I-70 Twin Tunnels

Environmental Assessment

Air Quality Technical Memorandum

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Prepared for

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Twin Tunnels Environmental Assessment
Idaho Springs/Clear Creek County

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Acronyms and Abbreviations

APCD	Air Pollution Control Division (part of CDPHE)
BAM	Beta Attenuation Monitor
CDPHE	Colorado Department Public Health and Environment
CDOT	Colorado Department of Transportation
CFR	Code of Federal Regulations
CO	Carbon monoxide
EA	Environmental Assessment
EPA	US Environmental Protection Agency
FHWA	Federal Highway Administration
I-70	Interstate Highway 70
MP	Milepost
mph	Miles per hour
MOVES2010a	Motor Vehicle Emission Simulator, version 2010a
MSAT	Mobile Source Air Toxics
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NO_x	Oxides of nitrogen
NO_2	Nitrogen dioxide
PEIS	Programmatic Environmental Impact Statement
$PM_{2.5}$	Fine particulate matter -- 2.5 microns in diameter, or smaller
PM_{10}	Coarse particulate matter -- ten microns in diameter, or smaller
ppb	Parts per billion
ppm	Parts per million
ROD	Record of Decision
SO_2	Sulfur dioxide
VMT	Vehicle miles of travel

Section 1. Purpose of the Memorandum

The Federal Highway Administration (FHWA), in cooperation with the Colorado Department of Transportation (CDOT), is preparing an Environmental Assessment (EA) for proposed changes to the eastbound lanes of I-70 and the eastbound bore of the Twin Tunnels between Milepost (MP) 241 and MP 244 near Idaho Springs in Clear Creek County, Colorado. The Twin Tunnels area is one of the most congested locations along the I-70 Mountain Corridor. Improvements are necessary to improve safety, operations, and travel time reliability in the eastbound direction of I-70 in the project area. Additionally, the improvements will be consistent with the I-70 Mountain Corridor Programmatic Environmental Impact Statement (PEIS) Record of Decision (ROD), I-70 Mountain Corridor Context Sensitive Solutions process, and other commitments of the PEIS.

This technical memorandum discusses the regulatory setting and describes the affected environment and the impacts of the Proposed Action on air quality within the identified study area. The memorandum also documents mitigation measures, including applicable measures identified in the I-70 Mountain Corridor PEIS, which would reduce any impacts during construction and operation. The I-70 PEIS identified comprehensive improvements for the corridor. The Proposed Action would immediately address safety, mobility, and operations in the eastbound direction at the Twin Tunnels, but would not address all of the needs in the Twin Tunnels area. The Proposed Action would not preclude other improvements needed and approved by the I-70 PEIS ROD.

Section 2. How Does the Analysis Relate to the Tier 1 PEIS?

The efforts that resulted in approval of the I-70 PEIS and ROD comprised the Tier 1 environmental process. Those efforts examined alternatives, impacts, and mitigation for the entire I-70 Mountain Corridor on a programmatic basis, considering various alternatives and identifying a Preferred Alternative. Due to its length, complexity, and cost, the Preferred Alternative will not be implemented as a single project but by numerous projects at various locations over time. Subsequent environmental analysis is required for these specific corridor improvements. The Proposed Action for the Twin Tunnels area is one of the first projects undergoing Tier 2 analysis.

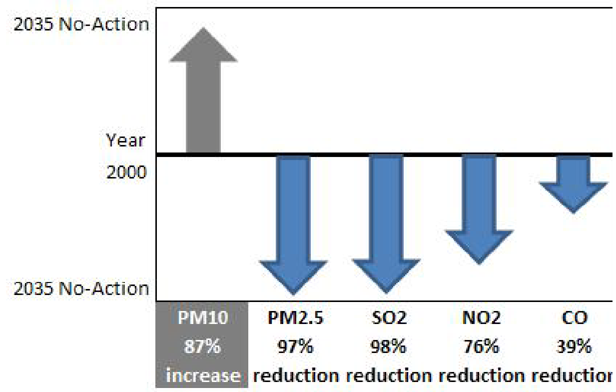
The Colorado Department of Transportation will conduct the following activities during Tier 2 processes:

- Identify extent and intensity of air qulaity impacts to the project and surrounding area
- Develop specific and more detailed mitigation strategies and measures
- Develop best management practices specific to each project
- Adhere to any new laws and regulations that may be in place when Tier 2 processes are underway.

The PEIS examined air quality issues for the 144-mile I-70 Mountain Corridor, extending from Glenwood Springs in western Colorado to C-470 on the western edge of Denver metropolitan area. Air quality differs greatly along this corridor depending on the density of surrounding development, I-70 traffic volumes and composition, local topography, and other nearby emission sources. The air quality analysis for the Twin Tunnels project EA focuses on a three-mile stretch of I-70 between mileposts 241.4 and 244.5, just east of the Town of Idaho Springs. This section represents slightly less than two percent of the PEIS corridor length, and is located in a rural, mountainous setting. Traffic volumes on this section of I-25 are less than the corridor-wide average for the PEIS study area.

The PEIS indicated that future I-70 traffic emissions for four pollutants are expected to decrease substantially over time as the result of improved vehicle fuels, engines and emission control technology. However, emissions of particulate matter smaller than ten microns in diameter (PM_{10}) from re-entrained dust will increase due to increased traffic, as it is not affected by the technological improvements. These findings are summarized in Figure 1.

FIGURE 1
Changes in Criteria Pollutants for the I-70 Mountain Corridor, 2000 to 2035



Source: I-70 Mountain Corridor PEIS, page 3.1-3

The PEIS indicated that project-specific Tier 2 processes such Environmental Assessments would include localized air quality modeling and conformity determinations where appropriate in designated non-attainment or maintenance areas. These conditions do not apply within Clear Creek County, Colorado, based on its attainment status as determined by the State of Colorado and the US Environmental Protection Agency (EPA).

The PEIS also stated that MSAT analysis and consideration of new nitrogen dioxide (NO_2) standards would be examined where appropriate. Traffic volumes on I-70 near the Twin Tunnels in Clear Creek County are far below the thresholds that would trigger analyses for those pollutants. FHWA guidance calls for quantitative MSAT analysis where traffic volumes are at least 140,000 vehicles per day, which typically corresponds to an eight-lane freeway. The annual average daily traffic at CDOT's Twin Tunnels automatic traffic recorder in 2010 was 42,000 vehicles per day, which is less than one third of the FHWA threshold. Accordingly, a qualities discussion of the MSAT issue was prepared and appears at the end of this memorandum.

EPA's Final Rule establishing the new NO_2 standard in 2010 included a requirement for near-roadway monitoring in cities with 500,000 or more residents. The I-70 Twin Tunnels project is near Idaho Springs, population 1,717 (2010 Census), and the entire population of Clear Creek County is 9,088. To meet the new EPA requirement, the State of Colorado plans to install NO_2 monitors in Denver and Colorado Springs, but not along the I-70 Mountain Corridor.

The US Environmental Protection Agency submitted scoping comments on the I-70 Twin Tunnels EA to CDOT in a letter dated October 6, 2011, from Suzanne J. Bohan to Jim Bemelen. EPA's comments on air quality were as follows:

One of the bullets under Climate and Air Quality Resources in Table 1 Mitigation Strategies in the Record of Decision (ROD) for the I-70 Mountain Corridor Programmatic EIS committed to conducting air quality monitoring during construction, including $PM_{2.5}$ for Tier 2 projects. On the CDOT scoping form for this project, developing a methodology for assessing PM_{10} was listed under Air Quality as a consideration. The EPA recommends that both PM_{10} and $PM_{2.5}$ be monitored. $PM_{2.5}$ would address emissions from combustion, primarily diesel engine emissions, while PM_{10} would deal more with dust concerns.[1]

Also, the Draft EA should ensure that the mitigation measures committed to in the ROD will be implemented by CDOT for the Twin Tunnels project.

CDOT Environmental Programs Branch staff requested input regarding the Twin Tunnels project from the Air Pollution Control Division (APCD) of the Colorado Department of Public Health and Environment. APCD provided the following response:

It would be reasonable to monitor during the project, as it is a high-visibility area that many travel through. The best method would be to use a continuous PM_{10} monitor, such as a Beta Attenuation Monitor (BAM). This would give a reading every hour. It could be set up to alarm at a certain level, indicating need for more dust control. I would recommend that one monitor be sited up-valley, and one down-valley, from the project. A wind speed / wind direction sensor on a pole could provide information about wind speed and direction.

Idaho Springs is not always upwind from the project. During the warm afternoons, air in river valleys moves up-valley. It goes down valley during the evenings and mornings.

There are two benefits to monitoring. First, it addresses public concerns about construction dust. The second benefit is that it makes the project contractor very aware of the need to control dust.

There is a possibility of public exposure to PM_{10} as individuals drive through the area. This period of exposure could be longer during periods when traffic backs up. If there is work on the weekends, traffic jams would be worse than normal.

Other Thoughts: Opacity Observation Training – During the TREX project, one or two of the project personnel got certified as opacity observers. This involved one day of training in Denver. The opacity observers filled out observation data sheets on equipment exhaust opacity during certain times of the day. These were submitted to APCD as part of periodic reports.

[1] Please see discussion of interagency consultation in Section 3.1 of this memorandum.
[2] Please see discussion of opacity observation in Section 7.2.5 of this memorandum.

The advantages of doing this are:

- - Project personnel are aware of what conditions constitute a "violation"
- - The project is more likely to act to control fugitive emissions
- Fugitive Emissions and Highway Visibility – Construction dust can be a safety hazard if it gets out of control, and obstructs the views of drivers. This can be a problem during high wind speeds. Sometimes problems occur during periods when the construction site is unoccupied. Wind speeds increase, and exposed materials begin blowing in the wind. The project should consider procedures for "putting the site to bed" to make sure emission problems don't occur during off-hours.[1]

Additionally, in request to CDOT's request for input, APCD indicated that Regulation #1, "Emission Control for Particulate Matter, Smoke, Carbon Monoxide, and Sulfur Oxides" would apply to this project.

[1] As the I-70 Twin Tunnels project will be constructed with shifts around the clock (24/7), "putting the site to bed" will not be a normal occurrence. Routine constrcuction Best Management Practices would include measures addressing high wind events.

Section 3. What Process Was Followed to Analyze Air Quality?

3.1 Methodology

The ***CDOT Air Quality Analysis and Documentation Procedures,*** as revised in 2010 (CDOT, 2010) details the processes and consideration taken into account for analyzing CDOT transportation projects. These procedures ensure compliance with FHWA regulations and requirements of the Clean Air Act. Under these procedures, the CDOT Environmental Programs Branch (EPB) or Regional Air Quality Specialist evaluates the potential for air quality impacts from a proposed transportation project and then determines if coordination with APCD is required. Coordination with APCD involves notifying them early in the scoping phase of the project, to discuss air quality concerns, and determine the appropriate level of analysis required to assess the air quality impacts of the project. In the case of the Twin Tunnels project, interagency scoping consultation with Federal agencies and APCD on air quality conformity issues was not necessary because the project is outside of all Colorado nonattainment areas.

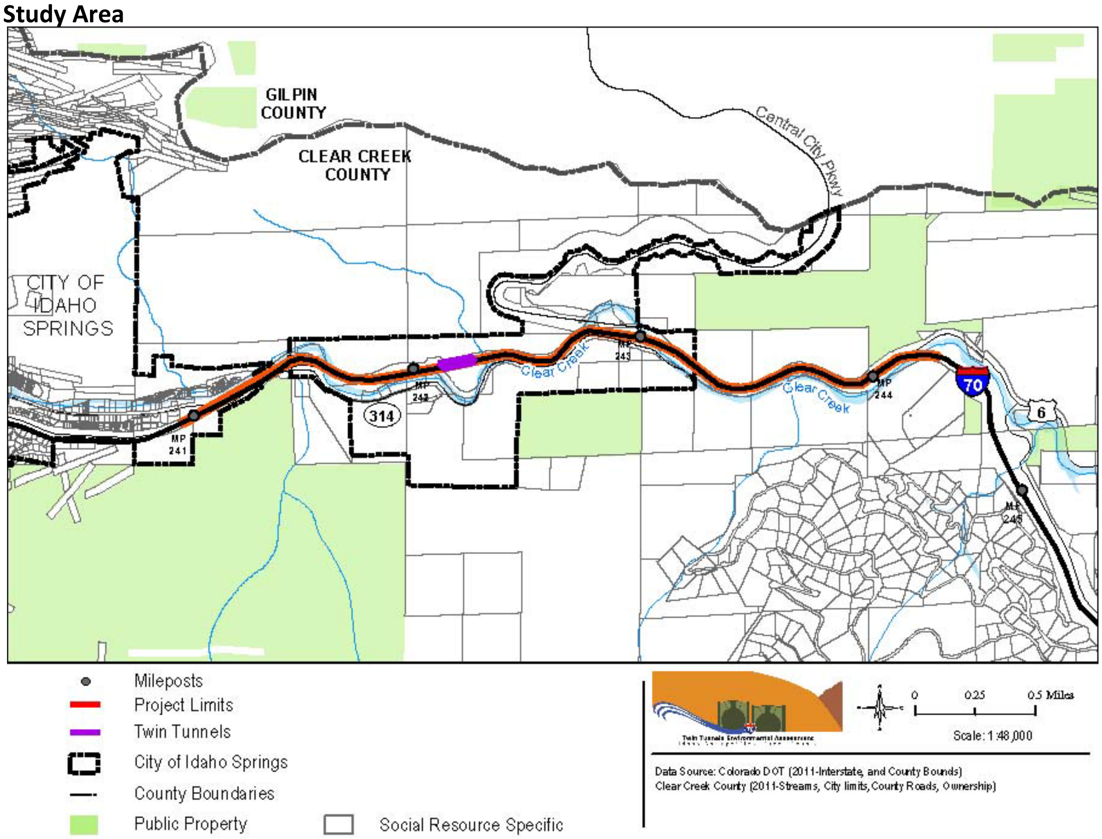
For the I-70 Twin Tunnels project, CDOT staff met with APCD staff in an interagency consultation meeting on December 12, 2011 that focused on potential air quality monitoring approaches for the project. At this consultation meeting, it was determined that PM_{10} was reasonable to monitor during tunnel construction; $PM_{2.5}$ monitoring would not provide real-time construction information. APCD later provided estimates of future pollutant emissions for carbon monoxide, particulate matter, sulfur dioxide, and nitrogen dioxide based on traffic assumptions provided by CDOT. Staff from the two agencies met again on January 24, 2012 to identify potential sites for Special Purpose Monitors to measure ambient concentrations of particulate matter during construction.

The subsequent analysis utilized project-area hourly traffic volumes and speeds estimated in CDOT's Draft Twin Tunnels Transportation Technical Report dated February 2012. These volumes correspond to a summer "design day" with heavy eastbound congestion due to weekend recreational traffic. APCD staff determined appropriate emission rates (grams per mile) for various pollutants using the EPA-developed MOVES 2010a (Motor Vehicle Emission Simulator) system nd aggreagated the emissions burden for each pollutant for each scenario. These are provided in Appendix 1.

3.2 Study Area

The project study area is along I-70 highway for approximately three miles between the East Idaho Springs interchange and the base of Floyd Hill. Figure 2 depicts this study area.

FIGURE 2
Study Area



3.3 Data Sources

The key data inputs used for the air quality analysis were the traffic volumes and speeds by direction as estimated in the **Twin Tunnels Transportation Technical Report** for the summer design day under the following five scenarios:

- Existing conditions
- Temporary construction detour conditions
- Year 2035 No Action Alternative
- Year 2035 Proposed Action with Managed Lanes
- Year 2035 Proposed Action with General Purpose Lanes

3.3.1 Traffic Volumes and Speed

The **Twin Tunnels Technical Transportation Report** (February 2012) determined the traffic volumes that were used as inputs for the air quality analysis. Tables 1 and 2 present the hourly traffic volumes and speeds by direction of travel for design day conditions. The estimated conditions for traffic in the congested, eastbound direction reflect major travel speed fluctuations, while uncongested westbound traffic speeds are comparatively more consistent.

TABLE 1
Design Day Eastbound (Congested) Hourly Traffic Volumes and Speeds at I-70 Twin Tunnels

Starting Hour	Existing Condition		Detour Condition		2035 No Action		2035 Managed Lanes		2035 Gen. Purpose Lns.	
	Volume	Speed	Volume	Speed	Volume	Speed	Volume	Speed	Volume	Speed
9am	1,065	54	859	56	1,204	49	1,275	53	1,316	52
10am	2,445	41	2,138	41	2,624	35	2,804	44	2,895	41
11am	3,025	31	2,704	22	3,075	29	3,256	41	3,472	39
Noon	3,129	28	2,505	16	3,157	27	3,728	32	3,853	35
1 pm	3,162	28	2,385	13	3,198	25	3,746	25	3,947	33
2pm	3,219	26	2,421	11	3,218	25	3,716	41	3,929	31
3pm	3,233	25	2,320	10	3,229	23	3,894	38	4,039	32
4pm	3,241	24	2,387	10	3,220	22	3,740	39	3,908	34
5pm	3,237	24	2,383	11	3,228	22	3,694	30	3,838	37
6pm	3,225	26	2,542	10	3,225	22	3,652	29	3,901	32
7pm	3,223	26	2,306	16	3,227	22	3,453	27	3,726	36
8pm	3,175	25	2,407	26	3,229	21	3,721	22	3,310	39
9pm	1,239	52	1,459	49	3,235	21	3,758	25	3,172	42
10pm	550	55	457	56	3,202	21	2,852	46	1,918	46
Subtotal	37,167		29,271		42,273		47,289		47,224	

TABLE 2
Design Day Westbound (Non-Congested) Hourly Traffic Volumes and Speeds at I-70 Twin Tunnels

Starting Hour	Existing Condition		Detour Condition		2035 No Action		2035 Managed Lanes		2035 Gen. Purpose Lns.	
	Volume	Speed	Volume	Speed	Volume	Speed	Volume	Speed	Volume	Speed
9am	659	55	528	60	714	55	714	55	714	55
10am	1,328	54	1,091	59	1,543	53	1,543	53	1,543	53
11am	1,640	53	1,367	59	1,694	51	1,694	51	1,694	51
Noon	1,721	51	1,454	59	1,822	49	1,822	49	1,822	49
1 pm	1,601	53	1,356	59	1,725	50	1,725	50	1,725	50
2pm	1,667	59	1,297	59	1,335	54	1,335	54	1,335	54
3pm	1,335	54	997	60	1,439	54	1,439	54	1,439	54
4pm	1,197	55	954	60	1,660	48	1,660	48	1,660	48
5pm	1,283	54	1,021	59	1,589	48	1,589	48	1,589	48
6pm	774	55	604	60	1,499	52	1,499	52	1,499	52
7pm	459	55	389	60	705	54	705	54	705	54
8pm	369	55	309	60	360	55	360	55	360	55
9pm	323	55	264	60	344	55	344	55	344	55
10pm	113	55	109	60	166	55	166	55	166	55
Subtotal	14,468		11,740		16,593		16,593		16,593	

Outside of the 14 –hour period reflected in these tables, traffic for the remainder of the day (11 PM to 8:59 AM) would travel at approximately the posted speed limit, except for the 2035 No Action case, where congested speeds could continue beyond 11PM.

3.3.2 Meteorological Data

An air quality technical memorandum for a CDOT project normally includes wind and temperature to provide a sense of how atmospheric conditions affect emission rates and influence pollutant concentrations. However, there is no source of applicable weather data for the Twin Tunnels location. CDOT's Maintenance Section collects limited weather data along I-70 at Floyd Hill for traveler advisory purposes, but does not retain historic weather records. The closest weather station continuously collecting meteorological data is located on the slopes of Mount Evans, 7.89 miles distant and about 3,000 feet higher in elevation (10,630 feet) than the Twin Tunnels.

The National Oceanic and Atmospheric Administration's website provides weather forecasts for the Idaho Springs area, but references the Rocky Mountain Regional Airport in Broomfield (Jefferson County) as the closest relevant source of current weather conditions. The weather station in Broomfield is 2,000 feet lower in elevation than Idaho Springs, and is 25 miles away (38.9 miles by vehicle).

Since neither the Mount Evans weather station nor the station at the airport in Broomfield has conditions representative of the Idaho Springs area, this technical memorandum does not include wind and temperature data from these stations. The weather assumptions used for the I-70 Twin Tunnels analysis are summer and winter design day temperatures as determined by APCD as input assumptions for the MOVES2010a emissions estimating system. CDOT did not collect or provide any meteorological assumptions to APCD for this analysis.

3.3.3 Topographical Influences

Idaho Springs is situated in the Clear Creek valley, surrounded by steep mountain slopes. These geomorphic conditions combined with diurnal wind and atmospheric patterns can trap air and pollutants close to the ground during thermal inversion conditions. When the ground cools quickly at sunset, surface air no longer heats and rises, so this air stagnates. The onset of thermal inversions comes earlier in the day during winter, capturing more vehicle pollutants than on days when the sun sets later. However, the typical wind pattern through the valley includes steady westerly winds facilitating dispersion of locally generated traffic and stationary sourced emissions.

The Twin Tunnels are approximately 700 feet long, or about one seventh of a mile long. At this length, motorists can see the light at the other end of the tunnel as they enter, as shown in Figure 3. The tunnels do not need and do not have any ventilation system. Emissions from vehicles in the tunnels exit the tunnels at one end or the other. Vehicles moving through the tunnels generally push the air in the direction of traffic flow.

FIGURE 3
View Eastward into the Existing Eastbound Bore of the I-70 Twin Tunnels

Source: Google Maps, 2012.

3.3.4 Air Quality Data

There are no air quality monitors in Idaho Springs, Clear Creek County or within a radius of over 15 miles distant from the Twin Tunnels. Air quality in the I-70 Twin Tunnels study area and surrounding Clear Creek County is assumed to be good. It is assumed to meet National Ambient Area Quality Standards (NAAQS) due to the low amount and intensity of emission-generating activity in the area. Jefferson County is part of the Denver metropolitan ozone nonattainment area. Clear Creek County is not. Clear Creek County recently considered the possibility of installing air quality monitors in Idaho Springs but decided that the capital and operating costs would be too high to justify this action. However, the fact that the County considered installing monitors is indicative of local sensitivity and concern over potential air quality degradation (Clear Creek, 2011).

Table 3 provides a listing of the NAAQS primary standards from EPA's website as of February 2012. The NAAQS can change from time to time. Table 3 is updated and simplified compared to the version included in the *I-70 Mountain Corridor PEIS Climate and Air Quality Technical Report* (March, 2011). The rest of this report contains monitored or projected air quality concentrations, only estimates of pollutant emissions.

TABLE 3
National Ambient Air Quality Standards - Primary Standards

Pollutant	Averaging Time	Primary Standard*	Form
Carbon Monoxide	8-hour 1-hour	9 ppm 35 ppm	not to be exceeded more than once per year
Ozone	8-hour	0.075 ppm	annual fourth-highest daily maximum 8-hr concentration, averaged over 3 years
Particle Pollution	annual	15 µg/m^3	annual mean, averaged over 3 years
$PM_{2.5}$	24-hour	35 µg/m^3	98th percentile averaged over 3 years
PM_{10}	24-hour	150 µg/m^3	not to be exceeded
Lead	rolling 3 month average	0.15 µg/m^3	not to be exceeded
Nitrogen Dioxide	1-hour annual	100 ppb 53 ppb	98th percentile, averaged over 3 years annual mean
Sulfur Dioxide	1-hour	75 ppb	99th percentile of 1-hr daily maximum concentrations, averaged over 3 years
	annual	53 ppb	annual mean

** ppm = parts per million; µg/m^3 = micrograms per cubic meter; ppb = parts per billion*
Source: EPA, 2012.

A listing of the location and functions of monitoring stations along the I-70 Mountain Corridor appeared in same March 2011 report. Table 4 summarizes this information, which has not changed. The table indicates that ozone is monitored at four locations in Jefferson County, which is part of an ozone nonattainment area. PM_{10} is monitored in Breckenridge, a busy ski resort and summer recrational destination(1.6 million skier-visits in 2010-11) generate high, year-long traffic volumes and substantial wintertime wood burning.

TABLE 4
Monitoring Stations in Counties along the I-70 Mountain Corridor

County	Station Site	Lead, Sulfur Dioxide, and Nitrogen Dioxide	Carbon Monoxide	Ozone	PM_{10}	Meteorological Measurements
Garfield	Glenwood Springs	none	none	None	none[a]	none
Eagle	Vail	none	none	None	none[b]	none
Summit	Breckenridge	none	none	none	**Yes**	none
Clear Creek	No stations	none	none	none	None	none
Jefferson	Rocky Flats/ Golden	none	none	**yes**	None	none
Jefferson	Arvada	none	none[c]	**yes**	None	**yes**
Jefferson	Welch - Lakewood	none	none	**yes**	None	**yes**
Jefferson	NREL - Golden	none	none	**yes**	None	none

a = discontinued in 2007; b = discontinued in 2001; c = discontinued in 2006

Key factors affecting air quality in the study area include frontage road traffic, other local emission sources, topography, meteorology, and regional background concentrations. The number, proximity and type of nearby air quality receptors are also important to consider.

Regional Background Concentrations
Due to the low amount and density of development in Clear Creek County, and the distance from the study area to other major urban areas, it can be assumed that regional background concentrations of vehicle-related pollutants are minimal.

The project area is located to the east of the developed portion of City of Idaho Springs. According to the U.S. Census Bureau, the City had 1,717 residents in 2010. The entire population of Clear Creek County (approximately 400 square miles) was 9,088 in 2010, according to the Census.

The next nearest town is Downieville-Lawson-Dumont (one quarter the population of Idaho Springs), located six miles west along I-70. Colorado's largest city west of the project area is Grand Junction, population 58,566, located more than 200 miles away.

The Twin Tunnels are located approximately 18 miles west of the western edge of the Denver metropolitan area, and about 2,000 feet higher than Denver, the "Mile High City."

3.4 Regulations

FHWA guidance and the **CDOT Air Quality Analysis and Documentation Procedures**, as revised in 2010 (CDOT, 2010) detail the processes and considerations taken into account for analyzing CDOT transportation projects. These procedures ensure compliance with the National Environmental Policy Act and the Clean Air Act.

The I-70 Twin Tunnels project is not subject to Federal air quality conformity regulations because it is located outside of any Colorado nonattainment area. As there is no requirement for an EPA-approved plan addressing air quality in Clear Creek County, mobile source emissions are not required to stay within a plan-identified emissions budget for any pollutant. There is no requirement for microscale analysis of potential pollution hotspot locations, and in any event, the Twin Tunnels study area does not include any signalized intersections. The air quality analysis for the project therefore focuses primarily on estimation of emissions for the Proposed Action and the No Action Alternative.

Additionally, during construction, the project will be subject to **Colorado Air Quality Control Commission Regulation #1**, "Emission Control for Particulate Matter, Smoke, Carbon Monoxide, and Sulfur Oxides." Regulation #1 contains provisions applicable to typical roadway construction activities, including land clearing and material handling. It also contains a provision specifically applicable for blasting activities: "Any owner or operator of any new or existing blasting activities from which fugitive particulate emissions will be emitted shall be required to use all available practical methods which are technically feasible and economically reasonable in order to minimize such emissions…"

Section 4. Description of the Proposed Action

The Proposed Action would add a third eastbound travel lane to the I-70 highway for approximately three miles between the East Idaho Springs interchange and the base of Floyd Hill. The Proposed Action would provide a consistent 10-foot outside shoulder throughout the project area. CDOT is considering a range of widths for the inside shoulder between the west project limits and the Hidden Valley interchange. A 4-foot inside shoulder would be provided east of Hidden Valley. The eastbound bore of the Twin Tunnels would be expanded to accommodate the wider roadway section, and two tunnel widths are being evaluated. CDOT is also considering whether the additional capacity will operate exclusively as a general purpose lane or as a tolled lane during peak periods (also called a managed lane). The Proposed Action would provide a consistent 55 mph posted speed.

Section 5. What Are the Current and Future Conditions of Air Quality in the Study Area?

There are no air quality monitors in Clear Creek County, as the air is assumed to be good, given the minimal development in this area of highly mountainous terrain and narrow intermountane valleys. The air quality in the project area is expected to remain good in the future, due to technological improvements that will reduce vehicle emissions over time, even while traffic on I-70 increases.

Due to topographical constraints, substantial growth is not expected in the project area or in nearby Idaho Springs. A primary factor affecting emissions in the study area will be increased traffic growth on I-70, as Colorado's population continues to grow and additional Front Range residents use I-70 to access summer and winter recreational opportunities in the mountains. The PEIS indicated that traffic volumes throughout the entire I-70 Mountain Corridor are expected to increase 29 to 43 percent by the year 2035. Technological improvements, explained below, will likely offset air quality impacts of traffic growth to some degree.

For the past several decades, Colorado's air quality nonattainment areas have experienced major increase in vehicle miles traveled (VMT) but nonetheless have also seen reduced concentrations of vehicle-generated pollutants such as carbon monoxide. This apparent contradiction is explained by the fact that vehicle emissions technology has greatly improved, due to various regulatory requirements, such as federal CAFE standards for light and heavy duty vehicles and state Air Quality Regulations. Continued improvement is expected in the future, but eventually it will be limited by diminishing returns. At some point in the foreseeable future, VMT growth will overtake emission improvements and total emissions will increase, thus increasing pollutant concentrations. The I-70 Mountain Corridor PEIS discussed this possibility with regard to the 2035 to 2050 timeframe.

Nearby Air Quality Receptors

Due to topographical constraints, minimal development exists in the study area. Nearby air quality receivers include three scattered houses near the Twin Tunnels, a few more homes near the Hidden Valley interchange (I-70 Exit 243), and a recreational trail along the frontage road (County Road 314). The Twin Tunnels project area does not have other, more sensitive receptors such as schools, hospitals or nursing homes.

Figures 4 and 5 indicate the location of the existing I-70 lanes, the planned construction detour route, the existing Scott Lancaster Memorial Trail, and the barrier-separated shared use path that will be provided for non-motorized travel during project construction.

FIGURE 4
Air Quality Receptor Locations in Western Half of Project Area

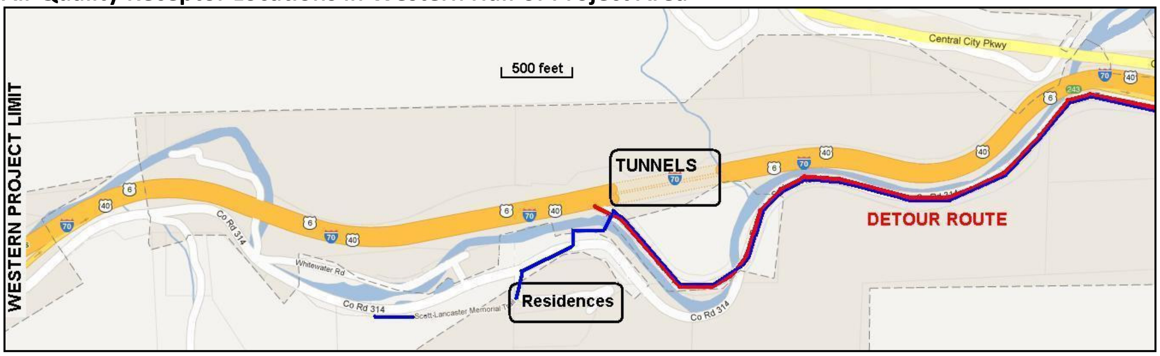
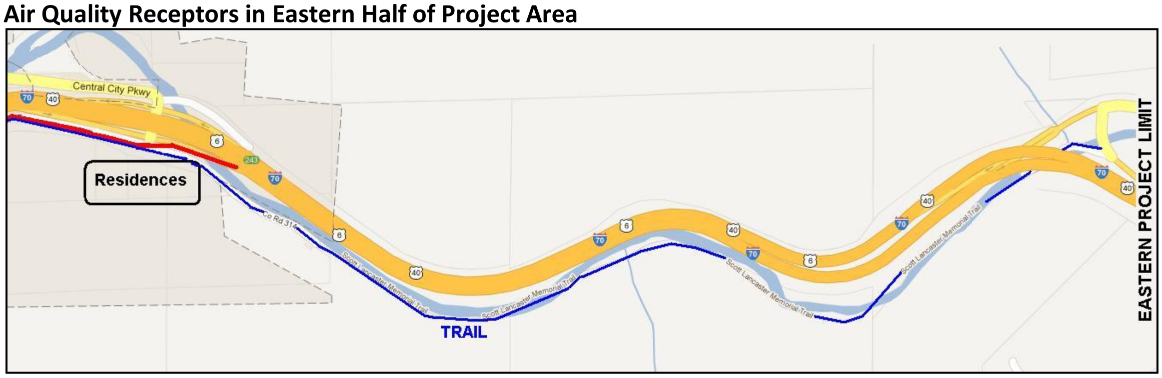


FIGURE 5
Air Quality Receptors in Eastern Half of Project Area



Section 6. What Are the Environmental Consequences?

6.1 How does the No Action Alternative affect air quality?

Air quality impacts from the No Action Alternative would be associated with the combination of changes to traffic volumes and speeds, compared with existing conditions, as well as changes in the amount of emissions produced per mile of travel as vehicle fuels and technologies change over time.

Table 5 shows the vehicular emissions that were calculated for existing 2010 conditions and for 2035 No-Action conditions for summer design day traffic. It indicates that tailpipe emissions are expected to decrease substantially for carbon monoxide (29%), fine particulate matter (53%), and oxides of nitrogen (75%).

TABLE 5
Summer Sunday Criteria Pollutant Emissions Burden for 2035 No Action Alternative (pounds per day)

Alternative	Particulate Matter Less Than 2.5 Microns ($PM_{2.5}$)	Sulfur Dioxide (SO_2)	Oxides of Nitrogen (NO_x)	Carbon Monoxide (CO)	Re-entrained Road Dust (PM_{10})
2010 Existing Conditions	11.47	2.91	612.78	3,783.82	16.04
2035 No Action Alternative	5.39	3.56	151.54	2,675.39	20.01
Change	-6.07	+0.65	-461.24	-1,108.43	+3.97
Percent Change	53% reduction	22% increase*	75% reduction	29% reduction	25% Increase

** SO_2 reductions have already declined by more than 90% since 2000.*

Sulfur dioxide emissions will increase minimally, but in 2035 will remain far below year 2000 levels due to reductions resulting from increasingly more stringent CAFE exhaust standards during the past decade. The one pollutant for which emissions will increase substantially (25%) is PM_{10} from re-entrained road dust. This pollutant is produced mechanically, by the movement of vehicles over the roadway, and not dominantly from tailpipe exhaust, thus is not influenced by technological improvement to vehicle engines or fuels. In the absence of new control measures (i.e., measures that affect the amount of dust that is on the road), PM_{10} generally increases in proportion with traffic volumes.

There is no reason to believe that the projected increase of four pounds of PM_{10} on the design day (or less, on most days of the year) spread over the three-mile project area would result in concentrations that would violate any national air quality standard.

The emissions presented in Table 5 were calculated for design day traffic in summer ambient temperatures. Elevated carbon monoxide concentrations are considered primarily a wintertime concern, due to higher vehicle emission rates, increased wood burning and thermal inversions which trap air close to the ground, preventing pollutant dispersion. The change in winter CO emissions for the same design day traffic inputs used in the above analysis showed a 23 percent reduction, as compared with 29 percent in summer. The 2035 No Action Alternative winter CO emissions are approximately twice the value shown for summer (5,377.46 pounds per day, versus 2,675.39). This pollutant is an exceptional case. Wintertime NO_x emission rates are only marginally higher than summer emission rates, and there is no substantial difference between seasonal rates for the other pollutants in the table above.

6.2 How does the Proposed Action affect air quality?

6.2.1 What are the direct effects of the Proposed Action with a managed lane?

If the new eastbound lane added by the Proposed Action is operated as a managed lane, users of the lane would pay a toll during periods of peak congestion. This may result in some differences in lane volumes and speeds among the three eastbound lanes, but eventually, motorists will make their choices and the design day traffic will be served by the end of the day. Table 6 presents the projected emissions that were calculated for this alternative based upon the traffic volumes and speeds that were shown in Table 2.

TABLE 6
Summer Sunday Criteria Pollutant Emissions Burden for the 2035 Proposed Action (pounds per day)

Alternative	Particulate Matter Less Than 2.5 Microns ($PM_{2.5}$)	Sulfur Dioxide (SO_2)	Oxides of Nitrogen (NO_x)	Carbon Monoxide (CO)	Re-entrained Road Dust (PM_{10})
2035 No Action Alternative	5.39	3.56	151.54	2,675.39	20.01
2035 Proposed Action	5.39	3.56	147.54	2,643.98	20.01
Change from No Action Alternative, pounds per day	none	none	-4.00	-31.41	None
Percent Change from No Action Alternative	none	none	2.6% reduction	1% reduction	None
2035 Proposed Action Change from Existing Conditions	47.0% reduction	22% increase*	24.1% reduction	30.1% reduction	22% Increase

** SO_2 reductions have already declined by more than 90% since 2000.*

Due to differences in emission rates resulting from vehicles speeds, the Proposed Action with managed lanes is expected to result in a slight reduction of carbon monoxide and NO_x emissions, compared to the 2035 No Action Alternative, no change for fine particulate matter, sulfur dioxide or PM_{10}. However, these results represent substantial reductions from emissions for the 2010 existing conditions, due to improvements in vehicle and fuel technology. Once again, however, future PM_{10} emissions would be greater than 2010 PM_{10} emissions due to increased design day VMT.

6.2.2 How does the Proposed Action change without tolling?

If the Proposed Action were implemented as three eastbound general purpose lanes (i.e., no managed lane), Table 7 indicates that design day emissions of carbon monoxide and NO_x could be slightly lower than for the Managed Lanes scenario. This would again be due to differences in emission rates that result from speed changes. Projected emissions would be the same in each scenario for the other pollutants that are not sensitive to speed changes. Table 8 provides detail regarding hourly speeds and emission rates.

TABLE 7
Summer Sunday Criteria Pollutant Emissions Burden for 2035 No Action Alternative (pounds per day)

Alternative	Particulate Matter Less Than 2.5 Microns ($PM_{2.5}$)	Sulfur Dioxide (SO_2)	Oxides of Nitrogen (NO_x)	Carbon Monoxide (CO)	Re-entrained Road Dust (PM_{10})
2035 Managed Lanes	5.39	3.56	147.54	2,643.98	20.01
2035 General Purpose Lanes	5.39	3.56	144.96	2,611.70	20.01
Change from Managed Lanes	none	none	-2.58	-32.28	None
Percent Change	none	none	1.7% reduction	1.2% reduction	None

TABLE 8
Comparison of Hourly NO_x and CO Emission Rates for Proposed Action Variations

Starting Hour	2035 Managed Lanes (ML) Speed	2035 Gen. Purpose Lns. (GPL) Speed	Alternative with Lower Emission Rate for NO_x	Alternative with Lower Emission Rate for CO
9am	53	52	GPL	GPL
10am	44	41	GPL	GPL
11am	41	39	GPL	GPL
Noon	32	35	GPL	ML
1 pm	25	33	GPL	ML
2pm	41	31	GPL	GPL
3pm	38	32	ML	GPL
4pm	39	34	GPL	GPL
5pm	30	37	GPL	ML
6pm	29	32	GPL	GPL
7pm	27	36	GPL	GPL
8pm	22	39	GPL	GPL
9pm	25	42	GPL	ML
10pm	46	46	same	Same

6.3 What indirect effects are anticipated?

Indirect effects are those that occur at a different time or place than the Actual Proposed Action. The actual Proposed Action consists of construction activities which will temporarily generate dust, construction equipment emissions, and other construction-related emissions. The relocation of emissions for I-70 eastbound traffic during the construction detour is also a direct effect of the Proposed Action. Indirect effects of the Proposed Action would include increased pollutant concentrations, especially PM_{10}, at nearby air quality receptors including several residences and the Scott Lancaster Memorial Trail, both during construction and throughout future years, as widening I-70 will increase the amount of traffic that is able to pass through the area. The same persistent downwind conditions that disperse CO, SO_2, NO_x, and other exhaust pollutants, exasperate PM_{10} conditions due to wind entrainment of loose dust particles.

6.4 What effects occur during construction?

This project will have several temporary impacts to air quality during construction. These impacts are associated with detouring eastbound traffic around the twin tunnels site, excavation of the tunnel via blasting and standard construction techniques.

6.4.1 What are the effects of the detour?

During tunnel construction eastbound I-70 traffic will be detoured to the adjacent frontage road, County Road 314, as was depicted previously in Figure 4. The detour will transition off eastbound I-70 mainline just west of the western tunnel portal into the former game check area, cross the doghouse rail bridge where it will tie into the existing frontage road traveling east until transitioning back onto I-70 mainline just west of the Hidden Valley interchange.

Differences in emissions from traffic with existing conditions and the construction detour would arise due to travels speeds. The detour route will have a slower posted speed limit than the existing 55 mph tunnel. This will change the emission rates for I-70 eastbound traffic, but not for westbound traffic. Design day conditions are so congested that hourly average travel speeds range from 24 to 28 miles per hour for much of the daytime. The detour route would have a lower speed limit but would be equally as capacity constrained, with an estimated hourly average speed of 26 miles per hour for much of the day. The two eastbound lanes of the detour route would have less capacity than I-70 because of its non-Interstate design, so it would take more hours to accommodate the same amount of design day traffic. Prior to 9:00 AM and after 11:00 PM, each alternative would have less traffic and be likely to operate at the respective speed limit. Thus the primary differences in speed would occur during the shoulder hours before and after the existing hours of heavy congestion, as shown in Figure 6.

Emission rates for some pollutants are more sensitive to changes in speed than for other pollutants. In some cases there is a minimum emission rate (grams per mile) associated with a moderate speed, so that changing from a high speed to the moderate speed will reduce the emission rate, while changing from a moderate speed to a lower speed will increase the emission rate. Therefore, emissions for different pollutants do not all change consistently in response to different speed profiles.

FIGURE 6
Average Hourly Travel Speeds with Existing Conditions and the Construction Detour

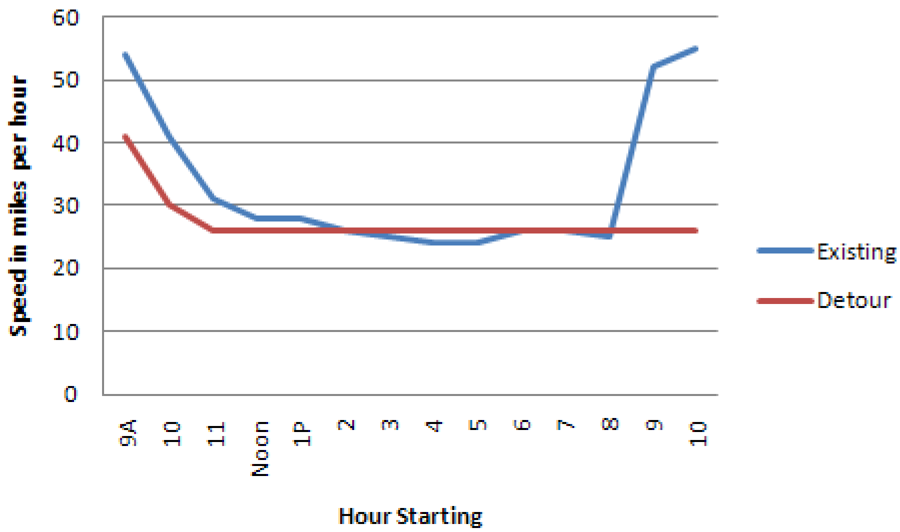


Table 9 indicates projected design day emissions for the Construction Detour condition. Based on the factors explained above, it is not surprising that the differences in daily emissions between the Existing Conditions and Construction detour conditions are relatively minor, and that emissions for some pollutants are lower for the construction detour case. The emission differences are largely the result of speed differences during the less congested hours of the day.

TABLE 9
Summer Sunday Criteria Pollutant Emissions for I-70 Traffic during the Construction Detour (pounds per day)

Alternative	Particulate Matter Less Than 2.5 Microns ($PM_{2.5}$)	Sulfur Dioxide (SO_2)	Oxides of Nitrogen (NO_x)	Carbon Monoxide (CO)	Re-entrained Road Dust (PM_{10})
Existing Conditions	11.47	2.91	612.78	3,783.82	16.04
Detour Conditions	11.47*	2.91*	592.36*	3,780.44*	16.04*
Change	none	none	-20.42	-3.38	none
Percent Change	none	none	3% reduction	Negligible	none

** Note that 75% of these emissions will be generated on the detour route, in closer proximity to receptors than the existing I-70 eastbound lanes.*

More important than the differences in daily emissions between existing conditions and the construction detour, however, is the change in where the emissions are generated. While emissions from westbound I-70 traffic would not change, emissions from eastbound traffic would occur along the detour route (County Road 314), where they would be closer to nearby air quality receptors than are emissions from the existing eastbound I-70 lanes. These nearby receptors include several residences and the Scott Lancaster Memorial Trail. During construction, eastbound detour traffic would be immediately adjacent to some of these receptors.

