Seconds/vehicle)	Vehicles per Hour	Passenger Vehicles	Commercial Vehicles	Total Delay (Seconds/vehicle)	Total Delay (Seconds/vehicle)	Total Delay (Seconds/vehicle)	% Reduction
Planebrook/Rt. 30 Eastbound																
AM (6am - 8:59am)	2.7%	675	657	18	10.0	788	767	21	12.6	1432	1393	39	115.5	14.5	(101.0)	-87%
PM (4pm -6:59pm)	2.5%	694	677	17	3.6	810	790	20	5.5	1472	1435	37	95.0	11.9	(83.1)	-87%
Planebrook/Rt. 30 Westbound																
AM (6am - 8:59am)	4.0%	535	514	21	19.7	613	588	25	22.7	1062.4	1020	42	147.2	35.7	(111.6)	-76%
PM (4pm -6:59pm)	1.3%	785	775	10	16.5	899	887	12	21.5	1558	1538	20	257.6	62.4	(195.2)	-76%
Planebrook/Rt. 30 Northbound																
AM (6am - 8:59am)	0.0%	5	5	0	52.8	5	5	0	52.8	5	5	0	52.8	52.8	-	0%
PM (4pm -6:59pm)	0.0%	0	0	0	-	0	0	0	-	0	0	0	-	-	-	0%
Planebrook/Rt. 30 Southbound																
AM (6am - 8:59am)	4.6%	346	330	16	52.8	398	380	18	54.6	715.6	683	33	90.3	49.6	(40.7)	-45%
PM (4pm -6:59pm)	0.6%	344	342	2	55.6	396	394	2	59.4	712	708	4	137.1	75.3	(61.8)	-45%
Sproul/Rt. 30 Eastbound																
AM (6am - 8:59am)	4.8%	628	598	30	33.4	723	688	35	26.5	1359.5	1295	65	163.9	19.4	(144.5)	-88%
PM (4pm -6:59pm)	0.4%	704	701	3	54.6	811	808	3	32.2	1525	1519	6	365.4	43.2	(322.2)	-88%
Sproul/Rt. 30 Westbound																
AM (6am - 8:59am)	4.2%	565	541	24	13.0	736	705	31	20.7	1198.2	1148	50	23.5	12.3	(11.2)	-48%
PM (4pm -6:59pm)	0.6%	974	968	6	40.8	1269	1261	8	89.1	2066	2054	12	101.1	52.9	(48.2)	-48%
Sproul/Rt. 30 Northbound																
AM (6am - 8:59am)	1.1%	746	738	8	34.7	922	912	10	27.5	1347.6	1333	15	27.5	37.7	10.1	37%
PM (4pm -6:59pm)	0.3%	633	631	2	79.6	782	780	2	46.7	1143	1140	3	46.7	63.9	17.2	37%
Sproul/Rt. 30 Southbound																
AM (6am - 8:59am)	28.6%	7	5	2	17.1	54	39	15	17.3	56.3	40	16	37.1	41.7	4.6	12%
PM (4pm -6:59pm)	0.0%	3	3	0	21.0	23	23	0	21.6	24	24	0	70.9	79.7	8.8	12%
Church/Rt. 30 Eastbound																
AM (6am - 8:59am)	2.2%	1020	998	22	3.3	1319	1290	29	4.8	2235.1	2186	49	45.5	2.7	(42.8)	-94%
PM (4pm -6:59pm)	1.2%	823	813	10	3.6	1064	1051	13	6.9	1803	1781	22	123.6	7.3	(116.3)	-94%
Church/Rt. 30 Westbound																
AM (6am - 8:59am)	2.3%	862	842	20	17.2	1135	1109	26	42.3	1860.8	1818	43	74.7	11.0	(63.7)	-85%
PM (4pm -6:59pm)	1.7%	904	889	15	25.5	1190	1170	20	100.0	1951	1918	33	252.8	37.1	(215.7)	-85%
Church/Rt. 30 Northbound																
AM (6am - 8:59am)	0.0%	3	3	0	41.9	3	3	0	41.7	3	3	0	50.4	59.1	8.8	17%
PM (4pm -6:59pm)	0.0%	1	1	0	29.1	1	1	0	28.8	1	1	0	40.8	47.9	7.1	17%
Church/Rt. 30 Southbound																
AM (6am - 8:59am)	0.0%	234	234	0	53.1	279	279	0	61.0	319	319	0	86.4	59.8	(26.5)	-31%
PM (4pm -6:59pm)	0.0%	281	281	0	42.2	335	335	0	54.8	383	383	0	100.3	69.5	(30.8)	-31%

