Air Quality Technical Memorandum

Tampa Interstate Study

Supplemental Environmental Impact Statement
I-275 from Howard Frankland Bridge to
North of Dr. Martin Luther King, Jr. Boulevard
and
I-4 from I-275 to East of 50th Street with New Alignment from I-4 South to the Existing Selmon Expressway and Improvements to the Selmon Expressway from the Kennedy Boulevard Overpass East to Maydell Drive
Work Program Item Segment # 258337-2

Segments 1A, 2A, 2B, 3A, 3B & 3C

November 2019

INTRODUCTION

The Federal Highway Administration (FHWA) and Florida Department of Transportation (FDOT) have initiated the environmental review process for the Tampa Interstate Study (TIS) in Tampa, Hillsborough County, Florida. The study is a supplement to the 1996 Final Environmental Impact Statement (FEIS). FHWA issued the Records of Decision (ROD) in 1997 and 1999. FDOT and FHWA are conducting this study based on a proposed design change that includes a new alternative not previously considered, as well as modified alternatives presented in the 1996 TIS FEIS to accommodate tolled express lanes and other capacity and mobility improvement alternatives, some of which are being considered by others in separate studies. FDOT, in coordination with FHWA, will prepare a Supplemental Environmental Impact Statement (SEIS) in accordance with the National Environmental Policy Act (NEPA) and other regulatory requirements.

Project Location

The proposed project for the TIS is located in the City of Tampa in Hillsborough County, Florida. The TIS SEIS study area comprises approximately 11 miles of I-275 and I-4, an approximate 4.4-mile segment of the Selmon Expressway, and an approximate 0.8-mile segment of the I-4/Selmon Expressway Connector (also known as the Selmon Connector). The proposed improvements would involve the reconstruction of I-275 from east of Howard Frankland Bridge (HFB) to east of Himes Avenue, I-275 from east of Himes Avenue to East of Rome Avenue, and east of Rome Avenue to North of State Road (SR) 574 (Dr. Martin Luther King Jr. [MLK] Boulevard), and I-4 from I-275 to east of 50th Street. The proposed improvements are located in the 1996 TIS FEIS Segments 1A, 2A, 2B, 3A, 3B and 3C (see **Figure 1**). Segment 3C is not being considered in the TIS SEIS because it has been constructed.

AIR QUALITY STANDARDS AND ASSESSMENT

The Clean Air Act (CAA) establishes primary and secondary National Ambient Air Quality Standards (NAAQS) for what are referred to as "criteria" air pollutants listed to the right. These standards are intended to protect the public health and welfare. Currently, there are NAAQS for six criteria pollutants. Under federal regulations, areas that violate primary NAAQS are designated as nonattainment areas.

The proposed project is located in an area of the City of Tampa and Hillsborough County that are currently designated as being attainment for all of the NAAQS under the criteria provided in the Clean Air Act (ozone, nitrogen dioxide, particulate matter (2.5 microns in size and 10 microns in size), sulfur dioxide, carbon monoxide (CO) and lead). Therefore, the Clean Air Act conformity requirements do not apply to this project.

Due to the nature of this project, an air quality assessment involving a CO screening was conducted. The details of the analysis follow.

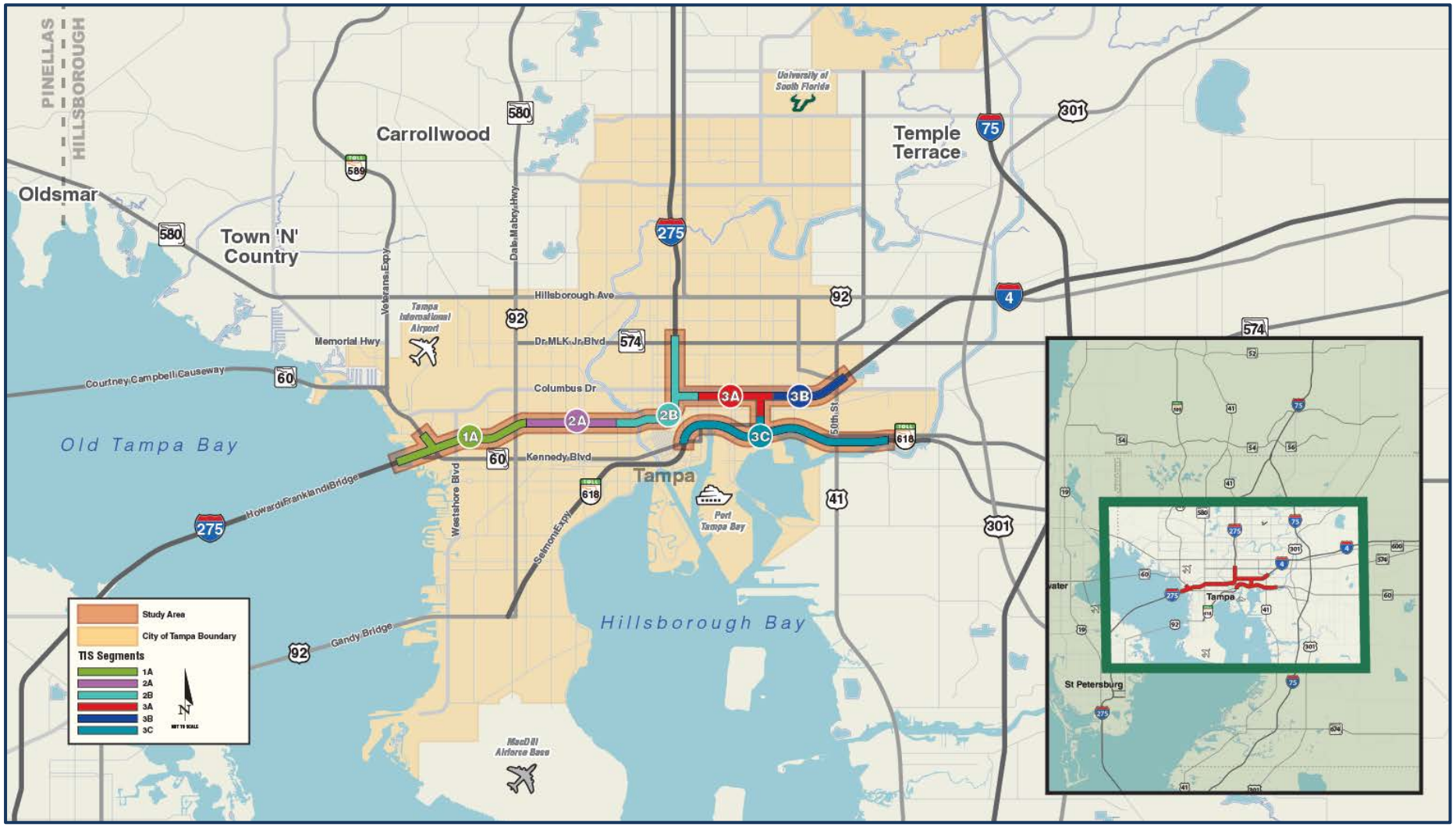
In addition, a Mobile Source Air Toxic (MSAT) emission evaluation was conducted to assess the potential effects of nine priority compounds as shown in the table to the right. The details and results of the MSAT evaluation also follow.

There are NAAQS for six criteria pollutants:

- Ozone (O3)
- Carbon monoxide (CO)
- Nitrogen dioxide (NO2)
- Sulfur dioxide (SO2)
- Particulate matter (PM) measured as both PM10 (diameter of 10 microns or less) and PM2.5 (diameter of 2.5 microns or less)
- Lead (Pb)

There are six priority MSATs:

- Benzene
- Formaldehyde
- Acetaldehyde
- Diesel particulate matter/diesel exhaust gases
- Acrolein
- 1, 3-butadiene
- Diesel PM plus diesel exhaust organic gasses
- Ethylbenzene
- Naphthalene
- Polycyclic organic matter (POM)



SOURCE: FDOT 1996

Figure 1 Tampa Interstate Study SEIS Project Study Area (TIS Segments 1A, 2A, 2B, 3A and 3B)

ALTERNATIVES CONSIDERED

The alternatives that will be evaluated in the TIS SEIS are described in the following sections. Refer to the *Preliminary Engineering Report* for further details of these alternatives including concept plan drawings.

No Further Action Alternative

Portions of the Selected Alternative in the 1996 TIS FEIS have been constructed, so the No-Action Alternative that was evaluated in previous studies is no longer applicable. Therefore, a new No Further Action Alternative is evaluated for comparison to the 1996 TIS FEIS Long-Term Preferred Alternative and a 2018 Express Lane Alternative. The No Further Action Alternative is defined as the existing transportation system plus projects included in the Hillsborough County MPO's *Imagine 2040: Hillsborough Long Range Transportation Plan*. In Segment 1A, the No Further Action Alternative includes construction of the general use lanes (outer roadways) within the I-275/SR 60 Interchange, which was approved under the 1997 ROD. Within the TIS SEIS study area, the remainder of the Imagine 2040 projects has already been built.

1996 TIS FEIS Long-Term Preferred Alternative (Non-Tolled)

Proposed improvements of the 1996 TIS FEIS Long-Term Preferred Alternative consist of a four-roadway system (general use lanes that provide local access and non-tolled express lanes in each direction of travel) on I-275 throughout the study limits and the preservation of a HOV/Transitway corridor within the interstate alignment. Proposed interchange improvements include:

- Fully directional interchange for the I-275 connection to the SR 60/Veterans Expressway;
- Modifications to the existing Westshore Boulevard, Lois Avenue, and Dale Mabry Highway interchanges;
- Split interchange ramps remaining at Howard and Armenia Avenues;
- A new west bank Central Business District (CBD) interchange with ramps to and from the west on I-275 at North Boulevard;
- A fully directional interchange for the I-4/I-275 connection;
- Removal of the existing ramps to and from the north at Floribraska Avenue;
- A full interchange at MLK Boulevard;
- Reconfiguration of the split interchange at Columbus Drive and 50th Street;
- Removal of the interchange ramps at 40th Street;
- A new directional freeway-to-freeway interchange with the proposed I-4/Selmon Expressway Connector on I-4 near 31st Street; and
- A new Ybor City/east side CBD split interchange on I-4 at 14th and 15th Streets (with extension of the ramps at 14th and 15th Streets as parallel frontage roads to 21st and 22nd Streets to replace the existing access from I-4 to these streets).

Other new non-interstate improvements include the following:

- The removal of the 19th Street overpass and the maintenance of the 26th Street overpass;
- The extension of Sherrill Street from Memorial Highway (SR 60) and Kennedy Boulevard under I-275 to Cypress Street;
- The extension of Trask Street under I-275;
- A Lemon Street Connector to Westshore Boulevard from Occident Street;

- Park-n-ride lots to provide access to HOV lanes located at the Florida State Fairgrounds, Yukon Street, Sinclair Hills Road, and SR 56;
- Overpass width to accommodate pedestrian and bicycle facilities on cross street; and
- A multi-modal terminal/parking garage at the northern end of the Marion Street.

The 1996 TIS FEIS Long-Term Preferred Alternative has been reevaluated numerous times throughout the past 20 years as the various segments of interstate have been constructed. Therefore, this alternative consists of the original impacts, as updated by the approved re-evaluations.

2018 Express Lane Alternative (Tolled Build Alternative)

Improvements identified for the segments that will be evaluated in the TIS SEIS include major components of the 1996 TIS FEIS Long-Term Preferred Alternative. There are areas where the design has changed in alignment and configuration. The TIS segments that will be evaluated in the SEIS and the design differences from the 1996 TIS FEIS Long-Term Preferred Alternative are described in the following sections. **Figure 1** shows the TIS SEIS segments**.**

1A – I-275 from Howard Frankland Bridge/Kennedy Boulevard ramps and just north of Cypress Street on Memorial Highway (SR 60) to East of Himes Avenue: The general use lanes (outer roadways) in this section were included in the 1996 TIS FEIS and approved by the 1997 ROD. The design changes would involve the use of tolled express lanes and access changes between general and express lanes; expansion of I-275 from HFB to south of SR 60 to accommodate express lanes along I-275; and local street changes, including relocation of Lemon Street, the extension of Occident Street, modified Trask Street ramp connections, replacement of the Executive Drive to southbound I-275 ramp connection, and extension of Sherrill Street with a new I-275 Reo Street interchange that would provide a connection between Kennedy Boulevard, Reo Street, and I-275. Additional right-of-way (ROW) would be needed to accommodate express lanes near the SR 60 interchange south to and from I-275, a new toll ramp into Tampa International Airport (TIA), the addition of general use lanes west of Westshore Boulevard, and expansion of the corridor for future transit use west of SR 60. No acquisitions would occur in historic districts.

2A – I-275 from East of Himes Avenue to East of Rome Avenue: The general use and express lanes in this section were included in the 1996 TIS FEIS and approved in the 1997 and 1999 ROD. The outer roadway (general use lanes) has already been constructed with I-275 improvements. The work in this section includes adding express lanes in the median. Himes Avenue would be a full express lanes interchange with direct express lane ramps constructed within the I-275 median area, tying into the Himes Avenue between the northbound and southbound I-275 bridges. Left turns from northbound and southbound Himes Avenue to the express lane ramps would be prohibited. Construction would include the widening of the I-275 bridges over Himes Avenue, toward the median, with pavement widening, median modifications and sidewalk construction along Himes Avenue. These interchange modifications would not require additional ROW and the existing northbound I-275 general use on-ramp and the existing southbound I-275 general use off-ramp to remain in place.

2B – I-275 from East of Rome Avenue to North of MLK Boulevard and I-4 from I-275 to East of 15th Street: Operational improvements at the I-275/I-4 interchange were included in the 1996 TIS FEIS. The design changes include tolled express lanes; changes in access to express lanes, which include adding a direct connection to the downtown local street network and slip ramp access north and east of downtown; adding overpasses at several locations to open cross-connections of local streets through the interstate footprint; and additional ROW acquisition involving vacant or undeveloped portions of land at a few pinch-points. This section is adjacent to several historic districts and primarily residential areas.

3A – I-4 from East of 15th Street to East of 34th Street: The general use and express lanes in this section were included in the 1996 TIS FEIS. The outer roadway (general use lanes) has already been constructed from 21st Street to 34th Street. The design changes involve tolled express lanes; changes in access to express lanes, which include slip ramp access east of Downtown; and ramp access change with I-4 interchanges at 14/15th Street and 21/22nd Street. No additional ROW would be acquired. Land uses adjacent to this section include historic districts and a mix of residential and commercial areas such as Ybor City and East Tampa.

3B – I-4 from East of 34th Street to East of 50th Street: The general use lanes in this section were included in the 1996 TIS FEIS. The outer roadway (general use lanes) has already been constructed from 34th Street to 50th Street. Minimal ROW would be acquired in this section just east of 50th Street to accommodate barrier separated express lanes along I-4 while accommodating an eastbound ingress just east of 50th Street. Work in this section would include adding express lanes in the median and adjustments in access between express and general lanes. This would require the mainline and eastbound entrance ramp to shift south of the existing ROW within the limits of the ramp.

3C – I-4/Lee Roy Selmon Expressway Interchange: These improvements were fully constructed in 2014 and are not a part of the SEIS.

Design Options for the 2018 Express Lane Alternative

Five interchange design options are being considered for the Downtown Interchange in Segment 2B. They represent both tolled and non-tolled options for managed lanes. Two options are full reconstruction of the interchange with a larger footprint, two are viaduct alternatives that would build express lanes next to the existing infrastructure but have a smaller footprint, and the fifth option focuses on operational and safety improvements. The Design Options are described in the following sections.

- **Options A and B (Reconstructed Interchange) -** The proposed improvements under Options A and B would include reconstructing the interchange to provide a fully directional interchange for the I-4/I-275 connection, with express lanes. Restructuring the interchange would eliminate weave movements, improve operations and safety, and fix the roller-coaster effect along the north section I-275 north of the Downtown Interchange. The design options include changes in access to express lanes, which include adding a direct connection to the downtown local street network and slip ramp access north and east of Downtown Tampa; adding overpasses at several locations to open cross-connections of local streets through the interstate footprint; and additional ROW acquisition outside the original TIS FEIS footprint involving vacant or undeveloped portions of land at a few pinch-points. However, like the 1996 Long-Term Preferred Alternative, there would be no access to Floribraska Avenue since the ramps would be eliminated. The differences between Options A and B are as follows:
  - **Option A (Reconstructed Interchange with Express Lane Ramps to the North):** Option A would include direct express lane ramp connections to the north leg of I-275.
  - **Option B (Reconstructed Interchange without Express Lane Ramps to the North):** Option B would not include express lane ramp connections to the north leg of I-275.
- **Options C and D (Existing Interchange with Elevated Express Lanes) -** The proposed improvements under Options C and D would include preserving the existing I-275 and I-4 interstate while adding express lanes on elevated structure from west of the Hillsborough River to I-4. Access would be provided to the downtown street grid from the elevated express lanes. However, like the 1996 Long-Term Preferred Alternative, there would be no access to Floribraska Avenue since the ramps would be eliminated. Other improvements to increase capacity and improve operations between the Selmon Connector and the north leg of I-275 include providing two-lane ramps for connections to I-4 and the north leg of I-275; adding express lane ramp

connections from I-4 to the north leg of I-275; reconfiguring the eastbound I-4 exit to Ybor City; adding overpasses at several locations to open cross-connections of local streets through the interstate footprint; and additional ROW acquisition outside the original TIS FEIS footprint involving vacant or undeveloped portions of land at a few pinch-points. Adding express lane ramp connection from I-4 to the north leg of I-275 would eliminate weaving on I-4 for traffic traveling to and from the Selmon Connector and the north leg of I-275. Reconfiguring the eastbound I-4 exit to Ybor City would eliminate weaving between the southbound I-275 ramp to eastbound I-4 and the exit to Ybor City. This would be accomplished by removing the ramp along eastbound I-4, currently serving only 21st/22nd Street and providing separate exits from northbound I-275 and southbound I-275.

The exit from northbound I-275 would be located between Palm Avenue and Nebraska Avenue while the exit from southbound I-275 would be located off the two-lane flyover to eastbound I-4. Those two separate ramps would then combine along the south side of the eastbound I-4 mainline east of Nebraska Avenue and would tie into 14th/15th Street, providing a new access point that would serve both the 14th/15th Street and 21st/22nd Street interchanges. The ramp would align with the existing eastbound frontage road that currently connects 14th/15th Street and 21st/22nd Street. The frontage road would be widened to two lanes to facilitate traffic to 21st/22nd Street. The differences between Options C and D are as follows:

- **Option C (Existing Interchange with Elevated Express Lanes – South Side of I-275):** Under Option C, the elevated express lanes would fly out from the median of I-275 west of the Hillsborough River over the northbound I-275 lanes to the outside of the existing interstate and run adjacent to the existing northbound I-275 lanes from the Hillsborough River to I-4, on the south side of I-275. The elevated express lanes would turn east along I-4 by crossing over to the north side of I-4, adjacent to the westbound I-4 lanes from I-275 to east of 15th Street. The elevated express lanes would then fly over the westbound I-4 lanes back into the median of I-4 just west of 21st Street.
- **Option D (Existing Interchange with Elevated Express Lanes – North Side of I-275):** Under Option D, the elevated express lanes would fly out from the median of I-275 west of the Hillsborough River over the southbound I-275 lanes to the outside of the existing interstate and run adjacent to the existing southbound I-275 lanes from the Hillsborough River to I-4, on the north side of I-275. The elevated express lanes would turn east along I-4, adjacent to the westbound I-4 lanes from I-275 to east of 15th Street. The elevated express lanes would then fly over the westbound I-4 lanes back into the median of I-4 just west of 21st Street.

- **Option E (Safety and Operational Improvements):** In May 2019, FDOT held Alternatives Public Workshops to receive input on the Westshore and Downtown Alternatives, including Options A, B, C, and D, with the intent of recommending one of the options to carry forward as a part of the Recommended Locally Preferred Alternative (LPA). While there is definitive public support for reconstruction of the I-275/SR 60 Interchange (TIS Segment 1A), there are many factors that may impact the plans in the I-275/I-4 (TIS Segment 2B). Therefore, FDOT developed Option E in response to input from the public and area stakeholders including:
  - Continuous comments from the public to minimize ROW impacts to downtown neighborhoods
  - Comments and concerns related to the closure of the Floribraska Avenue ramps
  - Comments and concerns related to the potential impacts to the Perry Harvey Sr. Park
  - Support for safety and operational improvements in the Downtown Interchange area

  The TIS SEIS Project Team reviewed the Options A, B, C, and D within the I-275/I-4 interchange and extracted and refined three improvements from the current concepts that would enhance safety and

operational performance in alignment with the Purpose and Need. The improvements are discussed further in the following sections. The areas below would not be tolled.

- **Southbound I-275 to Eastbound I-4** - The southbound I-275 to eastbound I-4 improvements include widening the existing flyover ramp to two lanes. New signage located near Hillsborough Avenue would inform drivers that they can remain in the outermost lane to access the dual lane flyover ramp to I-4. The existing auxiliary lane that begins at the entrance ramp from Dr. MLK, Jr. Boulevard still would also provide drivers access to the I-4 flyover ramp without changing lanes. The existing exit ramp to Floribraska Avenue would remain.

  The improvements would also include relocating the exit ramp to Ybor City and East Tampa from the existing location at 21st/22nd Street to 14th/15th Street. The relocated exit ramp would provide enhanced access to businesses, educational institutions, and residential areas. Drivers would still access 21st/22nd Street via widening the existing single-lane frontage road, East 13th Avenue, to two lanes. These proposed operational improvements would be completed almost entirely within the existing FDOT owned ROW. Only one additional parcel impact is anticipated.
- **Westbound I-4 to Northbound I-275 -** The westbound I-4 to northbound I-275 operational improvement would include widening the existing exit to northbound I-275. Westbound I-4 would be widened beginning at the westbound on-ramp from 21st Street and continuing to northbound I-275, providing for a widened two-lane exit to north I-275.

  The additional widened lane would continue north along I-275 to provide five lanes from I-4 to the Floribraska Avenue on-ramp. Between the Floribraska Ave. on-ramp and the Dr. MLK, Jr. Boulevard exit ramp, a sixth auxiliary lane would be added connecting the existing Floribraska Avenue on-ramp to the Dr. MLK, Jr. Boulevard exit ramp. The existing single-lane exit ramp to Dr. MLK, Jr. Boulevard will be widened to two lanes. From the exit ramp to Dr. MLK, Jr. Boulevard north, the five lanes would continue and then reduce to four lanes prior to the on-ramp from Dr. MLK, Jr. Boulevard and continuing to Hillsborough Avenue. The on-ramp from Dr. MLK, Jr. Boulevard would merge prior to Osborne Avenue. Drivers in the innermost lane from the ramp to I-275 northbound would be able to continue in this lane to Hillsborough Avenue. These proposed operational improvements would be completed mostly within the existing FDOT-owned ROW. Seven parcels would need to be acquired.
- **Westbound I-4 to Southbound I-275 -** The westbound I-4 to southbound I-275 operational improvements would include widening the southbound I-275 ramp from two lanes to three lanes. The three lanes would join the two lanes from southbound I-275 to provide five lanes. The five lanes would then merge to four lanes near Jefferson Street. The exit ramps to Downtown Tampa would be adjusted to improve spacing so drivers can more efficiently exit to downtown. The exit ramps would still serve Orange Avenue, Jefferson Street, Ashley Drive, and Doyle Carlton Drive. The improvements would remove the existing ramp bridge structure over I-275 as part of the ramp relocations. The existing shoulders would be widened on I-275 from Palm Avenue to Jefferson Street. These proposed operational improvements would be completed entirely within the existing FDOT owned ROW.

  Collectively the three operational/safety improvements make up the geometric improvements to the Downtown Interchange, which will be Option E.

AIR QUALITY ASSESSMENT SUMMARY FROM 1996 FEIS

Below is a clip from page S-20 from the 1996 FEIS summarizing the findings of the air quality assessment including the 1996 TIS FEIS Long Term Preferred Alternative. (non-tolled)

Air Quality - ***Compared to the No-Action Alternative, carbon monoxide (CO) concentrations predicted for the Selected Alternative are expected to be lower in the vicinity of the project as a result of increased motor vehicle mobility, faster operating speeds, and less stop-and-go driving. The microscale analysis indicates that the Selected Alternative will not cause, or contribute to, CO concentrations above the one- and eight-hour National Ambient Air Quality Standards.***

As of February 5, 1996, the Tampa Bay airshed which includes Hillsborough County has been designated as "attainment" for the ozone standards under the criteria provided in the Clean Air Act Amendments of 1990. Prior to that date, the area had been designated "non-attainment" for ozone standards. As such, Hillsborough County and the project study area are currently a "maintenance area" for ozone. This project is in conformance with the State Implementation Plan because it will not cause violations of any of the National Ambient Air Quality Standards. This project is included in the urban area's current approved conforming Transportation Improvement Program (TIP) which was signed by the Secretary of the Florida Department of Transportation on September 30, 1996. The Selected Alternative is included in the area's 2015 Long Range Transportation Plan (LRTP) and is included in the area's Conformity Determination Report which was approved by FHWA/FTA on October 1, 1996.

CARBON MONOXIDE (CO) SCREENING

The No Further Action and 2018 Express Lane project alternatives were subjected to a CO screening model (COFL2012) that makes various conservative worst-case assumptions related to site conditions, meteorology and traffic. The FDOT's screening model for CO uses the United States Environmental Protection Agency (USEPA)-approved software (MOVES Version 2010a and MOVES 2010b) to produce estimates of one-hour and eight-hour CO at default air quality receptor locations. The one-hour and eight-hour estimates can be directly compared to the current one-and eight-hour NAAQS for CO.

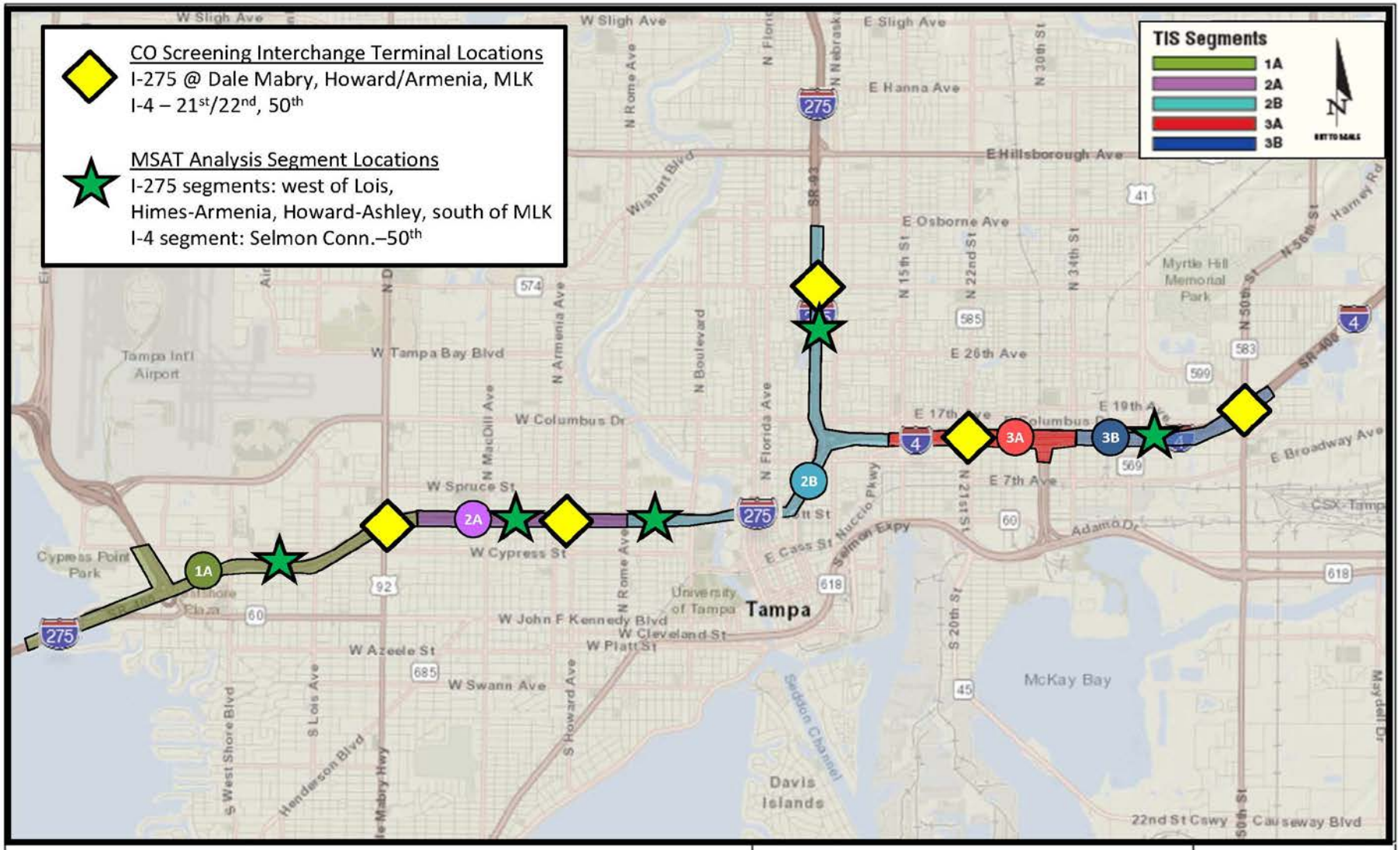
Five interchanges were evaluated using the COFL2012 model. The locations of the interchanges are shown by a yellow diamond on **Figure 2** and include:

- I-275/Dale Mabry Highway (TIS Segment 1A)
- I-275/Howard-Armenia Avenues (TIS Segment 2A)
- I-275/MLK Boulevard (TIS Segment 2B)
- I-4/21st-22nd Streets (TIS Segment 3A)
- I-4/50th Street (TIS Segment 3B)

The I-275/Dale Mabry Highway interchange, located in TIS Segment 1A was selected because it services the highest volume of traffic within the TIS SEIS study area. The other four service interchanges were selected because they are forecast to service the highest volumes of traffic in their respective TIS Segments. The configuration of all five interchanges would not change substantially between the existing condition/no further action alternative and the proposed design options of the 2018 Express Lane Alternative, allowing a comparison between those conditions in a future design year (2045). The I-275/Howard-Armenia Avenues and the I-4/21st-22nd Streets interchanges are diamond interchanges with one-way pair roadways on the local cross streets. These locations were coded as normal diamond configuration interchanges, ignoring the short frontage road connecting the ramp terminal intersections. This is believed to be conservative as the model will estimate a higher concentration of CO than would actually exist with the ramp intersections spread out.

The No Further Action and Design Option scenarios of the 2018 Express Lane Alternative for the design year (2045) were evaluated for both AM and PM peak periods. The traffic data input used in the evaluation is as included in the *Project Traffic Analysis Report (PTAR)*. The draft of the PTAR used in this analysis is dated October 2019.

Estimates of CO were predicted for the default receptors which are located 10 feet to 150 feet from the edge of the roadway. Based on the results from the screening model, the highest CO one-hour and eight-hour levels are not predicted to meet or exceed the one-hour nor eight-hour NAAQS for this pollutant with either the No Further Action or 2018 Express Lane Alternative. As such, in all locations tested, the project "passes" the screening model, meaning the one-hour concentrations do not exceed 35 parts per million of CO (ppm) and the eight-hour concentrations do not exceed 9 ppm. The results for the predicted one-hour CO levels are shown in **Table 1** and for the eight-hour CO levels are shown in **Table 2**. Comparing information in Table 2, with the exception of the Dale Mabry interchange in the AM period, Design Option E, which has been identified as the Locally Preferred Alternative, has a slightly higher CO emission than the 2045 No Further Action Alternative by a range of 0-14 percent (%). The output reports of the COFL2012 screening model runs are included in **Appendix A** of this memorandum.



TIS SEIS – Air Quality Technical Memorandum TIS Segments 1A, 2A, 2B, 3A, 3B	Air Quality Analysis/Screening Locations	Figure 2

Table 1 – Maximum 1-hour CO Concentrations (ppm)

Interchange	AM or PM Peak	No Further Action	Design Option A	Design Option B	Design Option C	Design Option D	Design Option E	Standard
I-275/Dale Mabry Hwy	AM	12.2	10.3	10.3	10.3	10.3	11.0	<35 ppm*
I-275/Dale Mabry Hwy	PM	11.6	11.3	11.3	11.3	11.3	12.1	<35 ppm*
I-275/Howard-Armenia	AM	10.9	10.9	10.9	10.9	10.9	12.3	<35 ppm*
I-275/Howard-Armenia	PM	10.8	11.1	11.1	11.1	11.1	11.2	<35 ppm*
I-275/MLK Blvd	AM	10.5	11.9	11.9	11.9	11.9	10.6	<35 ppm*
I-275/MLK Blvd	PM	10.2	11.0	11.0	11.0	11.0	10.7	<35 ppm*
I-4/21st-22nd St	AM	12.4	11.5	11.5	12.2	12.3	12.4	<35 ppm*
I-4/21st-22nd St	PM	12.1	10.5	10.5	12.2	12.3	12.5	<35 ppm*
I-4/50th St	AM	9.8	10.1	10.1	10.2	10.2	9.9	<35 ppm*
I-4/50th St	PM	10.4	10.8	10.8	11.0	11.0	10.4	<35 ppm*

Source: COFL2012 Screening in Appendix A.
Table 1 shows the highest concentration of the twenty receptors calculated by the screening model at each interchange location.
ppm = parts per million, MLK = Martin Luther King Jr
* does not exceed National Ambient Air Quality Standards

Table 2 – Maximum 8-hour CO Concentrations (ppm)

Interchange	AM or PM Peak	No Further Action	Design Option A	Design Option B	Design Option C	Design Option D	Design Option E	Standard
I-275/Dale Mabry Hwy	AM	7.3	6.2	6.2	6.2	6.2	6.6	<9 ppm*
I-275/Dale Mabry Hwy	PM	7.0	6.8	6.8	6.8	6.8	7.3	<9 ppm*
I-275/Howard-Armenia	AM	6.5	6.5	6.5	6.5	6.5	7.4	<9 ppm*
I-275/Howard-Armenia	PM	6.5	6.7	6.7	6.7	6.7	6.7	<9 ppm*
I-275/MLK Blvd	AM	6.3	7.1	7.1	7.1	7.1	6.4	<9 ppm*
I-275/MLK Blvd	PM	6.1	6.6	6.6	6.6	6.6	6.4	<9 ppm*
I-4/21st-22nd St	AM	7.4	6.9	6.9	7.3	7.4	7.4	<9 ppm*
I-4/21st-22nd St	PM	7.3	6.3	6.3	7.3	7.4	7.5	<9 ppm*
I-4/50th St	AM	5.9	6.1	6.1	6.1	6.1	5.9	<9 ppm*
I-4/50th St	PM	6.2	6.5	6.5	6.6	6.6	6.2	<9 ppm*

Source: COFL2012 Screening in Appendix A.
Table 2 shows the highest concentration of the twenty receptors calculated by the screening model at each interchange location.
ppm = parts per million, MLK = Martin Luther King Jr
* does not exceed National Ambient Air Quality Standards

MOBILE SOURCE AIR TOXIC (MSAT) EMISSIONS EVALUATION

Basis for MSAT Emissions Evaluation

A quantitative analysis provides a basis for identifying and comparing the potential differences among MSAT emissions, if any, from the various alternatives. The quantitative assessment presented below is derived in part from a study conducted by FHWA entitled *A Methodology for Evaluating Mobile Source Air Toxic Emissions Among Transportation Project Alternatives*.

The FHWA developed a tiered approach with three categories for analyzing MSAT in NEPA documents, depending on specific project circumstances:

(1) No analysis for projects with no potential for meaningful MSAT effects;

(2) Qualitative analysis for projects with low potential MSAT effects; or

(3) Quantitative analysis to differentiate alternatives for projects with higher potential MSAT effects.

This category includes projects that have the potential for meaningful differences in MSAT emissions among project alternatives. FHWA expects a limited number of projects to meet this two pronged test. To fall into this category, a project should:

- Create or significantly alter a major intermodal freight facility that has the potential to concentrate high levels of diesel particulate matter in a single location, involving a significant number of diesel vehicles for new projects or accommodating with a significant increase in the number of diesel vehicles for expansion projects; or
- Create new capacity or add significant capacity to urban highways such as Interstates, urban arterials, or urban collector-distributor routes with traffic volumes where the AADT is projected to be in the range of 140,000 to 150,000 or greater by the design year;

And also

- Be proposed to be located in proximity to populated areas.

For projects warranting MSAT analysis, all nine priority MSAT should be considered.

Based on the criteria above, specific project circumstance (3) applies as the second "prong" of the test is met with the project adding capacity to an urban interstate with traffic volumes in the range of in excess of 200,000 vehicles per day by the design year (2045) and being located in proximity to populated areas. Thus, the MSAT quantitative evaluation was undertaken to the Year 2045 No Further Action and the Year 2045 Design Options (A, B, C, D & E) of the 2018 Express Lane Alternative. The MSAT analysis was also calculated for 2018 existing conditions as a means to compare current conditions to the future conditions.

MSAT Evaluation Considerations

The October 2019 Draft PTAR provides traffic information that was used in the MSAT evaluation. It is assumed that the fleet mix of vehicles will not change substantially between the evaluated alternatives. Thus, for each alternative analyzed in the SEIS, the amount of MSAT emitted would be proportional to the vehicle miles traveled (VMT). The MSAT evaluation was performed for two scenarios. The evaluation of Scenario One was for the I-275 corridor and I-4 corridor combined at more of a project, macro level. The limits of the evaluation are along I-275 starting at the western ramp to/from SR 60 on the west end in TIS Segment 1A to the northern

ramps of MLK Boulevard at the northern most portion of Segment 2B. Along I-4, the evaluation began at the I-275 interchange in Segment 2B and extended east to the 50th Street ramps in Segment 3B. The evaluation of Scenario Two was performed at 5 separate links within the I-275 and I-4 corridors of Scenario One to determine whether the results at a smaller, or micro-levels are consistent with the Scenario One macro-level evaluation.

The MSAT emission calculations based on the USEPA's MOVES2014 model, are effected by traffic volume in vehicle miles traveled and traffic speeds. MSAT emission levels decrease as travel speed increases. In addition, emissions would likely be lower in future years than present levels in the current year because of USEPA's national control programs that are projected to reduce annual MSAT emissions by over 90 percent between 2010 and 2050 (refer to *Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents*, FHWA, October 12, 2016 included in **Appendix C** of this document). The FDOT's central office created look-up tables of emission factors for each year from 2016 to 2040 that were used in the MSAT evaluation. The last page of **Appendix B** contains notes on how these MSAT look-up tables were used in the analysis and other notes on the procedure used in the MSAT analysis.

The emission estimates of each of the nine MSAT toxins are calculated separately. The emission estimates for all nine toxins are combined to result in a total overall emission value in pounds for comparison purposes.

Two scenarios were evaluated for this MSAT analysis comparing emissions for the 2018 and 2045 time periods.

- Scenario One involved evaluating a macro-level of the I-275 and I-4 corridors. The limits include I-275 from the western ramps at SR 60 to the northern ramps at MLK Boulevard and along I-4 from I-275 to 50th Street. The total MSAT emissions were calculated.
- Scenario Two involved evaluating micro-levels of the project corridor by evaluating several separate I-275 and I-4 mainline roadway segments, between ramp junctions. The total emissions for these separate mainline segments were calculated and the segment with the highest total emissions was determined.

The results of the total emissions for Scenario Two were compared to the results from Scenario One to determine whether the results were generally consistent between a macro-level evaluation and a micro-level evaluation.

MSAT Scenario One Evaluation (Macro Level Corridors along I-275 and I-4)

The Draft PTAR contains figures and tables that include AM and PM peak hour traffic volumes and projected travel speeds for all links along both directions of I-275 and I-4. For the 2018 Existing Conditions and the 2045 No Further Action alternative, volumes and average travel speeds for all links were provided for the existing I-275 and I-4 mainline travel lanes in both peak AM and peak PM time periods per the PTAR. Each interstate mainline directional corridor (northbound I-275, southbound I-275, eastbound I-4 and westbound I-4) were evaluated in the AM and PM time periods. For Design Options A, B, C, D and E, these five interstate mainline directional corridors were further separated into general use lanes and express lanes (where express lanes were applicable) as the travel speeds of the express lanes would be different than for the general use lanes. **Appendix B** contains the calculations of vehicle miles traveled (VMT) and average speeds that were then entered into the calculation of MSAT emissions. The emissions were calculated based on these peak hour conditions, so the results are calculated in amount of emissions in the peak hour. The PTAR does not provide average speeds for the typical day, so the calculation cannot provide an amount of emissions in a typical day or time period greater than the peak hour.

Results of the MSAT Scenario One Evaluation

Project traffic information (traffic volumes, travel speeds) from the October 2019 Draft PTAR was used in the evaluation. **Appendix B** contains summary tables of the evaluation, specific calculations of the MSAT evaluation for each link and condition (year, AM/PM period and alternative) as well as a listing of the look-up factors used in the evaluation and assumptions made in the analysis.

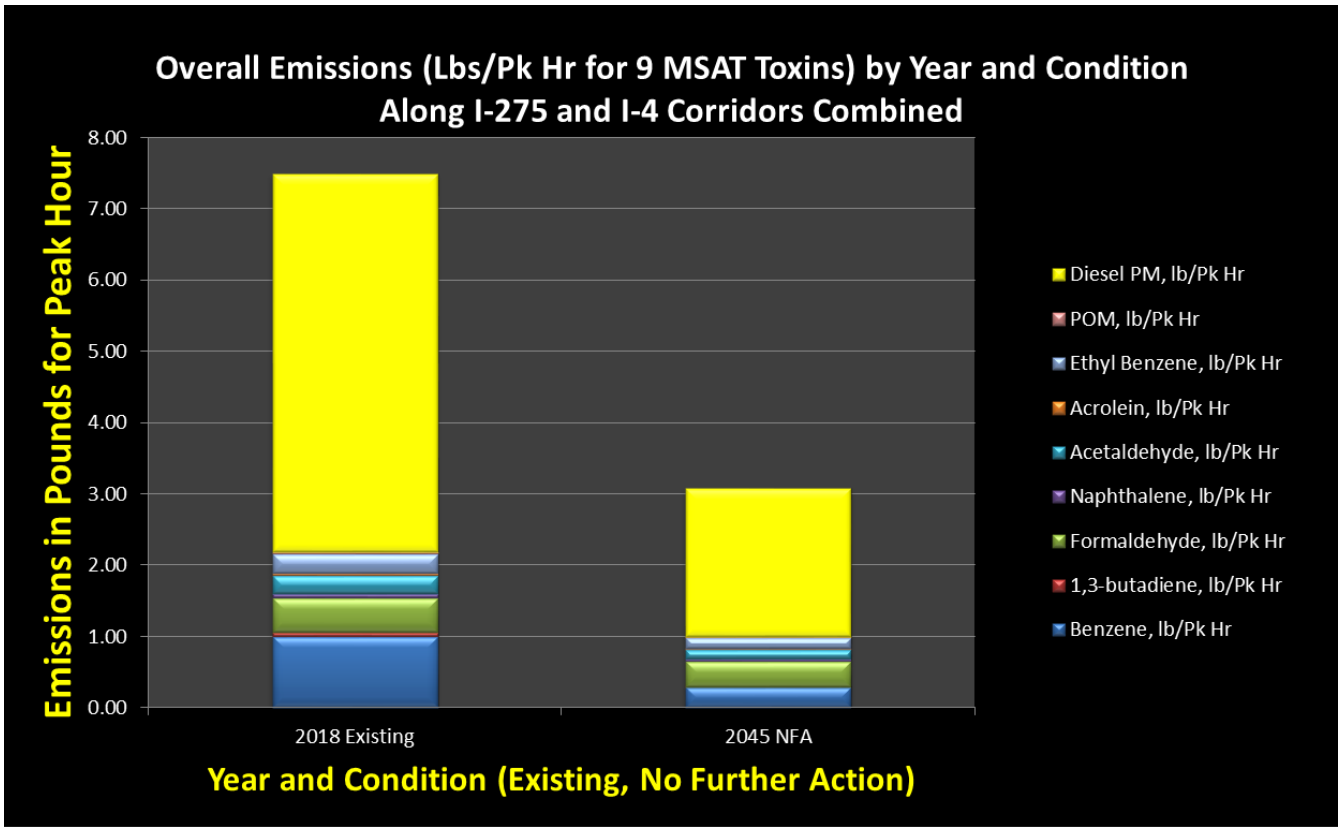
The results showed for the overall project corridor (I-275 and I-4) that MSAT levels decreased between 2018 existing conditions 2045 No Further Action Alternative. This result is consistent with the figure on Page 3 of *Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents*, FHWA, October 12, 2016 in **Appendix C** where MSAT levels would decrease over time (in this case from 2018 to 2045, even with a future increase in volume of traffic and increase in traffic congestion. **Figure 3** graphically shows the difference in emission rates for 2018 existing conditions, and the No Further Action Alternative in year 2045. The level of toxin emission in the peak hour 2018 existing conditions (AM period was the peak hour period with the highest emission rate) was about 7.5 pounds of total MSAT emissions. This total MSAT emission level is predicted to be reduced to about 3.1 pounds in the peak hour (PM period was the peak) for the 2045 No Further Action Alternative. This is a decrease in emissions by approximately 59 percent. The change in each toxin is slightly different. While the calculated VMT increases from 2018 to 2045 and the vehicle speeds are lower, this difference is reflective of the lowering in MSAT emissions over the 27 year time period between 2018 and 2045 according to the MOVES2014 model. The calculations of this evaluation are shown in **Appendix B**.

Next, the evaluation compared alternatives in the 2045 time period. This included the No-Further Action alternative in comparison with the Design Options A, B, C, D and E of the 2018 Express Lane Alternative. **Figure 4** shows this comparison. As shown, the 2045 No Further Action Alternative was predicted to result in 3.1 pounds of MSAT emissions in the PM peak hour. In general, Design Options A, B, C, D and E would produce about 50 percent less emissions than the No Further Action Alternative. The difference in emission totals is primarily as a result of decreased traffic congestion (higher travel speeds). The emission rates of the five design options range from 1.58 pounds to 1.66 pounds in the peak hour. There is only a 5 percent difference between the total MSAT emissions with the Design Option with the lowest emission total (AM peak hour of Design Option B at 1.58 pounds) and Design Option with the highest emission total (PM peak hour of Design Option A at 1.66 pounds). In the analysis, Design Option E, which has been identified as the Locally Preferred Alternative, has an emission rate of 1.60 pounds, which demonstrates a 48% reduction from the 2045 No Further Action Alternative. The calculations of this evaluation are shown in **Appendix B**.

Figure 5 shows the detail emission levels for each of the nine MSAT toxins to demonstrate the emission differences in each toxin for the information shown in **Figure 4**.

Figure 3 – Scenario One (Mainline Corridors of I-275 & I-4) MSAT Emissions in Pounds in the Peak Hour for all Nine Toxins 2018 Existing Conditions vs 2045 No Further Action Alternative

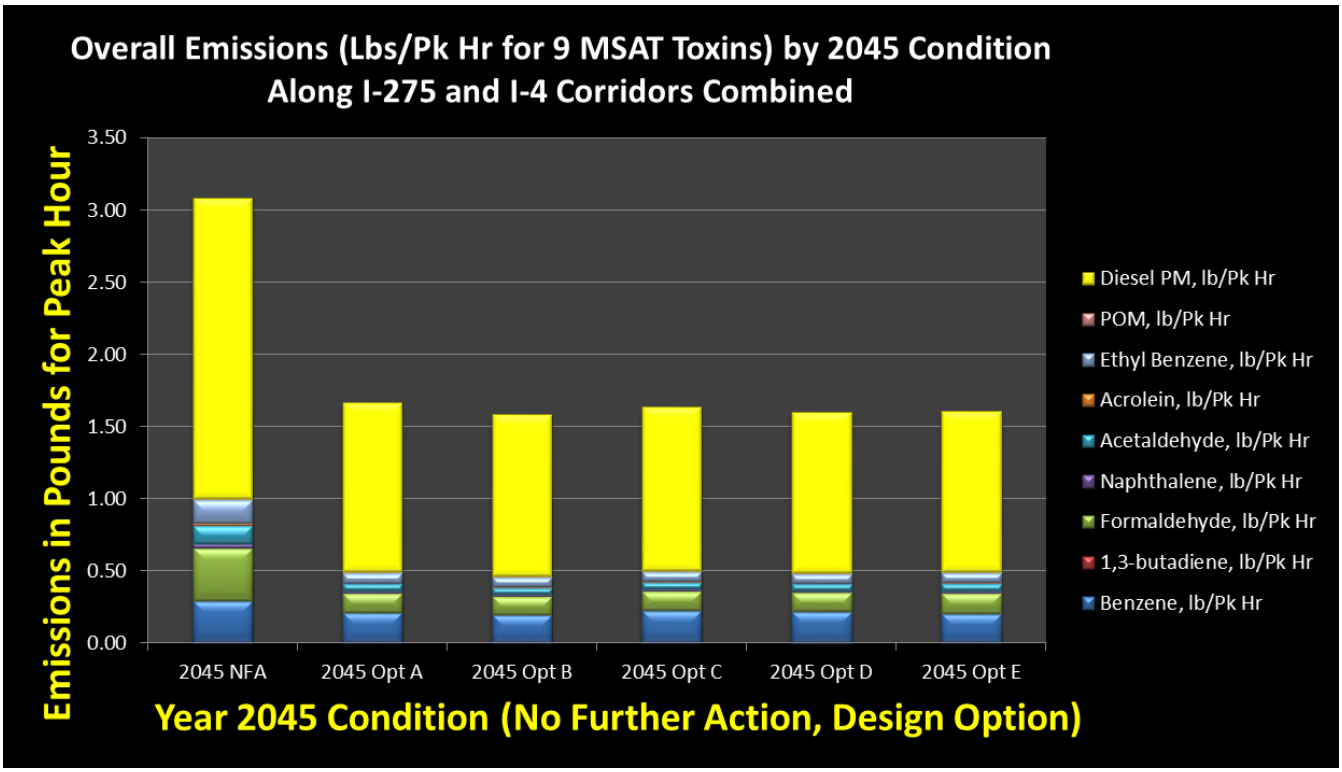
(I-275 from SR 60 to MLK Boulevard and I-4 from I-275 to 50th Street)



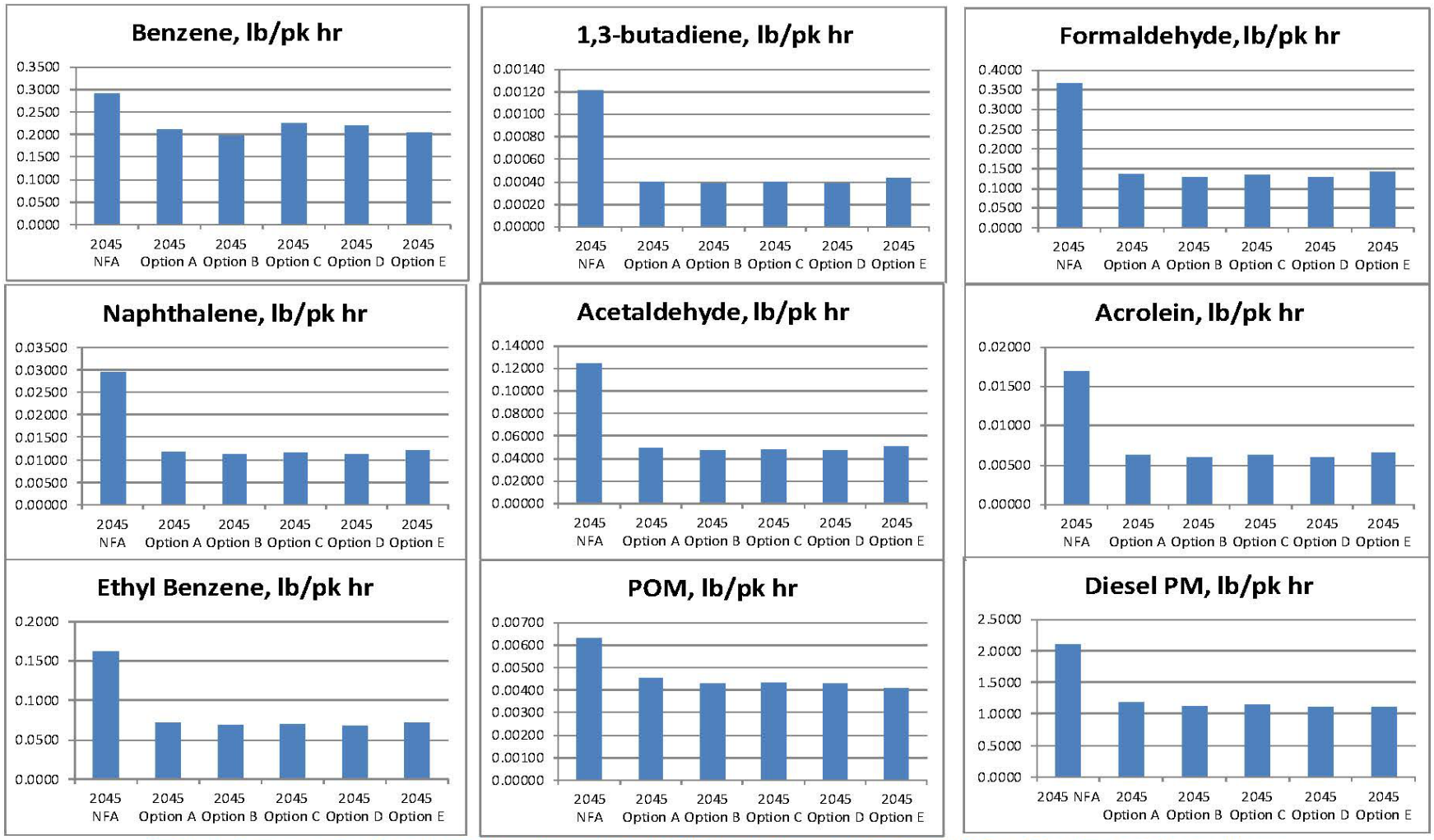
Source: MSAT Analysis Calculations, See **Appendix B.** NFA = No Further Action

Figure 4 – Scenario One (Mainline Corridors of I-275 & I-4) MSAT Emissions in Pounds in the Peak Hour for all Nine Toxins 2045 No Further Action vs 2045 Design Options A, B, C, D & E

(I-275 from SR 60 to MLK Boulevard and I-4 from I-275 to 50th Street)



Source: MSAT Analysis Calculations, See **Appendix B.** NFA = No Further Action



For illustrative purposes, these charts show the predicted 2045 levels of each of the nine MSAT emission toxins in the peak hour for I-275 from the west SR 60 ramps to MLK Boulevard and I-4 from I-275 to 50th Street.