In addition to the relocation of emissions to the detour route, the project area will have construction-generated emissions due to tunnel excavation and standard constriction activities. These topics are discussed below.

6.4.2 What are the effects of tunnel excavation?

Blasting work on the eastbound tunnel will be done from both ends. The width of the tunnel will determine the cycle of blasting. The 53-foot tunnel option would require a 36 hour cycle from March through September 2013. The 61-foot tunnel would require a 48 hour cycle from March through October 2013. Each blasting crew will be on a different cycle and there would be several blasts during each cycle. At the beginning of construction the blasting will be done at the portals. As the work progresses, the blasting will occur progressively farther inside the 700-foot tunnel. Each blast will be relatively small, removing only six linear feet of rock at a time.

Each blast will convert solid rock into pieces and will generate airborne dust particles, including both PM_{10} and $PM_{2.5}$. However, as the blasting is a physical process rather than a chemical one, most of the resulting particulate matter will consist of PM_{10} rather than $PM_{2.5}$. These emissions will be generated at two identifiable locations, which are the tunnel ends. Cleanup of blast debris will include not only the rocks chunks but also vacuuming to minimize further re-entrainment of blast dust. Diesel-powered equipment will likely be used to collect and haul away the debris to an appropriate disposal or re-use storage site. Measures taken to control dust for the safety of the project workers will also benefit potential receptors nearby. Due to dispersion and dilution with distance, dust generated by tunnel excavation activities will be most concentrated near the tunnel ends, and concentrations will diminish for receptors father away.

6.4.3 What are the Effects of Standard Construction Techniques?

In addition to tunnel excavation activity, the I-70 Twin Tunnels project includes about three miles of roadway widening, necessitating the use of standard roadway construction techniques and equipment. Much of this equipment is diesel-powered. Virtually all construction techniques and equipment will generate emissions of some kind. The relatively limited space available along the highway may reduce the amount of material storage that can take place onsite. Material storage piles for rock products and fill dirt can generate dust emissions. If there is no room for storage piles onsite, these emission will occur elsewhere, offsite, but the tradeoff is that construction vehicles will generate emissions while making trips to obtain the needed materials.

Apart from the tunnel excavation aspect that is discussed above, emissions from this highway widening project are not expected to be especially different from other roadway widening projects that occur throughout the state every year, in areas with much greater population density. In fact, the project would generate less construction-related emissions than a normal widening project because the Twin Tunnels Proposed Action will add just one new lane, rather than two, which will involve less soil disturbance than adding two lanes. Partially offsetting this, however, is that due to topographical constraints, this project will require construction of some retaining walls and other features that would not be necessary in flatter terrain.

Section 7. What Mitigation Is Needed?

7.1 Tier 1 Mitigation Strategies

The air quality mitigation strategies identified in the PEIS were as follows:

"The PEIS indicated that CDOT would pursue the following Colorado Department of Transportation will support policies and programs, as described below to improve air quality in the Corridor:

- Support local jurisdiction efforts, such as those in Clear Creek County, to secure grants to help develop data that will better inform the air quality measurements and mitigation
- Support engine idling ordinance to restrict emissions produced from idling auto and commercial vehicles, especially buses, delivery trucks, etc.
- Continue to explore highway maintenance strategies to minimize the amount of sand used for winter maintenance and to remove the sand from the roadway to minimize re-entrained dust
- Continue to support regional, statewide, and national efforts to reduce air pollutants and comply with current air quality regulations"

The PEIS acknowledged that "some air quality issues, particularly emissions of greenhouse gases, are global issues that are difficult to affect on a project-specific level. As such, the lead agencies are committed to working on these broad issues, as described in Chapter 4, Cumulative Impacts Analysis, while also incorporating measures to control air pollutant emissions locally."

The PEIS recognized that fugitive dust was the air pollutant of primary concern along the I-70 Mountain Corridor. It stated that, "Because project alternatives are not anticipated to cause or result in violations of any NAAQS, most mitigation measures for air quality will center on controlling fugitive dust during construction, operations, and maintenance. The following conceptual techniques for mitigation of construction impacts could be considered:

- Control fugitive dust through a fugitive dust control plan, including wetting of disturbed areas
- Use the cleanest fuels available at the time in construction equipment and vehicles to reduce exhaust emissions
- Keep construction equipment well maintained to ensure that exhaust systems are in good working order
- Control blasting and avoid blasting on days with high winds to minimize windblown dust from blasting, particularly near community areas
- Minimize dust from construction in or near tailing areas
- Air quality monitoring during construction, including $PM_{2.5}$ monitoring
- Investigate requirements or incentives for retrofitting construction vehicles and equipment to reduce emissions (such as idling equipment)"

The PEIS mitigation discussion concluded as follows: "During Tier 2 processes, CDOT will conduct the following activities:

- Develop specific and more detailed mitigation strategies and measures

- Develop best management practices specific to each project
- Adhere to any new laws and regulations that may be in place when Tier 2 processes are underway"

These agency scoping comments and mitigation concepts from the PEIS were taken under consideration for possible application to the Twin Tunnels project. The mitigation measures selected for use on this project are discussed below.

7.2 Twin Tunnels Mitigation

Project-related air pollutants were evaluated through air quality analysis. Relevant NAAQS air quality standards were reviewed for the future years. Future emissions from vehicles will be minimized through several federal regulations (such as emission standards) and county controls (such as street sweeping or fireplace burning ordinances). Due to cleaner vehicles, future daily air pollutant levels for most pollutants are predicted to be lower than current levels, even with more vehicles on the roads. Total particulate matter levels may increase in the future because of more vehicles, but the preliminary analysis indicates the concentrations would meet the NAAQS. The proposed improvements were found not to cause violations of health-based air quality standards or other relevant evaluation criteria through the air quality analysis.

7.2.1 Operations Mitigation

The term "operations" means the future use and maintenance of I-70 in the Twin Tunnels project area. As noted above, the project alternatives examined in the PEIS are not expected to result in violations of any NAAQS. This statement applies to both the No Action Alternative and the Twin Tunnels Proposed Action. Therefore most mitigation measures for air quality will focus on controlling fugitive dust during construction, operations and maintenance. Mitigation for construction impacts is discussed in a separate subsection below. In the discussions below, the terms "fugitive dust" and PM_{10} are used interchangeably, because re-entrainment of fugitive dust from the roadway surface is the major source of PM_{10} emissions.

Mud Trackout: Limited access roadways such as Interstate highways are generally cleaner than local roadways with more access because vehicles that may be tracking mud or dirt must first use a local roadway before they can reach the Interstate. Since interchanges providing Interstate access are generally miles apart, trackout materials from elsewhere on I-70 have minimal potential to reach the Twin Tunnels project area. Thus, the responsibility for controlling the trackout materials that affect air quality in the Twin Tunnels area rests with the government entities in the project area. CDOT has a maintenance yard north of I-70 at the Hidden Valley Interchange (Exit 244) and will implement measures to minimize any trackout by CDOT vehicles at that location.

Road Cleaning: Other fugitive dust sources include spillage from trucks hauling soil or rock products, and windblown dust from nearby area or point sources. Also, motor vehicle use itself creates PM_{10} emissions in the form of tire wear and other mechanical deterioration, although these are comparatively minor amounts. High traffic speeds on I-70 make it difficult for CDOT to safely conduct road cleaning operations on a routine basis. Lane closures do occur occasionally for repairs, major spill cleanup, or emergency response. When road closures occur, CDOT maintenance crews may have an opportunity to clean the roadway, if this can safely be done in conjunction with the other activities at the site. CDOT can station and maintain a street sweeper at its Hidden Valley maintenance yard for this purpose.

Road Sanding: I-70 is at high altitude near the Twin Tunnels and often experiences snow and icy conditions during winter storms. In the past, CDOT has applied sand to improve roadway traction in icy conditions for safety reasons. This practice has side effects both regarding air quality (re-entrained dust) and water quality since the sand can eventually move downhill to reach nearby waters such as Clear Creek. Accordingly, CDOT has largely switched to the use of chemical deicers such as magnesium chloride, and has conducted studies of the water quality impacts of such products to ensure that they are safe. A similar change in maintenance practices has substantially reduced wintertime PM_{10} concentrations in the Denver metropolitan area. In the I-70 Twin Tunnels area, CDOT will continue its ongoing practice of minimizing the use of road sanding as safety permits.

7.2.2 Detour Mitigation

During construction, conditions on the eastbound detour route will be similar to those described on I-70, above, in terms of high traffic volumes limiting CDOT's opportunities to safely conduct road cleaning. Generally, the same mitigation approaches will be appropriate. As an additional step, CDOT will review the detour route and utilize Best Management Practices to minimize opportunities for fugitive dust to reach the roadway. CDOT will ensure that roadside soils are stabilized and that the detour route is swept prior to opening County Road 314 for detour use.

7.2.3 Tunnel Excavation Mitigation

In accordance with Colorado Air Quality Regulation #1, CDOT will use all available practical methods which are technically feasible and economically reasonable in order to minimize fugitive dust emissions from blasting activities. As a part of this effort, CDOT will control blasting or avoid blasting on days with high winds to minimize windblown dust from blasting. CDOT's contractor will be required to wet the affected work area prior to each blast and to clean it after each blast to minimize the potential for re-entrained dust. CDOT will implement a related air quality monitoring program that is discussed in a subsection below.

7.2.4 Standard Construction Mitigation

In accordance with the potential mitigation strategies that were discussed in the PEIS, CDOT will implement the following measures to address emissions during construction:

- Prepare or require the contractor to prepare and implements a fugitive dust control plan, including wetting of disturbed areas
- Use or require the contractor to use the cleanest fuels available at the time in construction equipment and vehicles to reduce exhaust emissions
- Maintain or require the contractor to maintain construction equipment well maintained to ensure that exhaust systems are in good working order
- Minimize dust from construction in or near tailing areas
- Air quality monitoring during construction (see detailed discussion below)
- CDOT will require the contractor to prepare a cost/benefit analysis on retrofitting construction vehicles and equipment to reduce emissions and a plan to minimize engine idling by construction equipment.
- CDOT will require the contractor to prepare a plan indicating where construction workers will park their personal vehicles and how they will shuttle or otherwise efficiently be transported to and from the work site to begin and end their shifts.

7.2.5 Special Purpose Air Quality Monitoring

The I-70 Mountain Corridor PEIS indicated that in Tier 2 processes along the corridor, air quality monitoring during construction, including $PM_{2.5}$ monitoring "could be considered." In scoping comments for the I-70 Twin Tunnels project, EPA recommended that both PM_{10} and $PM_{2.5}$ be monitored, stating that, "$PM_{2.5}$ would address emissions from combustion, primarily diesel engine emissions, while PM_{10} would deal more with dust concerns." The Colorado Department of Public Health and Environment also recommended PM_{10} monitoring for this project, but did not specifically recommend monitoring for $PM_{2.5}$.

CDOT met with CDPHE monitoring specialists on January 24, 2012 to discuss potential ambient air quality monitoring during construction. Important questions regarding any CDOT air quality monitoring included:

- What is the purpose of the monitoring activity?
- What would having monitoring data enable or prompt CDOT to do differently on this project?
- What pollutant(s) would be monitored?
- Where would the monitor(s) be installed?
- When would monitoring take place, with respect to the construction sequence?

The meeting also included discussion of CDPHE's scoping suggestion to consider use of visual opacity observations. Since the project area is in a mountainous canyon, with a dark tunnel, it was agreed that the usefulness of this technique might be limited by the local conditions. Therefore the meeting focused instead on conventional monitoring equipment.

What is the purpose of the monitoring activity? The purpose of the monitoring activity would be to protect human health. Air quality monitoring is not ordinarily conducted for CDOT highway projects. It is being considered along the I-70 Mountain Corridor in response to concerns from local residents, partly due to the lack of available data on air pollutant concentrations in the corridor. The Twin Tunnels project has the additional aspect of tunnel excavation (blasting), which has the potential to generate more PM_{10} emissions than a typical highway improvement project.

Highway construction projects ordinarily resulting in air pollutant exposure to three populations: (1) the workers involved with the construction; (2) motorists driving through the project area, sometimes delayed in traffic queues; and (3) persons who live or work in the project area or routinely visit it for other purposes. The construction workers will have appropriate training and safety equipment to protect them from dust in compliance with applicable safety standards. Motorists will not have training or equipment, but will be in the project area for only short time it takes to traverse it. Persons living or working in the nearby area would have exposure for longer amounts of time, but would be father away from the emissions sources than the construction workers and highway users. Persons living or working in the nearby area likely also would be motorists driving through the area.

The purpose of monitoring would not be to determine whether or not the NAAQS are met in Clear Creek County. Investigations of that type are clearly within the purview of CDPHE and should be done in compliance with EPA guidelines. In fact, the PEIS reported that APCD collected ozone samples in 2007 and determined that Clear Creek County is not likely to have high ozone concentrations and should not be included in the Denver metropolitan and North Front Range updated ozone nonattainment areas.

What would having monitoring data enable or prompt CDOT to do differently on this project? In consultation with APCD, it was determined that ambient air quality monitoring could be used to protect the health of nearby residents if used as a mechanism to trigger adaptive air pollution mitigation. Specifically, if monitored levels of particulate matter reached a given threshold, the contractor would be required to undertake additional best management practices for fugitive dust control.

For example, Table 3 in this memorandum indicated that the NAAQS for PM_{10} is a 24-hour average of 150 micrograms per cubic meter ($\mu g/m^3$). One hour with PM_{10} concentrations at this level would not constitute a violation, nor would one hour with concentrations of even 200 or 300 $\mu g/m^3$, because short-term spikes in concentration can be averaged downward throughout the course of a day, but they would indicate the potential for a violation. Since crews will be working on the project 24 hours a day and since the types of construction activity underway during any given phase of construction will likely be homogeneous, an initial one-hour reading of 150 $\mu g/m^3$ would indeed indicate the potential for a violation, and thus serve as the threshold to initiate supplemental dust suppression measures.

What pollutant(s) would be monitored? The PEIS indicated that CDOT would likely conduct PM_{10} monitoring and that $PM_{2.5}$ monitoring would be considered. In scoping comments, EPA recommended that both be undertaken during the Twin Tunnels project, as PM_{10} monitoring would address fugitive dust emissions and $PM_{2.5}$ monitoring would address emissions from motor vehicles, especially diesel-powered trucks, and construction equipment.

It was noted early that a key air pollution aspect of the Twin Tunnels project is the tunnel excavation activity, which will generate more PM_{10} than normally encountered in a highway widening project. With regard to $PM_{2.5}$, however, this project is different from ordinary widening projects because it is adding only an eastbound lane, and not a new lane in each direction. Additionally, traffic volumes on this portion of I-70 are less than the corridor-wide average, and truck percentages here are not unusually high. Additionally, there are very few air quality receptors in the immediate vicinity. If a PM_{10} monitor were already being used to trigger adaptive mitigation, this approach would provide some benefits for $PM_{2.5}$ because the fine particles are a portion of what is detected by the PM_{10} monitor.

An important aspect of any CDOT monitoring effort would be obtaining real-time data that is "actionable" in the sense of triggering prompt, adaptive mitigation. PM_{10} monitors provide hourly readings available onsite with no need to send samples to a laboratory for analysis. $PM_{2.5}$ particles are much smaller and require more sophisticated, off-site analytical methods.

After CDOT consultation with CDPHE (APCD's air quality monitoring specialists), PM_{10} was determined to be the most appropriate pollutant to monitor during construction because it could be done reliably under real-time conditions, thus affording a direct link to emissions generating activity and PM monitoring. Because $PM_{2.5}$ is a fraction of the PM_{10} capture and the area was located away from population centers, it was felt that monitoring data and any PM concerns identified during construction at this project site could be used to re-evaluate future construction monitoring protocols. Based on the monitoring experience for this project, it may be determined that PM monitoring during construction is not needed for other projects; or, on the other hand, if extraordinary PM concerns arise from this project, DOT could investigate tighter monitoring protocols and/or emissions monitoring needs for subsequent projects.

Where would the monitor(s) be installed? Given that the eastbound tunnel has a western entrance and an eastern exit, these are the two directions in which fugitive dust from tunnel excavation can go. A question that arose in CDOT-APCD consultation was whether there should be only one PM_{10} monitor, and if so, on which side of the tunnel, or two monitors, consisting of one on each side of the tunnel. One factor considered was that the western side is closer to Idaho Springs (population 1,717) whereas the eastern side has just a few residences near the Hidden Valley exit. However, it could not be asserted confidently to residents east of the tunnel that readings taken on the other side of the tunnel accurately represented conditions east of the tunnel.

Another factor considered was the cost of the monitoring efforts. From contact with industry representatives, it was determined that the purchase cost of the type of portable monitor recommended in the CDPHE scoping comments would be slightly over $25,000 per unit. The units can be rented but for several months' use, buying becomes the more cost-effective option. Each monitor needs a power source and needs some degree of security to prevent accidental damage or theft. Additionally, personnel will need to receive training and employee time will be needed to review the data, ensure periodic quality control checks, and restock disposable supplies (test strips). The total cost of acquisition, installation, and operation of one monitor thus should be assumed to be in the ballpark of $50,000. Operating two monitors could cost roughly $100,000.

APCD's monitoring experts strongly felt that two monitors should be used, and the CDOT project manager agreed that this level of expense was acceptable. This would provide flexibility for future project use, including the possibility of monitoring two future projects at the same time.

Staff from the two agencies met again on January 24, 2012 to consider possible sites for two PM_{10} monitors, one west of the tunnel and one east of the tunnel. Key considerations included access to a nearby power source and having a location not blocked by walls, structures or trees to maximize free air flow not excessively influenced by extraneous sources (e.g. an unpaved lot or road, or an industrial activity). EPA's criteria for siting permanent monitors were reviewed and considered because they provide excellent guidance, although it was understood that CDOT special purpose monitors are not required to meet the siting criteria for permanent monitors. It was agreed that the sites should be closer to the nearby receptors than to the tunnel itself, to identify concentrations that are representative of exposure at the receptor sites.

APCD's monitor siting experts identified a total of six candidate locations for monitors. CDOT will provide the six recommended monitor locations and the EPA siting criteria to its construction contractor for consideration. The project's detailed design and construction staging plans have not yet been prepared, and may well determine whether or not some of the sites are feasible. CDOT will retain approval authority over the ultimate site selection, as it must ensure that the sites would provide meaningful data that make the monitoring effort productive and worthwhile.

Additionally, CDOT or a third party will oversee the monitoring program; to ensure accountability, this role will not be delegated to the construction contractor. CDOT will consider mechanisms for making the data publicly available online to enhance transparency for the nearby community. APCD agreed to provide training to CDOT staff regarding operation of the equipment.

When would monitoring take place, with respect to the construction sequence? CDOT-APCD consultation included discussion of several possible timeframes for monitoring. For research purposes, it might be helpful to have before-during-and-after data, as long as it is comparable. However, this may or may not be feasible depending on the contractor's construction phasing plans, which are not currently known. At a minimum, CDOT's approach will be to begin the process to acquire the needed technical equipment as soon as possible, and to ensure that it is installed and operational prior to the first blasting activity. Since the purpose of the monitoring is to facilitate adaptive mitigation during blasting activities, the monitoring program will end once the blasting phase is completed. Owning the monitors, CDOT will have the flexibility to enhance this monitoring approach should the need arise.

Summary of Monitoring Approach
The Twin Tunnel air quality monitors will be set up a some months ahead of project construction to facilitate monitoring protocol establishment, equipment testing, and acquire short term baseline data. The monitoring will be geared toward community air quality alerts, not OSHA-level or EPA long-term targets. The monitoring will provide a concentration alert threshold that will immediately enact additional construction BMPs to address dust. Tunnel boring activities will not be halted for alerts. Additionally, once the tunnel bore is completed, the monitoring will cease. This effort will be conducted for the duration of construction associated with tunnel boring/blasting only and not for post-construction air quality monitoring.

Section 8. Other Air Quality Issues Addressed in the PEIS

8.1 Mobile Source Air Toxics

As noted earlier in this memorandum, FHWA guidelines suggest that the appropriate approach for addressing Mobile Source Ai r Toxics (MSATs) for a project with traffic volumes as found on I-70 in the Twin Tunnels area would be a qualitative discussion. On September 30, 2009, FHWA released updated interim guidance on when and how to analyze MSATs in National Environmental Policy Act (NEPA) documents for highway projects (FHWA, 2009). The interim guidance reflects the current list of priority MSATs.

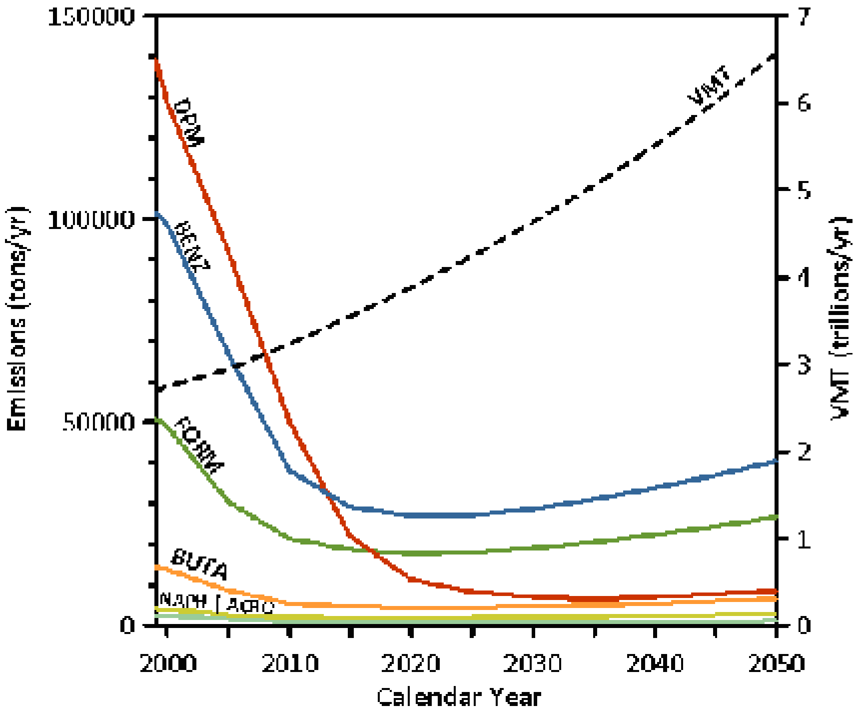
Controlling air toxic emissions became a national priority with the passage of the Clean Air Act Amendments of 1990, whereby Congress mandated that the Environmental Protection Agency regulate 188 air toxics, also known as hazardous air pollutants. The Environmental Protection Agency assessed this expansive list in their latest rule on the Control of Hazardous Air Pollutants from Mobile Sources (Federal Register, Vol. 72, No. 37, page 8430, February 26, 2007) and identified a group of 93 compounds emitted from mobile sources that are listed in their Integrated Risk Information System (IRIS) (URL: http://www.epa.gov/ncea/iris/index.html). In addition, the Environmental Protection Agency identified seven compounds with noteworthy contributions from mobile sources that are among the national and regional-scale cancer risk drivers from their 1999 National Air Toxics Assessment (URL: http://www.epa.gov/ttn/atw/nata1999/):

- Acrolein
- Benzene
- 1,3-butadiene
- Diesel particulate matter plus diesel exhaust organic gases (DPM)
- Formaldehyde
- Naphthalene
- Polycyclic organic matter

While FHWA considers these the priority MSATs, the list is subject to change and may be adjusted in consideration of future Environmental Protection Agency rules.

The 2007 Environmental Protection Agency rule mentioned above requires controls that will dramatically decrease MSAT emissions through cleaner fuels and cleaner engines. According to an FHWA analysis using the Environmental Protection Agency's MOBILE6.2 model, even if vehicle activity (vehicle miles traveled) increases by 145 percent as assumed, a combined reduction of 72 percent in the total annual emission rate for the priority MSATs is projected from 1999 to 2050, as shown in Figure 7.

FIGURE 7
National MSAT Emission Trends 1999– 2050 for Vehicles Operating on Roadways Using the Environmental Protection Agency's MOBILE6.2 Model



Notes:
(1) Annual emissions of polycyclic organic matter are projected to be 561 tons per year (tpy) for 1999, decreasing to 373 tpy for 2050.
(2) Trends for specific locations may be different, depending on locally derived information representing vehicle miles traveled, vehicle speeds, vehicle mix, fuels, emission control programs, meteorology, and other factors
Source: Environmental Protection Agency. MOBILE6.2 model run 20 August 2009.

Air toxics analysis is a continuing area of research. While much work has been done to assess the overall health risk of air toxics, many questions remain unanswered. In particular, the tools and techniques for assessing project-specific health outcomes as a result of lifetime MSAT exposure remain limited. These limitations impede the ability to evaluate how the potential health risks posed by MSAT exposure should be factored into project-level decision-making within the context of NEPA.

Nonetheless, air toxics concerns continue to be raised on highway projects during the NEPA process. Even as the science emerges, the public and other agencies expect the lead agencies to address MSAT impacts in our environmental documents. The Federal Highway administration, Environmental Protection Agency, Health Effects Institute, and others have funded and conducted research studies to try to more clearly define potential risks from MSAT emissions associated with highway projects. The Federal Highway Administration will continue to monitor the developing research in this emerging field.

Emissions of five MSAT pollutants were estimated for the Twin Tunnels project using MOVES2010a emission factors from CDPHE. Table 10 presents these estimates.

TABLE 10
Summer Sunday MSAT Emissions for the Twin Tunnels Project Area (pounds per day)

Alternative	Existing Condition	Detour Condition*	2035 No Action Alternative	2035 Proposed Action Managed Lanes	2035 Proposed Action General Purpose Lanes
1,3 Butadiene	1.17	1.19	0.67	0.63	0.62
Acetaldehyde	2.56	2.63	1.52	1.41	1.37
Acrolein	0.21	0.22	0.13	0.12	0.11
Benzene	9.81	9.86	5.18	4.97	4.87
Formaldehyde	5.06	5.21	3.10	2.86	2.74

** Note that 75% of these emissions will be generated on the detour route, in closer proximity to receptors than the existing I-70 eastbound lanes.*

The MSAT calculations incorporated MOVEs2010a emission rates and the traffic volumes and speeds for the alternatives and scenarios discussed previously in this memorandum.

MSAT emissions for all alternatives in 2035 will be less than emissions in the existing condition, and emissions for both variations of the Proposed Action would be less than the emissions for the 2035 No Action Alternative. Emissions for the construction detour scenario would be slightly greater than the existing conditions, but the differences are in one-hundredths of a pound per day, over the project length of nearly three miles, and thus should be considered negligible. Table 10 presents these emission estimates.

Sec. 1502.22 INCOMPETE OR UNAVAILABLE INFORMATION

When an agency is evaluating reasonably foreseeable significant adverse effects on the human environment in an environmental impact statement and there is incomplete or unavailable information, the agency shall always make clear that such information is lacking.

a. If the incomplete information relevant to reasonably foreseeable significant adverse impacts is essential to a reasoned choice among alternatives and the overall costs of obtaining it are not exorbitant, the agency shall include the information in the environmental impact statement.
b. If the information relevant to reasonably foreseeable significant adverse impacts cannot be obtained because the overall costs of obtaining it are exorbitant or the means to obtain it are not known, the agency shall include within the environmental impact statement:
    1. a statement that such information is incomplete or unavailable;
    2. a statement of the relevance of the incomplete or unavailable information to evaluating reasonably foreseeable significant adverse impacts on the human environment;
    3. a summary of existing credible scientific evidence which is relevant to evaluating the reasonably foreseeable significant adverse impacts on the human environment; and
    4. the agency's evaluation of such impacts based upon theoretical approaches or research methods generally accepted in the scientific community. For the purposes of this section, "reasonably foreseeable" includes impacts that have catastrophic consequences, even if their probability of occurrence is low, provided that the analysis of the impacts is supported by credible scientific evidence, is not based on pure conjecture, and is within the rule of reason.

c. The amended regulation will be applicable to all environmental impact statements for which a Notice to Intent (40 CFR 1508.22) is published in the Federal Register on or after May 27, 1986. For environmental impact statements in progress, agencies may choose to comply with the requirements of either the original or amended regulation.

INCOMPLETE OR UNAVAILABLE INFORMATION FOR PROJECT-SPECIFIC MSAT HEALTH IMPACTS ANALYSIS

In FHWA's view, information is incomplete or unavailable to credibly predict the project-specific health impacts due to changes in MSAT emissions associated with a proposed set of highway alternatives. The outcome of such an assessment, adverse or not, would be influenced more by the uncertainty introduced into the process through assumption and speculation rather than any genuine insight into the actual health impacts directly attributable to MSAT exposure associated with a proposed action.

The U.S. Environmental Protection Agency (EPA) is responsible for protecting the public health and welfare from any known or anticipated effect of an air pollutant. They are the lead authority for administering the Clean Air Act and its amendments and have specific statutory obligations with respect to hazardous air pollutants and MSAT. The EPA is in the continual process of assessing human health effects, exposures, and risks posed by air pollutants. They maintain the Integrated Risk Information System (IRIS), which is "a compilation of electronic reports on specific substances found in the environment and their potential to cause human health effects" (EPA, http://www.epa.gov/ncea/iris/index.html). Each report contains assessments of non-cancerous and cancerous effects for individual compounds and quantitative estimates of risk levels from lifetime oral and inhalation exposures with uncertainty spanning perhaps an order of magnitude.

Other organizations are also active in the research and analyses of the human health effects of MSAT, including the Health Effects Institute (HEI). Two HEI studies are summarized in Appendix D of FHWA's Interim Guidance Update on Mobile source Air Toxic Analysis in NEPA Documents. Among the adverse health effects linked to MSAT compounds at high exposures are cancer in humans in occupational settings; cancer in animals; and irritation to the respiratory tract, including the exacerbation of asthma. Less obvious is the adverse human health effects of MSAT compounds at current environmental concentrations (HEI, http://pubs.healtheffects.org/view.php?id=282) or in the future as vehicle emissions substantially decrease (HEI, http://pubs.healtheffects.org/view.php?id=306).

The methodologies for forecasting health impacts include emissions modeling; dispersion modeling; exposure modeling; and then final determination of health impacts - each step in the process building on the model predictions obtained in the previous step. All are encumbered by technical shortcomings or uncertain science that prevents a more complete differentiation of the MSAT health impacts among a set of project alternatives. These difficulties are magnified for lifetime (i.e., 70 year) assessments, particularly because unsupportable assumptions would have to be made regarding changes in travel patterns and vehicle technology (which affects emissions rates) over that time frame, since such information is unavailable. The results produced by the EPA's MOBILE6.2 model, the California EPA's Emfac2007 model, and the EPA's DraftMOVES2009 model in forecasting MSAT emissions are highly inconsistent. Indications from the development of the MOVES model are that MOBILE6.2 significantly underestimates diesel particulate matter (PM) emissions and significantly overestimates benzene emissions.

Regarding air dispersion modeling, an extensive evaluation of EPA's guideline CAL3QHC model was conducted in an NCHRP study (http://www.epa.gov/scram001/dispersion_alt.htm#hyroad), which documents poor model performance at ten sites across the country - three where intensive monitoring was conducted plus an additional seven with less intensive monitoring. The study indicates a bias of the CAL3QHC model to overestimate concentrations near highly congested intersections and underestimate concentrations near uncongested intersections. The consequence of this is a tendency to overstate the air quality benefits of mitigating congestion at intersections. Such poor model performance is less difficult to manage for demonstrating compliance with National Ambient Air Quality Standards for relatively short time frames than it is for forecasting individual exposure over an entire lifetime, especially given that some information needed for estimating 70-year lifetime exposure is unavailable. It is particularly difficult to reliably forecast MSAT exposure near roadways, and to determine the portion of time that people are actually exposed at a specific location.

There are considerable uncertainties associated with the existing estimates of toxicity of the various MSAT, because of factors such as low-dose extrapolation and translation of occupational exposure data to the general population, a concern expressed by HEI (http://pubs.healtheffects.org/view.php?id=282). As a result, there is no national consensus on air dose-response values assumed to protect the public health and welfare for MSAT compounds, and in particular for diesel PM. The EPA (http://www.epa.gov/risk/basicinformation.htm#g) and the HEI (http://pubs.healtheffects.org/getfile.php?u=395) have not established a basis for quantitative risk assessment of diesel PM in ambient settings.

There is also the lack of a national consensus on an acceptable level of risk. The current context is the process used by the EPA as provided by the Clean Air Act to determine whether more stringent controls are required in order to provide an ample margin of safety to protect public health or to prevent an adverse environmental effect for industrial sources subject to the maximum achievable control technology standards, such as benzene emissions from refineries. The decision framework is a two-step process. The first step requires EPA to determine a "safe" or "acceptable" level of risk due to emissions from a source, which is generally no greater than approximately 100 in a million. Additional factors are considered in the second step, the goal of which is to maximize the number of people with risks less than 1 in a million due to emissions from a source. The results of this statutory two-step process do not guarantee that cancer risks from exposure to air toxics are less than 1 in a million;in some cases, the residual risk determination could result in maximum individual cancer risks that are as high as approximately 100 in a million. In a June 2008 decision, the U.S. Court of Appeals for the District of Columbia Circuit upheld EPA's approach to addressing risk in its two step decision framework. Information is incomplete or unavailable to establish that even the largest of highway projects would result in levels of risk greater than safe or acceptable.

Because of the limitations in the methodologies for forecasting health impacts described, any predicted difference in health impacts between alternatives is likely to be much smaller than the uncertainties associated with predicting the impacts. Consequently, the results of such assessments would not be useful to decision makers, who would need to weigh this information against project benefits, such as reducing traffic congestion, accident rates, and fatalities plus improved access for emergency response, that are better suited for quantitative analysis.

8.2 Global Climate Change Cumulative Effects

The issue of global climate change is an important national and global concern that is being addressed in several ways by the Federal government. The transportation sector is the second largest source of total greenhouse gases (GHGs) in the U.S., and the greatest source of carbon dioxide (CO_2) emissions – the predominant GHG. In 2004, the transportation sector was responsible for 31 percent of all U.S. CO_2 emissions. The principal anthropogenic (human made) source of carbon emissions is the combustion of fossil fuels, which account for approximately 80 percent of anthropogenic emissions of carbon worldwide. Almost all of the transportation sector emissions (98 percent) result from the consumption of petroleum products, such as gasoline, diesel fuel, and aviation fuel.

Recognizing this concern, FHWA is working nationally with other modal administrations through the DOT Center for Climate Change and Environmental Forecasting to develop strategies to reduce transportation's contribution to greenhouse gases - particularly CO_2 emissions - and to assess the risks to transportation systems and services from climate changes.

At the state level, there are also several programs underway in Colorado to address transportation GHGs. The Governor's Climate Action Plan, adopted in November 2007, includes measures to adopt vehicle CO_2 emissions standards and to reduce vehicle travel through transit, flex time, telecommuting, ridesharing, and broadband communications. CDOT issued a policy Directive on Air Quality in May 2009. This Policy Directive was developed with input from a number of agencies, including the State of Colorado's Department of Public Health and Environment, EPA, FHWA, the Federal Transit Administration, the Denver Regional Transportation District and the Denver Regional Air Quality Council. This Policy Directive addresses unregulated MSATs and GHGs produced from Colorado's state highways, interstates, and construction activities.

As a part of CDOT's commitment to addressing MSATs and GHGs, some of CDOT's programwide activities include:

- Developing truck routes/restrictions with the goal of limiting truck traffic in proximity to facilities, including schools, with sensitive receptor populations.
- Continue researching pavement durability opportunities with the goal of reducing the frequency of resurfacing and/or reconstruction projects.
- Developing air quality educational materials, specific to transportation issues, for citizens, elected officials, and schools.
- Offering outreach to communities to integrate land use and transportation decisions to
- reduce growth in VMT, such as smart growth techniques, buffer zones, transit-oriented
- development, walkable communities, access management plans, etc.
- Committing to research additional concrete additives that would reduce the demand for
- cement.
- Expanding Transportation Demand Management efforts statewide to better utilize the
- existing transportation mobility network.
- Continuing to diversify the CDOT fleet by retrofitting diesel vehicles, specifying the types of vehicles and equipment contractors may use, purchasing low-emission vehicles, such as hybrids, and purchasing cleaner burning fuels through bidding incentives where feasible.
- Incentivizing is the likely vehicle for this.
- Exploring congestion and/or right-lane only restrictions for motor carriers.
- Funding truck parking electrification (note: mostly via exploring external grant opportunities)
- Researching additional ways to improve freight movement and efficiency statewide.

- Incorporating ultra-low sulfur diesel for non-road equipment statewide.
- Developing a low-VOC emitting tree landscaping specification.

Because climate change is a global issue, and the emissions changes due to project alternatives are very small compared to global totals, the GHG emissions associated with the alternatives were not calculated. Because GHGs are directly related to energy use, the changes in GHG emissions would be similar to the changes in energy consumption presented in the EA. The relationship of current and projected Colorado highway emissions to total global CO_2 emissions is presented in Table 11.

TABLE 11
Carbon Dioxide Emissions Data

Global CO_2 emissions 2005, million metric tons (MMT)[1]	Colorado highway CO_2 emissions 2005, MMT[2]	Projected Colorado 2035 highway CO_2 emissions, MMT[2]	Colorado highway emissions, % of global total (2005)[2]	Project corridor VMT, % of statewide VMT (2005)
27,700	29.9	31.3	0.108	<0.01

[1] US Department of Energy, 2007

[2] Calculated by FHWA Resource Center

8.3 Other Air Quality Issues

Due to the limited size of the project, visibility and nitrogen deposition were not analyzed for the Twin Tunnels project. For context, the Twin Tunnels project accounts for three of the 144 miles of the PEIS corridor, and has lower traffic volumes than the corridor-wide average, meaning that this project accounts for about 1.8 percent of I-70 corridor VMT. Lastly, this portion of the corridor is being widened for only one direction of traffic. Thus, in general, the Twin Tunnels project would only account for less than one percent of any quantified air quality impacts for the 144-mile corridor.

Section 9. References

CDOT (Colorado Department of Transportation), CDOT Air Quality Analysis and Documentation Procedures, 2010. http://www.coloradodot.info/programs/environmental/air-quality/Air%20Quality%20-10%20Revisons.pdf

CDOT, 2011a. Average Annual Daily Traffic. http://apps.coloradodot.info/dataaccess/ Accessed November 10, 2011.

CDOT, 2011b. Hourly Traffic Volumes for I-70 in 2010. http://apps.coloradodot.info/dataaccess/Traffic/index.cfm?fuseaction=TrafficMain&MenuType=Traffic. Accessed November 10, 2011.

Clear Creek County, 2011. Telephone conversation between Joanne Sorensen, Clear Creek County, and Doug Eberhart, Wilson & Company. October 25, 2011.

APPENDIX 1
Emission Factors and Estimated Emissions

The following Excel spreadsheet pages were provided to CDOT by APCD:

Provided on March 7, 2012:

1. 2010 Emissions for Existing Conditions
2. 2035 Emissions for Managed Lanes and No Action
3. 2010 Summer Emission Factors for Existing Conditions
4. 2010 Winter Emission Factors for Existing Conditions
5. 2035 Summer Emission Factors for Managed Lanes and No Action Alternative
6. 2035 Winter Emission Factors for Managed Lanes and No Action Alternative
7. Vehicle Mix Assumed for All Scenarios

Provided on March 19, 2012:

1. $PM_{2.5}$ Emissions
2. 2010 $PM_{2.5}$ Composite Emission Factors
3. 2010 $PM_{2.5}$ Composite Emission Factors
4. Road Dust Emission Factors

Provided on March 20, 2012:

1. 2010 Emissions for Detour Conditions
2. 2035 Emissions for General Purpose Lanes
3. 2010 Summer Emission Factors for Detour Conditions
4. 2010 Winter Emission Factors for Detour Conditions (not applicable)
5. 2035 Summer Emission Factors for General Purpose Lanes
6. 2035 Winter Emission Factors for General Purpose Lanes
7. Vehicle Mix Assumed for All Scenarios
8. Detour $PM_{2.5}$ Emissions
9. Detour $PM_{2.5}$ Emission Factors
10. 2035 General Purpose Lane PM2.5 Emission Factors
11. Road Dust Emission Factors

Emission aggregation was performed for an assumed project length of 2.57 miles.