Corridor Totals	2017				2027 Pass-through				2027 Development				With Project	Delay Reduction	
	Total Vehicles per Hour	Passenger Vehicles	Commercial Vehicles	Total Delay (Seconds/vehicle)	Vehicles per Hour	Passenger Vehicles	Commercial Vehicles	Total Delay (Seconds/vehicle)	Vehicles per Hour	Passenger Vehicles	Commercial Vehicles	Total Delay (Seconds/vehicle)	Total Delay (Seconds/vehicle)	Total Delay (Seconds/vehicle)	% Reduction
AM (6am - 8:59am)	5,626	5,465	161	349.0	6,975	6,765	210	384.5	11,595	11,243	352	914.8	396.3	(518.5)	-57%
PM (4pm -6:59pm)	6,146	6,081	65	372.1	7,580	7,500	80	466.5	12,638	12,501	137	1,591.3	551.1	(1,040.2)	-65%

Emissions Data

	NOX (g/hr)	PM2.5 (g/hr)
Light Duty Gasoline Vehicle	3.515	
Light Duty Gasoline Truck	4.065	
Average LDGV	3.79	
Heavy Duty Gasoline Vehicle	5.33	
Heavy Duty Deisel Vehicle Class V	18.655	1.008
Heavy Duty Deisel Vehicle Class VIIIa	35.758	1.07
Average HDDV Class V and Class VIIIa	27.2065	1.039

Source U.S Environmental Protection Agency, Idling Vehicle Emissions for Passenger Cars, Light-Duty Trucks, and Heavy-Duty Trucks Emission Facts (2008).

PM 2.5 per gallon of gasoline	PM 2.5 (g/mile)	Gasoline consumption/mile	PM 2.5/gal	PM 2.5 (g/hr) idling
Light Duty Gasoline Vehicle (Passenger Cars)	0.0041	0.04149	0.098818993	0.043480357
Light Duty Gasoline Truck	0.0045	0.0578	0.077854671	0.034256055
Average LDGV	0.0043	0.049645	0.088336832	0.038868206

U.S Environmental Protection Agency, Average Annual Emissions and Fuel Consumption for Gasoline-Fueled Passenger Cars and Light Trucks Emission Facts (2008).

Fuel Consumption Efficiency	Fuel Type	Idling Fuel Use (gal/hr) no load	Idling Fuel Use (gal/hr) with load
Compact Sedan	Gasoline	0.16	0.29
Large Sedan	Gasoline	0.39	0.59
Delivery Truck	Diesel	0.84	1.1
Tractor-Semitrailer	Diesel	0.64	1.15

U.S Energy Efficiency and Renewable Energy Office, Fact #861 February 23, 2015 Idle Fuel Consumption for Selected Gasoline and Diesel Vehicles – Dataset.

Grams of CO2/Gallon of Gasoline	Gasoline Vehicles	Diesel Vehicles
Grams of CO2/Gallon	8,887	10,180
Idling Fuel Use (gal/hr) no load	0.44	1.125
Grams of Co2/hr	3,910.28	11,452.50

U.S Environmental Protection Agency, Greenhouse Gases Equivalencies Calculator - Calculations and References (2022).

Recommended Monetized Values				
Year	Nox	Sox	PM 2.5	CO2
2021	$15,600	$41,500	$748,600	$52
2022	$15,800	$42,300	$761,000	$53
2023	$16,000	$43,100	$774,700	$54
2024	$16,200	$44,000	$788,100	$55
2025	$16,500	$44,900	$801,700	$56
2026	$16,800	$45,700	$814,500	$57
2027	$17,100	$46,500	$827,400	$58
2028	$17,400	$47,300	$840,600	$60
2029	$17,700	$48,200	$854,000	$61
2030	$18,100	$49,100	$867,000	$62
2031	$18,100	$49,100	$867,000	$63
2032	$18,100	$49,100	$867,000	$64
2033	$18,100	$49,100	$867,000	$65
2034	$18,100	$49,100	$867,000	$66
2035	$18,100	$49,100	$867,000	$67
2036	$18,100	$49,100	$867,000	$69
2037	$18,100	$49,100	$867,000	$70
2038	$18,100	$49,100	$867,000	$71
2039	$18,100	$49,100	$867,000	$72
2040	$18,100	$49,100	$867,000	$73
2041	$18,100	$49,100	$867,000	$74
2042	$18,100	$49,100	$867,000	$75
2043	$18,100	$49,100	$867,000	$77
2044	$18,100	$49,100	$867,000	$78
2045	$18,100	$49,100	$867,000	$79
2046	$18,100	$49,100	$867,000	$80
2047	$18,100	$49,100	$867,000	$81
2048	$18,100	$49,100	$867,000	$82
2049	$18,100	$49,100	$867,000	$83
2050	$18,100	$49,100	$867,000	$85