Shows the change in the levels based on the 2045 No Further Action Alternative and Design Options A, B, C, D & E of the 2018 Express Lane Alternative

TIS SEIS – Air Quality Technical Memorandum TIS Segments 1A, 2A, 2B, 3A, 3B	Air Quality - MSAT emission levels Scenario One 2045 No Further Action (NFA) VS 2045 Design Options A, B, C, D, E	Figure 5

MSAT Scenario Two Evaluation (Micro Level Links along I-275 and I-4)

Scenario Two evaluated MSAT emissions at a smaller scale to determine whether the results in Scenario One might be reflective of smaller stretches of the project corridor. For Scenario Two, the evaluation consisted of evaluating MSAT emission for five separate segments of I-275 and I-4. These five segments are shown on **Figure 2** with a green star. These segments were selected as they are forecast to have a combination of the greatest VMT and lowest speed (i.e., segments where the MSAT emissions are anticipated to be greatest. The segments were also selected because there would not be a substantial change in the roadway geometry (including little change in ramp configurations). Ramps were not included in the evaluation because there is no speed data for ramps in the PTAR.

These five locations include:

- I-275 from the west ramps at Lois Avenue to the east ramps at Lois Avenue (TIS Segment 1A)
- I-275 from Himes Avenue to Armenia Avenue (TIS Segment 2A)
- I-275 from Howard Avenue to Ashley Drive (TIS Segments 2A & 2B)
- I-275 south of the MLK Boulevard south ramps (TIS Segment 2B)
- I-4 from the Selmon Connector to Columbus Drive ramps (TIS Segment 3A & 3B)

Results of the MSAT Scenario Two Evaluation

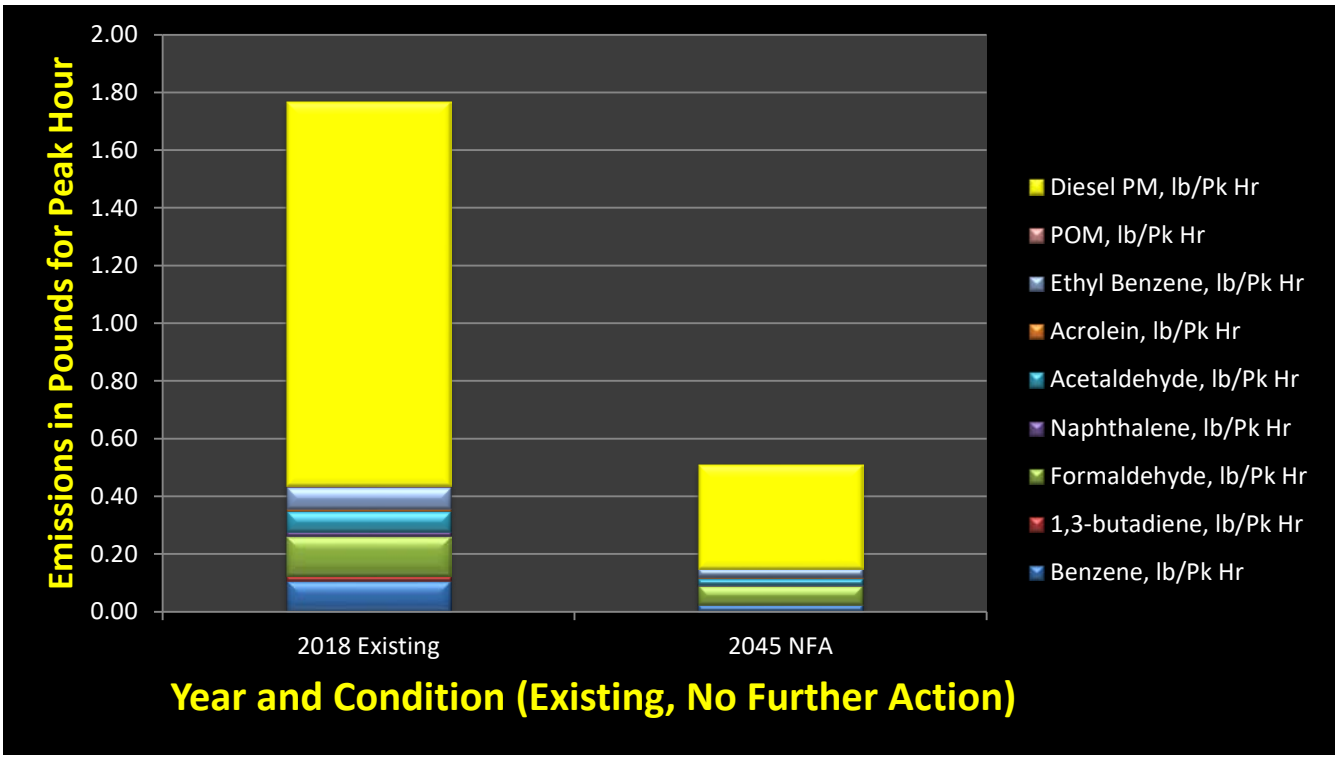
Similar to the MSAT Scenario One Evaluation, project traffic information (traffic volumes, travel speeds) from the Draft PTAR for each of the five segments were used in the evaluation. **Appendix B** contains summary tables of the evaluation, specific calculations of the MSAT evaluation for each segment and condition (year, AM/PM period and alternative). The same look-up factors used in the Scenario One evaluation and assumptions apply to the Scenario Two evaluation.

The segment with the highest calculated emission for all time periods and conditions was I-275 between Howard Avenue and Ashley Drive. The following tables reflect the emission in formation for this segment. Calculations are shown for the other four segments in **Appendix B**.

Figure 6 shows the comparison of MSAT emissions for the 2018 Existing Condition and the 2045 No Further Action Alternative. Similar to **Figure 3**, this bar chart shows a predicted decrease in emissions from 2018 to 2045. **Figure 6** shows a reduction in emissions from just less than 1.8 pounds in the peak hour for the 2018 Existing Conditions to about 0.5 pounds in the peak hour for the 2045 No Further Action Alternative, a reduction in emission of about 70 percent. The results of Scenario Two shown in **Figure 6** are similar to the results of Scenario One shown in **Figure 3**.

Figure 6 – Scenario Two (Micro-level – link evaluation) MSAT Emissions in Pounds in the Peak Hour for all Nine Toxins 2018 Existing Conditions vs 2045 No Further Action Alternative

Link with the highest emissions – I-275 from Howard Avenue to Ashley Drive (PM peak period)

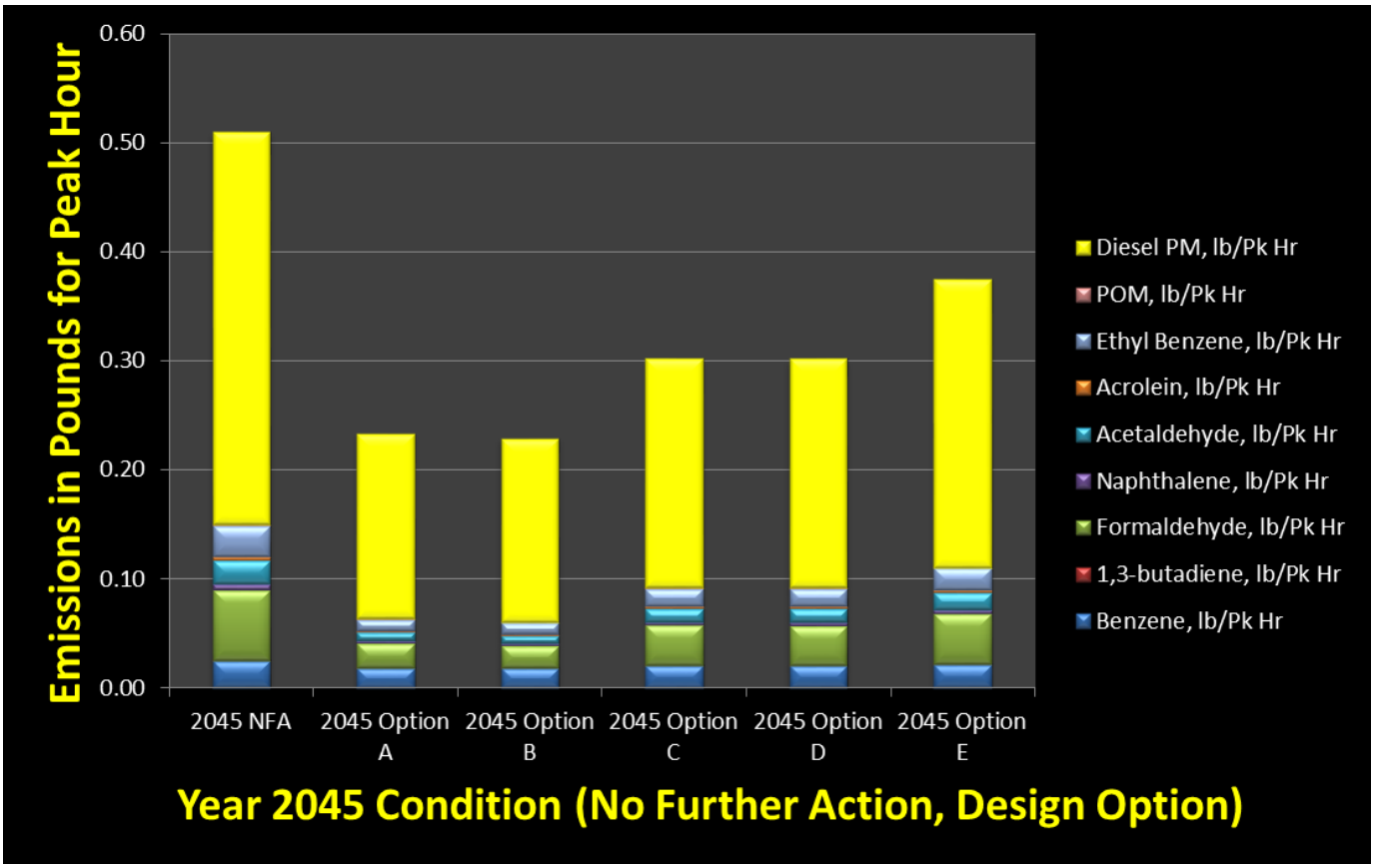


Source: MSAT Analysis Calculations, See **Appendix B.** NFA = No Further Action

Similar to Scenario One, the evaluation for Scenario Two also compared the emissions for the 2045 No Further Action Alterative and Design Options A, B, C, D and E of the 2018 Express Lane Alternative. **Figure 7** shows the results of this comparison and this yields a similar pattern of decreased emissions with all five Design Options over the No Further Action Alternative, a reduction of around 50 percent. At this this micro-level, the emissions at this segment differs more definitively between the Design Options than in Scenario One. Design Options A and B are predicted to yield approximately 0.23 pounds in the peak hour compared to 0.30 pounds in the peak hour for Design Options C and D, and 0.37 pounds in the peak hour for Design Option E. Design Options A and B are predicted to result in 56 percent less emissions than the No Further Action Alternative, compared to a 40 percent reduction for Design Options C and D, and a 27 percent reduction for Design Option E. Thus comparing both Scenario One and Scenario Two evaluations, the results are generally similar.

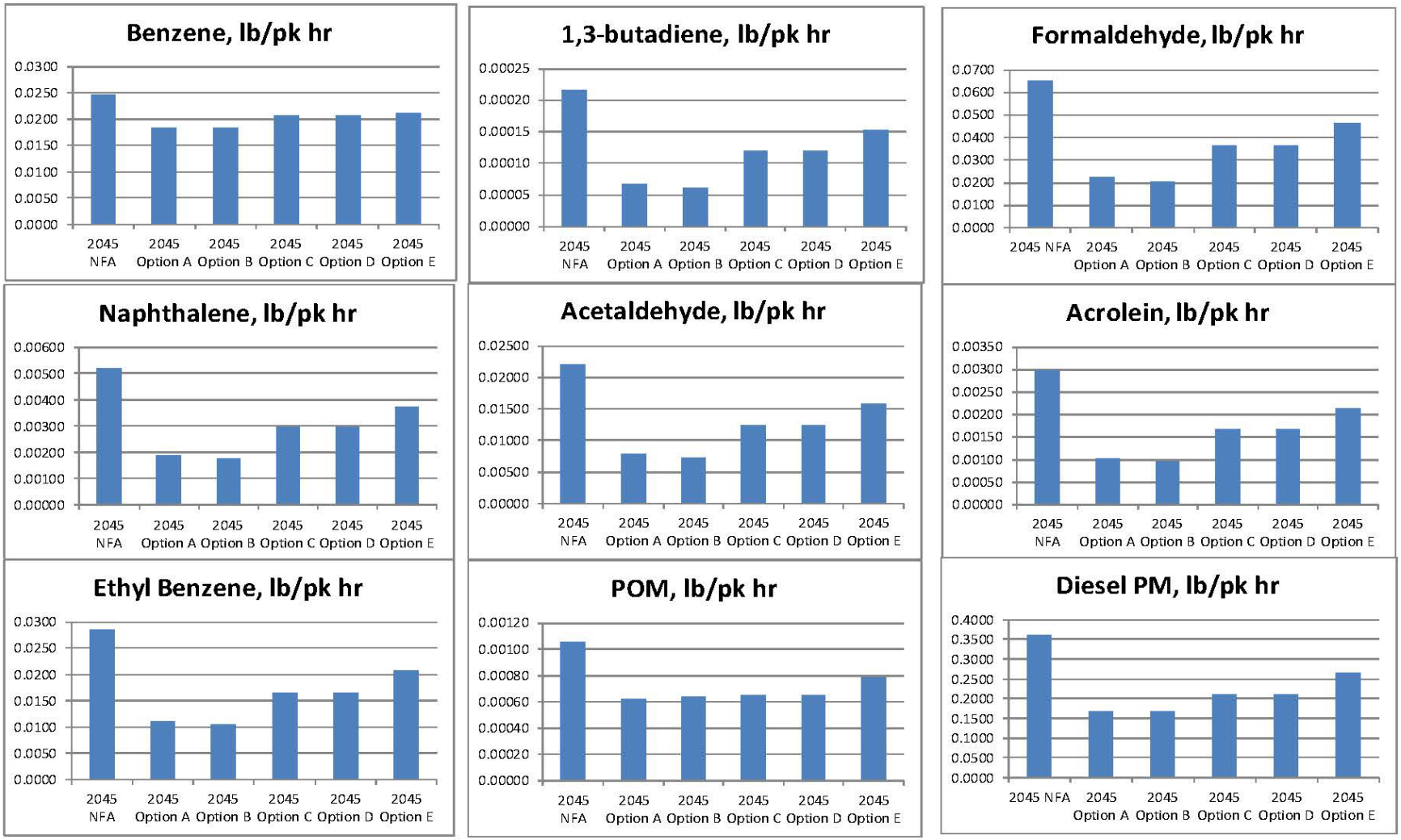
Figure 7 – Scenario Two (Micro-level – link evaluation)
2045 MSAT Emissions in Pounds in the Peak Hour for all Nine Toxins
No Further Action vs Design Options A, B, C, D & E

Comparing 2045 No Further Action Alternative and 2045 Design Options A, B, C, D and E of the 2018 Express Lane Alternative for the link of I-275 from Howard Avenue to Ashley Drive which exhibited the highest amount of emissions in the peak hour.



Source: MSAT Analysis Calculations, See **Appendix B.** NFA = No Further Action

Figure 8 shows the detail emission levels for each of the nine MSAT toxins to demonstrate the emission differences in each toxin for the information shown in **Figure 7**.



For illustrative purposes, these charts show the predicted 2045 levels of each of the nine MSAT emission toxins in the peak hour for the location (**I-275 from Howard to Ashley**). Shows the change in the levels based on the 2045 No Further Action Alternative and Design Options A, B, C, D &E of the 2018 Express Lane Alternative

TIS SEIS – Air Quality Technical Memorandum TIS Segments 1A, 2A, 2B, 3A, 3B	Air Quality - MSAT emission levels Scenario Two 2045 No Further Action (NFA) VS 2045 Design Options A, B, C, D, E	Figure 8

Summary Results of the MSAT Scenario One and Scenario Evaluations

Below is a summary of the general comparisons of emission totals among the years and conditions by comparing the results of both Scenario One (**Figures 3**, **4** and **5**) and Scenario Two (**Figures 6**, **7** and **8**) :

- 2045 No Further Action Alternative showed improved levels over 2018 Existing Conditions by an average decrease in all toxins combined by approximately **60 percent.**
- All four Design Options (A, B, C, D & E) for the 2018 Express Lane Alternative showed an improvement in MSAT emissions when compared to the 2045 No Further Action Alternative by an average decrease of approximately **50 percent**. **Figures 5** and **8** show that there is a decrease in emission levels for each of the nine MSAT toxins.
- There was not a substantial difference in total MSAT emissions for the five Design Options (A, B, C, D, & E) for the 2018 Express Lane Alternative.
    - At a macro level in Scenario One, there was little difference (within 5 percent difference with Design Option B producing slightly less than (and Design Option A producing slightly more than) the other Design Options.
    - At a micro-level, in Scenario Two for the link with the highest emission rates, Design Options A and B would be predicted to produce lower emissions than Design Options C D, and E, with Design Option E as the highest (about 24% higher than Design Options C or D).

Improvements proposed under the 2018 Express Lane Alternative may have the effect of moving some traffic closer to nearby populated areas; therefore, under each alternative there may be localized areas where ambient concentrations of MSAT could be higher under certain Design Options than the No Further Action Alternative. However, the magnitude and the duration of these potential increases compared to the No-Further Action Alternative cannot be reliably quantified due to incomplete or unavailable information in forecasting project-specific MSAT health impacts. In sum, when a highway is widened, the localized level of MSAT emissions for the 2018 Express Lane Alternative could be higher relative to the No Further Action Alternative, but this could be offset due to increases in speeds and reductions in congestion (which are associated with lower MSAT emissions). Also, MSAT would be lower in other locations when traffic shifts away from sensitive locations. However, on a regional basis, USEPA's vehicle and fuel regulations, coupled with fleet turnover, would over time cause substantial reductions that, in almost all cases, would cause region-wide MSAT levels to be significantly lower than today.

Incomplete or Unavailable Information for MSAT Effects Analysis

The MSAT Effects Analysis was conducted with as complete information as practical. The following considerations factored into the analysis and may have resulted in some limitations with the calculations.

- Due to funding and resource constraints, the MSAT levels for 2018 existing conditions was calculated using the traffic speed information in the PTAR rather than measuring actual emission levels in the field.
- The fleet mix of vehicles was not assumed to change between 2018 and 2045 conditions. The project alternatives are not anticipated to cause a substantial change in fleet mix.
- The PTAR listed travel speeds for the AM and PM peak hours. Travel speeds for each hour of the day were not available. The emission rate was calculated for these AM and PM peak hour speeds. Since

these are the hours of highest traffic volume and highest congestion, it is assumed that emissions would be less for the non-peak hours. The evaluation retains comparison of emission rates based on a peak-hour condition. The evaluation did not calculate emissions for any time period greater than the peak hour (day, week, month, and year).

- The MSAT analysis utilized look-up tables for emission rates as developed by FDOT Office of Environmental Management. These tables were developed in accordance with FHWA guidelines as noted in this document. The lookup tables used were those developed for FDOT District 7 projects (where this TIS SEIS is located) and for urban restricted areas. Year 2045 factors were determined from a straight-line extrapolation from year 2039 and 2040 year factors.

Refer to Appendix C of the *Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents*, FHWA, October 12, 2016 for additional details related to incomplete or unavailable information. This FHWA guidance is contained in **Appendix C** of this Air Quality Technical Memorandum

SHORT-TERM AIR QUALITY IMPACTS

Construction activities would cause short-term air quality impacts in the form of dust from earthwork and unpaved roads. These impacts will be minimized by adherence to applicable state regulations and to the *FDOT Standard Specifications for Road and Bridge Construction*.

Appendix A

COFL2012 Analysis

Divided by interchange location

Summary of COFL2012 Screenings

Rundate 11-01-2019

Based on 2045 DDHV Traffic Volumes from PTAR dated March, 2019

Max 1-hour CO (ppm)

		No Further	Design Option					
Interchange	AM/PM	Action	A	B	C	D	E	Comments
I-275/Dale Mabry	AM	12.2	10.3	10.3	10.3	10.3	11.0	< 35ppm, does not exceed NAAQ Stds
I-275/Dale Mabry	PM	11.6	11.3	11.3	11.3	11.3	12.1	< 35ppm, does not exceed NAAQ Stds
I-275/Howard-Armenia	AM	10.9	10.9	10.9	10.9	10.9	12.3	< 35ppm, does not exceed NAAQ Stds
I-275/Howard-Armenia	PM	10.8	11.1	11.1	11.1	11.1	11.2	< 35ppm, does not exceed NAAQ Stds
I-275/MLK	AM	10.5	11.9	11.9	11.9	11.9	10.6	< 35ppm, does not exceed NAAQ Stds
I-275/MLK	PM	10.2	11.0	11.0	11.0	11.0	10.7	< 35ppm, does not exceed NAAQ Stds
I-4/21st-22nd	AM	12.4	11.5	11.5	12.2	12.3	12.4	< 35ppm, does not exceed NAAQ Stds
I-4/21st-22nd	PM	12.1	10.5	10.5	12.2	12.3	12.5	< 35ppm, does not exceed NAAQ Stds
I-4/50th St	AM	9.8	10.1	10.1	10.2	10.2	9.9	< 35ppm, does not exceed NAAQ Stds
I-4/50th St	PM	10.4	10.8	10.8	11.0	11.0	10.4	< 35ppm, does not exceed NAAQ Stds

Max 8-hour CO (ppm)

		No Further	Design Option					
Interchange	AM/PM	Action	A	B	C	D	E	Comments
I-275/Dale Mabry	AM	7.3	6.2	6.2	6.2	6.2	6.6	< 9ppm, does not exceed NAAQ Stds
I-275/Dale Mabry	PM	7.0	6.8	6.8	6.8	6.8	7.3	< 9ppm, does not exceed NAAQ Stds
I-275/Howard-Armenia	AM	6.5	6.5	6.5	6.5	6.5	7.4	< 9ppm, does not exceed NAAQ Stds
I-275/Howard-Armenia	PM	6.5	6.7	6.7	6.7	6.7	6.7	< 9ppm, does not exceed NAAQ Stds
I-275/MLK	AM	6.3	7.1	7.1	7.1	7.1	6.4	< 9ppm, does not exceed NAAQ Stds
I-275/MLK	PM	6.1	6.6	6.6	6.6	6.6	6.4	< 9ppm, does not exceed NAAQ Stds
I-4/21st-22nd	AM	7.4	6.9	6.9	7.3	7.4	7.4	< 9ppm, does not exceed NAAQ Stds
I-4/21st-22nd	PM	7.3	6.3	6.3	7.3	7.4	7.5	< 9ppm, does not exceed NAAQ Stds
I-4/50th St	AM	5.9	6.1	6.1	6.1	6.1	5.9	< 9ppm, does not exceed NAAQ Stds
I-4/50th St	PM	6.2	6.5	6.5	6.6	6.6	6.2	< 9ppm, does not exceed NAAQ Stds

Source: COFL2012 Screening Runs in Appendix A

Appendix A

COFL2012 Analysis

I-275/Dale Mabry Interchange

CO Florida 2012 - Results
Friday, April 19, 2019

Project Description

Project Title	TIS SEIS			
Facility Name	I-275			
User's Name	Jeff Novotny			
Run Name	DM Option NoFA - AM			
FDOT District	7			
Year	2045			
Intersection Type	E-W Diamond			
Speed	Arterial	45 mph	Freeway	55 mph
Approach Traffic	Arterial	3660 vph	Freeway	13490 vph

Environmental Data

Temperature	48.8 °F
Reid Vapor Pressure	13.3 psi
Land Use	Urban
Stability Class	D
Surface Roughness	175 cm
1 Hr. Background Concentration	5.0 ppm
8 Hr. Background Concentration	3.0 ppm

Results
(ppm, including background CO)

Receptor	Max 1-Hr	Max 8-Hr
1	8.5	5.1
2	9.7	5.8
3	9.4	5.6
4	7.3	4.4
5	10.5	6.3
6	12.2	7.3
7	9.5	5.7
8	9.9	5.9
9	8.7	5.2
10	8.1	4.9
11	8.7	5.2
12	9.9	5.9
13	9.3	5.6
14	7.3	4.4
15	10.5	6.3
16	12.2	7.3
17	9.5	5.7
18	9.9	5.9
19	8.8	5.3
20	8.0	4.8

****
**********PROJECT PASSES**********
NO EXCEEDANCES OF NAAQ STANDARDS ARE PREDICTED
****

CO Florida 2012 - Results
Friday, April 19, 2019

Project Description

Project Title	TIS SEIS			
Facility Name	I-275			
User's Name	Jeff Novotny			
Run Name	DM Option NoFA - PM			
FDOT District	7			
Year	2045			
Intersection Type	E-W Diamond			
Speed	Arterial	45 mph	Freeway	55 mph
Approach Traffic	Arterial	4415 vph	Freeway	13180 vph

Environmental Data

Temperature	48.8 °F
Reid Vapor Pressure	13.3 psi
Land Use	Urban
Stability Class	D
Surface Roughness	175 cm
1 Hr. Background Concentration	5.0 ppm
8 Hr. Background Concentration	3.0 ppm

Results
(ppm, including background CO)

Receptor	Max 1-Hr	Max 8-Hr
1	9.4	5.6
2	9.9	5.9
3	9.2	5.5
4	7.1	4.3
5	10.4	6.2
6	11.6	7.0
7	9.2	5.5
8	9.6	5.8
9	8.9	5.3
10	8.4	5.0
11	9.5	5.7
12	10.1	6.1
13	9.1	5.5
14	7.1	4.3
15	10.4	6.2
16	11.6	7.0
17	9.2	5.5
18	9.4	5.6
19	8.9	5.3
20	8.3	5.0

****
**********PROJECT PASSES**********
NO EXCEEDANCES OF NAAQ STANDARDS ARE PREDICTED
****

CO Florida 2012 - Results
Friday, April 19, 2019

Project Description

Project Title	TIS SEIS			
Facility Name	I-275			
User's Name	Jeff Novotny			
Run Name	DM Option ABCD - AM			
FDOT District	7			
Year	2045			
Intersection Type	E-W Diamond			
Speed	Arterial	45 mph	Freeway	55 mph
Approach Traffic	Arterial	2575 vph	Freeway	13745 vph

Environmental Data

Temperature	48.8 °F
Reid Vapor Pressure	13.3 psi
Land Use	Urban
Stability Class	D
Surface Roughness	175 cm
1 Hr. Background Concentration	5.0 ppm
8 Hr. Background Concentration	3.0 ppm

Results
(ppm, including background CO)

Receptor	Max 1-Hr	Max 8-Hr
1	8.1	4.9
2	8.5	5.1
3	8.0	4.8
4	7.0	4.2
5	9.9	5.9
6	10.3	6.2
7	7.8	4.7
8	8.0	4.8
9	7.7	4.6
10	7.3	4.4
11	8.1	4.9
12	8.7	5.2
13	7.9	4.7
14	7.0	4.2
15	9.9	5.9
16	10.3	6.2
17	7.8	4.7
18	7.9	4.7
19	7.8	4.7
20	7.2	4.3

****
**********PROJECT PASSES**********
NO EXCEEDANCES OF NAAQ STANDARDS ARE PREDICTED
****

CO Florida 2012 - Results
Friday, April 19, 2019

Project Description

Project Title	TIS SEIS			
Facility Name	I-275			
User's Name	Jeff Novotny			
Run Name	DM Option ABCD - PM			
FDOT District	7			
Year	2045			
Intersection Type	E-W Diamond			
Speed	Arterial	45 mph	Freeway	55 mph
Approach Traffic	Arterial	3575 vph	Freeway	13800 vph

Environmental Data

Temperature	48.8 °F
Reid Vapor Pressure	13.3 psi
Land Use	Urban
Stability Class	D
Surface Roughness	175 cm
1 Hr. Background Concentration	5.0 ppm
8 Hr. Background Concentration	3.0 ppm

Results
(ppm, including background CO)

Receptor	Max 1-Hr	Max 8-Hr
1	8.3	5.0
2	9.0	5.4
3	8.8	5.3
4	7.2	4.3
5	10.1	6.1
6	11.3	6.8
7	8.8	5.3
8	8.9	5.3
9	8.3	5.0
10	7.9	4.7
11	8.4	5.0
12	9.2	5.5
13	8.7	5.2
14	7.2	4.3
15	10.1	6.1
16	11.3	6.8
17	8.8	5.3
18	8.9	5.3
19	8.4	5.0
20	7.8	4.7

****
**********PROJECT PASSES**********
NO EXCEEDANCES OF NAAQ STANDARDS ARE PREDICTED
****

CO Florida 2012 - Results
Friday, November 1, 2019

Project Description

Project Title	TIS SEIS			
Facility Name	I-275			
User's Name	Jeff Novotny			
Run Name	DM Option E - AM			
FDOT District	7			
Year	2045			
Intersection Type	E-W Diamond			
Speed	Arterial	45 mph	Freeway	55 mph
Approach Traffic	Arterial	2820 vph	Freeway	14065 vph

Environmental Data

Temperature	48.8 °F
Reid Vapor Pressure	13.3 psi
Land Use	Urban
Stability Class	D
Surface Roughness	175 cm
1 Hr. Background Concentration	5.0 ppm
8 Hr. Background Concentration	3.0 ppm

Results
(ppm, including background CO)

Receptor	Max 1-Hr	Max 8-Hr
1	8.4	5.0
2	8.8	5.3
3	8.4	5.0
4	7.1	4.3
5	10.2	6.1
6	11.0	6.6
7	8.4	5.0
8	8.5	5.1
9	8.0	4.8
10	7.8	4.7
11	8.5	5.1
12	9.0	5.4
13	8.3	5.0
14	7.1	4.3
15	10.2	6.1
16	11.0	6.6
17	8.4	5.0
18	8.5	5.1
19	8.0	4.8
20	7.7	4.6

****
**********PROJECT PASSES**********
NO EXCEEDANCES OF NAAQ STANDARDS ARE PREDICTED
****

CO Florida 2012 - Results
Friday, November 1, 2019

Project Description

Project Title	TIS SEIS			
Facility Name	I-275			
User's Name	Jeff Novotny			
Run Name	DM Option E - PM			
FDOT District	7			
Year	2045			
Intersection Type	E-W Diamond			
Speed	Arterial	45 mph	Freeway	55 mph
Approach Traffic	Arterial	3640 vph	Freeway	14470 vph

Environmental Data

Temperature	48.8 °F
Reid Vapor Pressure	13.3 psi
Land Use	Urban
Stability Class	D
Surface Roughness	175 cm
1 Hr. Background Concentration	5.0 ppm
8 Hr. Background Concentration	3.0 ppm

Results
(ppm, including background CO)

Receptor	Max 1-Hr	Max 8-Hr
1	8.4	5.0
2	9.4	5.6
3	9.2	5.5
4	7.3	4.4
5	10.4	6.2
6	12.1	7.3
7	9.2	5.5
8	9.5	5.7
9	8.6	5.2
10	8.0	4.8
11	8.5	5.1
12	9.5	5.7
13	9.1	5.5
14	7.3	4.4
15	10.4	6.2
16	12.1	7.3
17	9.2	5.5
18	9.5	5.7
19	8.7	5.2
20	7.9	4.7

****
**********PROJECT PASSES**********
NO EXCEEDANCES OF NAAQ STANDARDS ARE PREDICTED
****

Appendix A

COFL2012 Analysis

I-275/Howard-Armenia Interchange

CO Florida 2012 - Results
Friday, April 19, 2019

Project Description

Project Title	TIS SEIS			
Facility Name	I-275			
User's Name	Jeff Novotny			
Run Name	HA Option NoFA - AM			
FDOT District	7			
Year	2045			
Intersection Type	E-W Diamond			
Speed	Arterial	40 mph	Freeway	55 mph
Approach Traffic	Arterial	2330 vph	Freeway	14190 vph

Environmental Data

Temperature	48.8 °F
Reid Vapor Pressure	13.3 psi
Land Use	Urban
Stability Class	D
Surface Roughness	175 cm
1 Hr. Background Concentration	5.0 ppm
8 Hr. Background Concentration	3.0 ppm

Results
(ppm, including background CO)

Receptor	Max 1-Hr	Max 8-Hr
1	7.5	4.5
2	8.3	5.0
3	8.2	4.9
4	7.1	4.3
5	10.0	6.0
6	10.9	6.5
7	8.3	5.0
8	8.3	5.0
9	7.8	4.7
10	7.3	4.4
11	7.7	4.6
12	8.5	5.1
13	8.1	4.9
14	7.0	4.2
15	10.0	6.0
16	10.9	6.5
17	8.3	5.0
18	8.3	5.0
19	7.8	4.7
20	7.2	4.3

****
**********PROJECT PASSES**********
NO EXCEEDANCES OF NAAQ STANDARDS ARE PREDICTED
****

CO Florida 2012 - Results
Friday, April 19, 2019

Project Description

Project Title	TIS SEIS			
Facility Name	I-275			
User's Name	Jeff Novotny			
Run Name	HA Option NoFA - PM			
FDOT District	7			
Year	2045			
Intersection Type	E-W Diamond			
Speed	Arterial	40 mph	Freeway	55 mph
Approach Traffic	Arterial	2200 vph	Freeway	13790 vph

Environmental Data

Temperature	48.8 °F
Reid Vapor Pressure	13.3 psi
Land Use	Urban
Stability Class	D
Surface Roughness	175 cm
1 Hr. Background Concentration	5.0 ppm
8 Hr. Background Concentration	3.0 ppm

Results
(ppm, including background CO)

Receptor	Max 1-Hr	Max 8-Hr
1	7.3	4.4
2	8.1	4.9
3	8.2	4.9
4	7.0	4.2
5	9.9	5.9
6	10.8	6.5
7	8.2	4.9
8	8.3	5.0
9	7.7	4.6
10	7.2	4.3
11	7.5	4.5
12	8.3	5.0
13	8.1	4.9
14	7.0	4.2
15	9.9	5.9
16	10.8	6.5
17	8.2	4.9
18	8.3	5.0
19	7.8	4.7
20	7.1	4.3

****
**********PROJECT PASSES**********
NO EXCEEDANCES OF NAAQ STANDARDS ARE PREDICTED
****

CO Florida 2012 - Results
Friday, April 19, 2019

Project Description

Project Title	TIS SEIS			
Facility Name	I-275			
User's Name	Jeff Novotny			
Run Name	HA Option ABCD - AM			
FDOT District	7			
Year	2045			
Intersection Type	E-W Diamond			
Speed	Arterial	40 mph	Freeway	55 mph
Approach Traffic	Arterial	2390 vph	Freeway	14485 vph

Environmental Data

Temperature	48.8 °F
Reid Vapor Pressure	13.3 psi
Land Use	Urban
Stability Class	D
Surface Roughness	175 cm
1 Hr. Background Concentration	5.0 ppm
8 Hr. Background Concentration	3.0 ppm

Results
(ppm, including background CO)

Receptor	Max 1-Hr	Max 8-Hr
1	7.5	4.5
2	8.3	5.0
3	8.3	5.0
4	7.1	4.3
5	10.0	6.0
6	10.9	6.5
7	8.3	5.0
8	8.3	5.0
9	7.9	4.7
10	7.3	4.4
11	7.7	4.6
12	8.5	5.1
13	8.2	4.9
14	7.0	4.2
15	10.0	6.0
16	10.9	6.5
17	8.3	5.0
18	8.3	5.0
19	7.9	4.7
20	7.2	4.3

****
**********PROJECT PASSES**********
NO EXCEEDANCES OF NAAQ STANDARDS ARE PREDICTED
****

CO Florida 2012 - Results
Friday, April 19, 2019

Project Description

Project Title	TIS SEIS			
Facility Name	I-275			
User's Name	Jeff Novotny			
Run Name	HA Option ABCD - PM			
FDOT District	7			
Year	2045			
Intersection Type	E-W Diamond			
Speed	Arterial	40 mph	Freeway	55 mph
Approach Traffic	Arterial	2375 vph	Freeway	14710 vph

Environmental Data

Temperature	48.8 °F
Reid Vapor Pressure	13.3 psi
Land Use	Urban
Stability Class	D
Surface Roughness	175 cm
1 Hr. Background Concentration	5.0 ppm
8 Hr. Background Concentration	3.0 ppm

Results
(ppm, including background CO)

Receptor	Max 1-Hr	Max 8-Hr
1	7.4	4.4
2	8.2	4.9
3	8.4	5.0
4	7.1	4.3
5	10.1	6.1
6	11.1	6.7
7	8.3	5.0
8	8.3	5.0
9	7.8	4.7
10	7.2	4.3
11	7.6	4.6
12	8.4	5.0
13	8.3	5.0
14	7.0	4.2
15	10.1	6.1
16	11.1	6.7
17	8.3	5.0
18	8.3	5.0
19	7.9	4.7
20	7.1	4.3

****
**********PROJECT PASSES**********
NO EXCEEDANCES OF NAAQ STANDARDS ARE PREDICTED
****

CO Florida 2012 - Results
Friday, November 1, 2019

Project Description

Project Title	TIS SEIS			
Facility Name	I-275			
User's Name	Jeff Novotny			
Run Name	HA Option E - AM			
FDOT District	7			
Year	2045			
Intersection Type	E-W Diamond			
Speed	Arterial	40 mph	Freeway	55 mph
Approach Traffic	Arterial	2805 vph	Freeway	14485 vph

Environmental Data

Temperature	48.8 °F
Reid Vapor Pressure	13.3 psi
Land Use	Urban
Stability Class	D
Surface Roughness	175 cm
1 Hr. Background Concentration	5.0 ppm
8 Hr. Background Concentration	3.0 ppm

Results
(ppm, including background CO)

Receptor	Max 1-Hr	Max 8-Hr
1	7.7	4.6
2	8.9	5.3
3	9.3	5.6
4	7.2	4.3
5	10.4	6.2
6	12.3	7.4
7	9.4	5.6
8	9.7	5.8
9	8.5	5.1
10	7.7	4.6
11	7.9	4.7
12	9.0	5.4
13	9.2	5.5
14	7.2	4.3
15	10.4	6.2
16	12.3	7.4
17	9.4	5.6
18	9.7	5.8
19	8.5	5.1
20	7.6	4.6

****
**********PROJECT PASSES**********
NO EXCEEDANCES OF NAAQ STANDARDS ARE PREDICTED
****

CO Florida 2012 - Results
Friday, November 1, 2019

Project Description

Project Title	TIS SEIS			
Facility Name	I-275			
User's Name	Jeff Novotny			
Run Name	HA Option E - PM			
FDOT District	7			
Year	2045			
Intersection Type	E-W Diamond			
Speed	Arterial	40 mph	Freeway	55 mph
Approach Traffic	Arterial	2840 vph	Freeway	14200 vph

Environmental Data

Temperature	48.8 °F
Reid Vapor Pressure	13.3 psi
Land Use	Urban
Stability Class	D
Surface Roughness	175 cm
1 Hr. Background Concentration	5.0 ppm
8 Hr. Background Concentration	3.0 ppm

Results
(ppm, including background CO)

Receptor	Max 1-Hr	Max 8-Hr
1	8.0	4.8
2	8.7	5.2
3	8.4	5.0
4	7.2	4.3
5	10.1	6.1
6	11.2	6.7
7	8.5	5.1
8	8.5	5.1
9	7.9	4.7
10	7.7	4.6
11	8.1	4.9
12	8.8	5.3
13	8.3	5.0
14	7.1	4.3
15	10.1	6.1
16	11.2	6.7
17	8.5	5.1
18	8.5	5.1
19	7.9	4.7
20	7.6	4.6

****
**********PROJECT PASSES**********
NO EXCEEDANCES OF NAAQ STANDARDS ARE PREDICTED
****

Appendix A

COFL2012 Analysis

I-275/Martin Luther King Jr Interchange

CO Florida 2012 - Results
Friday, April 19, 2019

Project Description

Project Title	TIS SEIS			
Facility Name	I-275			
User's Name	Jeff Novotny			
Run Name	MLK Option NoFA - AM			
FDOT District	7			
Year	2045			
Intersection Type	N-S Diamond			
Speed	Arterial	45 mph	Freeway	55 mph
Approach Traffic	Arterial	1845 vph	Freeway	13100 vph

Environmental Data

Temperature	48.8 °F
Reid Vapor Pressure	13.3 psi
Land Use	Urban
Stability Class	D
Surface Roughness	175 cm
1 Hr. Background Concentration	5.0 ppm
8 Hr. Background Concentration	3.0 ppm

Results
(ppm, including background CO)

Receptor	Max 1-Hr	Max 8-Hr
1	10.5	6.3
2	8.1	4.9
3	8.2	4.9
4	7.5	4.5
5	6.9	4.1
6	7.3	4.4
7	8.1	4.9
8	8.0	4.8
9	6.8	4.1
10	9.7	5.8
11	10.5	6.3
12	8.1	4.9
13	8.2	4.9
14	7.4	4.4
15	6.8	4.1
16	7.3	4.4
17	8.1	4.9
18	8.1	4.9
19	6.9	4.1
20	9.7	5.8

****
**********PROJECT PASSES**********
NO EXCEEDANCES OF NAAQ STANDARDS ARE PREDICTED
****

CO Florida 2012 - Results
Friday, April 19, 2019

Project Description

Project Title	TIS SEIS			
Facility Name	I-275			
User's Name	Jeff Novotny			
Run Name	MLK Option NoFA - PM			
FDOT District	7			
Year	2045			
Intersection Type	N-S Diamond			
Speed	Arterial	45 mph	Freeway	55 mph
Approach Traffic	Arterial	2245 vph	Freeway	13100 vph

Environmental Data

Temperature	48.8 °F
Reid Vapor Pressure	13.3 psi
Land Use	Urban
Stability Class	D
Surface Roughness	175 cm
1 Hr. Background Concentration	5.0 ppm
8 Hr. Background Concentration	3.0 ppm

Results
(ppm, including background CO)

Receptor	Max 1-Hr	Max 8-Hr
1	10.2	6.1
2	7.8	4.7
3	7.8	4.7
4	7.6	4.6
5	7.1	4.3
6	7.6	4.6
7	8.3	5.0
8	7.8	4.7
9	6.8	4.1
10	9.6	5.8
11	10.2	6.1
12	7.8	4.7
13	7.8	4.7
14	7.5	4.5
15	7.0	4.2
16	7.6	4.6
17	8.3	5.0
18	7.9	4.7
19	6.9	4.1
20	9.6	5.8

****
**********PROJECT PASSES**********
NO EXCEEDANCES OF NAAQ STANDARDS ARE PREDICTED
****

CO Florida 2012 - Results
Friday, April 19, 2019

Project Description

Project Title	TIS SEIS			
Facility Name	I-275			
User's Name	Jeff Novotny			
Run Name	MLK Option ABCD - AM			
FDOT District	7			
Year	2045			
Intersection Type	N-S Diamond			
Speed	Arterial	45 mph	Freeway	55 mph
Approach Traffic	Arterial	2735 vph	Freeway	13100 vph

Environmental Data

Temperature	48.8 °F
Reid Vapor Pressure	13.3 psi
Land Use	Urban
Stability Class	D
Surface Roughness	175 cm
1 Hr. Background Concentration	5.0 ppm
8 Hr. Background Concentration	3.0 ppm

Results
(ppm, including background CO)

Receptor	Max 1-Hr	Max 8-Hr
1	11.9	7.1
2	9.3	5.6
3	9.6	5.8
4	8.5	5.1
5	7.5	4.5
6	8.0	4.8
7	9.2	5.5
8	8.9	5.3
9	7.1	4.3
10	10.1	6.1
11	11.9	7.1
12	9.3	5.6
13	9.6	5.8
14	8.4	5.0
15	7.5	4.5
16	8.0	4.8
17	9.2	5.5
18	9.0	5.4
19	7.1	4.3
20	10.1	6.1

****
**********PROJECT PASSES**********
NO EXCEEDANCES OF NAAQ STANDARDS ARE PREDICTED
****

CO Florida 2012 - Results
Friday, April 19, 2019

Project Description

Project Title	TIS SEIS			
Facility Name	I-275			
User's Name	Jeff Novotny			
Run Name	MLK Option ABCD - PM			
FDOT District	7			
Year	2045			
Intersection Type	N-S Diamond			
Speed	Arterial	45 mph	Freeway	55 mph
Approach Traffic	Arterial	2225 vph	Freeway	12400 vph

Environmental Data

Temperature	48.8 °F
Reid Vapor Pressure	13.3 psi
Land Use	Urban
Stability Class	D
Surface Roughness	175 cm
1 Hr. Background Concentration	5.0 ppm
8 Hr. Background Concentration	3.0 ppm

Results
(ppm, including background CO)

Receptor	Max 1-Hr	Max 8-Hr
1	11.0	6.6
2	8.7	5.2
3	8.9	5.3
4	8.0	4.8
5	7.5	4.5
6	7.9	4.7
7	8.8	5.3
8	8.4	5.0
9	7.0	4.2
10	9.9	5.9
11	11.0	6.6
12	8.7	5.2
13	8.9	5.3
14	7.9	4.7
15	7.5	4.5
16	7.9	4.7
17	8.8	5.3
18	8.5	5.1
19	7.0	4.2
20	9.9	5.9

****
**********PROJECT PASSES**********
NO EXCEEDANCES OF NAAQ STANDARDS ARE PREDICTED
****

CO Florida 2012 - Results
Friday, November 1, 2019

Project Description

Project Title	TIS SEIS			
Facility Name	I-275			
User's Name	Jeff Novotny			
Run Name	MLK Option ABCD - AM			
FDOT District	7			
Year	2045			
Intersection Type	N-S Diamond			
Speed	Arterial	45 mph	Freeway	55 mph
Approach Traffic	Arterial	1895 vph	Freeway	13100 vph

Environmental Data

Temperature	48.8 °F
Reid Vapor Pressure	13.3 psi
Land Use	Urban
Stability Class	D
Surface Roughness	175 cm
1 Hr. Background Concentration	5.0 ppm
8 Hr. Background Concentration	3.0 ppm

Results
(ppm, including background CO)

Receptor	Max 1-Hr	Max 8-Hr
1	10.6	6.4
2	8.1	4.9
3	8.2	4.9
4	7.5	4.5
5	7.0	4.2
6	7.4	4.4
7	8.2	4.9
8	8.0	4.8
9	6.8	4.1
10	9.8	5.9
11	10.6	6.4
12	8.1	4.9
13	8.2	4.9
14	7.4	4.4
15	6.9	4.1
16	7.4	4.4
17	8.2	4.9
18	8.1	4.9
19	6.9	4.1
20	9.8	5.9

****
**********PROJECT PASSES**********
NO EXCEEDANCES OF NAAQ STANDARDS ARE PREDICTED
****

CO Florida 2012 - Results
Friday, November 1, 2019

Project Description

Project Title	TIS SEIS			
Facility Name	I-275			
User's Name	Jeff Novotny			
Run Name	MLK Option E - PM			
FDOT District	7			
Year	2045			
Intersection Type	N-S Diamond			
Speed	Arterial	45 mph	Freeway	55 mph
Approach Traffic	Arterial	1925 vph	Freeway	13165 vph

Environmental Data

Temperature	48.8 °F
Reid Vapor Pressure	13.3 psi
Land Use	Urban
Stability Class	D
Surface Roughness	175 cm
1 Hr. Background Concentration	5.0 ppm
8 Hr. Background Concentration	3.0 ppm

Results
(ppm, including background CO)

Receptor	Max 1-Hr	Max 8-Hr
1	10.7	6.4
2	8.3	5.0
3	8.4	5.0
4	7.5	4.5
5	7.1	4.3
6	7.5	4.5
7	8.4	5.0
8	8.1	4.9
9	6.8	4.1
10	9.8	5.9
11	10.7	6.4
12	8.3	5.0
13	8.4	5.0
14	7.5	4.5
15	7.0	4.2
16	7.5	4.5
17	8.4	5.0
18	8.2	4.9
19	6.9	4.1
20	9.8	5.9

****
**********PROJECT PASSES**********
NO EXCEEDANCES OF NAAQ STANDARDS ARE PREDICTED
****

Appendix A

COFL2012 Analysis

I-4/21st-22nd Streets Interchange

CO Florida 2012 - Results
Friday, April 19, 2019

Project Description

Project Title	TIS SEIS			
Facility Name	I-4			
User's Name	Jeff Novotny			
Run Name	21st22nd Option NoFA - AM			
FDOT District	7			
Year	2045			
Intersection Type	E-W Diamond			
Speed	Arterial	30 mph	Freeway	55 mph
Approach Traffic	Arterial	2730 vph	Freeway	15075 vph

Environmental Data

Temperature	48.8 °F
Reid Vapor Pressure	13.3 psi
Land Use	Urban
Stability Class	D
Surface Roughness	175 cm
1 Hr. Background Concentration	5.0 ppm
8 Hr. Background Concentration	3.0 ppm

Results
(ppm, including background CO)

Receptor	Max 1-Hr	Max 8-Hr
1	7.8	4.7
2	9.0	5.4
3	9.5	5.7
4	7.4	4.4
5	10.7	6.4
6	12.4	7.4
7	9.4	5.6
8	9.7	5.8
9	8.5	5.1
10	7.8	4.7
11	8.0	4.8
12	9.1	5.5
13	9.4	5.6
14	7.4	4.4
15	10.7	6.4
16	12.4	7.4
17	9.4	5.6
18	9.7	5.8
19	8.5	5.1
20	7.7	4.6

****
**********PROJECT PASSES**********
NO EXCEEDANCES OF NAAQ STANDARDS ARE PREDICTED
****

CO Florida 2012 - Results
Friday, April 19, 2019

Project Description

Project Title	TIS SEIS			
Facility Name	I-4			
User's Name	Jeff Novotny			
Run Name	21st22nd Option NoFA - PM			
FDOT District	7			
Year	2045			
Intersection Type	E-W Diamond			
Speed	Arterial	30 mph	Freeway	55 mph
Approach Traffic	Arterial	3880 vph	Freeway	13220 vph

Environmental Data

Temperature	48.8 °F
Reid Vapor Pressure	13.3 psi
Land Use	Urban
Stability Class	D
Surface Roughness	175 cm
1 Hr. Background Concentration	5.0 ppm
8 Hr. Background Concentration	3.0 ppm

Results
(ppm, including background CO)

Receptor	Max 1-Hr	Max 8-Hr
1	7.9	4.7
2	9.3	5.6
3	9.6	5.8
4	7.2	4.3
5	10.3	6.2
6	12.1	7.3
7	9.7	5.8
8	10.1	6.1
9	8.8	5.3
10	8.1	4.9
11	8.1	4.9
12	9.5	5.7
13	9.5	5.7
14	7.2	4.3
15	10.3	6.2
16	12.1	7.3
17	9.7	5.8
18	10.1	6.1
19	8.9	5.3
20	8.0	4.8

****
**********PROJECT PASSES**********
NO EXCEEDANCES OF NAAQ STANDARDS ARE PREDICTED
****

CO Florida 2012 - Results
Friday, April 19, 2019

Project Description

Project Title	TIS SEIS			
Facility Name	I-4			
User's Name	Jeff Novotny			
Run Name	21st22nd Option AB - AM			
FDOT District	7			
Year	2045			
Intersection Type	E-W Diamond			
Speed	Arterial	30 mph	Freeway	55 mph
Approach Traffic	Arterial	2155 vph	Freeway	14405 vph

Environmental Data

Temperature	48.8 °F
Reid Vapor Pressure	13.3 psi
Land Use	Urban
Stability Class	D
Surface Roughness	175 cm
1 Hr. Background Concentration	5.0 ppm
8 Hr. Background Concentration	3.0 ppm

Results
(ppm, including background CO)

Receptor	Max 1-Hr	Max 8-Hr
1	7.2	4.3
2	8.3	5.0
3	8.6	5.2
4	7.3	4.4
5	10.2	6.1
6	11.5	6.9
7	8.7	5.2
8	8.8	5.3
9	8.0	4.8
10	7.5	4.5
11	7.4	4.4
12	8.4	5.0
13	8.5	5.1
14	7.2	4.3
15	10.2	6.1
16	11.5	6.9
17	8.7	5.2
18	8.8	5.3
19	8.0	4.8
20	7.4	4.4

****
**********PROJECT PASSES**********
NO EXCEEDANCES OF NAAQ STANDARDS ARE PREDICTED
****

CO Florida 2012 - Results
Friday, April 19, 2019

Project Description

Project Title	TIS SEIS			
Facility Name	I-4			
User's Name	Jeff Novotny			
Run Name	21st22nd Option AB - PM			
FDOT District	7			
Year	2045			
Intersection Type	E-W Diamond			
Speed	Arterial	30 mph	Freeway	55 mph
Approach Traffic	Arterial	2400 vph	Freeway	13385 vph

Environmental Data

Temperature	48.8 °F
Reid Vapor Pressure	13.3 psi
Land Use	Urban
Stability Class	D
Surface Roughness	175 cm
1 Hr. Background Concentration	5.0 ppm
8 Hr. Background Concentration	3.0 ppm

Results
(ppm, including background CO)

Receptor	Max 1-Hr	Max 8-Hr
1	7.0	4.2
2	7.9	4.7
3	8.2	4.9
4	6.9	4.1
5	9.8	5.9
6	10.5	6.3
7	8.0	4.8
8	8.0	4.8
9	7.7	4.6
10	7.1	4.3
11	7.2	4.3
12	8.1	4.9
13	8.1	4.9
14	6.8	4.1
15	9.8	5.9
16	10.5	6.3
17	8.0	4.8
18	8.0	4.8
19	7.6	4.6
20	7.0	4.2

****
**********PROJECT PASSES**********
NO EXCEEDANCES OF NAAQ STANDARDS ARE PREDICTED
****

CO Florida 2012 - Results
Friday, April 19, 2019

Project Description

Project Title	TIS SEIS			
Facility Name	I-4			
User's Name	Jeff Novotny			
Run Name	21st22nd Option C - AM			
FDOT District	7			
Year	2045			
Intersection Type	E-W Diamond			
Speed	Arterial	30 mph	Freeway	55 mph
Approach Traffic	Arterial	2695 vph	Freeway	14405 vph

Environmental Data

Temperature	48.8 °F
Reid Vapor Pressure	13.3 psi
Land Use	Urban
Stability Class	D
Surface Roughness	175 cm
1 Hr. Background Concentration	5.0 ppm
8 Hr. Background Concentration	3.0 ppm

Results
(ppm, including background CO)

