

Emissions Reduction Cost-Benefit Analysis ¹

¹ based on ARB Methods to Find the Cost-Effectiveness of Funding Air Quality Projects

Wilson Rd

Between Edgemont St and Chester Ave	
Project Length (mi)	2.95
Operating Days per Year	250
Effective Life of Project (n), years	5
Discount Rate (i)	3%
Capital Recovery Factor (A/P,3%,5) ²	0.22
CMAQ Funding Dollars	\$1,123,269
CoFund Dollars	\$145,531
CMAQ + CoFund Funding Dollars	\$1,268,800
Average Annual Daily Traffic	14,498
Ave. Speed Before Coordination (mph)	20
Ave. Speed After Coordination (mph)	40
Annual Project VMT ³ (mi/yr)	10,692,275

Local Match 11.47%

\$1,268,800

² $CRF = ((1+i)^n * i) / ((1+i)^n - 1)$

³ Annual Project VMT = Operating Days per Year * Project Length * AADT

Emissions	ROG	CO	NOx	PM2.5 Ex
Before Speed Factor ⁴ (g/mi)	0.0384	1.4894	0.2603	0.0035
After Speed Factor ⁴ (g/mi)	0.0166	1.04	0.1368	0.0018
Annual Emission Reduction ⁵ (lbs/yr)/mi	257	749	1454	20
Annual Emission Reduction ⁶ (kg/day)/mi	0.32	0.93	1.81	0.02

⁴ Emissions factors are referenced from Table 3 of Methods to Find the Cost-Effectiveness of Funding Air Quality Projects, Emission Factor Tables, September 2024

⁵ Annual Emissions Reductions (lbs/yr) = [(0.50)*(VMT)*(Before Speed Factor - After Speed Factor)]/454 grams per lb.

⁶ Annual Emissions Reductions (kg/yr) = [Annual Emissions Reductions (lbs/yr)]*2.2 kg per lb.

The calculation divides CO by 7

	dollars per lb.	dollars per ton
CMAQ Cost-Effectiveness⁷	\$98.88	\$197,763
Total Cost-Effectiveness⁸	\$111.69	\$223,385

⁷ Cost-Effectiveness of CMAQ Funding Dollars = (CRF * CMAQ Funding Dollars) / (ROG + CO + NOx + PM10)

⁸ Cost-Effectiveness of Total Funding Dollars = (CRF * Total Funding Dollars) / (ROG + CO + NOx + PM10)