Emissions Reduction Cost-Benefit Analysis [1]

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

Olive Drive

Between Frontier HS and Coffee Rd				
Project Length (mi)	3.46			
Operating Days per Year	250		***Local Match***	**11.47%**
Effective Life of Project (n), years	5			
Discount Rate (i)	3%			
Capital Recovery Factor (A/P,3%,5)[2]	0.22			
CMAQ Funding Dollars	**$1,570,345**			
CoFund Dollars	**$203,455**			
CMAQ + CoFund Funding Dollars	**$1,773,800**	*$1,773,800*		
Average Annual Daily Traffic	19,986			
Ave. Speed Before Coordination (mph)	**22**			
Ave. Speed After Coordination (mph)	**45**			
Annual Project VMT [3] (mi/yr)	**17,287,890**			

[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)	0.0343	1.4312	0.2418	0.0032
After Speed Factor[4] (g/mi)	0.0152	0.97	0.1256	0.0018
Annual Emission Reduction[5] (lbs/yr)/mi	364	1252	2212	27
Annual Emission Reduction[6] (kg/day)/mi	**0.45**	**1.56**	**2.76**	**0.03**

[4] Emissions factors are referenced from Table 3 of Methods to Find the Cost-Effectiveness of Funding Air Quality Projects, Emission Factor Tables, Semptember 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-Effectiveness[7]	**$88.95**	*$177,897*
Total Cost-Effectiveness[8]	**$100.47**	*$200,945*

[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)*