Appendix F: Existing and Potential Future Air Quality Benefits by Cycle Zone

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Existing and Potential Future Air Quality Benefits

Alta Planning + Design modeled the potential future air quality benefits based on maintaining the current bicycle network and a complete bicycle network. Tables 19 – 24 display the results of this modeling for each cycle zone defined for this plan. More detailed descriptions of the modeling and the assumptions that were included are provided in Appendix D: Quantifying Current and Future Demand for Bicycling Facilities.

Table 19: Zone 1 Potential Future Air Quality Benefits

	Bicycle Network	
Vehicle Travel Reductions	No Expansion	Complete
Reduced Vehicle Trips per Weekday[1]	958	1,869
Reduced Vehicle Trips per Year [2]	250,058	487,936
Reduced VMT per Weekday [3]	6,866	13,758
Reduced VMT per Year [2]	1,792,082	3,590,915
Vehicle Emissions Reductions	No Expansion	Complete
Reduced PM10 (tons per weekday) [4]	126	253
Reduced NOX (tons per weekday) [5]	3,425	6,863
Reduced ROG (tons per weekday) [6]	498	999
Reduced CO2 (tons per weekday)	3	6
Reduced PM10 (tons per year) [8]	32,974	66,073
Reduced NOX (tons per year) [8]	893,890	1,791,149
Reduced ROG (tons per year) [8]	130,105	260,700
Reduced CO2 (tons per year) [8]	762	1,526

Note: VMT means Vehicle Miles Traveled. This table shows estimated potential future benefits based on two scenarios:

Future population increase assuming no changes to the bicycle network. These benefits are estimated based on existing bicycling mode share

Future population increase assuming a completed bicycle network. These benefits are estimated based on assumed mode share increases

(1) Assumes 73% of bicycle trips replace vehicle trips for adults/college students; 53% reduction for school children.

(2) Weekday trip reduction multiplied by 261 weekdays per year.

(3) Bicycle trips: assumes average roundtrip of 8 miles for adults/college students; 1 mile for school children. Pedestrian trips: assumes average roundtrip of 1.2 miles for adults/college students; 0.5 mile for school children.

(4) PM10 reduction of 0.0184 tons per mile.

(5) NOX reduction of 0.4988 tons per mile.

(6) ROG reduction of 0.0726 tons per mile

(7) C02 reduction of 0.000425 tons per mile.

(8) Weekday emission reduction multiplied by 261 weekdays per year.

Table 20: Zone 2 Potential Future Air Quality Benefits

	Bicycle Network	
Vehicle Travel Reductions	No Expansion	Complete
Reduced Vehicle Trips per Weekday[1]	2,206	4,342
Reduced Vehicle Trips per Year [2]	575,824	1,133,329
Reduced VMT per Weekday [3]	15,795	31,956
Reduced VMT per Year [2]	4,122,59	8,340,63
Vehicle Emissions Reductions	No Expansion	Complete
Reduced PM10 (tons per weekday)[4]	291	588
Reduced NOX (tons per weekday)[5]	7,879	15,940
Reduced ROG (tons per weekday)[6]	1,147	2,320
Reduced CO2 (tons per weekday)	7	14
Reduced PM10 (tons per year) [8]	75,856	153,468
Reduced NOX (tons per year) [8]	2,056,350	4,160,309
Reduced ROG (tons per year) [8]	299,300	605,530
Reduced CO2 (tons per year) [8]	1,752	3,545

Note: VMT means Vehicle Miles Traveled. This table shows estimated potential future benefits based on two scenarios:

Future population increase assuming no changes to the bicycle network. These benefits are estimated based on existing bicycling mode share

Future population increase assuming a completed bicycle network. These benefits are estimated based on assumed mode share increases

(1) Assumes 73% of bicycle trips replace vehicle trips for adults/college students; 53% reduction for school children.

(2) Weekday trip reduction multiplied by 261 weekdays per year.

(3) Bicycle trips: assumes average roundtrip of 8 miles for adults/college students; 1 mile for school children. Pedestrian trips: assumes average roundtrip of 1.2 miles for adults/college students; 0.5 mile for school children.

