

Table 7-12: Design Year (2039) No-Build vs. Build Access Point Density Comparison

Corridor	Design Year No-Build Alternative			Design Year Build Alternative			Percentage Change in Access Point Density (Build/No-Build)
	Distance Between First and Last Access Point	Number of Access Points	Access Point Density (Access Points/Mile)	Distance Between First and Last Access Point	Number of Access Points	Access Point Density (Access Points/Mile)	
I-285 Westbound	2.5 miles	7	2.8	2.8 miles	7	2.5	-11%
I-285 Eastbound	3.1 miles	9	2.9	3.87 miles	7	1.8	-38%

Note: The number of access points along I-285 westbound varies between the open year and the design year because of the programmed CD projects (P.I. No. 0013255 and P.I. No. 0001758).

The access point density calculations show that the Build Alternative will maintain a lower access point density over the No-Build Alternative and, therefore, will potentially reduce the frequency of sideswipe and rear-end crashes.

7.9 Benefit-Cost Analysis

The benefit to cost (B/C) ratio for the proposed project was estimated based on GDOT's latest B/C methodology, which was developed as part of the project prioritization program. Benefits are calculated by assigning monetary values to the reduction in automobile delay and truck delay and by accounting for fuel cost savings. Figure 7-26 shows the equations used for estimating automobile delay savings, truck delay savings, and fuel cost savings.

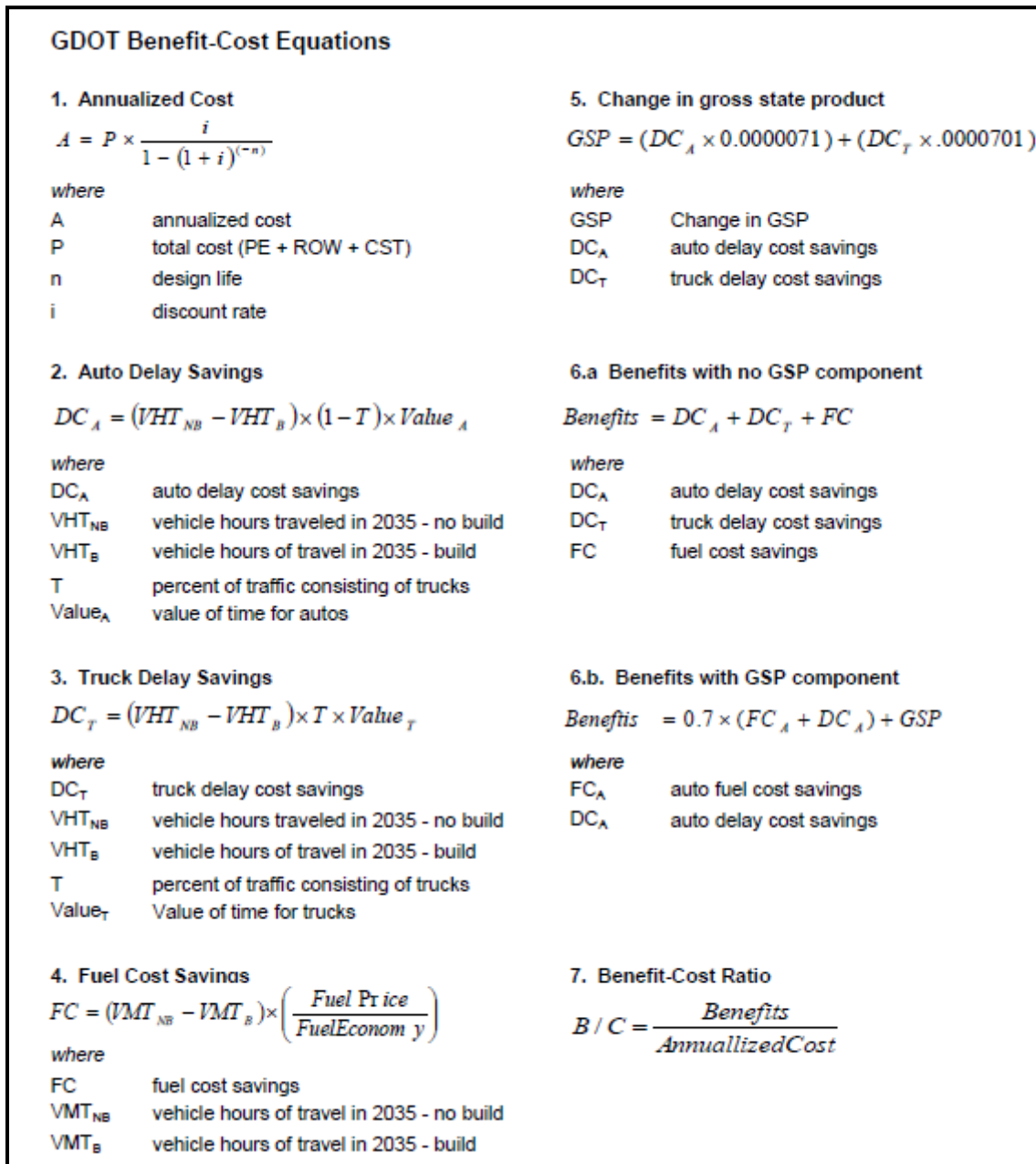


Figure 7-26: GDOT Benefit-Cost Equations

Table 7-13 shows various parameters and their values used in equations for benefit calculations.