Receptor	Max 1-Hr	Max 8-Hr
1	7.6	4.6
2	8.8	5.3
3	9.2	5.5
4	7.3	4.4
5	10.4	6.2
6	12.2	7.3
7	9.4	5.6
8	9.7	5.8
9	8.3	5.0
10	7.7	4.6
11	7.8	4.7
12	8.9	5.3
13	9.1	5.5
14	7.3	4.4
15	10.4	6.2
16	12.2	7.3
17	9.4	5.6
18	9.7	5.8
19	8.3	5.0
20	7.6	4.6

****
**********PROJECT PASSES**********
NO EXCEEDANCES OF NAAQ STANDARDS ARE PREDICTED
****

CO Florida 2012 - Results
Friday, April 19, 2019

Project Description

Project Title	TIS SEIS			
Facility Name	I-4			
User's Name	Jeff Novotny			
Run Name	21st22nd Option C - PM			
FDOT District	7			
Year	2045			
Intersection Type	E-W Diamond			
Speed	Arterial	30 mph	Freeway	55 mph
Approach Traffic	Arterial	3130 vph	Freeway	12975 vph

Environmental Data

Temperature	48.8 °F
Reid Vapor Pressure	13.3 psi
Land Use	Urban
Stability Class	D
Surface Roughness	175 cm
1 Hr. Background Concentration	5.0 ppm
8 Hr. Background Concentration	3.0 ppm

Results
(ppm, including background CO)

Receptor	Max 1-Hr	Max 8-Hr
1	7.7	4.6
2	9.1	5.5
3	9.6	5.8
4	7.2	4.3
5	10.2	6.1
6	12.3	7.4
7	9.8	5.9
8	10.2	6.1
9	8.8	5.3
10	7.7	4.6
11	7.9	4.7
12	9.3	5.6
13	9.5	5.7
14	7.2	4.3
15	10.2	6.1
16	12.3	7.4
17	9.8	5.9
18	10.2	6.1
19	8.9	5.3
20	7.6	4.6

****
**********PROJECT PASSES**********
NO EXCEEDANCES OF NAAQ STANDARDS ARE PREDICTED
****

CO Florida 2012 - Results
Friday, April 19, 2019

Project Description

Project Title	TIS SEIS			
Facility Name	I-4			
User's Name	Jeff Novotny			
Run Name	21st22nd Option D - AM			
FDOT District	7			
Year	2045			
Intersection Type	E-W Diamond			
Speed	Arterial	30 mph	Freeway	55 mph
Approach Traffic	Arterial	2695 vph	Freeway	14405 vph

Environmental Data

Temperature	48.8 °F
Reid Vapor Pressure	13.3 psi
Land Use	Urban
Stability Class	D
Surface Roughness	175 cm
1 Hr. Background Concentration	5.0 ppm
8 Hr. Background Concentration	3.0 ppm

Results
(ppm, including background CO)

Receptor	Max 1-Hr	Max 8-Hr
1	7.6	4.6
2	8.8	5.3
3	9.2	5.5
4	7.3	4.4
5	10.4	6.2
6	12.2	7.3
7	9.4	5.6
8	9.7	5.8
9	8.3	5.0
10	7.7	4.6
11	7.8	4.7
12	8.9	5.3
13	9.1	5.5
14	7.3	4.4
15	10.4	6.2
16	12.2	7.3
17	9.4	5.6
18	9.7	5.8
19	8.3	5.0
20	7.6	4.6

****
**********PROJECT PASSES**********
NO EXCEEDANCES OF NAAQ STANDARDS ARE PREDICTED
****

CO Florida 2012 - Results
Friday, April 19, 2019

Project Description

Project Title	TIS SEIS			
Facility Name	I-4			
User's Name	Jeff Novotny			
Run Name	21st22nd Option D - PM			
FDOT District	7			
Year	2045			
Intersection Type	E-W Diamond			
Speed	Arterial	30 mph	Freeway	55 mph
Approach Traffic	Arterial	3130 vph	Freeway	12975 vph

Environmental Data

Temperature	48.8 °F
Reid Vapor Pressure	13.3 psi
Land Use	Urban
Stability Class	D
Surface Roughness	175 cm
1 Hr. Background Concentration	5.0 ppm
8 Hr. Background Concentration	3.0 ppm

Results
(ppm, including background CO)

Receptor	Max 1-Hr	Max 8-Hr
1	7.7	4.6
2	9.1	5.5
3	9.6	5.8
4	7.2	4.3
5	10.2	6.1
6	12.3	7.4
7	9.8	5.9
8	10.2	6.1
9	8.8	5.3
10	7.7	4.6
11	7.9	4.7
12	9.3	5.6
13	9.5	5.7
14	7.2	4.3
15	10.2	6.1
16	12.3	7.4
17	9.8	5.9
18	10.2	6.1
19	8.9	5.3
20	7.6	4.6

****
**********PROJECT PASSES**********
NO EXCEEDANCES OF NAAQ STANDARDS ARE PREDICTED
****

CO Florida 2012 - Results
Friday, November 1, 2019

Project Description

Project Title	TIS SEIS			
Facility Name	I-4			
User's Name	Jeff Novotny			
Run Name	21st22nd Option E - AM			
FDOT District	7			
Year	2045			
Intersection Type	E-W Diamond			
Speed	Arterial	30 mph	Freeway	55 mph
Approach Traffic	Arterial	2830 vph	Freeway	14465 vph

Environmental Data

Temperature	48.8 °F
Reid Vapor Pressure	13.3 psi
Land Use	Urban
Stability Class	D
Surface Roughness	175 cm
1 Hr. Background Concentration	5.0 ppm
8 Hr. Background Concentration	3.0 ppm

Results
(ppm, including background CO)

Receptor	Max 1-Hr	Max 8-Hr
1	7.6	4.6
2	8.9	5.3
3	9.3	5.6
4	7.4	4.4
5	10.4	6.2
6	12.4	7.4
7	9.5	5.7
8	9.9	5.9
9	8.4	5.0
10	7.7	4.6
11	7.8	4.7
12	9.0	5.4
13	9.2	5.5
14	7.4	4.4
15	10.4	6.2
16	12.4	7.4
17	9.5	5.7
18	9.9	5.9
19	8.5	5.1
20	7.6	4.6

****
**********PROJECT PASSES**********
NO EXCEEDANCES OF NAAQ STANDARDS ARE PREDICTED
****

CO Florida 2012 - Results
Friday, November 1, 2019

Project Description

Project Title	TIS SEIS			
Facility Name	I-4			
User's Name	Jeff Novotny			
Run Name	21st22nd Option D - PM			
FDOT District	7			
Year	2045			
Intersection Type	E-W Diamond			
Speed	Arterial	30 mph	Freeway	55 mph
Approach Traffic	Arterial	3725 vph	Freeway	14170 vph

Environmental Data

Temperature	48.8 °F
Reid Vapor Pressure	13.3 psi
Land Use	Urban
Stability Class	D
Surface Roughness	175 cm
1 Hr. Background Concentration	5.0 ppm
8 Hr. Background Concentration	3.0 ppm

Results
(ppm, including background CO)

Receptor	Max 1-Hr	Max 8-Hr
1	7.8	4.7
2	9.2	5.5
3	9.6	5.8
4	7.4	4.4
5	10.5	6.3
6	12.5	7.5
7	9.8	5.9
8	10.2	6.1
9	8.7	5.2
10	8.0	4.8
11	8.0	4.8
12	9.3	5.6
13	9.5	5.7
14	7.4	4.4
15	10.5	6.3
16	12.5	7.5
17	9.8	5.9
18	10.2	6.1
19	8.8	5.3
20	7.9	4.7

****
**********PROJECT PASSES**********
NO EXCEEDANCES OF NAAQ STANDARDS ARE PREDICTED
****

Appendix A

COFL2012 Analysis

I-4/50th Street Interchange

CO Florida 2012 - Results
Friday, April 19, 2019

Project Description

Project Title	TIS SEIS			
Facility Name	I-4			
User's Name	Jeff Novotny			
Run Name	50th Option NoFA - AM			
FDOT District	7			
Year	2045			
Intersection Type	E-W Diamond			
Speed	Arterial	45 mph	Freeway	55 mph
Approach Traffic	Arterial	2230 vph	Freeway	12520 vph

Environmental Data

Temperature	48.8 °F
Reid Vapor Pressure	13.3 psi
Land Use	Urban
Stability Class	D
Surface Roughness	175 cm
1 Hr. Background Concentration	5.0 ppm
8 Hr. Background Concentration	3.0 ppm

Results
(ppm, including background CO)

Receptor	Max 1-Hr	Max 8-Hr
1	7.7	4.6
2	7.8	4.7
3	7.6	4.6
4	6.8	4.1
5	9.5	5.7
6	9.8	5.9
7	7.4	4.4
8	7.6	4.6
9	7.5	4.5
10	7.1	4.3
11	7.7	4.6
12	8.0	4.8
13	7.5	4.5
14	6.7	4.0
15	9.5	5.7
16	9.8	5.9
17	7.4	4.4
18	7.4	4.4
19	7.6	4.6
20	7.0	4.2

****
**********PROJECT PASSES**********
NO EXCEEDANCES OF NAAQ STANDARDS ARE PREDICTED
****

CO Florida 2012 - Results
Friday, April 19, 2019

Project Description

Project Title	TIS SEIS			
Facility Name	I-4			
User's Name	Jeff Novotny			
Run Name	50th Option NoFA - PM			
FDOT District	7			
Year	2045			
Intersection Type	E-W Diamond			
Speed	Arterial	45 mph	Freeway	55 mph
Approach Traffic	Arterial	2460 vph	Freeway	11640 vph

Environmental Data

Temperature	48.8 °F
Reid Vapor Pressure	13.3 psi
Land Use	Urban
Stability Class	D
Surface Roughness	175 cm
1 Hr. Background Concentration	5.0 ppm
8 Hr. Background Concentration	3.0 ppm

Results
(ppm, including background CO)

Receptor	Max 1-Hr	Max 8-Hr
1	7.2	4.3
2	8.0	4.8
3	8.2	4.9
4	6.7	4.0
5	9.3	5.6
6	10.4	6.2
7	8.1	4.9
8	8.3	5.0
9	7.6	4.6
10	7.2	4.3
11	7.4	4.4
12	8.2	4.9
13	8.1	4.9
14	6.7	4.0
15	9.2	5.5
16	10.4	6.2
17	8.1	4.9
18	8.3	5.0
19	7.7	4.6
20	7.1	4.3

****
**********PROJECT PASSES**********
NO EXCEEDANCES OF NAAQ STANDARDS ARE PREDICTED
****

CO Florida 2012 - Results
Friday, April 19, 2019

Project Description

Project Title	TIS SEIS			
Facility Name	I-4			
User's Name	Jeff Novotny			
Run Name	50th Option AB - AM			
FDOT District	7			
Year	2045			
Intersection Type	E-W Diamond			
Speed	Arterial	45 mph	Freeway	55 mph
Approach Traffic	Arterial	2405 vph	Freeway	13725 vph

Environmental Data

Temperature	48.8 °F
Reid Vapor Pressure	13.3 psi
Land Use	Urban
Stability Class	D
Surface Roughness	175 cm
1 Hr. Background Concentration	5.0 ppm
8 Hr. Background Concentration	3.0 ppm

Results
(ppm, including background CO)

Receptor	Max 1-Hr	Max 8-Hr
1	7.9	4.7
2	8.1	4.9
3	7.8	4.7
4	6.8	4.1
5	9.8	5.9
6	10.1	6.1
7	7.6	4.6
8	7.7	4.6
9	7.6	4.6
10	7.2	4.3
11	8.0	4.8
12	8.3	5.0
13	7.7	4.6
14	6.8	4.1
15	9.8	5.9
16	10.1	6.1
17	7.6	4.6
18	7.6	4.6
19	7.7	4.6
20	7.1	4.3

****
**********PROJECT PASSES**********
NO EXCEEDANCES OF NAAQ STANDARDS ARE PREDICTED
****

CO Florida 2012 - Results
Friday, April 19, 2019

Project Description

Project Title	TIS SEIS			
Facility Name	I-4			
User's Name	Jeff Novotny			
Run Name	50th Option AB - PM			
FDOT District	7			
Year	2045			
Intersection Type	E-W Diamond			
Speed	Arterial	45 mph	Freeway	55 mph
Approach Traffic	Arterial	2615 vph	Freeway	12760 vph

Environmental Data

Temperature	48.8 °F
Reid Vapor Pressure	13.3 psi
Land Use	Urban
Stability Class	D
Surface Roughness	175 cm
1 Hr. Background Concentration	5.0 ppm
8 Hr. Background Concentration	3.0 ppm

Results
(ppm, including background CO)

Receptor	Max 1-Hr	Max 8-Hr
1	7.4	4.4
2	8.3	5.0
3	8.4	5.0
4	6.9	4.1
5	9.7	5.8
6	10.8	6.5
7	8.3	5.0
8	8.5	5.1
9	7.8	4.7
10	7.3	4.4
11	7.6	4.6
12	8.5	5.1
13	8.3	5.0
14	6.8	4.1
15	9.7	5.8
16	10.8	6.5
17	8.3	5.0
18	8.5	5.1
19	7.8	4.7
20	7.2	4.3

****
**********PROJECT PASSES**********
NO EXCEEDANCES OF NAAQ STANDARDS ARE PREDICTED
****

CO Florida 2012 - Results
Friday, April 19, 2019

Project Description

Project Title	TIS SEIS			
Facility Name	I-4			
User's Name	Jeff Novotny			
Run Name	50th Option CD - AM			
FDOT District	7			
Year	2045			
Intersection Type	E-W Diamond			
Speed	Arterial	45 mph	Freeway	55 mph
Approach Traffic	Arterial	2455 vph	Freeway	13965 vph

Environmental Data

Temperature	48.8 °F
Reid Vapor Pressure	13.3 psi
Land Use	Urban
Stability Class	D
Surface Roughness	175 cm
1 Hr. Background Concentration	5.0 ppm
8 Hr. Background Concentration	3.0 ppm

Results
(ppm, including background CO)

Receptor	Max 1-Hr	Max 8-Hr
1	8.0	4.8
2	8.1	4.9
3	7.9	4.7
4	6.9	4.1
5	9.8	5.9
6	10.2	6.1
7	7.7	4.6
8	7.8	4.7
9	7.6	4.6
10	7.2	4.3
11	8.0	4.8
12	8.3	5.0
13	7.8	4.7
14	6.9	4.1
15	9.8	5.9
16	10.2	6.1
17	7.7	4.6
18	7.8	4.7
19	7.7	4.6
20	7.1	4.3

****
**********PROJECT PASSES**********
NO EXCEEDANCES OF NAAQ STANDARDS ARE PREDICTED
****

CO Florida 2012 - Results
Friday, April 19, 2019

Project Description

Project Title	TIS SEIS			
Facility Name	I-4			
User's Name	Jeff Novotny			
Run Name	50th Option CD - PM			
FDOT District	7			
Year	2045			
Intersection Type	E-W Diamond			
Speed	Arterial	45 mph	Freeway	55 mph
Approach Traffic	Arterial	2615 vph	Freeway	12930 vph

Environmental Data

Temperature	48.8 °F
Reid Vapor Pressure	13.3 psi
Land Use	Urban
Stability Class	D
Surface Roughness	175 cm
1 Hr. Background Concentration	5.0 ppm
8 Hr. Background Concentration	3.0 ppm

Results
(ppm, including background CO)

Receptor	Max 1-Hr	Max 8-Hr
1	7.5	4.5
2	8.4	5.0
3	8.4	5.0
4	6.9	4.1
5	9.7	5.8
6	11.0	6.6
7	8.4	5.0
8	8.5	5.1
9	7.8	4.7
10	7.3	4.4
11	7.7	4.6
12	8.6	5.2
13	8.3	5.0
14	6.9	4.1
15	9.7	5.8
16	11.0	6.6
17	8.4	5.0
18	8.5	5.1
19	7.9	4.7
20	7.2	4.3

****
**********PROJECT PASSES**********
NO EXCEEDANCES OF NAAQ STANDARDS ARE PREDICTED
****

CO Florida 2012 - Results
Friday, November 1, 2019

Project Description

Project Title	TIS SEIS			
Facility Name	I-4			
User's Name	Jeff Novotny			
Run Name	50th Option E - AM			
FDOT District	7			
Year	2045			
Intersection Type	E-W Diamond			
Speed	Arterial	45 mph	Freeway	55 mph
Approach Traffic	Arterial	2475 vph	Freeway	12520 vph

Environmental Data

Temperature	48.8 °F
Reid Vapor Pressure	13.3 psi
Land Use	Urban
Stability Class	D
Surface Roughness	175 cm
1 Hr. Background Concentration	5.0 ppm
8 Hr. Background Concentration	3.0 ppm

Results
(ppm, including background CO)

Receptor	Max 1-Hr	Max 8-Hr
1	7.8	4.7
2	8.0	4.8
3	7.8	4.7
4	6.8	4.1
5	9.5	5.7
6	9.9	5.9
7	7.5	4.5
8	7.7	4.6
9	7.6	4.6
10	7.1	4.3
11	7.9	4.7
12	8.2	4.9
13	7.7	4.6
14	6.7	4.0
15	9.5	5.7
16	9.9	5.9
17	7.5	4.5
18	7.5	4.5
19	7.7	4.6
20	7.0	4.2

****
**********PROJECT PASSES**********
NO EXCEEDANCES OF NAAQ STANDARDS ARE PREDICTED
****

CO Florida 2012 - Results
Friday, November 1, 2019

Project Description

Project Title	TIS SEIS			
Facility Name	I-4			
User's Name	Jeff Novotny			
Run Name	50th Option E - PM			
FDOT District	7			
Year	2045			
Intersection Type	E-W Diamond			
Speed	Arterial	45 mph	Freeway	55 mph
Approach Traffic	Arterial	2615 vph	Freeway	11670 vph

Environmental Data

Temperature	48.8 °F
Reid Vapor Pressure	13.3 psi
Land Use	Urban
Stability Class	D
Surface Roughness	175 cm
1 Hr. Background Concentration	5.0 ppm
8 Hr. Background Concentration	3.0 ppm

Results
(ppm, including background CO)

Receptor	Max 1-Hr	Max 8-Hr
1	7.4	4.4
2	8.1	4.9
3	8.3	5.0
4	6.7	4.0
5	9.3	5.6
6	10.4	6.2
7	8.1	4.9
8	8.3	5.0
9	7.6	4.6
10	7.2	4.3
11	7.5	4.5
12	8.3	5.0
13	8.2	4.9
14	6.7	4.0
15	9.2	5.5
16	10.4	6.2
17	8.1	4.9
18	8.3	5.0
19	7.7	4.6
20	7.1	4.3

****
**********PROJECT PASSES**********
NO EXCEEDANCES OF NAAQ STANDARDS ARE PREDICTED
****

Appendix B

MSAT Analysis

Summary Tables

Calculations – Scenario One
Calculations – Scenario Two

ERLT Lookup Tables

Assumptions

Appendix B - MSAT Analysis

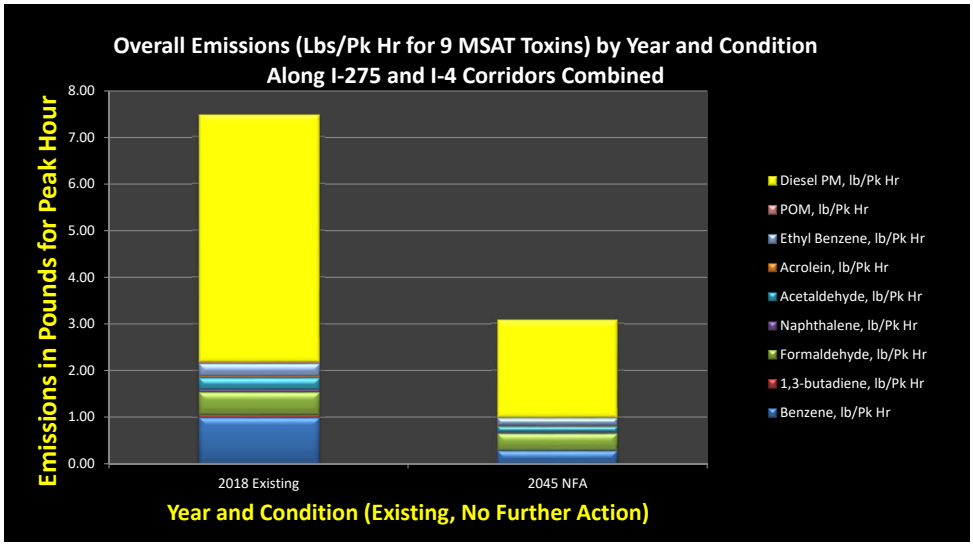
Summary Comparison Tables
Scenarios One and Two

1) Compare 2018 (existing)
to 2045 No-build (NFA)

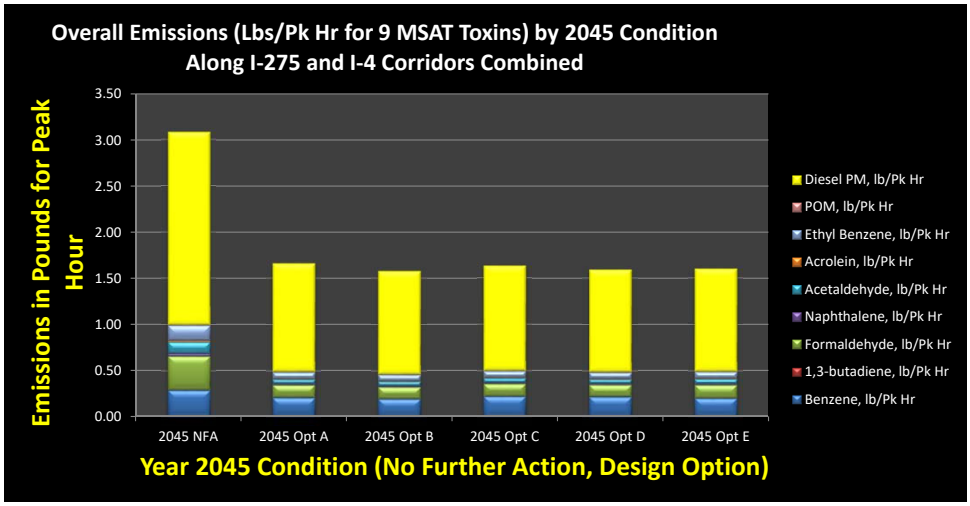
2) Compare 2018 (existing)
To 2045 NFA
To 2045 Build conditions
(Opts A, B, C, D, E)

Corridor charts - showing the peak hour emissions for entire project corridor of mainline I-275 and mainline I-4 combined

		Highest Peak Hour of Emissions (AM/PM)	Year/Condition	Benzene, lb/Pk Hr	1,3-butadiene, lb/Pk Hr	Formaldehyde, lb/Pk Hr	Naphthalene, lb/Pk Hr	Acetaldehyde, lb/Pk Hr	Acrolein, lb/Pk Hr	Ethyl Benzene, lb/Pk Hr	POM, lb/Pk Hr	Diesel PM, lb/Pk Hr	Toxin Total lb/Pk Hr	
I-275 & I-4 Combined	2018 Existing	AM	2018 Existing	1.00	0.06	0.49	0.06	0.25	0.03	0.28	0.02	5.30	7.48	
I-275 & I-4 Combined	2045 NFA	PM	2045 NFA	0.29	0.00	0.37	0.03	0.12	0.02	0.16	0.01	2.09	3.08	0.412261



		Highest Peak Hour of Emissions (AM/PM)	Year/Condition	Benzene, lb/Pk Hr	1,3-butadiene, lb/Pk Hr	Formaldehyde, lb/Pk Hr	Naphthalene, lb/Pk Hr	Acetaldehyde, lb/Pk Hr	Acrolein, lb/Pk Hr	Ethyl Benzene, lb/Pk Hr	POM, lb/Pk Hr	Diesel PM, lb/Pk Hr	Toxin Total lb/Pk Hr	
I-275 & I-4 Combined	2045 NFA	PM	2045 NFA	0.29	0.00	0.37	0.03	0.12	0.02	0.16	0.01	2.09	3.1	
I-275 & I-4 Combined	2045 NFA	PM	2045 Opt A	0.21	0.00	0.14	0.01	0.05	0.01	0.07	0.00	1.17	1.66	0.539565
I-275 & I-4 Combined	2045 NFA	AM	2045 Opt B	0.20	0.00	0.13	0.01	0.05	0.01	0.07	0.00	1.12	1.58	0.512528
I-275 & I-4 Combined	2045 NFA	PM	2045 Opt C	0.22	0.00	0.13	0.01	0.05	0.01	0.07	0.00	1.13	1.63	0.52987
I-275 & I-4 Combined	2045 NFA	PM	2045 Opt D	0.22	0.00	0.13	0.01	0.05	0.01	0.07	0.00	1.11	1.60	0.51758
I-275 & I-4 Combined	2045 NFA	AM	2045 Opt E	0.20	0.00	0.14	0.01	0.05	0.01	0.07	0.00	1.11	1.60	0.520183

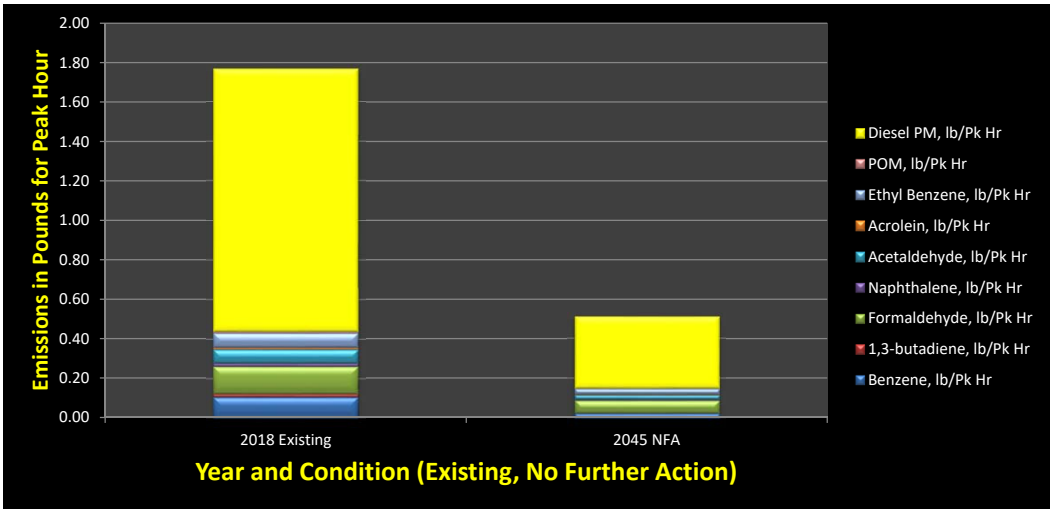


Differences in MSAT Levels at link with highest levels (Lb per Peak Hour)
Figure 6

0.0904 PHF used 2018
0.0934 PHF used 2045

					Benzene, lb/Pk Hr	1,3-butadiene, lb/Pk Hr	Formaldehyde, lb/Pk Hr	Naphthalene, lb/Pk Hr	Acetaldehyde, lb/Pk Hr	Acrolein, lb/Pk Hr	Ethyl Benzene, lb/Pk Hr	POM, lb/Pk Hr	Diesel PM, lb/Pk Hr	Toxin Total lb/Pk Hr	
c	I-275	Howard- Ashley	PM	2018 Existi	0.11	0.02	0.14	0.02	0.07	0.01	0.07	0.01	1.33	1.77	
c	I-275	Howard- Ashley	PM	2045 NFA	0.02	0.00	0.06	0.01	0.02	0.00	0.03	0.00	0.36	0.51	0.287934

		2018 AADT	2018 PM Peak	2018 PHF	2045 AADT	2045 PM Peak	2045 PHF
PM	SB	123400	11860	0.0961	144100	13790	0.0957
	NB	123400	10450	0.0847	144100	13130	0.0911
	Total	246800	22310	0.0904	288200	26920	0.0934



Difference in MSAT Toxin Levels - 2045 NFA vs Build Options

Figure 7

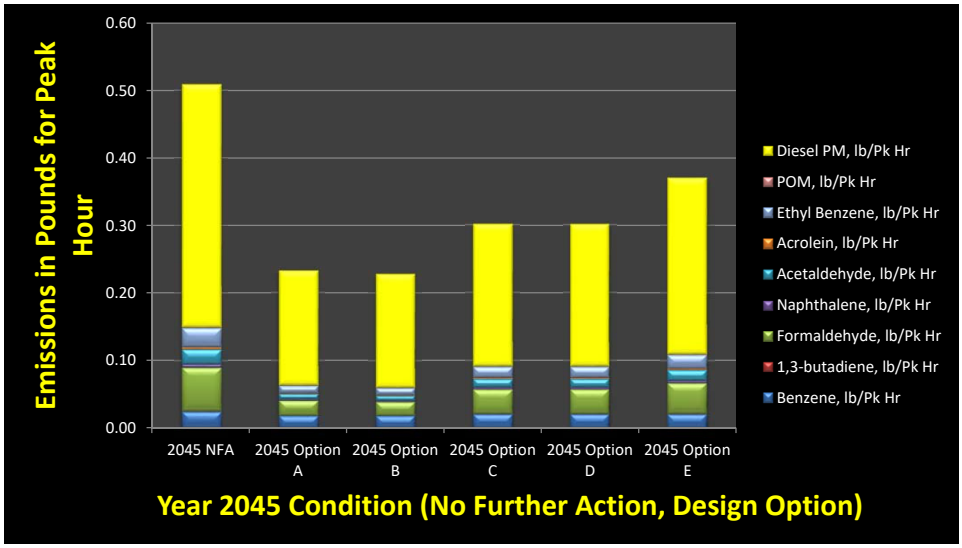
0.0934 PHF used 2045 NFA

0.0941 PHF used 2045 A | 0.0941 PHF used 2045 C | 0.0935 PHF used 2045 E

0.0941 PHF used 2045 B | 0.0935 PHF used 2045 D

					Benzene, lb/Pk Hr	1,3-butadiene, lb/Pk Hr	Formaldehyde, lb/Pk Hr	Naphthalene, lb/Pk Hr	Acetaldehyde, lb/Pk Hr	Acrolein, lb/Pk Hr	Ethyl Benzene, lb/Pk Hr	POM, lb/Pk Hr	Diesel PM, lb/Pk Hr	Toxin Total lb/Pk Hr	
c	I-275	Howard- Ashley	PM	2045 NFA	0.02	0.00	0.06	0.01	0.02	0.00	0.03	0.00	0.36	0.51	
c	I-275	Howard- Ashley	AM	2045 Option A	0.02	0.00	0.02	0.00	0.01	0.00	0.01	0.00	0.17	0.23	0.457588
c	I-275	Howard- Ashley	AM	2045 Option B	0.02	0.00	0.02	0.00	0.01	0.00	0.01	0.00	0.17	0.23	0.448472
c	I-275	Howard- Ashley	AM	2045 Option C	0.02	0.00	0.04	0.00	0.01	0.00	0.02	0.00	0.21	0.30	0.592051
c	I-275	Howard- Ashley	PM	2045 Option D	0.02	0.00	0.04	0.00	0.01	0.00	0.02	0.00	0.21	0.30	0.591978
c	I-275	Howard- Ashley	PM	2045 Option E	0.02	0.00	0.05	0.00	0.02	0.00	0.02	0.00	0.26	0.37	0.728034

		2045 A AADT	2045 A PM Peak	2045 A PHF			2045 C&D AADT	2045 C&D PM Peak	2045 C&D PHF
2045A - PM	SB	154220	14710	0.0954	2045CD - P	SB	154220	14710	0.0954
	NB	154220	14305	0.0928		NB	154220	14305	0.0928
	Total	308440	29015	0.0941		Total	308440	29015	0.0941
		2045 B AADT	2045 B PM Peak	2045 B PHF			2045 E AADT	2045 E PM Peak	2045 E PHF
2045B - PM	SB	154220	14710	0.0954	2045E- PM	SB	146060	13655	0.0935
	NB	154220	14305	0.0928		NB	146060	13655	0.0935
	Total	308440	29015	0.0941		Total	292120	27310	0.0935



Appendix B - MSAT Analysis

MSAT calculations
Scenario One
(I-275 & I-4 Corridors)

2018 (existing)
2045 No-build (NFA)
2045 Build option A
2045 Build option B
2045 Build option C
2045 Build option D
2045 Build option E

2018 Existing conditions - Distances, Peak Hourly Volumes and Average Speeds

Southbound I-275

				AM/PM DDHV Fig 2-3		VMT		Model Speeds		Time to Travel Dist (min)			
From	To	Link distance (ft) Fig 2-1	Link Distance (mi)	AM	PM	AM	PM	AM Fig 2-10	PM Fig 2-12	AM	PM		
Ent from SR 60	Ex to SR 60	5870	1.11	3385	4445	3763	4942	56	57	1.19	1.17		
Ex to SR 60	Ent from Lois	1990	0.38	7385	9745	2783	3673	51	40	0.44	0.57		
Ent from Lois	Ex to WS	2220	0.42	7085	9350	2979	3931	54	29	0.47	0.87		
Ex to WS	Ent from DM	1645	0.31	8485	10450	2644	3256	55	39	0.34	0.48		
Ent from DM	Ex to Lois	1925	0.36	7325	9560	2671	3485	56	39	0.39	0.56		
Ex to Lois	Ex to DM	1840	0.35	8085	10130	2818	3530	56	18	0.37	1.16		
Ex to DM	Ex to Himes	925	0.18	9685	11330	1697	1985	55	30	0.19	0.35		
Ex to Himes	Ent from Armenia	1905	0.36	10505	11950	3790	4312	54	25	0.40	0.87		
Ent from Armenia	Ex to Howard	5115	0.97	9150	10860	8864	10521	43	23	1.35	2.53		
Ex to Howard	Ent from Ashley	3200	0.61	10450	11860	6333	7188	44	24	0.83	1.52	0.084684	0.09611
Ent from Ashley	Ent from I-4	4250	0.80	8515	9185	6854	7393	36	18	1.34	2.68		
Ent from I-4	Ex to DT	2230	0.42	3775	2955	1594	1248	53	54	0.48	0.47		
Ex to DT	Ex to I-4	1880	0.36	5665	4365	2017	1554	51	51	0.42	0.42		
Ex to I-4	Ex to Floribraska	945	0.18	8765	6075	1569	1087	50	46	0.21	0.23		
Ex to Floribraska	Ent from MLK	1500	0.28	9265	6735	2632	1913	52	31	0.33	0.55		
Ent from MLK	Ex to MLK	3400	0.64	8300	6000	5345	3864	50	24	0.77	1.61		
		Total Dist (mi)->	7.7		Total VMT	58352	63882	Veh-Miles		9.53	16.03		
									Avg Speed	49	29	mph	

Northbound I-275

				AM/PM DDHV Fig 2-3		VMT		Model Speeds		Time to Travel Dist (min)			
From	To	Link distance (ft) Fig 2-1	Link Distance (mi)	AM	PM	AM	PM	AM Fig 2-9	PM Fig 2-11	AM	PM		
Ex to SR 60	Ent from SR 60	5840	1.11	4445	3385	4916	3744	21	52	3.16	1.28		
Ent from SR 60	Ent from WS	3550	0.67	9745	7385	6552	4965	31	17	1.30	2.37		
Ent from WS	Ex to Lois	915	0.17	10845	8785	1879	1522	50	22	0.21	0.47		
Ex to Lois	Ex to DM	1520	0.29	10450	8485	3008	2443	57	15	0.30	1.15		
Ex to DM	Ent from Lois	2270	0.43	9560	7325	4110	3149	56	11	0.46	2.35		
Ent from Lois	Ent from DM	3240	0.61	10130	8085	6216	4961	56	23	0.66	1.60		
Ent from DM	Ent from Himes	610	0.12	11330	9685	1309	1119	53	27	0.13	0.26		
Ent from Himes	Ex to Armenia	1775	0.34	11950	10505	4017	3532	53	21	0.38	0.96		
Ex to Armenia	Ent from Howard	3790	0.72	10860	9150	7795	6568	55	15	0.78	2.87		
Ent from Howard	Ex to Ashley	4145	0.79	11860	10450	9311	8204	53	23	0.89	2.05	0.09611	0.084684
Ex to Ashley	Ent from Ashley	1395	0.26	9185	8515	2427	2250	54	46	0.29	0.34		
Ent from Ashley	Ent from Orange LT	2370	0.45	9955	9545	4468	4284	54	22	0.50	1.22		
Ent from Orange LT	Ent from Orange RT	525	0.10	10955	10875	1089	1081	54	13	0.11	0.46		
Ent from Orange RT	Ex to I-4	850	0.16	11805	12005	1900	1933	52	16	0.19	0.60		
Ex to I-4	Ent from I-4	1895	0.36	4365	5665	1567	2033	52	15	0.41	1.44		
Ent from I-4	Ent from Floribraska	2180	0.41	6075	8765	2508	3619	52	10	0.48	2.48		
Ent from Floribraska	Ex to MLK	2140	0.41	6735	9265	2730	3755	52	17	0.47	1.43		
Ex to MLK	Ent to MLK	3400	0.64	6000	8300	3864	5345	52	17	0.74	2.27		
		Total Dist (mi)->	8.03		Total VMT	69668	64507	Veh-Miles	Total Time	11.46	25.60	min	
									Avg Speed	42	19	mph	

Westbound I-4

				AM/PM DDHV Fig 2-3		VMT		Model Speeds		Time to Travel Dist (min)		
From	To	Link distance (ft) Fig 2-2	Link Distance (mi)	AM	PM	AM	PM	AM Fig 2-14	PM Fig 2-16	AM	PM	
Ex to Frontage Rd	Ex to I-275	945	0.18	6340	7440	1135	1332	21	40	0.51	0.27	
Ex to I-275	Ent from 21st	1860	0.35	8050	10540	2836	3713	21	54	1.01	0.39	
Ent from 21st	Ent from Selmon	3020	0.57	6850	9010	3918	5153	23	57	1.49	0.60	
Ent from Selmon	Ex to 22nd	290	0.05	5050	6710	277	369	45	56	0.07	0.06	
Ex to 22nd	Ex to Selmon	3325	0.63	5925	7100	3731	4471	53	56	0.71	0.67	
Ex to Selmon	Ent from Columbus	2650	0.50	7525	7900	3777	3965	61	53	0.49	0.57	
Ent from Columbus	Ex to 50th	5470	1.04	6470	6300	6703	6527	61	61	1.02	1.02	
		Total Dist (mi)->	3.33		Total VMT	22377	25529	Veh-Miles	Total Time	5.31	3.58	min
									Avg Speed	38	56	mph

Eastbound I-4

				AM/PM DDHV Fig 2-3		VMT		Model Speeds		Time to Travel Dist (min)		
From	To	Link distance (ft) Fig 2-2	Link Distance (mi)	AM	PM	AM	PM	AM Fig 2-13	PM Fig 2-15	AM	PM	
Ent from I-275	Ex to 21st	1475	0.28	10540	8050	2944	2249	53	53	0.32	0.32	
Ex to 21st	Ex to Selmon	2615	0.50	9010	6850	4462	3393	55	54	0.54	0.55	
Ex to Selmon	Ent from 22nd	1450	0.27	6710	5050	1843	1387	57	57	0.29	0.29	
Ent from 22nd	Ent from Selmon	2740	0.52	7100	5925	3684	3075	58	57	0.54	0.55	
Ent from Selmon	Ex to Columbus	3075	0.58	7900	7525	4601	4382	55	55	0.64	0.64	
Ex to Columbus	Ent from 50th	4505	0.85	6300	6470	5375	5520	57	56	0.90	0.91	
		Total Dist (mi)->	3.00		Total VMT	22910	20006	Veh-Miles	Total Time	3.22	3.25	min
									Avg Speed	56	55	mph

2045 No Further Action - Distances, Peak Hourly Volumes and Average Speeds

Southbound I-275				AM/PM DDHV Fig 3.42		VMT		Model Speeds		Time to Travel Dist (min)		
From	To	Link distance (ft) Fig 2-1	Link Distance (mi)	AM	PM	AM	PM	AM Fig 3-42	PM Fig 3-42	AM	PM	
Ent from SR 60	Ex to SR 60	5870	1.11	6020	6440	6693	7160	58	18	1.15	3.71	
Ex to SR 60	Ent from Lois	1990	0.38	10920	12940	4116	4877	53	40	0.43	0.57	
Ent from Lois	Ex to WS	2220	0.42	9450	11040	3973	4642	57	41	0.44	0.62	
Ex to WS	Ent from DM	1645	0.31	11750	12740	3661	3969	15	45	1.25	0.42	
Ent from DM	Ex to Lois	1925	0.36	8850	10540	3227	3843	49	56	0.45	0.39	
Ex to Lois	Ex to DM	1840	0.35	9830	11280	3426	3931	57	57	0.37	0.37	
Ex to DM	Ex to Himes	925	0.18	12430	13180	2178	2309	56	56	0.19	0.19	
Ex to Himes	Ent from Armenia	1905	0.36	13730	14190	4954	5120	54	50	0.40	0.43	
Ent from Armenia	Ex to Howard	5115	0.97	11430	12490	11073	12100	54	53	1.08	1.10	
Ex to Howard	Ent from Ashley	3200	0.61	13130	13790	7958	8358	49	45	0.74	0.81	
Ent from Ashley	Ent from I-4	4250	0.80	10530	10390	8476	8363	57	52	0.85	0.93	
Ent from I-4	Ex to DT	2230	0.42	4290	3890	1812	1643	57	58	0.44	0.44	
Ex to DT	Ex to I-4	1880	0.36	6660	5430	2371	1933	51	28	0.42	0.76	
Ex to I-4	Ex to Floribraska	945	0.18	12360	8230	2212	1473	15	37	0.72	0.29	
Ex to Floribraska	Ent from MLK	1500	0.28	13100	9200	3722	2614	15	49	1.14	0.35	
Ent from MLK	Ex to MLK	3400	0.64	11800	8200	7598	5280	11	50	3.51	0.77	
		Total Dist (mi)->	7.7		Total VMT	77448	77614	Veh-Miles		13.56	12.12	
									Avg Speed	34	38	mph

Northbound I-275				AM/PM DDHV Fig 3.41		VMT		Model Speeds		Time to Travel Dist (min)		
From	To	Link distance (ft) Fig 2-1	Link Distance (mi)	AM	PM	AM	PM	AM Fig 3-41	PM Fig 3-41	AM	PM	
Ex to SR 60	Ent from SR 60	5840	1.11	6440	6020	7123	6658	19	13	3.49	5.10	
Ent from SR 60	Ent from WS	3550	0.67	12940	10920	8700	7342	17	17	2.37	2.37	
Ent from WS	Ex to Lois	915	0.17	14640	13220	2537	2291	20	20	0.52	0.52	
Ex to Lois	Ex to DM	1520	0.29	12740	11750	3668	3383	17	22	1.02	0.79	
Ex to DM	Ent from Lois	2270	0.43	10540	8850	4531	3805	15	12	1.72	2.15	
Ent from Lois	Ent from DM	3240	0.61	11280	9830	6922	6032	16	14	2.30	2.63	
Ent from DM	Ent from Himes	610	0.12	13180	12430	1523	1436	19	17	0.36	0.41	
Ent from Himes	Ex to Armenia	1775	0.34	14190	13730	4770	4616	23	12	0.88	1.68	
Ex to Armenia	Ent from Howard	3790	0.72	12490	11430	8965	8204	21	8	2.05	5.38	
Ent from Howard	Ex to Ashley	4145	0.79	13790	13130	10826	10308	22	13	2.14	3.62	
Ex to Ashley	Ent from Ashley	1395	0.26	10390	10530	2745	2782	49	15	0.32	1.06	
Ent from Ashley	Ent from Orange LT	2370	0.45	11390	11860	5113	5324	50	13	0.54	2.07	
Ent from Orange LT	Ent from Orange RT	525	0.10	13290	14320	1321	1424	49	15	0.12	0.40	
Ent from Orange RT	Ex to I-4	850	0.16	14530	15960	2339	2569	45	18	0.21	0.54	
Ex to I-4	Ent from I-4	1895	0.36	5430	6660	1949	2390	53	17	0.41	1.27	
Ent from I-4	Ent from Floribraska	2180	0.41	8230	12360	3398	5103	51	51	0.49	0.49	
Ent from Floribraska	Ex to MLK	2140	0.41	9200	13100	3729	5309	58	50	0.42	0.49	
Ex to MLK	Ent to MLK	3400	0.64	8200	11800	5280	7598	57	57	0.68	0.68	
		Total Dist (mi)->	8.03		Total VMT	85439	86575	Veh-Miles	Total Time	20.04	31.64	min
									Avg Speed	24	15	mph

Westbound I-4				AM/PM DDHV Fig 3.44		VMT		Model Speeds		Time to Travel Dist (min)		
From	To	Link distance (ft) Fig 2-2	Link Distance (mi)	AM	PM	AM	PM	AM Fig 3-44	PM Fig 3-44	AM	PM	
Ex to Frontage Rd	Ex to I-275	945	0.18	9300	9100	1664	1629	33	53	0.33	0.20	
Ex to I-275	Ent from 21st	1860	0.35	12100	14180	4263	4995	25	33	0.85	0.64	
Ent from 21st	Ent from Selmon	3020	0.57	9900	12400	5663	7092	18	14	1.91	2.45	
Ent from Selmon	Ex to 22nd	290	0.05	7000	9210	384	506	20	7	0.16	0.47	
Ex to 22nd	Ex to Selmon	3325	0.63	8550	10030	5384	6316	34	8	1.11	4.72	
Ex to Selmon	Ent from Columbus	2650	0.50	12550	12030	6299	6038	23	10	1.31	3.01	
Ent from Columbus	Ex to 50th	5470	1.04	10720	9880	11106	10236	24	8	2.59	7.77	
		Total Dist (mi)->	3.33		Total VMT	34763	36812	Veh-Miles	Total Time	8.25	19.27	min
									Avg Speed	24	10	mph

Eastbound I-4				AM/PM DDHV Fig 3.43		VMT		Model Speeds		Time to Travel Dist (min)		
From	To	Link distance (ft) Fig 2-2	Link Distance (mi)	AM	PM	AM	PM	AM Fig 3-43	PM Fig 3-43	AM	PM	
Ent from I-275	Ex to 21st	1475	0.28	14800	12100	4134	3380	46	52	0.36	0.32	
Ex to 21st	Ex to Selmon	2615	0.50	12400	9900	6141	4903	40	54	0.74	0.55	
Ex to Selmon	Ent from 22nd	1450	0.27	9210	7000	2529	1922	49	57	0.34	0.29	
Ent from 22nd	Ent from Selmon	2740	0.52	10030	8550	5205	4437	40	57	0.78	0.55	
Ent from Selmon	Ex to Columbus	3075	0.58	12030	12550	7006	7309	34	48	1.03	0.73	
Ex to Columbus	Ent from 50th	4505	0.85	9880	10720	8430	9147	50	40	1.02	1.28	
		Total Dist (mi)->	3.00		Total VMT	33446	31098	Veh-Miles	Total Time	4.27	3.72	min
									Avg Speed	42	49	mph

2045 Design Option A - Distances, Peak Hourly Volumes and Average Speeds

Southbound I-275 GU Lanes				AM/PM DDHV Fig 3.46		VMT		Model Speeds		Time to Travel Dist (min)				
From	To	Link distance (ft) Fig 2-1	Link Distance (mi)	AM	PM	AM	PM	AM Fig 3-46	PM Fig 3-46	AM	PM			
Ent from SR 60	Ex to SR 60	4870	0.92	5300	6150	4888	5672	58	58	0.95	0.95			
Ex to SR 60	Ent from Lois	1990	0.38	9150	10740	3449	4048	54	52	0.42	0.43			
Ent from Lois	Ex to WS	2220	0.42	7660	8765	3221	3685	57	56	0.44	0.45			
Ex to WS	Ent from DM	1645	0.31	9915	10470	3089	3262	55	55	0.34	0.34			
Ent from DM	Ex to Lois	1925	0.36	8430	9260	3073	3376	57	56	0.38	0.39			
Ex to Lois	Ex to DM	1840	0.35	9415	10005	3281	3487	56	56	0.37	0.37			
Ex to DM	Ex to Himes	925	0.18	11600	11270	2032	1974	54	54	0.19	0.19			
Ex to Himes	Ent from Armenia	1905	0.36	12300	12300	4438	4438	52	44	0.42	0.49			
Ent from Armenia	Ent from Exp	2600	0.49	10860	11210	5348	5520	51	47	0.58	0.63			
Ent from Exp	Ex to Howard	2515	0.48	9945	10735	4737	5113	56	55	0.51	0.52			
Ex to Howard	Ent from N Blvd	1400	0.27	11690	12050	3100	3195	46	46	0.35	0.35		0.113429	0.116922
Ent from N Blvd	Ent from Ashley	1000	0.19	10885	11150	2062	2112	32	34	0.36	0.33			
Ent from Ashley	Ent from DT	1200	0.23	9530	9125	2166	2074	52	52	0.26	0.26			
Ent from DT	Ent from I-4	3700	0.70	9205	8710	6450	6104	57	57	0.74	0.74			
Ent from I-4	Ex to DT	3200	0.61	2490	2325	1509	1409	58	58	0.63	0.63			
Ex to DT	Ex to I-4	1100	0.21	5875	48880	1224	10183	54	54	0.23	0.23			
Ex to I-4	Ent from MLK	3150	0.60	10300	6935	6145	4137	53	55	0.68	0.65			
Ent from MLK	Ex to Exp	2300	0.44	8950	5915	3899	2577	55	58	0.48	0.45			
Ex to Exp	Ex to MLK	1100	0.21	11050	7180	2302	1496	50	50	0.25	0.25			
		Total Dist (mi)->	7.7		Total VMT	66412	73862	Veh-Miles		8.57	8.67			
									Avg Speed	54	53	mph		

Southbound I-275 Exp Lanes				AM/PM DDHV Fig 3.46		VMT		Model Speeds		Time to Travel Dist (min)		
From	To	Link distance (ft) Fig 2-1	Link Distance (mi)	AM	PM	AM	PM	AM Fig 3-46	PM Fig 3-46	AM	PM	
DC from SR 60	DC to SR 60	5300	1.00	1085	655	1089	657	58	57	1.04	1.06	
DC to SR 60	DC from Himes	6550	1.24	2110	2530	2618	3139	58	57	1.28	1.31	
DC from Himes	DC to Himes	3500	0.66	685	1540	454	1021	59	58	0.67	0.69	
DC to Himes	Egr to 275	4800	0.91	1700	2185	1545	1986	51	58	1.07	0.94	
Egr to 275	DC from Tampa	5550	1.05	2615	2660	2749	2796	57	57	1.11	1.11	
DC from Tampa	DC from I-4	3700	0.70	1870	1720	1310	1205	57	57	0.74	0.74	
DC from I-4	DC to I-4	5000	0.95	780	485	739	459	57	57	1.00	1.00	
DC to I-4	Ing from 275	3500	0.66	2100	1265	1392	839	55	58	0.72	0.69	
		Total Dist (mi)->	7.2		Total VMT	11896	12102	Veh-Miles		7.63	7.52	
									Avg Speed	56	57	mph

Nouthbound I-275 GU Lanes				AM/PM DDHV Fig 3.45		VMT		Model Speeds		Time to Travel Dist (min)				
From	To	Link distance (ft) Fig 2-1	Link Distance (mi)	AM	PM	AM	PM	AM Fig 3-45	PM Fig 3-45	AM	PM			
Ex to SR 60	Ent from Exp	4000	0.76	5185	4875	3928	3693	56	52	0.81	0.87			
Ent from Exp	Ent from SR 60	1840	0.35	6180	5175	2154	1803	44	40	0.48	0.52			
Ent from SR 60	Ex to Lois	2500	0.47	10770	9025	5099	4273	45	35	0.63	0.81			
Ex to Lois	Ent from WS	1050	0.20	8795	7535	1749	1498	42	27	0.28	0.44			
Ent from WS	Ex to DM	2435	0.46	10500	9790	4842	4515	37	38	0.75	0.73			
Ex to DM	Ent from Lois	2270	0.43	9290	8305	3994	3571	25	45	1.03	0.57			
Ent from Lois	Ent from Exp	1600	0.30	10035	9290	3041	2815	20	40	0.91	0.45			
Ent from Exp	Ent from DM	1640	0.31	10315	9415	3204	2924	22	36	0.85	0.52			
Ent from DM	Ent from Himes	610	0.12	11580	11600	1338	1340	24	27	0.29	0.26			
Ent from Himes	Ex to Armenia	1775	0.34	12610	12300	4239	4135	34	34	0.59	0.59			
Ex to Armenia	Ex to Exp	1900	0.36	11520	10860	4145	3908	51	43	0.42	0.50			
Ex to Exp	Ent from Howard	1890	0.36	10735	9945	3843	3560	55	43	0.39	0.50			
Ent from Howard	Ex to North Blvd	1600	0.30	12050	11690	3652	3542	48	39	0.38	0.47		0.116922	0.113429
Ex to North Blvd	Ex to Ashley	1000	0.19	11150	10885	2112	2062	48	44	0.24	0.26			
Ex to Ashley	Ex to I-4	2370	0.45	8710	9205	3910	4132	55	54	0.49	0.50			
Ex to I-4	Ent from Ashley	1000	0.19	2325	2490	440	472	59	55	0.19	0.21			
Ent from Ashley	Ent from Orange	1000	0.19	3115	4115	590	779	57	57	0.20	0.20			
Ent from Orange	Ent from I-4	1895	0.36	4880	5875	1751	2109	58	56	0.37	0.38			
Ent from I-4	Ex to MLK	4300	0.81	6935	10300	5648	8388	54	43	0.90	1.14			
Ex to MLK	Ent from Exp	2140	0.41	5915	8950	2397	3627	56	49	0.43	0.50			
Ent from Exp	Ent to MLK	900	0.17	7180	11050	1224	1884	58	49	0.18	0.21			
		Total Dist (mi)->	7.5		Total VMT	63300	65031	Veh-Miles	Total Time	10.82	10.63	min		
									Avg Speed	42	42	mph		