(4) PM10 reduction of 0.0184 tons per mile.

(5) NOX reduction of 0.4988 tons per mile.

(6) ROG reduction of 0.0726 tons per mile

(7) C02 reduction of 0.000425 tons per mile.

(8) Weekday emission reduction multiplied by 261 weekdays per year.

Existing and Potential Future Air Quality Benefits

Table 21: Zone 3 Potential Future Air Quality Benefits

	Bicycle Network	
Vehicle Travel Reductions	No Expansion	Complete
Reduced Vehicle Trips per Weekday[1]	1,008	1,985
Reduced Vehicle Trips per Year [2]	263,173	517,977
Reduced VMT per Weekday [3]	7,219	14,605
Reduced VMT per Year [2]	1,884,184	3,812,018
Vehicle Emissions Reductions	No Expansion	Complete
Reduced PM10 (tons per weekday) [4]	133	269
Reduced NOX (tons per weekday) [5]	3,601	7,285
Reduced ROG (tons per weekday) [6]	524	1,060
Reduced CO2 (tons per weekday)	3	6
Reduced PM10 (tons per year) [8]	34,669	70,141
Reduced NOX (tons per year) [8]	939,831	1,901,434
Reduced ROG (tons per year) [8]	136,792	276,752
Reduced CO2 (tons per year) [8]	801	1,620

Note: VMT means Vehicle Miles Traveled. This table shows estimated potential future benefits based on two scenarios:

Future population increase assuming no changes to the bicycle network. These benefits are estimated based on existing bicycling mode share

Future population increase assuming a completed bicycle network. These benefits are estimated based on assumed mode share increases

(1) Assumes 73% of bicycle trips replace vehicle trips for adults/college students; 53% reduction for school children.

(2) Weekday trip reduction multiplied by 261 weekdays per year.

(3) Bicycle trips: assumes average roundtrip of 8 miles for adults/college students; 1 mile for school children. Pedestrian trips: assumes average roundtrip of 1.2 miles for adults/college students; 0.5 mile for school children.

(4) PM10 reduction of 0.0184 tons per mile.

(5) NOX reduction of 0.4988 tons per mile.

(6) ROG reduction of 0.0726 tons per mile

(7) C02 reduction of 0.000425 tons per mile.

(8) Weekday emission reduction multiplied by 261 weekdays per year.

Table 22: Zone 4 Potential Future Air Quality Benefits

	Bicycle Network	
Vehicle Travel Reductions	No Expansion	Complete
Reduced Vehicle Trips per Weekday[1]	1,126	2,217
Reduced Vehicle Trips per Year [2]	293,971	578,593
Reduced VMT per Weekday [3]	8,064	16,315
Reduced VMT per Year [2]	2,104,673	4,258,106
Vehicle Emissions Reductions	No Expansion	Complete
Reduced PM10 (tons per weekday) [4]	148	300
Reduced NOX (tons per weekday) [5]	4,022	8,138
Reduced ROG (tons per weekday) [6]	585	1,174
Reduced CO2 (tons per weekday)	3	7
Reduced PM10 (tons per year) [8]	38,726	78,349
Reduced NOX (tons per year) [8]	1,049,811	2,123,943
Reduced ROG (tons per year) [8]	152,799	309,138
Reduced CO2 (tons per year) [8]	894	1,810

Note: VMT means Vehicle Miles Traveled. This table shows estimated potential future benefits based on two scenarios:

Future population increase assuming no changes to the bicycle network. These benefits are estimated based on existing bicycling mode share

Future population increase assuming a completed bicycle network. These benefits are estimated based on assumed mode share increases

(1) Assumes 73% of bicycle trips replace vehicle trips for adults/college students; 53% reduction for school children.

(2) Weekday trip reduction multiplied by 261 weekdays per year.

(3) Bicycle trips: assumes average roundtrip of 8 miles for adults/college students; 1 mile for school children. Pedestrian trips: assumes average roundtrip of 1.2 miles for adults/college students; 0.5 mile for school children.

(4) PM10 reduction of 0.0184 tons per mile.

(5) NOX reduction of 0.4988 tons per mile.

