

Emissions Reduction Cost-Benefit Analysis ¹

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

Planz Rd

Between Wilson Rd and Union Ave				
Project Length (mi)	3.20			
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	\$1,266,953			
CoFund Dollars	\$164,147			
CMAQ + CoFund Funding Dollars	\$1,431,100			
Average Annual Daily Traffic	10,678			
Ave. Speed Before Coordination (mph)	18			
Ave. Speed After Coordination (mph)	40			
Annual Project VMT ³ (mi/yr)	8,542,400			
		Local Match	11.47%	
		\$1,431,100		
Emissions	ROG	CO	NOx	PM2.5 Ex
Before Speed Factor ⁴ (g/mi)	0.044	1.5575	0.2828	0.004
After Speed Factor ⁴ (g/mi)	0.0166	1.0439	0.1368	0.0018
Annual Emission Reduction ⁵ (lbs/yr)/mi	258	690	1374	21
Annual Emission Reduction ⁶ (kg/day)/mi	0.32	0.86	1.71	0.03

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

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

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	\$118.11	\$236,216
Total Cost-Effectiveness⁸	\$133.41	\$266,820

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)