Nouthbound I-275 Exp Lanes				AM/PM DDHV Fig 3.45		VMT		Model Speeds		Time to Travel Dist (min)			
From	To	Link distance (ft) Conc Plan	Link Distance (mi)	AM	PM	AM	PM	AM Fig 3-45	AM Fig 3-45	AM	PM		
Egr to 275	DC to SR 60	3275	0.62	1925	2105	1194	1306	58	56	0.64	0.66		
DC to SR 60	DC from SR 60	4100	0.78	625	1210	485	940	59	58	0.79	0.80		
DC from SR 60	Egr to 275	5000	0.95	2500	2235	2367	2116	56	57	1.01	1.00		
Egr to 275	DC to Himes	1200	0.23	2220	2110	505	480	55	54	0.25	0.25		
DC to Himes	DC from Himes	3450	0.65	1230	685	804	448	59	59	0.66	0.66		
DC from Himes	Egr from 275	4800	0.91	1875	1700	1705	1545	58	58	0.94	0.94		
Egr from 275	DC from Ashley	7000	1.33	2660	2615	3527	3467	58	58	1.37	1.37		0.02581	0.025374
DC from Ashley	DC to I-4	1600	0.30	1720	1870	521	567	58	58	0.31	0.31		
DC to I-4	DC from I-4	3700	0.70	485	780	340	547	58	57	0.72	0.74		
DC from I-4	Egr to 275	4700	0.89	1265	2100	1126	1869	53	49	1.01	1.09		

2045 Design Option A - Distances, Peak Hourly Volumes and Average Speeds

		Total Dist (mi)->	7.4		Total VMT	12573	13284	Veh-Miles		7.72	7.83	
									Avg Speed	57	56	mph

Westbound I-4 GU Lanes				AM/PM DDHV Fig 3-48		VMT		Model Speeds		Time to Travel Dist (min)		
From	To	Link distance (ft) Conc Plan	Link Distance (mi)	AM	PM	AM	PM	AM Fig 3-48	PM Fig 3-48	AM	PM	
Ex to DT Front Rd	Ex to I-275	945	0.18	7695	7145	1377	1279	56	56	0.19	0.19	
Ex to I-275	Ent from 21st	1860	0.35	9210	9905	3244	3489	54	54	0.39	0.39	
Ent from 21st	Ent from Selmon	3020	0.57	7585	9070	4338	5188	54	49	0.64	0.70	
Ent from Selmon	Ex to 22nd	290	0.05	5485	6470	301	355	58	57	0.06	0.06	
Ex to 22nd	Ent from Columbus	3325	0.63	7105	7545	4474	4751	57	57	0.66	0.66	
Ent from Columbus	Ex to Selmon	2650	0.50	5355	5545	2688	2783	62	61	0.49	0.49	
Ex to Selmon	Ex to 50th	5470	1.04	8635	7955	8946	8241	44	46	1.41	1.35	
		Total Dist (mi)->	3.3		Total VMT	25369	26087	Veh-Miles	Total Time	3.84	3.85	min
									Avg Speed	52	52	mph

Westbound I-4 Express Lanes				AM/PM DDHV Fig 3-48		VMT		Model Speeds		Time to Travel Dist (min)		
From	To	Link distance (ft) Conc Plan	Link Distance (mi)	AM	PM	AM	PM	AM Fig 3-48	PM Fig 3-48	AM	PM	
DC to 275	DC from Selmon	8700	1.65	2780	3240	4581	5339	57	56	1.73	1.77	
DC from Selmon	DC to Selmon	3550	0.67	2345	2510	1577	1688	57	56	0.71	0.72	
DC to Selmon	Ing from I-4	5100	0.97	3175	2800	3067	2705	55	56	1.05	1.03	
		Total Dist (mi)->	3.3		Total VMT	9224	9731	Veh-Miles	Total Time	3.50	3.52	min
									Avg Speed	56	56	mph

Eastbound I-4 GU Lanes				AM/PM DDHV Fig 3.47		VMT		Model Speeds		Time to Travel Dist (min)		
From	To	Link distance (ft) Conc Plan	Link Distance (mi)	AM	PM	AM	PM	AM Fig 3-47	PM Fig 3-47	AM	PM	
Ent from Ashley	Ent from Orange	1100	0.21	6510	7185	1356	1497	54	53	0.23	0.24	
Ent from Orange	Ex to 14th	1100	0.21	7145	7695	1489	1603	57	56	0.22	0.22	
Ex to 14th	Ent from 275	800	0.15	6310	6070	956	920	47	47	0.19	0.19	
Ent from 275	Ex to Selmon	1615	0.31	9070	7585	2774	2320	42	51	0.44	0.36	
Ex to Selmon	Ent from 22nd	1450	0.27	6295	5485	1729	1506	57	57	0.29	0.29	
Ent from 22nd	Ent from Selmon	2740	0.52	7370	7105	3825	3687	43	31	0.72	1.00	
Ent from Selmon	Ex to Columbus	3075	0.58	10420	10915	6068	6357	30	25	1.16	1.40	
Ex to Columbus	Ex to Exp	2000	0.38	8305	9010	3146	3413	54	22	0.42	1.03	
Ex to Exp	Ent from 50th	2505	0.47	7865	8675	3731	4116	54	18	0.53	1.58	
		Total Dist (mi)->	3.1		Total VMT	25074	25418	Veh-Miles	Total Time	4.21	6.32	min
									Avg Speed	44	29	mph

Eastbound I-4 Express Lanes				AM/PM DDHV Fig 3.47		VMT		Model Speeds		Time to Travel Dist (min)		
From	To	Link distance (ft) Conc Plan	Link Distance (mi)	AM	PM	AM	PM	AM Fig 3-47	PM Fig 3-47	AM	PM	
DC from 275	DC to Selmon	4500	0.85	3240	2780	2761	2369	56	56	0.91	0.91	
DC to Selmon	Egr to I-4	3000	0.57	2510	2345	1426	1332	58	59	0.59	0.58	
Egr to I-4	DC from Selmon	2100	0.40	2035	1970	809	784	59	59	0.40	0.40	
DC from Selmon	Ing from I-4	7300	1.38	2400	2800	3318	3871	58	58	1.43	1.43	
		Total Dist (mi)->	3.2		Total VMT	8315	8356	Veh-Miles	Total Time	3.34	3.33	min
									Avg Speed	58	58	mph

2045 Design Option B - Distances, Peak Hourly Volumes and Average Speeds

Southbound I-275 GU Lanes				AM/PM DDHV Fig 3.46		VMT		Model Speeds		Time to Travel Dist (min)		
From	To	Link distance (ft) Fig 2-1	Link Distance (mi)	AM	PM	AM	PM	AM Fig 3-46	PM Fig 3-46	AM	PM	
Ent from SR 60	Ex to SR 60	5870	1.11	5300	5300	5892	5892	58	58	1.15	1.15	
Ex to SR 60	Ent from Lois	1990	0.38	9150	10740	3449	4048	54	52	0.42	0.43	
Ent from Lois	Ex to WS	2220	0.42	7660	8765	3221	3685	57	56	0.44	0.45	
Ex to WS	Ent from DM	1645	0.31	9915	10470	3089	3262	55	55	0.34	0.34	
Ent from DM	Ex to Lois	1925	0.36	8430	9260	3073	3376	57	56	0.38	0.39	
Ex to Lois	Ex to DM	1840	0.35	9415	10005	3281	3487	56	56	0.37	0.37	
Ex to DM	Ex to Himes	925	0.18	11600	11270	2032	1974	54	55	0.19	0.19	
Ex to Himes	Ent from Armenia	1905	0.36	12300	12300	4438	4438	52	53	0.42	0.41	
Ent from Armenia	Ent from Exp	2600	0.49	10860	11210	5348	5520	51	53	0.58	0.56	
Ent from Exp	Ex to Howard	2515	0.48	9945	10735	4737	5113	56	56	0.51	0.51	
Ex to Howard	Ent from N Blvd	1400	0.27	11690	12050	3100	3195	47	47	0.34	0.34	
Ent from N Blvd	Ent from Ashley	1000	0.19	10885	11150	2062	2112	38	39	0.30	0.29	
Ent from Ashley	Ent from DT	1100	0.21	9530	9125	1985	1901	56	55	0.22	0.23	
Ent from DT	Ex to Exp	2100	0.40	9205	8710	3661	3464	57	57	0.42	0.42	Ent from I-4
Ex to Exp	Ent from I-4	1000	0.19	9985	9195	1891	1741	56	58	0.20	0.20	Ex to DT
Ent from I-4	Ex to DT	3800	0.72	3270	2810	2353	2022	58	58	0.74	0.74	Ex to I-4
Ex to DT	Ex to I-4	900	0.17	6655	5365	1134	914	53	54	0.19	0.19	Ent from M
Ex to I-4	Ent from MLK	2350	0.45	12400	8200	5519	3650	37	55	0.72	0.49	
Ent from MLK	Ex to MLK	3400	0.64	11050	7180	7116	4623	52	56	0.74	0.69	
		Total Dist (mi)->	7.7		Total VMT	67381	64419	Veh-Miles		8.69	8.39	
									Avg Speed	53	55	mph

Southbound I-275 Exp Lanes				AM/PM DDHV Fig 3.46		VMT		Model Speeds		Time to Travel Dist (min)		
From	To	Link distance (ft) Fig 2-1	Link Distance (mi)	AM	PM	AM	PM	AM Fig 3-46	PM Fig 3-46	AM	PM	
DC from SR 60	DC to SR 60	5300	1.00	1085	655	1089	657	58	59	1.04	1.02	
DC to SR 60	DC from Himes	6550	1.24	2110	2530	2618	3139	58	57	1.28	1.31	
DC from Himes	DC to Himes	3500	0.66	685	1540	454	1021	59	58	0.67	0.69	
DC to Himes	Egr to 275	4800	0.91	1700	2185	1545	1986	56	57	0.97	0.96	
Egr to 275	DC from Tampa	5550	1.05	2615	2660	2749	2796	58	57	1.09	1.11	
DC from Tampa	Ing from 275	1250	0.24	1870	1720	443	407	58	58	0.24	0.24	
Ing from 275	DC from I-4	2800	0.53	1090	1235	578	655	59	59	0.54	0.54	
		Total Dist (mi)->	5.6		Total VMT	9476	10661	Veh-Miles		5.84	5.86	
									Avg Speed	58	58	mph

Nouthbound I-275 GU Lanes				AM/PM DDHV Fig 3.45		VMT		Model Speeds		Time to Travel Dist (min)		
From	To	Link distance (ft) Fig 2-1	Link Distance (mi)	AM	PM	AM	PM	AM Fig 3-45	PM Fig 3-45	AM	PM	
Ex to SR 60	Ent from Exp	4000	0.76	5185	4875	3928	3693	52	35	0.87	1.30	
Ent from Exp	Ent from SR 60	1840	0.35	6180	5175	2154	1803	40	20	0.52	1.05	
Ent from SR 60	Ex to Lois	2500	0.47	10770	9025	5099	4273	43	29	0.66	0.98	
Ex to Lois	Ent from WS	1050	0.20	8795	7535	1749	1498	41	27	0.29	0.44	
Ent from WS	Ex to DM	2435	0.46	10500	9790	4842	4515	35	39	0.79	0.71	
Ex to DM	Ent from Lois	2270	0.43	9290	8305	3994	3571	24	56	1.07	0.46	
Ent from Lois	Ent from Exp	1600	0.30	10035	9290	3041	2815	20	52	0.91	0.35	
Ent from Exp	Ent from DM	1640	0.31	10315	9415	3204	2924	22	45	0.85	0.41	
Ent from DM	Ent from Himes	610	0.12	11580	11600	1338	1340	23	31	0.30	0.22	
Ent from Himes	Ex to Armenia	1775	0.34	12610	12300	4239	4135	34	38	0.59	0.53	
Ex to Armenia	Ex to Exp	1900	0.36	11520	10860	4145	3908	51	51	0.42	0.42	
Ex to Exp	Ent from Howard	1890	0.36	10735	9945	3843	3560	55	55	0.39	0.39	
Ent from Howard	Ex to North Blvd	1300	0.25	12050	11690	2967	2878	47	46	0.31	0.32	
Ex to North Blvd	Ex to Ashley	1600	0.30	11150	10885	3379	3298	48	48	0.38	0.38	
Ex to Ashley	Ex to I-4	1000	0.19	8710	9205	1650	1743	55	55	0.21	0.21	
Ex to I-4	Ent from Exp	950	0.18	2325	2490	418	448	59	58	0.18	0.19	Ent from As
Ent from Exp	Ent from Ashley	900	0.17	3115	4115	531	701	59	59	0.17	0.17	Ent from O
Ent from Ashley	Ent from Orange	2000	0.38	4880	5875	1848	2225	57	55	0.40	0.41	Ent from I-4
Ent from Orange	Ent from I-4	2800	0.53	6935	10300	3678	5462	57	57	0.56	0.56	Ex to MLK
Ent from I-4	Ex to MLK	3000	0.57	5915	8950	3361	5085	56	49	0.61	0.70	
Ex to MLK	Ent to MLK	3400	0.64	7180	11050	4623	7116	52	39	0.74	0.99	
		Total Dist (mi)->	7.7		Total VMT	64031	66994	Veh-Miles	Total Time	11.24	11.19	min
									Avg Speed	41	41	mph

Nouthbound I-275 Exp Lanes				AM/PM DDHV Fig 3.45		VMT		Model Speeds		Time to Travel Dist (min)	
From	To	Link distance (ft) Conc Plan	Link Distance (mi)	AM	PM	AM	PM	AM Fig 3-45	AM Fig 3-45	AM	PM
Egr to 275	DC to SR 60	3275	0.62	1925	2105	1194	1306	58	58	0.64	0.64
DC to SR 60	DC from SR 60	4100	0.78	625	1210	485	940	59	58	0.79	0.80
DC from SR 60	Egr to 275	5000	0.95	2500	2235	2367	2116	56	57	1.01	1.00
Egr to 275	DC to Himes	1200	0.23	2220	2110	505	480	55	54	0.25	0.25
DC to Himes	DC from Himes	3450	0.65	1230	685	804	448	59	59	0.66	0.66
DC from Himes	Ing from 275	4800	0.91	1875	1700	1705	1545	58	58	0.94	0.94

2045 Design Option B - Distances, Peak Hourly Volumes and Average Speeds

Ing from 275	DC from DT	3000	0.57	2660	2615	1511	1486	58	58	0.59	0.59	
DC from DT	Egr to 275	1250	0.24	1720	1870	407	443	58	58	0.24	0.24	
		Total Dist (mi)->	4.9		Total VMT	8978	8763	Veh-Miles		5.13	5.13	
									Avg Speed	58	58	mph

Westbound I-4 GU Lanes				AM/PM DDHV Fig 3-48		VMT		Model Speeds		Time to Travel Dist (min)		
		Link distance	Link Distance					AM Fig 3-	PM Fig 3-			
From	To	(ft) Conc Plan	(mi)	AM	PM	AM	PM	48	48	AM	PM	
Ex to DT Front Rd	Ex to I-275	945	0.18	7695	7145	1377	1279	56	56	0.19	0.19	
Ex to I-275	Ent from 21st	1860	0.35	9990	11225	3519	3954	54	52	0.39	0.41	
Ent from 21st	Ent from Selmon	3020	0.57	8365	10390	4785	5943	53	47	0.65	0.73	
Ent from Selmon	Ex to 22nd	290	0.05	6265	7790	344	428	58	54	0.06	0.06	
Ex to 22nd	Ent from Columbus	3325	0.63	7885	8865	4965	5583	57	56	0.66	0.67	
Ent from Columbus	Ex to Selmon	2650	0.50	6135	6865	3079	3446	62	61	0.49	0.49	
Ex to Selmon	Ex to 50th	5470	1.04	9415	9275	9754	9609	44	51	1.41	1.22	
		Total Dist (mi)->	3.3		Total VMT	27823	30241	Veh-Miles	Total Time	3.85	3.78	min
									Avg Speed	52	53	mph

Westbound I-4 Express Lanes				AM/PM DDHV Fig 3-48		VMT		Model Speeds		Time to Travel Dist (min)		
		Link distance	Link Distance					AM Fig 3-	PM Fig 3-			
From	To	(ft) Conc Plan	(mi)	AM	PM	AM	PM	48	48	AM	PM	
DC to 275	DC from Selmon	8700	1.65	2000	1920	3295	3164	58	58	1.70	1.70	
DC from Selmon	DC to Selmon	3550	0.67	1565	1190	1052	800	58	58	0.70	0.70	
DC to Selmon	Ing from I-4	5100	0.97	2395	1480	2313	1430	56	58	1.03	1.00	
		Total Dist (mi)->	3.3		Total VMT	6661	5393	Veh-Miles	Total Time	3.43	3.40	min
									Avg Speed	57	58	mph

Eastbound I-4 GU Lanes				AM/PM DDHV Fig 3-51		VMT		Model Speeds		Time to Travel Dist (min)		
		Link distance	Link Distance					AM Fig 3-	PM Fig 3-			
From	To	(ft) Conc Plan	(mi)	AM	PM	AM	PM	51	51	AM	PM	
Ent from Ashley	Ent from Orange	1200	0.23	6510	7185	1480	1633	54	53	0.25	0.26	
Ent from Orange	Ex to 14th	1200	0.23	7145	7695	1624	1749	57	52	0.24	0.26	
Ex to 14th	Ent from 275	800	0.15	6310	6070	956	920	40	36	0.23	0.25	
Ent from 275	Ex to Selmon	1615	0.31	10390	8365	3178	2559	31	28	0.59	0.66	
Ex to Selmon	Ent from 22nd	1450	0.27	7615	6265	2091	1721	27	12	0.61	1.37	
Ent from 22nd	Ent from Selmon	2740	0.52	8690	7885	4510	4092	15	10	2.08	3.11	
Ent from Selmon	Ex to Columbus	3075	0.58	11740	11695	6837	6811	23	16	1.52	2.18	
Ex to Columbus	Ex to Exp	2000	0.38	9625	9790	3646	3708	53	19	0.43	1.20	
Ex to Exp	Ent from 50th	2505	0.47	9185	6455	4358	3062	43	18	0.66	1.58	
		Total Dist (mi)->	3.1		Total VMT	28679	26254	Veh-Miles	Total Time	6.61	10.88	min
									Avg Speed	29	17	mph

Eastbound I-4 Express Lanes				AM/PM DDHV Fig 3-51		VMT		Model Speeds		Time to Travel Dist (min)		
		Link distance	Link Distance					AM Fig 3-	PM Fig 3-			
From	To	(ft) Conc Plan	(mi)	AM	PM	AM	PM	51	51	AM	PM	
DC from 275	DC to Selmon	4500	0.85	1920	2000	1636	1705	53	53	0.96	0.96	
DC to Selmon	Egr to I-4	3000	0.57	1190	1565	676	889	59	59	0.58	0.58	
Egr to I-4	DC from Selmon	2100	0.40	715	1190	284	473	59	59	0.40	0.40	
DC from Selmon	Ing from I-4	7300	1.38	1080	2020	1493	2793	60	59	1.38	1.41	
		Total Dist (mi)->	3.2		Total VMT	4090	5860	Veh-Miles	Total Time	3.33	3.35	min
									Avg Speed	58	57	mph

2045 Design Option C - Distances, Peak Hourly Volumes and Average Speeds

Southbound I-275 GU Lanes				AM/PM DDHV Fig 3.46		VMT		Model Speeds		Time to Travel Dist (min)		
From	To	Link distance (ft) Fig 2-1	Link Distance (mi)	AM	PM	AM	PM	AM Fig 3-46	PM Fig 3-46	AM	PM	
Ent from SR 60	Ex to SR 60	5870	1.11	5300	6150	5892	6837	58	58	1.15	1.15	
Ex to SR 60	Ent from Lois	1990	0.38	9150	10740	3449	4048	53	53	0.43	0.43	
Ent from Lois	Ex to WS	2220	0.42	7660	8765	3221	3685	57	56	0.44	0.45	
Ex to WS	Ent from DM	1645	0.31	9915	10470	3089	3262	54	55	0.35	0.34	
Ent from DM	Ex to Lois	1925	0.36	8430	9260	3073	3376	57	57	0.38	0.38	
Ex to Lois	Ex to DM	1840	0.35	9415	10005	3281	3487	56	56	0.37	0.37	
Ex to DM	Ex to Himes	925	0.18	11600	11270	2032	1974	54	55	0.19	0.19	
Ex to Himes	Ent from Armenia	1905	0.36	12300	12300	4438	4438	50	54	0.43	0.40	
Ent from Armenia	Ent from Exp	2600	0.49	10860	11210	5348	5520	48	54	0.62	0.55	
Ent from Exp	Ex to Howard	2515	0.48	9945	10735	4737	5113	56	56	0.51	0.51	
Ex to Howard	Ent from N Blvd	1600	0.30	11690	12050	3542	3652	49	51	0.37	0.36	
Ent from N Blvd	Ent from AshleyDT	1000	0.19	10885	11150	2062	2112	54	52	0.21	0.22	
Ent from AshleyDT	Ex to Exp	250	0.05	9205	8710	436	412	55	32	0.05	0.09	
Ex to Exp	Ent from I-4	4500	0.85	9985	9195	8510	7837	54	34	0.95	1.50	Ent from I-4
Ent from I-4	Ex to DT	2000	0.38	3270	2810	1239	1064	57	57	0.40	0.40	Ex to DT
Ex to DT	Ex to I-4	1900	0.36	6655	5365	2395	1931	56	57	0.39	0.38	Ex to I-4
Ex to I-4	Ent from MLK	2650	0.50	12400	8200	6223	4116	46	55	0.65	0.55	Ent from MLK
Ent from MLK	Ex to MLK	3400	0.64	11050	7180	7116	4623	54	56	0.72	0.69	
		Total Dist (mi)->	7.7		Total VMT	70082	67487	Veh-Miles		8.61	8.96	
									Avg Speed	54	52	mph

Southbound I-275 Exp Lanes				AM/PM DDHV Fig 3.46		VMT		Model Speeds		Time to Travel Dist (min)		
From	To	Link distance (ft) Fig 2-1	Link Distance (mi)	AM	PM	AM	PM	AM Fig 3-46	PM Fig 3-46	AM	PM	
DC from SR 60	DC to SR 60	5300	1.00	1085	655	1089	657	58	59	1.04	1.02	
DC to SR 60	DC from Himes	6550	1.24	2110	2530	2618	3139	58	57	1.28	1.31	
DC from Himes	DC to Himes	3500	0.66	685	1540	454	1021	59	58	0.67	0.69	
DC to Himes	Egr to 275	4800	0.91	1700	2185	1545	1986	56	57	0.97	0.96	
Egr to 275	DC from Tampa	5550	1.05	2615	2660	2749	2796	58	57	1.09	1.11	
DC from Tampa	DC to Morgan	3100	0.59	1835	2175	1077	1277	58	58	0.61	0.61	
DC to Morgan	DC from I-4	2600	0.49	2000	1920	985	945	59	59	0.50	0.50	
		Total Dist (mi)->	5.9		Total VMT	10517	11822	Veh-Miles		6.17	6.18	
3800									Avg Speed	58	58	mph

DC from SR	DC to SR 60	5300
DC to SR 60	DC from Hi	6550
DC from Hi	DC to Hime	3500
DC to Hime	Egr to 275	4800
Egr to 275	DC from Ta	5550
DC from Ta	Ing from 27	1250
Ing from 27	DC from I-4	2800

Nouthbound I-275 GU Lanes				AM/PM DDHV Fig 3.45		VMT		Model Speeds		Time to Travel Dist (min)		
From	To	Link distance (ft) Fig 2-1	Link Distance (mi)	AM	PM	AM	PM	AM Fig 3-45	PM Fig 3-45	AM	PM	
Ex to SR 60	Ent from Exp	4000	0.76	5185	4875	3928	3693	8	10	5.68	4.55	
Ent from Exp	Ent from SR 60	1840	0.35	6180	5175	2154	1803	12	11	1.74	1.90	
Ent from SR 60	Ex to Lois	2500	0.47	10770	9025	5099	4273	24	21	1.18	1.35	
Ex to Lois	Ent from WS	1050	0.20	8795	7535	1749	1498	22	20	0.54	0.60	
Ent from WS	Ex to DM	2435	0.46	10500	9790	4842	4515	20	24	1.38	1.15	
Ex to DM	Ent from Lois	2270	0.43	9290	8305	3994	3571	14	14	1.84	1.84	
Ent from Lois	Ent from Exp	1600	0.30	10035	9290	3041	2815	13	13	1.40	1.40	
Ent from Exp	Ent from DM	1640	0.31	10315	9415	3204	2924	15	15	1.24	1.24	
Ent from DM	Ent from Himes	610	0.12	11580	11600	1338	1340	17	17	0.41	0.41	
Ent from Himes	Ex to Armenia	1775	0.34	12610	12300	4239	4135	22	21	0.92	0.96	
Ex to Armenia	Ex to Exp	1900	0.36	11520	10860	4145	3908	21	19	1.03	1.14	
Ex to Exp	Ent from Howard	1890	0.36	10735	9945	3843	3560	18	18	1.19	1.19	
Ent from Howard	Ex to North Blvd	1300	0.25	12050	11690	2967	2878	18	17	0.82	0.87	
Ex to North Blvd	Ex to Ashley	2200	0.42	11635	11665	4848	4860	53	52	0.47	0.48	
Ex to Ashley	Ent from Ashley	1395	0.26	9195	9985	2429	2638	57	58	0.28	0.27	
Ent from Ashley	Ent from Orange	2370	0.45	10110	12080	4538	5422	50	49	0.54	0.55	
Ent from Orange	Ex to I-4	850	0.16	12510	14350	2014	2310	56	56	0.17	0.17	
Ex to I-4	Ent from I-4	1895	0.36	5365	6655	1926	2388	58	57	0.37	0.38	
Ent from I-4	Ex to MLK	3700	0.70	8200	12400	5746	8689	56	37	0.75	1.14	
Ex to MLK	Ent to MLK	3400	0.64	7180	11050	4623	7116	55	37	0.70	1.04	
		Total Dist (mi)->	7.7		Total VMT	70668	74339	Veh-Miles	Total Time	22.67	22.63	min
									Avg Speed	20	20	mph

Nouthbound I-275 Exp Lanes				AM/PM DDHV Fig 3.45		VMT		Model Speeds		Time to Travel Dist (min)		
From	To	Link distance (ft) Conc Plan	Link Distance (mi)	AM	PM	AM	PM	AM Fig 3-45	AM Fig 3-45	AM	PM	
Egr to 275	DC to SR 60	3275	0.62	1925	2105	1194	1306	58	58	0.64	0.64	
DC to SR 60	DC from SR 60	4100	0.78	625	1210	485	940	59	58	0.79	0.80	
DC from SR 60	Egr to 275	5000	0.95	2500	2235	2367	2116	57	57	1.00	1.00	
Egr to 275	DC to Himes	1200	0.23	2220	2110	505	480	55	54	0.25	0.25	
DC to Himes	DC from Himes	3450	0.65	1230	685	804	448	59	59	0.66	0.66	
DC from Himes	Ing from 275	4800	0.91	1875	1700	1705	1545	58	58	0.94	0.94	
Ing from 275	Egr to 275	3000	0.57	2660	2615	1511	1486	57	57	0.60	0.60	
Egr to 275	DC from Ashley	2200	0.42	2175	1835	906	765	57	57	0.44	0.44	
DC from Ashley	DC from Morgan	5100	0.97	1235	1090	1193	1053	59	59	0.98	0.98	
DC from Morgan	Link to I-4	2400	0.45	1920	2000	873	909	57	56	0.48	0.49	
		Total Dist (mi)->	6.5		Total VMT	11543	11047	Veh-Miles		6.78	6.81	
									Avg Speed	58	58	mph

Westbound I-4 GU Lanes				AM/PM DDHV Fig 3-48		VMT		Model Speeds		Time to Travel Dist (min)	
From	To	Link distance (ft) Conc Plan	Link Distance (mi)	AM	PM	AM	PM	AM Fig 3-48	PM Fig 3-48	AM	PM
Ex to DT Front Rd	Ex to I-275	945	0.18	7695	7145	1377	1279	51	51	0.21	0.21
Ex to I-275	Ent from 21st	1860	0.35	9750	11570	3435	4076	56	32	0.38	0.66
Ent from 21st	Ent from Selmon	3020	0.57	7585	9070	4338	5188	55	35	0.62	0.98
Ent from Selmon	Ex to 22nd	290	0.05	5485	6295	301	346	58	55	0.06	0.06
Ex to 22nd	Ent from Columbus	3325	0.63	7155	7420	4506	4673	57	57	0.66	0.66
Ent from Columbus	Ex to Selmon	2650	0.50	5405	5455	2713	2738	57	61	0.53	0.49
Ex to Selmon	Ex to 50th	5470	1.04	8805	7985	9122	8272	44	45	1.41	1.38

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		Total Dist (mi)->	3.3		Total VMT	25792	26571	Veh-Miles	Total Time	3.87	4.45	min
									Avg Speed	52	45	mph

Westbound I-4 Express Lanes				AM/PM DDHV Fig 3-48		VMT		Model Speeds		Time to Travel Dist (min)		
From	To	Link distance (ft) Conc Plan	Link Distance (mi)	AM	PM	AM	PM	AM Fig 3-48	PM Fig 3-48	AM	PM	
DC to 275N	DC from Selmon	5000	0.95	2780	3240	2633	3068	58	58	0.98	0.98	
DC from Selmon	DC to Selmon	3550	0.67	2345	2510	1577	1688	58	58	0.70	0.70	
DC to Selmon	Ing from I-4	5100	0.97	3175	2875	3067	2777	56	58	1.03	1.00	
		Total Dist (mi)->	2.6		Total VMT	7276	7533	Veh-Miles	Total Time	2.71	2.67	min
									Avg Speed	57	58	mph

Eastbound I-4 GU Lanes				AM/PM DDHV Fig 3-51		VMT		Model Speeds		Time to Travel Dist (min)		
From	To	Link distance (ft) Conc Plan	Link Distance (mi)	AM	PM	AM	PM	AM Fig 3-51	PM Fig 3-51	AM	PM	
Ent from 275	Ex to Selmon	5000	0.95	9070	7590	8589	7188	54	55	1.05	1.03	
Ex to Selmon	Ent from 22nd	1450	0.27	6295	5490	1729	1508	58	58	0.28	0.28	
Ent from 22nd	Ent from Selmon	2740	0.52	7420	7160	3851	3716	34	38	0.92	0.82	
Ent from Selmon	Ex to Columbus	3075	0.58	10575	11085	6159	6456	37	34	0.94	1.03	
Ex to Columbus	Ex to Exp	2000	0.38	8460	9180	3205	3477	55	27	0.41	0.84	
Ex to Exp	Ent from 50th	2505	0.47	8020	8845	3805	4196	54	18	0.53	1.58	
		Total Dist (mi)->	3.2		Total VMT	27337	26540	Veh-Miles	Total Time	4.14	5.59	min
									Avg Speed	46	34	mph

Eastbound I-4 Express Lanes				AM/PM DDHV Fig 3-51		VMT		Model Speeds		Time to Travel Dist (min)		
From	To	Link distance (ft) Conc Plan	Link Distance (mi)	AM	PM	AM	PM	AM Fig 3-51	PM Fig 3-51	AM	PM	
DC from 275	DC to Selmon	4500	0.85	3240	2780	2761	2369	57	57	0.90	0.90	
DC to Selmon	Egr to I-4	2800	0.53	2510	2345	1331	1244	58	58	0.55	0.55	
Egr to I-4	DC from Selmon	2100	0.40	2035	1970	809	784	59	59	0.40	0.40	
DC from Selmon	Ing from I-4	7300	1.38	2400	2800	3318	3871	58	58	1.43	1.43	
		Total Dist (mi)->	3.2		Total VMT	8220	8268	Veh-Miles	Total Time	3.28	3.28	min
									Avg Speed	58	58	mph

2045 Design Option D - Distances, Peak Hourly Volumes and Average Speeds

Southbound I-275 GU Lanes				AM/PM DDHV Fig 3-58		VMT		Model Speeds		Time to Travel Dist (min)		
		Link distance	Link Distance					AM Fig 3-	PM Fig 3-			
From	To	(ft) Fig 2-1	(mi)	AM	PM	AM	PM	58	58	AM	PM	
Ent from SR 60	Ex to SR 60	5870	1.11	5300	6150	5892	6837	58	58	1.15	1.15	
Ex to SR 60	Ent from Lois	1990	0.38	9150	10740	3449	4048	53	53	0.43	0.43	
Ent from Lois	Ex to WS	2220	0.42	7660	8765	3221	3685	57	56	0.44	0.45	
Ex to WS	Ent from DM	1645	0.31	9915	10470	3089	3262	54	55	0.35	0.34	
Ent from DM	Ex to Lois	1925	0.36	8430	9260	3073	3376	57	57	0.38	0.38	
Ex to Lois	Ex to DM	1840	0.35	9415	10005	3281	3487	56	56	0.37	0.37	
Ex to DM	Ex to Himes	925	0.18	11600	11270	2032	1974	54	55	0.19	0.19	
Ex to Himes	Ent from Armenia	1905	0.36	12300	12300	4438	4438	51	54	0.42	0.40	
Ent from Armenia	Ent from Exp	2600	0.49	10860	11210	5348	5520	51	53	0.58	0.56	
Ent from Exp	Ex to Howard	2515	0.48	9945	10735	4737	5113	56	56	0.51	0.51	
Ex to Howard	Ent from N Blvd	1600	0.30	11690	12050	3542	3652	50	51	0.36	0.36	
Ent from N Blvd	Ent from AshleyDT	1000	0.19	10885	11150	2062	2112	54	55	0.21	0.21	
Ent from AshleyDT	Ex to Exp	250	0.05	9205	8710	436	412	55	48	0.05	0.06	
Ex to Exp	Ent from I-4	4500	0.85	9985	9195	8510	7837	55	52	0.93	0.98	Ent from I-4
Ent from I-4	Ex to DT	2000	0.38	3270	2810	1239	1064	57	56	0.40	0.41	Ex to DT
Ex to DT	Ex to I-4	1900	0.36	6655	5365	2395	1931	56	40	0.39	0.54	Ex to I-4
Ex to I-4	Ent from MLK	2650	0.50	12400	8200	6223	4116	51	51	0.59	0.59	Ent from M
Ent from MLK	Ex to MLK	3400	0.64	11050	7180	7116	4623	55	54	0.70	0.72	
		Total Dist (mi)->	7.7		Total VMT	70082	67487	Veh-Miles		8.46	8.64	
									Avg Speed	55	54	mph

Southbound I-275 Exp Lanes				AM/PM DDHV Fig 3-58		VMT		Model Speeds		Time to Travel Dist (min)		
		Link distance	Link Distance					AM Fig 3-	PM Fig 3-			
From	To	(ft) Fig 2-1	(mi)	AM	PM	AM	PM	58	58	AM	PM	
DC from SR 60	DC to SR 60	5300	1.00	1085	655	1089	657	58	59	1.04	1.02	
DC to SR 60	DC from Himes	6550	1.24	2110	2530	2618	3139	58	58	1.28	1.28	
DC from Himes	DC to Himes	3500	0.66	685	1540	454	1021	59	58	0.67	0.69	
DC to Himes	Egr to 275	4800	0.91	1700	2185	1545	1986	57	57	0.96	0.96	
Egr to 275	DC from Tampa	5550	1.05	2615	2660	2749	2796	57	57	1.11	1.11	
DC from Tampa	DC to Morgan	5200	0.98	1835	2175	1807	2142	57	57	1.04	1.04	
DC to Morgan	DC from I-4	1000	0.19	2000	1920	379	364	48	48	0.24	0.24	
		Total Dist (mi)->	6.0		Total VMT	10641	12105	Veh-Miles		6.33	6.33	
3800									Avg Speed	57	57	mph

Nouthbound I-275 GU Lanes				AM/PM DDHV Fig 3-57		VMT		Model Speeds		Time to Travel Dist (min)		
		Link distance	Link Distance					AM Fig 3-	PM Fig 3-			
From	To	(ft) Fig 2-1	(mi)	AM	PM	AM	PM	57	57	AM	PM	
Ex to SR 60	Ent from Exp	4000	0.76	5185	4875	3928	3693	7	12	6.49	3.79	
Ent from Exp	Ent from SR 60	1840	0.35	6180	5175	2154	1803	12	12	1.74	1.74	
Ent from SR 60	Ex to Lois	2500	0.47	10770	9025	5099	4273	24	21	1.18	1.35	
Ex to Lois	Ent from WS	1050	0.20	8795	7535	1749	1498	23	20	0.52	0.60	
Ent from WS	Ex to DM	2435	0.46	10500	9790	4842	4515	21	23	1.32	1.20	
Ex to DM	Ent from Lois	2270	0.43	9290	8305	3994	3571	14	13	1.84	1.98	
Ent from Lois	Ent from Exp	1600	0.30	10035	9290	3041	2815	12	13	1.52	1.40	
Ent from Exp	Ent from DM	1640	0.31	10315	9415	3204	2924	15	15	1.24	1.24	
Ent from DM	Ent from Himes	610	0.12	11580	11600	1338	1340	17	18	0.41	0.39	
Ent from Himes	Ex to Armenia	1775	0.34	12610	12300	4239	4135	22	21	0.92	0.96	
Ex to Armenia	Ex to Exp	1900	0.36	11520	10860	4145	3908	21	20	1.03	1.08	
Ex to Exp	Ent from Howard	1890	0.36	10735	9945	3843	3560	18	16	1.19	1.34	
Ent from Howard	Ex to North Blvd	1300	0.25	12050	11690	2967	2878	18	17	0.82	0.87	
Ex to North Blvd	Ex to Ashley	2200	0.42	11635	11665	4848	4860	53	52	0.47	0.48	
Ex to Ashley	Ent from Ashley	1395	0.26	9195	9985	2429	2638	57	58	0.28	0.27	
Ent from Ashley	Ent from Orange	2370	0.45	10110	12080	4538	5422	50	37	0.54	0.73	
Ent from Orange	Ex to I-4	850	0.16	12510	14350	2014	2310	53	52	0.18	0.19	
Ex to I-4	Ent from I-4	1895	0.36	5365	6655	1926	2388	58	58	0.37	0.37	
Ent from I-4	Ex to MLK	3700	0.70	8200	12400	5746	8689	56	36	0.75	1.17	
Ex to MLK	Ent to MLK	3400	0.64	7180	11050	4623	7116	55	37	0.70	1.04	
		Total Dist (mi)->	7.7		Total VMT	70668	74339	Veh-Miles	Total Time	23.52	22.20	min
									Avg Speed	20	21	mph

Nouthbound I-275 Exp Lanes				AM/PM DDHV Fig 3-57		VMT		Model Speeds		Time to Travel Dist (min)	
		Link distance	Link Distance					AM Fig 3-	PM Fig 3-		
From	To	(ft) Conc Plan	(mi)	AM	PM	AM	PM	57	57	AM	PM
Egr to 275	DC to SR 60	3275	0.62	1925	2105	1194	1306	58	58	0.64	0.64
DC to SR 60	DC from SR 60	4100	0.78	625	1210	485	940	58	58	0.80	0.80
DC from SR 60	Egr to 275	5000	0.95	2500	2235	2367	2116	57	57	1.00	1.00
Egr to 275	DC to Himes	1200	0.23	2220	2110	505	480	54	54	0.25	0.25
DC to Himes	DC from Himes	3450	0.65	1230	685	804	448	59	59	0.66	0.66
DC from Himes	Ing from 275	4800	0.91	1875	1700	1705	1545	58	58	0.94	0.94
Ing from 275	Egr to 275	3000	0.57	2660	2615	1511	1486	58	57	0.59	0.60
Egr to 275	DC from Ashley	2200	0.42	2175	1835	906	765	57	58	0.44	0.43

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DC from Ashley	DC from Morgan	5100	0.97	1235	1090	1193	1053	59	59	0.98	0.98	
DC from Morgan	Link to I-4	5800	1.10	1920	2000	2109	2197	47	47	1.40	1.40	
		Total Dist (mi)->	7.2		Total VMT	12779	12334	Veh-Miles		7.71	7.71	
									Avg Speed	56	56	mph

Westbound I-4 GU Lanes				AM/PM DDHV Fig 3-60		VMT		Model Speeds		Time to Travel Dist (min)		
From	To	Link distance (ft) Conc Plan	Link Distance (mi)	AM	PM	AM	PM	AM Fig 3-60	PM Fig 3-60	AM	PM	
Ex to DT Front Rd	Ex to I-275	945	0.18	7695	7145	1377	1279	56	56	0.19	0.19	
Ex to I-275	Ent from 21st	1860	0.35	9750	11570	3435	4076	55	38	0.38	0.56	
Ent from 21st	Ent from Selmon	3020	0.57	7585	9070	4338	5188	56	39	0.61	0.88	
Ent from Selmon	Ex to 22nd	290	0.05	5485	6295	301	346	58	56	0.06	0.06	
Ex to 22nd	Ent from Columbus	3325	0.63	7155	7420	4506	4673	57	57	0.66	0.66	
Ent from Columbus	Ex to Selmon	2650	0.50	5405	5455	2713	2738	62	61	0.49	0.49	
Ex to Selmon	Ex to 50th	5470	1.04	8805	7985	9122	8272	43	45	1.45	1.38	
		Total Dist (mi)->	3.3		Total VMT	25792	26571	Veh-Miles	Total Time	3.84	4.22	min
									Avg Speed	52	47	mph

Westbound I-4 Express Lanes				AM/PM DDHV Fig 3-60		VMT		Model Speeds		Time to Travel Dist (min)		
From	To	Link distance (ft) Conc Plan	Link Distance (mi)	AM	PM	AM	PM	AM Fig 3-60	PM Fig 3-60	AM	PM	
DC to 275N	DC from Selmon	3500	0.66	2780	3240	1843	2148	57	56	0.70	0.71	
DC from Selmon	DC to Selmon	3550	0.67	2345	2510	1577	1688	57	56	0.71	0.72	
DC to Selmon	Ing from I-4	5100	0.97	3175	2875	3067	2777	55	56	1.05	1.03	
		Total Dist (mi)->	2.3		Total VMT	6486	6612	Veh-Miles	Total Time	2.46	2.47	min
									Avg Speed	56	56	mph

Eastbound I-4 GU Lanes				AM/PM DDHV Fig 3-59		VMT		Model Speeds		Time to Travel Dist (min)		
From	To	Link distance (ft) Conc Plan	Link Distance (mi)	AM	PM	AM	PM	AM Fig 3-59	PM Fig 3-59	AM	PM	
Ent from 275	Ex to Selmon	5000	0.95	9070	7590	8589	7188	53	55	1.07	1.03	
Ex to Selmon	Ent from 22nd	1450	0.27	6295	5490	1729	1508	58	58	0.28	0.28	
Ent from 22nd	Ent from Selmon	2740	0.52	7420	7160	3851	3716	39	22	0.80	1.42	
Ent from Selmon	Ex to Columbus	3075	0.58	10575	11085	6159	6456	39	21	0.90	1.66	
Ex to Columbus	Ex to Exp	2000	0.38	8460	9180	3205	3477	55	20	0.41	1.14	
Ex to Exp	Ent from 50th	2505	0.47	8020	8845	3805	4196	55	18	0.52	1.58	
		Total Dist (mi)->	3.2		Total VMT	27337	26540	Veh-Miles	Total Time	3.98	7.11	min
									Avg Speed	48	27	mph

Eastbound I-4 Express Lanes				AM/PM DDHV Fig 3-59		VMT		Model Speeds		Time to Travel Dist (min)		
From	To	Link distance (ft) Conc Plan	Link Distance (mi)	AM	PM	AM	PM	AM Fig 3-59	PM Fig 3-59	AM	PM	
DC from 275	DC to Selmon	1400	0.27	3240	2780	859	737	57	57	0.28	0.28	
DC to Selmon	Egr to I-4	2800	0.53	2510	2345	1331	1244	58	58	0.55	0.55	
Egr to I-4	DC from Selmon	2100	0.40	2035	1970	809	784	59	59	0.40	0.40	
DC from Selmon	Ing from I-4	7300	1.38	2400	2800	3318	3871	58	57	1.43	1.46	
		Total Dist (mi)->	2.6		Total VMT	6318	6635	Veh-Miles	Total Time	2.66	2.69	min
									Avg Speed	58	58	mph

2045 Design Option E - Distances, Peak Hourly Volumes and Average Speeds

Southbound I-275 GU Lanes				AM/PM DDHV Fig 3-72		VMT		Model Speeds		Time to Travel Dist (min)		
From	To	Link distance (ft) Fig 2-1	Link Distance (mi)	AM	PM	AM	PM	AM Fig 3-72	PM Fig 3-72	AM	PM	
Ent from SR 60	Ex to SR 60	5870	1.11	5030	6200	5592	6893	58	58	1.15	1.15	
Ex to SR 60	Ent from Lois	1990	0.38	7805	9745	2942	3673	55	54	0.41	0.42	
Ent from Lois	Ex to WS	2220	0.42	6240	7770	2624	3267	58	57	0.43	0.44	
Ex to WS	Ent from DM	1645	0.31	8540	9475	2661	2952	54	56	0.35	0.33	
Ent from DM	Ex to Lois	1925	0.36	6955	8265	2536	3013	58	57	0.38	0.38	
Ex to Lois	Ex to DM	1840	0.35	7935	9010	2765	3140	57	57	0.37	0.37	
Ex to DM	Ex to Himes	925	0.18	10500	10945	1839	1917	55	55	0.19	0.19	
Ex to Himes	Ent from Armenia	1905	0.36	11835	11950	4270	4312	52	53	0.42	0.41	
Ent from Armenia	Ex to Howard	5115	0.97	9415	10225	9121	9905	56	56	1.04	1.04	
Ex to Howard	Ent from AshleyDT	2600	0.49	11115	11540	5473	5683	54	55	0.55	0.54	
Ent from AshleyDT	Ex to Exp	250	0.05	9205	9130	436	432	56	57	0.05	0.05	
Ex to Exp	Ent from I-4	4000	0.76	10580	10645	8015	8064	50	43	0.91	1.06	
Ent from I-4	Ex to Orange	2230	0.42	3650	2935	1542	1240	57	57	0.44	0.44	
Ex to Orange	Ex to I-4	1880	0.36	6710	5400	2389	1923	55	55	0.39	0.39	
Ex to I-4	Ex to Floribraska	950	0.18	12410	8200	2233	1475	46	54	0.23	0.20	
Ex to Floribraska	Ent from MLK	1500	0.28	13150	9170	3736	2605	39	54	0.44	0.32	
Ent from MLK	Ex to MLK	1775	0.34	11800	8150	3967	2740	37	55	0.55	0.37	
		Total Dist (mi)->	7.3		Total VMT	62140	63234	Veh-Miles		8.29	8.09	
									Avg Speed	53	54	mph

Southbound I-275 Exp Lanes				AM/PM DDHV Fig 3-72		VMT		Model Speeds		Time to Travel Dist (min)		
From	To	Link distance (ft) Fig 2-1	Link Distance (mi)	AM	PM	AM	PM	AM Fig 3-72	PM Fig 3-72	AM	PM	
DC from SR 60	DC to SR 60	5300	1.00	1465	610	1471	612	59	60	1.02	1.00	
DC to SR 60	DC from Himes	6550	1.24	3565	3525	4422	4373	57	56	1.31	1.33	
DC from Himes	DC from Ashley	3500	0.66	2120	2535	1405	1680	58	58	0.69	0.69	
DC from Ashley	Ent from 275	4400	0.83	1375	1515	1146	1263	57	57	0.88	0.88	
EXPRESS LANES END HERE												
		Total Dist (mi)->	3.7		Total VMT	8444	7928	Veh-Miles		3.89	3.90	
3800									Avg Speed	58	58	mph

Nouthbound I-275 GU Lanes				AM/PM DDHV Fig 3-71		VMT		Model Speeds		Time to Travel Dist (min)		
From	To	Link distance (ft) Fig 2-1	Link Distance (mi)	AM	PM	AM	PM	AM Fig 3-71	PM Fig 3-71	AM	PM	
Ex to SR 60	Ent from Exp	4000	0.76	5205	4680	3943	3545	31	41	1.47	1.11	
Ent from Exp	Ent from SR 60	1840	0.35	6200	5030	2161	1753	28	37	0.75	0.57	
Ent from SR 60	Ex to Lois	2500	0.47	9745	4805	4614	2275	36	33	0.79	0.86	
Ex to Lois	Ent from WS	1050	0.20	7700	6240	1531	1241	36	25	0.33	0.48	
Ent from WS	Ex to DM	2435	0.46	9475	8540	4370	3938	34	37	0.81	0.75	
Ex to DM	Ent from Lois	2270	0.43	8265	6955	3553	2990	25	35	1.03	0.74	
Ent from Lois	Ent from Exp	1600	0.30	9010	7935	2730	2405	17	23	1.07	0.79	
Ent from Exp	Ent from DM	1640	0.31	9365	8115	2909	2521	17	20	1.10	0.93	
Ent from DM	Ent from Himes	610	0.12	11300	10680	1305	1234	17	18	0.41	0.39	
Ent from Himes	Ex to Armenia	1775	0.34	12305	12015	4137	4039	20	19	1.01	1.06	
Ex to Armenia	Ex to Exp	1900	0.36	10580	9595	3807	3453	17	14	1.27	1.54	
Ex to Exp	Ent from Howard	1890	0.36	11740	10790	4202	3862	15	13	1.43	1.65	
Ent from Howard	Ex to Ashley	3500	0.66	13055	12490	8654	8279	16	15	2.49	2.65	
Ex to Ashley	Ent from Ashley	1395	0.26	10645	10580	2812	2795	17	17	0.93	0.93	
Ent from Ashley	Ent from Orange	2370	0.45	11650	11910	5229	5346	16	16	1.68	1.68	
Ent from Orange	Ent from Orange	525	0.10	13510	14370	1343	1429	27	28	0.22	0.21	
Ent from Orange	Ex to 14/15th	700	0.13	14750	16010	1955	2123	35	41	0.23	0.19	
Ex to 14/15th	Ex to I-4	150	0.03	13895	14545	395	413	37	49	0.05	0.03	
Ex to I-4	Ent from I-4	1895	0.36	5400	6710	1938	2408	56	57	0.38	0.38	
Ent from I-4	Ent from Floribraska	2180	0.41	8200	12410	3386	5124	57	55	0.43	0.45	
Ent from Floribraska	Ex to MLK	2140	0.41	9170	13150	3717	5330	56	54	0.43	0.45	
Ex to MLK	Ent to MLK	1760	0.33	8150	11800	2717	3933	56	49	0.36	0.41	
		Total Dist (mi)->	7.6		Total VMT	71409	70436	Veh-Miles	Total Time	18.67	18.26	min
									Avg Speed	24	25	mph

Nouthbound I-275 Exp Lanes				AM/PM DDHV Fig 3-71		VMT		Model Speeds		Time to Travel Dist (min)	
From	To	Link distance (ft) Conc Plan	Link Distance (mi)	AM	PM	AM	PM	AM Fig 3-71	PM Fig 3-71	AM	PM
Egr to 275	DC to SR 60	3275	0.62	1925	2355	1194	1461	56	56	0.66	0.66
DC to SR 60	DC from SR 60	4100	0.78	610	1465	474	1138	59	58	0.79	0.80

2045 Design Option E - Distances, Peak Hourly Volumes and Average Speeds

DC from SR 60	Egr to 275	5000	0.95	3525	3565	3338	3376	54	54	1.05	1.05
Egr to 275	DC to Himes	1200	0.23	3170	3385	720	769	55	54	0.25	0.25
DC to Himes	Ing from 275	11250	2.13	2180	1940	4645	4134	58	58	2.20	2.20
Ing from 275	DC from Ashley	2200	0.42	1020	745	425	310	59	59	0.42	0.42
EXPRESS LANES END HERE											
		Total Dist (mi)->	5.1		Total VMT	10796	11188	Veh-Miles		5.38	5.40
									Avg Speed	57	57	mph

Westbound I-4 GU Lanes				AM/PM DDHV Fig 3-74		VMT		Model Speeds		Time to Travel Dist (min)		
From	To	Link distance (ft) Conc Plan	Link Distance (mi)	AM	PM	AM	PM	AM Fig 3-74	PM Fig 3-74	AM	PM	
Ex to DT Front Rd	Ex to I-275	945	0.18	9300	9350	1664	1673	46	50	0.23	0.21	
Ex to I-275	Ent from 21st	1860	0.35	12100	15050	4263	5302	45	36	0.47	0.59	
Ent from 21st	Ent from Selmon	3020	0.57	9900	12650	5663	7235	43	23	0.80	1.49	
Ent from Selmon	Ex to 22nd	290	0.05	7000	9310	384	511	21	16	0.16	0.21	
Ex to 22nd	Ent from Columbus	3325	0.63	8550	10130	5384	6379	25	18	1.51	2.10	
Ent from Columbus	Ex to Selmon	2650	0.50	6875	8000	3451	4015	35	23	0.86	1.31	
Ex to Selmon	Ex to 50th	5470	1.04	9470	9435	9811	9775	38	26	1.64	2.39	
		Total Dist (mi)->	3.3		Total VMT	30619	34891	Veh-Miles	Total Time	5.67	8.30	min
									Avg Speed	35	24	mph

Westbound I-4 Express Lanes				AM/PM DDHV Fig 3-		VMT		Model Speeds		Time to Travel Dist (min)		
From	To	Link distance (ft) Conc Plan	Link Distance (mi)	AM	PM	AM	PM	AM Fig 3-	PM Fig 3-	AM	PM	
NO EXPRESS LANES												
		Total Dist (mi)->	0.0		Total VMT	0	0	Veh-Miles	Total Time	0.00	0.00	min
									Avg Speed	#DIV/0!	#DIV/0!	mph

Eastbound I-4 GU Lanes				AM/PM DDHV Fig 3-73		VMT		Model Speeds		Time to Travel Dist (min)		
From	To	Link distance (ft) Conc Plan	Link Distance (mi)	AM	PM	AM	PM	AM Fig 3-73	PM Fig 3-73	AM	PM	
Ent from 275	Ex to Selmon	5000	0.95	12650	9900	11979	9375	21	53	2.71	1.07	
Ex to Selmon	Ent from 22nd	1450	0.27	9310	7000	2557	1922	18	57	0.92	0.29	
Ent from 22nd	Ent from Selmon	2740	0.52	10130	8550	5257	4437	13	53	2.40	0.59	
Ent from Selmon	Ex to Columbus	3075	0.58	11685	11300	6805	6581	23	29	1.52	1.20	
Ex to Columbus	Ex to Exp	2000	0.38	9435	9470	3574	3587	54	54	0.42	0.42	
Ex to Exp	Ent from 50th	2505	0.47	8660	8610	4109	4085	55	55	0.52	0.52	
		Total Dist (mi)->	3.2		Total VMT	34280	29987	Veh-Miles	Total Time	8.47	4.09	min
									Avg Speed	22	47	mph

Eastbound I-4 Express Lanes				AM/PM DDHV Fig 3-		VMT		Model Speeds		Time to Travel Dist (min)		
From	To	Link distance (ft) Conc Plan	Link Distance (mi)	AM	PM	AM	PM	AM Fig 3-	PM Fig 3-	AM	PM	
NO EXPRESS LANES												
		Total Dist (mi)->	0.0		Total VMT	0	0	Veh-Miles	Total Time	0.00	0.00	min
									Avg Speed	#DIV/0!	#DIV/0!	mph