1. 2010 Emissions for Existing Conditions (pounds per day)

Scenario	Name	Winter	Summer
2010 Existing EB	SO2	2.12	2.12
2010 Existing EB	CO	5,030.76	2,701.53
2010 Existing EB	NOX	469.68	437.57
2010 Existing EB	VOC	318.07	312.69
2010 Existing EB	1,3 Butadiene	1.11	0.89
2010 Existing EB	Acetaldehyde	2.43	1.97
2010 Existing EB	Acrolein	0.21	0.17
2010 Existing EB	Benzene	8.45	7.38
2010 Existing EB	Formaldehyde	4.52	3.92
2010 Existing EB	PM10	12.67	12.67
2010 Existing WB	SO2	0.79	0.79
2010 Existing WB	CO	1,967.74	1,082.28
2010 Existing WB	NOX	188.67	175.21
2010 Existing WB	VOC	104.41	100.30
2010 Existing WB	1,3 Butadiene	0.36	0.28
2010 Existing WB	Acetaldehyde	0.76	0.59
2010 Existing WB	Acrolein	0.06	0.05
2010 Existing WB	Benzene	2.83	2.43
2010 Existing WB	Formaldehyde	1.35	1.14
2010 Existing WB	PM10	4.68	4.68

2. 2035 Emissions for Managed Lanes and No Action

Scenario	Name	2035(pounds)Winter	2035pounds)Summer
2035 Managed Lanes EB	SO2	2.56	2.56
2035 Managed Lanes EB	CO	3,766.42	1,854.42
2035 Managed Lanes EB	NOX	115.02	105.06
2035 Managed Lanes EB	VOC	141.98	138.35
2035 Managed Lanes EB	1,3 Butadiene	0.55	0.47
2035 Managed Lanes EB	Acetaldehyde	1.25	1.05
2035 Managed Lanes EB	Acrolein	0.11	0.09
2035 Managed Lanes EB	Benzene	4.06	3.64
2035 Managed Lanes EB	Formaldehyde	2.37	2.14
2035 Managed Lanes EB	PM10	8.49	8.49
2035 Managed Lanes WB	SO2	1.00	1.00
2035 Managed Lanes WB	CO	1,570.08	789.56
2035 Managed Lanes WB	NOX	47.14	42.48
2035 Managed Lanes WB	VOC	50.81	48.02
2035 Managed Lanes WB	1,3 Butadiene	0.20	0.17
2035 Managed Lanes WB	Acetaldehyde	0.43	0.36
2035 Managed Lanes WB	Acrolein	0.04	0.03
2035 Managed Lanes WB	Benzene	1.50	1.33
2035 Managed Lanes WB	Formaldehyde	0.80	0.71
2035 Managed Lanes WB	PM10	3.33	3.33
2035 No-Action EB	SO2	2.55	2.55
2035 No-Action EB	CO	3,807.38	1,885.83
2035 No-Action EB	NOX	118.49	109.07
2035 No-Action EB	VOC	151.14	148.92
2035 No-Action EB	1,3 Butadiene	0.58	0.50
2035 No-Action EB	Acetaldehyde	1.36	1.16
2035 No-Action EB	Acrolein	0.12	0.10
2035 No-Action EB	Benzene	4.26	3.85
2035 No-Action EB	Formaldehyde	2.63	2.39
2035 No-Action EB	PM10	8.49	8.49
2035 No-Action WB	SO2	1.00	1.00
2035 No-Action WB	CO	1,570.08	789.56
2035 No-Action WB	NOX	47.14	42.48
2035 No-Action WB	VOC	50.81	48.02
2035 No-Action WB	1,3 Butadiene	0.20	0.17
2035 No-Action WB	Acetaldehyde	0.43	0.36
2035 No-Action WB	Acrolein	0.04	0.03
2035 No-Action WB	Benzene	1.50	1.33
2035 No-Action WB	Formaldehyde	0.80	0.71
2035 No-Action WB	PM10	3.33	3.33

3. 2010 Summer Emission Rates for Existing Conditions (grams per mile)

Scenario	Speed	Name	CompositeEF	HDDV	HDGV	LDDT	LDDV	LDGT1	LDGT2	LDGV	MC
2010 Existing EB	24	SO2	0.008107901	0.0096494	0.016707	0.00409	0.0021	0.0086816	0.0114	0.0068	0.0033
2010 Existing EB	24	CO	10.13269733	6.4380378	27.277169	0.9558444	1.1641	12.065985	12.123207	9.2078	29.23
2010 Existing EB	24	NOX	1.650921472	8.4961338	2.151775	0.7150761	0.5122	1.0694353	1.1743682	0.7614	0.8265
2010 Existing EB	24	VOC	1.300272385	1.1751548	1.7366453	0.5582579	0.3222	1.4676362	1.4789259	1.1798	5.4886
2010 Existing EB	24	1,3 Butadiene	0.003713803	0.0075217	0.0033908	0.0050409	0.002928	0.0036654	0.0041189	0.002784	0.034412
2010 Existing EB	24	Acetaldehyde	0.008473704	0.0355123	0.0094348	0.00689	0.004002	0.0063906	0.0072226	0.00456	0.036253
2010 Existing EB	24	Acrolein	0.000735782	0.0043155	0.0012864	0.0019604	0.001139	0.0003991	0.0004475	0.000282	0.002077
2010 Existing EB	24	Benzene	0.030334865	0.0129472	0.0355855	0.0112029	0.006507	0.0364336	0.038533	0.028341	0.087963
2010 Existing EB	24	Formaldehyde	0.017206835	0.0964258	0.0194182	0.0216217	0.012558	0.0100113	0.0112298	0.0069	0.08278
2010 Existing EB	24	PM10	0.04847786	0.2636441	0.0704874	0.0838205	0.0939	0.0256024	0.0259655	0.0249	0.0371
2010 Existing EB	25	SO2	0.008107896	0.0096494	0.0167047	0.00409	0.0021	0.0086816	0.0114	0.0068	0.0033
2010 Existing EB	25	CO	10.0410471	6.1654946	26.084192	0.9318673	1.135	11.995988	12.052288	9.1393	28.7168
2010 Existing EB	25	NOX	1.632721057	8.3895476	2.1669909	0.705714	0.5056	1.0599961	1.1641766	0.7532	0.8377
2010 Existing EB	25	VOC	1.28144449	1.1386362	1.687905	0.546264	0.3158	1.448985	1.4610276	1.1642	5.44
2010 Existing EB	25	1,3 Butadiene	0.003650442	0.007288	0.0032053	0.0049331	0.00287	0.0036158	0.0040623	0.002747	0.033895
2010 Existing EB	25	Acetaldehyde	0.00829689	0.0344088	0.0089185	0.0067416	0.003922	0.0063034	0.0071233	0.004498	0.035709
2010 Existing EB	25	Acrolein	0.000718177	0.0041817	0.0012154	0.0019187	0.001116	0.0003935	0.0004411	0.000278	0.002046
2010 Existing EB	25	Benzene	0.029901882	0.0125448	0.0340415	0.010962	0.006377	0.035942	0.0380168	0.027959	0.086926
2010 Existing EB	25	Formaldehyde	0.016806599	0.0934295	0.0183547	0.0211571	0.012308	0.0098742	0.0110749	0.006807	0.081538
2010 Existing EB	25	PM10	0.048477867	0.2636441	0.0704904	0.0838205	0.0939	0.0256024	0.0259655	0.0249	0.0371
2010 Existing EB	26	SO2	0.008107889	0.0096494	0.0167017	0.00409	0.0021	0.0086816	0.0114	0.0068	0.0033
2010 Existing EB	26	CO	9.979404696	5.9195725	25.055032	0.9102362	1.1087	11.959358	12.013441	9.0997	28.0565
2010 Existing EB	26	NOX	1.617905933	8.3122969	2.1880699	0.6988979	0.5007	1.0511937	1.154685	0.7455	0.8525
2010 Existing EB	26	VOC	1.264824735	1.1011263	1.6432792	0.5339652	0.3092	1.4334755	1.4462965	1.1507	5.3863
2010 Existing EB	26	1,3 Butadiene	0.003598354	0.0070478	0.0030372	0.0048213	0.00281	0.0035808	0.0040223	0.002722	0.033326
2010 Existing EB	26	Acetaldehyde	0.008138477	0.0332752	0.0084518	0.0065901	0.00384	0.0062429	0.0070534	0.004457	0.035109
2010 Existing EB	26	Acrolein	0.000701188	0.0040439	0.0011524	0.001875	0.001093	0.000389	0.0004368	0.000275	0.002012
2010 Existing EB	26	Benzene	0.029567412	0.0121313	0.0326417	0.0107149	0.006244	0.0355784	0.0376363	0.027673	0.085781
2010 Existing EB	26	Formaldehyde	0.016430619	0.0903521	0.0173959	0.0206802	0.01205	0.0097795	0.0109656	0.006744	0.080169
2010 Existing EB	26	PM10	0.0484517	0.2636441	0.0704046	0.0838205	0.0939	0.0255208	0.0259655	0.0249	0.0371

3. 2010 Summer Emission Rates for Existing Conditions (grams per mile)

Scenario	Speed	Name	CompositeEF	HDDV	HDGV	LDDT	LDDV	LDGT1	LDGT2	LDGV	MC
2010 Existing EB	28	SO2	0.008107706	0.0096494	0.0166158	0.00409	0.0021	0.0086816	0.0114	0.0068	0.0033
2010 Existing EB	28	CO	9.869349001	5.4804536	23.217271	0.8716675	1.0618	11.894011	11.943976	9.029	26.8774
2010 Existing EB	28	NOX	1.591357463	8.1742651	2.2257636	0.6867882	0.4921	1.0354257	1.137733	0.7316	0.879
2010 Existing EB	28	VOC	1.235106804	1.0341543	1.5637423	0.5119109	0.2975	1.4056372	1.4199998	1.1266	5.2905
2010 Existing EB	28	1,3 Butadiene	0.003504814	0.0066192	0.0027386	0.004623	0.002702	0.0035188	0.0039504	0.002676	0.032309
2010 Existing EB	28	Acetaldehyde	0.007854681	0.0312515	0.0076203	0.0063186	0.003693	0.0061348	0.0069275	0.004382	0.034038
2010 Existing EB	28	Acrolein	0.00067128	0.0037979	0.0010387	0.0017977	0.001051	0.0003819	0.0004285	0.00027	0.001951
2010 Existing EB	28	Benzene	0.028971139	0.011394	0.0301433	0.0102736	0.006005	0.0349306	0.0369579	0.027163	0.083737
2010 Existing EB	28	Formaldehyde	0.015759488	0.0848568	0.0156832	0.0198281	0.01159	0.0096105	0.0107704	0.006632	0.077722
2010 Existing EB	28	PM10	0.048487295	0.2636441	0.0704936	0.0838205	0.0939	0.0255208	0.0258655	0.025	0.0371
2010 Existing EB	31	SO2	0.008133689	0.0096494	0.0166158	0.00409	0.0021	0.0087632	0.0114	0.0068	0.0033
2010 Existing EB	31	CO	9.774962236	4.9451811	21.018517	0.8247284	1.0046	11.86334	11.907037	8.9845	25.3278
2010 Existing EB	31	NOX	1.563680286	8.0394777	2.2790168	0.6748843	0.4837	1.0182393	1.119217	0.7158	0.9135
2010 Existing EB	31	VOC	1.196353762	0.948873	1.4650822	0.483958	0.2825	1.3690589	1.3848721	1.0951	5.1652
2010 Existing EB	31	1,3 Butadiene	0.003379864	0.0060735	0.0023707	0.0043698	0.002566	0.0034313	0.0038488	0.002613	0.030979
2010 Existing EB	31	Acetaldehyde	0.00748338	0.0286739	0.0065973	0.0059729	0.003507	0.0059816	0.0067492	0.00428	0.032636
2010 Existing EB	31	Acrolein	0.000632307	0.0034843	0.0008991	0.0016991	0.000998	0.0003716	0.0004161	0.000263	0.00187
2010 Existing EB	31	Benzene	0.028162854	0.0104538	0.0270657	0.0097113	0.005702	0.0340406	0.0360179	0.02647	0.081063
2010 Existing EB	31	Formaldehyde	0.014888582	0.0778578	0.0135782	0.0187432	0.011005	0.0093715	0.0104949	0.006477	0.074522
2010 Existing EB	31	PM10	0.048467358	0.2636441	0.0705784	0.0838205	0.0939	0.0256024	0.0258655	0.0249	0.0371
2010 Existing EB	41	SO2	0.008133678	0.0096494	0.0166105	0.00409	0.0021	0.0087632	0.0114	0.0068	0.0033
2010 Existing EB	41	CO	10.21482393	3.9541926	17.442877	0.7376921	0.8986	12.551983	12.563519	9.5524	21.9257
2010 Existing EB	41	NOX	1.585672974	8.284175	2.461057	0.6964544	0.499	1.0201105	1.1191994	0.7093	0.9953
2010 Existing EB	41	VOC	1.108266929	0.7521511	1.2586555	0.4193145	0.248	1.2869527	1.3063772	1.023	4.8799
2010 Existing EB	41	1,3 Butadiene	0.00311012	0.0048139	0.0016343	0.0037862	0.002251	0.0032503	0.0036359	0.002488	0.02795
2010 Existing EB	41	Acetaldehyde	0.006663013	0.0227289	0.0045487	0.0051747	0.003076	0.0056709	0.0063805	0.004082	0.029446
2010 Existing EB	41	Acrolein	0.000544872	0.0027624	0.0006198	0.0014724	0.000875	0.0003505	0.0003915	0.000249	0.001687
2010 Existing EB	41	Benzene	0.026442834	0.0082865	0.0208181	0.0084149	0.005002	0.0321607	0.0340244	0.02502	0.074976
2010 Existing EB	41	Formaldehyde	0.012940487	0.0617161	0.009361	0.0162409	0.009654	0.0088889	0.0099285	0.006184	0.067237
2010 Existing EB	41	PM10	0.048467369	0.2636441	0.0705837	0.0838205	0.0939	0.0256024	0.0258655	0.0249	0.0371

3. 2010 Summer Emission Rates for Existing Conditions (grams per mile)

Scenario	Speed	Name	CompositeEF	HDDV	HDGV	LDDT	LDDV	LDGT1	LDGT2	LDGV	MC
2010 Existing EB	52	SO2	0.008133678	0.0096494	0.0166105	0.00409	0.0021	0.0087632	0.0114	0.0068	0.0033
2010 Existing EB	52	CO	11.08586529	3.8242321	18.389647	0.726264	0.8848	13.636657	13.608113	10.4755	21.4569
2010 Existing EB	52	NOX	1.776168827	9.9866567	2.6623171	0.8462329	0.6051	1.0555049	1.1530943	0.7292	1.0824
2010 Existing EB	52	VOC	1.045781174	0.6449771	1.1507959	0.3841463	0.2292	1.2241849	1.2475083	0.968	4.8214
2010 Existing EB	52	1,3 Butadiene	0.00295355	0.0041281	0.0013172	0.003469	0.002079	0.0031344	0.0034973	0.002411	0.02733
2010 Existing EB	52	Acetaldehyde	0.006201688	0.0194906	0.003665	0.0047405	0.002842	0.0054728	0.0061436	0.003965	0.028792
2010 Existing EB	52	Acrolein	0.000496176	0.0023685	0.0004998	0.0013493	0.000809	0.0003368	0.0003752	0.000241	0.00165
2010 Existing EB	52	Benzene	0.025306897	0.0071058	0.0179494	0.0077082	0.004621	0.0308677	0.0326639	0.024036	0.073728
2010 Existing EB	52	Formaldehyde	0.011860846	0.0529223	0.0075431	0.0148773	0.008918	0.0085842	0.0095673	0.006012	0.065744
2010 Existing EB	52	PM10	0.048467369	0.2636441	0.0705837	0.0838205	0.0939	0.0256024	0.0258655	0.0249	0.0371
2010 Existing EB	54	SO2	0.008133678	0.0096494	0.0166105	0.00409	0.0021	0.0087632	0.0114	0.0068	0.0033
2010 Existing EB	54	CO	11.24988882	3.8809807	19.02377	0.7312635	0.8908	13.829768	13.794205	10.6398	21.4569
2010 Existing EB	54	NOX	1.828165079	10.471851	2.6980829	0.8889673	0.6353	1.0621785	1.1595582	0.7331	1.1062
2010 Existing EB	54	VOC	1.035706644	0.6339068	1.138912	0.3804878	0.2273	1.2128986	1.236941	0.9588	4.8214
2010 Existing EB	54	1,3 Butadiene	0.002931433	0.0040575	0.0012917	0.0034364	0.002062	0.0031139	0.0034727	0.002398	0.02733
2010 Existing EB	54	Acetaldehyde	0.00614363	0.019156	0.0035948	0.0046958	0.002817	0.0054379	0.0061016	0.003944	0.028792
2010 Existing EB	54	Acrolein	0.000490194	0.002328	0.0004895	0.0013361	0.000802	0.0003344	0.0003722	0.000239	0.00165
2010 Existing EB	54	Benzene	0.025116402	0.0069838	0.0176899	0.007636	0.004581	0.0306365	0.0324216	0.023866	0.073728
2010 Existing EB	54	Formaldehyde	0.011733502	0.0520135	0.0073978	0.014737	0.008842	0.00853	0.009503	0.005981	0.065744
2010 Existing EB	54	PM10	0.048467369	0.2636441	0.0705837	0.0838205	0.0939	0.0256024	0.0258655	0.0249	0.0371
2010 Existing EB	55	SO2	0.008133678	0.0096494	0.0166105	0.00409	0.0021	0.0087632	0.0114	0.0068	0.0033
2010 Existing EB	55	CO	11.32743339	3.9077887	19.323576	0.7336111	0.8937	13.921051	13.882132	10.7175	21.4569
2010 Existing EB	55	NOX	1.852754541	10.701226	2.7150261	0.9091149	0.6496	1.0653969	1.162691	0.7349	1.1175
2010 Existing EB	55	VOC	1.030935044	0.6286351	1.133222	0.3788594	0.2264	1.2076106	1.2319738	0.9544	4.8214
2010 Existing EB	55	1,3 Butadiene	0.002920405	0.0040238	0.00128	0.0034202	0.002053	0.0031037	0.0034613	0.002391	0.02733
2010 Existing EB	55	Acetaldehyde	0.00611601	0.0189975	0.003561	0.0046745	0.002806	0.0054212	0.0060813	0.003934	0.028792
2010 Existing EB	55	Acrolein	0.000487819	0.0023087	0.0004854	0.00133	0.000798	0.0003332	0.0003712	0.000239	0.00165
2010 Existing EB	55	Benzene	0.025025971	0.0069261	0.0175672	0.0076015	0.004563	0.0305268	0.0323073	0.023785	0.073728
2010 Existing EB	55	Formaldehyde	0.011673537	0.0515835	0.0073295	0.0146699	0.008806	0.0085043	0.0094727	0.005967	0.065744
2010 Existing EB	55	PM10	0.048467369	0.2636441	0.0705837	0.0838205	0.0939	0.0256024	0.0258655	0.0249	0.0371

3. 2010 Summer Emission Rates for Existing Conditions (grams per mile)

Scenario	Speed	Name	CompositeEF	HDDV	HDGV	LDDT	LDDV	LDGT1	LDGT2	LDGV	MC
2010 Existing WB	50	SO2	0.008133678	0.0096494	0.0166105	0.00409	0.0021	0.0087632	0.0114	0.0068	0.0033
2010 Existing WB	50	CO	10.90872091	3.7630152	17.704635	0.7208571	0.8782	13.428145	13.407184	10.298	21.4569
2010 Existing WB	50	NOX	1.720016432	9.4626451	2.6236453	0.8001391	0.5724	1.0483313	1.1459977	0.725	1.0566
2010 Existing WB	50	VOC	1.056684022	0.6569089	1.1636995	0.3881098	0.2313	1.2363737	1.2588755	0.978	4.8214
2010 Existing WB	50	1,3 Butadiene	0.002977945	0.0042047	0.0013444	0.0035045	0.002098	0.0031565	0.003524	0.002426	0.02733
2010 Existing WB	50	Acetaldehyde	0.006264467	0.0198521	0.0037411	0.0047893	0.002868	0.0055103	0.0061889	0.003988	0.028792
2010 Existing WB	50	Acrolein	0.000502124	0.0024128	0.0005096	0.0013625	0.000816	0.0003393	0.0003782	0.000242	0.00165
2010 Existing WB	50	Benzene	0.025512216	0.0072377	0.0182298	0.0077875	0.004663	0.031117	0.0329255	0.024219	0.073728
2010 Existing WB	50	Formaldehyde	0.011998021	0.0539038	0.0076993	0.0150299	0.009	0.0086422	0.0096366	0.006045	0.065744
2010 Existing WB	50	PM10	0.048467369	0.2636441	0.0705837	0.0838205	0.0939	0.0256024	0.0258655	0.0249	0.0371
2010 Existing WB	51	SO2	0.008133678	0.0096494	0.0166105	0.00409	0.0021	0.0087632	0.0114	0.0068	0.0033
2010 Existing WB	51	CO	10.99903124	3.7942455	18.053845	0.7236122	0.8816	13.53443	13.509616	10.3885	21.4569
2010 Existing WB	51	NOX	1.748617075	9.7298034	2.6434035	0.8236444	0.5891	1.0519681	1.149596	0.7271	1.0697
2010 Existing WB	51	VOC	1.051134308	0.6508517	1.1571681	0.3860772	0.2302	1.2301833	1.2530755	0.9729	4.8214
2010 Existing WB	51	1,3 Butadiene	0.002965295	0.0041658	0.0013303	0.0034862	0.002089	0.0031449	0.0035106	0.002418	0.02733
2010 Existing WB	51	Acetaldehyde	0.006232358	0.019668	0.0037024	0.0047649	0.002855	0.005491	0.0061662	0.003976	0.028792
2010 Existing WB	51	Acrolein	0.00049941	0.0023901	0.0005042	0.0013554	0.000812	0.0003381	0.0003772	0.000242	0.00165
2010 Existing WB	51	Benzene	0.025407457	0.0071704	0.0180864	0.0077469	0.004642	0.0309893	0.0327919	0.024126	0.073728
2010 Existing WB	51	Formaldehyde	0.011928063	0.0534037	0.0076194	0.0149526	0.008958	0.0086126	0.0096016	0.006028	0.065744
2010 Existing WB	51	PM10	0.048467369	0.2636441	0.0705837	0.0838205	0.0939	0.0256024	0.0258655	0.0249	0.0371
2010 Existing WB	53	SO2	0.008133678	0.0096494	0.0166105	0.00409	0.0021	0.0087632	0.0114	0.0068	0.0033
2010 Existing WB	53	CO	11.16943223	3.8531308	18.712707	0.728815	0.8879	13.735064	13.702909	10.5592	21.4569
2010 Existing WB	53	NOX	1.802674766	10.233855	2.6805735	0.8680072	0.6205	1.0589417	1.1563599	0.7312	1.0945
2010 Existing WB	53	VOC	1.040658282	0.6393472	1.1447364	0.3823162	0.2282	1.2184866	1.2421083	0.9633	4.8214
2010 Existing WB	53	1,3 Butadiene	0.002942181	0.004092	0.0013043	0.0034517	0.00207	0.0031241	0.003485	0.002404	0.02733
2010 Existing WB	53	Acetaldehyde	0.006171885	0.0193201	0.0036288	0.0047182	0.002829	0.0054547	0.0061222	0.003954	0.028792
2010 Existing WB	53	Acrolein	0.000493221	0.0023481	0.0004946	0.0013422	0.000805	0.0003356	0.0003742	0.00024	0.00165
2010 Existing WB	53	Benzene	0.025209462	0.0070436	0.017817	0.0076716	0.004601	0.0307492	0.0325406	0.023949	0.073728
2010 Existing WB	53	Formaldehyde	0.011795977	0.0524592	0.0074687	0.0148062	0.008879	0.0085569	0.0095347	0.005996	0.065744
2010 Existing WB	53	PM10	0.048467369	0.2636441	0.0705837	0.0838205	0.0939	0.0256024	0.0258655	0.0249	0.0371

3. 2010 Summer Emission Rates for Existing Conditions (grams per mile)

Scenario	Speed	Name	CompositeEF	HDDV	HDGV	LDDT	LDDV	LDGT1	LDGT2	LDGV	MC
2010 Existing WB	54	SO2	0.008133678	0.0096494	0.0166105	0.00409	0.0021	0.0087632	0.0114	0.0068	0.0033
2010 Existing WB	54	CO	11.24988882	3.8809807	19.02377	0.7312635	0.8908	13.829768	13.794205	10.6398	21.4569
2010 Existing WB	54	NOX	1.828165079	10.471851	2.6980829	0.8889673	0.6353	1.0621785	1.1595582	0.7331	1.1062
2010 Existing WB	54	VOC	1.035706644	0.6339068	1.138912	0.3804878	0.2273	1.2128986	1.236941	0.9588	4.8214
2010 Existing WB	54	1,3 Butadiene	0.002931433	0.0040575	0.0012917	0.0034364	0.002062	0.0031139	0.0034727	0.002398	0.02733
2010 Existing WB	54	Acetaldehyde	0.00614363	0.019156	0.0035948	0.0046958	0.002817	0.0054379	0.0061016	0.003944	0.028792
2010 Existing WB	54	Acrolein	0.000490194	0.002328	0.0004895	0.0013361	0.000802	0.0003344	0.0003722	0.000239	0.00165
2010 Existing WB	54	Benzene	0.025116402	0.0069838	0.0176899	0.007636	0.004581	0.0306365	0.0324216	0.023866	0.073728
2010 Existing WB	54	Formaldehyde	0.011733502	0.0520135	0.0073978	0.014737	0.008842	0.00853	0.009503	0.005981	0.065744
2010 Existing WB	54	PM10	0.048467369	0.2636441	0.0705837	0.0838205	0.0939	0.0256024	0.0258655	0.0249	0.0371
2010 Existing WB	55	SO2	0.008133678	0.0096494	0.0166105	0.00409	0.0021	0.0087632	0.0114	0.0068	0.0033
2010 Existing WB	55	CO	11.32743339	3.9077887	19.323576	0.7336111	0.8937	13.921051	13.882132	10.7175	21.4569
2010 Existing WB	55	NOX	1.852754541	10.701226	2.7150261	0.9091149	0.6496	1.0653969	1.162691	0.7349	1.1175
2010 Existing WB	55	VOC	1.030935044	0.6286351	1.133222	0.3788594	0.2264	1.2076106	1.2319738	0.9544	4.8214
2010 Existing WB	55	1,3 Butadiene	0.002920405	0.0040238	0.00128	0.0034202	0.002053	0.0031037	0.0034613	0.002391	0.02733
2010 Existing WB	55	Acetaldehyde	0.00611601	0.0189975	0.003561	0.0046745	0.002806	0.0054212	0.0060813	0.003934	0.028792
2010 Existing WB	55	Acrolein	0.000487819	0.0023087	0.0004854	0.00133	0.000798	0.0003332	0.0003712	0.000239	0.00165
2010 Existing WB	55	Benzene	0.025025971	0.0069261	0.0175672	0.0076015	0.004563	0.0305268	0.0323073	0.023785	0.073728
2010 Existing WB	55	Formaldehyde	0.011673537	0.0515835	0.0073295	0.0146699	0.008806	0.0085043	0.0094727	0.005967	0.065744
2010 Existing WB	55	PM10	0.048467369	0.2636441	0.0705837	0.0838205	0.0939	0.0256024	0.0258655	0.0249	0.0371

4. 2010 Winter Emission Rates for Existing Conditions (grams per mile)

Scenario	Speed	Name	CompositeEF	HDDV	HDGV	LDDT	LDDV	LDGT1	LDGT2	LDGV	MC
2010 Existing EB	24	SO2	0.008107901	0.0096494	0.016707	0.00409	0.0021	0.0086816	0.0114	0.0068	0.0033
2010 Existing EB	24	CO	19.00643201	6.4380378	33.733118	0.955844	1.1641	23.558883	22.92759	17.98	29.4867
2010 Existing EB	24	NOX	1.766388215	8.4961338	2.2209993	0.715076	0.5122	1.2591743	1.384338	0.8308	1.0362
2010 Existing EB	24	VOC	1.307975365	1.1751548	1.6959973	0.558258	0.3222	1.5211548	1.622873	1.1297	4.7616
2010 Existing EB	24	1,3 Butadiene	0.004601557	0.0075217	0.0045357	0.005041	0.002928	0.0048731	0.005528	0.003532	0.036837
2010 Existing EB	24	Acetaldehyde	0.010300655	0.0355123	0.0126213	0.00689	0.004002	0.0093137	0.010551	0.005705	0.038808
2010 Existing EB	24	Acrolein	0.000890309	0.0043155	0.0017206	0.00196	0.001139	0.000611	0.000689	0.000412	0.002224
2010 Existing EB	24	Benzene	0.034372477	0.0129472	0.0412255	0.011203	0.006507	0.0425631	0.046188	0.031086	0.08304
2010 Existing EB	24	Formaldehyde	0.019565456	0.0964258	0.0259767	0.021622	0.012558	0.0135173	0.015364	0.008578	0.088615
2010 Existing EB	24	PM10	0.04847786	0.2636441	0.0704874	0.083821	0.0939	0.0256024	0.025966	0.0249	0.0371
2010 Existing EB	25	SO2	0.008107896	0.0096494	0.0167047	0.00409	0.0021	0.0086816	0.0114	0.0068	0.0033
2010 Existing EB	25	CO	18.87608213	6.1654946	32.257663	0.931867	1.135	23.436173	22.80742	17.8765	29.0164
2010 Existing EB	25	NOX	1.748329208	8.3895476	2.2367432	0.705714	0.5056	1.2488983	1.373149	0.8237	1.0504
2010 Existing EB	25	VOC	1.290522362	1.1386362	1.6373851	0.546264	0.3158	1.5035924	1.605277	1.1163	4.7143
2010 Existing EB	25	1,3 Butadiene	0.004533273	0.007288	0.0042874	0.004933	0.00287	0.0048164	0.005465	0.003491	0.036334
2010 Existing EB	25	Acetaldehyde	0.010111378	0.0344088	0.0119305	0.006742	0.003922	0.0092047	0.010429	0.005637	0.038278
2010 Existing EB	25	Acrolein	0.000871286	0.0041817	0.0016266	0.001919	0.001116	0.0006033	0.000681	0.000407	0.002194
2010 Existing EB	25	Benzene	0.03393851	0.0125448	0.0392262	0.010962	0.006377	0.0420592	0.045652	0.030717	0.08203
2010 Existing EB	25	Formaldehyde	0.019151672	0.0934295	0.024555	0.021157	0.012308	0.0133602	0.015187	0.008476	0.087405
2010 Existing EB	25	PM10	0.048477867	0.2636441	0.0704904	0.083821	0.0939	0.0256024	0.025966	0.0249	0.0371
2010 Existing EB	26	SO2	0.008107889	0.0096494	0.0167017	0.00409	0.0021	0.0086816	0.0114	0.0068	0.0033
2010 Existing EB	26	CO	18.78488886	5.9195725	30.98492	0.910236	1.1087	23.358758	22.73126	17.8105	28.4114
2010 Existing EB	26	NOX	1.733797706	8.3122969	2.2584843	0.698898	0.5007	1.2393407	1.362859	0.8173	1.0693
2010 Existing EB	26	VOC	1.275849407	1.1011263	1.5844035	0.533965	0.3092	1.4898085	1.59168	1.1056	4.662
2010 Existing EB	26	1,3 Butadiene	0.004477139	0.0070478	0.0040633	0.004821	0.00281	0.0047767	0.005419	0.003462	0.03578
2010 Existing EB	26	Acetaldehyde	0.009942943	0.0332752	0.0113067	0.00659	0.00384	0.0091282	0.010342	0.00559	0.037694
2010 Existing EB	26	Acrolein	0.000853197	0.0040439	0.001541	0.001875	0.001093	0.0005975	0.000675	0.000403	0.00216
2010 Existing EB	26	Benzene	0.033611358	0.0121313	0.0374212	0.010715	0.006244	0.0416958	0.045265	0.03045	0.080914
2010 Existing EB	26	Formaldehyde	0.018764312	0.0903521	0.0232714	0.02068	0.01205	0.0132491	0.01506	0.008405	0.086071
2010 Existing EB	26	PM10	0.0484517	0.2636441	0.0704046	0.083821	0.0939	0.0255208	0.025966	0.0249	0.0371

4. 2010 Winter Emission Rates for Existing Conditions (grams per mile)

Scenario	Speed	Name	CompositeEF	HDDV	HDGV	LDDT	LDDV	LDGT1	LDGT2	LDGV	MC
2010 Existing EB	28	SO2	0.008107706	0.0096494	0.0166158	0.00409	0.0021	0.0086816	0.0114	0.0068	0.0033
2010 Existing EB	28	CO	18.6220159	5.4804536	28.71229	0.871668	1.0618	23.220489	22.59524	17.6926	27.3311
2010 Existing EB	28	NOX	1.707759521	8.1742651	2.2973774	0.686788	0.4921	1.2222807	1.344443	0.8057	1.103
2010 Existing EB	28	VOC	1.249614265	1.0341543	1.4896618	0.511911	0.2975	1.4652373	1.567352	1.0864	4.5687
2010 Existing EB	28	1,3 Butadiene	0.004377237	0.0066192	0.0036635	0.004623	0.002702	0.0047056	0.005338	0.003411	0.034789
2010 Existing EB	28	Acetaldehyde	0.009642942	0.0312515	0.0101935	0.006319	0.003693	0.0089923	0.010187	0.005507	0.03665
2010 Existing EB	28	Acrolein	0.000821841	0.0037979	0.0013897	0.001798	0.001051	0.0005882	0.000664	0.000397	0.0021
2010 Existing EB	28	Benzene	0.0330272	0.011394	0.0341974	0.010274	0.006005	0.0410469	0.044574	0.029973	0.078923
2010 Existing EB	28	Formaldehyde	0.018073383	0.0848568	0.0209802	0.019828	0.01159	0.0130521	0.014834	0.008279	0.083688
2010 Existing EB	28	PM10	0.048487295	0.2636441	0.0704936	0.083821	0.0939	0.0255208	0.025866	0.025	0.0371
2010 Existing EB	31	SO2	0.008133689	0.0096494	0.0166158	0.00409	0.0021	0.0087632	0.0114	0.0068	0.0033
2010 Existing EB	31	CO	18.47749061	4.9451811	25.993172	0.824728	1.0046	23.120607	22.49691	17.6032	25.9113
2010 Existing EB	31	NOX	1.681074584	8.0394777	2.352277	0.674884	0.4837	1.2040391	1.324763	0.793	1.1469
2010 Existing EB	31	VOC	1.215012874	0.948873	1.3730135	0.483958	0.2825	1.432147	1.534228	1.0611	4.4466
2010 Existing EB	31	1,3 Butadiene	0.004242041	0.0060735	0.0031714	0.00437	0.002566	0.0046043	0.005222	0.003339	0.033493
2010 Existing EB	31	Acetaldehyde	0.009248137	0.0286739	0.0088251	0.005973	0.003507	0.0088004	0.009967	0.005392	0.035285
2010 Existing EB	31	Acrolein	0.000780305	0.0034843	0.0012027	0.001699	0.000998	0.0005742	0.000649	0.000388	0.002022
2010 Existing EB	31	Benzene	0.032228755	0.0104538	0.0302333	0.009711	0.005702	0.040146	0.043607	0.029319	0.076318
2010 Existing EB	31	Formaldehyde	0.017175136	0.0778578	0.0181643	0.018743	0.011005	0.0127729	0.014513	0.008106	0.080571
2010 Existing EB	31	PM10	0.048467358	0.2636441	0.0705784	0.083821	0.0939	0.0256024	0.025866	0.0249	0.0371
2010 Existing EB	41	SO2	0.008133678	0.0096494	0.0166105	0.00409	0.0021	0.0087632	0.0114	0.0068	0.0033
2010 Existing EB	41	CO	19.05999773	3.9541926	21.571207	0.737692	0.8986	24.003355	23.35875	18.3014	22.7942
2010 Existing EB	41	NOX	1.711602964	8.284175	2.5402714	0.696454	0.499	1.2122575	1.331211	0.799	1.251
2010 Existing EB	41	VOC	1.139282326	0.7521511	1.1362505	0.419314	0.248	1.3605192	1.462507	1.0071	4.1686
2010 Existing EB	41	1,3 Butadiene	0.003949749	0.0048139	0.0021865	0.003786	0.002251	0.0043933	0.004977	0.003194	0.030543
2010 Existing EB	41	Acetaldehyde	0.008375173	0.0227289	0.0060847	0.005175	0.003076	0.0084026	0.009507	0.005164	0.032177
2010 Existing EB	41	Acrolein	0.000687244	0.0027624	0.0008293	0.001472	0.000875	0.0005462	0.000615	0.000369	0.001844
2010 Existing EB	41	Benzene	0.030548408	0.0082865	0.0222678	0.008415	0.005002	0.0382529	0.041563	0.027983	0.070388
2010 Existing EB	41	Formaldehyde	0.015162848	0.0617161	0.0125229	0.016241	0.009654	0.0121968	0.013843	0.007768	0.073474
2010 Existing EB	41	PM10	0.048467369	0.2636441	0.0705837	0.083821	0.0939	0.0256024	0.025866	0.0249	0.0371

4. 2010 Winter Emission Rates for Existing Conditions (grams per mile)

Scenario	Speed	Name	CompositeEF	HDDV	HDGV	LDDT	LDDV	LDGT1	LDGT2	LDGV	MC
2010 Existing EB	52	SO2	0.008133678	0.0096494	0.0166105	0.00409	0.0021	0.0087632	0.0114	0.0068	0.0033
2010 Existing EB	52	CO	20.21645408	3.8242321	22.741996	0.726264	0.8848	25.47472	24.7951	19.4844	22.3646
2010 Existing EB	52	NOX	1.913930193	9.9866567	2.7479599	0.846233	0.6051	1.2598279	1.377235	0.8332	1.3618
2010 Existing EB	52	VOC	1.087391748	0.6449771	1.0234243	0.384146	0.2292	1.3073802	1.410307	0.9669	4.1117
2010 Existing EB	52	1,3 Butadiene	0.003775983	0.0041281	0.0017623	0.003469	0.002079	0.0042539	0.004814	0.003102	0.029938
2010 Existing EB	52	Acetaldehyde	0.00787441	0.0194906	0.0049025	0.004741	0.002842	0.0081419	0.009205	0.005021	0.03154
2010 Existing EB	52	Acrolein	0.000634883	0.0023685	0.0006687	0.001349	0.000809	0.0005274	0.000594	0.000358	0.001807
2010 Existing EB	52	Benzene	0.029447057	0.0071058	0.0187452	0.007708	0.004621	0.0369567	0.040173	0.027086	0.069173
2010 Existing EB	52	Formaldehyde	0.014033735	0.0529223	0.0100911	0.014877	0.008918	0.0118201	0.013405	0.007559	0.072019
2010 Existing EB	52	PM10	0.048467369	0.2636441	0.0705837	0.083821	0.0939	0.0256024	0.025866	0.0249	0.0371
2010 Existing EB	54	SO2	0.008133678	0.0096494	0.0166105	0.00409	0.0021	0.0087632	0.0114	0.0068	0.0033
2010 Existing EB	54	CO	20.43121188	3.8809807	23.526284	0.731263	0.8908	25.736285	25.05046	19.6947	22.3646
2010 Existing EB	54	NOX	1.968024184	10.471851	2.7849013	0.888967	0.6353	1.2686567	1.385965	0.8396	1.3922
2010 Existing EB	54	VOC	1.078587241	0.6339068	1.0118806	0.380488	0.2273	1.2974722	1.400607	0.9593	4.1117
2010 Existing EB	54	1,3 Butadiene	0.003749996	0.0040575	0.0017282	0.003436	0.002062	0.0042287	0.004785	0.003085	0.029938
2010 Existing EB	54	Acetaldehyde	0.007809664	0.019156	0.0048087	0.004696	0.002817	0.0080959	0.009151	0.004996	0.03154
2010 Existing EB	54	Acrolein	0.000628412	0.002328	0.0006559	0.001336	0.000802	0.0005238	0.00059	0.000356	0.001807
2010 Existing EB	54	Benzene	0.029257444	0.0069838	0.0184435	0.007636	0.004581	0.0367224	0.039923	0.026922	0.069173
2010 Existing EB	54	Formaldehyde	0.013898137	0.0520135	0.0098972	0.014737	0.008842	0.0117538	0.013326	0.007522	0.072019
2010 Existing EB	54	PM10	0.048467369	0.2636441	0.0705837	0.083821	0.0939	0.0256024	0.025866	0.0249	0.0371
2010 Existing EB	55	SO2	0.008133678	0.0096494	0.0166105	0.00409	0.0021	0.0087632	0.0114	0.0068	0.0033
2010 Existing EB	55	CO	20.53274424	3.9077887	23.897103	0.733611	0.8937	25.859989	25.17119	19.7941	22.3646
2010 Existing EB	55	NOX	1.993579515	10.701226	2.8023891	0.909115	0.6496	1.2728119	1.390096	0.8426	1.4065
2010 Existing EB	55	VOC	1.074401829	0.6286351	1.0064453	0.378859	0.2264	1.2927419	1.396007	0.9557	4.1117
2010 Existing EB	55	1,3 Butadiene	0.003737848	0.0040238	0.0017124	0.00342	0.002053	0.0042171	0.004772	0.003077	0.029938
2010 Existing EB	55	Acetaldehyde	0.007778939	0.0189975	0.0047642	0.004674	0.002806	0.0080741	0.009126	0.004984	0.03154
2010 Existing EB	55	Acrolein	0.000625404	0.0023087	0.0006492	0.00133	0.000798	0.0005225	0.000588	0.000355	0.001807
2010 Existing EB	55	Benzene	0.0291679	0.0069261	0.0183012	0.007601	0.004563	0.0366112	0.039805	0.026845	0.069173
2010 Existing EB	55	Formaldehyde	0.013833644	0.0515835	0.0098054	0.01467	0.008806	0.0117222	0.013289	0.007504	0.072019
2010 Existing EB	55	PM10	0.048467369	0.2636441	0.0705837	0.083821	0.0939	0.0256024	0.025866	0.0249	0.0371

4. 2010 Winter Emission Rates for Existing Conditions (grams per mile)

Scenario	Speed	Name	CompositeEF	HDDV	HDGV	LDDT	LDDV	LDGT1	LDGT2	LDGV	MC
2010 Existing WB	50	SO2	0.008133678	0.0096494	0.0166105	0.00409	0.0021	0.0087632	0.0114	0.0068	0.0033
2010 Existing WB	50	CO	19.98452678	3.7630152	21.894914	0.720857	0.8782	25.192213	24.5193	19.2573	22.3646
2010 Existing WB	50	NOX	1.855516051	9.4626451	2.7080764	0.800139	0.5724	1.2502991	1.367806	0.8263	1.329
2010 Existing WB	50	VOC	1.096916949	0.6569089	1.0358954	0.38811	0.2313	1.3181538	1.420774	0.9751	4.1117
2010 Existing WB	50	1,3 Butadiene	0.003803231	0.0042047	0.0017983	0.003505	0.002098	0.0042806	0.004845	0.003119	0.029938
2010 Existing WB	50	Acetaldehyde	0.007945075	0.0198521	0.0050043	0.004789	0.002868	0.0081925	0.009263	0.005049	0.03154
2010 Existing WB	50	Acrolein	0.000641819	0.0024128	0.0006821	0.001363	0.000816	0.0005311	0.000598	0.00036	0.001807
2010 Existing WB	50	Benzene	0.029651478	0.0072377	0.019071	0.007788	0.004663	0.0372099	0.040444	0.027262	0.069173
2010 Existing WB	50	Formaldehyde	0.014180306	0.0539038	0.0103	0.01503	0.009	0.0118924	0.013488	0.007599	0.072019
2010 Existing WB	50	PM10	0.048467369	0.2636441	0.0705837	0.083821	0.0939	0.0256024	0.025866	0.0249	0.0371
2010 Existing WB	51	SO2	0.008133678	0.0096494	0.0166105	0.00409	0.0021	0.0087632	0.0114	0.0068	0.0033
2010 Existing WB	51	CO	20.10273254	3.7942455	22.326823	0.723612	0.8816	25.336241	24.6599	19.373	22.3646
2010 Existing WB	51	NOX	1.885296699	9.7298034	2.7284005	0.823644	0.5891	1.2551727	1.372637	0.8298	1.3457
2010 Existing WB	51	VOC	1.092044078	0.6508517	1.0295449	0.386077	0.2302	1.3126394	1.415407	0.9709	4.1117
2010 Existing WB	51	1,3 Butadiene	0.003789108	0.0041658	0.0017797	0.003486	0.002089	0.0042666	0.00483	0.00311	0.029938
2010 Existing WB	51	Acetaldehyde	0.0079093	0.019668	0.0049527	0.004765	0.002855	0.008167	0.009234	0.005035	0.03154
2010 Existing WB	51	Acrolein	0.000638179	0.0023901	0.000675	0.001355	0.000812	0.0005289	0.000596	0.000359	0.001807
2010 Existing WB	51	Benzene	0.029547067	0.0071704	0.0189048	0.007747	0.004642	0.0370807	0.040306	0.027172	0.069173
2010 Existing WB	51	Formaldehyde	0.014105733	0.0534037	0.0101936	0.014953	0.008958	0.0118555	0.013445	0.007579	0.072019
2010 Existing WB	51	PM10	0.048467369	0.2636441	0.0705837	0.083821	0.0939	0.0256024	0.025866	0.0249	0.0371
2010 Existing WB	53	SO2	0.008133678	0.0096494	0.0166105	0.00409	0.0021	0.0087632	0.0114	0.0068	0.0033
2010 Existing WB	53	CO	20.32583906	3.8531308	23.141585	0.728815	0.8879	25.607968	24.92516	19.5915	22.3646
2010 Existing WB	53	NOX	1.941498685	10.233855	2.7667597	0.868007	0.6205	1.2643015	1.381666	0.8365	1.3773
2010 Existing WB	53	VOC	1.082890218	0.6393472	1.0175388	0.382316	0.2282	1.3023394	1.405307	0.963	4.1117
2010 Existing WB	53	1,3 Butadiene	0.003762642	0.004092	0.0017443	0.003452	0.00207	0.0042413	0.004799	0.003093	0.029938
2010 Existing WB	53	Acetaldehyde	0.007841853	0.0193201	0.0048545	0.004718	0.002829	0.0081187	0.009178	0.005009	0.03154
2010 Existing WB	53	Acrolein	0.000631759	0.0023481	0.0006618	0.001342	0.000805	0.000526	0.000592	0.000357	0.001807
2010 Existing WB	53	Benzene	0.029350766	0.0070436	0.018592	0.007672	0.004601	0.0368375	0.040046	0.027003	0.069173
2010 Existing WB	53	Formaldehyde	0.013964406	0.0524592	0.0099918	0.014806	0.008879	0.011786	0.013364	0.00754	0.072019
2010 Existing WB	53	PM10	0.048467369	0.2636441	0.0705837	0.083821	0.0939	0.0256024	0.025866	0.0249	0.0371

4. 2010 Winter Emission Rates for Existing Conditions (grams per mile)

