

Emissions Reduction Cost-Benefit Analysis¹

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

California Ave

Between Oak St and MLK Blvd

Project Length (mi)	3.09
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	\$1,903,129
CoFund Dollars	\$246,571
CMAQ + CoFund Funding Dollars	\$2,149,700
Average Annual Daily Traffic	21,987
Ave. Speed Before Coordination (mph)	18
Ave. Speed After Coordination (mph)	35
Annual Project VMT³ (mi/yr)	16,984,958

Local Match

11.47%

\$2,149,700

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)	0.044	1.5575	0.2828	0.004
After Speed Factor ⁴ (g/mi)	0.0191	1.1298	0.1556	0.0019
Annual Emission Reduction ⁵ (lbs/yr)/mi	466	1143	2379	39
Annual Emission Reduction ⁶ (kg/day)/mi	0.58	1.42	2.96	0.05

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

\$103.18

\$206,366

Total Cost-Effectiveness⁸

\$116.55

\$233,103

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)