2018 Existing Condition - Mainline during peak hours (AM or PM)

Link	Road	Limits	AM/PM	Direction (NB/SB or EB/WB)	General use or express lanes	Link length (mi)*	VMT, Veh-miles in hr	Speed (idling 2.5 or lowest speed)	Idling (Hr/day)*	BENZ, lb	BUTA, lb	FORM, lb	NAP, lb	ACE, lb	ACROL, lb	ETB, lb	POM, lb	DPM, lb		
	I-275	w/SR 60 to MLK	AM	SB	GU	7.70	58352	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
	I-275	w/SR 60 to MLK	AM	NB	GU	8.00	69668	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
	I-275	w/SR 60 to MLK	AM	SB	GU	7.70	58352	49		0.3322	0.0400	0.3369	0.0389	0.1754	0.0211	0.1957	0.0168	3.7410		
	I-275	w/SR 60 to MLK	AM	NB	GU	8.00	69668	42		0.4125	0.0512	0.4388	0.0502	0.2268	0.0276	0.2499	0.0212	4.7212		
									I-275 Totals	0.7448	0.0400	0.3369	0.0389	0.1754	0.0211	0.1957	0.0168	3.7410		
	I-4	I-275 to 50th	AM	WB	GU	3.33	22377	2.5	1	0.0001	0.0000	0.0001	0.0000	0.0001	0.0000	0.0001	0.0000	0.0014		
	I-4	I-275 to 50th	AM	EB	GU	3.00	22910	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
	I-4	I-275 to 50th	AM	WB	GU	3.33	22377	38		0.1344	0.0171	0.1488	0.0169	0.0764	0.0094	0.0833	0.0070	1.5532		
	I-4	I-275 to 50th	AM	EB	GU	3.00	22910	56		0.1226	0.0147	0.1215	0.0141	0.0636	0.0076	0.0712	0.0060	1.3604		
									I-4 Totals	0.2571	0.0171	0.1489	0.0169	0.0765	0.0094	0.0834	0.0070	1.5547		
									AM TOTAL	1.0019	0.0571	0.4858	0.0558	0.2519	0.0305	0.2791	0.0237	5.2957		7.4816
	I-275	w/SR 60 to MLK	PM	SB	GU	7.70	63882	2.5	1	0.0001	0.0000	0.0001	0.0000	0.0001	0.0000	0.0001	0.0000	0.0014		
	I-275	w/SR 60 to MLK	PM	NB	GU	8.00	64507	2.5	1	0.0001	0.0000	0.0001	0.0000	0.0001	0.0000	0.0001	0.0000	0.0014		
	I-275	w/SR 60 to MLK	PM	SB	GU	7.70	63882	29		0.4001	0.0546	0.4918	0.0550	0.2493	0.0312	0.2652	0.0213	4.9226		
	I-275	w/SR 60 to MLK	PM	NB	GU	8.00	64507	19		0.5189	0.0736	0.6884	0.0763	0.3451	0.0439	0.3638	0.0289	6.4216		
									I-275 Totals	0.9191	0.0546	0.4920	0.0550	0.2494	0.0312	0.2653	0.0213	4.9241		
	I-4	I-275 to 50th	PM	WB	GU	3.33	25529	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
	I-4	I-275 to 50th	PM	EB	GU	3.00	20006	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
	I-4	I-275 to 50th	PM	WB	GU	3.33	25529	56		0.1366	0.0164	0.1354	0.0157	0.0709	0.0085	0.0793	0.0067	1.5159		
	I-4	I-275 to 50th	PM	EB	GU	3.00	20006	55		0.1078	0.0129	0.1073	0.0124	0.0561	0.0067	0.0627	0.0053	1.1996		
									I-4 Totals	0.2444	0.0164	0.1354	0.0157	0.0709	0.0085	0.0793	0.0067	1.5159		
									PM TOTAL	1.1635	0.0710	0.6274	0.0708	0.3203	0.0397	0.3446	0.0280	6.4400	Total	9.1051
								Highest peak hour - Lbs of Toxins in peak hour->	AM	1.0019	0.0571	0.4858	0.0558	0.2519	0.0305	0.2791	0.0237	5.2957	7.48	

* if speed is < 40mph, assume 1 hour of idling

2045 No Further Action Condition - Mainline during peak hours (AM or PM)

Link	Road	Limits	AM/PM	Direction (NB/SB or EB/WB)	General use or express lanes	Link length (mi)*	VMT, Veh-miles in hr	Speed (idling 2.5 or lowest speed)	Idling (Hr/day)*	BENZ, lb	BUTA, lb	FORM, lb	NAP, lb	ACE, lb	ACROL, lb	ETB, lb	POM, lb	DPM, lb		
	I-275	w/SR 60 to MLK	AM	SB	GU	7.70	77448	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003		
	I-275	w/SR 60 to MLK	AM	NB	GU	8.00	85439	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003		
	I-275	w/SR 60 to MLK	AM	SB	GU	7.70	77448	38		0.0719	0.0004	0.1396	0.0116	0.0489	0.0064	0.0668	0.0034	0.9762		
	I-275	w/SR 60 to MLK	AM	NB	GU	8.00	85439	23		0.0848	0.0008	0.2343	0.0186	0.0793	0.0107	0.1035	0.0034	1.2054		
									I-275 Totals	0.1567	0.0004	0.1396	0.0116	0.0489	0.0064	0.0668	0.0034	0.9765		
	I-4	I-275 to 50th	AM	WB	GU	3.33	34763	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003		
	I-4	I-275 to 50th	AM	EB	GU	3.00	33446	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
	I-4	I-275 to 50th	AM	WB	GU	3.33	34763	24		0.0334	0.0003	0.0914	0.0073	0.0309	0.0042	0.0404	0.0014	0.4787		
	I-4	I-275 to 50th	AM	EB	GU	3.00	33446	42		0.0315	0.0002	0.0555	0.0047	0.0196	0.0026	0.0274	0.0016	0.4223		
									I-4 Totals	0.0649	0.0003	0.0914	0.0073	0.0310	0.0042	0.0404	0.0014	0.4789		
									AM TOTAL	0.2216	0.0007	0.2310	0.0188	0.0798	0.0106	0.1072	0.0048	1.4554		2.1301
	I-275	w/SR 60 to MLK	PM	SB	GU	7.70	77614	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003		
	I-275	w/SR 60 to MLK	PM	NB	GU	8.00	86575	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003		
	I-275	w/SR 60 to MLK	PM	SB	GU	7.70	77614	38		0.0720	0.0004	0.1399	0.0116	0.0490	0.0064	0.0669	0.0034	0.9783		
	I-275	w/SR 60 to MLK	PM	NB	GU	8.00	86575	15		0.1180	0.0012	0.3572	0.0282	0.1195	0.0164	0.1525	0.0046	1.7720		
									I-275 Totals	0.1901	0.0004	0.1399	0.0116	0.0490	0.0064	0.0670	0.0034	0.9786		
	I-4	I-275 to 50th	PM	WB	GU	3.33	36812	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003		
	I-4	I-275 to 50th	PM	EB	GU	3.00	31098	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
	I-4	I-275 to 50th	PM	WB	GU	3.33	36812	10		0.0718	0.0008	0.2267	0.0178	0.0754	0.0104	0.0952	0.0029	1.1077		
	I-4	I-275 to 50th	PM	EB	GU	3.00	31098	49		0.0289	0.0001	0.0453	0.0039	0.0163	0.0021	0.0234	0.0015	0.3803		
									I-4 Totals	0.1008	0.0008	0.2267	0.0178	0.0754	0.0104	0.0953	0.0029	1.1079		
* if speed is < 40mph, assume 1 hour of idling									PM TOTAL	0.2908	0.0012	0.3666	0.0294	0.1244	0.0169	0.1622	0.0063	2.0865	Total	3.0844
								Highest peak hour - Lbs of Toxins in peak hour->	PM	0.2908	0.0012	0.3666	0.0294	0.1244	0.0169	0.1622	0.0063	2.0865	3.08	

2045 Design Option A Condition - Mainline during peak hours (AM or PM)

Link	Road	Limits	AM/PM	Direction (NB/SB or EB/WB)	General use or express lanes	Link length (mi)*	VMT, Veh-miles in hr	Speed (idling 2.5 or lowest speed)	Idling (Hr/day)*	BENZ, lb	BUTA, lb	FORM, lb	NAP, lb	ACE, lb	ACROL, lb	ETB, lb	POM, lb	DPM, lb		
	I-275	w/SR 60 to MLK	AM	SB	GU	7.70	66412	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
	I-275	w/SR 60 to MLK	AM	NB	GU	7.70	63300	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
	I-275	w/SR 60 to MLK	AM	SB	GU	7.70	66412	54		0.0588	0.0003	0.0881	0.0076	0.0319	0.0041	0.0465	0.0029	0.7681		
	I-275	w/SR 60 to MLK	AM	NB	GU	7.70	63300	42		0.0596	0.0003	0.1051	0.0088	0.0372	0.0049	0.0519	0.0029	0.7993		
	I-275	w/SR 60 to MLK	AM	SB	EX	7.20	11896	56		0.0103	0.0000	0.0152	0.0013	0.0055	0.0007	0.0081	0.0005	0.1346		
	I-275	w/SR 60 to MLK	AM	NB	EX	7.40	12573	57		0.0108	0.0000	0.0158	0.0014	0.0057	0.0007	0.0085	0.0005	0.1408		
									I-275 Totals	0.1396	0.0003	0.0881	0.0076	0.0319	0.0041	0.0465	0.0029	0.7681		
	I-4	I-275 to 50th	AM	WB	GU	3.30	25369	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
	I-4	I-275 to 50th	AM	EB	GU	3.10	25074	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
	I-4	I-275 to 50th	AM	WB	GU	3.30	25369	52		0.0230	0.0001	0.0350	0.0030	0.0126	0.0016	0.0183	0.0012	0.3007		
	I-4	I-275 to 50th	AM	EB	GU	3.10	25074	44		0.0237	0.0001	0.0401	0.0034	0.0142	0.0019	0.0201	0.0012	0.3161		
	I-4	I-275 to 50th	AM	WB	EX	2.50	9224	56		0.0080	0.0000	0.0118	0.0010	0.0043	0.0005	0.0063	0.0004	0.1043		
	I-4	I-275 to 50th	AM	EB	EX	3.00	8315	58		0.0071	0.0000	0.0102	0.0009	0.0037	0.0005	0.0055	0.0004	0.0922		
									I-4 Totals	0.0618	0.0001	0.0350	0.0030	0.0126	0.0016	0.0183	0.0012	0.3007		
									AM TOTAL	0.2014	0.0004	0.1231	0.0106	0.0445	0.0057	0.0648	0.0041	1.0688		1.5233
	I-275	w/SR 60 to MLK	PM	SB	GU	7.70	73862	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
	I-275	w/SR 60 to MLK	PM	NB	GU	7.70	65031	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
	I-275	w/SR 60 to MLK	PM	SB	GU	7.70	73862	53		0.0662	0.0003	0.0999	0.0086	0.0361	0.0046	0.0525	0.0033	0.8648		
	I-275	w/SR 60 to MLK	PM	NB	GU	7.70	65031	42		0.0612	0.0003	0.1080	0.0091	0.0382	0.0050	0.0533	0.0030	0.8212		
	I-275	w/SR 60 to MLK	PM	SB	EX	7.20	12102	57		0.0104	0.0000	0.0152	0.0013	0.0055	0.0007	0.0082	0.0005	0.1356		
	I-275	w/SR 60 to MLK	PM	NB	EX	7.40	13284	56		0.0115	0.0000	0.0170	0.0015	0.0062	0.0008	0.0091	0.0006	0.1503		
									I-275 Totals	0.1494	0.0003	0.0999	0.0086	0.0361	0.0046	0.0525	0.0033	0.8648		
	I-4	I-275 to 50th	PM	WB	GU	3.30	26087	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
	I-4	I-275 to 50th	PM	EB	GU	3.10	25418	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003		
	I-4	I-275 to 50th	PM	WB	GU	3.30	26087	52		0.0236	0.0001	0.0359	0.0031	0.0130	0.0017	0.0188	0.0012	0.3092		
	I-4	I-275 to 50th	PM	EB	GU	3.10	25418	29		0.0225	0.0002	0.0558	0.0045	0.0191	0.0026	0.0254	0.0010	0.3300		
	I-4	I-275 to 50th	PM	WB	EX	2.50	9731	56		0.0085	0.0000	0.0124	0.0011	0.0045	0.0006	0.0066	0.0004	0.1101		
	I-4	I-275 to 50th	PM	EB	EX	3.00	8356	58		0.0072	0.0000	0.0103	0.0009	0.0037	0.0005	0.0056	0.0004	0.0927		
									I-4 Totals	0.0617	0.0001	0.0359	0.0031	0.0130	0.0017	0.0188	0.0012	0.3092		
* if speed is < 40mph, assume 1 hour of idling									PM TOTAL	0.2111	0.0004	0.1358	0.0117	0.0491	0.0063	0.0713	0.0045	1.1740	Total	1.6642
								Highest peak hour - Lbs of Toxins in peak hour->	PM	0.2111	0.0004	0.1358	0.0117	0.0491	0.0063	0.0713	0.0045	1.1740	1.66	

2045 Design Option B Condition - Mainline during peak hours (AM or PM)

Link	Road	Limits	AM/PM	Direction (NB/SB or EB/WB)	General use or express lanes	Link length (mi)*	VMT, Veh-miles in hr	Speed (idling 2.5 or lowest speed)	Idling (Hr/day)*	BENZ, lb	BUTA, lb	FORM, lb	NAP, lb	ACE, lb	ACROL, lb	ETB, lb	POM, lb	DPM, lb		
	I-275	w/SR 60 to MLK	AM	SB	GU	7.70	67381	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
	I-275	w/SR 60 to MLK	AM	NB	GU	7.70	64031	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
	I-275	w/SR 60 to MLK	AM	SB	GU	7.70	67381	53		0.0604	0.0003	0.0911	0.0078	0.0329	0.0042	0.0479	0.0030	0.7889		
	I-275	w/SR 60 to MLK	AM	NB	GU	7.70	64031	41		0.0601	0.0003	0.1083	0.0091	0.0382	0.0050	0.0531	0.0030	0.8092		
	I-275	w/SR 60 to MLK	AM	SB	EX	5.60	9476	58		0.0081	0.0000	0.0117	0.0010	0.0042	0.0005	0.0063	0.0004	0.1051		
	I-275	w/SR 60 to MLK	AM	NB	EX	4.90	8978	58		0.0077	0.0000	0.0111	0.0010	0.0040	0.0005	0.0060	0.0004	0.0996		
									I-275 Totals	0.1363	0.0003	0.0911	0.0078	0.0329	0.0042	0.0479	0.0030	0.7889		
	I-4	I-275 to 50th	AM	WB	GU	3.30	27823	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
	I-4	I-275 to 50th	AM	EB	GU	3.10	28679	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003		
	I-4	I-275 to 50th	AM	WB	GU	3.30	27823	52		0.0252	0.0001	0.0383	0.0033	0.0138	0.0018	0.0201	0.0013	0.3298		
	I-4	I-275 to 50th	AM	EB	GU	3.10	28679	29		0.0253	0.0002	0.0630	0.0051	0.0215	0.0029	0.0287	0.0011	0.3723		
	I-4	I-275 to 50th	AM	WB	EX	2.50	6661	57		0.0057	0.0000	0.0084	0.0007	0.0030	0.0004	0.0045	0.0003	0.0746		
	I-4	I-275 to 50th	AM	EB	EX	3.00	4090	58		0.0035	0.0000	0.0050	0.0004	0.0018	0.0002	0.0027	0.0002	0.0454		
									I-4 Totals	0.0598	0.0001	0.0383	0.0033	0.0138	0.0018	0.0201	0.0013	0.3298		
									AM TOTAL	0.1961	0.0004	0.1295	0.0111	0.0467	0.0060	0.0680	0.0043	1.1187		1.5808
	I-275	w/SR 60 to MLK	PM	SB	GU	7.70	64419	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
	I-275	w/SR 60 to MLK	PM	NB	GU	7.70	66994	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
	I-275	w/SR 60 to MLK	PM	SB	GU	7.70	64419	55		0.0564	0.0002	0.0839	0.0072	0.0304	0.0039	0.0445	0.0028	0.7358		
	I-275	w/SR 60 to MLK	PM	NB	GU	7.70	66994	41		0.0629	0.0003	0.1133	0.0095	0.0400	0.0052	0.0556	0.0031	0.8466		
	I-275	w/SR 60 to MLK	PM	SB	EX	5.60	10661	58		0.0091	0.0000	0.0131	0.0011	0.0048	0.0006	0.0071	0.0004	0.1182		
	I-275	w/SR 60 to MLK	PM	NB	EX	4.90	8763	58		0.0075	0.0000	0.0108	0.0009	0.0039	0.0005	0.0058	0.0004	0.0972		
									I-275 Totals	0.1359	0.0002	0.0839	0.0072	0.0304	0.0039	0.0445	0.0028	0.7358		
	I-4	I-275 to 50th	PM	WB	GU	3.30	30241	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
	I-4	I-275 to 50th	PM	EB	GU	3.10	26254	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003		
	I-4	I-275 to 50th	PM	WB	GU	3.30	30241	53		0.0271	0.0001	0.0409	0.0035	0.0148	0.0019	0.0215	0.0014	0.3541		
	I-4	I-275 to 50th	PM	EB	GU	3.10	26254	17		0.0329	0.0003	0.0974	0.0077	0.0327	0.0045	0.0420	0.0013	0.4812		
	I-4	I-275 to 50th	PM	WB	EX	2.50	5393	58		0.0046	0.0000	0.0066	0.0006	0.0024	0.0003	0.0036	0.0002	0.0598		
	I-4	I-275 to 50th	PM	EB	EX	3.00	5860	57		0.0051	0.0000	0.0074	0.0006	0.0027	0.0003	0.0040	0.0003	0.0656		
									I-4 Totals	0.0697	0.0001	0.0409	0.0035	0.0148	0.0019	0.0215	0.0014	0.3541		
* if speed is < 40mph, assume 1 hour of idling									PM TOTAL	0.2056	0.0004	0.1248	0.0108	0.0451	0.0058	0.0660	0.0042	1.0899	Total	1.5525
								Highest peak hour - Lbs of Toxins in peak hour->	AM	0.1961	0.0004	0.1295	0.0111	0.0467	0.0060	0.0680	0.0043	1.1187	1.58	

2045 Design Option C Condition - Mainline during peak hours (AM or PM)

Link	Road	Limits	AM/PM	Direction (NB/SB or EB/WB)	General use or express lanes	Link length (mi)*	VMT, Veh-miles in hr	Speed (idling 2.5 or lowest speed)	Idling (Hr/day)*	BENZ, lb	BUTA, lb	FORM, lb	NAP, lb	ACE, lb	ACROL, lb	ETB, lb	POM, lb	DPM, lb		
	I-275	w/SR 60 to MLK	AM	SB	GU	7.70	70082	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
	I-275	w/SR 60 to MLK	AM	NB	GU	7.70	70668	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003		
	I-275	w/SR 60 to MLK	AM	SB	GU	7.70	70082	54		0.0621	0.0003	0.0930	0.0080	0.0336	0.0043	0.0491	0.0031	0.8105		
	I-275	w/SR 60 to MLK	AM	NB	GU	7.70	70668	20		0.0770	0.0007	0.2181	0.0173	0.0735	0.0100	0.0958	0.0030	1.0687		
	I-275	w/SR 60 to MLK	AM	SB	EX	5.90	10517	58		0.0090	0.0000	0.0130	0.0011	0.0047	0.0006	0.0070	0.0004	0.1166		
	I-275	w/SR 60 to MLK	AM	NB	EX	6.50	11543	58		0.0099	0.0000	0.0142	0.0012	0.0052	0.0007	0.0077	0.0005	0.1280		
									I-275 Totals	0.1580	0.0003	0.0930	0.0080	0.0336	0.0043	0.0491	0.0031	0.8105		
	I-4	I-275 to 50th	AM	WB	GU	3.30	25792	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
	I-4	I-275 to 50th	AM	EB	GU	3.20	27337	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
	I-4	I-275 to 50th	AM	WB	GU	3.30	25792	52		0.0234	0.0001	0.0355	0.0031	0.0128	0.0016	0.0186	0.0012	0.3057		
	I-4	I-275 to 50th	AM	EB	GU	3.20	27337	46		0.0258	0.0001	0.0421	0.0036	0.0150	0.0019	0.0214	0.0013	0.3419		
	I-4	I-275 to 50th	AM	WB	EX	2.60	7276	57		0.0063	0.0000	0.0091	0.0008	0.0033	0.0004	0.0049	0.0003	0.0815		
	I-4	I-275 to 50th	AM	EB	EX	3.20	8220	58		0.0070	0.0000	0.0101	0.0009	0.0037	0.0005	0.0055	0.0003	0.0912		
									I-4 Totals	0.0625	0.0001	0.0355	0.0031	0.0128	0.0016	0.0186	0.0012	0.3057		
									AM TOTAL	0.2204	0.0004	0.1286	0.0111	0.0465	0.0059	0.0677	0.0043	1.1162		1.6011
	I-275	w/SR 60 to MLK	PM	SB	GU	7.70	67487	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
	I-275	w/SR 60 to MLK	PM	NB	GU	7.70	74339	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003		
	I-275	w/SR 60 to MLK	PM	SB	GU	7.70	67487	52		0.0611	0.0003	0.0930	0.0080	0.0335	0.0043	0.0487	0.0031	0.7999		
	I-275	w/SR 60 to MLK	PM	NB	GU	7.70	74339	20		0.0810	0.0008	0.2294	0.0182	0.0773	0.0105	0.1008	0.0032	1.1242		
	I-275	w/SR 60 to MLK	PM	SB	EX	5.90	11822	58		0.0101	0.0000	0.0146	0.0013	0.0053	0.0007	0.0079	0.0005	0.1311		
	I-275	w/SR 60 to MLK	PM	NB	EX	6.50	11047	58		0.0095	0.0000	0.0136	0.0012	0.0050	0.0006	0.0074	0.0005	0.1225		
									I-275 Totals	0.1617	0.0003	0.0930	0.0080	0.0335	0.0043	0.0487	0.0031	0.7999		
	I-4	I-275 to 50th	PM	WB	GU	3.30	26571	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
	I-4	I-275 to 50th	PM	EB	GU	3.20	26540	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003		
	I-4	I-275 to 50th	PM	WB	GU	3.30	26571	45		0.0252	0.0001	0.0416	0.0035	0.0148	0.0019	0.0210	0.0013	0.3347		
	I-4	I-275 to 50th	PM	EB	GU	3.20	26540	34		0.0241	0.0002	0.0520	0.0042	0.0180	0.0024	0.0242	0.0011	0.3346		
	I-4	I-275 to 50th	PM	WB	EX	2.60	7533	58		0.0065	0.0000	0.0093	0.0008	0.0034	0.0004	0.0050	0.0003	0.0835		
	I-4	I-275 to 50th	PM	EB	EX	3.20	8268	58		0.0071	0.0000	0.0102	0.0009	0.0037	0.0005	0.0055	0.0003	0.0917		
									I-4 Totals	0.0628	0.0001	0.0416	0.0035	0.0148	0.0019	0.0210	0.0013	0.3347		
* if speed is < 40mph, assume 1 hour of idling									PM TOTAL	0.2245	0.0004	0.1346	0.0115	0.0484	0.0062	0.0697	0.0044	1.1346	Total	1.6343
								Highest peak hour - Lbs of Toxins in peak hour->	PM	0.2245	0.0004	0.1346	0.0115	0.0484	0.0062	0.0697	0.0044	1.1346	1.63	

2045 Design Option D Condition - Mainline during peak hours (AM or PM)

Link	Road	Limits	AM/PM	Direction (NB/SB or EB/WB)	General use or express lanes	Link length (mi)*	VMT, Veh-miles in hr	Speed (idling 2.5 or lowest speed)	Idling (Hr/day)*	BENZ, lb	BUTA, lb	FORM, lb	NAP, lb	ACE, lb	ACROL, lb	ETB, lb	POM, lb	DPM, lb		
	I-275	w/SR 60 to MLK	AM	SB	GU	7.70	70082	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
	I-275	w/SR 60 to MLK	AM	NB	GU	7.70	70668	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003		
	I-275	w/SR 60 to MLK	AM	SB	GU	7.70	70082	55		0.0613	0.0003	0.0912	0.0079	0.0330	0.0042	0.0484	0.0031	0.8005		
	I-275	w/SR 60 to MLK	AM	NB	GU	7.70	70668	20		0.0770	0.0007	0.2181	0.0173	0.0735	0.0100	0.0958	0.0030	1.0687		
	I-275	w/SR 60 to MLK	AM	SB	EX	6.00	10641	57		0.0092	0.0000	0.0134	0.0012	0.0049	0.0006	0.0072	0.0005	0.1192		
	I-275	w/SR 60 to MLK	AM	NB	EX	7.20	12779	56		0.0111	0.0000	0.0163	0.0014	0.0059	0.0008	0.0087	0.0006	0.1446		
									I-275 Totals	0.1586	0.0003	0.0912	0.0079	0.0330	0.0042	0.0484	0.0031	0.8005		
	I-4	I-275 to 50th	AM	WB	GU	3.30	25792	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
	I-4	I-275 to 50th	AM	EB	GU	3.20	27337	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
	I-4	I-275 to 50th	AM	WB	GU	3.30	25792	52		0.0234	0.0001	0.0355	0.0031	0.0128	0.0016	0.0186	0.0012	0.3057		
	I-4	I-275 to 50th	AM	EB	GU	3.20	27337	48		0.0256	0.0001	0.0406	0.0035	0.0145	0.0019	0.0208	0.0013	0.3368		
	I-4	I-275 to 50th	AM	WB	EX	2.30	6486	56		0.0056	0.0000	0.0083	0.0007	0.0030	0.0004	0.0044	0.0003	0.0734		
	I-4	I-275 to 50th	AM	EB	EX	2.60	6318	58		0.0054	0.0000	0.0078	0.0007	0.0028	0.0004	0.0042	0.0003	0.0701		
									I-4 Totals	0.0600	0.0001	0.0355	0.0031	0.0128	0.0016	0.0186	0.0012	0.3057		
									AM TOTAL	0.2186	0.0004	0.1268	0.0109	0.0459	0.0059	0.0670	0.0042	1.1062		1.5858
	I-275	w/SR 60 to MLK	PM	SB	GU	7.70	67487	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
	I-275	w/SR 60 to MLK	PM	NB	GU	7.70	74339	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003		
	I-275	w/SR 60 to MLK	PM	SB	GU	7.70	67487	54		0.0598	0.0003	0.0896	0.0077	0.0324	0.0041	0.0473	0.0030	0.7805		
	I-275	w/SR 60 to MLK	PM	NB	GU	7.70	74339	21		0.0786	0.0007	0.2209	0.0175	0.0745	0.0101	0.0972	0.0031	1.0990		
	I-275	w/SR 60 to MLK	PM	SB	EX	6.00	12105	57		0.0104	0.0000	0.0152	0.0013	0.0055	0.0007	0.0082	0.0005	0.1356		
	I-275	w/SR 60 to MLK	PM	NB	EX	7.20	12334	56		0.0107	0.0000	0.0158	0.0014	0.0057	0.0007	0.0084	0.0005	0.1395		
									I-275 Totals	0.1595	0.0003	0.0896	0.0077	0.0324	0.0041	0.0473	0.0030	0.7805		
	I-4	I-275 to 50th	PM	WB	GU	3.30	26571	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
	I-4	I-275 to 50th	PM	EB	GU	3.20	26540	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003		
	I-4	I-275 to 50th	PM	WB	GU	3.30	26571	47		0.0250	0.0001	0.0402	0.0034	0.0144	0.0019	0.0205	0.0013	0.3298		
	I-4	I-275 to 50th	PM	EB	GU	3.20	26540	27		0.0240	0.0002	0.0625	0.0050	0.0213	0.0029	0.0280	0.0010	0.3505		
	I-4	I-275 to 50th	PM	WB	EX	2.30	6612	56		0.0057	0.0000	0.0085	0.0007	0.0031	0.0004	0.0045	0.0003	0.0748		
	I-4	I-275 to 50th	PM	EB	EX	2.60	6635	58		0.0057	0.0000	0.0082	0.0007	0.0030	0.0004	0.0044	0.0003	0.0736		
									I-4 Totals	0.0604	0.0001	0.0402	0.0034	0.0144	0.0019	0.0205	0.0013	0.3298		
* if speed is < 40mph, assume 1 hour of idling									PM TOTAL	0.2200	0.0004	0.1297	0.0111	0.0468	0.0060	0.0678	0.0043	1.1104	Total	1.5964
								Highest peak hour - Lbs of Toxins in peak hour->	PM	0.2200	0.0004	0.1297	0.0111	0.0468	0.0060	0.0678	0.0043	1.1104	1.60	

2045 Design Option E Condition - Mainline during peak hours (AM or PM)

Link	Road	Limits	AM/PM	Direction (NB/SB or EB/WB)	General use or express lanes	Link length (mi)*	VMT, Veh-miles in hr	Speed (idling 2.5 or lowest speed)	Idling (Hr/day)*	BENZ, lb	BUTA, lb	FORM, lb	NAP, lb	ACE, lb	ACROL, lb	ETB, lb	POM, lb	DPM, lb		
	I-275	w/SR 60 to MLK	AM	SB	GU	7.30	62140	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
	I-275	w/SR 60 to MLK	AM	NB	GU	7.60	71409	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003		
	I-275	w/SR 60 to MLK	AM	SB	GU	7.30	62140	53		0.0557	0.0002	0.0840	0.0072	0.0304	0.0039	0.0442	0.0028	0.7276		
	I-275	w/SR 60 to MLK	AM	NB	GU	7.60	71409	24		0.0686	0.0006	0.1877	0.0149	0.0636	0.0086	0.0830	0.0028	0.9833		
	I-275	w/SR 60 to MLK	AM	SB	EX	3.70	8444	58		0.0072	0.0000	0.0104	0.0009	0.0038	0.0005	0.0056	0.0004	0.0937		
	I-275	w/SR 60 to MLK	AM	NB	EX	7.20	10796	57		0.0093	0.0000	0.0136	0.0012	0.0049	0.0006	0.0073	0.0005	0.1209		
									I-275 Totals	0.1408	0.0002	0.0840	0.0072	0.0304	0.0039	0.0442	0.0028	0.7276		
	I-4	I-275 to 50th	AM	WB	GU	3.30	30619	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003		
	I-4	I-275 to 50th	AM	EB	GU	3.20	34280	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003		
	I-4	I-275 to 50th	AM	WB	GU	3.30	30619	35		0.0280	0.0002	0.0588	0.0048	0.0204	0.0027	0.0275	0.0013	0.3840		
	I-4	I-275 to 50th	AM	EB	GU	3.20	34280	22		0.0351	0.0003	0.0979	0.0078	0.0331	0.0045	0.0432	0.0014	0.4952		
	I-4	I-275 to 50th	AM	WB	EX	0.00	0	56		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
	I-4	I-275 to 50th	AM	EB	EX	0.00	0	58		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
									I-4 Totals	0.0632	0.0002	0.0589	0.0048	0.0204	0.0027	0.0275	0.0013	0.3842		
									AM TOTAL	0.2040	0.0004	0.1429	0.0121	0.0508	0.0066	0.0717	0.0041	1.1118		1.6044
	I-275	w/SR 60 to MLK	PM	SB	GU	7.30	63234	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
	I-275	w/SR 60 to MLK	PM	NB	GU	7.60	70436	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003		
	I-275	w/SR 60 to MLK	PM	SB	GU	7.30	63234	54		0.0560	0.0002	0.0839	0.0072	0.0304	0.0039	0.0443	0.0028	0.7313		
	I-275	w/SR 60 to MLK	PM	NB	GU	7.60	70436	25		0.0654	0.0006	0.1771	0.0141	0.0600	0.0081	0.0785	0.0027	0.9461		
	I-275	w/SR 60 to MLK	PM	SB	EX	3.70	7928	58		0.0068	0.0000	0.0098	0.0008	0.0036	0.0005	0.0053	0.0003	0.0879		
	I-275	w/SR 60 to MLK	PM	NB	EX	7.20	11188	57		0.0097	0.0000	0.0140	0.0012	0.0051	0.0007	0.0075	0.0005	0.1253		
									I-275 Totals	0.1378	0.0002	0.0839	0.0072	0.0304	0.0039	0.0443	0.0028	0.7313		
	I-4	I-275 to 50th	PM	WB	GU	3.30	26571	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
	I-4	I-275 to 50th	PM	EB	GU	3.20	26540	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003		
	I-4	I-275 to 50th	PM	WB	GU	3.30	26571	47		0.0250	0.0001	0.0402	0.0034	0.0144	0.0019	0.0205	0.0013	0.3298		
	I-4	I-275 to 50th	PM	EB	GU	3.20	26540	27		0.0240	0.0002	0.0625	0.0050	0.0213	0.0029	0.0280	0.0010	0.3505		
	I-4	I-275 to 50th	PM	WB	EX	0.00	0	56		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
	I-4	I-275 to 50th	PM	EB	EX	0.00	0	58		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
									I-4 Totals	0.0490	0.0001	0.0402	0.0034	0.0144	0.0019	0.0205	0.0013	0.3298		
									PM TOTAL	0.1868	0.0004	0.1241	0.0107	0.0447	0.0057	0.0648	0.0041	1.0612	Total	1.5025
								Highest peak hour - Lbs of Toxins in peak hour->	AM	0.2040	0.0004	0.1429	0.0121	0.0508	0.0066	0.0717	0.0041	1.1118	1.60	

* if speed is < 40mph, assume 1 hour of idling

Appendix B - MSAT Analysis

MSAT calculations
Scenario Two
(Five links along I-275 and I-4)

2018 (existing)
2045 No-build (NFA)
2045 Build option A
2045 Build option B
2045 Build option C
2045 Build option D
2045 Build option E

Compare Existing Condition 2018 to 2045 NoFurther Action(NFA) to 2045 Design Options A, B, C, D & E

* Link with highest total emissions

Link	Road	Limits	Year	Condition	Worst time	Pk Hr Factor	Benzene, lb/Pk Hr	1,3-butadiene, lb/Pk Hr	Formaldehyde, lb/Pk Hr	Naphthalene, lb/Pk Hr	Acetaldehyde, lb/Pk Hr	Acrolein, lb/Pk Hr	Ethyl Benzene, lb/Pk Hr	POM, lb/Pk Hr	Diesel PM, lb/Pk Hr	Toxin Total lb/pk hr	
a	I-275	west of Lois e ramp	2018	Existing	PM	0.092	0.071	0.010	0.098	0.011	0.049	0.006	0.051	0.004	0.912	1.212	
a	I-275	west of Lois e ramp	2045	NFA	PM	0.096	0.008	0.000	0.019	0.002	0.006	0.001	0.009	0.000	0.108	0.152	
a	I-275	west of Lois e ramp	2045	Option A	PM	0.101	0.008	0.000	0.013	0.001	0.004	0.001	0.006	0.000	0.092	0.126	
a	I-275	west of Lois e ramp	2045	Option B	AM	0.100	0.008	0.000	0.011	0.001	0.004	0.001	0.006	0.000	0.091	0.121	
a	I-275	west of Lois e ramp	2045	Option C	AM	0.100	0.008	0.000	0.015	0.001	0.005	0.001	0.007	0.000	0.096	0.134	
a	I-275	west of Lois e ramp	2045	Option D	PM	0.101	0.009	0.000	0.017	0.001	0.006	0.001	0.008	0.000	0.101	0.143	
a	I-275	west of Lois e ramp	2045	Option E	PM	0.098	0.009	0.000	0.011	0.001	0.004	0.001	0.006	0.000	0.083	0.114	
b	I-275	Himes-Armenia	2018	Existing	PM	0.091	0.057	0.008	0.074	0.008	0.037	0.005	0.039	0.003	0.697	0.928	
b	I-275	Himes-Armenia	2045	NFA	PM	0.094	0.013	0.000	0.032	0.003	0.011	0.001	0.014	0.001	0.184	0.259	
b	I-275	Himes-Armenia	2045	Option A	AM	0.094	0.009	0.000	0.012	0.001	0.004	0.001	0.006	0.000	0.091	0.125	
b	I-275	Himes-Armenia	2045	Option B	AM	0.094	0.009	0.000	0.012	0.001	0.004	0.001	0.006	0.000	0.091	0.124	
b	I-275	Himes-Armenia	2045	Option C	AM	0.094	0.009	0.000	0.016	0.001	0.005	0.001	0.007	0.000	0.099	0.140	
b	I-275	Himes-Armenia	2045	Option D	PM	0.094	0.009	0.000	0.016	0.001	0.005	0.001	0.007	0.000	0.098	0.139	
b	I-275	Himes-Armenia	2045	Option E	PM	0.094	0.010	0.000	0.018	0.001	0.006	0.001	0.008	0.000	0.110	0.155	
c	I-275	Howard- Ashley	2018	Existing	PM	0.090	0.108	0.015	0.140	0.016	0.070	0.009	0.074	0.006	1.331	1.769	*
c	I-275	Howard- Ashley	2045	NFA	PM	0.093	0.025	0.000	0.065	0.005	0.022	0.003	0.029	0.001	0.360	0.509	*
c	I-275	Howard- Ashley	2045	Option A	PM	0.094	0.018	0.000	0.022	0.002	0.008	0.001	0.011	0.001	0.170	0.233	*
c	I-275	Howard- Ashley	2045	Option B	PM	0.094	0.018	0.000	0.021	0.002	0.007	0.001	0.010	0.001	0.168	0.228	*
c	I-275	Howard- Ashley	2045	Option C	PM	0.094	0.021	0.000	0.036	0.003	0.012	0.002	0.016	0.001	0.210	0.302	*
c	I-275	Howard- Ashley	2045	Option D	PM	0.094	0.021	0.000	0.036	0.003	0.012	0.002	0.016	0.001	0.210	0.301	*
c	I-275	Howard- Ashley	2045	Option E	PM	0.093	0.021	0.000	0.046	0.004	0.016	0.002	0.020	0.001	0.261	0.371	*
d	I-275	south of MLK	2018	Existing	PM	0.090	0.055	0.008	0.076	0.008	0.038	0.005	0.040	0.003	0.712	0.944	
d	I-275	south of MLK	2045	NFA	AM	0.090	0.009	0.000	0.020	0.002	0.007	0.001	0.009	0.000	0.121	0.168	
d	I-275	south of MLK	2045	Option A	PM	0.090	0.006	0.000	0.010	0.001	0.004	0.000	0.005	0.000	0.080	0.106	
d	I-275	south of MLK	2045	Option B	PM	0.075	0.005	0.000	0.008	0.001	0.003	0.000	0.004	0.000	0.070	0.093	
d	I-275	south of MLK	2045	Option C	PM	0.090	0.006	0.000	0.012	0.001	0.004	0.001	0.006	0.000	0.086	0.115	
d	I-275	south of MLK	2045	Option D	PM	0.090	0.007	0.000	0.012	0.001	0.004	0.001	0.006	0.000	0.088	0.118	
d	I-275	south of MLK	2045	Option E	AM	0.090	0.007	0.000	0.011	0.001	0.004	0.001	0.006	0.000	0.091	0.121	
e	I-4	Selmon-Columbus	2018	Existing	PM	0.088	0.045	0.005	0.045	0.005	0.024	0.003	0.027	0.002	0.507	0.664	
e	I-4	Selmon-Columbus	2045	NFA	PM	0.089	0.019	0.000	0.049	0.004	0.016	0.002	0.021	0.001	0.274	0.386	
e	I-4	Selmon-Columbus	2045	Option A	AM	0.072	0.010	0.000	0.013	0.001	0.005	0.001	0.006	0.000	0.089	0.125	
e	I-4	Selmon-Columbus	2045	Option B	PM	0.074	0.012	0.000	0.021	0.002	0.007	0.001	0.010	0.000	0.124	0.178	
e	I-4	Selmon-Columbus	2045	Option C	PM	0.073	0.012	0.000	0.019	0.002	0.006	0.001	0.009	0.000	0.109	0.158	
e	I-4	Selmon-Columbus	2045	Option D	PM	0.073	0.011	0.000	0.017	0.001	0.006	0.001	0.008	0.000	0.100	0.144	

Calculating peak hour factors to convert from AADT calculations to Peak Hr Calculations

						AADT	DDHV	Peak Hr Factor
a	I-275	west of Lois e ramp	2018	Existing	PM	186000	19120	0.103
a	I-275	west of Lois e ramp	2045	NFA	PM	203000	19390	0.096
a	I-275	west of Lois e ramp	2045	Option A	PM	220315	22330	0.101
a	I-275	west of Lois e ramp	2045	Option B	AM	220315	22050	0.100
a	I-275	west of Lois e ramp	2045	Option C	AM	220315	22050	0.100
a	I-275	west of Lois e ramp	2045	Option D	AM	220315	22330	0.101
a	I-275	west of Lois e ramp	2045	Option E	AM	243925	23895	0.098
b	I-275	Himes-Armenia	2018	Existing	PM	248000	22455	0.091
b	I-275	Himes-Armenia	2045	NFA	PM	298200	27920	0.094
b	I-275	Himes-Armenia	2045	Option A	AM	302550	28485	0.094
b	I-275	Himes-Armenia	2045	Option B	AM	302550	28485	0.094
b	I-275	Himes-Armenia	2045	Option C	AM	302550	28485	0.094
b	I-275	Himes-Armenia	2045	Option D	PM	302550	28485	0.094
b	I-275	Himes-Armenia	2045	Option E	PM	302700	28440	0.094
c	I-275	Howard- Ashley	2018	Existing	PM	246800	22310	0.090
c	I-275	Howard- Ashley	2045	NFA	PM	288200	26920	0.093
c	I-275	Howard- Ashley	2045	Option A	PM	308440	29015	0.094
c	I-275	Howard- Ashley	2045	Option B	PM	308440	29015	0.094
c	I-275	Howard- Ashley	2045	Option C	PM	308440	29015	0.094
c	I-275	Howard- Ashley	2045	Option D	PM	308440	29015	0.094
c	I-275	Howard- Ashley	2045	Option E	PM	292120	27310	0.093
d	I-275	south of MLK	2018	Existing	PM	177600	16000	0.090
d	I-275	south of MLK	2045	NFA	AM	248000	22300	0.090
d	I-275	south of MLK	2045	Option A	PM	229360	20600	0.090
d	I-275	south of MLK	2045	Option B	PM	229360	17150	0.075
d	I-275	south of MLK	2045	Option C	PM	229360	20600	0.090
d	I-275	south of MLK	2045	Option D	PM	229360	20600	0.090
d	I-275	south of MLK	2045	Option E	PM	248340	22320	0.090
e	I-4	Selmon-Columbus	2018	Existing	PM	175600	15425	0.088
e	I-4	Selmon-Columbus	2045	NFA	PM	276000	24580	0.089
e	I-4	Selmon-Columbus	2045	Option A	AM	298400	21350	0.072
e	I-4	Selmon-Columbus	2045	Option B	PM	298400	22060	0.074
e	I-4	Selmon-Columbus	2045	Option C	PM	303030	22215	0.073
e	I-4	Selmon-Columbus	2045	Option D	PM	303030	22215	0.073
e	I-4	Selmon-Columbus	2045	Option E	PM	275370	24680	0.090

2018 Existing Conditions

Link	Road	Limits	AM/PM	Direction (NB/SB or EB/WB)	General use or express lanes	Link length (mi)*	AADT	VMT, miles/day	Speed (idling 2.5 or lowest speed)	Idling (Hr/day)	BENZ, lb	BUTA, lb	FORM, lb	NAP, lb	ACE, lb	ACROL, lb	ETB, lb	POM, lb	DPM, lb		
a	I-275	west of Lois exit	AM	SB	GU	0.36	93000	33906	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
a	I-275	west of Lois exit	AM	SB	GU	0.36	93000	33906	56		0.1814	0.0217	0.1799	0.0209	0.0942	0.0113	0.1053	0.0089	2.0133		
										NBTotals	0.1814	0.0217	0.1799	0.0209	0.0942	0.0113	0.1053	0.0089	2.0133		
a	I-275	west of Lois ent	AM	NB	GU	0.43	93000	39983	2.5	1	0.0001	0.0000	0.0001	0.0000	0.0001	0.0000	0.0001	0.0000	0.0014		
a	I-275	west of Lois ent	AM	NB	GU	0.43	93000	39983	50		0.2260	0.0271	0.2279	0.0263	0.1188	0.0143	0.1327	0.0114	2.5388		
										NB Totals	0.2261	0.0272	0.2281	0.0264	0.1188	0.0143	0.1328	0.0114	2.5402		
										AM TOTAL	0.4075	0.0489	0.4080	0.0472	0.2130	0.0256	0.2381	0.0203	4.5536		5.9622
a	I-275	west of Lois exit	PM	SB	GU	0.36	93000	33906	2.5	1	0.0001	0.0000	0.0001	0.0000	0.0001	0.0000	0.0001	0.0000	0.0014		
a	I-275	west of Lois exit	PM	SB	GU	0.36	93000	33906	18		0.2856	0.0407	0.3811	0.0422	0.1909	0.0243	0.2012	0.0159	3.5686		
										SB Totals	0.2857	0.0407	0.3812	0.0422	0.1910	0.0243	0.2013	0.0160	3.5700		
a	I-275	west of Lois ent	PM	NB	GU	0.43	93000	39983	2.5	1	0.0001	0.0000	0.0001	0.0000	0.0001	0.0000	0.0001	0.0000	0.0014		
a	I-275	west of Lois ent	PM	NB	GU	0.43	93000	39983	11		0.4833	0.0701	0.6852	0.0753	0.3394	0.0439	0.3563	0.0285	6.3273		
										NB Totals	0.4834	0.0702	0.6853	0.0753	0.3395	0.0439	0.3564	0.0285	6.3287		
										PM TOTAL	0.7691	0.1109	1.0665	0.1176	0.5305	0.0683	0.5577	0.0445	9.8987	Total	13.1637
			Worst case applied for whole day - Lbs of Toxins in day (24 hrs x worst case)							PM	0.7691	0.1109	1.0665	0.1176	0.5305	0.0683	0.5577	0.0445	9.8987	13.16	
																				lbs/day	
b	I-275	Himes-Armenia	AM	SB	GU	0.36	124000	44739	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
b	I-275	Himes-Armenia	AM	SB	GU	0.36	124000	44739	42		0.2649	0.0329	0.2818	0.0323	0.1456	0.0177	0.1605	0.0136	3.0318		
										NBTotals	0.2649	0.0329	0.2818	0.0323	0.1456	0.0177	0.1605	0.0136	3.0318		
b	I-275	Himes-Armenia	AM	NB	GU	0.34	124000	41686	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
b	I-275	Himes-Armenia	AM	NB	GU	0.34	124000	41686	53		0.2290	0.0275	0.2292	0.0265	0.1197	0.0144	0.1337	0.0114	2.5586		
										NB Totals	0.2290	0.0275	0.2292	0.0265	0.1197	0.0144	0.1337	0.0114	2.5586		
										AM TOTAL	0.4940	0.0604	0.5110	0.0588	0.2653	0.0321	0.2942	0.0250	5.5904		7.3312
b	I-275	Himes-Armenia	PM	SB	GU	0.36	124000	44739	2.5	1	0.0001	0.0000	0.0001	0.0000	0.0001	0.0000	0.0001	0.0000	0.0014		
b	I-275	Himes-Armenia	PM	SB	GU	0.36	124000	44739	23		0.3158	0.0443	0.4094	0.0455	0.2059	0.0261	0.2171	0.0173	3.8816		
										SB Totals	0.3159	0.0443	0.4096	0.0455	0.2060	0.0261	0.2172	0.0173	3.8830		
b	I-275	Himes-Armenia	PM	NB	GU	0.34	124000	41686	2.5	1	0.0001	0.0000	0.0001	0.0000	0.0001	0.0000	0.0001	0.0000	0.0014		
b	I-275	Himes-Armenia	PM	NB	GU	0.34	124000	41686	21		0.3111	0.0438	0.4080	0.0453	0.2048	0.0260	0.2159	0.0172	3.8137		
										NB Totals	0.3112	0.0439	0.4081	0.0453	0.2049	0.0260	0.2160	0.0172	3.8151		
										PM TOTAL	0.6271	0.0882	0.8177	0.0908	0.4109	0.0521	0.4332	0.0345	7.6981	Total	10.2525
			Worst case applied for whole day - Lbs of Toxins in day (24 hrs x worst case)							PM	0.6271	0.0882	0.8177	0.0908	0.4109	0.0521	0.4332	0.0345	7.6981	10.25	
																				lbs/day	
c	I-275	Howard- Ashley	AM	SB	GU	0.61	123400	74788	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
c	I-275	Howard- Ashley	AM	SB	GU	0.61	123400	74788	44		0.4396	0.0540	0.4594	0.0527	0.2381	0.0288	0.2637	0.0225	5.0084		
										NBTotals	0.4396	0.0540	0.4594	0.0527	0.2381	0.0288	0.2637	0.0225	5.0084		
c	I-275	Howard- Ashley	AM	NB	GU	0.79	123400	96874	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
c	I-275	Howard- Ashley	AM	NB	GU	0.79	123400	96874	55		0.5220	0.0626	0.5198	0.0602	0.2719	0.0326	0.3037	0.0258	5.8089		
										NB Totals	0.5220	0.0626	0.5198	0.0602	0.2719	0.0326	0.3037	0.0258	5.8089		
										AM TOTAL	0.9616	0.1166	0.9792	0.1130	0.5099	0.0614	0.5673	0.0482	10.8174		14.1745
c	I-275	Howard- Ashley	PM	SB	GU	0.61	123400	74788	2.5	1	0.0001	0.0000	0.0001	0.0000	0.0001	0.0000	0.0001	0.0000	0.0014		
c	I-275	Howard- Ashley	PM	SB	GU	0.61	123400	74788	24		0.5128	0.0717	0.6606	0.0735	0.3326	0.0420	0.3506	0.0280	6.3120		
										SB Totals	0.5129	0.0717	0.6608	0.0735	0.3327	0.0421	0.3507	0.0280	6.3134		
c	I-275	Howard- Ashley	PM	NB	GU	0.79	123400	96874	2.5	1	0.0001	0.0000	0.0001	0.0000	0.0001	0.0000	0.0001	0.0000	0.0014		
c	I-275	Howard- Ashley	PM	NB	GU	0.79	123400	96874	23		0.6838	0.0959	0.8865	0.0985	0.4459	0.0565	0.4700	0.0375	8.4048		
										NB Totals	0.6839	0.0959	0.8867	0.0985	0.4460	0.0565	0.4701	0.0375	8.4063		
										PM TOTAL	1.1968	0.1676	1.5474	0.1720	0.7787	0.0985	0.8208	0.0655	14.7196	Total	19.5670
			Worst case applied for whole day - Lbs of Toxins in day (24 hrs x worst case)							PM	1.1968	0.1676	1.5474	0.1720	0.7787	0.0985	0.8208	0.0655	14.7196	19.57	
																				lbs/day	
d	I-275	south of MLK	AM	SB	GU	0.28	88800	25227	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
d	I-275	south of MLK	AM	SB	GU	0.28	88800	25227	50		0.1426	0.0171	0.1438	0.0166	0.0749	0.0090	0.0837	0.0072	1.6019		
										NBTotals	0.1426	0.0171	0.1438	0.0166	0.0749	0.0090	0.0837	0.0072	1.6019		
d	I-275	south of MLK	AM	NB	GU	0.41	88800	35991	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
d	I-275	south of MLK	AM	NB	GU	0.41	88800	35991	52		0.1996	0.0240	0.2003	0.0232	0.1045	0.0126	0.1168	0.0100	2.2345		
										NB Totals	0.1996	0.0240	0.2003	0.0232	0.1045	0.0126	0.1168	0.0100	2.2345		
										AM TOTAL	0.3422	0.0411	0.3442	0.0398	0.1795	0.0216	0.2005	0.0172	3.8363		5.0223
d	I-275	south of MLK	PM	SB	GU	0.28	88800	25227	2.5	1	0.0001	0.0000	0.0001	0.0000	0.0001	0.0000	0.0001	0.0000	0.0014		
d	I-275	south of MLK	PM	SB	GU	0.28	88800	25227	31		0.1550	0.0209	0.1863	0.0209	0.0947	0.0118	0.1012	0.0082	1.8867		
										SB Totals	0.1551	0.0209	0.1864	0.0209	0.0948	0.0118	0.1013	0.0082	1.8881		
d	I-275	south of MLK	PM	NB	GU	0.41	88800	35991	2.5	1	0.0001	0.0000	0.0001	0.0000	0.0001	0.0000	0.0001	0.0000	0.0014		
d	I-275	south of MLK	PM	NB	GU	0.41	88800	35991	10		0.4579	0.0666	0.6545	0.0719	0.3237	0.0420	0.3395	0.0272	6.0185		
										NB Totals	0.4580	0.0666	0.6547	0.0719	0.3237	0.0420	0.3396	0.0272	6.0200		
										PM TOTAL	0.6131	0.0874	0.8411	0.0928	0.4185	0.0538	0.4409	0.0354	7.9081	Total	10.4912
			Worst case applied for whole day - Lbs of Toxins in day (24 hrs x worst case)							PM	0.6131	0.0874	0.8411	0.0928	0.4185	0.0538	0.4409	0.0354	7.9081	10.49	
																				lbs/day	
e	I-4	Selmon-Columbus	AM	WB	GU	0.50	87800	44066	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
e	I-4	Selmon-Columbus	AM	WB	GU	0.50	87800	44066	53		0.2421	0.0290	0.2423	0.0281	0.1266	0.0152	0.1414	0.0120	2.7047		
										NBTotals	0.2421	0.0290	0.2423	0.0281	0.1266	0.0152	0.1414	0.0120	2.7047		
e	I-4	Selmon-Columbus	AM	EB	GU	0.58	87800	51134	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
e	I-4	Selmon-Columbus	AM	EB	GU	0.58	87800	51134	55		0.2755	0.0330	0.2743	0.0318	0.1435	0.0172	0.1603	0.0136	3.0662		
										NB Totals	0.2755	0.0330	0.2743	0.0318	0.1435	0.0172	0.1603	0.0136	3.0662		
										AM TOTAL	0.5176	0.0621	0.5167	0.0598	0.2701	0.0324	0.3017	0.0256	5.7708		7.5568
e	I-4	Selmon-Columbus	PM	WB	GU	0.50	87800	44066	2.5	1	0.0001	0.0000	0.0001	0.0000	0.0001	0.0000	0.0001	0.0000	0.0014		
e	I-4	Selmon-Columbus	PM	WB	GU	0.50	87800	44066	53		0.2421	0.0290	0.2423	0.0281	0.1266	0.0152	0.1414	0.0120	2.7047		
										SB Totals	0.2422	0.0291	0.2425	0.0281	0.1266	0.0152	0.1415	0.0121	2.7061		
e	I-4	Selmon-Columbus	PM	EB	GU	0.58	87800	51134	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
e	I-4	Selmon-Columbus	PM	EB	GU	0.58	87800	51134	55		0.2755	0.0330	0.2743	0.0318	0.1435	0.0172	0.1603	0.0136	3.0662		
			for link e - assume same speeds as 2025 NB - no 2018 speeds available							NB Totals	0.2755	0.0330	0.2743	0.0318	0.1435	0.0172	0.1603	0.0136	3.0662		
										PM TOTAL	0.5177	0.0621	0.5168	0.0599	0.2701	0.0324	0.3017	0.0256	5.7723	Total	7.5587
			Worst case applied for whole day - Lbs of Toxins in day (24 hrs x worst case)							PM	0.5177	0.0621	0.5168	0.0599	0.2701	0.0324	0.3017	0.0256	5.7723	7.56	
																				lbs/day	