Table A-6, 2022 Benefit-Cost Analysis Guidance for Discretionary Grant Programs

Table 1.3 - SUMMARY OF RECEIPTS, OUTLAYS, AND SURPLUSES OR DEFICITS (-) IN CURRENT DOLLARS,

(dollar amounts in billions)

Fiscal Year	In Current Dollars			In Constant (FY 2012) Dollars			Addendum: Composite Deflator	As Percentages of GDP		
	Receipts	Outlays	Surplus or Deficit (-)	Receipts	Outlays	Surplus or Deficit (-)		Receipts	Outlays	Surplus or Deficit (-)
1940	6.5	9.5	-2.9	100.3	145.0	-44.7	0.0653	6.7	9.6	-3.0
1941	8.7	13.7	-4.9	120.3	188.6	-68.2	0.0724	7.5	11.7	-4.3
1942	14.6	35.1	-20.5	177.8	426.9	-249.1	0.0823	9.9	23.8	-13.9
1943	24.0	78.6	-54.6	263.2	861.3	-598.2	0.0912	13.0	42.6	-29.6
1944	43.7	91.3	-47.6	522.0	1,089.5	-567.5	0.0838	20.5	42.7	-22.2
1945	45.2	92.7	-47.6	573.1	1,176.5	-603.5	0.0788	19.9	41.0	-21.0
1946	39.3	55.2	-15.9	495.5	696.5	-201.0	0.0793	17.2	24.2	-7.0
1947	38.5	34.5	4.0	429.8	385.0	44.8	0.0896	16.1	14.4	1.7
1948	41.6	29.8	11.8	445.9	319.4	126.6	0.0932	15.9	11.4	4.5
1949	39.4	38.8	0.6	439.9	433.4	6.5	0.0896	14.3	14.0	0.2
1950	39.4	42.6	-3.1	419.2	452.3	-33.1	0.0941	14.2	15.3	-1.1
1951	51.6	45.5	6.1	545.0	480.6	64.4	0.0947	15.8	13.9	1.9
1952	66.2	67.7	-1.5	700.9	717.0	-16.1	0.0944	18.5	19.0	-0.4
1953	69.6	76.1	-6.5	685.8	749.8	-64.0	0.1015	18.2	19.9	-1.7
1954	69.7	70.9	-1.2	666.4	677.4	-11.0	0.1046	18.0	18.3	-0.3
1955	65.5	68.4	-3.0	605.5	633.2	-27.7	0.1081	16.1	16.8	-0.7
1956	74.6	70.6	3.9	660.6	625.7	35.0	0.1129	17.0	16.1	0.9
1957	80.0	76.6	3.4	675.0	646.2	28.8	0.1185	17.3	16.5	0.7
1958	79.6	82.4	-2.8	634.5	656.6	-22.1	0.1255	16.8	17.4	-0.6
1959	79.2	92.1	-12.8	606.3	704.7	-98.3	0.1307	15.7	18.3	-2.5
1960	92.5	92.2	0.3	697.0	694.7	2.3	0.1327	17.3	17.3	0.1
1961	94.4	97.7	-3.3	695.6	720.1	-24.6	0.1357	17.3	17.9	-0.6
1962	99.7	106.8	-7.1	733.4	786.0	-52.6	0.1359	17.0	18.2	-1.2
1963	106.6	111.3	-4.8	751.5	785.0	-33.5	0.1418	17.2	18.0	-0.8
1964	112.6	118.5	-5.9	782.0	823.1	-41.1	0.1440	17.0	17.9	-0.9
1965	116.8	118.2	-1.4	800.1	809.8	-9.7	0.1460	16.5	16.7	-0.2
1966	130.8	134.5	-3.7	872.2	896.9	-24.7	0.1500	16.8	17.2	-0.5
1967	148.8	157.5	-8.6	970.2	1,026.5	-56.3	0.1534	17.8	18.8	-1.0
1968	153.0	178.1	-25.2	962.7	1,121.0	-158.3	0.1589	17.0	19.8	-2.8
1969	186.9	183.6	3.2	1,105.8	1,086.6	19.2	0.1690	19.1	18.7	0.3
1970	192.8	195.6	-2.8	1,080.8	1,096.7	-15.9	0.1784	18.4	18.7	-0.3
1971	187.1	210.2	-23.0	981.3	1,102.1	-120.8	0.1907	16.8	18.8	-2.1
1972	207.3	230.7	-23.4	1,020.2	1,135.2	-115.0	0.2032	17.0	19.0	-1.9
1973	230.8	245.7	-14.9	1,086.6	1,156.8	-70.2	0.2124	17.1	18.2	-1.1
1974	263.2	269.4	-6.1	1,143.5	1,170.1	-26.7	0.2302	17.8	18.2	-0.4
1975	279.1	332.3	-53.2	1,104.9	1,315.6	-210.8	0.2526	17.4	20.7	-3.3
1976	298.1	371.8	-73.7	1,101.5	1,374.0	-272.5	0.2706	16.7	20.8	-4.1
TQ	81.2	96.0	-14.7	292.8	346.0	-53.1	0.2774	17.2	20.3	-3.1
1977	355.6	409.2	-53.7	1,224.4	1,409.2	-184.8	0.2904	17.6	20.2	-2.7
1978	399.6	458.7	-59.2	1,295.2	1,487.0	-191.8	0.3085	17.6	20.2	-2.6
1979	463.3	504.0	-40.7	1,381.3	1,502.8	-121.4	0.3354	18.1	19.6	-1.6
1980	517.1	590.9	-73.8	1,394.6	1,593.7	-199.1	0.3708	18.5	21.2	-2.6
1981	599.3	678.2	-79.0	1,455.3	1,647.0	-191.8	0.4118	19.1	21.6	-2.5
1982	617.8	745.7	-128.0	1,393.2	1,681.9	-288.6	0.4434	18.6	22.5	-3.9
1983	600.6	808.4	-207.8	1,291.0	1,737.7	-446.7	0.4652	17.0	22.9	-5.9