Scenario	Speed	Name	CompositeEF	HDDV	HDGV	LDDT	LDDV	LDGT1	LDGT2	LDGV	MC
2010 Existing WB	54	SO2	0.008133678	0.0096494	0.0166105	0.00409	0.0021	0.0087632	0.0114	0.0068	0.0033
2010 Existing WB	54	CO	20.43121188	3.8809807	23.526284	0.731263	0.8908	25.736285	25.05046	19.6947	22.3646
2010 Existing WB	54	NOX	1.968024184	10.471851	2.7849013	0.888967	0.6353	1.2686567	1.385965	0.8396	1.3922
2010 Existing WB	54	VOC	1.078587241	0.6339068	1.0118806	0.380488	0.2273	1.2974722	1.400607	0.9593	4.1117
2010 Existing WB	54	1,3 Butadiene	0.003749996	0.0040575	0.0017282	0.003436	0.002062	0.0042287	0.004785	0.003085	0.029938
2010 Existing WB	54	Acetaldehyde	0.007809664	0.019156	0.0048087	0.004696	0.002817	0.0080959	0.009151	0.004996	0.03154
2010 Existing WB	54	Acrolein	0.000628412	0.002328	0.0006559	0.001336	0.000802	0.0005238	0.00059	0.000356	0.001807
2010 Existing WB	54	Benzene	0.029257444	0.0069838	0.0184435	0.007636	0.004581	0.0367224	0.039923	0.026922	0.069173
2010 Existing WB	54	Formaldehyde	0.013898137	0.0520135	0.0098972	0.014737	0.008842	0.0117538	0.013326	0.007522	0.072019
2010 Existing WB	54	PM10	0.048467369	0.2636441	0.0705837	0.083821	0.0939	0.0256024	0.025866	0.0249	0.0371
2010 Existing WB	55	SO2	0.008133678	0.0096494	0.0166105	0.00409	0.0021	0.0087632	0.0114	0.0068	0.0033
2010 Existing WB	55	CO	20.53274424	3.9077887	23.897103	0.733611	0.8937	25.859989	25.17119	19.7941	22.3646
2010 Existing WB	55	NOX	1.993579515	10.701226	2.8023891	0.909115	0.6496	1.2728119	1.390096	0.8426	1.4065
2010 Existing WB	55	VOC	1.074401829	0.6286351	1.0064453	0.378859	0.2264	1.2927419	1.396007	0.9557	4.1117
2010 Existing WB	55	1,3 Butadiene	0.003737848	0.0040238	0.0017124	0.00342	0.002053	0.0042171	0.004772	0.003077	0.029938
2010 Existing WB	55	Acetaldehyde	0.007778939	0.0189975	0.0047642	0.004674	0.002806	0.0080741	0.009126	0.004984	0.03154
2010 Existing WB	55	Acrolein	0.000625404	0.0023087	0.0006492	0.00133	0.000798	0.0005225	0.000588	0.000355	0.001807
2010 Existing WB	55	Benzene	0.0291679	0.0069261	0.0183012	0.007601	0.004563	0.0366112	0.039805	0.026845	0.069173
2010 Existing WB	55	Formaldehyde	0.013833644	0.0515835	0.0098054	0.01467	0.008806	0.0117222	0.013289	0.007504	0.072019
2010 Existing WB	55	PM10	0.048467369	0.2636441	0.0705837	0.083821	0.0939	0.0256024	0.025866	0.0249	0.0371

5. 2035 Summer Emission Factors for Managed Lanes (ML) and No Action Alternative (grams per mile)

Scenario	Speed	Name	CompositeEF	HDDV	HDGV	LDDT	LDDV	LDGT1	LDGT2	LDGV	MC
2035 ML EB	22	SO2	0.008103115	0.009582756	0.016382837	0.0041	0.0022	0.0088	0.0115	0.0067	0.0033
2035 ML EB	22	CO	5.89832655	0.646404723	25.45205773	0.4144	0.7206	6.943819278	6.869875613	6.0065	30.3964
2035 ML EB	22	NOX	0.352822709	0.443268056	0.128995516	0.1146	0.0259	0.392815292	0.444661814	0.2926	0.8011
2035 ML EB	22	VOC	0.520480655	0.628531337	0.536089063	0.1377	0.0615	0.556900044	0.567931356	0.4542	4.9136
2035 ML EB	22	1,3 Butadiene	0.001728794	0.004019422	0.000604697	0.001239	0.000554	0.001637087	0.001736917	0.001198	0.035088
2035 ML EB	22	Acetaldehyde	0.004127757	0.018976877	0.00251969	0.001694	0.000757	0.002845695	0.003007532	0.002099	0.036965
2035 ML EB	22	Acrolein	0.000364986	0.002306412	0.000113118	0.000482	0.000215	0.000178385	0.000188588	0.000126	0.002118
2035 ML EB	22	Benzene	0.013139175	0.006918593	0.011116015	0.002754	0.001231	0.015818355	0.016562423	0.011821	0.083905
2035 ML EB	22	Formaldehyde	0.008672378	0.051526767	0.004157395	0.005316	0.002375	0.004538202	0.004787323	0.003269	0.084407
2035 ML EB	22	PM10	0.02701278	0.050887771	0.030959176	0.0297	0.0297	0.0247	0.0247	0.0246	0.0372
2035 ML EB	25	SO2	0.008149216	0.009582756	0.016382587	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 ML EB	25	CO	5.73075278	0.564733707	22.13822076	0.3777	0.6611	6.770323784	6.7075	5.8411	28.7168
2035 ML EB	25	NOX	0.340788614	0.42394694	0.132033872	0.1098	0.0248	0.381081611	0.431345814	0.2816	0.8377
2035 ML EB	25	VOC	0.492939917	0.568847449	0.491235067	0.1277	0.0573	0.531284417	0.54257084	0.4316	4.7565
2035 ML EB	25	1,3 Butadiene	0.001633931	0.0036375	0.000508523	0.001149	0.000515	0.001566958	0.001662623	0.001147	0.033419
2035 ML EB	25	Acetaldehyde	0.003853738	0.017173828	0.002118218	0.001571	0.000704	0.002724278	0.002878926	0.002009	0.035207
2035 ML EB	25	Acrolein	0.000337544	0.0020871	9.50437E-05	0.000447	0.0002	0.000170201	0.000180261	0.000121	0.002018
2035 ML EB	25	Benzene	0.012516978	0.006261493	0.009689543	0.002554	0.001145	0.015120636	0.015837725	0.011283	0.08055
2035 ML EB	25	Formaldehyde	0.008038394	0.046631706	0.003494744	0.004929	0.00221	0.004345392	0.004582079	0.00313	0.080392
2035 ML EB	25	PM10	0.027058867	0.050887771	0.031052396	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 ML EB	27	SO2	0.008149212	0.009582756	0.016380656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 ML EB	27	CO	5.669815463	0.521341799	20.45595985	0.3582	0.6294	6.712802947	6.655365548	5.7837	27.4451
2035 ML EB	27	NOX	0.334308605	0.415686013	0.134450159	0.1077	0.0244	0.374505569	0.423988653	0.2754	0.8662
2035 ML EB	27	VOC	0.478382568	0.532759428	0.46666569	0.1216	0.0547	0.518585805	0.530139743	0.4199	4.6545
2035 ML EB	27	1,3 Butadiene	0.001587228	0.003406774	0.00045746	0.001095	0.000492	0.001539038	0.001632968	0.001126	0.032335
2035 ML EB	27	Acetaldehyde	0.00370757	0.016084298	0.001905057	0.001496	0.000672	0.002675622	0.002826615	0.001974	0.034065
2035 ML EB	27	Acrolein	0.00032165	0.001954742	8.51487E-05	0.000426	0.000191	0.000167017	0.000176261	0.000118	0.001952
2035 ML EB	27	Benzene	0.012232376	0.005863853	0.008924508	0.002433	0.001093	0.014818313	0.01552517	0.011045	0.078371
2035 ML EB	27	Formaldehyde	0.007685014	0.043673652	0.003143309	0.004695	0.00211	0.004267368	0.004499112	0.003075	0.077784
2035 ML EB	27	PM10	0.027058867	0.050887771	0.031052396	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371

5. 2035 Summer Emission Factors for Managed Lanes (ML) and No Action Alternative (grams per mile)

Scenario	Speed	Name	CompositeEF	HDDV	HDGV	LDDT	LDDV	LDGT1	LDGT2	LDGV	MC
2035 ML EB	29	SO2	0.0081492	0.009582756	0.0163748	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 ML EB	29	CO	5.617331235	0.48397005	19.00577352	0.3414	0.6022	6.663255028	6.610363871	5.7343	26.3488
2035 ML EB	29	NOX	0.32878557	0.408589879	0.136642327	0.1059	0.024	0.368966333	0.417629814	0.2701	0.8909
2035 ML EB	29	VOC	0.465833307	0.501651603	0.445462987	0.1164	0.0524	0.507652818	0.519441421	0.4098	4.5665
2035 ML EB	29	1,3 Butadiene	0.001547464	0.003207741	0.000413379	0.001048	0.000472	0.001515118	0.001606985	0.001109	0.0314
2035 ML EB	29	Acetaldehyde	0.003581615	0.015145532	0.001720888	0.001432	0.000645	0.002633517	0.002781305	0.001944	0.03308
2035 ML EB	29	Acrolein	0.000308661	0.001840766	7.70912E-05	0.000407	0.000184	0.000164017	0.000173261	0.000117	0.001896
2035 ML EB	29	Benzene	0.011986715	0.005521702	0.008264225	0.002328	0.001049	0.014557751	0.015255599	0.010839	0.076493
2035 ML EB	29	Formaldehyde	0.007380448	0.041123805	0.002839997	0.004493	0.002024	0.004199712	0.004427474	0.003028	0.075536
2035 ML EB	29	PM10	0.027058867	0.050887771	0.031052396	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 ML EB	30	SO2	0.008149003	0.009582756	0.016282837	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 ML EB	30	CO	5.593670768	0.467114635	18.35319106	0.3339	0.5899	6.640920304	6.590163871	5.712	25.8555
2035 ML EB	30	NOX	0.326282579	0.405373019	0.137588266	0.1051	0.0238	0.366437513	0.414800395	0.2677	0.9019
2035 ML EB	30	VOC	0.46014753	0.487642406	0.435892633	0.1141	0.0514	0.502700734	0.514608647	0.4052	4.5269
2035 ML EB	30	1,3 Butadiene	0.001529283	0.003118469	0.000393434	0.001026	0.000463	0.00150375	0.001595657	0.001101	0.03098
2035 ML EB	30	Acetaldehyde	0.003524792	0.014722465	0.001638704	0.001403	0.000633	0.002614781	0.002761649	0.00193	0.032637
2035 ML EB	30	Acrolein	0.000302583	0.001789148	7.312E-05	0.000399	0.00018	0.000162833	0.000171933	0.000116	0.00187
2035 ML EB	30	Benzene	0.011876435	0.005367714	0.007967317	0.002281	0.001029	0.014440206	0.015134649	0.010747	0.075648
2035 ML EB	30	Formaldehyde	0.007243195	0.039976356	0.002703851	0.004402	0.001985	0.004169792	0.00439549	0.003006	0.074525
2035 ML EB	30	PM10	0.027058868	0.050887771	0.031052596	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 ML EB	32	SO2	0.008149003	0.009582756	0.016282587	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 ML EB	32	CO	5.59395495	0.439675039	17.35674181	0.3216	0.5699	6.652089748	6.603163871	5.7171	24.8331
2035 ML EB	32	NOX	0.323621268	0.403728454	0.13999609	0.1047	0.0237	0.363800707	0.411703749	0.2647	0.9244
2035 ML EB	32	VOC	0.449238835	0.461248664	0.418871897	0.1096	0.0495	0.493359761	0.505244776	0.3962	4.446
2035 ML EB	32	1,3 Butadiene	0.001494383	0.002949771	0.000360323	0.000987	0.000446	0.001483094	0.001571674	0.001085	0.030121
2035 ML EB	32	Acetaldehyde	0.00341614	0.01392605	0.001499614	0.001348	0.000609	0.002578205	0.00272101	0.001902	0.031732
2035 ML EB	32	Acrolein	0.000290846	0.001692603	6.71032E-05	0.000384	0.000173	0.000159833	0.000168933	0.000114	0.001818
2035 ML EB	32	Benzene	0.01165859	0.005077298	0.007460707	0.002192	0.000991	0.014213594	0.014893111	0.010559	0.07392
2035 ML EB	32	Formaldehyde	0.006982104	0.037813765	0.002474586	0.004231	0.001912	0.004111743	0.004331196	0.002962	0.072458
2035 ML EB	32	PM10	0.027058872	0.050887771	0.031054527	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371

5. 2035 Summer Emission Factors for Managed Lanes (ML) and No Action Alternative (grams per mile)

Scenario	Speed	Name	CompositeEF	HDDV	HDGV	LDDT	LDDV	LDGT1	LDGT2	LDGV	MC
2035 ML EB	38	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 ML EB	38	CO	5.740932461	0.380353836	15.31845169	0.2949	0.5267	6.85113628	6.800310064	5.8852	22.5894
2035 ML EB	38	NOX	0.322656115	0.408406076	0.146690816	0.1059	0.024	0.363263902	0.410907104	0.2619	0.9762
2035 ML EB	38	VOC	0.425077884	0.399258542	0.379395493	0.0992	0.0451	0.473736149	0.485817034	0.376	4.2628
2035 ML EB	38	1,3 Butadiene	0.001425207	0.002552858	0.000285253	0.000893	0.000406	0.001451229	0.001534707	0.001059	0.028173
2035 ML EB	38	Acetaldehyde	0.003184152	0.012053181	0.001188261	0.00122	0.000555	0.002523948	0.002659061	0.001857	0.029681
2035 ML EB	38	Acrolein	0.000265318	0.001464974	5.30875E-05	0.000347	0.000158	0.000156281	0.000163933	0.000111	0.001701
2035 ML EB	38	Benzene	0.011249824	0.004394518	0.006309507	0.001984	0.000902	0.013825539	0.014473724	0.010206	0.070006
2035 ML EB	38	Formaldehyde	0.00640635	0.032727955	0.001960141	0.003829	0.00174	0.00402599	0.004233952	0.002893	0.067774
2035 ML EB	38	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 ML EB	39	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 ML EB	39	CO	5.784778917	0.373168769	15.09200057	0.2917	0.5214	6.90638142	6.854280645	5.9335	22.3115
2035 ML EB	39	NOX	0.323388988	0.410402402	0.147737337	0.1064	0.0241	0.364163902	0.411807104	0.2622	0.983
2035 ML EB	39	VOC	0.42203344	0.390824151	0.374092623	0.0978	0.0445	0.471468093	0.483584259	0.3734	4.239
2035 ML EB	39	1,3 Butadiene	0.001418284	0.002498951	0.000275364	0.00088	0.0004	0.001449677	0.001533379	0.001058	0.027921
2035 ML EB	39	Acetaldehyde	0.003156456	0.011799495	0.001148205	0.001203	0.000547	0.002522028	0.002655733	0.001854	0.029415
2035 ML EB	39	Acrolein	0.000262164	0.001433958	5.11247E-05	0.000342	0.000156	0.000156097	0.000163605	0.000111	0.001686
2035 ML EB	39	Benzene	0.011211453	0.004301783	0.006159491	0.001956	0.00089	0.013796546	0.01444143	0.010173	0.0695
2035 ML EB	39	Formaldehyde	0.006334701	0.032038521	0.001894967	0.003775	0.001717	0.004023517	0.004229625	0.002889	0.067167
2035 ML EB	39	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 ML EB	41	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 ML EB	41	CO	5.87871394	0.36216526	14.80417586	0.2868	0.5134	7.02312934	6.96845458	6.0356	21.9257
2035 ML EB	41	NOX	0.32561199	0.418098139	0.149937215	0.1083	0.0245	0.366400707	0.414305427	0.2632	0.9953
2035 ML EB	41	VOC	0.416328338	0.375761661	0.364499008	0.0953	0.0434	0.467150384	0.479285937	0.3684	4.2035
2035 ML EB	41	1,3 Butadiene	0.001404745	0.002403028	0.000259234	0.000857	0.000391	0.001446573	0.001528724	0.001054	0.027544
2035 ML EB	41	Acetaldehyde	0.003106683	0.01134445	0.001080187	0.001172	0.000534	0.002517188	0.00264975	0.001849	0.029017
2035 ML EB	41	Acrolein	0.000255946	0.001378523	4.81008E-05	0.000333	0.000152	0.000155281	0.000163277	0.00011	0.001663
2035 ML EB	41	Benzene	0.0111367	0.004136098	0.005899467	0.001905	0.000868	0.01373856	0.014375825	0.010106	0.068741
2035 ML EB	41	Formaldehyde	0.006205232	0.030803229	0.00178284	0.003677	0.001675	0.004016389	0.004219641	0.002881	0.066259
2035 ML EB	41	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371

5. 2035 Summer Emission Factors for Managed Lanes (ML) and No Action Alternative (grams per mile)

Scenario	Speed	Name	CompositeEF	HDDV	HDGV	LDDT	LDDV	LDGT1	LDGT2	LDGV	MC
2035 ML EB	44	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 ML EB	44	CO	6.021352449	0.3508182	14.60598081	0.2817	0.5051	7.198596011	7.139933548	6.1889	21.5938
2035 ML EB	44	NOX	0.329836324	0.433805274	0.153286461	0.1123	0.0254	0.370392721	0.418569298	0.2652	1.0111
2035 ML EB	44	VOC	0.408570967	0.356451285	0.352049119	0.092	0.042	0.461175036	0.473287614	0.3614	4.168
2035 ML EB	44	1,3 Butadiene	0.00138775	0.002279423	0.00023931	0.000828	0.000378	0.001442917	0.001523068	0.001049	0.027167
2035 ML EB	44	Acetaldehyde	0.003042284	0.010761508	0.00099805	0.001132	0.000517	0.002511059	0.002640439	0.001841	0.02862
2035 ML EB	44	Acrolein	0.000248776	0.001307867	4.49994E-05	0.000322	0.000147	0.000154913	0.000162277	0.00011	0.00164
2035 ML EB	44	Benzene	0.011033238	0.003923125	0.005577724	0.00184	0.00084	0.013656501	0.014282925	0.01001	0.067983
2035 ML EB	44	Formaldehyde	0.006038569	0.029220451	0.001646721	0.003552	0.001622	0.004005972	0.004205675	0.002869	0.065352
2035 ML EB	44	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 ML EB	46	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 ML EB	46	CO	6.117640467	0.346762131	14.65030084	0.2799	0.5022	7.315907125	7.254574709	6.2913	21.4851
2035 ML EB	46	NOX	0.333039513	0.448326317	0.155486335	0.1159	0.0262	0.37304793	0.421434846	0.2665	1.0247
2035 ML EB	46	VOC	0.403726407	0.345733835	0.344960887	0.0902	0.0412	0.457194133	0.469422066	0.3569	4.1547
2035 ML EB	46	1,3 Butadiene	0.001377853	0.002210774	0.000229265	0.000812	0.000371	0.001439813	0.001518413	0.001046	0.027026
2035 ML EB	46	Acetaldehyde	0.003005315	0.01043745	0.000954976	0.00111	0.000507	0.002506219	0.002633783	0.001835	0.028472
2035 ML EB	46	Acrolein	0.000244345	0.001268712	4.30274E-05	0.000316	0.000144	0.000154729	0.000161605	0.000109	0.001632
2035 ML EB	46	Benzene	0.010968089	0.003805456	0.005401937	0.001804	0.000825	0.013601699	0.014220992	0.009948	0.067699
2035 ML EB	46	Formaldehyde	0.005944678	0.028340637	0.001574703	0.003482	0.001592	0.003999028	0.004196364	0.00286	0.065013
2035 ML EB	46	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 ML EB	53	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 ML EB	53	CO	6.462801109	0.352909985	15.88183761	0.2826	0.5067	7.730288038	7.659701548	6.6529	21.4569
2035 ML EB	53	NOX	0.34721021	0.526132148	0.163337463	0.1354	0.0306	0.382568763	0.431860911	0.2714	1.0945
2035 ML EB	53	VOC	0.388906866	0.319378707	0.32625969	0.0858	0.0394	0.443536145	0.456027098	0.343	4.1457
2035 ML EB	53	1,3 Butadiene	0.001351371	0.002042211	0.000207162	0.000772	0.000354	0.001429764	0.001504446	0.001035	0.02693
2035 ML EB	53	Acetaldehyde	0.002911411	0.0096428	0.000861909	0.001055	0.000484	0.00249041	0.002611834	0.001816	0.028371
2035 ML EB	53	Acrolein	0.000233745	0.00117199	3.89767E-05	0.0003	0.000138	0.000153361	0.000159277	0.000108	0.001626
2035 ML EB	53	Benzene	0.010763178	0.003515552	0.00499604	0.001716	0.000787	0.013413827	0.014007899	0.009747	0.067508
2035 ML EB	53	Formaldehyde	0.005709209	0.026183019	0.001422448	0.003312	0.001519	0.00397517	0.004162431	0.002831	0.064783
2035 ML EB	53	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371

5. 2035 Summer Emission Factors for Managed Lanes (ML) and No Action Alternative (grams per mile)

Scenario	Speed	Name	CompositeEF	HDDV	HDGV	LDDT	LDDV	LDGT1	LDGT2	LDGV	MC
2035 ML EB	55	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 ML EB	55	CO	6.556480903	0.357928428	16.40036058	0.2849	0.5103	7.84192311	7.768842709	6.7502	21.4569
2035 ML EB	55	NOX	0.351560251	0.552009185	0.16543302	0.1419	0.0321	0.385123972	0.434759233	0.2728	1.1175
2035 ML EB	55	VOC	0.385310938	0.3140636	0.322266467	0.0849	0.039	0.440018436	0.45246155	0.3396	4.1457
2035 ML EB	55	1,3 Butadiene	0.001345553	0.002008489	0.0002032	0.000764	0.000351	0.00142766	0.001500119	0.001032	0.02693
2035 ML EB	55	Acetaldehyde	0.002891537	0.009482169	0.000845901	0.001044	0.000479	0.00248657	0.002605506	0.001811	0.028371
2035 ML EB	55	Acrolein	0.000231479	0.001152405	3.80324E-05	0.000297	0.000136	0.000152361	0.00015895	0.000108	0.001626
2035 ML EB	55	Benzene	0.010711915	0.00345731	0.004919103	0.001698	0.000779	0.013364209	0.013950967	0.009696	0.067508
2035 ML EB	55	Formaldehyde	0.005660074	0.025746119	0.00139551	0.003277	0.001504	0.003969226	0.004153448	0.002823	0.064783
2035 ML EB	55	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 ML WB	48	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 ML WB	48	CO	6.216853192	0.345649323	14.84616044	0.2794	0.5014	7.435810253	7.371748645	6.3959	21.4704
2035 ML WB	48	NOX	0.336680595	0.466584668	0.157786208	0.1205	0.0272	0.375721541	0.424433169	0.2679	1.0413
2035 ML WB	48	VOC	0.399120343	0.336577086	0.338571999	0.0887	0.0406	0.453176424	0.465423743	0.3526	4.15
2035 ML WB	48	1,3 Butadiene	0.001369463	0.002152515	0.000221177	0.000798	0.000365	0.001437524	0.001514085	0.001043	0.026976
2035 ML WB	48	Acetaldehyde	0.002973729	0.01016171	0.000920011	0.001091	0.000499	0.002501379	0.002627128	0.00183	0.028419
2035 ML WB	48	Acrolein	0.000240694	0.001235018	4.10781E-05	0.00031	0.000142	0.000153729	0.000161277	0.000109	0.001629
2035 ML WB	48	Benzene	0.01090536	0.00370465	0.005256969	0.001774	0.000812	0.013546528	0.014158732	0.009887	0.0676
2035 ML WB	48	Formaldehyde	0.005864705	0.027592548	0.001518564	0.003423	0.001567	0.003992715	0.004186381	0.002852	0.064893
2035 ML WB	48	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 ML WB	49	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 ML WB	49	CO	6.263474591	0.345158452	14.93811684	0.2792	0.501	7.492073796	7.426819225	6.4451	21.4635
2035 ML WB	49	NOX	0.338426292	0.475167807	0.158837711	0.1226	0.0277	0.377039944	0.425798717	0.2686	1.0491
2035 ML WB	49	VOC	0.396914243	0.332308623	0.335672717	0.088	0.0403	0.451245174	0.463590969	0.3505	4.1479
2035 ML WB	49	1,3 Butadiene	0.001365144	0.002124817	0.000217187	0.000792	0.000363	0.001435972	0.001512757	0.001041	0.026953
2035 ML WB	49	Acetaldehyde	0.002958793	0.010032546	0.000903987	0.001082	0.000495	0.002499458	0.002624472	0.001827	0.028395
2035 ML WB	49	Acrolein	0.000239068	0.001219482	4.09479E-05	0.000308	0.000141	0.000153729	0.000160277	0.000109	0.001627
2035 ML WB	49	Benzene	0.010875735	0.003657772	0.005189	0.001759	0.000806	0.013520719	0.014128765	0.009858	0.067553
2035 ML WB	49	Formaldehyde	0.005826896	0.027241402	0.001491597	0.003396	0.001555	0.003989243	0.004181725	0.002848	0.064837
2035 ML WB	49	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371

5. 2035 Summer Emission Factors for Managed Lanes (ML) and No Action Alternative (grams per mile)

Scenario	Speed	Name	CompositeEF	HDDV	HDGV	LDDT	LDDV	LDGT1	LDGT2	LDGV	MC
2035 ML WB	50	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 ML WB	50	CO	6.308226539	0.344673213	15.02635638	0.2789	0.5006	7.546145325	7.47962258	6.4923	21.4569
2035 ML WB	50	NOX	0.340053543	0.483377132	0.159878381	0.1247	0.0282	0.378258347	0.427131491	0.2692	1.0566
2035 ML WB	50	VOC	0.394849319	0.328218255	0.3327901	0.0873	0.04	0.449413924	0.461758195	0.3486	4.1457
2035 ML WB	50	1,3 Butadiene	0.001361329	0.002098698	0.000213232	0.000785	0.00036	0.00143442	0.00151043	0.00104	0.02693
2035 ML WB	50	Acetaldehyde	0.002944788	0.009908561	0.000888879	0.001074	0.000492	0.002497538	0.002621472	0.001825	0.028371
2035 ML WB	50	Acrolein	0.000237504	0.001204092	4.00563E-05	0.000305	0.00014	0.000153545	0.000160277	0.000109	0.001626
2035 ML WB	50	Benzene	0.010847547	0.003612796	0.005123196	0.001746	0.0008	0.013495462	0.014100127	0.009831	0.067508
2035 ML WB	50	Formaldehyde	0.005790536	0.026904127	0.001466498	0.003369	0.001543	0.003985955	0.004177397	0.002844	0.064783
2035 ML WB	50	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 ML WB	51	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 ML WB	51	CO	6.361764117	0.347538305	15.32270473	0.2802	0.5027	7.609966507	7.541960386	6.5479	21.4569
2035 ML WB	51	NOX	0.342542343	0.498203772	0.16103759	0.1284	0.029	0.379713555	0.42879704	0.27	1.0697
2035 ML WB	51	VOC	0.392764114	0.325115275	0.330567795	0.0868	0.0398	0.447409062	0.459725421	0.3466	4.1457
2035 ML WB	51	1,3 Butadiene	0.00135774	0.002079035	0.000211239	0.000781	0.000358	0.001432868	0.001508102	0.001038	0.02693
2035 ML WB	51	Acetaldehyde	0.002933353	0.009816416	0.000878984	0.001067	0.000489	0.002495434	0.002617817	0.001822	0.028371
2035 ML WB	51	Acrolein	0.000235974	0.001193143	3.90781E-05	0.000304	0.000139	0.000153545	0.000160277	0.000108	0.001626
2035 ML WB	51	Benzene	0.010818473	0.003579045	0.005079128	0.001735	0.000795	0.013467549	0.01406816	0.009802	0.067508
2035 ML WB	51	Formaldehyde	0.005762186	0.026654387	0.001450588	0.003349	0.001535	0.003982299	0.004172414	0.002839	0.064783
2035 ML WB	51	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 ML WB	52	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 ML WB	52	CO	6.413262851	0.350275412	15.60764844	0.2814	0.5047	7.671314078	7.601998193	6.6014	21.4569
2035 ML WB	52	NOX	0.344908382	0.512422719	0.162190692	0.132	0.0298	0.38115036	0.430362588	0.2707	1.0824
2035 ML WB	52	VOC	0.390817036	0.322240048	0.328364662	0.0863	0.0396	0.445422604	0.457859872	0.3448	4.1457
2035 ML WB	52	1,3 Butadiene	0.001354264	0.002060195	0.000209164	0.000776	0.000356	0.001431316	0.001506102	0.001036	0.02693
2035 ML WB	52	Acetaldehyde	0.002922051	0.009727893	0.000870836	0.001061	0.000487	0.002492514	0.002614489	0.001819	0.028371
2035 ML WB	52	Acrolein	0.000234734	0.001182127	3.90563E-05	0.000302	0.000138	0.000153361	0.000159277	0.000108	0.001626
2035 ML WB	52	Benzene	0.010790248	0.003546674	0.005037018	0.001725	0.000791	0.013440188	0.014036866	0.009774	0.067508
2035 ML WB	52	Formaldehyde	0.005735226	0.026414529	0.001436479	0.00333	0.001527	0.003978642	0.004167086	0.002835	0.064783
2035 ML WB	52	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371

5. 2035 Summer Emission Factors for Managed Lanes (ML) and No Action Alternative (grams per mile)

Scenario	Speed	Name	CompositeEF	HDDV	HDGV	LDDT	LDDV	LDGT1	LDGT2	LDGV	MC
2035 ML WB	53	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 ML WB	53	CO	6.462801109	0.352909985	15.88183761	0.2826	0.5067	7.730288038	7.659701548	6.6529	21.4569
2035 ML WB	53	NOX	0.34721021	0.526132148	0.163337463	0.1354	0.0306	0.382568763	0.431860911	0.2714	1.0945
2035 ML WB	53	VOC	0.388906866	0.319378707	0.32625969	0.0858	0.0394	0.443536145	0.456027098	0.343	4.1457
2035 ML WB	53	1,3 Butadiene	0.001351371	0.002042211	0.000207162	0.000772	0.000354	0.001429764	0.001504446	0.001035	0.02693
2035 ML WB	53	Acetaldehyde	0.002911411	0.0096428	0.000861909	0.001055	0.000484	0.00249041	0.002611834	0.001816	0.028371
2035 ML WB	53	Acrolein	0.000233745	0.00117199	3.89767E-05	0.0003	0.000138	0.000153361	0.000159277	0.000108	0.001626
2035 ML WB	53	Benzene	0.010763178	0.003515552	0.00499604	0.001716	0.000787	0.013413827	0.014007899	0.009747	0.067508
2035 ML WB	53	Formaldehyde	0.005709209	0.026183019	0.001422448	0.003312	0.001519	0.00397517	0.004162431	0.002831	0.064783
2035 ML WB	53	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 ML WB	54	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 ML WB	54	CO	6.510481696	0.355463751	16.14589217	0.2838	0.5085	7.787133179	7.715272128	6.7024	21.4569
2035 ML WB	54	NOX	0.34942187	0.539290978	0.164388635	0.1387	0.0313	0.383887166	0.433326459	0.2721	1.1062
2035 ML WB	54	VOC	0.387049542	0.316670945	0.324256192	0.0853	0.0392	0.441768089	0.454194324	0.3412	4.1457
2035 ML WB	54	1,3 Butadiene	0.001348311	0.002024951	0.000205159	0.000768	0.000352	0.001429028	0.001502446	0.001033	0.02693
2035 ML WB	54	Acetaldehyde	0.002901538	0.009560936	0.000853886	0.00105	0.000482	0.00248849	0.002608506	0.001814	0.028371
2035 ML WB	54	Acrolein	0.000232696	0.001162206	3.80563E-05	0.000299	0.000137	0.000153177	0.00015895	0.000108	0.001626
2035 ML WB	54	Benzene	0.010736892	0.00348593	0.004956141	0.001707	0.000783	0.013388018	0.013978933	0.009721	0.067508
2035 ML WB	54	Formaldehyde	0.0056841	0.025960468	0.001408541	0.003294	0.001512	0.003971698	0.004158103	0.002827	0.064783
2035 ML WB	54	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 ML WB	55	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 ML WB	55	CO	6.556480903	0.357928428	16.40036058	0.2849	0.5103	7.84192311	7.768842709	6.7502	21.4569
2035 ML WB	55	NOX	0.351560251	0.552009185	0.16543302	0.1419	0.0321	0.385123972	0.434759233	0.2728	1.1175
2035 ML WB	55	VOC	0.385310938	0.3140636	0.322266467	0.0849	0.039	0.440018436	0.45246155	0.3396	4.1457
2035 ML WB	55	1,3 Butadiene	0.001345553	0.002008489	0.0002032	0.000764	0.000351	0.00142766	0.001500119	0.001032	0.02693
2035 ML WB	55	Acetaldehyde	0.002891537	0.009482169	0.000845901	0.001044	0.000479	0.00248657	0.002605506	0.001811	0.028371
2035 ML WB	55	Acrolein	0.000231479	0.001152405	3.80324E-05	0.000297	0.000136	0.000152361	0.00015895	0.000108	0.001626
2035 ML WB	55	Benzene	0.010711915	0.00345731	0.004919103	0.001698	0.000779	0.013364209	0.013950967	0.009696	0.067508
2035 ML WB	55	Formaldehyde	0.005660074	0.025746119	0.00139551	0.003277	0.001504	0.003969226	0.004153448	0.002823	0.064783
2035 ML WB	55	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371

5. 2035 Summer Emission Factors for Managed Lanes (ML) and No Action Alternative (grams per mile)

Scenario	Speed	Name	CompositeEF	HDDV	HDGV	LDDT	LDDV	LDGT1	LDGT2	LDGV	MC
2035 No-Act EB	21	SO2	0.008103316	0.009582756	0.016476936	0.0041	0.0022	0.0088	0.0115	0.0067	0.0033
2035 No-Act EB	21	CO	5.964782801	0.678846605	26.76712168	0.4289	0.7443	7.012588031	6.934278968	6.0721	31.0629
2035 No-Act EB	21	NOX	0.357625728	0.450890041	0.127750534	0.1166	0.0264	0.397517722	0.449955105	0.297	0.7866
2035 No-Act EB	21	VOC	0.531390631	0.652249281	0.553923515	0.1417	0.0632	0.567104211	0.577962453	0.4631	4.976
2035 No-Act EB	21	1,3 Butadiene	0.001766213	0.004170994	0.000642753	0.001275	0.000569	0.001664375	0.001766901	0.001218	0.035751
2035 No-Act EB	21	Acetaldehyde	0.004236061	0.019692095	0.002678835	0.001743	0.000778	0.002893535	0.003058843	0.002134	0.037663
2035 No-Act EB	21	Acrolein	0.00037627	0.002393225	0.000120141	0.000496	0.000221	0.000181569	0.000191588	0.000129	0.002158
2035 No-Act EB	21	Benzene	0.013386335	0.007179277	0.011682659	0.002834	0.001265	0.016095206	0.016850306	0.012035	0.085237
2035 No-Act EB	21	Formaldehyde	0.008923943	0.053469181	0.004420618	0.005469	0.002441	0.004614962	0.004868617	0.003324	0.086001
2035 No-Act EB	21	PM10	0.02705908	0.050887771	0.031052014	0.0297	0.0297	0.0247	0.0247	0.0247	0.0372
2035 No-Act EB	22	SO2	0.008103115	0.009582756	0.016382837	0.0041	0.0022	0.0088	0.0115	0.0067	0.0033
2035 No-Act EB	22	CO	5.89832655	0.646404723	25.45205773	0.4144	0.7206	6.943819278	6.869875613	6.0065	30.3964
2035 No-Act EB	22	NOX	0.352822709	0.443268056	0.128995516	0.1146	0.0259	0.392815292	0.444661814	0.2926	0.8011
2035 No-Act EB	22	VOC	0.520480655	0.628531337	0.536089063	0.1377	0.0615	0.556900044	0.567931356	0.4542	4.9136
2035 No-Act EB	22	1,3 Butadiene	0.001728794	0.004019422	0.000604697	0.001239	0.000554	0.001637087	0.001736917	0.001198	0.035088
2035 No-Act EB	22	Acetaldehyde	0.004127757	0.018976877	0.00251969	0.001694	0.000757	0.002845695	0.003007532	0.002099	0.036965
2035 No-Act EB	22	Acrolein	0.000364986	0.002306412	0.000113118	0.000482	0.000215	0.000178385	0.000188588	0.000126	0.002118
2035 No-Act EB	22	Benzene	0.013139175	0.006918593	0.011116015	0.002754	0.001231	0.015818355	0.016562423	0.011821	0.083905
2035 No-Act EB	22	Formaldehyde	0.008672378	0.051526767	0.004157395	0.005316	0.002375	0.004538202	0.004787323	0.003269	0.084407
2035 No-Act EB	22	PM10	0.02701278	0.050887771	0.030959176	0.0297	0.0297	0.0247	0.0247	0.0246	0.0372
2035 No-Act EB	23	SO2	0.008149217	0.009582756	0.016382837	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 No-Act EB	23	CO	5.837565521	0.616811277	24.25142371	0.4011	0.6991	6.880910595	6.811072258	5.9465	29.7878
2035 No-Act EB	23	NOX	0.348448957	0.436268828	0.130050663	0.1129	0.0255	0.388531264	0.439868524	0.2886	0.8144
2035 No-Act EB	23	VOC	0.510508511	0.606906946	0.519878123	0.1341	0.06	0.547669487	0.55870026	0.446	4.8567
2035 No-Act EB	23	1,3 Butadiene	0.001694067	0.003881239	0.000569634	0.001207	0.00054	0.001611167	0.001710262	0.001179	0.034483
2035 No-Act EB	23	Acetaldehyde	0.004028333	0.018323683	0.002374497	0.001649	0.000738	0.002802038	0.002960221	0.002066	0.036328
2035 No-Act EB	23	Acrolein	0.000354922	0.002227064	0.000106162	0.000469	0.00021	0.000175385	0.000185261	0.000124	0.002082
2035 No-Act EB	23	Benzene	0.012913652	0.006680587	0.01059954	0.002682	0.0012	0.015565345	0.016299868	0.011626	0.08269
2035 No-Act EB	23	Formaldehyde	0.008442907	0.049753259	0.003917191	0.005176	0.002315	0.004468625	0.004712684	0.003219	0.082952
2035 No-Act EB	23	PM10	0.027059081	0.050887771	0.031052596	0.0297	0.0297	0.0247	0.0247	0.0247	0.0372

5. 2035 Summer Emission Factors for Managed Lanes (ML) and No Action Alternative (grams per mile)

Scenario	Speed	Name	CompositeEF	HDDV	HDGV	LDDT	LDDV	LDGT1	LDGT2	LDGV	MC
2035 No-Act EB	25	SO2	0.008149216	0.009582756	0.016382587	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 No-Act EB	25	CO	5.73075278	0.564733707	22.13822076	0.3777	0.6611	6.770323784	6.7075	5.8411	28.7168
2035 No-Act EB	25	NOX	0.340788614	0.42394694	0.132033872	0.1098	0.0248	0.381081611	0.431345814	0.2816	0.8377
2035 No-Act EB	25	VOC	0.492939917	0.568847449	0.491235067	0.1277	0.0573	0.531284417	0.54257084	0.4316	4.7565
2035 No-Act EB	25	1,3 Butadiene	0.001633931	0.0036375	0.000508523	0.001149	0.000515	0.001566958	0.001662623	0.001147	0.033419
2035 No-Act EB	25	Acetaldehyde	0.003853738	0.017173828	0.002118218	0.001571	0.000704	0.002724278	0.002878926	0.002009	0.035207
2035 No-Act EB	25	Acrolein	0.000337544	0.0020871	9.50437E-05	0.000447	0.0002	0.000170201	0.000180261	0.000121	0.002018
2035 No-Act EB	25	Benzene	0.012516978	0.006261493	0.009689543	0.002554	0.001145	0.015120636	0.015837725	0.011283	0.08055
2035 No-Act EB	25	Formaldehyde	0.008038394	0.046631706	0.003494744	0.004929	0.00221	0.004345392	0.004582079	0.00313	0.080392
2035 No-Act EB	25	PM10	0.027058867	0.050887771	0.031052396	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 No-Act EB	27	SO2	0.008149212	0.009582756	0.016380656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 No-Act EB	27	CO	5.669815463	0.521341799	20.45595985	0.3582	0.6294	6.712802947	6.655365548	5.7837	27.4451
2035 No-Act EB	27	NOX	0.334308605	0.415686013	0.134450159	0.1077	0.0244	0.374505569	0.423988653	0.2754	0.8662
2035 No-Act EB	27	VOC	0.478382568	0.532759428	0.46666569	0.1216	0.0547	0.518585805	0.530139743	0.4199	4.6545
2035 No-Act EB	27	1,3 Butadiene	0.001587228	0.003406774	0.00045746	0.001095	0.000492	0.001539038	0.001632968	0.001126	0.032335
2035 No-Act EB	27	Acetaldehyde	0.00370757	0.016084298	0.001905057	0.001496	0.000672	0.002675622	0.002826615	0.001974	0.034065
2035 No-Act EB	27	Acrolein	0.00032165	0.001954742	8.51487E-05	0.000426	0.000191	0.000167017	0.000176261	0.000118	0.001952
2035 No-Act EB	27	Benzene	0.012232376	0.005863853	0.008924508	0.002433	0.001093	0.014818313	0.01552517	0.011045	0.078371
2035 No-Act EB	27	Formaldehyde	0.007685014	0.043673652	0.003143309	0.004695	0.00211	0.004267368	0.004499112	0.003075	0.077784
2035 No-Act EB	27	PM10	0.027058867	0.050887771	0.031052396	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 No-Act EB	29	SO2	0.0081492	0.009582756	0.0163748	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 No-Act EB	29	CO	5.617331235	0.48397005	19.00577352	0.3414	0.6022	6.663255028	6.610363871	5.7343	26.3488
2035 No-Act EB	29	NOX	0.32878557	0.408589879	0.136642327	0.1059	0.024	0.368966333	0.417629814	0.2701	0.8909
2035 No-Act EB	29	VOC	0.465833307	0.501651603	0.445462987	0.1164	0.0524	0.507652818	0.519441421	0.4098	4.5665
2035 No-Act EB	29	1,3 Butadiene	0.001547464	0.003207741	0.000413379	0.001048	0.000472	0.001515118	0.001606985	0.001109	0.0314
2035 No-Act EB	29	Acetaldehyde	0.003581615	0.015145532	0.001720888	0.001432	0.000645	0.002633517	0.002781305	0.001944	0.03308
2035 No-Act EB	29	Acrolein	0.000308661	0.001840766	7.70912E-05	0.000407	0.000184	0.000164017	0.000173261	0.000117	0.001896
2035 No-Act EB	29	Benzene	0.011986715	0.005521702	0.008264225	0.002328	0.001049	0.014557751	0.015255599	0.010839	0.076493
2035 No-Act EB	29	Formaldehyde	0.007380448	0.041123805	0.002839997	0.004493	0.002024	0.004199712	0.004427474	0.003028	0.075536
2035 No-Act EB	29	PM10	0.027058867	0.050887771	0.031052396	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371

5. 2035 Summer Emission Factors for Managed Lanes (ML) and No Action Alternative (grams per mile)

Scenario	Speed	Name	CompositeEF	HDDV	HDGV	LDDT	LDDV	LDGT1	LDGT2	LDGV	MC
2035 No-Act EB	35	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 No-Act EB	35	CO	5.594344138	0.404392207	16.07565419	0.3057	0.5442	6.666446344	6.619931097	5.7237	23.5186
2035 No-Act EB	35	NOX	0.320243265	0.401655805	0.143139516	0.1042	0.0236	0.360445499	0.407741556	0.2609	0.9533
2035 No-Act EB	35	VOC	0.435131641	0.427344689	0.397050228	0.1039	0.0471	0.481287538	0.49314813	0.3845	4.3421
2035 No-Act EB	35	1,3 Butadiene	0.001449162	0.002732921	0.000317292	0.000935	0.000424	0.001455885	0.001541363	0.001064	0.029016
2035 No-Act EB	35	Acetaldehyde	0.003276452	0.012902162	0.00132139	0.001278	0.000579	0.002531076	0.002669044	0.001866	0.030568
2035 No-Act EB	35	Acrolein	0.000275674	0.001568211	5.90863E-05	0.000364	0.000165	0.000156465	0.000164933	0.000111	0.001752
2035 No-Act EB	35	Benzene	0.0113786	0.004703941	0.006808301	0.002079	0.000942	0.01392291	0.014582623	0.010317	0.0717
2035 No-Act EB	35	Formaldehyde	0.006646606	0.0350326	0.00218027	0.004012	0.001818	0.004036958	0.004248919	0.002906	0.0698
2035 No-Act EB	35	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 No-Act EB	49	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 No-Act EB	49	CO	6.263474591	0.345158452	14.93811684	0.2792	0.501	7.492073796	7.426819225	6.4451	21.4635
2035 No-Act EB	49	NOX	0.338426292	0.475167807	0.158837711	0.1226	0.0277	0.377039944	0.425798717	0.2686	1.0491
2035 No-Act EB	49	VOC	0.396914243	0.332308623	0.335672717	0.088	0.0403	0.451245174	0.463590969	0.3505	4.1479
2035 No-Act EB	49	1,3 Butadiene	0.001365144	0.002124817	0.000217187	0.000792	0.000363	0.001435972	0.001512757	0.001041	0.026953
2035 No-Act EB	49	Acetaldehyde	0.002958793	0.010032546	0.000903987	0.001082	0.000495	0.002499458	0.002624472	0.001827	0.028395
2035 No-Act EB	49	Acrolein	0.000239068	0.001219482	4.09479E-05	0.000308	0.000141	0.000153729	0.000160277	0.000109	0.001627
2035 No-Act EB	49	Benzene	0.010875735	0.003657772	0.005189	0.001759	0.000806	0.013520719	0.014128765	0.009858	0.067553
2035 No-Act EB	49	Formaldehyde	0.005826896	0.027241402	0.001491597	0.003396	0.001555	0.003989243	0.004181725	0.002848	0.064837
2035 No-Act EB	49	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 No-Act EB	55	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 No-Act EB	55	CO	6.556480903	0.357928428	16.40036058	0.2849	0.5103	7.84192311	7.768842709	6.7502	21.4569
2035 No-Act EB	55	NOX	0.351560251	0.552009185	0.16543302	0.1419	0.0321	0.385123972	0.434759233	0.2728	1.1175
2035 No-Act EB	55	VOC	0.385310938	0.3140636	0.322266467	0.0849	0.039	0.440018436	0.45246155	0.3396	4.1457
2035 No-Act EB	55	1,3 Butadiene	0.001345553	0.002008489	0.0002032	0.000764	0.000351	0.00142766	0.001500119	0.001032	0.02693
2035 No-Act EB	55	Acetaldehyde	0.002891537	0.009482169	0.000845901	0.001044	0.000479	0.00248657	0.002605506	0.001811	0.028371
2035 No-Act EB	55	Acrolein	0.000231479	0.001152405	3.80324E-05	0.000297	0.000136	0.000152361	0.00015895	0.000108	0.001626
2035 No-Act EB	55	Benzene	0.010711915	0.00345731	0.004919103	0.001698	0.000779	0.013364209	0.013950967	0.009696	0.067508
2035 No-Act EB	55	Formaldehyde	0.005660074	0.025746119	0.00139551	0.003277	0.001504	0.003969226	0.004153448	0.002823	0.064783
2035 No-Act EB	55	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371