* held all link lengths the same for consistency in comparisons

61.03

2045 No further action (NFA) condition

Link	Road	Limits	AM/PM	Direction (NB/SB or EB/WB)	General use or express lanes	Link length (mi)*	AADT	VMT, miles/day	Speed (idling 2.5 or lowest speed)	Idling (Hr/day)	BENZ, lb	BUTA, lb	FORM, lb	NAP, lb	ACE, lb	ACROL, lb	ETB, lb	POM, lb	DPM, lb		
a	I-275	west of Lois exit	AM	SB	GU	0.36	101500	37005	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
a	I-275	west of Lois exit	AM	SB	GU	0.36	101500	37005	57		0.0319	0.0001	0.0465	0.0040	0.0169	0.0022	0.0250	0.0016	0.4145		
										SB Totals	0.0319	0.0001	0.0465	0.0040	0.0169	0.0022	0.0250	0.0016	0.4145		
a	I-275	west of Lois ent	AM	NB	GU	0.43	101500	43637	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003		
a	I-275	west of Lois ent	AM	NB	GU	0.43	101500	43637	20		0.0475	0.0005	0.1346	0.0107	0.0454	0.0062	0.0592	0.0019	0.6599		
										NB Totals	0.0476	0.0005	0.1347	0.0107	0.0454	0.0062	0.0592	0.0019	0.6602		
										AM TOTAL	0.0795	0.0006	0.1812	0.0147	0.0623	0.0083	0.0842	0.0034	1.0747		1.5088
a	I-275	west of Lois exit	PM	SB	GU	0.36	101500	37005	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
a	I-275	west of Lois exit	PM	SB	GU	0.36	101500	37005	41		0.0348	0.0002	0.0626	0.0052	0.0221	0.0029	0.0307	0.0017	0.4676		
										SB Totals	0.0348	0.0002	0.0626	0.0052	0.0221	0.0029	0.0307	0.0017	0.4676		
a	I-275	west of Lois ent	PM	NB	GU	0.43	101500	43637	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003		
a	I-275	west of Lois ent	PM	NB	GU	0.43	101500	43637	20		0.0475	0.0005	0.1346	0.0107	0.0454	0.0062	0.0592	0.0019	0.6599		
										NB Totals	0.0476	0.0005	0.1347	0.0107	0.0454	0.0062	0.0592	0.0019	0.6602		
										PM TOTAL	0.0823	0.0006	0.1973	0.0159	0.0675	0.0091	0.0899	0.0036	1.1278	Total	1.5940
									Worst case applied for whole day - Lbs of Toxins in day (24 hrs x worst case)	PM	0.0823	0.0006	0.1973	0.0159	0.0675	0.0091	0.0899	0.0036	1.1278	1.59	
																				lbs/day	
b	I-275	Himes-Armenia	AM	SB	GU	0.36	149100	53795	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
b	I-275	Himes-Armenia	AM	SB	GU	0.36	149100	53795	54		0.0476	0.0002	0.0714	0.0062	0.0258	0.0033	0.0377	0.0024	0.6222		
										SB Totals	0.0476	0.0002	0.0714	0.0062	0.0258	0.0033	0.0377	0.0024	0.6222		
b	I-275	Himes-Armenia	AM	NB	GU	0.34	149100	50124	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003		
b	I-275	Himes-Armenia	AM	NB	GU	0.34	149100	50124	23		0.0498	0.0005	0.1375	0.0109	0.0465	0.0063	0.0607	0.0020	0.7071		
										NB Totals	0.0498	0.0005	0.1375	0.0109	0.0465	0.0063	0.0607	0.0020	0.7074		
										AM TOTAL	0.0974	0.0007	0.2089	0.0171	0.0723	0.0096	0.0984	0.0044	1.3296		1.8384
b	I-275	Himes-Armenia	PM	SB	GU	0.36	149100	53795	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
b	I-275	Himes-Armenia	PM	SB	GU	0.36	149100	53795	50		0.0498	0.0002	0.0768	0.0066	0.0277	0.0036	0.0399	0.0025	0.6530		
										SB Totals	0.0498	0.0002	0.0768	0.0066	0.0277	0.0036	0.0399	0.0025	0.6530		
b	I-275	Himes-Armenia	PM	NB	GU	0.34	149100	50124	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003		
b	I-275	Himes-Armenia	PM	NB	GU	0.34	149100	50124	12		0.0860	0.0009	0.2679	0.0211	0.0893	0.0123	0.1131	0.0034	1.3153		
										NB Totals	0.0860	0.0009	0.2679	0.0211	0.0893	0.0123	0.1132	0.0034	1.3156		
										PM TOTAL	0.1358	0.0011	0.3448	0.0277	0.1169	0.0159	0.1531	0.0059	1.9685	Total	2.7698
									Worst case applied for whole day - Lbs of Toxins in day (24 hrs x worst case)	PM	0.1358	0.0011	0.3448	0.0277	0.1169	0.0159	0.1531	0.0059	1.9685	2.77	
																				lbs/day	
c	I-275	Howard- Ashley	AM	SB	GU	0.61	144100	87333	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
c	I-275	Howard- Ashley	AM	SB	GU	0.61	144100	87333	49		0.0813	0.0004	0.1272	0.0109	0.0457	0.0059	0.0657	0.0041	1.0681		
										SB Totals	0.0813	0.0004	0.1272	0.0109	0.0457	0.0059	0.0657	0.0041	1.0681		
c	I-275	Howard- Ashley	AM	NB	GU	0.79	144100	113124	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003		
c	I-275	Howard- Ashley	AM	NB	GU	0.79	144100	113124	22		0.1160	0.0011	0.3232	0.0256	0.1092	0.0148	0.1425	0.0046	1.6342		
										NB Totals	0.1160	0.0011	0.3232	0.0256	0.1092	0.0148	0.1425	0.0046	1.6345		
										AM TOTAL	0.1972	0.0015	0.4504	0.0365	0.1549	0.0207	0.2082	0.0087	2.7026		3.7807
c	I-275	Howard- Ashley	PM	SB	GU	0.61	144100	87333	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
c	I-275	Howard- Ashley	PM	SB	GU	0.61	144100	87333	45		0.0828	0.0004	0.1368	0.0116	0.0488	0.0063	0.0691	0.0042	1.1002		
										SB Totals	0.0828	0.0004	0.1368	0.0116	0.0488	0.0063	0.0691	0.0042	1.1002		
c	I-275	Howard- Ashley	PM	NB	GU	0.79	144100	113124	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003		
c	I-275	Howard- Ashley	PM	NB	GU	0.79	144100	113124	13		0.1808	0.0019	0.5586	0.0440	0.1864	0.0257	0.2367	0.0072	2.7508		
										NB Totals	0.1808	0.0019	0.5587	0.0440	0.1864	0.0257	0.2367	0.0072	2.7510		
										PM TOTAL	0.2635	0.0023	0.6955	0.0556	0.2352	0.0320	0.3058	0.0113	3.8512	Total	5.4524
									Worst case applied for whole day - Lbs of Toxins in day (24 hrs x worst case)	PM	0.2635	0.0023	0.6955	0.0556	0.2352	0.0320	0.3058	0.0113	3.8512	5.45	
																				lbs/day	
d	I-275	south of MLK	AM	SB	GU	0.28	124000	35227	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003		
d	I-275	south of MLK	AM	SB	GU	0.28	124000	35227	15		0.0480	0.0005	0.1453	0.0115	0.0486	0.0067	0.0621	0.0019	0.7210		
										SB Totals	0.0480	0.0005	0.1454	0.0115	0.0487	0.0067	0.0621	0.0019	0.7213		
d	I-275	south of MLK	AM	NB	GU	0.41	124000	50258	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
d	I-275	south of MLK	AM	NB	GU	0.41	124000	50258	48		0.0470	0.0002	0.0746	0.0064	0.0267	0.0034	0.0383	0.0024	0.6193		
										NB Totals	0.0470	0.0002	0.0746	0.0064	0.0267	0.0034	0.0383	0.0024	0.6193		
										AM TOTAL	0.0950	0.0007	0.2200	0.0178	0.0754	0.0101	0.1004	0.0043	1.3405		1.8642
d	I-275	south of MLK	PM	SB	GU	0.28	124000	35227	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003		
d	I-275	south of MLK	PM	SB	GU	0.28	124000	35227	49		0.0328	0.0002	0.0513	0.0044	0.0184	0.0024	0.0265	0.0017	0.4308		
										SB Totals	0.0328	0.0002	0.0513	0.0044	0.0184	0.0024	0.0265	0.0017	0.4311		
d	I-275	south of MLK	PM	NB	GU	0.41	124000	50258	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
d	I-275	south of MLK	PM	NB	GU	0.41	124000	50258	50		0.0466	0.0002	0.0718	0.0062	0.0258	0.0033	0.0373	0.0024	0.6101		
										NB Totals	0.0466	0.0002	0.0718	0.0062	0.0258	0.0033	0.0373	0.0024	0.6101		
										PM TOTAL	0.0794	0.0004	0.1231	0.0106	0.0443	0.0057	0.0638	0.0040	1.0411	Total	1.3724
									Worst case applied for whole day - Lbs of Toxins in day (24 hrs x worst case)	AM	0.0950	0.0007	0.2200	0.0178	0.0754	0.0101	0.1004	0.0043	1.3405	1.86	
																				lbs/day	
e	I-4	Selmon-Columbus	AM	WB	GU	0.50	138000	69261	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003		
e	I-4	Selmon-Columbus	AM	WB	GU	0.50	138000	69261	23		0.0688	0.0006	0.1900	0.0151	0.0642	0.0087	0.0839	0.0028	0.9771		
										SB Totals	0.0688	0.0006	0.1900	0.0151	0.0643	0.0087	0.0839	0.0028	0.9774		
e	I-4	Selmon-Columbus	AM	EB	GU	0.58	138000	80369	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003		
e	I-4	Selmon-Columbus	AM	EB	GU	0.58	138000	80369	34		0.0728	0.0005	0.1576	0.0129	0.0546	0.0072	0.0733	0.0033	1.0132		
										NB Totals	0.0729	0.0005	0.1576	0.0129	0.0546	0.0072	0.0733	0.0033	1.0134		
										AM TOTAL	0.1416	0.0011	0.3476	0.0280	0.1188	0.0160	0.1572	0.0061	1.9908		2.8073
e	I-4	Selmon-Columbus	PM	WB	GU	0.50	138000	69261	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003		
e	I-4	Selmon-Columbus	PM	WB	GU	0.50	138000	69261	10		0.1351	0.0015	0.4265	0.0335	0.1418	0.0196	0.1792	0.0054	2.0841		
										SB Totals	0.1351	0.0015	0.4265	0.0335	0.1418	0.0196	0.1792	0.0054	2.0844		
e	I-4	Selmon-Columbus	PM	EB	GU	0.58	138000	80369	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003		
e	I-4	Selmon-Columbus	PM	EB	GU	0.58	138000	80369	48		0.0751	0.0004	0.1192	0.0102	0.0427	0.0055	0.0612	0.0038	0.9903		
										NB Totals	0.0752	0.0004	0.1193	0.0102	0.0428	0.0055	0.0612	0.0038	0.9906		
										PM TOTAL	0.2102	0.0018	0.5458	0.0437	0.1846	0.0251	0.2405	0.0092	3.0749	Total	4.3360
									Worst case applied for whole day - Lbs of Toxins in day (24 hrs x worst case)	PM	0.2102	0.0018	0.5458	0.0437	0.1846	0.0251	0.2405	0.0092	3.0749	4.34	
																				lbs/day	

* held all link lengths the same for consistency in comparisons

2045 Design Option A condition

Link	Road	Limits	AM/PM	Direction (NB/SB or EB/WB)	General use or express lanes	Link length (mi)*	AADT	VMT, miles/day	Speed (idling 2.5 or lowest speed)	Idling (Hr/day)	BENZ, lb	BUTA, lb	FORM, lb	NAP, lb	ACE, lb	ACROL, lb	ETB, lb	POM, lb	DPM, lb	
a	I-275	west of Lois exit	AM	SB	GU	0.36	93855	34218	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
a	I-275	west of Lois exit	AM	SB	EXP	0.36	16303	5944	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
a	I-275	west of Lois exit	AM	SB	GU	0.36	93855	34218	54		0.0303	0.0001	0.0454	0.0039	0.0164	0.0021	0.0240	0.0015	0.3957	
a	I-275	west of Lois exit	AM	SB	EXP	0.36	16303	5944	58		0.0051	0.0000	0.0073	0.0006	0.0027	0.0003	0.0040	0.0003	0.0659	
										SB Totals	0.0354	0.0001	0.0454	0.0039	0.0164	0.0021	0.0240	0.0015	0.3957	
a	I-275	west of Lois ent	AM	NB	GU	0.43	93855	40351	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
a	I-275	west of Lois ent	AM	NB	EXP	0.43	16303	7009	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
a	I-275	west of Lois ent	AM	NB	GU	0.43	93855	40351	45		0.0382	0.0002	0.0632	0.0054	0.0225	0.0029	0.0319	0.0019	0.5083	
a	I-275	west of Lois ent	AM	NB	EXP	0.43	16303	7009	56		0.0061	0.0000	0.0090	0.0008	0.0033	0.0004	0.0048	0.0003	0.0793	
										NB Totals	0.0443	0.0002	0.0632	0.0054	0.0225	0.0029	0.0319	0.0019	0.5083	
										AM TOTAL	0.0797	0.0003	0.1086	0.0093	0.0390	0.0050	0.0559	0.0034	0.9040	
a	I-275	west of Lois exit	PM	SB	GU	0.36	93855	34218	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
a	I-275	west of Lois exit	PM	SB	EXP	0.36	16303	5944	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
a	I-275	west of Lois exit	PM	SB	GU	0.36	93855	34218	52		0.0310	0.0001	0.0471	0.0041	0.0170	0.0022	0.0247	0.0016	0.4055	
a	I-275	west of Lois exit	PM	SB	EXP	0.36	16303	5944	57		0.0051	0.0000	0.0075	0.0006	0.0027	0.0003	0.0040	0.0003	0.0666	
										SB Totals	0.0361	0.0001	0.0471	0.0041	0.0170	0.0022	0.0247	0.0016	0.4055	
a	I-275	west of Lois ent	PM	NB	GU	0.43	93855	40351	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003	
a	I-275	west of Lois ent	PM	NB	EXP	0.43	16303	7009	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
a	I-275	west of Lois ent	PM	NB	GU	0.43	93855	40351	35		0.0369	0.0002	0.0775	0.0064	0.0269	0.0036	0.0362	0.0017	0.5060	
a	I-275	west of Lois ent	PM	NB	EXP	0.43	16303	7009	57		0.0060	0.0000	0.0088	0.0008	0.0032	0.0004	0.0047	0.0003	0.0785	
										NB Totals	0.0430	0.0002	0.0776	0.0064	0.0269	0.0036	0.0362	0.0017	0.5063	
										PM TOTAL	0.0791	0.0004	0.1247	0.0104	0.0439	0.0058	0.0609	0.0033	0.9118	Total
			Worst case applied for whole day - Lbs of Toxins in day (24 hrs x worst case)							PM	0.0791	0.0004	0.1247	0.0104	0.0439	0.0058	0.0609	0.0033	0.9118	1.24
																				lbs/day
b	I-275	Himes-Armenia	AM	SB	GU	0.36	114010	41134	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
b	I-275	Himes-Armenia	AM	SB	EXP	0.36	37265	13445	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
b	I-275	Himes-Armenia	AM	SB	GU	0.36	114010	41134	52		0.0373	0.0002	0.0567	0.0049	0.0204	0.0026	0.0297	0.0019	0.4875	
b	I-275	Himes-Armenia	AM	SB	EXP	0.36	37265	13445	59		0.0114	0.0000	0.0162	0.0014	0.0059	0.0008	0.0089	0.0006	0.1476	
										SB Totals	0.0487	0.0002	0.0567	0.0049	0.0204	0.0026	0.0297	0.0019	0.4875	
b	I-275	Himes-Armenia	AM	NB	GU	0.34	114010	38327	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003	
b	I-275	Himes-Armenia	AM	NB	EXP	0.34	37265	12528	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
b	I-275	Himes-Armenia	AM	NB	GU	0.34	114010	38327	34		0.0347	0.0002	0.0751	0.0061	0.0260	0.0035	0.0350	0.0016	0.4832	
b	I-275	Himes-Armenia	AM	NB	EXP	0.34	37265	12528	58		0.0107	0.0000	0.0154	0.0013	0.0056	0.0007	0.0084	0.0005	0.1389	
										NB Totals	0.0455	0.0002	0.0752	0.0061	0.0260	0.0035	0.0350	0.0016	0.4834	
										AM TOTAL	0.0942	0.0004	0.1319	0.0110	0.0465	0.0061	0.0647	0.0035	0.9709	
b	I-275	Himes-Armenia	PM	SB	GU	0.36	114010	41134	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
b	I-275	Himes-Armenia	PM	SB	EXP	0.36	37265	13445	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
b	I-275	Himes-Armenia	PM	SB	GU	0.36	114010	41134	44		0.0389	0.0002	0.0657	0.0056	0.0234	0.0030	0.0329	0.0019	0.5186	
b	I-275	Himes-Armenia	PM	SB	EXP	0.36	37265	13445	58		0.0115	0.0000	0.0166	0.0014	0.0060	0.0008	0.0090	0.0006	0.1491	
										SB Totals	0.0504	0.0002	0.0657	0.0056	0.0234	0.0030	0.0329	0.0019	0.5186	
b	I-275	Himes-Armenia	PM	NB	GU	0.34	114010	38327	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003	
b	I-275	Himes-Armenia	PM	NB	EXP	0.34	37265	12528	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
b	I-275	Himes-Armenia	PM	NB	GU	0.34	114010	38327	34		0.0347	0.0002	0.0751	0.0061	0.0260	0.0035	0.0350	0.0016	0.4832	
b	I-275	Himes-Armenia	PM	NB	EXP	0.34	37265	12528	58		0.0107	0.0000	0.0154	0.0013	0.0056	0.0007	0.0084	0.0005	0.1389	
										NB Totals	0.0455	0.0002	0.0752	0.0061	0.0260	0.0035	0.0350	0.0016	0.4834	

2045 Design Option A condition

Link	Road	Limits	AM/PM	Direction (NB/SB or EB/WB)	General use or express lanes	Link length (mi)*	AADT	VMT, miles/day	Speed (idling 2.5 or lowest speed)	Idling (Hr/day)	BENZ, lb	BUTA, lb	FORM, lb	NAP, lb	ACE, lb	ACROL, lb	ETB, lb	POM, lb	DPM, lb			
										PM TOTAL	0.0959	0.0004	0.1409	0.0117	0.0494	0.0065	0.0679	0.0035	1.0020	Total		
			Worst case applied for whole day - Lbs of Toxins in day (24 hrs x worst case)							AM	0.0942	0.0004	0.1319	0.0110	0.0465	0.0061	0.0647	0.0035	0.9709	1.33		
																				lbs/day		
c	I-275	Howard- Ashley	AM	SB	GU	0.61	103060	62461	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			
c	I-275	Howard- Ashley	AM	SB	EXP	0.61	51160	31006	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			
c	I-275	Howard- Ashley	AM	SB	GU	0.61	103060	62461	46		0.0589	0.0003	0.0961	0.0082	0.0343	0.0044	0.0488	0.0030	0.7811			
c	I-275	Howard- Ashley	AM	SB	EXP	0.61	51160	31006	58		0.0266	0.0001	0.0382	0.0033	0.0139	0.0018	0.0207	0.0013	0.3439			
										SB Totals	0.0855	0.0003	0.0961	0.0082	0.0343	0.0044	0.0488	0.0030	0.7811			
c	I-275	Howard- Ashley	AM	NB	GU	0.79	103060	80906	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			
c	I-275	Howard- Ashley	AM	NB	EXP	0.79	51160	40163	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			
c	I-275	Howard- Ashley	AM	NB	GU	0.79	103060	80906	48		0.0756	0.0004	0.1200	0.0103	0.0430	0.0056	0.0616	0.0038	0.9969			
c	I-275	Howard- Ashley	AM	NB	EXP	0.79	51160	40163	58		0.0344	0.0001	0.0495	0.0043	0.0180	0.0023	0.0268	0.0017	0.4454			
										NB Totals	0.1100	0.0004	0.1200	0.0103	0.0430	0.0056	0.0616	0.0038	0.9969			
										AM TOTAL	0.1955	0.0006	0.2162	0.0184	0.0774	0.0100	0.1104	0.0068	1.7780		2.4133	
c	I-275	Howard- Ashley	PM	SB	GU	0.61	103060	62461	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			
c	I-275	Howard- Ashley	PM	SB	EXP	0.61	51160	31006	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.00000
c	I-275	Howard- Ashley	PM	SB	GU	0.61	103060	62461	46		0.0589	0.0003	0.0961	0.0082	0.0343	0.0044	0.0488	0.0030	0.7811			
c	I-275	Howard- Ashley	PM	SB	EXP	0.61	51160	31006	58		0.0266	0.0001	0.0382	0.0033	0.0139	0.0018	0.0207	0.0013	0.3439			
										SB Totals	0.0855	0.0003	0.0961	0.0082	0.0343	0.0044	0.0488	0.0030	0.7811			
c	I-275	Howard- Ashley	PM	NB	GU	0.79	103060	80906	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003			
c	I-275	Howard- Ashley	PM	NB	EXP	0.79	51160	40163	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			
c	I-275	Howard- Ashley	PM	NB	GU	0.79	103060	80906	39		0.0754	0.0004	0.1426	0.0119	0.0500	0.0066	0.0688	0.0036	1.0215			
c	I-275	Howard- Ashley	PM	NB	EXP	0.79	51160	40163	58		0.0344	0.0001	0.0495	0.0043	0.0180	0.0023	0.0268	0.0017	0.4454			
										NB Totals	0.1099	0.0004	0.1426	0.0119	0.0501	0.0066	0.0688	0.0036	1.0218			
										PM TOTAL	0.1953	0.0007	0.2387	0.0200	0.0844	0.0110	0.1176	0.0066	1.8029	Total	2.4774	
			Worst case applied for whole day - Lbs of Toxins in day (24 hrs x worst case)							PM	0.1953	0.0007	0.2387	0.0200	0.0844	0.0110	0.1176	0.0066	1.8029	2.48		
																				lbs/day		
d	I-275	south of MLK	AM	SB	GU	0.28	106370	30219	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			
d	I-275	south of MLK	AM	SB	EXP	0.28	8310	2361	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			
d	I-275	south of MLK	AM	SB	GU	0.28	106370	30219	53		0.0271	0.0001	0.0409	0.0035	0.0148	0.0019	0.0215	0.0014	0.3538			
d	I-275	south of MLK	AM	SB	EXP	0.28	8310	2361	55		0.0021	0.0000	0.0031	0.0003	0.0011	0.0001	0.0016	0.0001	0.0270			
										SB Totals	0.0291	0.0001	0.0409	0.0035	0.0148	0.0019	0.0215	0.0014	0.3538			
d	I-275	south of MLK	AM	NB	GU	0.41	106370	43112	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			
d	I-275	south of MLK	AM	NB	EXP	0.41	8310	3368	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			
d	I-275	south of MLK	AM	NB	GU	0.41	106370	43112	54		0.0382	0.0002	0.0572	0.0049	0.0207	0.0026	0.0302	0.0019	0.4986			
d	I-275	south of MLK	AM	NB	EXP	0.41	8310	3368	53		0.0030	0.0000	0.0046	0.0004	0.0016	0.0002	0.0024	0.0002	0.0394			
										NB Totals	0.0412	0.0002	0.0572	0.0049	0.0207	0.0026	0.0302	0.0019	0.4986			
										AM TOTAL	0.0703	0.0003	0.0981	0.0085	0.0355	0.0045	0.0517	0.0033	0.8524			
d	I-275	south of MLK	PM	SB	GU	0.28	106370	30219	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			
d	I-275	south of MLK	PM	SB	EXP	0.28	8310	2361	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			
d	I-275	south of MLK	PM	SB	GU	0.28	106370	30219	55		0.0265	0.0001	0.0393	0.0034	0.0142	0.0018	0.0209	0.0013	0.3452			
d	I-275	south of MLK	PM	SB	EXP	0.28	8310	2361	56		0.0021	0.0000	0.0030	0.0003	0.0011	0.0001	0.0016	0.0001	0.0267			
										SB Totals	0.0285	0.0001	0.0393	0.0034	0.0142	0.0018	0.0209	0.0013	0.3452			
d	I-275	south of MLK	PM	NB	GU	0.41	106370	43112	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			
d	I-275	south of MLK	PM	NB	EXP	0.41	8310	3368	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			

2045 Design Option A condition

Link	Road	Limits	AM/PM	Direction (NB/SB or EB/WB)	General use or express lanes	Link length (mi)*	AADT	VMT, miles/day	Speed (idling 2.5 or lowest speed)	Idling (Hr/day)	BENZ, lb	BUTA, lb	FORM, lb	NAP, lb	ACE, lb	ACROL, lb	ETB, lb	POM, lb	DPM, lb	
d	I-275	south of MLK	PM	NB	GU	0.41	106370	43112	43		0.0407	0.0002	0.0702	0.0059	0.0249	0.0032	0.0349	0.0020	0.5440	
d	I-275	south of MLK	PM	NB	EXP	0.41	8310	3368	49		0.0031	0.0000	0.0049	0.0004	0.0018	0.0002	0.0025	0.0002	0.0412	
										NB Totals	0.0438	0.0002	0.0702	0.0059	0.0249	0.0032	0.0349	0.0020	0.5440	
										PM TOTAL	0.0723	0.0003	0.1096	0.0093	0.0392	0.0051	0.0558	0.0033	0.8891	Total
			Worst case applied for whole day - Lbs of Toxins in day (24 hrs x worst case)							PM	0.0723	0.0003	0.1096	0.0093	0.0392	0.0051	0.0558	0.0033	0.8891	1.18
																				lbs/day
e	I-4	Selmon-Columbus	AM	WB	GU	0.50	89990	45165	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
e	I-4	Selmon-Columbus	AM	WB	EXP	0.50	59210	29717	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
e	I-4	Selmon-Columbus	AM	WB	GU	0.50	89990	45165	44		0.0427	0.0002	0.0722	0.0061	0.0257	0.0033	0.0362	0.0021	0.5694	
e	I-4	Selmon-Columbus	AM	WB	EXP	0.50	59210	29717	55		0.0260	0.0001	0.0387	0.0033	0.0140	0.0018	0.0205	0.0013	0.3394	
										SB Totals	0.0687	0.0002	0.0722	0.0061	0.0257	0.0033	0.0362	0.0021	0.5694	
e	I-4	Selmon-Columbus	AM	EB	GU	0.58	89990	52409	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003	
e	I-4	Selmon-Columbus	AM	EB	EXP	0.58	59210	34483	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
e	I-4	Selmon-Columbus	AM	EB	GU	0.58	89990	52409	30		0.0457	0.0004	0.1110	0.0089	0.0380	0.0051	0.0509	0.0020	0.6744	
e	I-4	Selmon-Columbus	AM	EB	EXP	0.58	59210	34483	58		0.0295	0.0001	0.0425	0.0037	0.0155	0.0020	0.0230	0.0015	0.3825	
										NB Totals	0.0753	0.0004	0.1110	0.0089	0.0381	0.0051	0.0509	0.0020	0.6747	
										AM TOTAL	0.1440	0.0006	0.1832	0.0150	0.0637	0.0084	0.0871	0.0041	1.2441	
e	I-4	Selmon-Columbus	PM	WB	GU	0.50	89990	45165	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
e	I-4	Selmon-Columbus	PM	WB	EXP	0.50	59210	29717	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
e	I-4	Selmon-Columbus	PM	WB	GU	0.50	89990	45165	46		0.0426	0.0002	0.0695	0.0059	0.0248	0.0032	0.0353	0.0022	0.5648	
e	I-4	Selmon-Columbus	PM	WB	EXP	0.50	59210	29717	56		0.0258	0.0001	0.0380	0.0033	0.0138	0.0018	0.0203	0.0013	0.3362	
										SB Totals	0.0684	0.0002	0.0695	0.0059	0.0248	0.0032	0.0353	0.0022	0.5648	
e	I-4	Selmon-Columbus	PM	EB	GU	0.58	89990	52409	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003	
e	I-4	Selmon-Columbus	PM	EB	EXP	0.58	59210	34483	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
e	I-4	Selmon-Columbus	PM	EB	GU	0.58	89990	52409	25		0.0486	0.0004	0.1318	0.0105	0.0447	0.0060	0.0584	0.0020	0.7039	
e	I-4	Selmon-Columbus	PM	EB	EXP	0.58	59210	34483	58		0.0295	0.0001	0.0425	0.0037	0.0155	0.0020	0.0230	0.0015	0.3825	
										NB Totals	0.0782	0.0004	0.1318	0.0105	0.0447	0.0060	0.0584	0.0020	0.7042	
										PM TOTAL	0.1466	0.0006	0.2013	0.0164	0.0695	0.0093	0.0937	0.0042	1.2690	Total
			Worst case applied for whole day - Lbs of Toxins in day (24 hrs x worst case)							AM	0.1440	0.0006	0.1832	0.0150	0.0637	0.0084	0.0871	0.0041	1.2441	1.75
																				lbs/day

* held all link lengths the same for consistency in comparisons

2045 Design Option B condition

Link	Road	Limits	AM/PM	Direction (NB/SB or EB/WB)	General use or express lanes	Link length (mi)	Link length (mi)*	VMT, miles/day	Speed (idling 2.5 or lowest speed)	Idling (Hr/day)	BENZ, lb	BUTA, lb	FORM, lb	NAP, lb	ACE, lb	ACROL, lb	ETB, lb	POM, lb	DPM, lb	
a	I-275	west of Lois exit	AM	SB	GU	0.36	93855	34218	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
a	I-275	west of Lois exit	AM	SB	EXP	0.36	16303	5944	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
a	I-275	west of Lois exit	AM	SB	GU	0.36	93855	34218	54		0.0303	0.0001	0.0454	0.0039	0.0164	0.0021	0.0240	0.0015	0.3957	
a	I-275	west of Lois exit	AM	SB	EXP	0.36	16303	5944	58		0.0051	0.0000	0.0073	0.0006	0.0027	0.0003	0.0040	0.0003	0.0659	
										SB Totals	0.0354	0.0001	0.0454	0.0039	0.0164	0.0021	0.0240	0.0015	0.3957	
a	I-275	west of Lois ent	AM	NB	GU	0.43	93855	40351	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
a	I-275	west of Lois ent	AM	NB	EXP	0.43	16303	7009	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
a	I-275	west of Lois ent	AM	NB	GU	0.43	93855	40351	43		0.0381	0.0002	0.0657	0.0055	0.0233	0.0030	0.0327	0.0019	0.5091	
a	I-275	west of Lois ent	AM	NB	EXP	0.43	16303	7009	56		0.0061	0.0000	0.0090	0.0008	0.0033	0.0004	0.0048	0.0003	0.0793	
										NB Totals	0.0442	0.0002	0.0657	0.0055	0.0233	0.0030	0.0327	0.0019	0.5091	
										AM TOTAL	0.0795	0.0003	0.1111	0.0095	0.0397	0.0051	0.0567	0.0034	0.9049	
a	I-275	west of Lois exit	PM	SB	GU	0.36	93855	34218	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
a	I-275	west of Lois exit	PM	SB	EXP	0.36	16303	5944	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
a	I-275	west of Lois exit	PM	SB	GU	0.36	93855	34218	52		0.0310	0.0001	0.0471	0.0041	0.0170	0.0022	0.0247	0.0016	0.4055	
a	I-275	west of Lois exit	PM	SB	EXP	0.36	16303	5944	58		0.0051	0.0000	0.0073	0.0006	0.0027	0.0003	0.0040	0.0003	0.0659	
										SB Totals	0.0361	0.0001	0.0471	0.0041	0.0170	0.0022	0.0247	0.0016	0.4055	
a	I-275	west of Lois ent	PM	NB	GU	0.43	93855	40351	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003	
a	I-275	west of Lois ent	PM	NB	EXP	0.43	16303	7009	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
a	I-275	west of Lois ent	PM	NB	GU	0.43	93855	40351	29		0.0356	0.0003	0.0886	0.0071	0.0303	0.0041	0.0403	0.0015	0.5238	
a	I-275	west of Lois ent	PM	NB	EXP	0.43	16303	7009	57		0.0060	0.0000	0.0088	0.0008	0.0032	0.0004	0.0047	0.0003	0.0785	
										NB Totals	0.0417	0.0003	0.0887	0.0071	0.0303	0.0041	0.0403	0.0015	0.5241	
										PM TOTAL	0.0778	0.0004	0.1358	0.0112	0.0473	0.0062	0.0650	0.0031	0.9296	Total
				Worst case applied for whole day - Lbs of Toxins in day (24 hrs x worst case)						AM	0.0795	0.0003	0.1111	0.0095	0.0397	0.0051	0.0567	0.0034	0.9049	1.21
																				lbs/day
b	I-275	Himes-Armenia	AM	SB	GU	0.36	114010	41134	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
b	I-275	Himes-Armenia	AM	SB	EXP	0.36	37265	13445	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
b	I-275	Himes-Armenia	AM	SB	GU	0.36	114010	41134	53		0.0368	0.0002	0.0556	0.0048	0.0201	0.0026	0.0292	0.0019	0.4816	
b	I-275	Himes-Armenia	AM	SB	EXP	0.36	37265	13445	59		0.0114	0.0000	0.0162	0.0014	0.0059	0.0008	0.0089	0.0006	0.1476	
										SB Totals	0.0483	0.0002	0.0556	0.0048	0.0201	0.0026	0.0292	0.0019	0.4816	
b	I-275	Himes-Armenia	AM	NB	GU	0.34	114010	38327	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003	
b	I-275	Himes-Armenia	AM	NB	EXP	0.34	37265	12528	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
b	I-275	Himes-Armenia	AM	NB	GU	0.34	114010	38327	34		0.0347	0.0002	0.0751	0.0061	0.0260	0.0035	0.0350	0.0016	0.4832	
b	I-275	Himes-Armenia	AM	NB	EXP	0.34	37265	12528	58		0.0107	0.0000	0.0154	0.0013	0.0056	0.0007	0.0084	0.0005	0.1389	
										NB Totals	0.0455	0.0002	0.0752	0.0061	0.0260	0.0035	0.0350	0.0016	0.4834	
										AM TOTAL	0.0938	0.0004	0.1308	0.0109	0.0461	0.0060	0.0642	0.0034	0.9651	
b	I-275	Himes-Armenia	PM	SB	GU	0.36	114010	41134	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
b	I-275	Himes-Armenia	PM	SB	EXP	0.36	37265	13445	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
b	I-275	Himes-Armenia	PM	SB	GU	0.36	114010	41134	53		0.0368	0.0002	0.0556	0.0048	0.0201	0.0026	0.0292	0.0019	0.4816	
b	I-275	Himes-Armenia	PM	SB	EXP	0.36	37265	13445	58		0.0115	0.0000	0.0166	0.0014	0.0060	0.0008	0.0090	0.0006	0.1491	
										SB Totals	0.0484	0.0002	0.0556	0.0048	0.0201	0.0026	0.0292	0.0019	0.4816	
b	I-275	Himes-Armenia	PM	NB	GU	0.34	114010	38327	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003	
b	I-275	Himes-Armenia	PM	NB	EXP	0.34	37265	12528	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
b	I-275	Himes-Armenia	PM	NB	GU	0.34	114010	38327	38		0.0356	0.0002	0.0691	0.0057	0.0242	0.0032	0.0331	0.0017	0.4831	
b	I-275	Himes-Armenia	PM	NB	EXP	0.34	37265	12528	58		0.0107	0.0000	0.0154	0.0013	0.0056	0.0007	0.0084	0.0005	0.1389	
										NB Totals	0.0463	0.0002	0.0691	0.0057	0.0242	0.0032	0.0331	0.0017	0.4834	

2045 Design Option B condition

Link	Road	Limits	AM/PM	Direction (NB/SB or EB/WB)	General use or express lanes	Link length (mi)	Link length (mi)*	VMT, miles/day	Speed (idling 2.5 or lowest speed)	Idling (Hr/day)	BENZ, lb	BUTA, lb	FORM, lb	NAP, lb	ACE, lb	ACROL, lb	ETB, lb	POM, lb	DPM, lb		
										PM TOTAL	0.0947	0.0004	0.1248	0.0105	0.0443	0.0058	0.0623	0.0036	0.9650	Total	
				Worst case applied for whole day - Lbs of Toxins in day (24 hrs x worst case)						AM	0.0938	0.0004	0.1308	0.0109	0.0461	0.0060	0.0642	0.0034	0.9651	1.32	
																				lbs/day	
c	I-275	Howard- Ashley	AM	SB	GU	0.61	103060	62461	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
c	I-275	Howard- Ashley	AM	SB	EXP	0.61	51160	31006	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
c	I-275	Howard- Ashley	AM	SB	GU	0.61	103060	62461	47		0.0587	0.0003	0.0944	0.0080	0.0338	0.0044	0.0482	0.0030	0.7754		
c	I-275	Howard- Ashley	AM	SB	EXP	0.61	51160	31006	58		0.0266	0.0001	0.0382	0.0033	0.0139	0.0018	0.0207	0.0013	0.3439		
										SB Totals	0.0852	0.0003	0.0944	0.0080	0.0338	0.0044	0.0482	0.0030	0.7754		
c	I-275	Howard- Ashley	AM	NB	GU	0.79	103060	80906	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
c	I-275	Howard- Ashley	AM	NB	EXP	0.79	51160	40163	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
c	I-275	Howard- Ashley	AM	NB	GU	0.79	103060	80906	47		0.0760	0.0004	0.1223	0.0104	0.0438	0.0057	0.0624	0.0038	1.0043		
c	I-275	Howard- Ashley	AM	NB	EXP	0.79	51160	40163	58		0.0344	0.0001	0.0495	0.0043	0.0180	0.0023	0.0268	0.0017	0.4454		
										NB Totals	0.1104	0.0004	0.1223	0.0104	0.0438	0.0057	0.0624	0.0038	1.0043		
										AM TOTAL	0.1956	0.0006	0.2167	0.0185	0.0775	0.0100	0.1106	0.0068	1.7797		2.4160
c	I-275	Howard- Ashley	PM	SB	GU	0.61	103060	62461	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
c	I-275	Howard- Ashley	PM	SB	EXP	0.61	51160	31006	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
c	I-275	Howard- Ashley	PM	SB	GU	0.61	103060	62461	47		0.0587	0.0003	0.0944	0.0080	0.0338	0.0044	0.0482	0.0030	0.7754		
c	I-275	Howard- Ashley	PM	SB	EXP	0.61	51160	31006	57		0.0267	0.0001	0.0389	0.0034	0.0141	0.0018	0.0209	0.0013	0.3473		
										SB Totals	0.0854	0.0003	0.0944	0.0080	0.0338	0.0044	0.0482	0.0030	0.7754		
c	I-275	Howard- Ashley	PM	NB	GU	0.79	103060	80906	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
c	I-275	Howard- Ashley	PM	NB	EXP	0.79	51160	40163	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
c	I-275	Howard- Ashley	PM	NB	GU	0.79	103060	80906	46		0.0763	0.0004	0.1245	0.0106	0.0445	0.0058	0.0632	0.0039	1.0118		
c	I-275	Howard- Ashley	PM	NB	EXP	0.79	51160	40163	58		0.0344	0.0001	0.0495	0.0043	0.0180	0.0023	0.0268	0.0017	0.4454		
										NB Totals	0.1107	0.0004	0.1245	0.0106	0.0445	0.0058	0.0632	0.0039	1.0118		
										PM TOTAL	0.1961	0.0007	0.2189	0.0186	0.0782	0.0101	0.1114	0.0068	1.7871	Total	2.4280
				Worst case applied for whole day - Lbs of Toxins in day (24 hrs x worst case)						PM	0.1961	0.0007	0.2189	0.0186	0.0782	0.0101	0.1114	0.0068	1.7871	2.43	
																				lbs/day	
d	I-275	south of MLK	AM	SB	GU	0.28	114680	32580	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
d	I-275	south of MLK	AM	SB	EXP	0.28	0	0	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
d	I-275	south of MLK	AM	SB	GU	0.28	114680	32580	37		0.0301	0.0002	0.0600	0.0050	0.0209	0.0028	0.0285	0.0014	0.4100		
d	I-275	south of MLK	AM	SB	EXP	0.28	0	0	75		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
										SB Totals	0.0301	0.0002	0.0600	0.0050	0.0209	0.0028	0.0285	0.0014	0.4100		
d	I-275	south of MLK	AM	NB	GU	0.41	114680	46480	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
d	I-275	south of MLK	AM	NB	EXP	0.41	0	0	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
d	I-275	south of MLK	AM	NB	GU	0.41	114680	46480	56		0.0404	0.0002	0.0594	0.0051	0.0216	0.0028	0.0317	0.0020	0.5258		
d	I-275	south of MLK	AM	NB	EXP	0.41	0	0	75		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
										NB Totals	0.0404	0.0002	0.0594	0.0051	0.0216	0.0028	0.0317	0.0020	0.5258		
										AM TOTAL	0.0705	0.0004	0.1194	0.0101	0.0425	0.0055	0.0602	0.0034	0.9357		
d	I-275	south of MLK	PM	SB	GU	0.28	114680	32580	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
d	I-275	south of MLK	PM	SB	EXP	0.28	0	0	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
d	I-275	south of MLK	PM	SB	GU	0.28	114680	32580	55		0.0285	0.0001	0.0424	0.0037	0.0154	0.0020	0.0225	0.0014	0.3721		
d	I-275	south of MLK	PM	SB	EXP	0.28	0	0	75		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
										SB Totals	0.0285	0.0001	0.0424	0.0037	0.0154	0.0020	0.0225	0.0014	0.3721		
d	I-275	south of MLK	PM	NB	GU	0.41	114680	46480	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		

2045 Design Option B condition

Link	Road	Limits	AM/PM	Direction (NB/SB or EB/WB)	General use or express lanes	Link length (mi)	Link length (mi)*	VMT, miles/day	Speed (idling 2.5 or lowest speed)	Idling (Hr/day)	BENZ, lb	BUTA, lb	FORM, lb	NAP, lb	ACE, lb	ACROL, lb	ETB, lb	POM, lb	DPM, lb	
d	I-275	south of MLK	PM	NB	EXP	0.41	0	0	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
d	I-275	south of MLK	PM	NB	GU	0.41	114680	46480	49		0.0433	0.0002	0.0677	0.0058	0.0243	0.0031	0.0350	0.0022	0.5685	
d	I-275	south of MLK	PM	NB	EXP	0.41	0	0	75		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
										NB Totals	0.0433	0.0002	0.0677	0.0058	0.0243	0.0031	0.0350	0.0022	0.5685	
										PM TOTAL	0.0718	0.0003	0.1101	0.0095	0.0397	0.0051	0.0574	0.0036	0.9406	Total
								Worst case applied for whole day - Lbs of Toxins in day (24 hrs x worst case)		PM	0.0718	0.0003	0.1101	0.0095	0.0397	0.0051	0.0574	0.0036	0.9406	1.24
																				lbs/day
e	I-4	Selmon-Columbus	AM	WB	GU	0.50	97135	48751	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
e	I-4	Selmon-Columbus	AM	WB	EXP	0.50	52065	26131	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
e	I-4	Selmon-Columbus	AM	WB	GU	0.50	97135	48751	44		0.0461	0.0002	0.0779	0.0066	0.0277	0.0036	0.0390	0.0023	0.6146	
e	I-4	Selmon-Columbus	AM	WB	EXP	0.50	52065	26131	56		0.0227	0.0001	0.0334	0.0029	0.0121	0.0015	0.0178	0.0011	0.2956	
										SB Totals	0.0688	0.0002	0.0779	0.0066	0.0277	0.0036	0.0390	0.0023	0.6146	
e	I-4	Selmon-Columbus	AM	EB	GU	0.58	97135	56570	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003	
e	I-4	Selmon-Columbus	AM	EB	EXP	0.58	52065	30322	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
e	I-4	Selmon-Columbus	AM	EB	GU	0.58	97135	56570	23		0.0562	0.0005	0.1552	0.0123	0.0525	0.0071	0.0685	0.0023	0.7981	
e	I-4	Selmon-Columbus	AM	EB	EXP	0.58	52065	30322	60		0.0256	0.0001	0.0359	0.0031	0.0131	0.0017	0.0197	0.0012	0.3296	
										NB Totals	0.0818	0.0005	0.1552	0.0123	0.0525	0.0071	0.0685	0.0023	0.7984	
										AM TOTAL	0.1506	0.0008	0.2331	0.0189	0.0802	0.0107	0.1076	0.0046	1.4130	
e	I-4	Selmon-Columbus	PM	WB	GU	0.50	97135	48751	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
e	I-4	Selmon-Columbus	PM	WB	EXP	0.50	52065	26131	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
e	I-4	Selmon-Columbus	PM	WB	GU	0.50	97135	48751	51		0.0447	0.0002	0.0684	0.0059	0.0246	0.0032	0.0357	0.0023	0.5848	
e	I-4	Selmon-Columbus	PM	WB	EXP	0.50	52065	26131	58		0.0224	0.0001	0.0322	0.0028	0.0117	0.0015	0.0174	0.0011	0.2898	
										SB Totals	0.0670	0.0002	0.0684	0.0059	0.0246	0.0032	0.0357	0.0023	0.5848	
e	I-4	Selmon-Columbus	PM	EB	GU	0.58	97135	56570	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003	
e	I-4	Selmon-Columbus	PM	EB	EXP	0.58	52065	30322	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
e	I-4	Selmon-Columbus	PM	EB	GU	0.58	97135	56570	16		0.0740	0.0008	0.2216	0.0175	0.0743	0.0102	0.0951	0.0029	1.0974	
e	I-4	Selmon-Columbus	PM	EB	EXP	0.58	52065	30322	59		0.0258	0.0001	0.0366	0.0032	0.0134	0.0017	0.0200	0.0013	0.3330	
										NB Totals	0.0998	0.0008	0.2217	0.0175	0.0743	0.0102	0.0951	0.0029	1.0976	
										PM TOTAL	0.1668	0.0010	0.2901	0.0234	0.0989	0.0133	0.1308	0.0052	1.6824	Total
								Worst case applied for whole day - Lbs of Toxins in day (24 hrs x worst case)		PM	0.1668	0.0010	0.2901	0.0234	0.0989	0.0133	0.1308	0.0052	1.6824	2.41
																				lbs/day

* held all link lengths the same for consistency in comparisons

2045 Design Option C condition

Link	Road	Limits	AM/PM	Direction (NB/SB or EB/WB)	General use or express lanes	Link length (mi)*	AADT	VMT, miles/day	Speed (idling 2.5 or lowest speed)	Idling (Hr/day)	BENZ, lb	BUTA, lb	FORM, lb	NAP, lb	ACE, lb	ACROL, lb	ETB, lb	POM, lb	DPM, lb	
a	I-275	west of Lois exit	AM	SB	GU	0.36	93855	34218	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
a	I-275	west of Lois exit	AM	SB	EXP	0.36	16303	5944	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
a	I-275	west of Lois exit	AM	SB	GU	0.36	93855	34218	53		0.0307	0.0001	0.0463	0.0040	0.0167	0.0021	0.0243	0.0015	0.4006	
a	I-275	west of Lois exit	AM	SB	EXP	0.36	16303	5944	58		0.0051	0.0000	0.0073	0.0006	0.0027	0.0003	0.0040	0.0003	0.0659	
										SB Totals	0.0357	0.0001	0.0463	0.0040	0.0167	0.0021	0.0243	0.0015	0.4006	
a	I-275	west of Lois ent	AM	NB	GU	0.43	93855	40351	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003	
a	I-275	west of Lois ent	AM	NB	EXP	0.43	16303	7009	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
a	I-275	west of Lois ent	AM	NB	GU	0.43	93855	40351	24		0.0388	0.0004	0.1061	0.0084	0.0359	0.0049	0.0469	0.0016	0.5556	
a	I-275	west of Lois ent	AM	NB	EXP	0.43	16303	7009	57		0.0060	0.0000	0.0088	0.0008	0.0032	0.0004	0.0047	0.0003	0.0785	
										NB Totals	0.0448	0.0004	0.1061	0.0084	0.0359	0.0049	0.0469	0.0016	0.5559	
										AM TOTAL	0.0806	0.0005	0.1524	0.0124	0.0526	0.0070	0.0713	0.0031	0.9565	
a	I-275	west of Lois exit	PM	SB	GU	0.36	93855	34218	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
a	I-275	west of Lois exit	PM	SB	EXP	0.36	16303	5944	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
a	I-275	west of Lois exit	PM	SB	GU	0.36	93855	34218	53		0.0307	0.0001	0.0463	0.0040	0.0167	0.0021	0.0243	0.0015	0.4006	
a	I-275	west of Lois exit	PM	SB	EXP	0.36	16303	5944	57		0.0051	0.0000	0.0075	0.0006	0.0027	0.0003	0.0040	0.0003	0.0666	
										SB Totals	0.0358	0.0001	0.0463	0.0040	0.0167	0.0021	0.0243	0.0015	0.4006	
a	I-275	west of Lois ent	PM	NB	GU	0.43	93855	40351	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003	
a	I-275	west of Lois ent	PM	NB	EXP	0.43	16303	7009	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
a	I-275	west of Lois ent	PM	NB	GU	0.43	93855	40351	21		0.0427	0.0004	0.1199	0.0095	0.0405	0.0055	0.0528	0.0017	0.5966	
a	I-275	west of Lois ent	PM	NB	EXP	0.43	16303	7009	57		0.0060	0.0000	0.0088	0.0008	0.0032	0.0004	0.0047	0.0003	0.0785	
										NB Totals	0.0487	0.0004	0.1199	0.0095	0.0405	0.0055	0.0528	0.0017	0.5968	
										PM TOTAL	0.0845	0.0005	0.1662	0.0135	0.0572	0.0076	0.0771	0.0032	0.9975	Total
			Worst case applied for whole day - Lbs of Toxins in day (24 hrs x worst case)							AM	0.0806	0.0005	0.1524	0.0124	0.0526	0.0070	0.0713	0.0031	0.9565	1.34
																				lbs/day
b	I-275	Himes-Armenia	AM	SB	GU	0.36	114010	41134	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
b	I-275	Himes-Armenia	AM	SB	EXP	0.36	37265	13445	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
b	I-275	Himes-Armenia	AM	SB	GU	0.36	114010	41134	50		0.0381	0.0002	0.0588	0.0050	0.0211	0.0027	0.0305	0.0019	0.4993	
b	I-275	Himes-Armenia	AM	SB	EXP	0.36	37265	13445	59		0.0114	0.0000	0.0162	0.0014	0.0059	0.0008	0.0089	0.0006	0.1476	
										SB Totals	0.0495	0.0002	0.0588	0.0050	0.0211	0.0027	0.0305	0.0019	0.4993	
b	I-275	Himes-Armenia	AM	NB	GU	0.34	114010	38327	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003	
b	I-275	Himes-Armenia	AM	NB	EXP	0.34	37265	12528	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
b	I-275	Himes-Armenia	AM	NB	GU	0.34	114010	38327	22		0.0393	0.0004	0.1095	0.0087	0.0370	0.0050	0.0483	0.0016	0.5537	
b	I-275	Himes-Armenia	AM	NB	EXP	0.34	37265	12528	58		0.0107	0.0000	0.0154	0.0013	0.0056	0.0007	0.0084	0.0005	0.1389	
										NB Totals	0.0500	0.0004	0.1096	0.0087	0.0370	0.0050	0.0483	0.0016	0.5539	
										AM TOTAL	0.0996	0.0005	0.1683	0.0137	0.0582	0.0077	0.0788	0.0035	1.0532	
b	I-275	Himes-Armenia	PM	SB	GU	0.36	114010	41134	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
b	I-275	Himes-Armenia	PM	SB	EXP	0.36	37265	13445	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
b	I-275	Himes-Armenia	PM	SB	GU	0.36	114010	41134	54		0.0364	0.0002	0.0546	0.0047	0.0197	0.0025	0.0288	0.0018	0.4757	
b	I-275	Himes-Armenia	PM	SB	EXP	0.36	37265	13445	58		0.0115	0.0000	0.0166	0.0014	0.0060	0.0008	0.0090	0.0006	0.1491	
										SB Totals	0.0479	0.0002	0.0546	0.0047	0.0197	0.0025	0.0288	0.0018	0.4757	
b	I-275	Himes-Armenia	PM	NB	GU	0.34	114010	38327	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003	
b	I-275	Himes-Armenia	PM	NB	EXP	0.34	37265	12528	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
b	I-275	Himes-Armenia	PM	NB	GU	0.34	114010	38327	21		0.0405	0.0004	0.1139	0.0090	0.0384	0.0052	0.0501	0.0016	0.5666	
b	I-275	Himes-Armenia	PM	NB	EXP	0.34	37265	12528	58		0.0107	0.0000	0.0154	0.0013	0.0056	0.0007	0.0084	0.0005	0.1389	