1984	666.4	851.8	-185.4	1,367.1	1,747.3	-380.2	0.4875	16.9	21.6	-4.7
1985	734.0	946.3	-212.3	1,452.4	1,872.5	-420.1	0.5054	17.2	22.2	-5.0
1986	769.2	990.4	-221.2	1,490.3	1,919.0	-428.7	0.5161	17.0	21.9	-4.9
1987	854.3	1,004.0	-149.7	1,609.4	1,891.5	-282.1	0.5308	17.9	21.1	-3.1
1988	909.2	1,064.4	-155.2	1,655.9	1,938.5	-282.6	0.5491	17.7	20.7	-3.0
1989	991.1	1,143.7	-152.6	1,736.0	2,003.4	-267.4	0.5709	17.8	20.6	-2.7
1990	1,032.0	1,253.0	-221.0	1,756.8	2,133.1	-376.3	0.5874	17.5	21.2	-3.7
1991	1,055.0	1,324.2	-269.2	1,719.1	2,157.8	-438.7	0.6137	17.3	21.7	-4.4
1992	1,091.2	1,381.5	-290.3	1,709.0	2,163.7	-454.7	0.6385	17.0	21.5	-4.5
1993	1,154.3	1,409.4	-255.1	1,755.9	2,143.9	-388.0	0.6574	17.0	20.8	-3.8
1994	1,258.6	1,461.8	-203.2	1,881.3	2,185.0	-303.7	0.6690	17.5	20.4	-2.8
1995	1,351.8	1,515.7	-164.0	1,962.2	2,200.2	-238.0	0.6889	17.9	20.0	-2.2
1996	1,453.1	1,560.5	-107.4	2,065.8	2,218.5	-152.7	0.7034	18.3	19.6	-1.4
1997	1,579.2	1,601.1	-21.9	2,199.2	2,229.7	-30.5	0.7181	18.7	18.9	-0.3
1998	1,721.7	1,652.5	69.3	2,377.7	2,282.1	95.7	0.7241	19.3	18.5	0.8
1999	1,827.5	1,701.8	125.6	2,493.8	2,322.4	171.4	0.7328	19.3	18.0	1.3
2000	2,025.2	1,789.0	236.2	2,694.5	2,380.2	314.3	0.7516	20.0	17.7	2.3
2001	1,991.1	1,862.8	128.2	2,580.5	2,414.3	166.2	0.7716	18.9	17.7	1.2
2002	1,853.1	2,010.9	-157.8	2,364.9	2,566.2	-201.3	0.7836	17.1	18.6	-1.5
2003	1,782.3	2,159.9	-377.6	2,210.2	2,678.4	-468.2	0.8064	15.8	19.2	-3.3
2004	1,880.1	2,292.8	-412.7	2,271.2	2,769.8	-498.6	0.8278	15.6	19.1	-3.4
2005	2,153.6	2,472.0	-318.3	2,515.3	2,887.1	-371.8	0.8562	16.8	19.3	-2.5
2006	2,406.9	2,655.0	-248.2	2,715.6	2,995.7	-280.0	0.8863	17.6	19.5	-1.8