5. 2035 Summer Emission Factors for Managed Lanes (ML) and No Action Alternative (grams per mile)

Scenario	Speed	Name	CompositeEF	HDDV	HDGV	LDDT	LDDV	LDGT1	LDGT2	LDGV	MC
2035 No-Act WB	48	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 No-Act WB	48	CO	6.216853192	0.345649323	14.84616044	0.2794	0.5014	7.435810253	7.371748645	6.3959	21.4704
2035 No-Act WB	48	NOX	0.336680595	0.466584668	0.157786208	0.1205	0.0272	0.375721541	0.424433169	0.2679	1.0413
2035 No-Act WB	48	VOC	0.399120343	0.336577086	0.338571999	0.0887	0.0406	0.453176424	0.465423743	0.3526	4.15
2035 No-Act WB	48	1,3 Butadiene	0.001369463	0.002152515	0.000221177	0.000798	0.000365	0.001437524	0.001514085	0.001043	0.026976
2035 No-Act WB	48	Acetaldehyde	0.002973729	0.01016171	0.000920011	0.001091	0.000499	0.002501379	0.002627128	0.00183	0.028419
2035 No-Act WB	48	Acrolein	0.000240694	0.001235018	4.10781E-05	0.00031	0.000142	0.000153729	0.000161277	0.000109	0.001629
2035 No-Act WB	48	Benzene	0.01090536	0.00370465	0.005256969	0.001774	0.000812	0.013546528	0.014158732	0.009887	0.0676
2035 No-Act WB	48	Formaldehyde	0.005864705	0.027592548	0.001518564	0.003423	0.001567	0.003992715	0.004186381	0.002852	0.064893
2035 No-Act WB	48	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 No-Act WB	49	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 No-Act WB	49	CO	6.263474591	0.345158452	14.93811684	0.2792	0.501	7.492073796	7.426819225	6.4451	21.4635
2035 No-Act WB	49	NOX	0.338426292	0.475167807	0.158837711	0.1226	0.0277	0.377039944	0.425798717	0.2686	1.0491
2035 No-Act WB	49	VOC	0.396914243	0.332308623	0.335672717	0.088	0.0403	0.451245174	0.463590969	0.3505	4.1479
2035 No-Act WB	49	1,3 Butadiene	0.001365144	0.002124817	0.000217187	0.000792	0.000363	0.001435972	0.001512757	0.001041	0.026953
2035 No-Act WB	49	Acetaldehyde	0.002958793	0.010032546	0.000903987	0.001082	0.000495	0.002499458	0.002624472	0.001827	0.028395
2035 No-Act WB	49	Acrolein	0.000239068	0.001219482	4.09479E-05	0.000308	0.000141	0.000153729	0.000160277	0.000109	0.001627
2035 No-Act WB	49	Benzene	0.010875735	0.003657772	0.005189	0.001759	0.000806	0.013520719	0.014128765	0.009858	0.067553
2035 No-Act WB	49	Formaldehyde	0.005826896	0.027241402	0.001491597	0.003396	0.001555	0.003989243	0.004181725	0.002848	0.064837
2035 No-Act WB	49	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 No-Act WB	50	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 No-Act WB	50	CO	6.308226539	0.344673213	15.02635638	0.2789	0.5006	7.546145325	7.47962258	6.4923	21.4569
2035 No-Act WB	50	NOX	0.340053543	0.483377132	0.159878381	0.1247	0.0282	0.378258347	0.427131491	0.2692	1.0566
2035 No-Act WB	50	VOC	0.394849319	0.328218255	0.3327901	0.0873	0.04	0.449413924	0.461758195	0.3486	4.1457
2035 No-Act WB	50	1,3 Butadiene	0.001361329	0.002098698	0.000213232	0.000785	0.00036	0.00143442	0.00151043	0.00104	0.02693
2035 No-Act WB	50	Acetaldehyde	0.002944788	0.009908561	0.000888879	0.001074	0.000492	0.002497538	0.002621472	0.001825	0.028371
2035 No-Act WB	50	Acrolein	0.000237504	0.001204092	4.00563E-05	0.000305	0.00014	0.000153545	0.000160277	0.000109	0.001626
2035 No-Act WB	50	Benzene	0.010847547	0.003612796	0.005123196	0.001746	0.0008	0.013495462	0.014100127	0.009831	0.067508
2035 No-Act WB	50	Formaldehyde	0.005790536	0.026904127	0.001466498	0.003369	0.001543	0.003985955	0.004177397	0.002844	0.064783
2035 No-Act WB	50	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371

5. 2035 Summer Emission Factors for Managed Lanes (ML) and No Action Alternative (grams per mile)

Scenario	Speed	Name	CompositeEF	HDDV	HDGV	LDDT	LDDV	LDGT1	LDGT2	LDGV	MC
2035 No-Act WB	51	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 No-Act WB	51	CO	6.361764117	0.347538305	15.32270473	0.2802	0.5027	7.609966507	7.541960386	6.5479	21.4569
2035 No-Act WB	51	NOX	0.342542343	0.498203772	0.16103759	0.1284	0.029	0.379713555	0.42879704	0.27	1.0697
2035 No-Act WB	51	VOC	0.392764114	0.325115275	0.330567795	0.0868	0.0398	0.447409062	0.459725421	0.3466	4.1457
2035 No-Act WB	51	1,3 Butadiene	0.00135774	0.002079035	0.000211239	0.000781	0.000358	0.001432868	0.001508102	0.001038	0.02693
2035 No-Act WB	51	Acetaldehyde	0.002933353	0.009816416	0.000878984	0.001067	0.000489	0.002495434	0.002617817	0.001822	0.028371
2035 No-Act WB	51	Acrolein	0.000235974	0.001193143	3.90781E-05	0.000304	0.000139	0.000153545	0.000160277	0.000108	0.001626
2035 No-Act WB	51	Benzene	0.010818473	0.003579045	0.005079128	0.001735	0.000795	0.013467549	0.01406816	0.009802	0.067508
2035 No-Act WB	51	Formaldehyde	0.005762186	0.026654387	0.001450588	0.003349	0.001535	0.003982299	0.004172414	0.002839	0.064783
2035 No-Act WB	51	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 No-Act WB	52	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 No-Act WB	52	CO	6.413262851	0.350275412	15.60764844	0.2814	0.5047	7.671314078	7.601998193	6.6014	21.4569
2035 No-Act WB	52	NOX	0.344908382	0.512422719	0.162190692	0.132	0.0298	0.38115036	0.430362588	0.2707	1.0824
2035 No-Act WB	52	VOC	0.390817036	0.322240048	0.328364662	0.0863	0.0396	0.445422604	0.457859872	0.3448	4.1457
2035 No-Act WB	52	1,3 Butadiene	0.001354264	0.002060195	0.000209164	0.000776	0.000356	0.001431316	0.001506102	0.001036	0.02693
2035 No-Act WB	52	Acetaldehyde	0.002922051	0.009727893	0.000870836	0.001061	0.000487	0.002492514	0.002614489	0.001819	0.028371
2035 No-Act WB	52	Acrolein	0.000234734	0.001182127	3.90563E-05	0.000302	0.000138	0.000153361	0.000159277	0.000108	0.001626
2035 No-Act WB	52	Benzene	0.010790248	0.003546674	0.005037018	0.001725	0.000791	0.013440188	0.014036866	0.009774	0.067508
2035 No-Act WB	52	Formaldehyde	0.005735226	0.026414529	0.001436479	0.00333	0.001527	0.003978642	0.004167086	0.002835	0.064783
2035 No-Act WB	52	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 No-Act WB	53	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 No-Act WB	53	CO	6.462801109	0.352909985	15.88183761	0.2826	0.5067	7.730288038	7.659701548	6.6529	21.4569
2035 No-Act WB	53	NOX	0.34721021	0.526132148	0.163337463	0.1354	0.0306	0.382568763	0.431860911	0.2714	1.0945
2035 No-Act WB	53	VOC	0.388906866	0.319378707	0.32625969	0.0858	0.0394	0.443536145	0.456027098	0.343	4.1457
2035 No-Act WB	53	1,3 Butadiene	0.001351371	0.002042211	0.000207162	0.000772	0.000354	0.001429764	0.001504446	0.001035	0.02693
2035 No-Act WB	53	Acetaldehyde	0.002911411	0.0096428	0.000861909	0.001055	0.000484	0.00249041	0.002611834	0.001816	0.028371
2035 No-Act WB	53	Acrolein	0.000233745	0.00117199	3.89767E-05	0.0003	0.000138	0.000153361	0.000159277	0.000108	0.001626
2035 No-Act WB	53	Benzene	0.010763178	0.003515552	0.00499604	0.001716	0.000787	0.013413827	0.014007899	0.009747	0.067508
2035 No-Act WB	53	Formaldehyde	0.005709209	0.026183019	0.001422448	0.003312	0.001519	0.00397517	0.004162431	0.002831	0.064783
2035 No-Act WB	53	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371

5. 2035 Summer Emission Factors for Managed Lanes (ML) and No Action Alternative (grams per mile)

Scenario	Speed	Name	CompositeEF	HDDV	HDGV	LDDT	LDDV	LDGT1	LDGT2	LDGV	MC
2035 No-Act WB	54	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 No-Act WB	54	CO	6.510481696	0.355463751	16.14589217	0.2838	0.5085	7.787133179	7.715272128	6.7024	21.4569
2035 No-Act WB	54	NOX	0.34942187	0.539290978	0.164388635	0.1387	0.0313	0.383887166	0.433326459	0.2721	1.1062
2035 No-Act WB	54	VOC	0.387049542	0.316670945	0.324256192	0.0853	0.0392	0.441768089	0.454194324	0.3412	4.1457
2035 No-Act WB	54	1,3 Butadiene	0.001348311	0.002024951	0.000205159	0.000768	0.000352	0.001429028	0.001502446	0.001033	0.02693
2035 No-Act WB	54	Acetaldehyde	0.002901538	0.009560936	0.000853886	0.00105	0.000482	0.00248849	0.002608506	0.001814	0.028371
2035 No-Act WB	54	Acrolein	0.000232696	0.001162206	3.80563E-05	0.000299	0.000137	0.000153177	0.00015895	0.000108	0.001626
2035 No-Act WB	54	Benzene	0.010736892	0.00348593	0.004956141	0.001707	0.000783	0.013388018	0.013978933	0.009721	0.067508
2035 No-Act WB	54	Formaldehyde	0.0056841	0.025960468	0.001408541	0.003294	0.001512	0.003971698	0.004158103	0.002827	0.064783
2035 No-Act WB	54	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 No-Act WB	55	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 No-Act WB	55	CO	6.556480903	0.357928428	16.40036058	0.2849	0.5103	7.84192311	7.768842709	6.7502	21.4569
2035 No-Act WB	55	NOX	0.351560251	0.552009185	0.16543302	0.1419	0.0321	0.385123972	0.434759233	0.2728	1.1175
2035 No-Act WB	55	VOC	0.385310938	0.3140636	0.322266467	0.0849	0.039	0.440018436	0.45246155	0.3396	4.1457
2035 No-Act WB	55	1,3 Butadiene	0.001345553	0.002008489	0.0002032	0.000764	0.000351	0.00142766	0.001500119	0.001032	0.02693
2035 No-Act WB	55	Acetaldehyde	0.002891537	0.009482169	0.000845901	0.001044	0.000479	0.00248657	0.002605506	0.001811	0.028371
2035 No-Act WB	55	Acrolein	0.000231479	0.001152405	3.80324E-05	0.000297	0.000136	0.000152361	0.00015895	0.000108	0.001626
2035 No-Act WB	55	Benzene	0.010711915	0.00345731	0.004919103	0.001698	0.000779	0.013364209	0.013950967	0.009696	0.067508
2035 No-Act WB	55	Formaldehyde	0.005660074	0.025746119	0.00139551	0.003277	0.001504	0.003969226	0.004153448	0.002823	0.064783
2035 No-Act WB	55	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371

6. 2035 Winter Emission Factors for Managed Lanes (ML) and No Action Alternative (grams per mile)

Scenario	Speed	Name	CompositeEF	HDDV	HDGV	LDDT	LDDV	LDGT1	LDGT2	LDGV	MC
2035 ML EB	22	SO2	0.008103115	0.009582756	0.016382837	0.0041	0.0022	0.0088	0.0115	0.0067	0.0033
2035 ML EB	22	CO	11.95027842	0.646404723	31.4759536	0.4144	0.7206	13.61687508	13.1686605	13.0348	30.5554
2035 ML EB	22	NOX	0.379159133	0.443268056	0.1330907	0.1146	0.0259	0.442839598	0.49990233	0.3014	1.0039
2035 ML EB	22	VOC	0.520180034	0.628531337	0.516717727	0.1377	0.0615	0.573594482	0.59250284	0.4399	4.1592
2035 ML EB	22	1,3 Butadiene	0.001998288	0.004019422	0.000808843	0.00124	0.00055	0.001980826	0.00210046	0.00145	0.037431
2035 ML EB	22	Acetaldehyde	0.004779713	0.018976877	0.00337058	0.00169	0.00076	0.003860167	0.00407256	0.00255	0.039433
2035 ML EB	22	Acrolein	0.000420174	0.002306412	0.000151153	0.00048	0.00022	0.000249802	0.00026423	0.00018	0.00226
2035 ML EB	22	Benzene	0.014374279	0.006918593	0.012821734	0.00275	0.00123	0.017608553	0.0185226	0.01282	0.079351
2035 ML EB	22	Formaldehyde	0.009439895	0.051526767	0.005561891	0.00532	0.00238	0.005524618	0.00582137	0.00398	0.090042
2035 ML EB	22	PM10	0.02701278	0.050887771	0.030959176	0.0297	0.0297	0.0247	0.0247	0.0246	0.0372
	25	SO2	0.008149216	0.009582756	0.016382587	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 ML EB											
2035 ML EB	25	CO	11.71691434	0.564733707	27.37782291	0.3777	0.6611	13.36779556	12.9355143	12.7983	29.0164
2035 ML EB	25	NOX	0.368035421	0.42394694	0.136232195	0.1098	0.0248	0.430579529	0.48612078	0.2928	1.0504
2035 ML EB	25	VOC	0.494875318	0.568847449	0.466466338	0.1277	0.0573	0.549638925	0.56847678	0.4207	4.0062
2035 ML EB	25	1,3 Butadiene	0.001899698	0.0036375	0.000679757	0.00115	0.00052	0.001906514	0.00202083	0.00139	0.035804
2035 ML EB	25	Acetaldehyde	0.004492043	0.017173828	0.00283398	0.00157	0.0007	0.003714014	0.00391762	0.00245	0.03772
2035 ML EB	25	Acrolein	0.000390786	0.0020871	0.000127136	0.00045	0.0002	0.000239434	0.0002529	0.00017	0.002162
2035 ML EB	25	Benzene	0.013768775	0.006261493	0.011012464	0.00255	0.00115	0.016920355	0.01780225	0.01231	0.076082
2035 ML EB	25	Formaldehyde	0.008793943	0.046631706	0.004675909	0.00493	0.00221	0.005316441	0.00559979	0.00383	0.08613
2035 ML EB	25	PM10	0.027058867	0.050887771	0.031052396	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 ML EB	27	SO2	0.008149212	0.009582756	0.016380656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 ML EB	27	CO	11.63433861	0.521341799	25.297439	0.3582	0.6294	13.28610076	12.8614454	12.7171	27.8513
2035 ML EB	27	NOX	0.362275775	0.415686013	0.13884027	0.1077	0.0244	0.423940292	0.47863085	0.2882	1.0867
2035 ML EB	27	VOC	0.482318101	0.532759428	0.439714743	0.1216	0.0547	0.538661146	0.55754568	0.4118	3.9068
2035 ML EB	27	1,3 Butadiene	0.001851542	0.003406774	0.000611611	0.0011	0.00049	0.00187641	0.00198818	0.00137	0.034748
2035 ML EB	27	Acetaldehyde	0.004340113	0.016084298	0.002548706	0.0015	0.00067	0.003655358	0.00385499	0.00242	0.036608
2035 ML EB	27	Acrolein	0.000374595	0.001954742	0.000114176	0.00043	0.00019	0.000235434	0.00024857	0.00017	0.002098
2035 ML EB	27	Benzene	0.013501667	0.005863853	0.010050623	0.00243	0.00109	0.016632344	0.01750137	0.0121	0.07396
2035 ML EB	27	Formaldehyde	0.008435964	0.043673652	0.004205413	0.0047	0.00211	0.005232233	0.0055105	0.00377	0.08359
2035 ML EB	27	PM10	0.027058867	0.050887771	0.031052396	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371

6. 2035 Winter Emission Factors for Managed Lanes (ML) and No Action Alternative (grams per mile)

Scenario	Speed	Name	CompositeEF	HDDV	HDGV	LDDT	LDDV	LDGT1	LDGT2	LDGV	MC
2035 ML EB	29	SO2	0.0081492	0.009582756	0.0163748	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 ML EB	29	CO	11.56316348	0.48397005	23.50401916	0.3414	0.6022	13.21569173	12.797611	12.6471	26.8468
2035 ML EB	29	NOX	0.357268373	0.408589879	0.141039893	0.1059	0.024	0.418137862	0.47213923	0.2842	1.1181
2035 ML EB	29	VOC	0.471434611	0.501651603	0.416610555	0.1164	0.0524	0.529067395	0.54808181	0.4041	3.8211
2035 ML EB	29	1,3 Butadiene	0.001810594	0.003207741	0.000552631	0.00105	0.00047	0.00185049	0.00196119	0.00135	0.033838
2035 ML EB	29	Acetaldehyde	0.004209143	0.015145532	0.002302509	0.00143	0.00065	0.003604886	0.00380135	0.00238	0.035649
2035 ML EB	29	Acrolein	0.000360455	0.001840766	0.000103157	0.00041	0.00018	0.000232066	0.00024457	0.00017	0.002043
2035 ML EB	29	Benzene	0.013271723	0.005521702	0.009222141	0.00233	0.00105	0.016383726	0.01724214	0.01192	0.07213
2035 ML EB	29	Formaldehyde	0.008126778	0.041123805	0.00379908	0.00449	0.00202	0.005159393	0.00543353	0.00372	0.081401
2035 ML EB	29	PM10	0.027058867	0.050887771	0.031052396	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 ML EB	30	SO2	0.008149003	0.009582756	0.016282837	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 ML EB	30	CO	11.53109475	0.467114635	22.69702829	0.3339	0.5899	13.18401846	12.7689437	12.6155	26.3948
2035 ML EB	30	NOX	0.355024982	0.405373019	0.141985831	0.1051	0.0238	0.415545848	0.46927704	0.2824	1.1322
2035 ML EB	30	VOC	0.466540967	0.487642406	0.406267487	0.1141	0.0514	0.524807326	0.54384903	0.4006	3.7825
2035 ML EB	30	1,3 Butadiene	0.001791725	0.003118469	0.000526482	0.00103	0.00046	0.001838938	0.00194819	0.00135	0.033429
2035 ML EB	30	Acetaldehyde	0.004150049	0.014722465	0.002192298	0.0014	0.00063	0.003582149	0.00377702	0.00237	0.035217
2035 ML EB	30	Acrolein	0.000354211	0.001789148	9.81367E-05	0.0004	0.00018	0.00023025	0.00024357	0.00016	0.002018
2035 ML EB	30	Benzene	0.013168142	0.005367714	0.008848692	0.00228	0.00103	0.016271654	0.01712552	0.01184	0.071307
2035 ML EB	30	Formaldehyde	0.007987744	0.039976356	0.003616879	0.0044	0.00199	0.005126472	0.00539855	0.0037	0.080415
2035 ML EB	30	PM10	0.027058868	0.050887771	0.031052596	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 ML EB											
	32	SO2	0.008149003	0.009582756	0.016282587	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 ML EB	32	CO	11.53673218	0.439675039	21.46475584	0.3216	0.5699	13.20281186	12.790311	12.6257	25.4581
2035 ML EB	32	NOX	0.353172252	0.403728454	0.14449898	0.1047	0.0237	0.413145848	0.46644594	0.2809	1.1608
2035 ML EB	32	VOC	0.457297041	0.461248664	0.388529122	0.1096	0.0495	0.516795172	0.53571961	0.394	3.7038
2035 ML EB	32	1,3 Butadiene	0.001755607	0.002949771	0.000481485	0.00099	0.00045	0.001816281	0.00192288	0.00133	0.032592
2035 ML EB	32	Acetaldehyde	0.004037259	0.01392605	0.002006141	0.00135	0.00061	0.003538205	0.00372873	0.00234	0.034335
2035 ML EB	32	Acrolein	0.00034225	0.001692603	9.007E-05	0.00038	0.00017	0.000226882	0.00023957	0.00016	0.001968
2035 ML EB	32	Benzene	0.012965746	0.005077298	0.008220943	0.00219	0.00099	0.016057515	0.01689367	0.01167	0.069624
2035 ML EB	32	Formaldehyde	0.007723425	0.037813765	0.00331047	0.00423	0.00191	0.00506424	0.00532993	0.00365	0.078402
2035 ML EB	32	PM10	0.027058872	0.050887771	0.031054527	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371

6. 2035 Winter Emission Factors for Managed Lanes (ML) and No Action Alternative (grams per mile)

Scenario	Speed	Name	CompositeEF	HDDV	HDGV	LDDT	LDDV	LDGT1	LDGT2	LDGV	MC
2035 ML EB	38	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 ML EB	38	CO	11.76371977	0.380353836	18.94406265	0.2949	0.5267	13.50035492	13.0847966	12.8781	23.4023
2035 ML EB	38	NOX	0.354543149	0.408406076	0.151403588	0.1059	0.024	0.414101056	0.46724762	0.2817	1.2266
2035 ML EB	38	VOC	0.438135182	0.399258542	0.348532202	0.0992	0.0451	0.501521212	0.5202591	0.3807	3.5252
2035 ML EB	38	1,3 Butadiene	0.00168462	0.002552858	0.000381427	0.00089	0.00041	0.001782233	0.00188359	0.0013	0.030695
2035 ML EB	38	Acetaldehyde	0.003799219	0.012053181	0.00158966	0.00122	0.00056	0.00347366	0.00365479	0.00229	0.032337
2035 ML EB	38	Acrolein	0.000315794	0.001464974	7.11175E-05	0.00035	0.00016	0.00022233	0.00023324	0.00016	0.001853
2035 ML EB	38	Benzene	0.0126053	0.004394518	0.006807665	0.00198	0.0009	0.015712508	0.0165123	0.01139	0.065812
2035 ML EB	38	Formaldehyde	0.007142513	0.032727955	0.002622748	0.00383	0.00174	0.004972566	0.00522468	0.00358	0.073839
2035 ML EB	38	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 ML EB	39	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 ML EB	39	CO	11.82946457	0.373168769	18.66391972	0.2917	0.5214	13.58214104	13.1646689	12.9497	23.1476
2035 ML EB	39	NOX	0.355652417	0.410402402	0.152455347	0.1064	0.0241	0.415301056	0.4685804	0.2825	1.2353
2035 ML EB	39	VOC	0.43598837	0.390824151	0.343348995	0.0978	0.0445	0.500071559	0.51879355	0.3793	3.5021
2035 ML EB	39	1,3 Butadiene	0.001677631	0.002498951	0.000368436	0.00088	0.0004	0.001780681	0.00188159	0.0013	0.030449
2035 ML EB	39	Acetaldehyde	0.003771451	0.011799495	0.001536619	0.0012	0.00055	0.003471556	0.00365146	0.00229	0.032078
2035 ML EB	39	Acrolein	0.00031238	0.001433958	6.90187E-05	0.00034	0.00016	0.00022133	0.00023292	0.00016	0.001838
2035 ML EB	39	Benzene	0.012575242	0.004301783	0.006626721	0.00196	0.00089	0.015691251	0.01648766	0.01137	0.065318
2035 ML EB	39	Formaldehyde	0.007070035	0.032038521	0.002534696	0.00378	0.00172	0.004969094	0.00522003	0.00357	0.073248
2035 ML EB	39	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 ML EB	41	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 ML EB	41	CO	11.96961487	0.36216526	18.3080034	0.2868	0.5134	13.75488132	13.3333134	13.1009	22.7942
2035 ML EB	41	NOX	0.358719562	0.418098139	0.154755221	0.1083	0.0245	0.41829307	0.47191149	0.2846	1.251
2035 ML EB	41	VOC	0.431975034	0.375761661	0.334300377	0.0953	0.0434	0.497245865	0.515928	0.3766	3.4675
2035 ML EB	41	1,3 Butadiene	0.001664114	0.002403028	0.000347276	0.00086	0.00039	0.001777392	0.00187761	0.0013	0.030081
2035 ML EB	41	Acetaldehyde	0.003721298	0.01134445	0.001445524	0.00117	0.00053	0.003466163	0.00364381	0.00228	0.031691
2035 ML EB	41	Acrolein	0.000306752	0.001378523	6.50256E-05	0.00033	0.00015	0.000221146	0.00023192	0.00016	0.001816
2035 ML EB	41	Benzene	0.012517998	0.004136098	0.006316169	0.00191	0.00087	0.015650001	0.0164374	0.01132	0.064579
2035 ML EB	41	Formaldehyde	0.006940475	0.030803229	0.002384537	0.00368	0.00168	0.004961781	0.00521005	0.00356	0.072363
2035 ML EB	41	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371

6. 2035 Winter Emission Factors for Managed Lanes (ML) and No Action Alternative (grams per mile)

Scenario	Speed	Name	CompositeEF	HDDV	HDGV	LDDT	LDDV	LDGT1	LDGT2	LDGV	MC
2035 ML EB	44	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 ML EB	44	CO	12.1814894	0.3508182	18.0629183	0.2817	0.5051	14.01392855	13.5864302	13.3278	22.49
2035 ML EB	44	NOX	0.364245076	0.433805274	0.158208784	0.1123	0.0254	0.42342189	0.47754091	0.2883	1.2711
2035 ML EB	44	VOC	0.426664248	0.356451285	0.323197667	0.092	0.042	0.493444128	0.51206413	0.3729	3.4329
2035 ML EB	44	1,3 Butadiene	0.00164696	0.002279423	0.000320338	0.00083	0.00038	0.001773552	0.00187095	0.00129	0.029714
2035 ML EB	44	Acetaldehyde	0.00365575	0.010761508	0.001335369	0.00113	0.00052	0.003458667	0.0036325	0.00227	0.031304
2035 ML EB	44	Acrolein	0.000299119	0.001307867	6.00306E-05	0.00032	0.00015	0.000220778	0.00023092	0.00016	0.001794
2035 ML EB	44	Benzene	0.012439179	0.003923125	0.005938176	0.00184	0.00084	0.015590862	0.01636517	0.01126	0.06384
2035 ML EB	44	Formaldehyde	0.006772558	0.029220451	0.002202367	0.00355	0.00162	0.004950813	0.00519508	0.00355	0.071479
2035 ML EB	44	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 ML EB	46	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 ML EB	46	CO	12.32384494	0.346762131	18.11768788	0.2799	0.5022	14.18678723	13.7552419	13.4791	22.3905
2035 ML EB	46	NOX	0.368320187	0.448326317	0.160511039	0.1159	0.0262	0.426895501	0.48130478	0.2907	1.2884
2035 ML EB	46	VOC	0.423254456	0.345733835	0.316860935	0.0902	0.0412	0.490818433	0.50936581	0.3703	3.42
2035 ML EB	46	1,3 Butadiene	0.001637004	0.002210774	0.000306307	0.00081	0.00037	0.001770264	0.0018663	0.00129	0.029577
2035 ML EB	46	Acetaldehyde	0.003618544	0.01043745	0.001277288	0.00111	0.00051	0.003453274	0.00362551	0.00227	0.031159
2035 ML EB	46	Acrolein	0.000294924	0.001268712	5.70863E-05	0.00032	0.00014	0.000219778	0.00023059	0.00016	0.001786
2035 ML EB	46	Benzene	0.012388535	0.003805456	0.005734859	0.0018	0.00083	0.01554998	0.01631591	0.01122	0.063564
2035 ML EB	46	Formaldehyde	0.006678413	0.028340637	0.002107199	0.00348	0.00159	0.0049435	0.00518477	0.00354	0.071149
2035 ML EB	46	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 ML EB	53	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 ML EB	53	CO	12.83039143	0.352909985	19.64075961	0.2826	0.5067	14.79498065	14.349315	14.0117	22.3646
2035 ML EB	53	NOX	0.385468902	0.526132148	0.168573512	0.1354	0.0306	0.439108348	0.49479472	0.2994	1.3773
2035 ML EB	53	VOC	0.411942325	0.319378707	0.300317778	0.0858	0.0394	0.480836487	0.49923807	0.3607	3.4112
2035 ML EB	53	1,3 Butadiene	0.001609164	0.002042211	0.000276366	0.00077	0.00035	0.001759215	0.00185133	0.00127	0.029484
2035 ML EB	53	Acetaldehyde	0.003522207	0.0096428	0.001153176	0.00106	0.00048	0.003434361	0.00359924	0.00225	0.031061
2035 ML EB	53	Acrolein	0.00028373	0.00117199	5.19945E-05	0.0003	0.00014	0.000218226	0.00022759	0.00016	0.00178
2035 ML EB	53	Benzene	0.012221453	0.003515552	0.005277041	0.00172	0.00079	0.015402421	0.01613916	0.01106	0.063377
2035 ML EB	53	Formaldehyde	0.006441122	0.026183019	0.001902931	0.00331	0.00152	0.004917906	0.00514851	0.00351	0.070925
2035 ML EB	53	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371

6. 2035 Winter Emission Factors for Managed Lanes (ML) and No Action Alternative (grams per mile)

Scenario	Speed	Name	CompositeEF	HDDV	HDGV	LDDT	LDDV	LDGT1	LDGT2	LDGV	MC
2035 ML EB	55	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 ML EB	55	CO	12.9672672	0.357928428	20.28194535	0.2849	0.5103	14.95835288	14.5088595	14.1547	22.3646
2035 ML EB	55	NOX	0.390574327	0.552009185	0.170684019	0.1419	0.0321	0.442400362	0.49855859	0.3017	1.4065
2035 ML EB	55	VOC	0.408978127	0.3140636	0.296671819	0.0849	0.039	0.478029195	0.49643974	0.358	3.4112
2035 ML EB	55	1,3 Butadiene	0.001603286	0.002008489	0.000271346	0.00076	0.00035	0.001756927	0.001847	0.00127	0.029484
2035 ML EB	55	Acetaldehyde	0.003501814	0.009482169	0.001131253	0.00104	0.00048	0.003429153	0.00359225	0.00224	0.031061
2035 ML EB	55	Acrolein	0.000281652	0.001152405	5.09945E-05	0.0003	0.00014	0.000218042	0.00022659	0.00016	0.00178
2035 ML EB	55	Benzene	0.012177614	0.00345731	0.005191658	0.0017	0.00078	0.015361907	0.01609023	0.01102	0.063377
2035 ML EB	55	Formaldehyde	0.006391094	0.025746119	0.00186697	0.00328	0.0015	0.004910778	0.0051392	0.0035	0.070925
2035 ML EB	55	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 ML WB	48	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 ML WB	48	CO	12.47005341	0.345649323	18.3598999	0.2794	0.5014	14.36319314	13.9275537	13.6336	22.377
2035 ML WB	48	NOX	0.372831409	0.466584668	0.162819875	0.1205	0.0272	0.430387515	0.48516865	0.2932	1.3096
2035 ML WB	48	VOC	0.419885245	0.336577086	0.311310768	0.0887	0.0406	0.487992738	0.50646749	0.3676	3.4154
2035 ML WB	48	1,3 Butadiene	0.00162789	0.002152515	0.000295319	0.0008	0.00037	0.00176716	0.00186197	0.00128	0.029528
2035 ML WB	48	Acetaldehyde	0.00358616	0.01016171	0.001231239	0.00109	0.0005	0.003447882	0.00361753	0.00226	0.031108
2035 ML WB	48	Acrolein	0.000291	0.001235018	5.509E-05	0.00031	0.00014	0.000219594	0.00022959	0.00016	0.001783
2035 ML WB	48	Benzene	0.012338945	0.00370465	0.005570417	0.00177	0.00081	0.015507546	0.01626565	0.01117	0.063467
2035 ML WB	48	Formaldehyde	0.00659752	0.027592548	0.00203116	0.00342	0.00157	0.004936188	0.00517378	0.00353	0.071033
2035 ML WB	48	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 ML WB	49	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 ML WB	49	CO	12.53868465	0.345158452	18.47359922	0.2792	0.501	14.44601606	14.0084587	13.7061	22.3707
2035 ML WB	49	NOX	0.374969516	0.475167807	0.163962671	0.1226	0.0277	0.432042723	0.48700143	0.2944	1.3195
2035 ML WB	49	VOC	0.418299051	0.332308623	0.308739166	0.088	0.0403	0.486679891	0.50513471	0.3663	3.4133
2035 ML WB	49	1,3 Butadiene	0.001623461	0.002124817	0.000290304	0.00079	0.00036	0.001765608	0.00185964	0.00128	0.029505
2035 ML WB	49	Acetaldehyde	0.003570821	0.010032546	0.001209292	0.00108	0.0005	0.003444962	0.0036142	0.00226	0.031084
2035 ML WB	49	Acrolein	0.000289349	0.001219482	5.409E-05	0.00031	0.00014	0.00021941	0.00022892	0.00016	0.001781
2035 ML WB	49	Benzene	0.012315718	0.003657772	0.005492811	0.00176	0.00081	0.015488289	0.01624168	0.01115	0.063421
2035 ML WB	49	Formaldehyde	0.006559634	0.027241402	0.001995183	0.0034	0.00156	0.004932531	0.00516913	0.00353	0.070978
2035 ML WB	49	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371

6. 2035 Winter Emission Factors for Managed Lanes (ML) and No Action Alternative (grams per mile)

Scenario	Speed	Name	CompositeEF	HDDV	HDGV	LDDT	LDDV	LDGT1	LDGT2	LDGV	MC
2035 ML WB	50	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 ML WB	50	CO	12.60455702	0.344673213	18.58272243	0.2789	0.5006	14.52551016	14.0860637	13.7757	22.3646
2035 ML WB	50	NOX	0.376972045	0.483377132	0.165009191	0.1247	0.0282	0.433579529	0.48869975	0.2955	1.329
2035 ML WB	50	VOC	0.416795399	0.328218255	0.306270283	0.0873	0.04	0.485403849	0.50386916	0.3651	3.4112
2035 ML WB	50	1,3 Butadiene	0.001619755	0.002098698	0.000285274	0.00079	0.00036	0.001764056	0.00185831	0.00128	0.029484
2035 ML WB	50	Acetaldehyde	0.003556677	0.009908561	0.001188312	0.00107	0.00049	0.003442858	0.00361055	0.00226	0.031061
2035 ML WB	50	Acrolein	0.000287808	0.001204092	5.30875E-05	0.00031	0.00014	0.00021941	0.00022859	0.00016	0.00178
2035 ML WB	50	Benzene	0.012293317	0.003612796	0.005418229	0.00175	0.0008	0.015469216	0.01621872	0.01113	0.063377
2035 ML WB	50	Formaldehyde	0.006523164	0.026904127	0.001961141	0.00337	0.00154	0.004929059	0.00516447	0.00352	0.070925
2035 ML WB	50	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 ML WB	51	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 ML WB	51	CO	12.68281834	0.347538305	18.94927612	0.2802	0.5027	14.61887475	14.1772704	13.8575	22.3646
2035 ML WB	51	NOX	0.379944806	0.498203772	0.166178707	0.1284	0.029	0.435516334	0.49079807	0.2969	1.3457
2035 ML WB	51	VOC	0.415122875	0.325115275	0.304188303	0.0868	0.0398	0.483835793	0.50223639	0.3636	3.4112
2035 ML WB	51	1,3 Butadiene	0.001616105	0.002079035	0.000282282	0.00078	0.00036	0.00176232	0.00185598	0.00128	0.029484
2035 ML WB	51	Acetaldehyde	0.003544399	0.009816416	0.001176252	0.00107	0.00049	0.00343957	0.00360689	0.00225	0.031061
2035 ML WB	51	Acrolein	0.000286222	0.001193143	5.30163E-05	0.0003	0.00014	0.000219226	0.00022859	0.00016	0.00178
2035 ML WB	51	Benzene	0.012268545	0.003579045	0.005369446	0.00174	0.0008	0.015446039	0.01619142	0.01111	0.063377
2035 ML WB	51	Formaldehyde	0.006494674	0.026654387	0.001941038	0.00335	0.00154	0.004925219	0.00515882	0.00352	0.070925
2035 ML WB	51	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 ML WB	52	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 ML WB	52	CO	12.75802796	0.350275412	19.3016817	0.2814	0.5047	14.70861051	14.2649427	13.9361	22.3646
2035 ML WB	52	NOX	0.38275914	0.512422719	0.167421758	0.132	0.0298	0.437289945	0.4928964	0.2982	1.3618
2035 ML WB	52	VOC	0.413489248	0.322240048	0.302201546	0.0863	0.0396	0.48228614	0.50070361	0.3621	3.4112
2035 ML WB	52	1,3 Butadiene	0.001612592	0.002060195	0.000279335	0.00078	0.00036	0.001760767	0.00185366	0.00128	0.029484
2035 ML WB	52	Acetaldehyde	0.003533218	0.009727893	0.001164245	0.00106	0.00049	0.003437281	0.00360289	0.00225	0.031061
2035 ML WB	52	Acrolein	0.000284719	0.001182127	5.20661E-05	0.0003	0.00014	0.000218226	0.00022759	0.00016	0.00178
2035 ML WB	52	Benzene	0.012244327	0.003546674	0.005322684	0.00173	0.00079	0.015424046	0.01616446	0.01108	0.063377
2035 ML WB	52	Formaldehyde	0.006467278	0.026414529	0.001921085	0.00333	0.00153	0.004921563	0.00515383	0.00351	0.070925
2035 ML WB	52	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371

6. 2035 Winter Emission Factors for Managed Lanes (ML) and No Action Alternative (grams per mile)

Scenario	Speed	Name	CompositeEF	HDDV	HDGV	LDDT	LDDV	LDGT1	LDGT2	LDGV	MC
2035 ML WB	53	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 ML WB	53	CO	12.83039143	0.352909985	19.64075961	0.2826	0.5067	14.79498065	14.349315	14.0117	22.3646
2035 ML WB	53	NOX	0.385468902	0.526132148	0.168573512	0.1354	0.0306	0.439108348	0.49479472	0.2994	1.3773
2035 ML WB	53	VOC	0.411942325	0.319378707	0.300317778	0.0858	0.0394	0.480836487	0.49923807	0.3607	3.4112
2035 ML WB	53	1,3 Butadiene	0.001609164	0.002042211	0.000276366	0.00077	0.00035	0.001759215	0.00185133	0.00127	0.029484
2035 ML WB	53	Acetaldehyde	0.003522207	0.0096428	0.001153176	0.00106	0.00048	0.003434361	0.00359924	0.00225	0.031061
2035 ML WB	53	Acrolein	0.00028373	0.00117199	5.19945E-05	0.0003	0.00014	0.000218226	0.00022759	0.00016	0.00178
2035 ML WB	53	Benzene	0.012221453	0.003515552	0.005277041	0.00172	0.00079	0.015402421	0.01613916	0.01106	0.063377
2035 ML WB	53	Formaldehyde	0.006441122	0.026183019	0.001902931	0.00331	0.00152	0.004917906	0.00514851	0.00351	0.070925
2035 ML WB	53	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 ML WB	54	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 ML WB	54	CO	12.90010135	0.355463751	19.96727203	0.2838	0.5085	14.87822197	14.4305872	14.0845	22.3646
2035 ML WB	54	NOX	0.388071453	0.539290978	0.169630335	0.1387	0.0313	0.440763557	0.49669304	0.3006	1.3922
2035 ML WB	54	VOC	0.410425574	0.316670945	0.298443084	0.0853	0.0392	0.47942364	0.49780529	0.3593	3.4112
2035 ML WB	54	1,3 Butadiene	0.00160653	0.002024951	0.000274265	0.00077	0.00035	0.001758479	0.001849	0.00127	0.029484
2035 ML WB	54	Acetaldehyde	0.00351221	0.009560936	0.001142188	0.00105	0.00048	0.003432073	0.00359591	0.00224	0.031061
2035 ML WB	54	Acrolein	0.000282681	0.001162206	5.10661E-05	0.0003	0.00014	0.000218042	0.00022726	0.00016	0.00178
2035 ML WB	54	Benzene	0.01219914	0.00348593	0.005233346	0.00171	0.00078	0.01538198	0.01611419	0.01104	0.063377
2035 ML WB	54	Formaldehyde	0.006415967	0.025960468	0.001884053	0.00329	0.00151	0.004914434	0.00514385	0.0035	0.070925
2035 ML WB	54	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 ML WB	55	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 ML WB	55	CO	12.9672672	0.357928428	20.28194535	0.2849	0.5103	14.95835288	14.5088595	14.1547	22.3646
2035 ML WB	55	NOX	0.390574327	0.552009185	0.170684019	0.1419	0.0321	0.442400362	0.49855859	0.3017	1.4065
2035 ML WB	55	VOC	0.408978127	0.3140636	0.296671819	0.0849	0.039	0.478029195	0.49643974	0.358	3.4112
2035 ML WB	55	1,3 Butadiene	0.001603286	0.002008489	0.000271346	0.00076	0.00035	0.001756927	0.001847	0.00127	0.029484
2035 ML WB	55	Acetaldehyde	0.003501814	0.009482169	0.001131253	0.00104	0.00048	0.003429153	0.00359225	0.00224	0.031061
2035 ML WB	55	Acrolein	0.000281652	0.001152405	5.09945E-05	0.0003	0.00014	0.000218042	0.00022659	0.00016	0.00178
2035 ML WB	55	Benzene	0.012177614	0.00345731	0.005191658	0.0017	0.00078	0.015361907	0.01609023	0.01102	0.063377
2035 ML WB	55	Formaldehyde	0.006391094	0.025746119	0.00186697	0.00328	0.0015	0.004910778	0.0051392	0.0035	0.070925
2035 ML WB	55	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371

6. 2035 Winter Emission Factors for Managed Lanes (ML) and No Action Alternative (grams per mile)

