

Adaptive Traffic Control Systems

This calculator will estimate the emission reductions resulting from implementing ATCS on a corridor that originally had a Time of Day signal timing plan.

INPUT

(1) Input Evaluation Year

2025

(2) Input Area Type

Urban

(3) Input Corridor Length

7.7

miles

(4) Input Number of Signalized Intersections

27

(5) Input Total Peak Hours per Day (AM+PM)

24

(6) Input Free Flow Speed or Posted Speed Limit

35

miles per hour

Use the table below to estimate existing delay on a per intersection basis

Level of Service Reference Table

LOS	Delay at each intersection
A	0-10
B	>10-20
C	>20-35
D	>35-55
E	>55-80
F	>80

(7) Input Total Volume on Corridor (average of both directions)

566

vehicles/hour

(8) Input Existing Total Corridor Delay (average of both directions)

540

seconds/vehicle

(9) InputTruck Percentage (average of both directions)

3%

percent

Average Level of Service Per Intersection Before ATCS

B

*LOS F typically indicates that traffic demand has exceeded capacity

(10) Use Your Own Delay Reduction Values?

Average Peak Hour

Average Non-Peak Hour

(From HCM 2010, Exhibit 21-1)

(11) Input Corridor Delay Reduction Per Vehicle (average of both directions)

seconds/vehicle

OUTPUT

CORRIDOR PERFORMANCE (average of both directions)

Corridor Volume

566

vehicles/hour

Existing Corridor Travel Time

1332

seconds

Existing Average Speed

20.8

mph

Corridor Delay Reduction per Vehicle

106.6

seconds

New Corridor Delay per Vehicle

433.4

seconds

New Average Speed

22.6

mph

Average Level of Service Per Intersection After ATCS

B

NA

Last Updated

5/15/2025 10:36

EMISSION REDUCTIONS (Corridor-Wide)

Pollutant

Average Peak-Hour
Kilograms/hour

Average Non-Peak Hour
Kilograms/hour

Daily Total
Kilograms/day

Carbon Monoxide (CO)

1.947

NA

46.719

Particulate Matter <2.5 µm (PM_{2.5})

0.036

NA

0.859

Particulate Matter <10 µm (PM₁₀)

0.009

NA

0.221

Nitrogen Oxide (NOx)

0.132

NA

3.180

Volatile Organic Compounds (VOC)

0.062

NA

1.488

Atmospheric CO₂

157.973

NA

3,791.363

Carbon Dioxide Equivalents (CO₂e)

159.001

NA

3,816.017

Total Energy Consumption (MMBTU)

2.079

NA

49.884