2045 Design Option C condition

Link	Road	Limits	AM/PM	Direction (NB/SB or EB/WB)	General use or express lanes	Link length (mi)*	AADT	VMT, miles/day	Speed (idling 2.5 or lowest speed)	Idling (Hr/day)	BENZ, lb	BUTA, lb	FORM, lb	NAP, lb	ACE, lb	ACROL, lb	ETB, lb	POM, lb	DPM, lb		
										NB Totals	0.0513	0.0004	0.1139	0.0090	0.0384	0.0052	0.0502	0.0016	0.5669		
										PM TOTAL	0.0992	0.0005	0.1685	0.0137	0.0582	0.0078	0.0790	0.0034	1.0426	Total	
			Worst case applied for whole day - Lbs of Toxins in day (24 hrs x worst case)							AM	0.0996	0.0005	0.1683	0.0137	0.0582	0.0077	0.0788	0.0035	1.0532	1.48	
																				lbs/day	
c	I-275	Howard- Ashley	AM	SB	GU	0.61	103060	62461	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
c	I-275	Howard- Ashley	AM	SB	EXP	0.61	51160	31006	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
c	I-275	Howard- Ashley	AM	SB	GU	0.61	103060	62461	49		0.0581	0.0003	0.0909	0.0078	0.0327	0.0042	0.0470	0.0029	0.7639		
c	I-275	Howard- Ashley	AM	SB	EXP	0.61	51160	31006	55		0.0271	0.0001	0.0404	0.0035	0.0146	0.0019	0.0214	0.0014	0.3542		
										SB Totals	0.0853	0.0003	0.0909	0.0078	0.0327	0.0042	0.0470	0.0029	0.7639		
c	I-275	Howard- Ashley	AM	NB	GU	0.79	103060	80906	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003		
c	I-275	Howard- Ashley	AM	NB	EXP	0.79	51160	40163	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
c	I-275	Howard- Ashley	AM	NB	GU	0.79	103060	80906	18		0.0970	0.0010	0.2833	0.0224	0.0952	0.0130	0.1229	0.0038	1.3965		
c	I-275	Howard- Ashley	AM	NB	EXP	0.79	51160	40163	57		0.0346	0.0001	0.0504	0.0044	0.0183	0.0023	0.0271	0.0017	0.4499		
										NB Totals	0.1317	0.0010	0.2834	0.0224	0.0952	0.0130	0.1229	0.0038	1.3967		
										AM TOTAL	0.2169	0.0012	0.3743	0.0302	0.1279	0.0172	0.1699	0.0068	2.1606		3.1050
c	I-275	Howard- Ashley	PM	SB	GU	0.61	103060	62461	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
c	I-275	Howard- Ashley	PM	SB	EXP	0.61	51160	31006	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
c	I-275	Howard- Ashley	PM	SB	GU	0.61	103060	62461	51		0.0572	0.0003	0.0876	0.0075	0.0316	0.0041	0.0457	0.0029	0.7492		
c	I-275	Howard- Ashley	PM	SB	EXP	0.61	51160	31006	55		0.0271	0.0001	0.0404	0.0035	0.0146	0.0019	0.0214	0.0014	0.3542		
										SB Totals	0.0844	0.0003	0.0876	0.0075	0.0316	0.0041	0.0457	0.0029	0.7492		
c	I-275	Howard- Ashley	PM	NB	GU	0.79	103060	80906	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003		
c	I-275	Howard- Ashley	PM	NB	EXP	0.79	51160	40163	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
c	I-275	Howard- Ashley	PM	NB	GU	0.79	103060	80906	17		0.1014	0.0010	0.3001	0.0237	0.1007	0.0138	0.1294	0.0040	1.4830		
c	I-275	Howard- Ashley	PM	NB	EXP	0.79	51160	40163	57		0.0346	0.0001	0.0504	0.0044	0.0183	0.0023	0.0271	0.0017	0.4499		
										NB Totals	0.1361	0.0010	0.3002	0.0237	0.1007	0.0138	0.1295	0.0040	1.4832		
										PM TOTAL	0.2204	0.0013	0.3878	0.0312	0.1323	0.0178	0.1752	0.0069	2.2324	Total	3.2054
			Worst case applied for whole day - Lbs of Toxins in day (24 hrs x worst case)							PM	0.2204	0.0013	0.3878	0.0312	0.1323	0.0178	0.1752	0.0069	2.2324	3.21	
																				lbs/day	
d	I-275	south of MLK	AM	SB	GU	0.28	114680	32580	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
d	I-275	south of MLK	AM	SB	EXP	0.28	0	0	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
d	I-275	south of MLK	AM	SB	GU	0.28	114680	32580	46		0.0307	0.0001	0.0501	0.0043	0.0179	0.0023	0.0255	0.0016	0.4074		
d	I-275	south of MLK	AM	SB	EXP	0.28	0	0	75		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
										SB Totals	0.0307	0.0001	0.0501	0.0043	0.0179	0.0023	0.0255	0.0016	0.4074		
d	I-275	south of MLK	AM	NB	GU	0.41	114680	46480	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
d	I-275	south of MLK	AM	NB	EXP	0.41	0	0	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
d	I-275	south of MLK	AM	NB	GU	0.41	114680	46480	56		0.0404	0.0002	0.0594	0.0051	0.0216	0.0028	0.0317	0.0020	0.5258		
d	I-275	south of MLK	AM	NB	EXP	0.41	0	0	75		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
										NB Totals	0.0404	0.0002	0.0594	0.0051	0.0216	0.0028	0.0317	0.0020	0.5258		
										AM TOTAL	0.0711	0.0003	0.1096	0.0094	0.0395	0.0051	0.0572	0.0036	0.9332		
d	I-275	south of MLK	PM	SB	GU	0.28	114680	32580	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
d	I-275	south of MLK	PM	SB	EXP	0.28	0	0	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
d	I-275	south of MLK	PM	SB	GU	0.28	114680	32580	55		0.0285	0.0001	0.0424	0.0037	0.0154	0.0020	0.0225	0.0014	0.3721		
d	I-275	south of MLK	PM	SB	EXP	0.28	0	0	75		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
										SB Totals	0.0285	0.0001	0.0424	0.0037	0.0154	0.0020	0.0225	0.0014	0.3721		

2045 Design Option C condition

Link	Road	Limits	AM/PM	Direction (NB/SB or EB/WB)	General use or express lanes	Link length (mi)*	AADT	VMT, miles/day	Speed (idling 2.5 or lowest speed)	Idling (Hr/day)	BENZ, lb	BUTA, lb	FORM, lb	NAP, lb	ACE, lb	ACROL, lb	ETB, lb	POM, lb	DPM, lb	
d	I-275	south of MLK	PM	NB	GU	0.41	114680	46480	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003	
d	I-275	south of MLK	PM	NB	EXP	0.41	0	0	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
d	I-275	south of MLK	PM	NB	GU	0.41	114680	46480	37		0.0429	0.0003	0.0856	0.0071	0.0299	0.0039	0.0406	0.0020	0.5849	
d	I-275	south of MLK	PM	NB	EXP	0.41	0	0	75		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
										NB Totals	0.0430	0.0003	0.0857	0.0071	0.0299	0.0039	0.0407	0.0020	0.5851	
										PM TOTAL	0.0715	0.0004	0.1281	0.0107	0.0453	0.0059	0.0631	0.0035	0.9573	Total
			Worst case applied for whole day - Lbs of Toxins in day (24 hrs x worst case)							PM	0.0715	0.0004	0.1281	0.0107	0.0453	0.0059	0.0631	0.0035	0.9573	1.29
																				lbs/day
e	I-4	Selmon-Columbus	AM	WB	GU	0.50	90990	45667	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
e	I-4	Selmon-Columbus	AM	WB	EXP	0.50	60525	30377	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
e	I-4	Selmon-Columbus	AM	WB	GU	0.50	90990	45667	44		0.0432	0.0002	0.0730	0.0062	0.0259	0.0034	0.0366	0.0022	0.5757	
e	I-4	Selmon-Columbus	AM	WB	EXP	0.50	60525	30377	55		0.0266	0.0001	0.0396	0.0034	0.0143	0.0018	0.0210	0.0013	0.3470	
										SB Totals	0.0698	0.0002	0.0730	0.0062	0.0259	0.0034	0.0366	0.0022	0.5757	
e	I-4	Selmon-Columbus	AM	EB	GU	0.58	90990	52991	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
e	I-4	Selmon-Columbus	AM	EB	EXP	0.58	60525	35249	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
e	I-4	Selmon-Columbus	AM	EB	GU	0.58	90990	52991	54		0.0469	0.0002	0.0703	0.0061	0.0254	0.0033	0.0371	0.0024	0.6129	
e	I-4	Selmon-Columbus	AM	EB	EXP	0.58	60525	35249	58		0.0302	0.0001	0.0434	0.0038	0.0158	0.0020	0.0235	0.0015	0.3909	
										NB Totals	0.0771	0.0002	0.0703	0.0061	0.0254	0.0033	0.0371	0.0024	0.6129	
										AM TOTAL	0.1469	0.0004	0.1433	0.0122	0.0514	0.0066	0.0737	0.0045	1.1886	
e	I-4	Selmon-Columbus	PM	WB	GU	0.50	90990	45667	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
e	I-4	Selmon-Columbus	PM	WB	EXP	0.50	60525	30377	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
e	I-4	Selmon-Columbus	PM	WB	GU	0.50	90990	45667	45		0.0433	0.0002	0.0715	0.0061	0.0255	0.0033	0.0361	0.0022	0.5753	
e	I-4	Selmon-Columbus	PM	WB	EXP	0.50	60525	30377	55		0.0266	0.0001	0.0396	0.0034	0.0143	0.0018	0.0210	0.0013	0.3470	
										SB Totals	0.0699	0.0002	0.0715	0.0061	0.0255	0.0033	0.0361	0.0022	0.5753	
e	I-4	Selmon-Columbus	PM	EB	GU	0.58	90990	52991	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003	
e	I-4	Selmon-Columbus	PM	EB	EXP	0.58	60525	35249	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
e	I-4	Selmon-Columbus	PM	EB	GU	0.58	90990	52991	18		0.0635	0.0006	0.1856	0.0147	0.0623	0.0085	0.0805	0.0025	0.9146	
e	I-4	Selmon-Columbus	PM	EB	EXP	0.58	60525	35249	58		0.0302	0.0001	0.0434	0.0038	0.0158	0.0020	0.0235	0.0015	0.3909	
										NB Totals	0.0937	0.0006	0.1856	0.0147	0.0624	0.0085	0.0805	0.0025	0.9149	
										PM TOTAL	0.1636	0.0008	0.2572	0.0207	0.0879	0.0118	0.1166	0.0047	1.4902	Total
			Worst case applied for whole day - Lbs of Toxins in day (24 hrs x worst case)							PM	0.1636	0.0008	0.2572	0.0207	0.0879	0.0118	0.1166	0.0047	1.4902	2.15

* held all link lengths the same for consistency in comparisons

lbs/day

2045 Design Option D condition

Link	Road	Limits	AM/PM	Direction (NB/SB or EB/WB)	General use or express lanes	Link length (mi)*	AADT	VMT, miles/day	Speed (idling 2.5 or lowest speed)	Idling (Hr/day)	BENZ, lb	BUTA, lb	FORM, lb	NAP, lb	ACE, lb	ACROL, lb	ETB, lb	POM, lb	DPM, lb	
a	I-275	west of Lois exit	AM	SB	GU	0.36	93855	34218	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
a	I-275	west of Lois exit	AM	SB	EXP	0.36	16303	5944	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
a	I-275	west of Lois exit	AM	SB	GU	0.36	93855	34218	53		0.0307	0.0001	0.0463	0.0040	0.0167	0.0021	0.0243	0.0015	0.4006	
a	I-275	west of Lois exit	AM	SB	EXP	0.36	16303	5944	59		0.0051	0.0000	0.0072	0.0006	0.0026	0.0003	0.0039	0.0002	0.0653	
										SB Totals	0.0357	0.0001	0.0463	0.0040	0.0167	0.0021	0.0243	0.0015	0.4006	
a	I-275	west of Lois ent	AM	NB	GU	0.43	93855	40351	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003	
a	I-275	west of Lois ent	AM	NB	EXP	0.43	16303	7009	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
a	I-275	west of Lois ent	AM	NB	GU	0.43	93855	40351	24		0.0388	0.0004	0.1061	0.0084	0.0359	0.0049	0.0469	0.0016	0.5556	
a	I-275	west of Lois ent	AM	NB	EXP	0.43	16303	7009	56		0.0061	0.0000	0.0090	0.0008	0.0033	0.0004	0.0048	0.0003	0.0793	
										NB Totals	0.0449	0.0004	0.1061	0.0084	0.0359	0.0049	0.0469	0.0016	0.5559	
										AM TOTAL	0.0806	0.0005	0.1524	0.0124	0.0526	0.0070	0.0713	0.0031	0.9565	
a	I-275	west of Lois exit	PM	SB	GU	0.36	93855	34218	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
a	I-275	west of Lois exit	PM	SB	EXP	0.36	16303	5944	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
a	I-275	west of Lois exit	PM	SB	GU	0.36	93855	34218	53		0.0307	0.0001	0.0463	0.0040	0.0167	0.0021	0.0243	0.0015	0.4006	
a	I-275	west of Lois exit	PM	SB	EXP	0.36	16303	5944	59		0.0051	0.0000	0.0072	0.0006	0.0026	0.0003	0.0039	0.0002	0.0653	
										SB Totals	0.0357	0.0001	0.0463	0.0040	0.0167	0.0021	0.0243	0.0015	0.4006	
a	I-275	west of Lois ent	PM	NB	GU	0.43	93855	40351	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003	
a	I-275	west of Lois ent	PM	NB	EXP	0.43	16303	7009	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
a	I-275	west of Lois ent	PM	NB	GU	0.43	93855	40351	21		0.0427	0.0004	0.1199	0.0095	0.0405	0.0055	0.0528	0.0017	0.5966	
a	I-275	west of Lois ent	PM	NB	EXP	0.43	16303	7009	57		0.0060	0.0000	0.0088	0.0008	0.0032	0.0004	0.0047	0.0003	0.0785	
										NB Totals	0.0487	0.0004	0.1199	0.0095	0.0405	0.0055	0.0528	0.0017	0.5968	
										PM TOTAL	0.0844	0.0005	0.1662	0.0135	0.0572	0.0076	0.0771	0.0032	0.9975	Total
			Worst case applied for whole day - Lbs of Toxins in day (24 hrs x worst case)							PM	0.0844	0.0005	0.1662	0.0135	0.0572	0.0076	0.0771	0.0032	0.9975	1.41
																				lbs/day
b	I-275	Himes-Armenia	AM	SB	GU	0.36	114010	41134	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
b	I-275	Himes-Armenia	AM	SB	EXP	0.36	37265	13445	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
b	I-275	Himes-Armenia	AM	SB	GU	0.36	114010	41134	51		0.0377	0.0002	0.0577	0.0050	0.0208	0.0027	0.0301	0.0019	0.4934	
b	I-275	Himes-Armenia	AM	SB	EXP	0.36	37265	13445	59		0.0114	0.0000	0.0162	0.0014	0.0059	0.0008	0.0089	0.0006	0.1476	
										SB Totals	0.0491	0.0002	0.0577	0.0050	0.0208	0.0027	0.0301	0.0019	0.4934	
b	I-275	Himes-Armenia	AM	NB	GU	0.34	114010	38327	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003	
b	I-275	Himes-Armenia	AM	NB	EXP	0.34	37265	12528	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
b	I-275	Himes-Armenia	AM	NB	GU	0.34	114010	38327	22		0.0393	0.0004	0.1095	0.0087	0.0370	0.0050	0.0483	0.0016	0.5537	
b	I-275	Himes-Armenia	AM	NB	EXP	0.34	37265	12528	58		0.0107	0.0000	0.0154	0.0013	0.0056	0.0007	0.0084	0.0005	0.1389	
										NB Totals	0.0500	0.0004	0.1096	0.0087	0.0370	0.0050	0.0483	0.0016	0.5539	
										AM TOTAL	0.0991	0.0005	0.1673	0.0137	0.0578	0.0077	0.0784	0.0035	1.0474	
b	I-275	Himes-Armenia	PM	SB	GU	0.36	114010	41134	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
b	I-275	Himes-Armenia	PM	SB	EXP	0.36	37265	13445	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
b	I-275	Himes-Armenia	PM	SB	GU	0.36	114010	41134	54		0.0364	0.0002	0.0546	0.0047	0.0197	0.0025	0.0288	0.0018	0.4757	
b	I-275	Himes-Armenia	PM	SB	EXP	0.36	37265	13445	58		0.0115	0.0000	0.0166	0.0014	0.0060	0.0008	0.0090	0.0006	0.1491	
										SB Totals	0.0479	0.0002	0.0546	0.0047	0.0197	0.0025	0.0288	0.0018	0.4757	
b	I-275	Himes-Armenia	PM	NB	GU	0.34	114010	38327	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003	

2045 Design Option D condition

Link	Road	Limits	AM/PM	Direction (NB/SB or EB/WB)	General use or express lanes	Link length (mi)*	AADT	VMT, miles/day	Speed (idling 2.5 or lowest speed)	Idling (Hr/day)	BENZ, lb	BUTA, lb	FORM, lb	NAP, lb	ACE, lb	ACROL, lb	ETB, lb	POM, lb	DPM, lb	
b	I-275	Himes-Armenia	PM	NB	EXP	0.34	37265	12528	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
b	I-275	Himes-Armenia	PM	NB	GU	0.34	114010	38327	21		0.0405	0.0004	0.1139	0.0090	0.0384	0.0052	0.0501	0.0016	0.5666	
b	I-275	Himes-Armenia	PM	NB	EXP	0.34	37265	12528	58		0.0107	0.0000	0.0154	0.0013	0.0056	0.0007	0.0084	0.0005	0.1389	
										NB Totals	0.0513	0.0004	0.1139	0.0090	0.0384	0.0052	0.0502	0.0016	0.5669	
										PM TOTAL	0.0992	0.0005	0.1685	0.0137	0.0582	0.0078	0.0790	0.0034	1.0426	Total
			Worst case applied for whole day - Lbs of Toxins in day (24 hrs x worst case)							PM	0.0992	0.0005	0.1685	0.0137	0.0582	0.0078	0.0790	0.0034	1.0426	1.47
																				lbs/day
c	I-275	Howard- Ashley	AM	SB	GU	0.61	103060	62461	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
c	I-275	Howard- Ashley	AM	SB	EXP	0.61	51160	31006	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
c	I-275	Howard- Ashley	AM	SB	GU	0.61	103060	62461	50		0.0579	0.0003	0.0892	0.0077	0.0321	0.0041	0.0464	0.0029	0.7582	
c	I-275	Howard- Ashley	AM	SB	EXP	0.61	51160	31006	57		0.0267	0.0001	0.0389	0.0034	0.0141	0.0018	0.0209	0.0013	0.3473	
										SB Totals	0.0846	0.0003	0.0892	0.0077	0.0321	0.0041	0.0464	0.0029	0.7582	
c	I-275	Howard- Ashley	AM	NB	GU	0.79	103060	80906	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003	
c	I-275	Howard- Ashley	AM	NB	EXP	0.79	51160	40163	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
c	I-275	Howard- Ashley	AM	NB	GU	0.79	103060	80906	18		0.0970	0.0010	0.2833	0.0224	0.0952	0.0130	0.1229	0.0038	1.3965	
c	I-275	Howard- Ashley	AM	NB	EXP	0.79	51160	40163	58		0.0344	0.0001	0.0495	0.0043	0.0180	0.0023	0.0268	0.0017	0.4454	
										NB Totals	0.1314	0.0010	0.2834	0.0224	0.0952	0.0130	0.1229	0.0038	1.3967	
										AM TOTAL	0.2160	0.0012	0.3726	0.0301	0.1273	0.0171	0.1692	0.0067	2.1549	
c	I-275	Howard- Ashley	PM	SB	GU	0.61	103060	62461	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
c	I-275	Howard- Ashley	PM	SB	EXP	0.61	51160	31006	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
c	I-275	Howard- Ashley	PM	SB	GU	0.61	103060	62461	51		0.0572	0.0003	0.0876	0.0075	0.0316	0.0041	0.0457	0.0029	0.7492	
c	I-275	Howard- Ashley	PM	SB	EXP	0.61	51160	31006	57		0.0267	0.0001	0.0389	0.0034	0.0141	0.0018	0.0209	0.0013	0.3473	
										SB Totals	0.0840	0.0003	0.0876	0.0075	0.0316	0.0041	0.0457	0.0029	0.7492	
c	I-275	Howard- Ashley	PM	NB	GU	0.79	103060	80906	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003	
c	I-275	Howard- Ashley	PM	NB	EXP	0.79	51160	40163	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
c	I-275	Howard- Ashley	PM	NB	GU	0.79	103060	80906	17		0.1014	0.0010	0.3001	0.0237	0.1007	0.0138	0.1294	0.0040	1.4830	
c	I-275	Howard- Ashley	PM	NB	EXP	0.79	51160	40163	57		0.0346	0.0001	0.0504	0.0044	0.0183	0.0023	0.0271	0.0017	0.4499	
										NB Totals	0.1361	0.0010	0.3002	0.0237	0.1007	0.0138	0.1295	0.0040	1.4832	
										PM TOTAL	0.2201	0.0013	0.3878	0.0312	0.1323	0.0178	0.1752	0.0069	2.2324	Total
			Worst case applied for whole day - Lbs of Toxins in day (24 hrs x worst case)							PM	0.2201	0.0013	0.3878	0.0312	0.1323	0.0178	0.1752	0.0069	2.2324	3.20
																				lbs/day
d	I-275	south of MLK	AM	SB	GU	0.28	114680	32580	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
d	I-275	south of MLK	AM	SB	EXP	0.28	0	0	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
d	I-275	south of MLK	AM	SB	GU	0.28	114680	32580	51		0.0298	0.0001	0.0457	0.0039	0.0165	0.0021	0.0238	0.0015	0.3908	
d	I-275	south of MLK	AM	SB	EXP	0.28	0	0	75		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
										SB Totals	0.0298	0.0001	0.0457	0.0039	0.0165	0.0021	0.0238	0.0015	0.3908	
d	I-275	south of MLK	AM	NB	GU	0.41	114680	46480	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
d	I-275	south of MLK	AM	NB	EXP	0.41	0	0	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
d	I-275	south of MLK	AM	NB	GU	0.41	114680	46480	56		0.0404	0.0002	0.0594	0.0051	0.0216	0.0028	0.0317	0.0020	0.5258	
d	I-275	south of MLK	AM	NB	EXP	0.41	0	0	75		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	

2045 Design Option D condition

Link	Road	Limits	AM/PM	Direction (NB/SB or EB/WB)	General use or express lanes	Link length (mi)*	AADT	VMT, miles/day	Speed (idling 2.5 or lowest speed)	Idling (Hr/day)	BENZ, lb	BUTA, lb	FORM, lb	NAP, lb	ACE, lb	ACROL, lb	ETB, lb	POM, lb	DPM, lb	
										NB Totals	0.0404	0.0002	0.0594	0.0051	0.0216	0.0028	0.0317	0.0020	0.5258	
										AM TOTAL	0.0702	0.0003	0.1051	0.0091	0.0380	0.0049	0.0556	0.0035	0.9166	
d	I-275	south of MLK	PM	SB	GU	0.28	114680	32580	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
d	I-275	south of MLK	PM	SB	EXP	0.28	0	0	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
d	I-275	south of MLK	PM	SB	GU	0.28	114680	32580	51		0.0298	0.0001	0.0457	0.0039	0.0165	0.0021	0.0238	0.0015	0.3908	
d	I-275	south of MLK	PM	SB	EXP	0.28	0	0	75		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
										SB Totals	0.0298	0.0001	0.0457	0.0039	0.0165	0.0021	0.0238	0.0015	0.3908	
d	I-275	south of MLK	PM	NB	GU	0.41	114680	46480	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003	
d	I-275	south of MLK	PM	NB	EXP	0.41	0	0	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
d	I-275	south of MLK	PM	NB	GU	0.41	114680	46480	36		0.0427	0.0003	0.0875	0.0072	0.0304	0.0040	0.0412	0.0020	0.5839	
d	I-275	south of MLK	PM	NB	EXP	0.41	0	0	75		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
										NB Totals	0.0427	0.0003	0.0875	0.0072	0.0305	0.0040	0.0412	0.0020	0.5841	
										PM TOTAL	0.0726	0.0004	0.1332	0.0111	0.0469	0.0061	0.0650	0.0035	0.9749	Total
			Worst case applied for whole day - Lbs of Toxins in day (24 hrs x worst case)							PM	0.0726	0.0004	0.1332	0.0111	0.0469	0.0061	0.0650	0.0035	0.9749	1.31
																				lbs/day
e	I-4	Selmon-Columbus	AM	WB	GU	0.50	90990	45667	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
e	I-4	Selmon-Columbus	AM	WB	EXP	0.50	60525	30377	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
e	I-4	Selmon-Columbus	AM	WB	GU	0.50	90990	45667	43		0.0431	0.0002	0.0744	0.0063	0.0264	0.0034	0.0370	0.0021	0.5762	
e	I-4	Selmon-Columbus	AM	WB	EXP	0.50	60525	30377	55		0.0266	0.0001	0.0396	0.0034	0.0143	0.0018	0.0210	0.0013	0.3470	
										SB Totals	0.0697	0.0002	0.0744	0.0063	0.0264	0.0034	0.0370	0.0021	0.5762	
e	I-4	Selmon-Columbus	AM	EB	GU	0.58	90990	52991	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003	
e	I-4	Selmon-Columbus	AM	EB	EXP	0.58	60525	35249	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
e	I-4	Selmon-Columbus	AM	EB	GU	0.58	90990	52991	39		0.0494	0.0003	0.0934	0.0078	0.0328	0.0043	0.0451	0.0024	0.6691	
e	I-4	Selmon-Columbus	AM	EB	EXP	0.58	60525	35249	57		0.0304	0.0001	0.0442	0.0038	0.0161	0.0020	0.0238	0.0015	0.3948	
										NB Totals	0.0798	0.0003	0.0934	0.0078	0.0328	0.0043	0.0451	0.0024	0.6693	
										AM TOTAL	0.1495	0.0005	0.1678	0.0140	0.0592	0.0077	0.0821	0.0045	1.2455	
e	I-4	Selmon-Columbus	PM	WB	GU	0.50	90990	45667	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003	
e	I-4	Selmon-Columbus	PM	WB	EXP	0.50	60525	30377	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
e	I-4	Selmon-Columbus	PM	WB	GU	0.50	90990	45667	45		0.0433	0.0002	0.0715	0.0061	0.0255	0.0033	0.0361	0.0022	0.5753	
e	I-4	Selmon-Columbus	PM	WB	EXP	0.50	60525	30377	56		0.0264	0.0001	0.0388	0.0034	0.0141	0.0018	0.0207	0.0013	0.3436	
										SB Totals	0.0697	0.0002	0.0716	0.0061	0.0255	0.0033	0.0361	0.0022	0.5755	
e	I-4	Selmon-Columbus	PM	EB	GU	0.58	90990	52991	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003	
e	I-4	Selmon-Columbus	PM	EB	EXP	0.58	60525	35249	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
e	I-4	Selmon-Columbus	PM	EB	GU	0.58	90990	52991	21		0.0560	0.0005	0.1575	0.0125	0.0531	0.0072	0.0693	0.0022	0.7834	
e	I-4	Selmon-Columbus	PM	EB	EXP	0.58	60525	35249	58		0.0302	0.0001	0.0434	0.0038	0.0158	0.0020	0.0235	0.0015	0.3909	
										NB Totals	0.0862	0.0005	0.1575	0.0125	0.0532	0.0072	0.0693	0.0022	0.7837	
										PM TOTAL	0.1559	0.0007	0.2291	0.0186	0.0787	0.0105	0.1055	0.0044	1.3592	Total
			Worst case applied for whole day - Lbs of Toxins in day (24 hrs x worst case)							PM	0.1559	0.0007	0.2291	0.0186	0.0787	0.0105	0.1055	0.0044	1.3592	1.96

* held all link lengths the same for consistency in comparisons

lbs/day

2045 Design Option E condition

Link	Road	Limits	AM/PM	Direction (NB/SB or EB/WB)	General use or express lanes	Link length (mi)*	AADT	VMT, miles/day	Speed (idling 2.5 or lowest speed)	Idling (Hr/day)	BENZ, lb	BUTA, lb	FORM, lb	NAP, lb	ACE, lb	ACROL, lb	ETB, lb	POM, lb	DPM, lb	
a	I-275	west of Lois exit	AM	SB	GU	0.36	87180	31784	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
a	I-275	west of Lois exit	AM	SB	EXP	0.36	42190	15382	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
a	I-275	west of Lois exit	AM	SB	GU	0.36	87180	31784	55		0.0278	0.0001	0.0414	0.0036	0.0150	0.0019	0.0219	0.0014	0.3630	
a	I-275	west of Lois exit	AM	SB	EXP	0.36	42190	15382	59		0.0131	0.0001	0.0186	0.0016	0.0068	0.0009	0.0101	0.0006	0.1689	
										SB Totals	0.0409	0.0001	0.0414	0.0036	0.0150	0.0019	0.0219	0.0014	0.3630	
a	I-275	west of Lois ent	AM	NB	GU	0.43	87180	37481	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003	
a	I-275	west of Lois ent	AM	NB	EXP	0.43	42190	18139	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
a	I-275	west of Lois ent	AM	NB	GU	0.43	87180	37481	36		0.0345	0.0002	0.0705	0.0058	0.0246	0.0032	0.0332	0.0016	0.4708	
a	I-275	west of Lois ent	AM	NB	EXP	0.43	42190	18139	54		0.0161	0.0001	0.0241	0.0021	0.0087	0.0011	0.0127	0.0008	0.2098	
										NB Totals	0.0505	0.0002	0.0706	0.0058	0.0246	0.0032	0.0332	0.0016	0.4711	
										AM TOTAL	0.0914	0.0003	0.1120	0.0094	0.0396	0.0052	0.0552	0.0030	0.8341	
a	I-275	west of Lois exit	PM	SB	GU	0.36	87180	31784	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
a	I-275	west of Lois exit	PM	SB	EXP	0.36	42190	15382	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
a	I-275	west of Lois exit	PM	SB	GU	0.36	87180	31784	54		0.0281	0.0001	0.0422	0.0036	0.0153	0.0020	0.0223	0.0014	0.3676	
a	I-275	west of Lois exit	PM	SB	EXP	0.36	42190	15382	60		0.0130	0.0001	0.0182	0.0016	0.0067	0.0008	0.0100	0.0006	0.1672	
										SB Totals	0.0411	0.0001	0.0422	0.0036	0.0153	0.0020	0.0223	0.0014	0.3676	
a	I-275	west of Lois ent	PM	NB	GU	0.43	87180	37481	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003	
a	I-275	west of Lois ent	PM	NB	EXP	0.43	42190	18139	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
a	I-275	west of Lois ent	PM	NB	GU	0.43	87180	37481	33		0.0337	0.0002	0.0750	0.0061	0.0259	0.0034	0.0347	0.0015	0.4750	
a	I-275	west of Lois ent	PM	NB	EXP	0.43	42190	18139	54		0.0161	0.0001	0.0241	0.0021	0.0087	0.0011	0.0127	0.0008	0.2098	
										NB Totals	0.0497	0.0002	0.0750	0.0061	0.0259	0.0034	0.0348	0.0015	0.4752	
										PM TOTAL	0.0909	0.0004	0.1172	0.0097	0.0412	0.0054	0.0570	0.0029	0.8428	Total
			Worst case applied for whole day - Lbs of Toxins in day (24 hrs x worst case)							PM	0.0909	0.0004	0.1172	0.0097	0.0412	0.0054	0.0570	0.0029	0.8428	1.17
																				lbs/day
b	I-275	Himes-Armenia	AM	SB	GU	0.36	120373	43430	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
b	I-275	Himes-Armenia	AM	SB	EXP	0.36	30978	11177	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
b	I-275	Himes-Armenia	AM	SB	GU	0.36	120373	43430	52		0.0393	0.0002	0.0598	0.0051	0.0216	0.0028	0.0313	0.0020	0.5147	
b	I-275	Himes-Armenia	AM	SB	EXP	0.36	30978	11177	58		0.0096	0.0000	0.0138	0.0012	0.0050	0.0006	0.0075	0.0005	0.1240	
										SB Totals	0.0489	0.0002	0.0598	0.0051	0.0216	0.0028	0.0313	0.0020	0.5147	
b	I-275	Himes-Armenia	AM	NB	GU	0.34	120373	40466	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003	
b	I-275	Himes-Armenia	AM	NB	EXP	0.34	30978	10414	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
b	I-275	Himes-Armenia	AM	NB	GU	0.34	120373	40466	20		0.0441	0.0004	0.1249	0.0099	0.0421	0.0057	0.0549	0.0017	0.6119	
b	I-275	Himes-Armenia	AM	NB	EXP	0.34	30978	10414	58		0.0089	0.0000	0.0128	0.0011	0.0047	0.0006	0.0069	0.0004	0.1155	
										NB Totals	0.0530	0.0004	0.1249	0.0099	0.0421	0.0057	0.0549	0.0017	0.6122	
										AM TOTAL	0.1019	0.0006	0.1848	0.0150	0.0637	0.0085	0.0862	0.0037	1.1269	
b	I-275	Himes-Armenia	PM	SB	GU	0.36	120373	43430	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
b	I-275	Himes-Armenia	PM	SB	EXP	0.36	30978	11177	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
b	I-275	Himes-Armenia	PM	SB	GU	0.36	120373	43430	53		0.0389	0.0002	0.0587	0.0051	0.0212	0.0027	0.0309	0.0020	0.5085	
b	I-275	Himes-Armenia	PM	SB	EXP	0.36	30978	11177	58		0.0096	0.0000	0.0138	0.0012	0.0050	0.0006	0.0075	0.0005	0.1240	
										SB Totals	0.0485	0.0002	0.0587	0.0051	0.0212	0.0027	0.0309	0.0020	0.5085	
b	I-275	Himes-Armenia	PM	NB	GU	0.34	120373	40466	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003	

2045 Design Option E condition

Link	Road	Limits	AM/PM	Direction (NB/SB or EB/WB)	General use or express lanes	Link length (mi)*	AADT	VMT, miles/day	Speed (idling 2.5 or lowest speed)	Idling (Hr/day)	BENZ, lb	BUTA, lb	FORM, lb	NAP, lb	ACE, lb	ACROL, lb	ETB, lb	POM, lb	DPM, lb	
b	I-275	Himes-Armenia	PM	NB	EXP	0.34	30978	10414	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
b	I-275	Himes-Armenia	PM	NB	GU	0.34	120373	40466	19		0.0463	0.0004	0.1333	0.0105	0.0449	0.0061	0.0582	0.0018	0.6552	
b	I-275	Himes-Armenia	PM	NB	EXP	0.34	30978	10414	58		0.0089	0.0000	0.0128	0.0011	0.0047	0.0006	0.0069	0.0004	0.1155	
										NB Totals	0.0552	0.0004	0.1333	0.0105	0.0449	0.0061	0.0582	0.0018	0.6555	
										PM TOTAL	0.1037	0.0006	0.1921	0.0156	0.0661	0.0088	0.0891	0.0038	1.1640	Total
			Worst case applied for whole day - Lbs of Toxins in day (24 hrs x worst case)							PM	0.1037	0.0006	0.1921	0.0156	0.0661	0.0088	0.0891	0.0038	1.1640	1.64
																				lbs/day
c	I-275	Howard- Ashley	AM	SB	GU	0.61	122243	74086	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
c	I-275	Howard- Ashley	AM	SB	EXP	0.61	23818	14435	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
c	I-275	Howard- Ashley	AM	SB	GU	0.61	122243	74086	54		0.0656	0.0003	0.0983	0.0085	0.0356	0.0046	0.0519	0.0033	0.8568	
c	I-275	Howard- Ashley	AM	SB	EXP	0.61	23818	14435	57		0.0125	0.0001	0.0181	0.0016	0.0066	0.0008	0.0097	0.0006	0.1617	
										SB Totals	0.0781	0.0003	0.0983	0.0085	0.0356	0.0046	0.0519	0.0033	0.8568	
c	I-275	Howard- Ashley	AM	NB	GU	0.79	122243	95965	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003	
c	I-275	Howard- Ashley	AM	NB	EXP	0.79	23818	18698	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
c	I-275	Howard- Ashley	AM	NB	GU	0.79	122243	95965	16		0.1255	0.0013	0.3760	0.0297	0.1260	0.0173	0.1613	0.0049	1.8616	
c	I-275	Howard- Ashley	AM	NB	EXP	0.79	23818	18698	59		0.0159	0.0001	0.0226	0.0020	0.0082	0.0010	0.0123	0.0008	0.2053	
										NB Totals	0.1414	0.0013	0.3760	0.0297	0.1260	0.0173	0.1613	0.0049	1.8618	
										AM TOTAL	0.2195	0.0016	0.4743	0.0381	0.1615	0.0218	0.2132	0.0082	2.7187	
c	I-275	Howard- Ashley	PM	SB	GU	0.61	122243	74086	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
c	I-275	Howard- Ashley	PM	SB	EXP	0.61	23818	14435	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
c	I-275	Howard- Ashley	PM	SB	GU	0.61	122243	74086	55		0.0648	0.0003	0.0965	0.0083	0.0349	0.0045	0.0511	0.0032	0.8462	
c	I-275	Howard- Ashley	PM	SB	EXP	0.61	23818	14435	57		0.0125	0.0001	0.0181	0.0016	0.0066	0.0008	0.0097	0.0006	0.1617	
										SB Totals	0.0773	0.0003	0.0965	0.0083	0.0349	0.0045	0.0511	0.0032	0.8462	
c	I-275	Howard- Ashley	PM	NB	GU	0.79	122243	95965	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003	
c	I-275	Howard- Ashley	PM	NB	EXP	0.79	23818	18698	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
c	I-275	Howard- Ashley	PM	NB	GU	0.79	122243	95965	15		0.1308	0.0013	0.3959	0.0312	0.1325	0.0182	0.1691	0.0051	1.9641	
c	I-275	Howard- Ashley	PM	NB	EXP	0.79	23818	18698	59		0.0159	0.0001	0.0226	0.0020	0.0082	0.0010	0.0123	0.0008	0.2053	
										NB Totals	0.1467	0.0013	0.3960	0.0312	0.1325	0.0182	0.1691	0.0051	1.9644	
										PM TOTAL	0.2240	0.0016	0.4924	0.0395	0.1674	0.0227	0.2203	0.0084	2.8106	Total
			Worst case applied for whole day - Lbs of Toxins in day (24 hrs x worst case)							PM	0.2240	0.0016	0.4924	0.0395	0.1674	0.0227	0.2203	0.0084	2.8106	3.99
																				lbs/day
d	I-275	south of MLK	AM	SB	GU	0.28	124170	35276	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
d	I-275	south of MLK	AM	SB	EXP	0.28	0	0	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003	
d	I-275	south of MLK	AM	SB	GU	0.28	124170	35276	39		0.0329	0.0002	0.0622	0.0052	0.0218	0.0029	0.0300	0.0016	0.4454	
d	I-275	south of MLK	AM	SB	EXP	0.28	0	0	75		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
										SB Totals	0.0329	0.0002	0.0622	0.0052	0.0218	0.0029	0.0300	0.0016	0.4454	
d	I-275	south of MLK	AM	NB	GU	0.41	124170	50326	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
d	I-275	south of MLK	AM	NB	EXP	0.41	0	0	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
d	I-275	south of MLK	AM	NB	GU	0.41	124170	50326	56		0.0437	0.0002	0.0643	0.0056	0.0233	0.0030	0.0343	0.0022	0.5693	
d	I-275	south of MLK	AM	NB	EXP	0.41	0	0	75		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	

2045 Design Option E condition

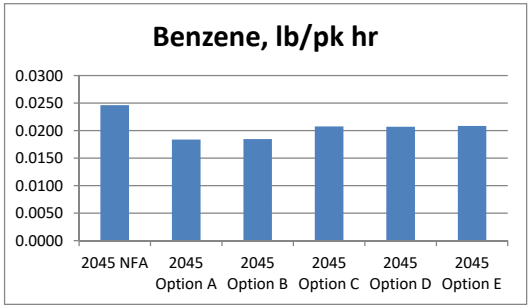
Link	Road	Limits	AM/PM	Direction (NB/SB or EB/WB)	General use or express lanes	Link length (mi)*	AADT	VMT, miles/day	Speed (idling 2.5 or lowest speed)	Idling (Hr/day)	BENZ, lb	BUTA, lb	FORM, lb	NAP, lb	ACE, lb	ACROL, lb	ETB, lb	POM, lb	DPM, lb	
										NB Totals	0.0437	0.0002	0.0643	0.0056	0.0233	0.0030	0.0343	0.0022	0.5693	
										AM TOTAL	0.0766	0.0004	0.1265	0.0107	0.0452	0.0058	0.0644	0.0038	1.0147	
d	I-275	south of MLK	PM	SB	GU	0.28	124170	35276	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
d	I-275	south of MLK	PM	SB	EXP	0.28	0	0	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
d	I-275	south of MLK	PM	SB	GU	0.28	124170	35276	54		0.0312	0.0001	0.0468	0.0040	0.0169	0.0022	0.0247	0.0016	0.4080	
d	I-275	south of MLK	PM	SB	EXP	0.28	0	0	75		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
										SB Totals	0.0312	0.0001	0.0468	0.0040	0.0169	0.0022	0.0247	0.0016	0.4080	
d	I-275	south of MLK	PM	NB	GU	0.41	124170	50326	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003	
d	I-275	south of MLK	PM	NB	EXP	0.41	0	0	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
d	I-275	south of MLK	PM	NB	GU	0.41	124170	50326	54		0.0446	0.0002	0.0668	0.0058	0.0242	0.0031	0.0353	0.0022	0.5820	
d	I-275	south of MLK	PM	NB	EXP	0.41	0	0	75		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
										NB Totals	0.0446	0.0002	0.0669	0.0058	0.0242	0.0031	0.0353	0.0022	0.5823	
										PM TOTAL	0.0758	0.0003	0.1137	0.0098	0.0411	0.0053	0.0600	0.0038	0.9903	Total
			Worst case applied for whole day - Lbs of Toxins in day (24 hrs x worst case)							AM	0.0766	0.0004	0.1265	0.0107	0.0452	0.0058	0.0644	0.0038	1.0147	1.35
																				lbs/day
e	I-4	Selmon-Columbus	AM	WB	GU	0.50	120815	60636	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003	
e	I-4	Selmon-Columbus	AM	WB	EXP	0.50	16870	8467	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
e	I-4	Selmon-Columbus	AM	WB	GU	0.50	120815	60636	25		0.0563	0.0005	0.1524	0.0121	0.0517	0.0070	0.0676	0.0023	0.8144	
e	I-4	Selmon-Columbus	AM	WB	EXP	0.50	16870	8467	55		0.0074	0.0000	0.0110	0.0010	0.0040	0.0005	0.0058	0.0004	0.0967	
										SB Totals	0.0637	0.0005	0.1525	0.0121	0.0517	0.0070	0.0676	0.0023	0.8147	
e	I-4	Selmon-Columbus	AM	EB	GU	0.58	120815	70361	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003	
e	I-4	Selmon-Columbus	AM	EB	EXP	0.58	16870	9825	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
e	I-4	Selmon-Columbus	AM	EB	GU	0.58	120815	70361	23		0.0698	0.0006	0.1930	0.0153	0.0653	0.0088	0.0852	0.0028	0.9927	
e	I-4	Selmon-Columbus	AM	EB	EXP	0.58	16870	9825	57		0.0085	0.0000	0.0123	0.0011	0.0045	0.0006	0.0066	0.0004	0.1101	
										NB Totals	0.0783	0.0006	0.1930	0.0153	0.0653	0.0089	0.0852	0.0028	0.9929	
										AM TOTAL	0.1420	0.0011	0.3455	0.0275	0.1170	0.0158	0.1528	0.0051	1.8076	
e	I-4	Selmon-Columbus	PM	WB	GU	0.50	120815	60636	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003	
e	I-4	Selmon-Columbus	PM	WB	EXP	0.50	16870	8467	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
e	I-4	Selmon-Columbus	PM	WB	GU	0.50	120815	60636	18		0.0727	0.0007	0.2123	0.0168	0.0713	0.0097	0.0921	0.0029	1.0466	
e	I-4	Selmon-Columbus	PM	WB	EXP	0.50	16870	8467	56		0.0074	0.0000	0.0108	0.0009	0.0039	0.0005	0.0058	0.0004	0.0958	
										SB Totals	0.0801	0.0007	0.2124	0.0168	0.0714	0.0097	0.0921	0.0029	1.0469	
e	I-4	Selmon-Columbus	PM	EB	GU	0.58	120815	70361	2.5	1	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003	
e	I-4	Selmon-Columbus	PM	EB	EXP	0.58	16870	9825	2.5	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
e	I-4	Selmon-Columbus	PM	EB	GU	0.58	120815	70361	29		0.0622	0.0005	0.1546	0.0124	0.0529	0.0071	0.0703	0.0027	0.9134	
e	I-4	Selmon-Columbus	PM	EB	EXP	0.58	16870	9825	58		0.0084	0.0000	0.0121	0.0011	0.0044	0.0006	0.0066	0.0004	0.1090	
										NB Totals	0.0706	0.0005	0.1546	0.0124	0.0529	0.0071	0.0703	0.0027	0.9136	
										PM TOTAL	0.1507	0.0012	0.3670	0.0292	0.1242	0.0168	0.1624	0.0055	1.9605	Total
			Worst case applied for whole day - Lbs of Toxins in day (24 hrs x worst case)							PM	0.1507	0.0012	0.3670	0.0292	0.1242	0.0168	0.1624	0.0055	1.9605	2.82

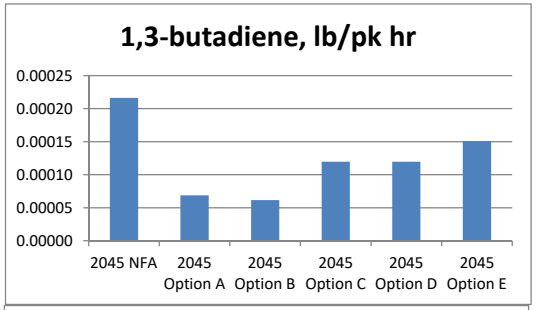
* held all link lengths the same for consistency in comparisons

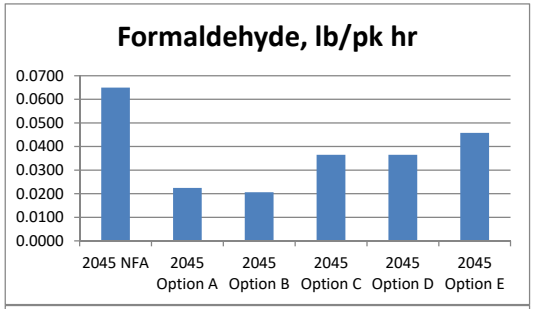
lbs/day

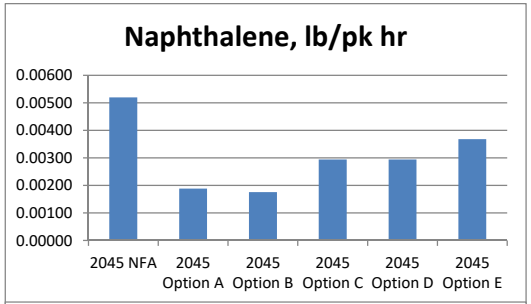
Levels for each Toxin - Howard to Ashley
Figure 8

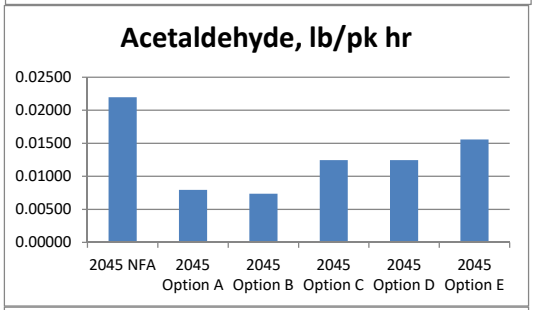
				Benzene, lb/pk hr		1,3-butadiene, lb/pk hr		Formaldehyde, lb/pk hr		Naphthalene, lb/pk hr		Acetaldehyde, lb/pk hr		Acrolein, lb/pk hr		Ethyl Benzene, lb/pk hr		POM, lb/pk hr		Diesel PM, lb/pk hr
I-275	Howard- Ashley	2045	2045 NFA	0.0246	2045 NFA	0.00022	2045 NFA	0.0650	2045 NFA	0.00519	2045 NFA	0.02197	2045 NFA	0.00299	2045 NFA	0.0286	2045 NFA	0.00106	2045 NFA	0.3597
I-275	Howard- Ashley	2045	2045 Optic	0.0184	2045 Optio	0.00007	2045 Optic	0.0225	2045 Optio	0.00189	2045 Optic	0.00794	2045 Optio	0.00104	2045 Optic	0.0111	2045 Optio	0.00062	2045 Optic	0.1696
I-275	Howard- Ashley	2045	2045 Optic	0.0184	2045 Optio	0.00006	2045 Optic	0.0206	2045 Optio	0.00175	2045 Optic	0.00736	2045 Optio	0.00095	2045 Optic	0.0105	2045 Optio	0.00064	2045 Optic	0.1681
I-275	Howard- Ashley	2045	2045 Optic	0.0207	2045 Optio	0.00012	2045 Optic	0.0365	2045 Optio	0.00294	2045 Optic	0.01244	2045 Optio	0.00168	2045 Optic	0.0165	2045 Optio	0.00065	2045 Optic	0.2100
I-275	Howard- Ashley	2045	2045 Optic	0.0207	2045 Optio	0.00012	2045 Optic	0.0365	2045 Optio	0.00294	2045 Optic	0.01244	2045 Optio	0.00168	2045 Optic	0.0165	2045 Optio	0.00065	2045 Optic	0.2100
I-275	Howard- Ashley	2045	2045 Optic	0.0208	2045 Optio	0.00015	2045 Optic	0.0458	2045 Optio	0.00368	2045 Optic	0.01557	2045 Optio	0.00211	2045 Optic	0.0205	2045 Optio	0.00078	2045 Optic	0.2614