Scenario	Speed	Name	CompositeEF	HDDV	HDGV	LDDT	LDDV	LDGT1	LDGT2	LDGV	MC
2035 No-Act EB	21	SO2	0.008103316	0.009582756	0.016476936	0.0041	0.0022	0.0088	0.0115	0.0067	0.0033
2035 No-Act EB	21	CO	12.04288223	0.678846605	33.10226702	0.4289	0.7443	13.71563377	13.2611655	13.1287	31.1661
2035 No-Act EB	21	NOX	0.38352588	0.450890041	0.131924322	0.1166	0.0264	0.447723626	0.50539562	0.3047	0.9854
2035 No-Act EB	21	VOC	0.530229677	0.652249281	0.536579398	0.1417	0.0632	0.583133024	0.60206671	0.4475	4.22
2035 No-Act EB	21	1,3 Butadiene	0.002037008	0.004170994	0.000859941	0.00128	0.00057	0.002010115	0.00213244	0.00147	0.038076
2035 No-Act EB	21	Acetaldehyde	0.004893825	0.019692095	0.003583843	0.00174	0.00078	0.003918191	0.0041342	0.00259	0.040113
2035 No-Act EB	21	Acrolein	0.000431888	0.002393225	0.000161139	0.0005	0.00022	0.000253986	0.00026823	0.00018	0.002299
2035 No-Act EB	21	Benzene	0.014614105	0.007179277	0.013539653	0.00283	0.00127	0.017881195	0.01880814	0.01302	0.080649
2035 No-Act EB	21	Formaldehyde	0.009696123	0.053469181	0.005913287	0.00547	0.00244	0.005607563	0.00590966	0.00404	0.091595
2035 No-Act EB	21	PM10	0.02705908	0.050887771	0.031052014	0.0297	0.0297	0.0247	0.0247	0.0247	0.0372
2035 No-Act EB	22	SO2	0.008103115	0.009582756	0.016382837	0.0041	0.0022	0.0088	0.0115	0.0067	0.0033
2035 No-Act EB	22	CO	11.95027842	0.646404723	31.4759536	0.4144	0.7206	13.61687508	13.1686605	13.0348	30.5554
2035 No-Act EB	22	NOX	0.379159133	0.443268056	0.1330907	0.1146	0.0259	0.442839598	0.49990233	0.3014	1.0039
2035 No-Act EB	22	VOC	0.520180034	0.628531337	0.516717727	0.1377	0.0615	0.573594482	0.59250284	0.4399	4.1592
2035 No-Act EB	22	1,3 Butadiene	0.001998288	0.004019422	0.000808843	0.00124	0.00055	0.001980826	0.00210046	0.00145	0.037431
2035 No-Act EB	22	Acetaldehyde	0.004779713	0.018976877	0.00337058	0.00169	0.00076	0.003860167	0.00407256	0.00255	0.039433
2035 No-Act EB	22	Acrolein	0.000420174	0.002306412	0.000151153	0.00048	0.00022	0.000249802	0.00026423	0.00018	0.00226
2035 No-Act EB	22	Benzene	0.014374279	0.006918593	0.012821734	0.00275	0.00123	0.017608553	0.0185226	0.01282	0.079351
2035 No-Act EB	22	Formaldehyde	0.009439895	0.051526767	0.005561891	0.00532	0.00238	0.005524618	0.00582137	0.00398	0.090042
2035 No-Act EB	22	PM10	0.02701278	0.050887771	0.030959176	0.0297	0.0297	0.0247	0.0247	0.0246	0.0372
2035 No-Act EB	23	SO2	0.008149217	0.009582756	0.016382837	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 No-Act EB	23	CO	11.86569552	0.616811277	29.99112414	0.4011	0.6991	13.52656049	13.0841555	12.9491	29.9978
2035 No-Act EB	23	NOX	0.375128745	0.436268828	0.134237471	0.1129	0.0255	0.438373973	0.49490904	0.2983	1.0207
2035 No-Act EB	23	VOC	0.511000779	0.606906946	0.498486808	0.1341	0.06	0.564929551	0.58383897	0.4329	4.1038
2035 No-Act EB	23	1,3 Butadiene	0.001962483	0.003881239	0.000762764	0.00121	0.00054	0.001953722	0.00207147	0.00143	0.036841
2035 No-Act EB	23	Acetaldehyde	0.004675409	0.018323683	0.003176351	0.00165	0.00074	0.003807327	0.00401625	0.00252	0.038812
2035 No-Act EB	23	Acrolein	0.000409255	0.002227064	0.000142195	0.00047	0.00021	0.000245802	0.00026023	0.00018	0.002224
2035 No-Act EB	23	Benzene	0.014155033	0.006680587	0.01216612	0.00268	0.0012	0.017359383	0.01826205	0.01264	0.078167
2035 No-Act EB	23	Formaldehyde	0.009205546	0.049753259	0.005240553	0.00518	0.00232	0.005449042	0.0057414	0.00393	0.088625
2035 No-Act EB	23	PM10	0.027059081	0.050887771	0.031052596	0.0297	0.0297	0.0247	0.0247	0.0247	0.0372

6. 2035 Winter Emission Factors for Managed Lanes (ML) and No Action Alternative (grams per mile)

Scenario	Speed	Name	CompositeEF	HDDV	HDGV	LDDT	LDDV	LDGT1	LDGT2	LDGV	MC
2035 No-Act EB	25	SO2	0.008149216	0.009582756	0.016382587	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 No-Act EB	25	CO	11.71691434	0.564733707	27.37782291	0.3777	0.6611	13.36779556	12.9355143	12.7983	29.0164
2035 No-Act EB	25	NOX	0.368035421	0.42394694	0.136232195	0.1098	0.0248	0.430579529	0.48612078	0.2928	1.0504
2035 No-Act EB	25	VOC	0.494875318	0.568847449	0.466466338	0.1277	0.0573	0.549638925	0.56847678	0.4207	4.0062
2035 No-Act EB	25	1,3 Butadiene	0.001899698	0.0036375	0.000679757	0.00115	0.00052	0.001906514	0.00202083	0.00139	0.035804
2035 No-Act EB	25	Acetaldehyde	0.004492043	0.017173828	0.00283398	0.00157	0.0007	0.003714014	0.00391762	0.00245	0.03772
2035 No-Act EB	25	Acrolein	0.000390786	0.0020871	0.000127136	0.00045	0.0002	0.000239434	0.0002529	0.00017	0.002162
2035 No-Act EB	25	Benzene	0.013768775	0.006261493	0.011012464	0.00255	0.00115	0.016920355	0.01780225	0.01231	0.076082
2035 No-Act EB	25	Formaldehyde	0.008793943	0.046631706	0.004675909	0.00493	0.00221	0.005316441	0.00559979	0.00383	0.08613
2035 No-Act EB	25	PM10	0.027058867	0.050887771	0.031052396	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 No-Act EB	27	SO2	0.008149212	0.009582756	0.016380656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 No-Act EB	27	CO	11.63433861	0.521341799	25.297439	0.3582	0.6294	13.28610076	12.8614454	12.7171	27.8513
2035 No-Act EB	27	NOX	0.362275775	0.415686013	0.13884027	0.1077	0.0244	0.423940292	0.47863085	0.2882	1.0867
2035 No-Act EB	27	VOC	0.482318101	0.532759428	0.439714743	0.1216	0.0547	0.538661146	0.55754568	0.4118	3.9068
2035 No-Act EB	27	1,3 Butadiene	0.001851542	0.003406774	0.000611611	0.0011	0.00049	0.00187641	0.00198818	0.00137	0.034748
2035 No-Act EB	27	Acetaldehyde	0.004340113	0.016084298	0.002548706	0.0015	0.00067	0.003655358	0.00385499	0.00242	0.036608
2035 No-Act EB	27	Acrolein	0.000374595	0.001954742	0.000114176	0.00043	0.00019	0.000235434	0.00024857	0.00017	0.002098
2035 No-Act EB	27	Benzene	0.013501667	0.005863853	0.010050623	0.00243	0.00109	0.016632344	0.01750137	0.0121	0.07396
2035 No-Act EB	27	Formaldehyde	0.008435964	0.043673652	0.004205413	0.0047	0.00211	0.005232233	0.0055105	0.00377	0.08359
2035 No-Act EB	27	PM10	0.027058867	0.050887771	0.031052396	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 No-Act EB	29	SO2	0.0081492	0.009582756	0.0163748	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 No-Act EB	29	CO	11.56316348	0.48397005	23.50401916	0.3414	0.6022	13.21569173	12.797611	12.6471	26.8468
2035 No-Act EB	29	NOX	0.357268373	0.408589879	0.141039893	0.1059	0.024	0.418137862	0.47213923	0.2842	1.1181
2035 No-Act EB	29	VOC	0.471434611	0.501651603	0.416610555	0.1164	0.0524	0.529067395	0.54808181	0.4041	3.8211
2035 No-Act EB	29	1,3 Butadiene	0.001810594	0.003207741	0.000552631	0.00105	0.00047	0.00185049	0.00196119	0.00135	0.033838
2035 No-Act EB	29	Acetaldehyde	0.004209143	0.015145532	0.002302509	0.00143	0.00065	0.003604886	0.00380135	0.00238	0.035649
2035 No-Act EB	29	Acrolein	0.000360455	0.001840766	0.000103157	0.00041	0.00018	0.000232066	0.00024457	0.00017	0.002043
2035 No-Act EB	29	Benzene	0.013271723	0.005521702	0.009222141	0.00233	0.00105	0.016383726	0.01724214	0.01192	0.07213
2035 No-Act EB	29	Formaldehyde	0.008126778	0.041123805	0.00379908	0.00449	0.00202	0.005159393	0.00543353	0.00372	0.081401
2035 No-Act EB	29	PM10	0.027058867	0.050887771	0.031052396	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371

6. 2035 Winter Emission Factors for Managed Lanes (ML) and No Action Alternative (grams per mile)

Scenario	Speed	Name	CompositeEF	HDDV	HDGV	LDDT	LDDV	LDGT1	LDGT2	LDGV	MC
2035 No-Act EB	35	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 No-Act EB	35	CO	11.54393676	0.404392207	19.88040595	0.3057	0.5442	13.22701881	12.8177454	12.6387	24.2536
2035 No-Act EB	35	NOX	0.35071192	0.401655805	0.147744506	0.1042	0.0236	0.410045848	0.46281652	0.2788	1.1976
2035 No-Act EB	35	VOC	0.445404623	0.427344689	0.365895179	0.1039	0.0471	0.506506977	0.5251902	0.3855	3.6025
2035 No-Act EB	35	1,3 Butadiene	0.001709104	0.002732921	0.000424418	0.00094	0.00042	0.001787073	0.00189057	0.00131	0.031515
2035 No-Act EB	35	Acetaldehyde	0.003892178	0.012902162	0.001767831	0.00128	0.00058	0.003482156	0.00366643	0.0023	0.033201
2035 No-Act EB	35	Acrolein	0.000326744	0.001568211	7.91343E-05	0.00036	0.00017	0.000222698	0.00023492	0.00016	0.001903
2035 No-Act EB	35	Benzene	0.012705101	0.004703941	0.007413435	0.00208	0.00094	0.015782223	0.01659518	0.01146	0.067461
2035 No-Act EB	35	Formaldehyde	0.007383535	0.0350326	0.002916117	0.00401	0.00182	0.004983903	0.00524098	0.00359	0.075813
2035 No-Act EB	35	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 No-Act EB	49	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 No-Act EB	49	CO	12.53868465	0.345158452	18.47359922	0.2792	0.501	14.44601606	14.0084587	13.7061	22.3707
2035 No-Act EB	49	NOX	0.374969516	0.475167807	0.163962671	0.1226	0.0277	0.432042723	0.48700143	0.2944	1.3195
2035 No-Act EB	49	VOC	0.418299051	0.332308623	0.308739166	0.088	0.0403	0.486679891	0.50513471	0.3663	3.4133
2035 No-Act EB	49	1,3 Butadiene	0.001623461	0.002124817	0.000290304	0.00079	0.00036	0.001765608	0.00185964	0.00128	0.029505
2035 No-Act EB	49	Acetaldehyde	0.003570821	0.010032546	0.001209292	0.00108	0.0005	0.003444962	0.0036142	0.00226	0.031084
2035 No-Act EB	49	Acrolein	0.000289349	0.001219482	5.409E-05	0.00031	0.00014	0.00021941	0.00022892	0.00016	0.001781
2035 No-Act EB	49	Benzene	0.012315718	0.003657772	0.005492811	0.00176	0.00081	0.015488289	0.01624168	0.01115	0.063421
2035 No-Act EB	49	Formaldehyde	0.006559634	0.027241402	0.001995183	0.0034	0.00156	0.004932531	0.00516913	0.00353	0.070978
2035 No-Act EB	49	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 No-Act EB	55	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 No-Act EB	55	CO	12.9672672	0.357928428	20.28194535	0.2849	0.5103	14.95835288	14.5088595	14.1547	22.3646
2035 No-Act EB	55	NOX	0.390574327	0.552009185	0.170684019	0.1419	0.0321	0.442400362	0.49855859	0.3017	1.4065
2035 No-Act EB	55	VOC	0.408978127	0.3140636	0.296671819	0.0849	0.039	0.478029195	0.49643974	0.358	3.4112
2035 No-Act EB	55	1,3 Butadiene	0.001603286	0.002008489	0.000271346	0.00076	0.00035	0.001756927	0.001847	0.00127	0.029484
2035 No-Act EB	55	Acetaldehyde	0.003501814	0.009482169	0.001131253	0.00104	0.00048	0.003429153	0.00359225	0.00224	0.031061
2035 No-Act EB	55	Acrolein	0.000281652	0.001152405	5.09945E-05	0.0003	0.00014	0.000218042	0.00022659	0.00016	0.00178
2035 No-Act EB	55	Benzene	0.012177614	0.00345731	0.005191658	0.0017	0.00078	0.015361907	0.01609023	0.01102	0.063377
2035 No-Act EB	55	Formaldehyde	0.006391094	0.025746119	0.00186697	0.00328	0.0015	0.004910778	0.0051392	0.0035	0.070925
2035 No-Act EB	55	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371

6. 2035 Winter Emission Factors for Managed Lanes (ML) and No Action Alternative (grams per mile)

Scenario	Speed	Name	CompositeEF	HDDV	HDGV	LDDT	LDDV	LDGT1	LDGT2	LDGV	MC
2035 No-Act WB	48	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 No-Act WB	48	CO	12.47005341	0.345649323	18.3598999	0.2794	0.5014	14.36319314	13.9275537	13.6336	22.377
2035 No-Act WB	48	NOX	0.372831409	0.466584668	0.162819875	0.1205	0.0272	0.430387515	0.48516865	0.2932	1.3096
2035 No-Act WB	48	VOC	0.419885245	0.336577086	0.311310768	0.0887	0.0406	0.487992738	0.50646749	0.3676	3.4154
2035 No-Act WB	48	1,3 Butadiene	0.00162789	0.002152515	0.000295319	0.0008	0.00037	0.00176716	0.00186197	0.00128	0.029528
2035 No-Act WB	48	Acetaldehyde	0.00358616	0.01016171	0.001231239	0.00109	0.0005	0.003447882	0.00361753	0.00226	0.031108
2035 No-Act WB	48	Acrolein	0.000291	0.001235018	5.509E-05	0.00031	0.00014	0.000219594	0.00022959	0.00016	0.001783
2035 No-Act WB	48	Benzene	0.012338945	0.00370465	0.005570417	0.00177	0.00081	0.015507546	0.01626565	0.01117	0.063467
2035 No-Act WB	48	Formaldehyde	0.00659752	0.027592548	0.00203116	0.00342	0.00157	0.004936188	0.00517378	0.00353	0.071033
2035 No-Act WB	48	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 No-Act WB	49	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 No-Act WB	49	CO	12.53868465	0.345158452	18.47359922	0.2792	0.501	14.44601606	14.0084587	13.7061	22.3707
2035 No-Act WB	49	NOX	0.374969516	0.475167807	0.163962671	0.1226	0.0277	0.432042723	0.48700143	0.2944	1.3195
2035 No-Act WB	49	VOC	0.418299051	0.332308623	0.308739166	0.088	0.0403	0.486679891	0.50513471	0.3663	3.4133
2035 No-Act WB	49	1,3 Butadiene	0.001623461	0.002124817	0.000290304	0.00079	0.00036	0.001765608	0.00185964	0.00128	0.029505
2035 No-Act WB	49	Acetaldehyde	0.003570821	0.010032546	0.001209292	0.00108	0.0005	0.003444962	0.0036142	0.00226	0.031084
2035 No-Act WB	49	Acrolein	0.000289349	0.001219482	5.409E-05	0.00031	0.00014	0.00021941	0.00022892	0.00016	0.001781
2035 No-Act WB	49	Benzene	0.012315718	0.003657772	0.005492811	0.00176	0.00081	0.015488289	0.01624168	0.01115	0.063421
2035 No-Act WB	49	Formaldehyde	0.006559634	0.027241402	0.001995183	0.0034	0.00156	0.004932531	0.00516913	0.00353	0.070978
2035 No-Act WB	49	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 No-Act WB	50	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 No-Act WB	50	CO	12.60455702	0.344673213	18.58272243	0.2789	0.5006	14.52551016	14.0860637	13.7757	22.3646
2035 No-Act WB	50	NOX	0.376972045	0.483377132	0.165009191	0.1247	0.0282	0.433579529	0.48869975	0.2955	1.329
2035 No-Act WB	50	VOC	0.416795399	0.328218255	0.306270283	0.0873	0.04	0.485403849	0.50386916	0.3651	3.4112
2035 No-Act WB	50	1,3 Butadiene	0.001619755	0.002098698	0.000285274	0.00079	0.00036	0.001764056	0.00185831	0.00128	0.029484
2035 No-Act WB	50	Acetaldehyde	0.003556677	0.009908561	0.001188312	0.00107	0.00049	0.003442858	0.00361055	0.00226	0.031061
2035 No-Act WB	50	Acrolein	0.000287808	0.001204092	5.30875E-05	0.00031	0.00014	0.00021941	0.00022859	0.00016	0.00178
2035 No-Act WB	50	Benzene	0.012293317	0.003612796	0.005418229	0.00175	0.0008	0.015469216	0.01621872	0.01113	0.063377
2035 No-Act WB	50	Formaldehyde	0.006523164	0.026904127	0.001961141	0.00337	0.00154	0.004929059	0.00516447	0.00352	0.070925
2035 No-Act WB	50	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371

6. 2035 Winter Emission Factors for Managed Lanes (ML) and No Action Alternative (grams per mile)

Scenario	Speed	Name	CompositeEF	HDDV	HDGV	LDDT	LDDV	LDGT1	LDGT2	LDGV	MC
2035 No-Act WB	51	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 No-Act WB	51	CO	12.68281834	0.347538305	18.94927612	0.2802	0.5027	14.61887475	14.1772704	13.8575	22.3646
2035 No-Act WB	51	NOX	0.379944806	0.498203772	0.166178707	0.1284	0.029	0.435516334	0.49079807	0.2969	1.3457
2035 No-Act WB	51	VOC	0.415122875	0.325115275	0.304188303	0.0868	0.0398	0.483835793	0.50223639	0.3636	3.4112
2035 No-Act WB	51	1,3 Butadiene	0.001616105	0.002079035	0.000282282	0.00078	0.00036	0.00176232	0.00185598	0.00128	0.029484
2035 No-Act WB	51	Acetaldehyde	0.003544399	0.009816416	0.001176252	0.00107	0.00049	0.00343957	0.00360689	0.00225	0.031061
2035 No-Act WB	51	Acrolein	0.000286222	0.001193143	5.30163E-05	0.0003	0.00014	0.000219226	0.00022859	0.00016	0.00178
2035 No-Act WB	51	Benzene	0.012268545	0.003579045	0.005369446	0.00174	0.0008	0.015446039	0.01619142	0.01111	0.063377
2035 No-Act WB	51	Formaldehyde	0.006494674	0.026654387	0.001941038	0.00335	0.00154	0.004925219	0.00515882	0.00352	0.070925
2035 No-Act WB	51	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 No-Act WB	52	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 No-Act WB	52	CO	12.75802796	0.350275412	19.3016817	0.2814	0.5047	14.70861051	14.2649427	13.9361	22.3646
2035 No-Act WB	52	NOX	0.38275914	0.512422719	0.167421758	0.132	0.0298	0.437289945	0.4928964	0.2982	1.3618
2035 No-Act WB	52	VOC	0.413489248	0.322240048	0.302201546	0.0863	0.0396	0.48228614	0.50070361	0.3621	3.4112
2035 No-Act WB	52	1,3 Butadiene	0.001612592	0.002060195	0.000279335	0.00078	0.00036	0.001760767	0.00185366	0.00128	0.029484
2035 No-Act WB	52	Acetaldehyde	0.003533218	0.009727893	0.001164245	0.00106	0.00049	0.003437281	0.00360289	0.00225	0.031061
2035 No-Act WB	52	Acrolein	0.000284719	0.001182127	5.20661E-05	0.0003	0.00014	0.000218226	0.00022759	0.00016	0.00178
2035 No-Act WB	52	Benzene	0.012244327	0.003546674	0.005322684	0.00173	0.00079	0.015424046	0.01616446	0.01108	0.063377
2035 No-Act WB	52	Formaldehyde	0.006467278	0.026414529	0.001921085	0.00333	0.00153	0.004921563	0.00515383	0.00351	0.070925
2035 No-Act WB	52	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 No-Act WB	53	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 No-Act WB	53	CO	12.83039143	0.352909985	19.64075961	0.2826	0.5067	14.79498065	14.349315	14.0117	22.3646
2035 No-Act WB	53	NOX	0.385468902	0.526132148	0.168573512	0.1354	0.0306	0.439108348	0.49479472	0.2994	1.3773
2035 No-Act WB	53	VOC	0.411942325	0.319378707	0.300317778	0.0858	0.0394	0.480836487	0.49923807	0.3607	3.4112
2035 No-Act WB	53	1,3 Butadiene	0.001609164	0.002042211	0.000276366	0.00077	0.00035	0.001759215	0.00185133	0.00127	0.029484
2035 No-Act WB	53	Acetaldehyde	0.003522207	0.0096428	0.001153176	0.00106	0.00048	0.003434361	0.00359924	0.00225	0.031061
2035 No-Act WB	53	Acrolein	0.00028373	0.00117199	5.19945E-05	0.0003	0.00014	0.000218226	0.00022759	0.00016	0.00178
2035 No-Act WB	53	Benzene	0.012221453	0.003515552	0.005277041	0.00172	0.00079	0.015402421	0.01613916	0.01106	0.063377
2035 No-Act WB	53	Formaldehyde	0.006441122	0.026183019	0.001902931	0.00331	0.00152	0.004917906	0.00514851	0.00351	0.070925
2035 No-Act WB	53	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371

6. 2035 Winter Emission Factors for Managed Lanes (ML) and No Action Alternative (grams per mile)

Scenario	Speed	Name	CompositeEF	HDDV	HDGV	LDDT	LDDV	LDGT1	LDGT2	LDGV	MC
2035 No-Act WB	54	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 No-Act WB	54	CO	12.90010135	0.355463751	19.96727203	0.2838	0.5085	14.87822197	14.4305872	14.0845	22.3646
2035 No-Act WB	54	NOX	0.388071453	0.539290978	0.169630335	0.1387	0.0313	0.440763557	0.49669304	0.3006	1.3922
2035 No-Act WB	54	VOC	0.410425574	0.316670945	0.298443084	0.0853	0.0392	0.47942364	0.49780529	0.3593	3.4112
2035 No-Act WB	54	1,3 Butadiene	0.00160653	0.002024951	0.000274265	0.00077	0.00035	0.001758479	0.001849	0.00127	0.029484
2035 No-Act WB	54	Acetaldehyde	0.00351221	0.009560936	0.001142188	0.00105	0.00048	0.003432073	0.00359591	0.00224	0.031061
2035 No-Act WB	54	Acrolein	0.000282681	0.001162206	5.10661E-05	0.0003	0.00014	0.000218042	0.00022726	0.00016	0.00178
2035 No-Act WB	54	Benzene	0.01219914	0.00348593	0.005233346	0.00171	0.00078	0.01538198	0.01611419	0.01104	0.063377
2035 No-Act WB	54	Formaldehyde	0.006415967	0.025960468	0.001884053	0.00329	0.00151	0.004914434	0.00514385	0.0035	0.070925
2035 No-Act WB	54	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 No-Act WB	55	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 No-Act WB	55	CO	12.9672672	0.357928428	20.28194535	0.2849	0.5103	14.95835288	14.5088595	14.1547	22.3646
2035 No-Act WB	55	NOX	0.390574327	0.552009185	0.170684019	0.1419	0.0321	0.442400362	0.49855859	0.3017	1.4065
2035 No-Act WB	55	VOC	0.408978127	0.3140636	0.296671819	0.0849	0.039	0.478029195	0.49643974	0.358	3.4112
2035 No-Act WB	55	1,3 Butadiene	0.001603286	0.002008489	0.000271346	0.00076	0.00035	0.001756927	0.001847	0.00127	0.029484
2035 No-Act WB	55	Acetaldehyde	0.003501814	0.009482169	0.001131253	0.00104	0.00048	0.003429153	0.00359225	0.00224	0.031061
2035 No-Act WB	55	Acrolein	0.000281652	0.001152405	5.09945E-05	0.0003	0.00014	0.000218042	0.00022659	0.00016	0.00178
2035 No-Act WB	55	Benzene	0.012177614	0.00345731	0.005191658	0.0017	0.00078	0.015361907	0.01609023	0.01102	0.063377
2035 No-Act WB	55	Formaldehyde	0.006391094	0.025746119	0.00186697	0.00328	0.0015	0.004910778	0.0051392	0.0035	0.070925
2035 No-Act WB	55	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371

7. Vehicle Mix Assumed for All Scenarios

	HDDV	HDGV	LDDT	LDDV	LDGT1	LDGT2	LDGV	MC
Fraction	0.097196	0.011805	0.001709	0.000753	0.318422	0.106966	0.461014	0.002135

HDDV = Heavy Duty Dieseal Vehicle; HDGV = Heavy Duty Gasoline Vehicle; LDDT = Light Duty Diesel Truck; LDDV = Light Duty Diesel Vehicle; LDGT1 = Light Duty Gasoline Truck, Class 1; LDGT2 = Light Duty Gasoline Truck, Class II; LDGV = Light Duty Gasoline Vehicle; MC + Motorcycle

8. $PM_{2.5}$ Emissions and Road Dust

Scenario	Name	2035Bld(pounds)
2010 Existing EB	PM2.5	8.37
2010 Existing WB	PM2.5	3.09

Scenario	Name	2035summer(pounds)
2035 Managed Lanes EB	PM2.5	3.87
2035 Managed Lanes WB	PM2.5	1.52
2035 No-Action EB	PM2.5	3.87
2035 No-Action WB	PM2.5	1.52

Road Dust	Pounds		
Scenario	L	PM-10	PM-2_5
2010 Existing EB	Summer	11.97939	2.940404
2010 Existing EB	Winter	11.71702	2.875997
2010 Existing WB	Summer	4.424713	1.086069
2010 Existing WB	Winter	4.327804	1.06228
2035 Managed Lanes EB	Summer	14.37991	3.529623
2035 Managed Lanes EB	Winter	14.06496	3.452311
2035 Managed Lanes WB	Summer	5.632134	1.382437
2035 Managed Lanes WB	Winter	5.50878	1.352156
2035 No-Action EB	Summer	14.37979	3.529596
2035 No-Action EB	Winter	14.06485	3.452284
2035 No-Action WB	Summer	5.632134	1.382437
2035 No-Action WB	Winter	5.50878	1.352156

9. 2010 $PM_{2.5}$ Composite Emission Factors (grams per mile)

Scenario	Speed	CompositeEF	HDDV	HDGV	LDDT	LDDV	LDGT1	LDGT2	LDGV	MC
2010 Existing EB	24	0.032021292	0.2193339	0.050085	0.0656259	0.0748	0.011984	0.0122655	0.0114	0.0206
2010 Existing EB	25	0.032047281	0.2193339	0.050088	0.0656259	0.0748	0.0120656	0.0122655	0.0114	0.0206
2010 Existing EB	26	0.032021115	0.2193339	0.050002	0.0656259	0.0748	0.011984	0.0122655	0.0114	0.0206
2010 Existing EB	28	0.032010619	0.2193339	0.050096	0.0656259	0.0748	0.011984	0.0121655	0.0114	0.0206
2010 Existing EB	31	0.032010794	0.2193339	0.050178	0.0656259	0.0748	0.011984	0.0121655	0.0114	0.0206
2010 Existing EB	41	0.032017997	0.2193339	0.050183	0.0656259	0.0748	0.011984	0.0122328	0.0114	0.0206
2010 Existing EB	52	0.032017997	0.2193339	0.050183	0.0656259	0.0748	0.011984	0.0122328	0.0114	0.0206
2010 Existing EB	54	0.032017997	0.2193339	0.050183	0.0656259	0.0748	0.011984	0.0122328	0.0114	0.0206
2010 Existing EB	55	0.032017997	0.2193339	0.050183	0.0656259	0.0748	0.011984	0.0122328	0.0114	0.0206
2010 Existing WB	50	0.032017997	0.2193339	0.050183	0.0656259	0.0748	0.011984	0.0122328	0.0114	0.0206
2010 Existing WB	51	0.032017997	0.2193339	0.050183	0.0656259	0.0748	0.011984	0.0122328	0.0114	0.0206
2010 Existing WB	53	0.032017997	0.2193339	0.050183	0.0656259	0.0748	0.011984	0.0122328	0.0114	0.0206
2010 Existing WB	54	0.032017997	0.2193339	0.050183	0.0656259	0.0748	0.011984	0.0122328	0.0114	0.0206
2010 Existing WB	55	0.032017997	0.2193339	0.050183	0.0656259	0.0748	0.011984	0.0122328	0.0114	0.0206

10. 2010 $PM_{2.5}$ Composite Emission Factors (grams per mile)

Scenario	Speed	CompositeEF	HDDV	HDGV	LDDT	LDDV	LDGT1	LDGT2	LDGV	MC
2035 ML EB	22	0.012300937	0.0236716	0.0166381	0.0158	0.0157	0.0112	0.0112	0.0111	0.0207
2035 ML EB	25	0.012347028	0.0236716	0.0167335	0.0158	0.0157	0.0112	0.0112	0.0112	0.0206
2035 ML EB	27	0.012347028	0.0236716	0.0167335	0.0158	0.0157	0.0112	0.0112	0.0112	0.0206
2035 ML EB	29	0.012347029	0.0236716	0.0167335	0.0158	0.0157	0.0112	0.0112	0.0112	0.0206
2035 ML EB	30	0.012347033	0.0236716	0.0167356	0.0158	0.0157	0.0112	0.0112	0.0112	0.0206
2035 ML EB	32	0.012347033	0.0236716	0.0167356	0.0158	0.0157	0.0112	0.0112	0.0112	0.0206
2035 ML EB	38	0.012347041	0.0236716	0.0167393	0.0158	0.0157	0.0112	0.0112	0.0112	0.0206
2035 ML EB	39	0.012347041	0.0236716	0.0167393	0.0158	0.0157	0.0112	0.0112	0.0112	0.0206
2035 ML EB	41	0.012347041	0.0236716	0.0167393	0.0158	0.0157	0.0112	0.0112	0.0112	0.0206
2035 ML EB	44	0.012347041	0.0236716	0.0167393	0.0158	0.0157	0.0112	0.0112	0.0112	0.0206
2035 ML EB	46	0.012347041	0.0236716	0.0167393	0.0158	0.0157	0.0112	0.0112	0.0112	0.0206
2035 ML EB	53	0.012347041	0.0236716	0.0167393	0.0158	0.0157	0.0112	0.0112	0.0112	0.0206
2035 ML EB	55	0.012347041	0.0236716	0.0167393	0.0158	0.0157	0.0112	0.0112	0.0112	0.0206
2035 ML WB	48	0.012347041	0.0236716	0.0167393	0.0158	0.0157	0.0112	0.0112	0.0112	0.0206
2035 ML WB	49	0.012347041	0.0236716	0.0167393	0.0158	0.0157	0.0112	0.0112	0.0112	0.0206
2035 ML WB	50	0.012347041	0.0236716	0.0167393	0.0158	0.0157	0.0112	0.0112	0.0112	0.0206
2035 ML WB	51	0.012347041	0.0236716	0.0167393	0.0158	0.0157	0.0112	0.0112	0.0112	0.0206
2035 ML WB	52	0.012347041	0.0236716	0.0167393	0.0158	0.0157	0.0112	0.0112	0.0112	0.0206
2035 ML WB	53	0.012347041	0.0236716	0.0167393	0.0158	0.0157	0.0112	0.0112	0.0112	0.0206
2035 ML WB	54	0.012347041	0.0236716	0.0167393	0.0158	0.0157	0.0112	0.0112	0.0112	0.0206
2035 ML WB	55	0.012347041	0.0236716	0.0167393	0.0158	0.0157	0.0112	0.0112	0.0112	0.0206
2035 No-Act EB	21	0.012347051	0.0236716	0.016644	0.0158	0.0157	0.0112	0.0112	0.0112	0.0207
2035 No-Act EB	22	0.012300937	0.0236716	0.0166381	0.0158	0.0157	0.0112	0.0112	0.0111	0.0207
2035 No-Act EB	23	0.01238959	0.0236716	0.016644	0.0158	0.0157	0.0113	0.0113	0.0112	0.0207
2035 No-Act EB	25	0.012347028	0.0236716	0.0167335	0.0158	0.0157	0.0112	0.0112	0.0112	0.0206
2035 No-Act EB	27	0.012347028	0.0236716	0.0167335	0.0158	0.0157	0.0112	0.0112	0.0112	0.0206
2035 No-Act EB	29	0.012347029	0.0236716	0.0167335	0.0158	0.0157	0.0112	0.0112	0.0112	0.0206
2035 No-Act EB	35	0.012347041	0.0236716	0.0167393	0.0158	0.0157	0.0112	0.0112	0.0112	0.0206
2035 No-Act EB	49	0.012347041	0.0236716	0.0167393	0.0158	0.0157	0.0112	0.0112	0.0112	0.0206
2035 No-Act EB	55	0.012347041	0.0236716	0.0167393	0.0158	0.0157	0.0112	0.0112	0.0112	0.0206

10. 2010 $PM_{2.5}$ Composite Emission Factors (grams per mile)

Scenario	Speed	CompositeEF	HDDV	HDGV	LDDT	LDDV	LDGT1	LDGT2	LDGV	MC
2035 No-Act WB	48	0.012347041	0.0236716	0.0167393	0.0158	0.0157	0.0112	0.0112	0.0112	0.0206
2035 No-Act WB	49	0.012347041	0.0236716	0.0167393	0.0158	0.0157	0.0112	0.0112	0.0112	0.0206
2035 No-Act WB	50	0.012347041	0.0236716	0.0167393	0.0158	0.0157	0.0112	0.0112	0.0112	0.0206
2035 No-Act WB	51	0.012347041	0.0236716	0.0167393	0.0158	0.0157	0.0112	0.0112	0.0112	0.0206
2035 No-Act WB	52	0.012347041	0.0236716	0.0167393	0.0158	0.0157	0.0112	0.0112	0.0112	0.0206
2035 No-Act WB	53	0.012347041	0.0236716	0.0167393	0.0158	0.0157	0.0112	0.0112	0.0112	0.0206
2035 No-Act WB	54	0.012347041	0.0236716	0.0167393	0.0158	0.0157	0.0112	0.0112	0.0112	0.0206
2035 No-Act WB	55	0.012347041	0.0236716	0.0167393	0.0158	0.0157	0.0112	0.0112	0.0112	0.0206

11. Road Dust Emission Factors

season	size	frwy pounds per VMT
Summer	PM-10	0.000100996
Winter	PM-10	0.000098784
Summer	PM-2.5	0.00002479
Winter	PM-2.5	0.000024247

12. 2010 Emissions for Detour Conditions (pounds)

Scenario	Name	Winter	Summer
2010 Detour EB	SO2	2.12	2.12
2010 Detour EB	CO	4,886.71	2,593.73
2010 Detour EB	NOX	447.78	417.14
2010 Detour EB	VOC	324.86	320.92
2010 Detour EB	1,3 Butadiene	1.14	0.91
2010 Detour EB	Acetaldehyde	2.50	2.03
2010 Detour EB	Acrolein	0.21	0.17
2010 Detour EB	Benzene	8.58	7.53
2010 Detour EB	Formaldehyde	4.68	4.08
2010 Detour EB	PM10	12.67	12.67
2010 Detour WB	SO2	0.79	0.79
2010 Detour WB	CO	1,967.74	1,082.28
2010 Detour WB	NOX	188.66	175.21
2010 Detour WB	VOC	104.41	100.30
2010 Detour WB	1,3 Butadiene	0.36	0.28
2010 Detour WB	Acetaldehyde	0.76	0.59
2010 Detour WB	Acrolein	0.06	0.05
2010 Detour WB	Benzene	2.83	2.43
2010 Detour WB	Formaldehyde	1.35	1.14
2010 Detour WB	PM10	4.68	4.68

13. 2035 Emissions for General Purpose Lanes (punds per day)

Scenario	Name	Winter	Summer
2035 General Purpose Lanes EB	SO2	2.56	2.56
2035 General Purpose Lanes EB	CO	3,721.28	1,822.05
2035 General Purpose Lanes EB	NOX	112.55	102.48
2035 General Purpose Lanes EB	VOC	138.14	134.00
2035 General Purpose Lanes EB	1,3 Butadiene	0.53	0.45
2035 General Purpose Lanes EB	Acetaldehyde	1.20	1.01
2035 General Purpose Lanes EB	Acrolein	0.10	0.08
2035 General Purpose Lanes EB	Benzene	3.97	3.55
2035 General Purpose Lanes EB	Formaldehyde	2.26	2.03
2035 General Purpose Lanes EB	PM10	8.49	8.49
2035 General Purpose Lanes WB	SO2	1.00	1.00
2035 General Purpose Lanes WB	CO	1,570.24	789.64
2035 General Purpose Lanes WB	NOX	47.14	42.48
2035 General Purpose Lanes WB	VOC	50.81	48.03
2035 General Purpose Lanes WB	1,3 Butadiene	0.20	0.17
2035 General Purpose Lanes WB	Acetaldehyde	0.43	0.36
2035 General Purpose Lanes WB	Acrolein	0.04	0.03
2035 General Purpose Lanes WB	Benzene	1.51	1.33
2035 General Purpose Lanes WB	Formaldehyde	0.80	0.71
2035 General Purpose Lanes WB	PM10	3.33	3.33

14. 2010 Summer Emission Factors for Detour Conditions

Scenario	Speed	Name	CompositeEF	HDDV	HDGV	LDDT	LDDV	LDGT1	LDGT2	LDGV	MC
2010 Detour EB	26	SO2	0.00811	0.00965	0.0167	0.00409	0.0021	0.00868	0.0114	0.0068	0.0033
2010 Detour EB	26	CO	9.9794	5.91957	25.055	0.91024	1.1087	11.9594	12.0134	9.0997	28.0565
2010 Detour EB	26	NOX	1.61791	8.3123	2.18807	0.6989	0.5007	1.05119	1.15469	0.7455	0.8525
2010 Detour EB	26	VOC	1.26482	1.10113	1.64328	0.53397	0.3092	1.43348	1.4463	1.1507	5.3863
2010 Detour EB	26	1,3 Butadiene	0.0036	0.00705	0.00304	0.00482	0.00281	0.00358	0.00402	0.00272	0.03333
2010 Detour EB	26	Acetaldehyde	0.00814	0.03328	0.00845	0.00659	0.00384	0.00624	0.00705	0.00446	0.03511
2010 Detour EB	26	Acrolein	0.0007	0.00404	0.00115	0.00188	0.00109	0.00039	0.00044	0.00028	0.00201
2010 Detour EB	26	Benzene	0.02957	0.01213	0.03264	0.01071	0.00624	0.03558	0.03764	0.02767	0.08578
2010 Detour EB	26	Formaldehyde	0.01643	0.09035	0.0174	0.02068	0.01205	0.00978	0.01097	0.00674	0.08017
2010 Detour EB	26	PM10	0.04845	0.26364	0.0704	0.08382	0.0939	0.02552	0.02597	0.0249	0.0371
2010 Detour EB	30	SO2	0.00813	0.00965	0.01662	0.00409	0.0021	0.00876	0.0114	0.0068	0.0033
2010 Detour EB	30	CO	9.77394	5.0999	21.6245	0.8383	1.0211	11.8373	11.8838	8.9677	25.8555
2010 Detour EB	30	NOX	1.56838	8.0547	2.25837	0.67621	0.4847	1.02179	1.12298	0.7196	0.9019
2010 Detour EB	30	VOC	1.20942	0.97609	1.49472	0.4929	0.2873	1.38162	1.39717	1.1058	5.2075
2010 Detour EB	30	1,3 Butadiene	0.00342	0.00625	0.00248	0.00445	0.00261	0.00347	0.00389	0.00264	0.03143
2010 Detour EB	30	Acetaldehyde	0.00761	0.0295	0.0069	0.00608	0.00357	0.00604	0.00682	0.00432	0.03311
2010 Detour EB	30	Acrolein	0.00065	0.00359	0.00094	0.00173	0.00102	0.00038	0.00042	0.00027	0.0019
2010 Detour EB	30	Benzene	0.02845	0.01075	0.02798	0.00989	0.0058	0.03437	0.03637	0.02672	0.08197
2010 Detour EB	30	Formaldehyde	0.01518	0.08009	0.0142	0.01909	0.01119	0.00946	0.0106	0.00654	0.0756
2010 Detour EB	30	PM10	0.04844	0.26364	0.07058	0.08382	0.0939	0.02552	0.02587	0.0249	0.0371
2010 Detour EB	35	SO2	0.00813	0.00965	0.01661	0.00409	0.0021	0.00876	0.0114	0.0068	0.0033
2010 Detour EB	35	CO	9.77847	4.41482	18.9409	0.7781	0.9479	11.9526	11.9866	9.0421	23.5186
2010 Detour EB	35	NOX	1.54739	7.98735	2.34967	0.67031	0.4805	1.00591	1.10617	0.7025	0.9533
2010 Detour EB	35	VOC	1.15151	0.8554	1.36351	0.45326	0.2661	1.3258	1.34258	1.0585	5.0203
2010 Detour EB	35	1,3 Butadiene	0.00323	0.00548	0.002	0.00409	0.00242	0.00331	0.00371	0.00253	0.02944
2010 Detour EB	35	Acetaldehyde	0.00705	0.02585	0.00556	0.00559	0.0033	0.00578	0.00651	0.00415	0.03102
2010 Detour EB	35	Acrolein	0.00059	0.00314	0.00076	0.00159	0.00094	0.00036	0.0004	0.00025	0.00178
2010 Detour EB	35	Benzene	0.02716	0.00942	0.02394	0.0091	0.00537	0.03291	0.03481	0.02561	0.07797
2010 Detour EB	35	Formaldehyde	0.0139	0.07019	0.01145	0.01755	0.01036	0.00906	0.01013	0.00628	0.07082
2010 Detour EB	35	PM10	0.04847	0.26364	0.07058	0.08382	0.0939	0.0256	0.02587	0.0249	0.0371