2007	2,568.0	2,728.7	-160.7	2,818.9	2,995.3	-176.4	0.9110	18.0	19.1	-1.1
2008	2,524.0	2,982.5	-458.6	2,677.4	3,163.8	-486.4	0.9427	17.1	20.2	-3.1
2009	2,105.0	3,517.7	-1,412.7	2,236.3	3,737.0	-1,500.8	0.9413	14.5	24.3	-9.8
2010	2,162.7	3,457.1	-1,294.4	2,257.1	3,607.9	-1,350.8	0.9582	14.5	23.2	-8.7
2011	2,303.5	3,603.1	-1,299.6	2,348.3	3,673.2	-1,324.9	0.9809	14.9	23.3	-8.4
2012	2,450.0	3,526.6	-1,076.6	2,450.0	3,526.6	-1,076.6	1.0000	15.2	21.9	-6.7
2013	2,775.1	3,454.9	-679.8	2,736.3	3,406.5	-670.3	1.0142	16.7	20.7	-4.1
2014	3,021.5	3,506.3	-484.8	2,932.3	3,402.8	-470.5	1.0304	17.4	20.2	-2.8
2015	3,249.9	3,691.8	-442.0	3,137.3	3,563.9	-426.6	1.0359	18.0	20.4	-2.4
2016	3,268.0	3,852.6	-584.6	3,135.0	3,695.9	-560.9	1.0424	17.6	20.8	-3.2
2017	3,316.2	3,981.6	-665.4	3,128.5	3,756.3	-627.8	1.0600	17.2	20.7	-3.5
2018	3,329.9	4,109.0	-779.1	3,071.3	3,789.9	-718.6	1.0842	16.4	20.2	-3.8
2019	3,463.4	4,447.0	-983.6	3,139.1	4,030.6	-891.5	1.1033	16.4	21.0	-4.7
2020	3,421.2	6,553.6	-3,132.4	3,039.1	5,821.8	-2,782.7	1.1257	16.3	31.3	-15.0
2021	4,047.1	6,822.4	-2,775.3	3,502.8	5,904.8	-2,402.1	1.1554	18.1	30.5	-12.4
2022 estimate	4,436.6	5,851.6	-1,415.0	3,654.9	4,820.5	-1,165.6	1.2139	18.3	24.1	-5.8
2023 estimate	4,638.2	5,792.0	-1,153.9	3,732.7	4,661.2	-928.6	1.2426	18.1	22.7	-4.5
2024 estimate	4,874.4	6,075.2	-1,200.8	3,835.7	4,780.6	-944.9	1.2708	18.3	22.8	-4.5
2025 estimate	5,076.3	6,406.0	-1,329.7	3,910.0	4,934.2	-1,024.2	1.2983	18.3	23.1	-4.8
2026 estimate	5,405.7	6,733.8	-1,328.2	4,073.0	5,073.7	-1,000.7	1.3272	18.7	23.3	-4.6
2027 estimate	5,695.9	7,047.6	-1,351.7	4,199.2	5,195.8	-996.6	1.3564	18.9	23.4	-4.5