Table 7-13: B/C Parameters and Values

Parameter	Value
Discount rate	7.0%
Fuel price (\$/gallon)	2.40
Fuel economy (miles per gallon)	18.03
Value of automobile travel (\$/hour)	13.75
Value of truck travel (\$/hour)	72.65
Percent trucks	9%
No. of working days in a year	250

Annualized vehicle miles traveled (VMTs) and vehicle hours traveled (VHTs) for the No-Build and Build Alternatives were used in the B/C equations to estimate the anticipated annual benefits in the open year and the design year. The VMTs and VHTs determined as part of the VISSIM network-level analysis were converted to annualized values using the following conversion factors:

- 10 peak hours (5 hours in the a.m. peak and 5 hours in the p.m. peak) of traffic per day
- 250 working days in a year

Table 7-14 presents annual benefits calculated for future open year and design year Build Alternative conditions.

Table 7-14: Project Benefit Calculations

Analysis Year	Annual Vehicle Miles Traveled (VMT)		Annual Vehicle Hours Traveled (VHT)		Benefits in 2014 Dollars
	No-Build	Build	No-Build	Build	
Open Year (2019)	739,981,870	781,381,473	30,002,038	25,131,580	\$85,680,354
Design Year (2039)	797,096,765	889,508,048	40,609,795	38,314,872	\$27,351,908

It is estimated that the Build Alternative will continue to provide benefits over the No-Build Alternative through 2039, the design year. Thus, the B/C ratio was estimated for a design life period of 20 years from open year to design year. A linear growth change in the traffic operation and the resulting benefits between open year and design year scenarios have been assumed. The graph on Figure 7-27 shows the project benefit for a design life of 20 years.

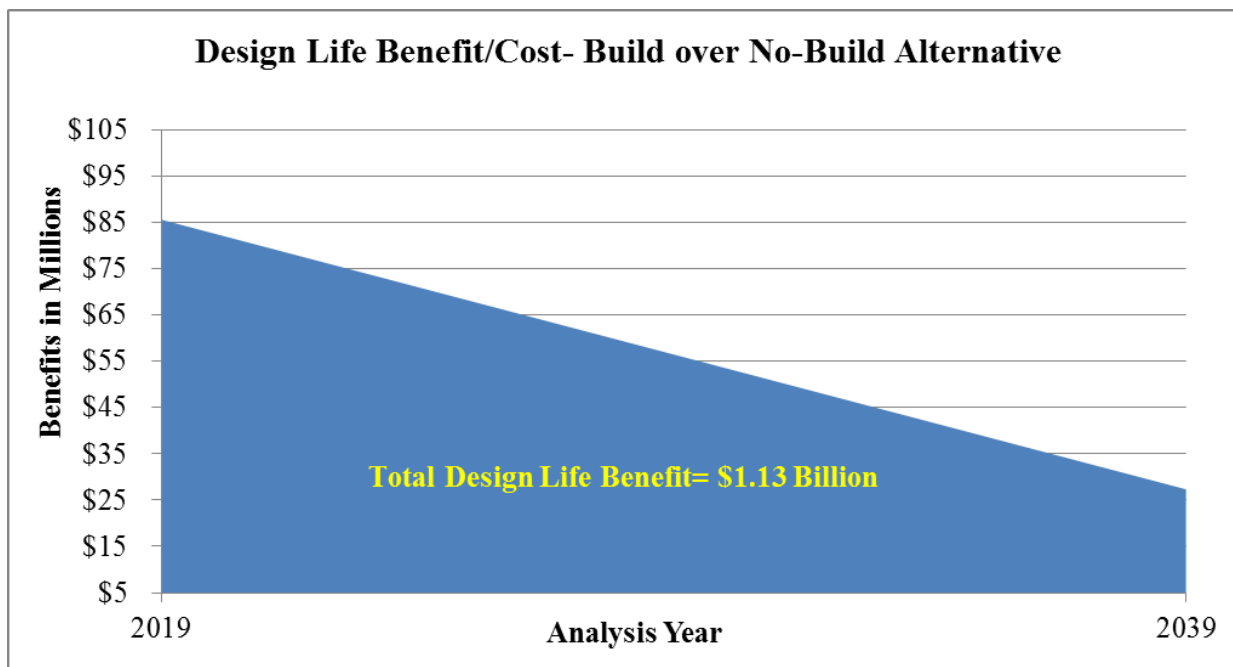


Figure 7-27: Benefits for Project Design Life of 20 Years

Table 7-15 summarizes the four cost components and their values. The total cost of the project is estimated to be approximately \$626.11 million. Table 7-16 shows that the project benefit for a design life of 20 years is approximately \$1.13billion. Therefore, the proposed project would provide a B/C ratio of 1.98 for a 20-year design life.

Table 7-15: Cost Estimates for the Project

Cost Component	Cost Estimate
Preliminary engineering cost	\$32,460,000
Right of way cost	\$128,150,000
Utility cost	\$19,300,000
Construction cost	\$446,203,000
Total Cost	\$626,113,300

Table 7-16: Benefit to Cost Ratio for the Project

Design Life	Benefit (in 2014 \$)	Cost (in 2014 \$)	Project B/C
20 Years	\$1,130,332,620	\$ 626,113,300	1.98