14. 2010 Summer Emission Factors for Detour Conditions

Scenario	Speed	Name	CompositeEF	HDDV	HDGV	LDDT	LDDV	LDGT1	LDGT2	LDGV	MC
2010 Detour EB	41	SO2	0.00813	0.00965	0.01661	0.00409	0.0021	0.00876	0.0114	0.0068	0.0033
2010 Detour EB	41	CO	10.2148	3.95419	17.4429	0.73769	0.8986	12.552	12.5635	9.5524	21.9257
2010 Detour EB	41	NOX	1.58567	8.28417	2.46106	0.69645	0.499	1.02011	1.1192	0.7093	0.9953
2010 Detour EB	41	VOC	1.10827	0.75215	1.25866	0.41931	0.248	1.28695	1.30638	1.023	4.8799
2010 Detour EB	41	1,3 Butadiene	0.00311	0.00481	0.00163	0.00379	0.00225	0.00325	0.00364	0.00249	0.02795
2010 Detour EB	41	Acetaldehyde	0.00666	0.02273	0.00455	0.00517	0.00308	0.00567	0.00638	0.00408	0.02945
2010 Detour EB	41	Acrolein	0.00054	0.00276	0.00062	0.00147	0.00088	0.00035	0.00039	0.00025	0.00169
2010 Detour EB	41	Benzene	0.02644	0.00829	0.02082	0.00841	0.005	0.03216	0.03402	0.02502	0.07498
2010 Detour EB	41	Formaldehyde	0.01294	0.06172	0.00936	0.01624	0.00965	0.00889	0.00993	0.00618	0.06724
2010 Detour EB	41	PM10	0.04847	0.26364	0.07058	0.08382	0.0939	0.0256	0.02587	0.0249	0.0371
2010 Detour WB	50	SO2	0.00813	0.00965	0.01661	0.00409	0.0021	0.00876	0.0114	0.0068	0.0033
2010 Detour WB	50	CO	10.9087	3.76302	17.7046	0.72086	0.8782	13.4281	13.4072	10.298	21.4569
2010 Detour WB	50	NOX	1.72002	9.46265	2.62365	0.80014	0.5724	1.04833	1.146	0.725	1.0566
2010 Detour WB	50	VOC	1.05668	0.65691	1.1637	0.38811	0.2313	1.23637	1.25888	0.978	4.8214
2010 Detour WB	50	1,3 Butadiene	0.00298	0.0042	0.00134	0.0035	0.0021	0.00316	0.00352	0.00243	0.02733
2010 Detour WB	50	Acetaldehyde	0.00626	0.01985	0.00374	0.00479	0.00287	0.00551	0.00619	0.00399	0.02879
2010 Detour WB	50	Acrolein	0.0005	0.00241	0.00051	0.00136	0.00082	0.00034	0.00038	0.00024	0.00165
2010 Detour WB	50	Benzene	0.02551	0.00724	0.01823	0.00779	0.00466	0.03112	0.03293	0.02422	0.07373
2010 Detour WB	50	Formaldehyde	0.012	0.0539	0.0077	0.01503	0.009	0.00864	0.00964	0.00605	0.06574
2010 Detour WB	50	PM10	0.04847	0.26364	0.07058	0.08382	0.0939	0.0256	0.02587	0.0249	0.0371
2010 Detour WB	51	SO2	0.00813	0.00965	0.01661	0.00409	0.0021	0.00876	0.0114	0.0068	0.0033
2010 Detour WB	51	CO	10.999	3.79425	18.0538	0.72361	0.8816	13.5344	13.5096	10.3885	21.4569
2010 Detour WB	51	NOX	1.74862	9.7298	2.6434	0.82364	0.5891	1.05197	1.1496	0.7271	1.0697
2010 Detour WB	51	VOC	1.05113	0.65085	1.15717	0.38608	0.2302	1.23018	1.25308	0.9729	4.8214
2010 Detour WB	51	1,3 Butadiene	0.00297	0.00417	0.00133	0.00349	0.00209	0.00314	0.00351	0.00242	0.02733
2010 Detour WB	51	Acetaldehyde	0.00623	0.01967	0.0037	0.00476	0.00286	0.00549	0.00617	0.00398	0.02879
2010 Detour WB	51	Acrolein	0.0005	0.00239	0.0005	0.00136	0.00081	0.00034	0.00038	0.00024	0.00165
2010 Detour WB	51	Benzene	0.02541	0.00717	0.01809	0.00775	0.00464	0.03099	0.03279	0.02413	0.07373
2010 Detour WB	51	Formaldehyde	0.01193	0.0534	0.00762	0.01495	0.00896	0.00861	0.0096	0.00603	0.06574
2010 Detour WB	51	PM10	0.04847	0.26364	0.07058	0.08382	0.0939	0.0256	0.02587	0.0249	0.0371

14. 2010 Summer Emission Factors for Detour Conditions

Scenario	Speed	Name	CompositeEF	HDDV	HDGV	LDDT	LDDV	LDGT1	LDGT2	LDGV	MC
2010 Detour WB	53	SO2	0.00813	0.00965	0.01661	0.00409	0.0021	0.00876	0.0114	0.0068	0.0033
2010 Detour WB	53	CO	11.1694	3.85313	18.7127	0.72881	0.8879	13.7351	13.7029	10.5592	21.4569
2010 Detour WB	53	NOX	1.80267	10.2339	2.68057	0.86801	0.6205	1.05894	1.15636	0.7312	1.0945
2010 Detour WB	53	VOC	1.04066	0.63935	1.14474	0.38232	0.2282	1.21849	1.24211	0.9633	4.8214
2010 Detour WB	53	1,3 Butadiene	0.00294	0.00409	0.0013	0.00345	0.00207	0.00312	0.00348	0.0024	0.02733
2010 Detour WB	53	Acetaldehyde	0.00617	0.01932	0.00363	0.00472	0.00283	0.00545	0.00612	0.00395	0.02879
2010 Detour WB	53	Acrolein	0.00049	0.00235	0.00049	0.00134	0.00081	0.00034	0.00037	0.00024	0.00165
2010 Detour WB	53	Benzene	0.02521	0.00704	0.01782	0.00767	0.0046	0.03075	0.03254	0.02395	0.07373
2010 Detour WB	53	Formaldehyde	0.0118	0.05246	0.00747	0.01481	0.00888	0.00856	0.00953	0.006	0.06574
2010 Detour WB	53	PM10	0.04847	0.26364	0.07058	0.08382	0.0939	0.0256	0.02587	0.0249	0.0371
2010 Detour WB	54	SO2	0.00813	0.00965	0.01661	0.00409	0.0021	0.00876	0.0114	0.0068	0.0033
2010 Detour WB	54	CO	11.2499	3.88098	19.0238	0.73126	0.8908	13.8298	13.7942	10.6398	21.4569
2010 Detour WB	54	NOX	1.82817	10.4719	2.69808	0.88897	0.6353	1.06218	1.15956	0.7331	1.1062
2010 Detour WB	54	VOC	1.03571	0.63391	1.13891	0.38049	0.2273	1.2129	1.23694	0.9588	4.8214
2010 Detour WB	54	1,3 Butadiene	0.00293	0.00406	0.00129	0.00344	0.00206	0.00311	0.00347	0.0024	0.02733
2010 Detour WB	54	Acetaldehyde	0.00614	0.01916	0.00359	0.0047	0.00282	0.00544	0.0061	0.00394	0.02879
2010 Detour WB	54	Acrolein	0.00049	0.00233	0.00049	0.00134	0.0008	0.00033	0.00037	0.00024	0.00165
2010 Detour WB	54	Benzene	0.02512	0.00698	0.01769	0.00764	0.00458	0.03064	0.03242	0.02387	0.07373
2010 Detour WB	54	Formaldehyde	0.01173	0.05201	0.0074	0.01474	0.00884	0.00853	0.0095	0.00598	0.06574
2010 Detour WB	54	PM10	0.04847	0.26364	0.07058	0.08382	0.0939	0.0256	0.02587	0.0249	0.0371
2010 Detour WB	55	SO2	0.00813	0.00965	0.01661	0.00409	0.0021	0.00876	0.0114	0.0068	0.0033
2010 Detour WB	55	CO	11.3274	3.90779	19.3236	0.73361	0.8937	13.9211	13.8821	10.7175	21.4569
2010 Detour WB	55	NOX	1.85275	10.7012	2.71503	0.90911	0.6496	1.0654	1.16269	0.7349	1.1175
2010 Detour WB	55	VOC	1.03094	0.62864	1.13322	0.37886	0.2264	1.20761	1.23197	0.9544	4.8214
2010 Detour WB	55	1,3 Butadiene	0.00292	0.00402	0.00128	0.00342	0.00205	0.0031	0.00346	0.00239	0.02733
2010 Detour WB	55	Acetaldehyde	0.00612	0.019	0.00356	0.00467	0.00281	0.00542	0.00608	0.00393	0.02879
2010 Detour WB	55	Acrolein	0.00049	0.00231	0.00049	0.00133	0.0008	0.00033	0.00037	0.00024	0.00165
2010 Detour WB	55	Benzene	0.02503	0.00693	0.01757	0.0076	0.00456	0.03053	0.03231	0.02379	0.07373
2010 Detour WB	55	Formaldehyde	0.01167	0.05158	0.00733	0.01467	0.00881	0.0085	0.00947	0.00597	0.06574
2010 Detour WB	55	PM10	0.04847	0.26364	0.07058	0.08382	0.0939	0.0256	0.02587	0.0249	0.0371

15. 2010 Winter Emission Factors for Detour Conditions (not applicable)

Scenario	Speed	Name	CompositeEF	HDDV	HDGV	LDDT	LDDV	LDGT1	LDGT2	LDGV	MC
2010 Detour EB	26	SO2	0.0081079	0.0096494	0.0167017	0.00409	0.0021	0.0086816	0.0114	0.0068	0.0033
2010 Detour EB	26	CO	18.784889	5.9195725	30.98492	0.9102362	1.1087	23.358758	22.731262	17.8105	28.4114
2010 Detour EB	26	NOX	1.7337977	8.3122969	2.2584843	0.6988979	0.5007	1.2393407	1.3628587	0.8173	1.0693
2010 Detour EB	26	VOC	1.2758494	1.1011263	1.5844035	0.5339652	0.3092	1.4898085	1.5916802	1.1056	4.662
2010 Detour EB	26	1,3 Butadiene	0.0044771	0.0070478	0.0040633	0.0048213	0.00281	0.0047767	0.005419	0.003462	0.03578
2010 Detour EB	26	Acetaldehyde	0.0099429	0.0332752	0.0113067	0.0065901	0.00384	0.0091282	0.010342	0.00559	0.037694
2010 Detour EB	26	Acrolein	0.0008532	0.0040439	0.001541	0.001875	0.001093	0.0005975	0.0006747	0.000403	0.00216
2010 Detour EB	26	Benzene	0.0336114	0.0121313	0.0374212	0.0107149	0.006244	0.0416958	0.0452647	0.03045	0.080914
2010 Detour EB	26	Formaldehyde	0.0187643	0.0903521	0.0232714	0.0206802	0.01205	0.0132491	0.0150602	0.008405	0.086071
2010 Detour EB	26	PM10	0.0484517	0.2636441	0.0704046	0.0838205	0.0939	0.0255208	0.0259655	0.0249	0.0371
2010 Detour EB	30	SO2	0.0081337	0.0096494	0.0166158	0.00409	0.0021	0.0087632	0.0114	0.0068	0.0033
2010 Detour EB	30	CO	18.480908	5.0999002	26.74253	0.8382999	1.0211	23.100656	22.47745	17.5905	26.3948
2010 Detour EB	30	NOX	1.6851779	8.0547003	2.3309774	0.6762077	0.4847	1.2074943	1.3284907	0.7956	1.1322
2010 Detour EB	30	VOC	1.2268706	0.9760902	1.4076577	0.4929026	0.2873	1.4438734	1.5462575	1.0698	4.4878
2010 Detour EB	30	1,3 Butadiene	0.0042903	0.0062476	0.0033168	0.0044512	0.002609	0.0046439	0.0052671	0.003366	0.03393
2010 Detour EB	30	Acetaldehyde	0.009383	0.0294976	0.0092289	0.0060827	0.003566	0.0088747	0.0100525	0.005435	0.035746
2010 Detour EB	30	Acrolein	0.0007942	0.003585	0.0012578	0.0017306	0.001015	0.0005799	0.000655	0.000391	0.002048
2010 Detour EB	30	Benzene	0.0325206	0.0107545	0.0314038	0.0098913	0.005799	0.0404846	0.0439746	0.029559	0.077197
2010 Detour EB	30	Formaldehyde	0.0174749	0.0800942	0.0189947	0.0190899	0.011192	0.0128807	0.0146378	0.008171	0.081622
2010 Detour EB	30	PM10	0.0484414	0.2636441	0.0705754	0.0838205	0.0939	0.0255208	0.0258655	0.0249	0.0371
2010 Detour EB	35	SO2	0.0081337	0.0096494	0.0166105	0.00409	0.0021	0.0087632	0.0114	0.0068	0.0033
2010 Detour EB	35	CO	18.465776	4.4148232	23.423886	0.7780993	0.9479	23.188966	22.563861	17.6467	24.2536
2010 Detour EB	35	NOX	1.6669245	7.9873477	2.4252938	0.6703058	0.4805	1.1920287	1.3120142	0.784	1.1976
2010 Detour EB	35	VOC	1.1744081	0.8554011	1.2544982	0.4532626	0.2661	1.3920743	1.4930744	1.0313	4.3054
2010 Detour EB	35	1,3 Butadiene	0.0040771	0.0054752	0.0026745	0.0040933	0.002416	0.0044707	0.0050672	0.003246	0.031994
2010 Detour EB	35	Acetaldehyde	0.0087856	0.02585	0.0074415	0.0055936	0.003302	0.0085465	0.0096734	0.005243	0.033706
2010 Detour EB	35	Acrolein	0.0007326	0.0031415	0.0010147	0.0015913	0.00094	0.0005563	0.0006274	0.000376	0.001932
2010 Detour EB	35	Benzene	0.0312286	0.0094244	0.026219	0.0090951	0.005369	0.0389869	0.0423459	0.028495	0.073305
2010 Detour EB	35	Formaldehyde	0.0161484	0.0701899	0.0153161	0.0175546	0.010363	0.012405	0.0140858	0.007884	0.076965
2010 Detour EB	35	PM10	0.0484674	0.2636441	0.0705837	0.0838205	0.0939	0.0256024	0.0258655	0.0249	0.0371

15. 2010 Winter Emission Factors for Detour Conditions (not applicable)

Scenario	Speed	Name	CompositeEF	HDDV	HDGV	LDDT	LDDV	LDGT1	LDGT2	LDGV	MC
2010 Detour EB	41	SO2	0.0081337	0.0096494	0.0166105	0.00409	0.0021	0.0087632	0.0114	0.0068	0.0033
2010 Detour EB	41	CO	19.059998	3.9541926	21.571207	0.7376921	0.8986	24.003355	23.358752	18.3014	22.7942
2010 Detour EB	41	NOX	1.711603	8.284175	2.5402714	0.6964544	0.499	1.2122575	1.3312108	0.799	1.251
2010 Detour EB	41	VOC	1.1392823	0.7521511	1.1362505	0.4193145	0.248	1.3605192	1.4625071	1.0071	4.1686
2010 Detour EB	41	1,3 Butadiene	0.0039497	0.0048139	0.0021865	0.0037862	0.002251	0.0043933	0.0049773	0.003194	0.030543
2010 Detour EB	41	Acetaldehyde	0.0083752	0.0227289	0.0060847	0.0051747	0.003076	0.0084026	0.0095068	0.005164	0.032177
2010 Detour EB	41	Acrolein	0.0006872	0.0027624	0.0008293	0.0014724	0.000875	0.0005462	0.0006154	0.000369	0.001844
2010 Detour EB	41	Benzene	0.0305484	0.0082865	0.0222678	0.0084149	0.005002	0.0382529	0.0415633	0.027983	0.070388
2010 Detour EB	41	Formaldehyde	0.0151628	0.0617161	0.0125229	0.0162409	0.009654	0.0121968	0.0138432	0.007768	0.073474
2010 Detour EB	41	PM10	0.0484674	0.2636441	0.0705837	0.0838205	0.0939	0.0256024	0.0258655	0.0249	0.0371
2010 Detour WB	50	SO2	0.0081337	0.0096494	0.0166105	0.00409	0.0021	0.0087632	0.0114	0.0068	0.0033
2010 Detour WB	50	CO	19.984527	3.7630152	21.894914	0.7208571	0.8782	25.192213	24.519299	19.2573	22.3646
2010 Detour WB	50	NOX	1.8555161	9.4626451	2.7080764	0.8001391	0.5724	1.2502991	1.3678058	0.8263	1.329
2010 Detour WB	50	VOC	1.0969169	0.6569089	1.0358954	0.3881098	0.2313	1.3181538	1.4207744	0.9751	4.1117
2010 Detour WB	50	1,3 Butadiene	0.0038032	0.0042047	0.0017983	0.0035045	0.002098	0.0042806	0.0048453	0.003119	0.029938
2010 Detour WB	50	Acetaldehyde	0.0079451	0.0198521	0.0050043	0.0047893	0.002868	0.0081925	0.0092629	0.005049	0.03154
2010 Detour WB	50	Acrolein	0.0006418	0.0024128	0.0006821	0.0013625	0.000816	0.0005311	0.000598	0.00036	0.001807
2010 Detour WB	50	Benzene	0.0296515	0.0072377	0.019071	0.0077875	0.004663	0.0372099	0.0404441	0.027262	0.069173
2010 Detour WB	50	Formaldehyde	0.0141803	0.0539038	0.0103	0.0150299	0.009	0.0118924	0.0134882	0.007599	0.072019
2010 Detour WB	50	PM10	0.0484674	0.2636441	0.0705837	0.0838205	0.0939	0.0256024	0.0258655	0.0249	0.0371
2010 Detour WB	51	SO2	0.0081337	0.0096494	0.0166105	0.00409	0.0021	0.0087632	0.0114	0.0068	0.0033
2010 Detour WB	51	CO	20.102733	3.7942455	22.326823	0.7236122	0.8816	25.336241	24.6599	19.373	22.3646
2010 Detour WB	51	NOX	1.8852967	9.7298034	2.7284005	0.8236444	0.5891	1.2551727	1.3726369	0.8298	1.3457
2010 Detour WB	51	VOC	1.0920441	0.6508517	1.0295449	0.3860772	0.2302	1.3126394	1.4154071	0.9709	4.1117
2010 Detour WB	51	1,3 Butadiene	0.0037891	0.0041658	0.0017797	0.0034862	0.002089	0.0042666	0.0048297	0.00311	0.029938
2010 Detour WB	51	Acetaldehyde	0.0079093	0.019668	0.0049527	0.0047649	0.002855	0.008167	0.0092335	0.005035	0.03154
2010 Detour WB	51	Acrolein	0.0006382	0.0023901	0.000675	0.0013554	0.000812	0.0005289	0.0005957	0.000359	0.001807
2010 Detour WB	51	Benzene	0.0295471	0.0071704	0.0189048	0.0077469	0.004642	0.0370807	0.0403057	0.027172	0.069173
2010 Detour WB	51	Formaldehyde	0.0141057	0.0534037	0.0101936	0.0149526	0.008958	0.0118555	0.0134453	0.007579	0.072019
2010 Detour WB	51	PM10	0.0484674	0.2636441	0.0705837	0.0838205	0.0939	0.0256024	0.0258655	0.0249	0.0371

15. 2010 Winter Emission Factors for Detour Conditions (not applicable)

Scenario	Speed	Name	CompositeEF	HDDV	HDGV	LDDT	LDDV	LDGT1	LDGT2	LDGV	MC
2010 Detour WB	53	SO2	0.0081337	0.0096494	0.0166105	0.00409	0.0021	0.0087632	0.0114	0.0068	0.0033
2010 Detour WB	53	CO	20.325839	3.8531308	23.141585	0.728815	0.8879	25.607968	24.925164	19.5915	22.3646
2010 Detour WB	53	NOX	1.9414987	10.233855	2.7667597	0.8680072	0.6205	1.2643015	1.3816663	0.8365	1.3773
2010 Detour WB	53	VOC	1.0828902	0.6393472	1.0175388	0.3823162	0.2282	1.3023394	1.4053071	0.963	4.1117
2010 Detour WB	53	1,3 Butadiene	0.0037626	0.004092	0.0017443	0.0034517	0.00207	0.0042413	0.0047993	0.003093	0.029938
2010 Detour WB	53	Acetaldehyde	0.0078419	0.0193201	0.0048545	0.0047182	0.002829	0.0081187	0.0091779	0.005009	0.03154
2010 Detour WB	53	Acrolein	0.0006318	0.0023481	0.0006618	0.0013422	0.000805	0.000526	0.0005917	0.000357	0.001807
2010 Detour WB	53	Benzene	0.0293508	0.0070436	0.018592	0.0076716	0.004601	0.0368375	0.0400458	0.027003	0.069173
2010 Detour WB	53	Formaldehyde	0.0139644	0.0524592	0.0099918	0.0148062	0.008879	0.011786	0.0133643	0.00754	0.072019
2010 Detour WB	53	PM10	0.0484674	0.2636441	0.0705837	0.0838205	0.0939	0.0256024	0.0258655	0.0249	0.0371
2010 Detour WB	54	SO2	0.0081337	0.0096494	0.0166105	0.00409	0.0021	0.0087632	0.0114	0.0068	0.0033
2010 Detour WB	54	CO	20.431212	3.8809807	23.526284	0.7312635	0.8908	25.736285	25.050461	19.6947	22.3646
2010 Detour WB	54	NOX	1.9680242	10.471851	2.7849013	0.8889673	0.6353	1.2686567	1.3859646	0.8396	1.3922
2010 Detour WB	54	VOC	1.0785872	0.6339068	1.0118806	0.3804878	0.2273	1.2974722	1.4006071	0.9593	4.1117
2010 Detour WB	54	1,3 Butadiene	0.00375	0.0040575	0.0017282	0.0034364	0.002062	0.0042287	0.004785	0.003085	0.029938
2010 Detour WB	54	Acetaldehyde	0.0078097	0.019156	0.0048087	0.0046958	0.002817	0.0080959	0.0091512	0.004996	0.03154
2010 Detour WB	54	Acrolein	0.0006284	0.002328	0.0006559	0.0013361	0.000802	0.0005238	0.0005897	0.000356	0.001807
2010 Detour WB	54	Benzene	0.0292574	0.0069838	0.0184435	0.007636	0.004581	0.0367224	0.0399231	0.026922	0.069173
2010 Detour WB	54	Formaldehyde	0.0138981	0.0520135	0.0098972	0.014737	0.008842	0.0117538	0.0133263	0.007522	0.072019
2010 Detour WB	54	PM10	0.0484674	0.2636441	0.0705837	0.0838205	0.0939	0.0256024	0.0258655	0.0249	0.0371
2010 Detour WB	55	SO2	0.0081337	0.0096494	0.0166105	0.00409	0.0021	0.0087632	0.0114	0.0068	0.0033
2010 Detour WB	55	CO	20.532744	3.9077887	23.897103	0.7336111	0.8937	25.859989	25.17119	19.7941	22.3646
2010 Detour WB	55	NOX	1.9935795	10.701226	2.8023891	0.9091149	0.6496	1.2728119	1.3900957	0.8426	1.4065
2010 Detour WB	55	VOC	1.0744018	0.6286351	1.0064453	0.3788594	0.2264	1.2927419	1.3960071	0.9557	4.1117
2010 Detour WB	55	1,3 Butadiene	0.0037378	0.0040238	0.0017124	0.0034202	0.002053	0.0042171	0.0047717	0.003077	0.029938
2010 Detour WB	55	Acetaldehyde	0.0077789	0.0189975	0.0047642	0.0046745	0.002806	0.0080741	0.0091259	0.004984	0.03154
2010 Detour WB	55	Acrolein	0.0006254	0.0023087	0.0006492	0.00133	0.000798	0.0005225	0.0005877	0.000355	0.001807
2010 Detour WB	55	Benzene	0.0291679	0.0069261	0.0183012	0.0076015	0.004563	0.0366112	0.0398048	0.026845	0.069173
2010 Detour WB	55	Formaldehyde	0.0138336	0.0515835	0.0098054	0.0146699	0.008806	0.0117222	0.013289	0.007504	0.072019
2010 Detour WB	55	PM10	0.0484674	0.2636441	0.0705837	0.0838205	0.0939	0.0256024	0.0258655	0.0249	0.0371

16. 2035 Summer Emission Factors for General Purpose Lanes (grams per mile)

Scenario	Speed	Name	CompositeEF	HDDV	HDGV	LDDT	LDDV	LDGT1	LDGT2	LDGV	MC
2035 EB GPL	31	SO2	0.008149003	0.009582756	0.016282837	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 EB GPL	31	CO	5.593845662	0.452927584	17.83892013	0.3275	0.5796	6.646686623	6.596863871	5.7147	25.3278
2035 EB GPL	31	NOX	0.324899035	0.404527526	0.138842206	0.1049	0.0237	0.36511911	0.413202072	0.2661	0.9135
2035 EB GPL	31	VOC	0.454551733	0.474015062	0.427118152	0.1118	0.0504	0.497911845	0.509810324	0.4006	4.4852
2035 EB GPL	31	1,3 Butadiene	0.001511288	0.003031161	0.000376323	0.001006	0.000454	0.00149283	0.001583329	0.001093	0.030536
2035 EB GPL	31	Acetaldehyde	0.003468434	0.014311513	0.001566717	0.001375	0.000621	0.002595677	0.002740994	0.001915	0.03217
2035 EB GPL	31	Acrolein	0.000296352	0.001739339	7.00956E-05	0.000391	0.000177	0.000160833	0.000169933	0.000115	0.001844
2035 EB GPL	31	Benzene	0.011764073	0.005217783	0.007706395	0.002235	0.001009	0.014323532	0.015009716	0.01065	0.074756
2035 EB GPL	31	Formaldehyde	0.007108707	0.038859918	0.002585663	0.004314	0.001947	0.004139767	0.004362179	0.002984	0.073458
2035 EB GPL	31	PM10	0.027058676	0.050887771	0.030962565	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 EB GPL	32	SO2	0.008149003	0.009582756	0.016282587	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 EB GPL	32	CO	5.59395495	0.439675039	17.35674181	0.3216	0.5699	6.652089748	6.603163871	5.7171	24.8331
2035 EB GPL	32	NOX	0.323621268	0.403728454	0.13999609	0.1047	0.0237	0.363800707	0.411703749	0.2647	0.9244
2035 EB GPL	32	VOC	0.449238835	0.461248664	0.418871897	0.1096	0.0495	0.493359761	0.505244776	0.3962	4.446
2035 EB GPL	32	1,3 Butadiene	0.001494383	0.002949771	0.000360323	0.000987	0.000446	0.001483094	0.001571674	0.001085	0.030121
2035 EB GPL	32	Acetaldehyde	0.00341614	0.01392605	0.001499614	0.001348	0.000609	0.002578205	0.00272101	0.001902	0.031732
2035 EB GPL	32	Acrolein	0.000290846	0.001692603	6.71032E-05	0.000384	0.000173	0.000159833	0.000168933	0.000114	0.001818
2035 EB GPL	32	Benzene	0.01165859	0.005077298	0.007460707	0.002192	0.000991	0.014213594	0.014893111	0.010559	0.07392
2035 EB GPL	32	Formaldehyde	0.006982104	0.037813765	0.002474586	0.004231	0.001912	0.004111743	0.004331196	0.002962	0.072458
2035 EB GPL	32	PM10	0.027058872	0.050887771	0.031054527	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 EB GPL	33	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 EB GPL	33	CO	5.594090039	0.427198801	16.90385188	0.316	0.5608	6.657192873	6.609131097	5.7194	24.3684
2035 EB GPL	33	NOX	0.322435303	0.402977494	0.141140148	0.1045	0.0237	0.362582305	0.410305427	0.2634	0.9346
2035 EB GPL	33	VOC	0.444255797	0.449274922	0.411217578	0.1076	0.0487	0.489044483	0.500979227	0.3921	4.4093
2035 EB GPL	33	1,3 Butadiene	0.001478575	0.002872927	0.000344414	0.000968	0.000438	0.001473358	0.001561346	0.001078	0.02973
2035 EB GPL	33	Acetaldehyde	0.003366572	0.013564244	0.001436557	0.001324	0.000599	0.002561285	0.002702683	0.001889	0.031321
2035 EB GPL	33	Acrolein	0.000285509	0.001648497	6.4132E-05	0.000377	0.00017	0.000158649	0.000167605	0.000113	0.001795
2035 EB GPL	33	Benzene	0.011559451	0.004945377	0.007230157	0.002152	0.000973	0.014111025	0.014783178	0.010473	0.073135
2035 EB GPL	33	Formaldehyde	0.006863774	0.036830221	0.002370506	0.004154	0.001879	0.004085087	0.004302213	0.002943	0.071518
2035 EB GPL	33	PM10	0.026970047	0.050887771	0.030967798	0.0297	0.0297	0.0246	0.0246	0.0246	0.0371

16. 2035 Summer Emission Factors for General Purpose Lanes (grams per mile)

Scenario	Speed	Name	CompositeEF	HDDV	HDGV	LDDT	LDDV	LDGT1	LDGT2	LDGV	MC
2035 EB GPL	34	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 EB GPL	34	CO	5.594202474	0.415413463	16.47759734	0.3107	0.5522	6.661951206	6.614631097	5.7216	23.931
2035 EB GPL	34	NOX	0.321298913	0.402311085	0.142186087	0.1044	0.0236	0.361463902	0.409007104	0.2621	0.9443
2035 EB GPL	34	VOC	0.439558647	0.437975673	0.403887499	0.1057	0.0479	0.485047608	0.496913679	0.3882	4.3747
2035 EB GPL	34	1,3 Butadiene	0.001463353	0.002800902	0.000330383	0.000951	0.000431	0.001463806	0.001551018	0.001071	0.029363
2035 EB GPL	34	Acetaldehyde	0.003320171	0.0132236	0.001377447	0.0013	0.000589	0.002545997	0.002685027	0.001877	0.030933
2035 EB GPL	34	Acrolein	0.000280505	0.001606797	6.20018E-05	0.00037	0.000168	0.000157649	0.000166605	0.000112	0.001773
2035 EB GPL	34	Benzene	0.01146648	0.004820984	0.007013628	0.002114	0.000957	0.014014192	0.014679901	0.010393	0.072396
2035 EB GPL	34	Formaldehyde	0.006752088	0.035905195	0.002272419	0.004081	0.001847	0.004060431	0.004274902	0.002924	0.070634
2035 EB GPL	34	PM10	0.027012771	0.050887771	0.031054527	0.0297	0.0297	0.0247	0.0247	0.0246	0.0371
2035 EB GPL	35	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 EB GPL	35	CO	5.594344138	0.404392207	16.07565419	0.3057	0.5442	6.666446344	6.619931097	5.7237	23.5186
2035 EB GPL	35	NOX	0.320243265	0.401655805	0.143139516	0.1042	0.0236	0.360445499	0.407741556	0.2609	0.9533
2035 EB GPL	35	VOC	0.435131641	0.427344689	0.397050228	0.1039	0.0471	0.481287538	0.49314813	0.3845	4.3421
2035 EB GPL	35	1,3 Butadiene	0.001449162	0.002732921	0.000317292	0.000935	0.000424	0.001455885	0.001541363	0.001064	0.029016
2035 EB GPL	35	Acetaldehyde	0.003276452	0.012902162	0.00132139	0.001278	0.000579	0.002531076	0.002669044	0.001866	0.030568
2035 EB GPL	35	Acrolein	0.000275674	0.001568211	5.90863E-05	0.000364	0.000165	0.000156465	0.000164933	0.000111	0.001752
2035 EB GPL	35	Benzene	0.0113786	0.004703941	0.006808301	0.002079	0.000942	0.01392291	0.014582623	0.010317	0.0717
2035 EB GPL	35	Formaldehyde	0.006646606	0.0350326	0.00218027	0.004012	0.001818	0.004036958	0.004248919	0.002906	0.0698
2035 EB GPL	35	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 EB GPL	36	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 EB GPL	36	CO	5.645894916	0.395915206	15.80925653	0.3019	0.538	6.731396346	6.683368903	5.7805	23.1917
2035 EB GPL	36	NOX	0.321119212	0.404031212	0.144391525	0.1048	0.0237	0.361445499	0.40887433	0.2613	0.9614
2035 EB GPL	36	VOC	0.43156842	0.417442159	0.390830509	0.1023	0.0464	0.478564274	0.490582582	0.3815	4.3142
2035 EB GPL	36	1,3 Butadiene	0.001440622	0.002669239	0.000306304	0.00092	0.000418	0.001454333	0.001539035	0.001062	0.02872
2035 EB GPL	36	Acetaldehyde	0.003244195	0.012603374	0.001274369	0.001258	0.000571	0.002528972	0.002665716	0.001863	0.030256
2035 EB GPL	36	Acrolein	0.000272015	0.001531493	5.70804E-05	0.000358	0.000162	0.000156465	0.000164605	0.000111	0.001734
2035 EB GPL	36	Benzene	0.01133331	0.004595056	0.006632958	0.002045	0.000928	0.013888629	0.014544329	0.010278	0.071104
2035 EB GPL	36	Formaldehyde	0.006562327	0.034221615	0.002103179	0.003947	0.001791	0.004033118	0.004243591	0.002902	0.069087
2035 EB GPL	36	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371

16. 2035 Summer Emission Factors for General Purpose Lanes (grams per mile)

Scenario	Speed	Name	CompositeEF	HDDV	HDGV	LDDT	LDDV	LDGT1	LDGT2	LDGV	MC
2035 EB GPL	37	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 EB GPL	37	CO	5.694716008	0.387933383	15.55724027	0.2983	0.5322	6.792880723	6.743439484	5.8343	22.8824
2035 EB GPL	37	NOX	0.321894709	0.40627417	0.14553965	0.1054	0.0238	0.362363902	0.40987433	0.2616	0.969
2035 EB GPL	37	VOC	0.42825103	0.408086003	0.384911264	0.1007	0.0457	0.476122607	0.488082582	0.3787	4.2878
2035 EB GPL	37	1,3 Butadiene	0.001432989	0.002609457	0.000295319	0.000906	0.000411	0.001452781	0.001537035	0.001061	0.028439
2035 EB GPL	37	Acetaldehyde	0.003213305	0.012320873	0.00123032	0.001239	0.000562	0.002526052	0.002662388	0.00186	0.029961
2035 EB GPL	37	Acrolein	0.000268559	0.001497076	5.509E-05	0.000352	0.00016	0.000156281	0.000164605	0.000111	0.001717
2035 EB GPL	37	Benzene	0.011290395	0.004491923	0.006466715	0.002014	0.000914	0.013856084	0.014508363	0.010241	0.07054
2035 EB GPL	37	Formaldehyde	0.00648212	0.033454676	0.002029197	0.003887	0.001765	0.004029646	0.004238608	0.002897	0.068413
2035 EB GPL	37	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 EB GPL	39	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 EB GPL	39	CO	5.784778917	0.373168769	15.09200057	0.2917	0.5214	6.90638142	6.854280645	5.9335	22.3115
2035 EB GPL	39	NOX	0.323388988	0.410402402	0.147737337	0.1064	0.0241	0.364163902	0.411807104	0.2622	0.983
2035 EB GPL	39	VOC	0.42203344	0.390824151	0.374092623	0.0978	0.0445	0.471468093	0.483584259	0.3734	4.239
2035 EB GPL	39	1,3 Butadiene	0.001418284	0.002498951	0.000275364	0.00088	0.0004	0.001449677	0.001533379	0.001058	0.027921
2035 EB GPL	39	Acetaldehyde	0.003156456	0.011799495	0.001148205	0.001203	0.000547	0.002522028	0.002655733	0.001854	0.029415
2035 EB GPL	39	Acrolein	0.000262164	0.001433958	5.11247E-05	0.000342	0.000156	0.000156097	0.000163605	0.000111	0.001686
2035 EB GPL	39	Benzene	0.011211453	0.004301783	0.006159491	0.001956	0.00089	0.013796546	0.01444143	0.010173	0.0695
2035 EB GPL	39	Formaldehyde	0.006334701	0.032038521	0.001894967	0.003775	0.001717	0.004023517	0.004229625	0.002889	0.067167
2035 EB GPL	39	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 EB GPL	41	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 EB GPL	41	CO	5.87871394	0.36216526	14.80417586	0.2868	0.5134	7.02312934	6.96845458	6.0356	21.9257
2035 EB GPL	41	NOX	0.32561199	0.418098139	0.149937215	0.1083	0.0245	0.366400707	0.414305427	0.2632	0.9953
2035 EB GPL	41	VOC	0.416328338	0.375761661	0.364499008	0.0953	0.0434	0.467150384	0.479285937	0.3684	4.2035
2035 EB GPL	41	1,3 Butadiene	0.001404745	0.002403028	0.000259234	0.000857	0.000391	0.001446573	0.001528724	0.001054	0.027544
2035 EB GPL	41	Acetaldehyde	0.003106683	0.01134445	0.001080187	0.001172	0.000534	0.002517188	0.00264975	0.001849	0.029017
2035 EB GPL	41	Acrolein	0.000255946	0.001378523	4.81008E-05	0.000333	0.000152	0.000155281	0.000163277	0.00011	0.001663
2035 EB GPL	41	Benzene	0.0111367	0.004136098	0.005899467	0.001905	0.000868	0.01373856	0.014375825	0.010106	0.068741
2035 EB GPL	41	Formaldehyde	0.006205232	0.030803229	0.00178284	0.003677	0.001675	0.004016389	0.004219641	0.002881	0.066259
2035 EB GPL	41	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371

16. 2035 Summer Emission Factors for General Purpose Lanes (grams per mile)

Scenario	Speed	Name	CompositeEF	HDDV	HDGV	LDDT	LDDV	LDGT1	LDGT2	LDGV	MC
2035 EB GPL	42	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 EB GPL	42	CO	5.928509609	0.358174555	14.73501163	0.285	0.5105	7.084395313	7.028392387	6.0891	21.8098
2035 EB GPL	42	NOX	0.327094895	0.423602018	0.1510909	0.1097	0.0248	0.36781911	0.415770975	0.2639	1.0008
2035 EB GPL	42	VOC	0.413622188	0.368989801	0.360121313	0.0941	0.0429	0.465019134	0.477185937	0.366	4.1911
2035 EB GPL	42	1,3 Butadiene	0.001399315	0.002359778	0.000252322	0.000847	0.000386	0.001445837	0.001526724	0.001053	0.027412
2035 EB GPL	42	Acetaldehyde	0.003084083	0.01114067	0.00105119	0.001158	0.000528	0.002515083	0.002646422	0.001846	0.028879
2035 EB GPL	42	Acrolein	0.000253392	0.001353876	4.70731E-05	0.000329	0.00015	0.000155097	0.000162605	0.00011	0.001655
2035 EB GPL	42	Benzene	0.011100242	0.004061533	0.005787439	0.001883	0.000858	0.013709567	0.01434353	0.010072	0.068476
2035 EB GPL	42	Formaldehyde	0.006147227	0.030250856	0.001734878	0.003633	0.001656	0.004012917	0.004214986	0.002877	0.065942
2035 EB GPL	42	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 EB GPL	46	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 EB GPL	46	CO	6.117640467	0.346762131	14.65030084	0.2799	0.5022	7.315907125	7.254574709	6.2913	21.4851
2035 EB GPL	46	NOX	0.333039513	0.448326317	0.155486335	0.1159	0.0262	0.37304793	0.421434846	0.2665	1.0247
2035 EB GPL	46	VOC	0.403726407	0.345733835	0.344960887	0.0902	0.0412	0.457194133	0.469422066	0.3569	4.1547
2035 EB GPL	46	1,3 Butadiene	0.001377853	0.002210774	0.000229265	0.000812	0.000371	0.001439813	0.001518413	0.001046	0.027026
2035 EB GPL	46	Acetaldehyde	0.003005315	0.01043745	0.000954976	0.00111	0.000507	0.002506219	0.002633783	0.001835	0.028472
2035 EB GPL	46	Acrolein	0.000244345	0.001268712	4.30274E-05	0.000316	0.000144	0.000154729	0.000161605	0.000109	0.001632
2035 EB GPL	46	Benzene	0.010968089	0.003805456	0.005401937	0.001804	0.000825	0.013601699	0.014220992	0.009948	0.067699
2035 EB GPL	46	Formaldehyde	0.005944678	0.028340637	0.001574703	0.003482	0.001592	0.003999028	0.004196364	0.00286	0.065013
2035 EB GPL	46	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 EB GPL	50	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 EB GPL	50	CO	6.308226539	0.344673213	15.02635638	0.2789	0.5006	7.546145325	7.47962258	6.4923	21.4569
2035 EB GPL	50	NOX	0.340053543	0.483377132	0.159878381	0.1247	0.0282	0.378258347	0.427131491	0.2692	1.0566
2035 EB GPL	50	VOC	0.394849319	0.328218255	0.3327901	0.0873	0.04	0.449413924	0.461758195	0.3486	4.1457
2035 EB GPL	50	1,3 Butadiene	0.001361329	0.002098698	0.000213232	0.000785	0.00036	0.00143442	0.00151043	0.00104	0.02693
2035 EB GPL	50	Acetaldehyde	0.002944788	0.009908561	0.000888879	0.001074	0.000492	0.002497538	0.002621472	0.001825	0.028371
2035 EB GPL	50	Acrolein	0.000237504	0.001204092	4.00563E-05	0.000305	0.00014	0.000153545	0.000160277	0.000109	0.001626
2035 EB GPL	50	Benzene	0.010847547	0.003612796	0.005123196	0.001746	0.0008	0.013495462	0.014100127	0.009831	0.067508
2035 EB GPL	50	Formaldehyde	0.005790536	0.026904127	0.001466498	0.003369	0.001543	0.003985955	0.004177397	0.002844	0.064783
2035 EB GPL	50	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371

16. 2035 Summer Emission Factors for General Purpose Lanes (grams per mile)

Scenario	Speed	Name	CompositeEF	HDDV	HDGV	LDDT	LDDV	LDGT1	LDGT2	LDGV	MC
2035 EB GPL	52	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 EB GPL	52	CO	6.413262851	0.350275412	15.60764844	0.2814	0.5047	7.671314078	7.601998193	6.6014	21.4569
2035 EB GPL	52	NOX	0.344908382	0.512422719	0.162190692	0.132	0.0298	0.38115036	0.430362588	0.2707	1.0824
2035 EB GPL	52	VOC	0.390817036	0.322240048	0.328364662	0.0863	0.0396	0.445422604	0.457859872	0.3448	4.1457
2035 EB GPL	52	1,3 Butadiene	0.001354264	0.002060195	0.000209164	0.000776	0.000356	0.001431316	0.001506102	0.001036	0.02693
2035 EB GPL	52	Acetaldehyde	0.002922051	0.009727893	0.000870836	0.001061	0.000487	0.002492514	0.002614489	0.001819	0.028371
2035 EB GPL	52	Acrolein	0.000234734	0.001182127	3.90563E-05	0.000302	0.000138	0.000153361	0.000159277	0.000108	0.001626
2035 EB GPL	52	Benzene	0.010790248	0.003546674	0.005037018	0.001725	0.000791	0.013440188	0.014036866	0.009774	0.067508
2035 EB GPL	52	Formaldehyde	0.005735226	0.026414529	0.001436479	0.00333	0.001527	0.003978642	0.004167086	0.002835	0.064783
2035 EB GPL	52	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 WB GPL	48	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 WB GPL	48	CO	6.216853192	0.345649323	14.84616044	0.2794	0.5014	7.435810253	7.371748645	6.3959	21.4704
2035 WB GPL	48	NOX	0.336680595	0.466584668	0.157786208	0.1205	0.0272	0.375721541	0.424433169	0.2679	1.0413
2035 WB GPL	48	VOC	0.399120343	0.336577086	0.338571999	0.0887	0.0406	0.453176424	0.465423743	0.3526	4.15
2035 WB GPL	48	1,3 Butadiene	0.001369463	0.002152515	0.000221177	0.000798	0.000365	0.001437524	0.001514085	0.001043	0.026976
2035 WB GPL	48	Acetaldehyde	0.002973729	0.01016171	0.000920011	0.001091	0.000499	0.002501379	0.002627128	0.00183	0.028419
2035 WB GPL	48	Acrolein	0.000240694	0.001235018	4.10781E-05	0.00031	0.000142	0.000153729	0.000161277	0.000109	0.001629
2035 WB GPL	48	Benzene	0.01090536	0.00370465	0.005256969	0.001774	0.000812	0.013546528	0.014158732	0.009887	0.0676
2035 WB GPL	48	Formaldehyde	0.005864705	0.027592548	0.001518564	0.003423	0.001567	0.003992715	0.004186381	0.002852	0.064893
2035 WB GPL	48	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 WB GPL	49	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 WB GPL	49	CO	6.263474591	0.345158452	14.93811684	0.2792	0.501	7.492073796	7.426819225	6.4451	21.4635
2035 WB GPL	49	NOX	0.338426292	0.475167807	0.158837711	0.1226	0.0277	0.377039944	0.425798717	0.2686	1.0491
2035 WB GPL	49	VOC	0.396914243	0.332308623	0.335672717	0.088	0.0403	0.451245174	0.463590969	0.3505	4.1479
2035 WB GPL	49	1,3 Butadiene	0.001365144	0.002124817	0.000217187	0.000792	0.000363	0.001435972	0.001512757	0.001041	0.026953
2035 WB GPL	49	Acetaldehyde	0.002958793	0.010032546	0.000903987	0.001082	0.000495	0.002499458	0.002624472	0.001827	0.028395
2035 WB GPL	49	Acrolein	0.000239068	0.001219482	4.09479E-05	0.000308	0.000141	0.000153729	0.000160277	0.000109	0.001627
2035 WB GPL	49	Benzene	0.010875735	0.003657772	0.005189	0.001759	0.000806	0.013520719	0.014128765	0.009858	0.067553
2035 WB GPL	49	Formaldehyde	0.005826896	0.027241402	0.001491597	0.003396	0.001555	0.003989243	0.004181725	0.002848	0.064837
2035 WB GPL	49	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371

16. 2035 Summer Emission Factors for General Purpose Lanes (grams per mile)