(6) ROG reduction of 0.0726 tons per mile

(7) C02 reduction of 0.000425 tons per mile.

(8) Weekday emission reduction multiplied by 261 weekdays per year.

Table 23: Zone 5 Potential Future Air Quality Benefits

	Bicycle Network	
Vehicle Travel Reductions	No Expansion	Complete
Reduced Vehicle Trips per Weekday[1]	569	1,119
Reduced Vehicle Trips per Year [2]	148,387	292,040
Reduced VMT per Weekday [3]	4,070	8,235
Reduced VMT per Year [2]	1,062,398	2,149,275
Vehicle Emissions Reductions	No Expansion	Complete
Reduced PM10 (tons per weekday) [4]	75	152
Reduced NOX (tons per weekday) [5]	2,030	4,108
Reduced ROG (tons per weekday) [6]	296	598
Reduced CO2 (tons per weekday)	2	3
Reduced PM10 (tons per year) [8]	19,548	39,547
Reduced NOX (tons per year) [8]	529,924	1,072,058
Reduced ROG (tons per year) [8]	77,130	156,037
Reduced CO2 (tons per year) [8]	452	913

Note: VMT means Vehicle Miles Traveled. This table shows estimated potential future benefits based on two scenarios:

Future population increase assuming no changes to the bicycle network. These benefits are estimated based on existing bicycling mode share

Future population increase assuming a completed bicycle network. These benefits are estimated based on assumed mode share increases

(1) Assumes 73% of bicycle trips replace vehicle trips for adults/college students; 53% reduction for school children.

(2) Weekday trip reduction multiplied by 261 weekdays per year.

(3) Bicycle trips: assumes average roundtrip of 8 miles for adults/college students; 1 mile for school children. Pedestrian trips: assumes average roundtrip of 1.2 miles for adults/college students; 0.5 mile for school children.

(4) PM10 reduction of 0.0184 tons per mile.

(5) NOX reduction of 0.4988 tons per mile.

(6) ROG reduction of 0.0726 tons per mile

(7) C02 reduction of 0.000425 tons per mile.

(8) Weekday emission reduction multiplied by 261 weekdays per year

Table 24: Zone 6 Existing and Potential Future Air Quality Benefits

	Bicycle Network	
Vehicle Travel Reductions	No Expansion	Complete
Reduced Vehicle Trips per Weekday[1]	1,959	3,855
Reduced Vehicle Trips per Year [2]	511,177	1,006,081
Reduced VMT per Weekday [3]	14,022	28,369
Reduced VMT per Year [2]	3,659,775	7,404,192
Vehicle Emissions Reductions	No Expansion	Complete
Reduced PM10 (tons per weekday) [4]	258	522
Reduced NOX (tons per weekday) [5]	6,994	14,150
Reduced ROG (tons per weekday) [6]	1,018	2,060
Reduced CO2 (tons per weekday)	6	12
Reduced PM10 (tons per year) [8]	67,340	136,237
Reduced NOX (tons per year) [8]	1,825,496	3,693,211
Reduced ROG (tons per year) [8]	265,700	537,544
Reduced CO2 (tons per year) [8]	1,555	3,147

Note: VMT means Vehicle Miles Traveled. This table shows estimated potential future benefits based on two scenarios:

Future population increase assuming no changes to the bicycle network. These benefits are estimated based on existing bicycling mode share

Future population increase assuming a completed bicycle network. These benefits are estimated based on assumed mode share increases

(1) Assumes 73% of bicycle trips replace vehicle trips for adults/college students; 53% reduction for school children.

(2) Weekday trip reduction multiplied by 261 weekdays per year.

(3) Bicycle trips: assumes average roundtrip of 8 miles for adults/college students; 1 mile for school children. Pedestrian trips: assumes average roundtrip of 1.2 miles for adults/college students; 0.5 mile for school children.

(4) PM10 reduction of 0.0184 tons per mile.

(5) NOX reduction of 0.4988 tons per mile.

(6) ROG reduction of 0.0726 tons per mile

(7) C02 reduction of 0.000425 tons per mile.

(8) Weekday emission reduction multiplied by 261 weekdays per year