Scenario	Speed	Name	CompositeEF	HDDV	HDGV	LDDT	LDDV	LDGT1	LDGT2	LDGV	MC
2035 WB GPL	50	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 WB GPL	50	CO	6.308226539	0.344673213	15.02635638	0.2789	0.5006	7.546145325	7.47962258	6.4923	21.4569
2035 WB GPL	50	NOX	0.340053543	0.483377132	0.159878381	0.1247	0.0282	0.378258347	0.427131491	0.2692	1.0566
2035 WB GPL	50	VOC	0.394849319	0.328218255	0.3327901	0.0873	0.04	0.449413924	0.461758195	0.3486	4.1457
2035 WB GPL	50	1,3 Butadiene	0.001361329	0.002098698	0.000213232	0.000785	0.00036	0.00143442	0.00151043	0.00104	0.02693
2035 WB GPL	50	Acetaldehyde	0.002944788	0.009908561	0.000888879	0.001074	0.000492	0.002497538	0.002621472	0.001825	0.028371
2035 WB GPL	50	Acrolein	0.000237504	0.001204092	4.00563E-05	0.000305	0.00014	0.000153545	0.000160277	0.000109	0.001626
2035 WB GPL	50	Benzene	0.010847547	0.003612796	0.005123196	0.001746	0.0008	0.013495462	0.014100127	0.009831	0.067508
2035 WB GPL	50	Formaldehyde	0.005790536	0.026904127	0.001466498	0.003369	0.001543	0.003985955	0.004177397	0.002844	0.064783
2035 WB GPL	50	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 WB GPL	51	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 WB GPL	51	CO	6.361764117	0.347538305	15.32270473	0.2802	0.5027	7.609966507	7.541960386	6.5479	21.4569
2035 WB GPL	51	NOX	0.342542343	0.498203772	0.16103759	0.1284	0.029	0.379713555	0.42879704	0.27	1.0697
2035 WB GPL	51	VOC	0.392764114	0.325115275	0.330567795	0.0868	0.0398	0.447409062	0.459725421	0.3466	4.1457
2035 WB GPL	51	1,3 Butadiene	0.00135774	0.002079035	0.000211239	0.000781	0.000358	0.001432868	0.001508102	0.001038	0.02693
2035 WB GPL	51	Acetaldehyde	0.002933353	0.009816416	0.000878984	0.001067	0.000489	0.002495434	0.002617817	0.001822	0.028371
2035 WB GPL	51	Acrolein	0.000235974	0.001193143	3.90781E-05	0.000304	0.000139	0.000153545	0.000160277	0.000108	0.001626
2035 WB GPL	51	Benzene	0.010818473	0.003579045	0.005079128	0.001735	0.000795	0.013467549	0.01406816	0.009802	0.067508
2035 WB GPL	51	Formaldehyde	0.005762186	0.026654387	0.001450588	0.003349	0.001535	0.003982299	0.004172414	0.002839	0.064783
2035 WB GPL	51	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 WB GPL	52	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 WB GPL	52	CO	6.413262851	0.350275412	15.60764844	0.2814	0.5047	7.671314078	7.601998193	6.6014	21.4569
2035 WB GPL	52	NOX	0.344908382	0.512422719	0.162190692	0.132	0.0298	0.38115036	0.430362588	0.2707	1.0824
2035 WB GPL	52	VOC	0.390817036	0.322240048	0.328364662	0.0863	0.0396	0.445422604	0.457859872	0.3448	4.1457
2035 WB GPL	52	1,3 Butadiene	0.001354264	0.002060195	0.000209164	0.000776	0.000356	0.001431316	0.001506102	0.001036	0.02693
2035 WB GPL	52	Acetaldehyde	0.002922051	0.009727893	0.000870836	0.001061	0.000487	0.002492514	0.002614489	0.001819	0.028371
2035 WB GPL	52	Acrolein	0.000234734	0.001182127	3.90563E-05	0.000302	0.000138	0.000153361	0.000159277	0.000108	0.001626
2035 WB GPL	52	Benzene	0.010790248	0.003546674	0.005037018	0.001725	0.000791	0.013440188	0.014036866	0.009774	0.067508
2035 WB GPL	52	Formaldehyde	0.005735226	0.026414529	0.001436479	0.00333	0.001527	0.003978642	0.004167086	0.002835	0.064783
2035 WB GPL	52	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371

16. 2035 Summer Emission Factors for General Purpose Lanes (grams per mile)

Scenario	Speed	Name	CompositeEF	HDDV	HDGV	LDDT	LDDV	LDGT1	LDGT2	LDGV	MC
2035 WB GPL	53	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 WB GPL	53	CO	6.462801109	0.352909985	15.88183761	0.2826	0.5067	7.730288038	7.659701548	6.6529	21.4569
2035 WB GPL	53	NOX	0.34721021	0.526132148	0.163337463	0.1354	0.0306	0.382568763	0.431860911	0.2714	1.0945
2035 WB GPL	53	VOC	0.388906866	0.319378707	0.32625969	0.0858	0.0394	0.443536145	0.456027098	0.343	4.1457
2035 WB GPL	53	1,3 Butadiene	0.001351371	0.002042211	0.000207162	0.000772	0.000354	0.001429764	0.001504446	0.001035	0.02693
2035 WB GPL	53	Acetaldehyde	0.002911411	0.0096428	0.000861909	0.001055	0.000484	0.00249041	0.002611834	0.001816	0.028371
2035 WB GPL	53	Acrolein	0.000233745	0.00117199	3.89767E-05	0.0003	0.000138	0.000153361	0.000159277	0.000108	0.001626
2035 WB GPL	53	Benzene	0.010763178	0.003515552	0.00499604	0.001716	0.000787	0.013413827	0.014007899	0.009747	0.067508
2035 WB GPL	53	Formaldehyde	0.005709209	0.026183019	0.001422448	0.003312	0.001519	0.00397517	0.004162431	0.002831	0.064783
2035 WB GPL	53	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 WB GPL	54	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 WB GPL	54	CO	6.510481696	0.355463751	16.14589217	0.2838	0.5085	7.787133179	7.715272128	6.7024	21.4569
2035 WB GPL	54	NOX	0.34942187	0.539290978	0.164388635	0.1387	0.0313	0.383887166	0.433326459	0.2721	1.1062
2035 WB GPL	54	VOC	0.387049542	0.316670945	0.324256192	0.0853	0.0392	0.441768089	0.454194324	0.3412	4.1457
2035 WB GPL	54	1,3 Butadiene	0.001348311	0.002024951	0.000205159	0.000768	0.000352	0.001429028	0.001502446	0.001033	0.02693
2035 WB GPL	54	Acetaldehyde	0.002901538	0.009560936	0.000853886	0.00105	0.000482	0.00248849	0.002608506	0.001814	0.028371
2035 WB GPL	54	Acrolein	0.000232696	0.001162206	3.80563E-05	0.000299	0.000137	0.000153177	0.00015895	0.000108	0.001626
2035 WB GPL	54	Benzene	0.010736892	0.00348593	0.004956141	0.001707	0.000783	0.013388018	0.013978933	0.009721	0.067508
2035 WB GPL	54	Formaldehyde	0.0056841	0.025960468	0.001408541	0.003294	0.001512	0.003971698	0.004158103	0.002827	0.064783
2035 WB GPL	54	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 WB GPL	55	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 WB GPL	55	CO	6.556480903	0.357928428	16.40036058	0.2849	0.5103	7.84192311	7.768842709	6.7502	21.4569
2035 WB GPL	55	NOX	0.351560251	0.552009185	0.16543302	0.1419	0.0321	0.385123972	0.434759233	0.2728	1.1175
2035 WB GPL	55	VOC	0.385310938	0.3140636	0.322266467	0.0849	0.039	0.440018436	0.45246155	0.3396	4.1457
2035 WB GPL	55	1,3 Butadiene	0.001345553	0.002008489	0.0002032	0.000764	0.000351	0.00142766	0.001500119	0.001032	0.02693
2035 WB GPL	55	Acetaldehyde	0.002891537	0.009482169	0.000845901	0.001044	0.000479	0.00248657	0.002605506	0.001811	0.028371
2035 WB GPL	55	Acrolein	0.000231479	0.001152405	3.80324E-05	0.000297	0.000136	0.000152361	0.00015895	0.000108	0.001626
2035 WB GPL	55	Benzene	0.010711915	0.00345731	0.004919103	0.001698	0.000779	0.013364209	0.013950967	0.009696	0.067508
2035 WB GPL	55	Formaldehyde	0.005660074	0.025746119	0.00139551	0.003277	0.001504	0.003969226	0.004153448	0.002823	0.064783
2035 WB GPL	55	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371

17. 2035 Winter Emission Factors for General Purpose Lanes (grams per mile)

Scenario	Speed	Name	CompositeEF	HDDV	HDGV	LDDT	LDDV	LDGT1	LDGT2	LDGV	MC
2035 EB GPL	31	SO2	0.008149003	0.009582756	0.016282837	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 EB GPL	31	CO	11.53402122	0.452927584	22.06097625	0.3275	0.5796	13.19373756	12.77994373	12.6208	25.9113
2035 EB GPL	31	NOX	0.354063126	0.404527526	0.143339771	0.1049	0.0237	0.414327445	0.467811492	0.2816	1.1469
2035 EB GPL	31	VOC	0.461775152	0.474015062	0.39714156	0.1118	0.0504	0.520692048	0.539617937	0.3972	3.7419
2035 EB GPL	31	1,3 Butadiene	0.001773448	0.003031161	0.00050353	0.001006	0.000454	0.001827201	0.001935539	0.001337	0.032997
2035 EB GPL	31	Acetaldehyde	0.004092129	0.014311513	0.002096241	0.001375	0.000621	0.003559677	0.003752036	0.002353	0.034762
2035 EB GPL	31	Acrolein	0.000347919	0.001739339	9.40751E-05	0.000391	0.000177	0.000228066	0.000241572	0.000163	0.001992
2035 EB GPL	31	Benzene	0.013063945	0.005217783	0.008524357	0.002235	0.001009	0.016161716	0.017005928	0.011753	0.070439
2035 EB GPL	31	Formaldehyde	0.007851398	0.038859918	0.003458633	0.004314	0.001947	0.005094264	0.005363239	0.003672	0.079376
2035 EB GPL	31	PM10	0.027058676	0.050887771	0.030962565	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 EB GPL	32	SO2	0.008149003	0.009582756	0.016282587	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 EB GPL	32	CO	11.53673218	0.439675039	21.46475584	0.3216	0.5699	13.20281186	12.79031095	12.6257	25.4581
2035 EB GPL	32	NOX	0.353172252	0.403728454	0.14449898	0.1047	0.0237	0.413145848	0.466445944	0.2809	1.1608
2035 EB GPL	32	VOC	0.457297041	0.461248664	0.388529122	0.1096	0.0495	0.516795172	0.535719615	0.394	3.7038
2035 EB GPL	32	1,3 Butadiene	0.001755607	0.002949771	0.000481485	0.000987	0.000446	0.001816281	0.001922884	0.001328	0.032592
2035 EB GPL	32	Acetaldehyde	0.004037259	0.01392605	0.002006141	0.001348	0.000609	0.003538205	0.003728725	0.002338	0.034335
2035 EB GPL	32	Acrolein	0.00034225	0.001692603	9.007E-05	0.000384	0.000173	0.000226882	0.000239572	0.000162	0.001968
2035 EB GPL	32	Benzene	0.012965746	0.005077298	0.008220943	0.002192	0.000991	0.016057515	0.016893667	0.011673	0.069624
2035 EB GPL	32	Formaldehyde	0.007723425	0.037813765	0.00331047	0.004231	0.001912	0.00506424	0.005329928	0.003649	0.078402
2035 EB GPL	32	PM10	0.027058872	0.050887771	0.031054527	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 EB GPL	33	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 EB GPL	33	CO	11.539292	0.427198801	20.9045761	0.316	0.5608	13.21140457	12.80001095	12.6303	25.0323
2035 EB GPL	33	NOX	0.352271192	0.402977494	0.145652665	0.1045	0.0237	0.412045848	0.465147621	0.2801	1.1738
2035 EB GPL	33	VOC	0.453090029	0.449274922	0.380512468	0.1076	0.0487	0.513153505	0.531954066	0.391	3.6679
2035 EB GPL	33	1,3 Butadiene	0.001738925	0.002872927	0.000461452	0.000968	0.000438	0.001805545	0.001911556	0.00132	0.032211
2035 EB GPL	33	Acetaldehyde	0.003986498	0.013564244	0.001922044	0.001324	0.000599	0.003518733	0.00370707	0.002325	0.033934
2035 EB GPL	33	Acrolein	0.000336911	0.001648497	8.61294E-05	0.000377	0.00017	0.000225698	0.000238244	0.000161	0.001945
2035 EB GPL	33	Benzene	0.012873231	0.004945377	0.007934825	0.002152	0.000973	0.015960049	0.016788062	0.011597	0.06886
2035 EB GPL	33	Formaldehyde	0.007603393	0.036830221	0.003171305	0.004154	0.001879	0.005036215	0.005297945	0.003628	0.077486
2035 EB GPL	33	PM10	0.026970047	0.050887771	0.030967798	0.0297	0.0297	0.0246	0.0246	0.0246	0.0371

17. 2035 Winter Emission Factors for General Purpose Lanes (grams per mile)

Scenario	Speed	Name	CompositeEF	HDDV	HDGV	LDDT	LDDV	LDGT1	LDGT2	LDGV	MC
2035 EB GPL	34	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 EB GPL	34	CO	11.54166913	0.415413463	20.37741564	0.3107	0.5522	13.21943408	12.80917818	12.6346	24.6315
2035 EB GPL	34	NOX	0.351514765	0.402311085	0.146703836	0.1044	0.0236	0.411045848	0.463982073	0.2795	1.186
2035 EB GPL	34	VOC	0.44910225	0.437975673	0.372997371	0.1057	0.0479	0.509730241	0.528488518	0.3881	3.6342
2035 EB GPL	34	1,3 Butadiene	0.001723618	0.002800902	0.000442426	0.000951	0.000431	0.001795809	0.001900901	0.001313	0.031853
2035 EB GPL	34	Acetaldehyde	0.003938046	0.0132236	0.001842904	0.0013	0.000589	0.003499629	0.003686086	0.002312	0.033557
2035 EB GPL	34	Acrolein	0.000331479	0.001606797	8.3028E-05	0.00037	0.000168	0.000223698	0.000236244	0.00016	0.001923
2035 EB GPL	34	Benzene	0.012786997	0.004820984	0.007666551	0.002114	0.000957	0.015868768	0.016688785	0.011527	0.06814
2035 EB GPL	34	Formaldehyde	0.007490408	0.035905195	0.003040229	0.004081	0.001847	0.005009559	0.005268961	0.003608	0.076625
2035 EB GPL	34	PM10	0.027012771	0.050887771	0.031054527	0.0297	0.0297	0.0247	0.0247	0.0246	0.0371
2035 EB GPL	35	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 EB GPL	35	CO	11.54393676	0.404392207	19.88040595	0.3057	0.5442	13.22701881	12.8177454	12.6387	24.2536
2035 EB GPL	35	NOX	0.35071192	0.401655805	0.147744506	0.1042	0.0236	0.410045848	0.462816525	0.2788	1.1976
2035 EB GPL	35	VOC	0.445404623	0.427344689	0.365895179	0.1039	0.0471	0.506506977	0.525190195	0.3855	3.6025
2035 EB GPL	35	1,3 Butadiene	0.001709104	0.002732921	0.000424418	0.000935	0.000424	0.001787073	0.001890573	0.001306	0.031515
2035 EB GPL	35	Acetaldehyde	0.003892178	0.012902162	0.001767831	0.001278	0.000579	0.003482156	0.003666431	0.002299	0.033201
2035 EB GPL	35	Acrolein	0.000326744	0.001568211	7.91343E-05	0.000364	0.000165	0.000222698	0.000234916	0.000159	0.001903
2035 EB GPL	35	Benzene	0.012705101	0.004703941	0.007413435	0.002079	0.000942	0.015782223	0.016595179	0.01146	0.067461
2035 EB GPL	35	Formaldehyde	0.007383535	0.0350326	0.002916117	0.004012	0.001818	0.004983903	0.005240978	0.003589	0.075813
2035 EB GPL	35	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 EB GPL	36	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 EB GPL	36	CO	11.6212485	0.395915206	19.55092784	0.3019	0.538	13.32319381	12.91168489	12.7229	23.9541
2035 EB GPL	36	NOX	0.352052182	0.404031212	0.149004297	0.1048	0.0237	0.411464251	0.464416525	0.2798	1.2078
2035 EB GPL	36	VOC	0.442835528	0.417442159	0.35971033	0.1023	0.0464	0.504738921	0.523457421	0.3838	3.5753
2035 EB GPL	36	1,3 Butadiene	0.001700513	0.002669239	0.000409384	0.00092	0.000418	0.001785337	0.001888245	0.001304	0.031227
2035 EB GPL	36	Acetaldehyde	0.003859479	0.012603374	0.001704808	0.001258	0.000571	0.003479052	0.003662103	0.002296	0.032897
2035 EB GPL	36	Acrolein	0.000322987	0.001531493	7.61438E-05	0.000358	0.000162	0.000222514	0.000234244	0.000159	0.001885
2035 EB GPL	36	Benzene	0.01266982	0.004595056	0.007200404	0.002045	0.000928	0.015757678	0.016565885	0.011434	0.066881
2035 EB GPL	36	Formaldehyde	0.007298707	0.034221615	0.002812966	0.003947	0.001791	0.004980063	0.005234995	0.003584	0.075118

17. 2035 Winter Emission Factors for General Purpose Lanes (grams per mile)

Scenario	Speed	Name	CompositeEF	HDDV	HDGV	LDDT	LDDV	LDGT1	LDGT2	LDGV	MC
2035 EB GPL	36	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 EB GPL	37	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 EB GPL	37	CO	11.69440824	0.387933383	19.23924336	0.2983	0.5322	13.41416638	13.00055715	12.8026	23.6707
2035 EB GPL	37	NOX	0.353332249	0.40627417	0.150250486	0.1054	0.0238	0.412782653	0.465882073	0.2808	1.2175
2035 EB GPL	37	VOC	0.440434895	0.408086003	0.354011259	0.1007	0.0457	0.503152463	0.521791873	0.3822	3.5496
2035 EB GPL	37	1,3 Butadiene	0.001692393	0.002609457	0.000395334	0.000906	0.000411	0.001783785	0.001885917	0.001302	0.030953
2035 EB GPL	37	Acetaldehyde	0.003828738	0.012320873	0.001645721	0.001239	0.000562	0.003476764	0.003658448	0.002293	0.032609
2035 EB GPL	37	Acrolein	0.000319498	0.001497076	7.40111E-05	0.000352	0.00016	0.00022233	0.000233916	0.000159	0.001869
2035 EB GPL	37	Benzene	0.012636706	0.004491923	0.006998565	0.002014	0.000914	0.015734317	0.016538591	0.01141	0.066332
2035 EB GPL	37	Formaldehyde	0.007218403	0.033454676	0.00271492	0.003887	0.001765	0.004976222	0.005230339	0.003579	0.074461
2035 EB GPL	37	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 EB GPL	39	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 EB GPL	39	CO	11.82946457	0.373168769	18.66391972	0.2917	0.5214	13.58214104	13.16466889	12.9497	23.1476
2035 EB GPL	39	NOX	0.355652417	0.410402402	0.152455347	0.1064	0.0241	0.415301056	0.468580396	0.2825	1.2353
2035 EB GPL	39	VOC	0.43598837	0.390824151	0.343348995	0.0978	0.0445	0.500071559	0.51879355	0.3793	3.5021
2035 EB GPL	39	1,3 Butadiene	0.001677631	0.002498951	0.000368436	0.00088	0.0004	0.001780681	0.00188159	0.001299	0.030449
2035 EB GPL	39	Acetaldehyde	0.003771451	0.011799495	0.001536619	0.001203	0.000547	0.003471556	0.003651465	0.002287	0.032078
2035 EB GPL	39	Acrolein	0.00031238	0.001433958	6.90187E-05	0.000342	0.000156	0.00022133	0.000232916	0.000158	0.001838
2035 EB GPL	39	Benzene	0.012575242	0.004301783	0.006626721	0.001956	0.00089	0.015691251	0.016487658	0.011365	0.065318
2035 EB GPL	39	Formaldehyde	0.007070035	0.032038521	0.002534696	0.003775	0.001717	0.004969094	0.005220028	0.00357	0.073248
2035 EB GPL	39	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 EB GPL	41	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 EB GPL	41	CO	11.96961487	0.36216526	18.3080034	0.2868	0.5134	13.75488132	13.3333134	13.1009	22.7942
2035 EB GPL	41	NOX	0.358719562	0.418098139	0.154755221	0.1083	0.0245	0.41829307	0.471911492	0.2846	1.251
2035 EB GPL	41	VOC	0.431975034	0.375761661	0.334300377	0.0953	0.0434	0.497245865	0.515928002	0.3766	3.4675
2035 EB GPL	41	1,3 Butadiene	0.001664114	0.002403028	0.000347276	0.000857	0.000391	0.001777392	0.001877606	0.001295	0.030081
2035 EB GPL	41	Acetaldehyde	0.003721298	0.01134445	0.001445524	0.001172	0.000534	0.003466163	0.003643809	0.002282	0.031691
2035 EB GPL	41	Acrolein	0.000306752	0.001378523	6.50256E-05	0.000333	0.000152	0.000221146	0.000231916	0.000158	0.001816
2035 EB GPL	41	Benzene	0.012517998	0.004136098	0.006316169	0.001905	0.000868	0.015650001	0.016437397	0.011321	0.064579

17. 2035 Winter Emission Factors for General Purpose Lanes (grams per mile)

Scenario	Speed	Name	CompositeEF	HDDV	HDGV	LDDT	LDDV	LDGT1	LDGT2	LDGV	MC
2035 EB GPL	41	Formaldehyde	0.006940475	0.030803229	0.002384537	0.003677	0.001675	0.004961781	0.005210045	0.003562	0.072363
2035 EB GPL	41	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 EB GPL	42	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 EB GPL	42	CO	12.04357996	0.358174555	18.22243243	0.285	0.5105	13.84533549	13.42168566	13.1801	22.688
2035 EB GPL	42	NOX	0.360669003	0.423602018	0.155915012	0.1097	0.0248	0.420129876	0.473877041	0.2859	1.258
2035 EB GPL	42	VOC	0.430116882	0.368989801	0.330429968	0.0941	0.0429	0.495933017	0.514562453	0.3753	3.4554
2035 EB GPL	42	1,3 Butadiene	0.00165793	0.002359778	0.000337397	0.000847	0.000386	0.00177584	0.001875279	0.001293	0.029953
2035 EB GPL	42	Acetaldehyde	0.003698327	0.01114067	0.001406539	0.001158	0.000528	0.003463059	0.003640154	0.002279	0.031555
2035 EB GPL	42	Acrolein	0.000303807	0.001353876	6.30754E-05	0.000329	0.00015	0.000220962	0.000231916	0.000157	0.001808
2035 EB GPL	42	Benzene	0.012490397	0.004061533	0.006183559	0.001883	0.000858	0.015629192	0.016412103	0.011299	0.064321
2035 EB GPL	42	Formaldehyde	0.00688177	0.030250856	0.002321405	0.003633	0.001656	0.004957941	0.00520439	0.003557	0.072054
2035 EB GPL	42	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 EB GPL	46	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 EB GPL	46	CO	12.32384494	0.346762131	18.11768788	0.2799	0.5022	14.18678723	13.75524192	13.4791	22.3905
2035 EB GPL	46	NOX	0.368320187	0.448326317	0.160511039	0.1159	0.0262	0.426895501	0.481304783	0.2907	1.2884
2035 EB GPL	46	VOC	0.423254456	0.345733835	0.316860935	0.0902	0.0412	0.490818433	0.509365808	0.3703	3.42
2035 EB GPL	46	1,3 Butadiene	0.001637004	0.002210774	0.000306307	0.000812	0.000371	0.001770264	0.001866295	0.001287	0.029577
2035 EB GPL	46	Acetaldehyde	0.003618544	0.01043745	0.001277288	0.00111	0.000507	0.003453274	0.003625515	0.002267	0.031159
2035 EB GPL	46	Acrolein	0.000294924	0.001268712	5.70863E-05	0.000316	0.000144	0.000219778	0.000230588	0.000157	0.001786
2035 EB GPL	46	Benzene	0.012388535	0.003805456	0.005734859	0.001804	0.000825	0.01554998	0.01631591	0.011215	0.063564
2035 EB GPL	46	Formaldehyde	0.006678413	0.028340637	0.002107199	0.003482	0.001592	0.0049435	0.005184768	0.003539	0.071149
2035 EB GPL	46	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 EB GPL	50	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 EB GPL	50	CO	12.60455702	0.344673213	18.58272243	0.2789	0.5006	14.52551016	14.08606373	13.7757	22.3646
2035 EB GPL	50	NOX	0.376972045	0.483377132	0.165009191	0.1247	0.0282	0.433579529	0.488699751	0.2955	1.329
2035 EB GPL	50	VOC	0.416795399	0.328218255	0.306270283	0.0873	0.04	0.485403849	0.503869163	0.3651	3.4112
2035 EB GPL	50	1,3 Butadiene	0.001619755	0.002098698	0.000285274	0.000785	0.00036	0.001764056	0.001858312	0.00128	0.029484
2035 EB GPL	50	Acetaldehyde	0.003556677	0.009908561	0.001188312	0.001074	0.000492	0.003442858	0.003610548	0.002256	0.031061
2035 EB GPL	50	Acrolein	0.000287808	0.001204092	5.30875E-05	0.000305	0.00014	0.00021941	0.000228588	0.000156	0.00178

17. 2035 Winter Emission Factors for General Purpose Lanes (grams per mile)

Scenario	Speed	Name	CompositeEF	HDDV	HDGV	LDDT	LDDV	LDGT1	LDGT2	LDGV	MC
2035 EB GPL	50	Benzene	0.012293317	0.003612796	0.005418229	0.001746	0.0008	0.015469216	0.016218716	0.01113	0.063377
2035 EB GPL	50	Formaldehyde	0.006523164	0.026904127	0.001961141	0.003369	0.001543	0.004929059	0.005164474	0.003522	0.070925
2035 EB GPL	50	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 EB GPL	52	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 EB GPL	52	CO	12.75802796	0.350275412	19.3016817	0.2814	0.5047	14.70861051	14.26494269	13.9361	22.3646
2035 EB GPL	52	NOX	0.38275914	0.512422719	0.167421758	0.132	0.0298	0.437289945	0.492896396	0.2982	1.3618
2035 EB GPL	52	VOC	0.413489248	0.322240048	0.302201546	0.0863	0.0396	0.48228614	0.500703614	0.3621	3.4112
2035 EB GPL	52	1,3 Butadiene	0.001612592	0.002060195	0.000279335	0.000776	0.000356	0.001760767	0.001853657	0.001276	0.029484
2035 EB GPL	52	Acetaldehyde	0.003533218	0.009727893	0.001164245	0.001061	0.000487	0.003437281	0.003602893	0.002249	0.031061
2035 EB GPL	52	Acrolein	0.000284719	0.001182127	5.20661E-05	0.000302	0.000138	0.000218226	0.000227588	0.000155	0.00178
2035 EB GPL	52	Benzene	0.012244327	0.003546674	0.005322684	0.001725	0.000791	0.015424046	0.016164456	0.011082	0.063377
2035 EB GPL	52	Formaldehyde	0.006467278	0.026414529	0.001921085	0.00333	0.001527	0.004921563	0.005153835	0.003512	0.070925
2035 EB GPL	52	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 WB GPL	48	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 WB GPL	48	CO	12.47005341	0.345649323	18.3598999	0.2794	0.5014	14.36319314	13.92755366	13.6336	22.377
2035 WB GPL	48	NOX	0.372831409	0.466584668	0.162819875	0.1205	0.0272	0.430387515	0.485168654	0.2932	1.3096
2035 WB GPL	48	VOC	0.419885245	0.336577086	0.311310768	0.0887	0.0406	0.487992738	0.506467485	0.3676	3.4154
2035 WB GPL	48	1,3 Butadiene	0.00162789	0.002152515	0.000295319	0.000798	0.000365	0.00176716	0.001861968	0.001283	0.029528
2035 WB GPL	48	Acetaldehyde	0.00358616	0.01016171	0.001231239	0.001091	0.000499	0.003447882	0.003617532	0.002261	0.031108
2035 WB GPL	48	Acrolein	0.000291	0.001235018	5.509E-05	0.00031	0.000142	0.000219594	0.000229588	0.000156	0.001783
2035 WB GPL	48	Benzene	0.012338945	0.00370465	0.005570417	0.001774	0.000812	0.015507546	0.016265649	0.011171	0.063467
2035 WB GPL	48	Formaldehyde	0.00659752	0.027592548	0.00203116	0.003423	0.001567	0.004936188	0.005173785	0.00353	0.071033
2035 WB GPL	48	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 WB GPL	49	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 WB GPL	49	CO	12.53868465	0.345158452	18.47359922	0.2792	0.501	14.44601606	14.00845869	13.7061	22.3707
2035 WB GPL	49	NOX	0.374969516	0.475167807	0.163962671	0.1226	0.0277	0.432042723	0.487001428	0.2944	1.3195
2035 WB GPL	49	VOC	0.418299051	0.332308623	0.308739166	0.088	0.0403	0.486679891	0.505134711	0.3663	3.4133
2035 WB GPL	49	1,3 Butadiene	0.001623461	0.002124817	0.000290304	0.000792	0.000363	0.001765608	0.00185964	0.001281	0.029505
2035 WB GPL	49	Acetaldehyde	0.003570821	0.010032546	0.001209292	0.001082	0.000495	0.003444962	0.003614204	0.002258	0.031084

17. 2035 Winter Emission Factors for General Purpose Lanes (grams per mile)

Scenario	Speed	Name	CompositeEF	HDDV	HDGV	LDDT	LDDV	LDGT1	LDGT2	LDGV	MC
2035 WB GPL	49	Acrolein	0.000289349	0.001219482	5.409E-05	0.000308	0.000141	0.00021941	0.000228916	0.000156	0.001781
2035 WB GPL	49	Benzene	0.012315718	0.003657772	0.005492811	0.001759	0.000806	0.015488289	0.016241683	0.01115	0.063421
2035 WB GPL	49	Formaldehyde	0.006559634	0.027241402	0.001995183	0.003396	0.001555	0.004932531	0.005169129	0.003526	0.070978
2035 WB GPL	49	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 WB GPL	50	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 WB GPL	50	CO	12.60455702	0.344673213	18.58272243	0.2789	0.5006	14.52551016	14.08606373	13.7757	22.3646
2035 WB GPL	50	NOX	0.376972045	0.483377132	0.165009191	0.1247	0.0282	0.433579529	0.488699751	0.2955	1.329
2035 WB GPL	50	VOC	0.416795399	0.328218255	0.306270283	0.0873	0.04	0.485403849	0.503869163	0.3651	3.4112
2035 WB GPL	50	1,3 Butadiene	0.001619755	0.002098698	0.000285274	0.000785	0.00036	0.001764056	0.001858312	0.00128	0.029484
2035 WB GPL	50	Acetaldehyde	0.003556677	0.009908561	0.001188312	0.001074	0.000492	0.003442858	0.003610548	0.002256	0.031061
2035 WB GPL	50	Acrolein	0.000287808	0.001204092	5.30875E-05	0.000305	0.00014	0.00021941	0.000228588	0.000156	0.00178
2035 WB GPL	50	Benzene	0.012293317	0.003612796	0.005418229	0.001746	0.0008	0.015469216	0.016218716	0.01113	0.063377
2035 WB GPL	50	Formaldehyde	0.006523164	0.026904127	0.001961141	0.003369	0.001543	0.004929059	0.005164474	0.003522	0.070925
2035 WB GPL	50	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 WB GPL	51	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 WB GPL	51	CO	12.68281834	0.347538305	18.94927612	0.2802	0.5027	14.61887475	14.17727044	13.8575	22.3646
2035 WB GPL	51	NOX	0.379944806	0.498203772	0.166178707	0.1284	0.029	0.435516334	0.490798073	0.2969	1.3457
2035 WB GPL	51	VOC	0.415122875	0.325115275	0.304188303	0.0868	0.0398	0.483835793	0.502236389	0.3636	3.4112
2035 WB GPL	51	1,3 Butadiene	0.001616105	0.002079035	0.000282282	0.000781	0.000358	0.00176232	0.001855985	0.001278	0.029484
2035 WB GPL	51	Acetaldehyde	0.003544399	0.009816416	0.001176252	0.001067	0.000489	0.00343957	0.003606893	0.002252	0.031061
2035 WB GPL	51	Acrolein	0.000286222	0.001193143	5.30163E-05	0.000304	0.000139	0.000219226	0.000228588	0.000155	0.00178
2035 WB GPL	51	Benzene	0.012268545	0.003579045	0.005369446	0.001735	0.000795	0.015446039	0.016191422	0.011106	0.063377
2035 WB GPL	51	Formaldehyde	0.006494674	0.026654387	0.001941038	0.003349	0.001535	0.004925219	0.005158818	0.003517	0.070925
2035 WB GPL	51	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 WB GPL	52	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 WB GPL	52	CO	12.75802796	0.350275412	19.3016817	0.2814	0.5047	14.70861051	14.26494269	13.9361	22.3646
2035 WB GPL	52	NOX	0.38275914	0.512422719	0.167421758	0.132	0.0298	0.437289945	0.492896396	0.2982	1.3618
2035 WB GPL	52	VOC	0.413489248	0.322240048	0.302201546	0.0863	0.0396	0.48228614	0.500703614	0.3621	3.4112
2035 WB GPL	52	1,3 Butadiene	0.001612592	0.002060195	0.000279335	0.000776	0.000356	0.001760767	0.001853657	0.001276	0.029484

17. 2035 Winter Emission Factors for General Purpose Lanes (grams per mile)

Scenario	Speed	Name	CompositeEF	HDDV	HDGV	LDDT	LDDV	LDGT1	LDGT2	LDGV	MC
2035 WB GPL	52	Acetaldehyde	0.003533218	0.009727893	0.001164245	0.001061	0.000487	0.003437281	0.003602893	0.002249	0.031061
2035 WB GPL	52	Acrolein	0.000284719	0.001182127	5.20661E-05	0.000302	0.000138	0.000218226	0.000227588	0.000155	0.00178
2035 WB GPL	52	Benzene	0.012244327	0.003546674	0.005322684	0.001725	0.000791	0.015424046	0.016164456	0.011082	0.063377
2035 WB GPL	52	Formaldehyde	0.006467278	0.026414529	0.001921085	0.00333	0.001527	0.004921563	0.005153835	0.003512	0.070925
2035 WB GPL	52	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 WB GPL	53	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 WB GPL	53	CO	12.83039143	0.352909985	19.64075961	0.2826	0.5067	14.79498065	14.34931495	14.0117	22.3646
2035 WB GPL	53	NOX	0.385468902	0.526132148	0.168573512	0.1354	0.0306	0.439108348	0.494794718	0.2994	1.3773
2035 WB GPL	53	VOC	0.411942325	0.319378707	0.300317778	0.0858	0.0394	0.480836487	0.499238066	0.3607	3.4112
2035 WB GPL	53	1,3 Butadiene	0.001609164	0.002042211	0.000276366	0.000772	0.000354	0.001759215	0.001851329	0.001274	0.029484
2035 WB GPL	53	Acetaldehyde	0.003522207	0.0096428	0.001153176	0.001055	0.000484	0.003434361	0.003599237	0.002246	0.031061
2035 WB GPL	53	Acrolein	0.00028373	0.00117199	5.19945E-05	0.0003	0.000138	0.000218226	0.000227588	0.000155	0.00178
2035 WB GPL	53	Benzene	0.012221453	0.003515552	0.005277041	0.001716	0.000787	0.015402421	0.016139161	0.01106	0.063377
2035 WB GPL	53	Formaldehyde	0.006441122	0.026183019	0.001902931	0.003312	0.001519	0.004917906	0.005148507	0.003508	0.070925
2035 WB GPL	53	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 WB GPL	54	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 WB GPL	54	CO	12.90010135	0.355463751	19.96727203	0.2838	0.5085	14.87822197	14.43058721	14.0845	22.3646
2035 WB GPL	54	NOX	0.388071453	0.539290978	0.169630335	0.1387	0.0313	0.440763557	0.496693041	0.3006	1.3922
2035 WB GPL	54	VOC	0.410425574	0.316670945	0.298443084	0.0853	0.0392	0.47942364	0.497805292	0.3593	3.4112
2035 WB GPL	54	1,3 Butadiene	0.00160653	0.002024951	0.000274265	0.000768	0.000352	0.001758479	0.001849001	0.001273	0.029484
2035 WB GPL	54	Acetaldehyde	0.00351221	0.009560936	0.001142188	0.00105	0.000482	0.003432073	0.00359591	0.002244	0.031061
2035 WB GPL	54	Acrolein	0.000282681	0.001162206	5.10661E-05	0.000299	0.000137	0.000218042	0.000227261	0.000155	0.00178
2035 WB GPL	54	Benzene	0.01219914	0.00348593	0.005233346	0.001707	0.000783	0.01538198	0.016114195	0.011038	0.063377
2035 WB GPL	54	Formaldehyde	0.006415967	0.025960468	0.001884053	0.003294	0.001512	0.004914434	0.005143852	0.003504	0.070925
2035 WB GPL	54	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371
2035 WB GPL	55	SO2	0.008148999	0.009582756	0.016280656	0.0041	0.0022	0.0088	0.0115	0.0068	0.0033
2035 WB GPL	55	CO	12.9672672	0.357928428	20.28194535	0.2849	0.5103	14.95835288	14.50885947	14.1547	22.3646
2035 WB GPL	55	NOX	0.390574327	0.552009185	0.170684019	0.1419	0.0321	0.442400362	0.498558589	0.3017	1.4065
2035 WB GPL	55	VOC	0.408978127	0.3140636	0.296671819	0.0849	0.039	0.478029195	0.496439743	0.358	3.4112

17. 2035 Winter Emission Factors for General Purpose Lanes (grams per mile)

Scenario	Speed	Name	CompositeEF	HDDV	HDGV	LDDT	LDDV	LDGT1	LDGT2	LDGV	MC
2035 WB GPL	55	1,3 Butadiene	0.001603286	0.002008489	0.000271346	0.000764	0.000351	0.001756927	0.001847001	0.001271	0.029484
2035 WB GPL	55	Acetaldehyde	0.003501814	0.009482169	0.001131253	0.001044	0.000479	0.003429153	0.003592254	0.002241	0.031061
2035 WB GPL	55	Acrolein	0.000281652	0.001152405	5.09945E-05	0.000297	0.000136	0.000218042	0.000226588	0.000155	0.00178
2035 WB GPL	55	Benzene	0.012177614	0.00345731	0.005191658	0.001698	0.000779	0.015361907	0.016090228	0.011017	0.063377
2035 WB GPL	55	Formaldehyde	0.006391094	0.025746119	0.00186697	0.003277	0.001504	0.004910778	0.005139196	0.003499	0.070925
2035 WB GPL	55	PM10	0.027058869	0.050887771	0.031053178	0.0297	0.0297	0.0247	0.0247	0.0247	0.0371

18. Vehicle Mix Assumed for All Scenarios

	HDDV	HDGV	LDDT	LDDV	LDGT1	LDGT2	LDGV	MC
Fraction	0.097196	0.011805	0.001709	0.000753	0.318422	0.106966	0.461014	0.002135

19. Detour PM2.5 Emissions (pounds per day)

Scenario	Name	
2010 Detour EB	PM2.5	8.37
2010 Detour WB	PM2.5	3.09

Scenario	Name	Summer
2035 EB GPL	PM2.5	3.87
2035 WB GPL	PM2.5	1.52

Road Dust	Pounds		
Scenario	L	PM-10	PM-2_5
2010 Detour EB	Summer	22.50945	5.525002
2010 Detour EB	Winter	22.01663	5.404019
2010 Detour WB	Summer	8.314236	2.04075
2010 Detour WB	Winter	8.132203	1.996063
2035 EB GPL	Summer	27.02042	6.632229
2035 EB GPL	Winter	26.42882	6.487001
2035 WB GPL	Summer	10.58411	2.597896
2035 WB GPL	Winter	10.35237	2.541009

20. Detour Emission Factors (grams per mile)

Scenario	Speed	CompositeEF	HDDV	HDGV	LDDT	LDDV	LDGT1	LDGT2	LDGV	MC
2010 Detour EB	26	0.032021115	0.2193339	0.05000206	0.06562586	0.0748	0.011984	0.01226554	0.0114	0.0206
2010 Detour EB	30	0.031964698	0.2193339	0.0501804	0.06562586	0.0748	0.011984	0.01216554	0.0113	0.0206
2010 Detour EB	35	0.032017997	0.2193339	0.05018339	0.06562586	0.0748	0.011984	0.01223277	0.0114	0.0206
2010 Detour EB	41	0.032017997	0.2193339	0.05018339	0.06562586	0.0748	0.011984	0.01223277	0.0114	0.0206
2010 Detour WB	50	0.032017997	0.2193339	0.05018339	0.06562586	0.0748	0.011984	0.01223277	0.0114	0.0206
2010 Detour WB	51	0.032017997	0.2193339	0.05018339	0.06562586	0.0748	0.011984	0.01223277	0.0114	0.0206
2010 Detour WB	53	0.032017997	0.2193339	0.05018339	0.06562586	0.0748	0.011984	0.01223277	0.0114	0.0206
2010 Detour WB	54	0.032017997	0.2193339	0.05018339	0.06562586	0.0748	0.011984	0.01223277	0.0114	0.0206
2010 Detour WB	55	0.032017997	0.2193339	0.05018339	0.06562586	0.0748	0.011984	0.01223277	0.0114	0.0206

21. 2035 General Purpose Lane PM2.5 Emission Factors (grams per mile)

Scenario	Speed	CompositeEF	HDDV	HDGV	LDDT	LDDV	LDGT1	LDGT2	LDGV	MC
2035 EB GPL	31	0.012346839	0.02367157	0.01664492	0.0158	0.0157	0.0112	0.0112	0.011	0.0206
2035 EB GPL	32	0.012347033	0.02367157	0.01673562	0.0158	0.0157	0.0112	0.0112	0.011	0.0206
2035 EB GPL	33	0.012300753	0.02367157	0.01665183	0.0158	0.0157	0.0112	0.0112	0.011	0.0206
2035 EB GPL	34	0.012300932	0.02367157	0.01673562	0.0158	0.0157	0.0112	0.0112	0.011	0.0206
2035 EB GPL	35	0.012347041	0.02367157	0.01673934	0.0158	0.0157	0.0112	0.0112	0.011	0.0206
2035 EB GPL	36	0.012347041	0.02367157	0.01673934	0.0158	0.0157	0.0112	0.0112	0.011	0.0206
2035 EB GPL	37	0.012347041	0.02367157	0.01673934	0.0158	0.0157	0.0112	0.0112	0.011	0.0206
2035 EB GPL	39	0.012347041	0.02367157	0.01673934	0.0158	0.0157	0.0112	0.0112	0.011	0.0206
2035 EB GPL	41	0.012347041	0.02367157	0.01673934	0.0158	0.0157	0.0112	0.0112	0.011	0.0206
2035 EB GPL	42	0.012347041	0.02367157	0.01673934	0.0158	0.0157	0.0112	0.0112	0.011	0.0206
2035 EB GPL	46	0.012347041	0.02367157	0.01673934	0.0158	0.0157	0.0112	0.0112	0.011	0.0206
2035 EB GPL	50	0.012347041	0.02367157	0.01673934	0.0158	0.0157	0.0112	0.0112	0.011	0.0206
2035 EB GPL	52	0.012347041	0.02367157	0.01673934	0.0158	0.0157	0.0112	0.0112	0.011	0.0206
2035 WB GPL	48	0.012347041	0.02367157	0.01673934	0.0158	0.0157	0.0112	0.0112	0.011	0.0206
2035 WB GPL	49	0.012347041	0.02367157	0.01673934	0.0158	0.0157	0.0112	0.0112	0.011	0.0206
2035 WB GPL	50	0.012347041	0.02367157	0.01673934	0.0158	0.0157	0.0112	0.0112	0.011	0.0206
2035 WB GPL	51	0.012347041	0.02367157	0.01673934	0.0158	0.0157	0.0112	0.0112	0.011	0.0206
2035 WB GPL	52	0.012347041	0.02367157	0.01673934	0.0158	0.0157	0.0112	0.0112	0.011	0.0206
2035 WB GPL	53	0.012347041	0.02367157	0.01673934	0.0158	0.0157	0.0112	0.0112	0.011	0.0206
2035 WB GPL	54	0.012347041	0.02367157	0.01673934	0.0158	0.0157	0.0112	0.0112	0.011	0.0206
2035 WB GPL	55	0.012347041	0.02367157	0.01673934	0.0158	0.0157	0.0112	0.0112	0.011	0.0206

22. Road Dust Emission Factors

L	size	adt>10000
Summer	PM-10	0.000189776
Winter	PM-10	0.000185621
Summer	PM-2.5	0.000046581
Winter	PM-2.5	0.000045561