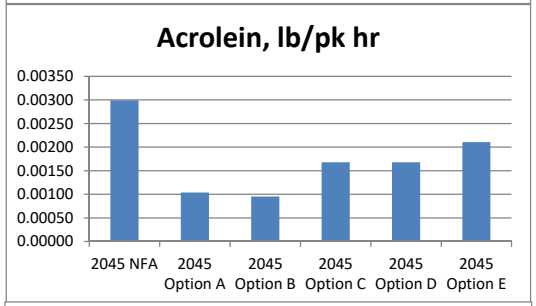


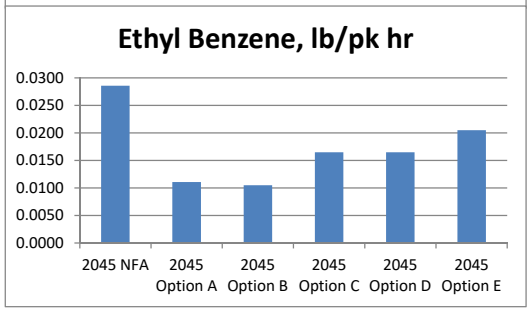


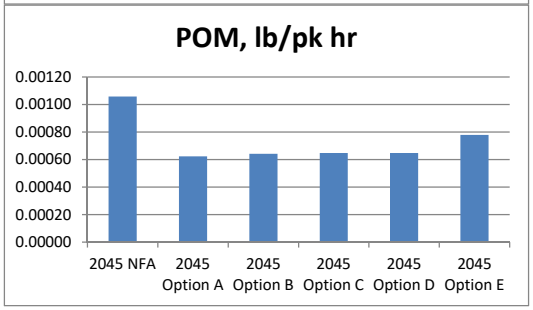


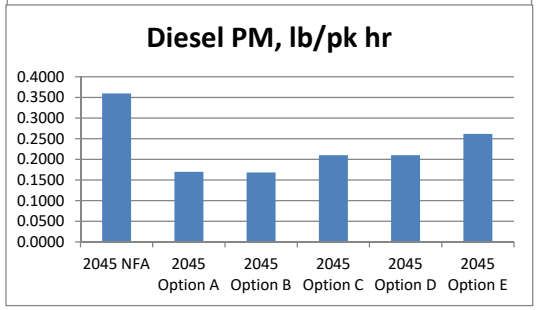












Appendix B - MSAT Analysis

ERLT FDOT Lookup Factors

Year 2018
Year 2045

FDOT District No.	Year	Road Type	Speed, mph	Benzene, g/mi	1,3-butadiene, g/mi	Formaldehyde, g/mi	Naphthalene, g/mi	Acetaldehyde, g/mi	Acrolein, g/mi	Ethyl Benzene, g/mi	POM, g/mi	Diesel PM, g/mi
7	2018	Urban Restricted Access	2.5	0.017839791	0.002705499	0.027118844	0.00296495	0.013336536	0.001756162	0.01461105	0.001154018	0.259515293
7	2018	Urban Restricted Access	3	0.016247518	0.002459598	0.024716548	0.002701575	0.012147714	0.001600152	0.013240475	0.00104868	0.234767818
7	2018	Urban Restricted Access	4	0.013062972	0.001967798	0.019911957	0.002174825	0.009770069	0.00128813	0.010499325	0.000838002	0.185272869
7	2018	Urban Restricted Access	5	0.009878427	0.001475997	0.015107366	0.001648075	0.007392424	0.000976109	0.007758175	0.000627324	0.13577792
7	2018	Urban Restricted Access	6	0.009056811	0.001348571	0.013735731	0.001499633	0.006729789	0.000886754	0.007062381	0.000570459	0.123792656
7	2018	Urban Restricted Access	7	0.008235196	0.001221145	0.012364096	0.001351192	0.006067154	0.000797399	0.006366588	0.000513593	0.111807392
7	2018	Urban Restricted Access	8	0.00741358	0.001093719	0.010992461	0.001202751	0.005404519	0.000708044	0.005670795	0.000456727	0.099822129
7	2018	Urban Restricted Access	9	0.006591964	0.000966293	0.009620826	0.00105431	0.004741884	0.000618689	0.004975001	0.000399861	0.087836865
7	2018	Urban Restricted Access	10	0.005770349	0.000838867	0.008249191	0.000905869	0.004079249	0.000529334	0.004279208	0.000342996	0.075851601
7	2018	Urban Restricted Access	11	0.005483338	0.000795822	0.007773264	0.000854514	0.003850711	0.000498474	0.00404202	0.00032326	0.07178061
7	2018	Urban Restricted Access	12	0.005196328	0.000752777	0.007297337	0.000803159	0.003622174	0.000467614	0.003804832	0.000303525	0.067709619
7	2018	Urban Restricted Access	13	0.004909318	0.000709733	0.006821409	0.000751804	0.003393636	0.000436755	0.003567644	0.000283789	0.063638628
7	2018	Urban Restricted Access	14	0.004622307	0.000666688	0.006345482	0.000700449	0.003165098	0.000405895	0.003330456	0.000264053	0.059567637
7	2018	Urban Restricted Access	15	0.004335297	0.000623643	0.005869555	0.000649094	0.00293656	0.000375035	0.003093268	0.000244318	0.055496646
7	2018	Urban Restricted Access	16	0.004163578	0.000597155	0.005612274	0.000620958	0.002809156	0.000358503	0.002959412	0.000233977	0.052911151
7	2018	Urban Restricted Access	17	0.003991859	0.000570666	0.005354994	0.000592823	0.002681752	0.000341971	0.002825556	0.000223636	0.050325656
7	2018	Urban Restricted Access	18	0.00382014	0.000544177	0.005097713	0.000564688	0.002554348	0.000325438	0.0026917	0.000213295	0.047740162
7	2018	Urban Restricted Access	19	0.003648421	0.000517689	0.004840433	0.000536552	0.002426944	0.000308906	0.002557844	0.000202954	0.045154667
7	2018	Urban Restricted Access	20	0.003476702	0.0004912	0.004583152	0.000508417	0.00229954	0.000292374	0.002423989	0.000192613	0.042569172
7	2018	Urban Restricted Access	21	0.003385028	0.000477128	0.004439068	0.000492732	0.002228987	0.000283026	0.002349629	0.000186899	0.041497459
7	2018	Urban Restricted Access	22	0.003293353	0.000463056	0.004294983	0.000477047	0.002158433	0.000273678	0.002275268	0.000181185	0.040425745
7	2018	Urban Restricted Access	23	0.003201678	0.000448984	0.004150899	0.000461362	0.00208788	0.000264331	0.002200908	0.000175472	0.039354032
7	2018	Urban Restricted Access	24	0.003110003	0.000434912	0.004006814	0.000445676	0.002017326	0.000254983	0.002126548	0.000169758	0.038282318
7	2018	Urban Restricted Access	25	0.003018329	0.00042084	0.00386273	0.000429991	0.001946772	0.000245635	0.002052188	0.000164045	0.037210605
7	2018	Urban Restricted Access	26	0.002973926	0.000412556	0.003770075	0.000420172	0.00190266	0.00023956	0.002009884	0.000160781	0.036646187
7	2018	Urban Restricted Access	27	0.002929524	0.000404272	0.00367742	0.000410353	0.001858547	0.000233485	0.00196758	0.000157518	0.036081769
7	2018	Urban Restricted Access	28	0.002885121	0.000395988	0.003584766	0.000400534	0.001814434	0.00022741	0.001925275	0.000154255	0.03551735
7	2018	Urban Restricted Access	29	0.002840718	0.000387703	0.003492111	0.000390715	0.001770321	0.000221335	0.001882971	0.000150992	0.034952932
7	2018	Urban Restricted Access	30	0.002796316	0.000379419	0.003399456	0.000380896	0.001726209	0.00021526	0.001840667	0.000147729	0.034388514
7	2018	Urban Restricted Access	31	0.002787545	0.000374937	0.003349262	0.000375962	0.001702985	0.000211961	0.001820136	0.000146912	0.03392285
7	2018	Urban Restricted Access	32	0.002778774	0.000370456	0.003299067	0.000371028	0.00167976	0.000208661	0.001799604	0.000146094	0.033457185
7	2018	Urban Restricted Access	33	0.002770002	0.000365975	0.003248873	0.000366094	0.001656536	0.000205361	0.001779073	0.000145276	0.032991521
7	2018	Urban Restricted Access	34	0.002761231	0.000361493	0.003198678	0.00036116	0.001633312	0.000202061	0.001758542	0.000144459	0.032525856
7	2018	Urban Restricted Access	35	0.00275246	0.000357012	0.003148484	0.000356226	0.001610088	0.000198762	0.00173801	0.000143641	0.032060192
7	2018	Urban Restricted Access	36	0.00274316	0.000353462	0.003104229	0.000351807	0.00158989	0.000195839	0.001721505	0.000142818	0.031868446
7	2018	Urban Restricted Access	37	0.002733859	0.000349913	0.003059974	0.000347388	0.001569693	0.000192916	0.001705	0.000141994	0.031676699
7	2018	Urban Restricted Access	38	0.002724559	0.000346364	0.00301572	0.000342968	0.001549495	0.000189994	0.001688494	0.00014117	0.031484953
7	2018	Urban Restricted Access	39	0.002715259	0.000342815	0.002971465	0.000338549	0.001529298	0.000187071	0.001671989	0.000140347	0.031293206
7	2018	Urban Restricted Access	40	0.002705958	0.000339265	0.00292721	0.00033413	0.001509101	0.000184148	0.001655484	0.000139523	0.03110146
7	2018	Urban Restricted Access	41	0.002695987	0.000336274	0.00289197	0.000330567	0.001492786	0.00018184	0.001641395	0.00013873	0.030920206
7	2018	Urban Restricted Access	42	0.002686015	0.000333283	0.00285673	0.000327004	0.001476471	0.000179531	0.001627306	0.000137937	0.030738952
7	2018	Urban Restricted Access	43	0.002676043	0.000330292	0.00282149	0.000323442	0.001460156	0.000177223	0.001613217	0.000137143	0.030557697
7	2018	Urban Restricted Access	44	0.002666072	0.000327301	0.002786251	0.000319879	0.001443841	0.000174915	0.001599128	0.00013635	0.030376443
7	2018	Urban Restricted Access	45	0.0026561	0.000324309	0.002751011	0.000316316	0.001427526	0.000172607	0.001585039	0.000135557	0.030195189
7	2018	Urban Restricted Access	46	0.002637686	0.00032103	0.002717955	0.00031281	0.001411491	0.000170498	0.001569066	0.000134272	0.029916544
7	2018	Urban Restricted Access	47	0.002619273	0.00031775	0.0026849	0.000309304	0.001395456	0.00016839	0.001553093	0.000132986	0.029637899
7	2018	Urban Restricted Access	48	0.00260086	0.000314471	0.002651845	0.000305798	0.00137942	0.000166282	0.00153712	0.000131701	0.029359254
7	2018	Urban Restricted Access	49	0.002582446	0.000311191	0.00261879	0.000302292	0.001363385	0.000164174	0.001521147	0.000130416	0.029080609
7	2018	Urban Restricted Access	50	0.002564033	0.000307911	0.002585734	0.000298786	0.00134735	0.000162066	0.001505174	0.00012913	0.028801964
7	2018	Urban Restricted Access	51	0.002540053	0.000304943	0.002555321	0.000295439	0.00133247	0.000160157	0.001488517	0.000127424	0.028481418
7	2018	Urban Restricted Access	52	0.002516074	0.000301975	0.002524908	0.000292092	0.001317591	0.000158249	0.001471859	0.000125718	0.028160872
7	2018	Urban Restricted Access	53	0.002492094	0.000299006	0.002494495	0.000288745	0.001302711	0.00015634	0.001455201	0.000124012	0.027840327
7	2018	Urban Restricted Access	54	0.002468115	0.000296038	0.002464082	0.000285398	0.001287831	0.000154432	0.001438543	0.000122305	0.027519781
7	2018	Urban Restricted Access	55	0.002444135	0.000293069	0.002433668	0.000282051	0.001272951	0.000152523	0.001421885	0.000120599	0.027199235
7	2018	Urban Restricted Access	56	0.002426883	0.00029069	0.002406474	0.000279115	0.00126001	0.000150777	0.00140917	0.000119134	0.026934213
7	2018	Urban Restricted Access	57	0.002409631	0.000288311	0.00237928	0.000276178	0.001247068	0.00014903	0.001396455	0.00011767	0.02666919
7	2018	Urban Restricted Access	58	0.002392379	0.000285931	0.002352086	0.000273241	0.001234126	0.000147284	0.001383739	0.000116205	0.026404168
7	2018	Urban Restricted Access	59	0.002375127	0.000283552	0.002324892	0.000270304	0.001221184	0.000145538	0.001371024	0.000114741	0.026139145
7	2018	Urban Restricted Access	60	0.002357875	0.000281173	0.002297698	0.000267367	0.001208242	0.000143791	0.001358308	0.000113276	0.025874123
7	2018	Urban Restricted Access	61	0.00236102	0.000280453	0.002280191	0.000265677	0.001201058	0.000142545	0.00135539	0.000112383	0.025799184
7	2018	Urban Restricted Access	62	0.002364166	0.000279734	0.002262685	0.000263987	0.001193875	0.000141299	0.001352472	0.00011149	0.025724245
7	2018	Urban Restricted Access	63	0.002367311	0.000279015	0.002245178	0.000262296	0.001186691	0.000140053	0.001349553	0.000110596	0.025649305
7	2018	Urban Restricted Access	64	0.002370456	0.000278296	0.002227672	0.000260606	0.001179507	0.000138807	0.001346635	0.000109703	0.025574366
7	2018	Urban Restricted Access	65	0.002373602	0.000277577	0.002210165	0.000258916	0.001172324	0.000137561	0.001343716	0.00010881	0.025499427
7	2018	Urban Restricted Access	66	0.002409187	0.000279547	0.002207026	0.000259186	0.001174127	0.000137089	0.00135593	0.00010873	0.025400077
7	2018	Urban Restricted Access	67	0.002444772	0.000281518	0.002203886	0.000259456	0.001175931	0.000136617	0.001368143	0.000108649	0.025300728
7	2018	Urban Restricted Access	68	0.002480358	0.000283488	0.002200746	0.000259726	0.001177734	0.000136145	0.001380356	0.000108569	0.025201378
7	2018	Urban Restricted Access	69	0.002515943	0.000285459	0.002197606	0.000259997	0.001179538	0.000135673	0.001392569	0.000108489	0.025102029
7	2018	Urban Restricted Access	70	0.002551528	0.00028743	0.002194466	0.000260267	0.001181341	0.000135201	0.001404783	0.000108409	0.025002679
7	2018	Urban Restricted Access	71	0.00267064	0.000297028	0.002213743	0.000264182	0.001201622	0.000135668	0.001453152	0.000109897	0.024913799
7	2018	Urban Restricted Access	72	0.002789752	0.000306627	0.00223302	0.000268096	0.001221902	0.000136136	0.001501522	0.000111386	0.024824919
7	2018	Urban Restricted Access	73	0.002908864	0.000316226	0.002252297	0.000272011	0.001242182	0.000136603	0.001549892	0.000112874	0.024736039
7	2018	Urban Restricted Access	74	0.003027976	0.000325825	0.002271574	0.000275926	0.001262462	0.000137071	0.001598262	0.000114362	0.024647159
7	2018	Urban Restricted Access	75	0.003147088	0.000335423	0.002290851	0.000279841	0.001282743	0.000137538	0.001646631	0.000115851	0.024558279

FDOT District No.	Year	Road Type	Speed, mph	Benzene, g/mi	1,3-butadiene, g/mi	Formaldehyde, g/mi	Naphthalene, g/mi	Acetaldehyde, g/mi	Acrolein, g/mi	Ethyl Benzene, g/mi	POM, g/mi	Diesel PM, g/mi
7	2045	Urban Restricted Access	2.5	0.002970901	3.36176E-05	0.009679544	0.000759183	0.003182005	0.000447115	0.004422905	0.000111826	0.047333875
7	2045	Urban Restricted Access	3	0.002698281	3.06236E-05	0.008820125	0.000691697	0.002900564	0.000407341	0.003992088	0.000102071	0.04282717
7	2045	Urban Restricted Access	4	0.002153042	2.46358E-05	0.007101288	0.000556725	0.002337681	0.000327793	0.003130456	8.25614E-05	0.033813759
7	2045	Urban Restricted Access	5	0.001607803	1.86479E-05	0.005382451	0.000421752	0.001774799	0.000248245	0.002268823	6.30517E-05	0.024800348
7	2045	Urban Restricted Access	6	0.00146317	1.68309E-05	0.004864531	0.000381338	0.001605604	0.000224307	0.002049785	5.75018E-05	0.022570036
7	2045	Urban Restricted Access	7	0.001318537	1.50138E-05	0.004346612	0.000340924	0.001436408	0.000200368	0.001830746	5.19518E-05	0.020339724
7	2045	Urban Restricted Access	8	0.001173904	1.31967E-05	0.003828693	0.000300509	0.001267213	0.00017643	0.001611707	4.64019E-05	0.018109412
7	2045	Urban Restricted Access	9	0.001029271	1.13797E-05	0.003310774	0.000260095	0.001098018	0.000152492	0.001392668	4.08519E-05	0.0158791
7	2045	Urban Restricted Access	10	0.000884639	9.56259E-06	0.002792855	0.000219681	0.000928822	0.000128554	0.001173629	3.5302E-05	0.013648788
7	2045	Urban Restricted Access	11	0.000831344	8.91967E-06	0.002608555	0.000205248	0.000868314	0.000120035	0.001098752	3.3097E-05	0.012775792
7	2045	Urban Restricted Access	12	0.000778049	8.27676E-06	0.002424255	0.000190815	0.000807806	0.000111516	0.001023875	3.08921E-05	0.011902797
7	2045	Urban Restricted Access	13	0.000724754	7.63385E-06	0.002239955	0.000176383	0.000747298	0.000102997	0.000948998	2.86871E-05	0.011029801
7	2045	Urban Restricted Access	14	0.000671459	6.99094E-06	0.002055654	0.00016195	0.00068679	9.44781E-05	0.00087412	2.64821E-05	0.010156806
7	2045	Urban Restricted Access	15	0.000618163	6.34803E-06	0.001871354	0.000147517	0.000626282	8.59593E-05	0.000799243	2.42771E-05	0.00928381
7	2045	Urban Restricted Access	16	0.00059338	6.01663E-06	0.001777006	0.00014019	0.000595397	8.16093E-05	0.000762436	2.33017E-05	0.00879893
7	2045	Urban Restricted Access	17	0.000568597	5.68523E-06	0.001682659	0.000132862	0.000564511	7.72593E-05	0.000725628	2.23263E-05	0.00831405
7	2045	Urban Restricted Access	18	0.000543813	5.35383E-06	0.001588311	0.000125535	0.000533626	7.29093E-05	0.00068882	2.13509E-05	0.007829171
7	2045	Urban Restricted Access	19	0.00051903	5.02243E-06	0.001493963	0.000118207	0.00050274	6.85593E-05	0.000652013	2.03755E-05	0.007344291
7	2045	Urban Restricted Access	20	0.000494247	4.69103E-06	0.001399615	0.00011088	0.000471855	6.42093E-05	0.000615205	1.94001E-05	0.006859411
7	2045	Urban Restricted Access	21	0.000479596	4.51008E-06	0.001347764	0.000106847	0.00045482	6.18215E-05	0.000593234	1.89822E-05	0.006706031
7	2045	Urban Restricted Access	22	0.000464945	4.32912E-06	0.001295913	0.000102814	0.000437786	5.94336E-05	0.000571263	1.85643E-05	0.006552651
7	2045	Urban Restricted Access	23	0.000450295	4.14817E-06	0.001244062	9.87805E-05	0.000420752	5.70458E-05	0.000549292	1.81464E-05	0.00639927
7	2045	Urban Restricted Access	24	0.000435644	3.96722E-06	0.001192211	9.47475E-05	0.000403717	5.46579E-05	0.000527321	1.77285E-05	0.00624589
7	2045	Urban Restricted Access	25	0.000420993	3.78626E-06	0.00114036	9.07144E-05	0.000386683	5.22701E-05	0.00050535	1.73106E-05	0.00609251
7	2045	Urban Restricted Access	26	0.000415928	3.65437E-06	0.001104361	8.80182E-05	0.000375203	5.06197E-05	0.000492331	1.7285E-05	0.00604144
7	2045	Urban Restricted Access	27	0.000410863	3.52249E-06	0.001068361	8.53221E-05	0.000363723	4.89694E-05	0.000479312	1.72594E-05	0.005990369
7	2045	Urban Restricted Access	28	0.000405798	3.3906E-06	0.001032362	8.26259E-05	0.000352244	4.73191E-05	0.000466292	1.72337E-05	0.005939299
7	2045	Urban Restricted Access	29	0.000400733	3.25871E-06	0.000996362	7.99298E-05	0.000340764	4.56687E-05	0.000453273	1.72081E-05	0.005888228
7	2045	Urban Restricted Access	30	0.000395669	3.12683E-06	0.000960363	7.72336E-05	0.000329284	4.40184E-05	0.000440254	1.71824E-05	0.005837158
7	2045	Urban Restricted Access	31	0.000399536	3.05444E-06	0.000942597	7.60774E-05	0.000323952	4.32328E-05	0.000433629	1.75905E-05	0.005807397
7	2045	Urban Restricted Access	32	0.000403404	2.98205E-06	0.000924831	7.49211E-05	0.000318621	4.24471E-05	0.000427004	1.79985E-05	0.005777636
7	2045	Urban Restricted Access	33	0.000407272	2.90966E-06	0.000907065	7.37648E-05	0.000313289	4.16615E-05	0.000420378	1.84066E-05	0.005747876
7	2045	Urban Restricted Access	34	0.00041114	2.83727E-06	0.000889299	7.26085E-05	0.000307957	4.08759E-05	0.000413753	1.88147E-05	0.005718115
7	2045	Urban Restricted Access	35	0.000415007	2.76488E-06	0.000871533	7.14523E-05	0.000302625	4.00903E-05	0.000407127	1.92227E-05	0.005688354
7	2045	Urban Restricted Access	36	0.000417002	2.6936E-06	0.000853475	7.02106E-05	0.000297119	3.9278E-05	0.000401804	1.95266E-05	0.00569802
7	2045	Urban Restricted Access	37	0.000418998	2.62231E-06	0.000835418	6.89689E-05	0.000291613	3.84658E-05	0.00039648	1.98305E-05	0.005707687
7	2045	Urban Restricted Access	38	0.000420993	2.55103E-06	0.000817361	6.77272E-05	0.000286107	3.76535E-05	0.000391156	2.01344E-05	0.005717353
7	2045	Urban Restricted Access	39	0.000422988	2.47975E-06	0.000799303	6.64855E-05	0.0002806	3.68412E-05	0.000385832	2.04383E-05	0.00572702
7	2045	Urban Restricted Access	40	0.000424983	2.40846E-06	0.000781246	6.52438E-05	0.000275094	3.60289E-05	0.000380508	2.07422E-05	0.005736686
7	2045	Urban Restricted Access	41	0.000425957	2.35341E-06	0.000767118	6.42591E-05	0.000270748	3.53922E-05	0.000376165	2.09282E-05	0.005732144
7	2045	Urban Restricted Access	42	0.00042693	2.29836E-06	0.00075299	6.32744E-05	0.000266401	3.47555E-05	0.000371822	2.11142E-05	0.005727602
7	2045	Urban Restricted Access	43	0.000427904	2.24331E-06	0.000738863	6.22897E-05	0.000262054	3.41188E-05	0.000367478	2.13002E-05	0.005723061
7	2045	Urban Restricted Access	44	0.000428877	2.18826E-06	0.000724735	6.1305E-05	0.000257708	3.34821E-05	0.000363135	2.14862E-05	0.005718519
7	2045	Urban Restricted Access	45	0.000429851	2.13321E-06	0.000710607	6.03203E-05	0.000253361	3.28454E-05	0.000358792	2.16722E-05	0.005713977
7	2045	Urban Restricted Access	46	0.000427921	2.08775E-06	0.000698065	5.938E-05	0.000249327	3.22731E-05	0.000354362	2.16015E-05	0.005672366
7	2045	Urban Restricted Access	47	0.000425991	2.0423E-06	0.000685523	5.84398E-05	0.000245293	3.17008E-05	0.000349932	2.15308E-05	0.005630755
7	2045	Urban Restricted Access	48	0.000424061	1.99684E-06	0.000672982	5.74996E-05	0.00024126	3.11285E-05	0.000345502	2.14601E-05	0.005589145
7	2045	Urban Restricted Access	49	0.00042213	1.95139E-06	0.00066044	5.65594E-05	0.000237226	3.05562E-05	0.000341072	2.13894E-05	0.005547534
7	2045	Urban Restricted Access	50	0.0004202	1.90593E-06	0.000647898	5.56191E-05	0.000233192	2.99839E-05	0.000336642	2.13188E-05	0.005505923
7	2045	Urban Restricted Access	51	0.000415567	1.86784E-06	0.000636433	5.46919E-05	0.000229327	2.94533E-05	0.000331942	2.10243E-05	0.005440934
7	2045	Urban Restricted Access	52	0.000410934	1.82976E-06	0.000624968	5.37648E-05	0.000225463	2.89227E-05	0.000327242	2.07299E-05	0.005375944
7	2045	Urban Restricted Access	53	0.000406301	1.79167E-06	0.000613503	5.28376E-05	0.000221598	2.8392E-05	0.000322542	2.04355E-05	0.005310955
7	2045	Urban Restricted Access	54	0.000401667	1.75358E-06	0.000602038	5.19104E-05	0.000217734	2.78614E-05	0.000317842	2.01411E-05	0.005245965
7	2045	Urban Restricted Access	55	0.000397034	1.71549E-06	0.000590573	5.09832E-05	0.000213869	2.73307E-05	0.000313142	1.98467E-05	0.005180976
7	2045	Urban Restricted Access	56	0.000394161	1.67866E-06	0.000579984	5.01545E-05	0.000210386	2.6843E-05	0.000309561	1.96094E-05	0.005130913
7	2045	Urban Restricted Access	57	0.000391287	1.64184E-06	0.000569395	4.93258E-05	0.000206902	2.63552E-05	0.000305981	1.93721E-05	0.00508085
7	2045	Urban Restricted Access	58	0.000388414	1.60501E-06	0.000558805	4.84971E-05	0.000203419	2.58674E-05	0.0003024	1.91348E-05	0.005030788
7	2045	Urban Restricted Access	59	0.000385541	1.56819E-06	0.000548216	4.76684E-05	0.000199935	2.53796E-05	0.00029882	1.88975E-05	0.004980725
7	2045	Urban Restricted Access	60	0.000382668	1.53136E-06	0.000537627	4.68397E-05	0.000196451	2.48918E-05	0.000295239	1.86602E-05	0.004930662
7	2045	Urban Restricted Access	61	0.000385351	1.49858E-06	0.000529899	4.63363E-05	0.000194235	2.45453E-05	0.000294003	1.86103E-05	0.004925658
7	2045	Urban Restricted Access	62	0.000388034	1.46579E-06	0.000522171	4.58329E-05	0.000192019	2.41989E-05	0.000292767	1.85604E-05	0.004920654
7	2045	Urban Restricted Access	63	0.000390716	1.43301E-06	0.000514442	4.53295E-05	0.000189802	2.38524E-05	0.00029153	1.85106E-05	0.00491565
7	2045	Urban Restricted Access	64	0.000393399	1.40023E-06	0.000506714	4.48262E-05	0.000187586	2.3506E-05	0.000290294	1.84607E-05	0.004910646
7	2045	Urban Restricted Access	65	0.000396082	1.36744E-06	0.000498986	4.43228E-05	0.00018537	2.31595E-05	0.000289058	1.84108E-05	0.004905642
7	2045	Urban Restricted Access	66	0.000406523	1.33958E-06	0.000495004	4.42607E-05	0.000184821	2.30027E-05	0.000290857	1.856E-05	0.004902311
7	2045	Urban Restricted Access	67	0.000416963	1.31172E-06	0.000491022	4.41986E-05	0.000184272	2.28458E-05	0.000292657	1.87093E-05	0.004898979
7	2045	Urban Restricted Access	68	0.000427404	1.28386E-06	0.00048704	4.41365E-05	0.000183724	2.2689E-05	0.000294456	1.88585E-05	0.004895648
7	2045	Urban Restricted Access	69	0.000437844	1.256E-06	0.000483058	4.40744E-05	0.000183175	2.25322E-05	0.000296255	1.90077E-05	0.004892316
7	2045	Urban Restricted Access	70	0.000448284	1.22814E-06	0.000479076	4.40122E-05	0.000182627	2.23754E-05	0.000298055	1.91569E-05	0.004888985
7	2045	Urban Restricted Access	71	0.000477703	1.18233E-06	0.000476435	4.44641E-05	0.00018373	2.23246E-05	0.000305157	1.98415E-05	0.004935285
7	2045	Urban Restricted Access	72	0.000507122	1.13653E-06	0.000473794	4.49161E-05	0.000184833	2.22739E-05	0.00031226	2.05261E-05	0.004981585
7	2045	Urban Restricted Access	73	0.000536541	1.09072E-06	0.000471154	4.5368E-05	0.000185936	2.22232E-05	0.000319362	2.12108E-05	0.005027885
7	2045	Urban Restricted Access	74	0.000565959	1.04492E-06	0.000468513	4.58199E-05	0.000187039	2.21724E-05	0.000326464	2.18954E-05	0.005074185
7	2045	Urban Restricted Access	75	0.000595378	9.99114E-07	0.000465872	4.62718E-05	0.000188142	2.21217E-05	0.000333567	2.258E-05	0.005120485

Appendix B - MSAT Analysis Assumptions & Notes

ERLT Lookup Tables and How they were used in the evaluation

- Used ERLT Lookup Tables provided by FDOT OEM (dated Feb 2018) for FDOT District 7
- Deleted all Rural restricted, Rural unrestricted and Urban unrestricted lines to shorten the lookup sheets
- Deleted unneeded years 2016, 2017, 2019-2038 to shorten the lookup sheets
- Leaving years 2018, 2039 and 2040
- Calculated the difference between 2039 and 2040 values to determine annual change by straight-line extrapolation from 2040 to 2045
- Multiplied the Difference between 2039-2040 by 5 (years) and applied to 2040 values to calculate 2045
- Took remaining values and split into sheets for year 2018 (existing) and 2045 (design year)
- Those remaining 2 sheets (2018 & 2045) were used to calculate the MSAT rates for the project.

MSAT Evaluation Assumptions and Notes

- Used information contained in Project Traffic Analysis Report (PTAR) draft dated March, then October 2019
- For Scenario One – used data along I-275 from the western ramps at SR 60 to the northern ramps of MLK and along I-4 from I-275 to 50th Street.
- For Scenario Two – Process for identifying the five links used in the evaluation:
  - Identified links to evaluate by looking at the speed/congestion tables . For "No Further Action" (NFA) conditions – used Figure 3-18 to 21, 3-41 to 47. For "Build" conditions Option A Figure 3-45 to 48, Option B Figure 3-49 to 52, Option C Figure 3-53 to 56 and Option D Figure 3-57 to 60, Option E Figure71 to 74)
  - Also looked at the link locations where there were no ramp connections or transitions overlapping so the analysis considered the mainline (general use and for build conditions general use and express lane conditions). The PTAR did not provide speeds on ramps , so calculating a MSAT value at ramp locations would not have been possible.
  - Lastly, attempted to include locations in each of the TIS Segments. Could not locate one in TIS Segment 3A due to the overlapping ramps for the I-4/I-275 and then feeder ramps on I-4 to 14/15th, 21st/22nd and the Selmon Connector.
- For 2018 speeds/congestion factors, used the model calculated speeds (Figures 2-9 to 12) in the PTAR as opposed to the measured speeds shown.
- For Scenarios One and Two - Used Figures 3-41 to 3-74 for speeds and congestion factors. Vehicle miles traveled were calculated based on volumes in the PTAR.
- For Scenario One – Used Design Hourly Vehicles (DDHV) for the peak AM/PM hours in the PTAR (Figure 2-3 for 2018, Figure 3-13 for 2045 NFA, and Figures 3-14, 3-15, 3-16 and 3-17 for Design Options A, B, C, & D respectively). Average speeds were calculated for Scenario One by adding up all travel time calculated from the speeds over the distance and re-calculating an average speed for each roadway section.
- For Scenario Two - Used Design Hourly Vehicles (DDHV) for the peak AM/PM hours noted above for Scenario Two, and Annual Average Daily Traffic (AADT) in the PTAR (Appendix E for 2018, 2045NFA, Appendix M for Option A, Appendix N for Option B, Appendix O for Option C and Appendix P for Option D, Appendix Q for Option E) to calculate Vehicle Miles traveled in the emissions calculations. The peak hour factor was calculated and the emissions were adjusted to peak hour emissions instead of emissions in the day as the calculation was based on speeds/congestion of the peak hour.
- To maintain consistency in the comparison of emissions by year (2018-2045), for Scenario Two evaluation, it was assumed that the length of each segment remained the same as in the existing 2018 condition (noted on PTAR Figures 2-1 & 2-2).
- The PTAR included speeds at both the AM and PM peak periods. Emission rates for both the AM and PM periods were calculated in the tables and the period with the highest values was used in comparison tables.
- The PTAR did not indicate whether an idling delay (2.5mph as used in the lookup tables) occurred. No links showed as having a travel speed that low. So in the calculation of emissions, to be conservative, if a travel speed from the PTAR sheets was below 40 mph, it was assumed that one hour of idling delay applied. So the calculation of 1 hour at 2.5mph is added to the calculation at the average speed shown. In the big picture, the value of the 2.5mph element is generally negligible as never it contributes more than 0.01% to the calculation, but nonetheless was included.

Appendix C

FHWA Guidance Document

Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents

Dated October 18, 2016

U.S. Department of Transportation
Federal Highway Administration

Memorandum

SENT VIA ELECTRONIC MAIL

Subject: **INFORMATION:** Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents

Date: October 18, 2016

/S/Original signed by

From: Emily Biondi
Acting Director, Office of Natural Environment

In Reply Refer To: HEPN-10

To: Division Administrators
Federal Lands Highway Division Engineers

PURPOSE

The purpose of this memorandum is to update the December 2012, Interim Guidance that advised Federal Highway (FHWA) Division Offices on when and how to analyze Mobile Source Air Toxics (MSAT) within the National Environmental Policy Act (NEPA) review process for proposed highway projects.

This update was prompted by recent changes in the emissions model required for conducting emissions analysis. In 2014, the U.S. Environmental Protection Agency (EPA) released MOVES2014,[1] the latest major update of the Motor Vehicle Emissions Simulator (MOVES) vehicle emissions model, and started a 2-year grace period to phase in the requirement of using MOVES2014 for transportation conformity analysis. Beginning October 7, 2016, project sponsors should use MOVES2014 (or minor revisions such as MOVES2014a,[2] which is the most recent version of MOVES released by EPA) to conduct emissions analysis for both transportation conformity determinations and for NEPA purposes.

This Updated Interim Guidance incorporates new analysis conducted using MOVES2014a. Based on FHWA's analysis using MOVES2014a, diesel particulate matter (diesel PM) remains the dominant MSAT of concern for highway projects. We have also provided an update on the status of scientific research on air toxics. This Updated Interim Guidance supersedes the December 2012 Interim Guidance and should be referenced in NEPA documentation.

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[1] Federal Register, Vol. 79, No. 194, page 60343, October 7, 2014.

Available at: https://www.gpo.gov/fdsys/pkg/FR-2014-10-07/pdf/2014-23258.pdf

[2] https://www.epa.gov/moves/moves2014a-latest-version-motor-vehicle-emission-simulator-moves

BACKGROUND

Controlling air toxic emissions became a national priority with the passage of the Clean Air Act Amendments (CAAA) of 1990, whereby Congress mandated that the U.S. Environmental Protection Agency (EPA) regulate 188 air toxics, also known as hazardous air pollutants. The EPA assessed this expansive list in its 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 part of EPA's Integrated Risk Information System (IRIS).[3] In addition, EPA identified nine compounds with significant contributions from mobile sources that are among the national and regional-scale cancer risk drivers or contributors and non-cancer hazard contributors from the 2011 National Air Toxics Assessment (NATA).[4] These are *1,3-butadiene, acetaldehyde, acrolein, benzene, diesel particulate matter (diesel PM), ethylbenzene, formaldehyde, naphthalene, and polycyclic organic matter*. While FHWA considers these the priority mobile source air toxics, the list is subject to change and may be adjusted in consideration of future EPA rules.

Motor Vehicle Emissions Simulator (MOVES)

According to EPA, MOVES2014 is a major revision to MOVES2010 and improves upon it in many respects. MOVES2014 includes new data, new emissions standards, and new functional improvements and features. It incorporates substantial new data for emissions, fleet, and activity developed since the release of MOVES2010. These new emissions data are for light- and heavy-duty vehicles, exhaust and evaporative emissions, and fuel effects. MOVES2014 also adds updated vehicle sales, population, age distribution, and vehicle miles travelled (VMT) data. MOVES2014 incorporates the effects of three new Federal emissions standard rules not included in MOVES2010. These new standards are all expected to impact MSAT emissions and include Tier 3 emissions and fuel standards starting in 2017 (79 FR 60344), heavy-duty greenhouse gas regulations that phase in during model years 2014-2018 (79 FR 60344), and the second phase of light duty greenhouse gas regulations that phase in during model years 2017-2025 (79 FR 60344). Since the release of MOVES2014, EPA has released MOVES2014a. In the November 2015 MOVES2014a Questions and Answers Guide,[5] EPA states that for on-road emissions, MOVES2014a adds new options requested by users for the input of local VMT, includes minor updates to the default fuel tables, and corrects an error in MOVES2014 brake wear emissions. The change in brake wear emissions results in small decreases in PM emissions, while emissions for other criteria pollutants remain essentially the same as MOVES2014.

Using EPA's MOVES2014a model, as shown in Figure 1, FHWA estimates that even if VMT increases by 45 percent from 2010 to 2050 as forecast, a combined reduction of 91 percent in the total annual emissions for the priority MSAT is projected for the same time period.

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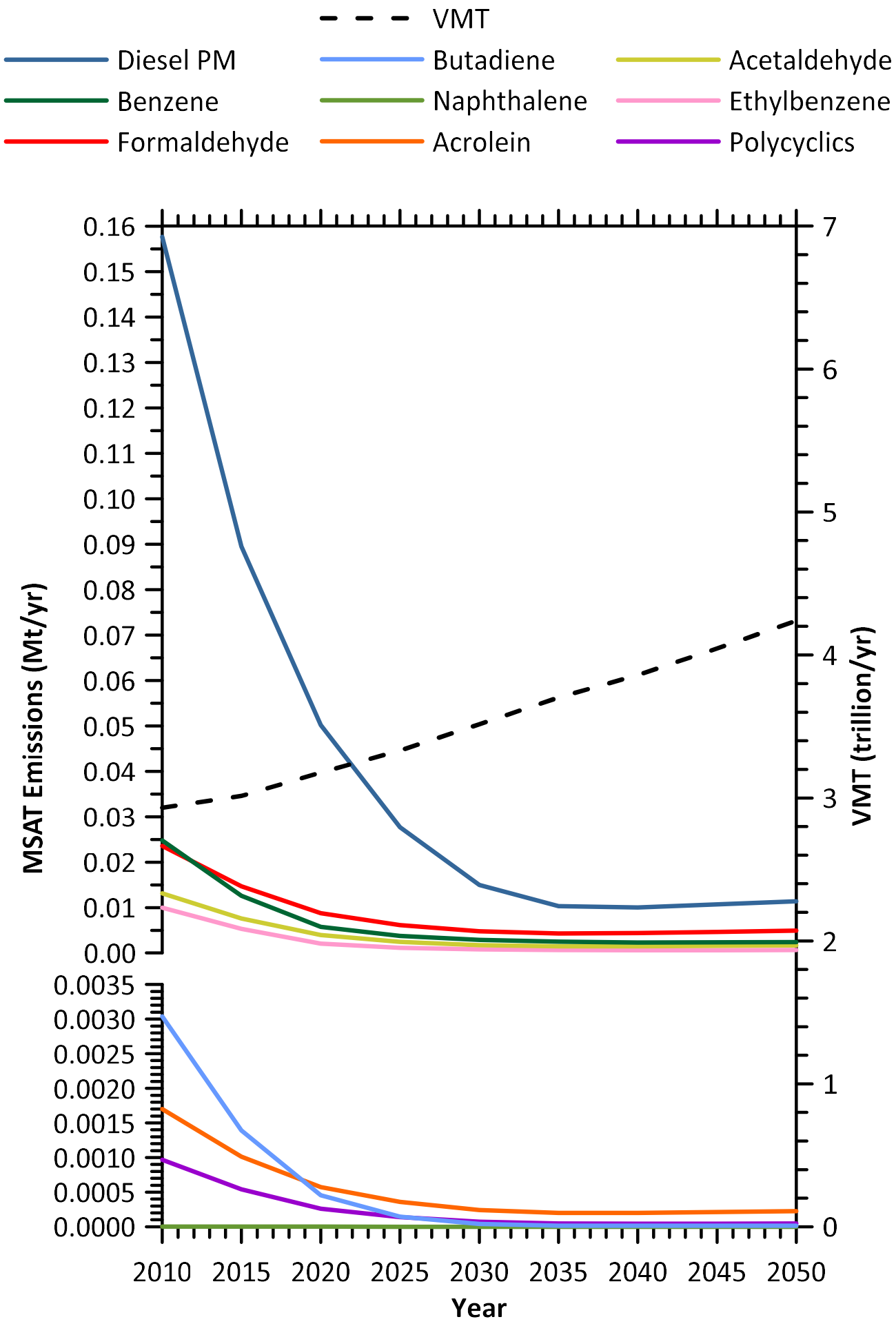
[3] https://www.epa.gov/iris
[4] https://www.epa.gov/national-air-toxics-assessment
[5] https://www.epa.gov/moves/moves2014a-latest-version-motor-vehicle-emission-simulator-moves


VMT
Diesel PM
Butadiene
Acetaldehyde
Benzene
Naphthalene
Ethylbenzene
Formaldehyde
Acrolein
Polycyclics
MSAT Emissions (Mt/yr)
VMT (trillion/yr)
0.16
0.15
0.14
0.13
0.12
0.11
0.10
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0.00
0.0035
0.0030
0.0025
0.0020
0.0015
0.0010
0.0005
0.0000
7
6
5
4
3
2
1
0
2010
2015
2020
2025
2030
2035
2040
2045
2050
Year

Diesel PM is the dominant component of MSAT emissions, making up 50 to 70 percent of all priority MSAT pollutants by mass, depending on calendar year. Users of MOVES2014a will notice some differences in emissions compared with MOVES2010b. MOVES2014a is based on updated data on some emissions and pollutant processes compared to MOVES2010b, and also reflects the latest Federal emissions standards in place at the time of its release. In addition, MOVES2014a emissions forecasts are based on lower VMT projections than MOVES2010b, consistent with recent trends suggesting reduced nationwide VMT growth compared to historical trends.

MSAT Research

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 potential public 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 arise on highway projects during the NEPA process. Even as the science emerges, the public and other agencies expect FHWA to address MSAT impacts in its environmental documents. The FHWA, EPA, the 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 FHWA will continue to monitor the developing research in this field.

NEPA CONTEXT

The NEPA requires, to the fullest extent possible, that the policies, regulations, and laws of the Federal Government be interpreted and administered in accordance with its environmental protection goals, and that Federal agencies use an interdisciplinary approach in planning and decision-making for any action that adversely impacts the environment (42 U.S.C. 4332). In addition to evaluating the potential environmental effects, FHWA must also take into account the need for safe and efficient transportation in reaching a decision that is in the best overall public interest (23 U.S.C. 109(h)). The FHWA policies and procedures for implementing NEPA are contained in regulation at 23 CFR Part 771.

CONSIDERATION OF MSAT IN NEPA DOCUMENTS

The FHWA developed a tiered approach with three categories for analyzing MSAT in NEPA documents, depending on specific project circumstances:

(1) No analysis for projects with no potential for meaningful MSAT effects;

(2) Qualitative analysis for projects with low potential MSAT effects; or

(3) Quantitative analysis to differentiate alternatives for projects with higher potential MSAT effects.

For projects warranting MSAT analysis, all nine priority MSAT should be considered.

(1) Projects with No Meaningful Potential MSAT Effects, or Exempt Projects.

The types of projects included in this category are:

- Projects qualifying as a categorical exclusion under 23 CFR 771.117;
- Projects exempt under the Clean Air Act conformity rule under 40 CFR 93.126; and
- Other projects with no meaningful impacts on traffic volumes or vehicle mix.

For projects that are categorically excluded under 23 CFR 771.117, or are exempt from conformity requirements under the Clean Air Act pursuant to 40 CFR 93.126, no analysis or discussion of MSAT is necessary. Documentation sufficient to demonstrate that the project qualifies as a categorical exclusion and/or exempt project will suffice. For other projects with no or negligible traffic impacts, regardless of the class of NEPA environmental document, no MSAT analysis is recommended. However, the project record should document in the EA or EIS the basis for the determination of no meaningful potential impacts with a brief description of the factors considered. Example language, which must be modified to correspond with local and project-specific circumstances, is provided in Appendix A.

(2) Projects with Low Potential MSAT Effects

The types of projects included in this category are those that serve to improve operations of highway, transit, or freight without adding substantial new capacity or without creating a facility that is likely to meaningfully increase MSAT emissions. This category covers a broad range of projects.

We anticipate that most highway projects that need an MSAT assessment will fall into this category. Examples of these types of projects are minor widening projects; new interchanges; replacing a signalized intersection on a surface street; and projects where design year traffic is projected to be less than 140,000 to 150,000 annual average daily traffic (AADT).

For these projects, a qualitative assessment of emissions projections should be conducted. This qualitative assessment should compare, in narrative form, the expected effect of the project on traffic volumes, vehicle mix, or routing of traffic and the associated changes in MSAT for the project alternatives, including no-build, based on VMT, vehicle mix, and speed. It should also discuss national trend data projecting substantial overall reductions in emissions due to stricter engine and fuel regulations issued by EPA. Because the emission effects of these projects typically are low, we expect there would be no appreciable difference in overall MSAT emissions among the various alternatives.

Appendix B includes example language for a qualitative assessment, with specific examples for four types of projects: (1) a minor widening project; (2) a new interchange connecting an existing roadway with a new roadway; (3) a new interchange connecting new roadways; and (4) minor improvements or expansions to intermodal centers or other projects that affect truck traffic. The information provided in Appendix B should be modified to reflect the local and project-specific situation.

In addition to the qualitative assessment, a NEPA document for this category of projects must include a discussion of information that is incomplete or unavailable for a project specific assessment of MSAT impacts, in compliance with the Council on Environmental Quality (CEQ) regulations (40 CFR 1502.22(b)). This discussion should explain how current scientific techniques, tools, and data are not sufficient to accurately estimate human health impacts that could result from a transportation project in a way that would be useful to decision-makers. Also in compliance with 40 CFR 150.22(b), this discussion should contain information regarding the health impacts of MSAT. See Appendix C.

(3) Projects with Higher Potential MSAT Effects

This category includes projects that have the potential for meaningful differences in MSAT emissions among project alternatives. We expect a limited number of projects to meet this two-pronged test. To fall into this category, a project should:

- Create or significantly alter a major intermodal freight facility that has the potential to concentrate high levels of diesel particulate matter in a single location, involving a significant number of diesel vehicles for new projects or accommodating with a significant increase in the number of diesel vehicles for expansion projects; or

- Create new capacity or add significant capacity to urban highways such as Interstates, urban arterials, or urban collector-distributor routes with traffic volumes where the AADT is projected to be in the range of 140,000 to 150,000[6] or greater by the design year;

And also

- Be proposed to be located in proximity to populated areas.

Projects falling within this category should be more rigorously assessed for impacts. If a project falls within this category, you should contact the Office of Natural Environment (HEPN) and the Office of Project Development and Environmental Review (HEPE) in FHWA Headquarters for assistance in developing a specific approach for assessing impacts. This approach would include a quantitative analysis to forecast local-specific emission trends of the priority MSAT for each alternative, to use as a basis of comparison. This analysis also may address the potential for

[6] Using EPA's MOVES2014a emissions model, FHWA determined that this range of AADT would result in emissions significantly lower than the Clean Air Act definition of a major hazardous air pollutant (HAP) source, i.e., 25 tons/yr. for all HAPs or 10 tons/yr. for any single HAP. Variations in conditions such as congestion or vehicle mix could warrant a different range for AADT; if this range does not seem appropriate for your project, please consult with the contacts from HEPN and HEPE identified in this memorandum.

cumulative impacts, where appropriate, based on local conditions. How and when cumulative impacts should be considered would be addressed as part of the assistance outlined above. The NEPA document for this project should also include relevant language on unavailable information described in Appendix C.

If the analysis for a project in this category indicates meaningful differences in levels of MSAT emissions among alternatives, mitigation options should be identified and considered. See Appendix E for information on mitigation strategies.

You should also consult with HEPN and HEPE if you have a project that does not fall within any of the types of projects listed in category 3 above, but you think has the potential to substantially increase future MSAT emissions.

CONCLUSION

What we know about mobile source air toxics is still evolving. As the science progresses FHWA will continue to revise and update this guidance. The FHWA is working with Stakeholders, EPA and others to better understand the strengths and weaknesses of developing analysis tools and the applicability on the project-level decision documentation process. The FHWA wants to make project sponsors aware of the implications of the transition to the MOVES2014 model and that FHWA will be issuing updates to this interim guidance when necessary. Additional background information on MSAT-related research is provided in Appendix D.

The FHWA Headquarters and Resource Center staff, Victoria Martinez (787) 771-2524, James Gavin (202) 366-1473, and Michael Claggett (505) 820-2047, are available to provide information and technical assistance, support any necessary analysis, and limit project delays. All MSAT analysis beginning on or after October 7, 2016, should use the MOVES2014 model. Any MSAT analysis initiated prior to that date may continue to operate under the previous guidance and utilize MOVES2010. The FHWA offices and staff listed above are available to answer questions from project sponsors.

APPENDICES

Appendix A – Prototype Language for Exempt Projects
Appendix B – Prototype Language for Qualitative Project Level MSAT Analysis
Appendix C – The Council on Environmental Quality (CEQ) Provisions Covering Incomplete or Unavailable Information (40 CFR 1502.22) including a discussion of unavailable information for project-specific MSAT Health Impacts Analysis
Appendix D – FHWA Sponsored Mobile Source Air Toxics Research Efforts
Appendix E – MSAT Mitigation Strategies

APPENDIX A – Prototype Language for Exempt Projects

The purpose of this project is to (*insert major deficiency that the project is meant to address*) by constructing (*insert major elements of the project*). This project has been determined to generate minimal air quality impacts for Clean Air Act criteria pollutants and has not been linked with any special mobile source air toxic (MSAT) concerns. As such, this project will not result in changes in traffic volumes, vehicle mix, basic project location, or any other factor that would cause a meaningful increase in MSAT impacts of the project from that of the no-build alternative.

Moreover, Environmental Protection Agency (EPA) regulations for vehicle engines and fuels will cause overall MSAT emissions to decline significantly over the next several decades. Based on regulations now in effect, an analysis of national trends with EPA's MOVES2014 model forecasts a combined reduction of over 90 percent in the total annual emissions rate for the priority MSAT from 2010 to 2050 while vehicle-miles of travel are projected to increase by over 45 percent (Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents, Federal Highway Administration, October 12, 2016). This will both reduce the background level of MSAT as well as the possibility of even minor MSAT emissions from this project.

APPENDIX B – Examples of Prototype Language for Qualitative Project-Level MSAT Analysis

The information in this Appendix is for projects with low potential MSAT effects – any non-exempt project that does not meet the threshold criteria for higher potential effects, as described in the interim guidance, should be considered for treatment provided here. The types of projects that fall into this category are those that improve operations of highways or freight facilities without adding substantial new capacity. Examples include minor widening projects or new interchanges replacing signalized intersection on surface streets.

The following are some examples of qualitative MSAT analyses for different types of projects. Each project is different, and some projects may contain elements covered in more than one of the examples below. Analysts can use the example language as a starting point, but should tailor it to reflect the unique circumstances of the project being considered. The following factors should be considered when crafting a qualitative analysis:

- For projects on an existing alignment, MSAT are expected to decline due to the effect of new EPA engine and fuel standards.

- Projects that result in increased travel speeds will reduce MSAT emissions per VMT basis, MOVES2014 provides an estimation of the effect of speed changes on diesel particulate matter and should be accounted for accordingly. This speed benefit may be offset somewhat by increased VMT if the more efficient facility attracts additional vehicle trips.

- Projects that facilitate new development may generate additional MSAT emissions from new trips, truck deliveries, and parked vehicles (due to evaporative emissions). However, these may also be activities that are attracted from elsewhere in the metro region; thus, on a regional scale there may be no net change in emissions.

- Projects that create new travel lanes, relocate lanes, or relocate economic activity closer to homes, schools, businesses, and other populated areas may increase concentrations of MSAT at those locations relative to No Action.

Other elements related to a qualitative analysis are a discussion of information that is incomplete or unavailable for a project specific assessment of MSAT impacts and a discussion of any MSAT mitigation measures that may be associated with the project.

INTODUCTORY LANGUAGE FOR QUALITATIVE ANALYSIS FOR ALL PROJECTS

A qualitative analysis provides a basis for identifying and comparing the potential differences among MSAT emissions, if any, from the various alternatives. The qualitative assessment presented below is derived in part from a study conducted by FHWA entitled *A Methodology for Evaluating Mobile Source Air Toxic Emissions Among Transportation Project Alternatives*, found at: https://www.fhwa.dot.gov/environment/air_quality/air_toxics/research_and_analysis/mobile_source_air_toxics/msatemissions.cfm.

(1) Minor Widening Project

(For purposes of this scenario, minor highway widening projects are those in which the design year traffic is predicted to be less than 140,000 – 150,000 AADT. Widening projects that surpass these criteria may be subject to a quantitative analysis.)

For each alternative in this EIS/EA (*specify*), the amount of mobile source air toxics (MSAT) emitted would be proportional to the vehicle miles traveled, or VMT, assuming that other variables such as fleet mix are the same for each alternative. The VMT estimated for each of the Build Alternatives is slightly higher than that for the No Build Alternative, because the additional capacity increases the efficiency of the roadway and attracts rerouted trips from elsewhere in the transportation network. Refer to Table ___ (*specify*). This increase in VMT would lead to higher MSAT emissions for the preferred action alternative along the highway corridor, along with a corresponding decrease in MSAT emissions along the parallel routes. The emissions increase is offset somewhat by lower MSAT emission rates due to increased speeds; according to the Environmental Protection Agency's (EPA) MOVES2014 model, emissions of all of the priority MSAT decrease as speed increases. Because the estimated VMT under each of the Alternatives are nearly the same, varying by less than ___ (*specify*) percent, it is expected there would be no appreciable difference in overall MSAT emissions among the various alternatives. Also, regardless of the alternative chosen, emissions will likely be lower than present levels in the design year as a result of EPA's national control programs that are projected to reduce annual MSAT emissions by over 90 percent between 2010 and 2050 (Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents, Federal Highway Administration, October 12, 2016). Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the EPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the study area are likely to be lower in the future in nearly all cases.

(The following paragraph may apply if the project includes plans to construct travel lanes closer to populated areas.)

The additional travel lanes contemplated as part of the project alternatives will have the effect of moving some traffic closer to nearby homes, schools, and businesses; therefore,

under each alternative there may be localized areas where ambient concentrations of MSAT could be higher under certain Build Alternatives than the No Build Alternative. The localized increases in MSAT concentrations would likely be most pronounced along the expanded roadway sections that would be built at _____ (*specify location*), under Alternatives _____ (*specify*), and along _____ (*specify route*) under Alternatives _____ (*specify*). However, the magnitude and the duration of these potential increases compared to the No-Build alternative cannot be reliably quantified due to incomplete or unavailable information in forecasting project-specific MSAT health impacts. In sum, when a highway is widened, the localized level of MSAT emissions for the Build Alternative could be higher relative to the No Build Alternative, but this could be offset due to increases in speeds and reductions in congestion (which are associated with lower MSAT emissions). Also, MSAT will be lower in other locations when traffic shifts away from them. However, on a regional basis, EPA's vehicle and fuel regulations, coupled with fleet turnover, will over time cause substantial reductions that, in almost all cases, will cause region-wide MSAT levels to be significantly lower than today.

(2) New Interchange Connecting an Existing Roadway with a New Roadway

(This scenario is oriented toward projects where a new roadway segment connects to an existing limited access highway. The purpose of the roadway is primarily to meet regional travel needs, e.g., by providing a more direct route between locations.)

For each alternative in this EIS/EA (*specify*), the amount of mobile source air toxics (MSAT) emitted would be proportional to the vehicle miles traveled, or VMT, assuming that other variables such as fleet mix are the same for each alternative. Because the VMT estimated for the No Build Alternative is higher than for any of the Build Alternatives, higher levels of MSAT are not expected from any of the Build Alternatives compared to the No Build. Refer to Table ___ (*specify*). In addition, because the estimated VMT under each of the Build Alternatives are nearly the same, varying by less than ___ (*specify*) percent, it is expected there would be no appreciable difference in overall MSAT emissions among the various alternatives. Also, regardless of the alternative chosen, emissions will likely be lower than present levels in the design year as a result of the Environmental Protection Agency’s (EPA) national control programs that are projected to reduce annual MSAT emissions by over 90 percent from 2010 to 2050 (Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents, Federal Highway Administration, October 12, 2016). Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the EPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the study area are likely to be lower in the future in virtually all locations.

Under each alternative there may be localized areas where VMT would increase, and other areas where VMT would decrease. Therefore, it is possible that localized increases and decreases in MSAT emissions may occur. The localized increases in MSAT emissions would likely be most pronounced along the new roadway sections that would be built at _____ (*specify location*), under Alternatives _____ (*specify*), and along _____

(*specify route*) under Alternatives _____ (*specify*). However, even if these increases do occur, they too will be substantially reduced in the future due to implementation of EPA's vehicle and fuel regulations.

In sum, under all Build Alternatives in the design year it is expected there would be reduced MSAT emissions in the immediate area of the project, relative to the No Build Alternative, due to the reduced VMT associated with more direct routing, and due to EPA's MSAT reduction programs.

(3) New Interchange Connecting New Roadways

(This scenario is oriented toward interchange projects developed in response to or in anticipation of economic development, e.g., a new interchange to serve a new shopping/residential development. Projects from the previous example may also have economic development associated with them, so some of this language may also apply.)

For each alternative in this EIS/EA (*specify*), the amount of mobile source air toxics (MSAT) emitted would be proportional to the vehicle miles traveled, or VMT, assuming that other variables such as fleet mix are the same for each alternative. The VMT estimated for each of the Build Alternatives is slightly higher than that for the No Build Alternative, because the interchange facilitates new development that attracts trips that would not otherwise occur in the area. Refer to Table ___ (*specify*). This increase in VMT means MSAT under the Build Alternatives would probably be higher than the No Build Alternative in the study area. There could also be localized differences in MSAT from indirect effects of the project such as associated access traffic, emissions of evaporative MSAT (e.g., benzene) from parked cars, and emissions of diesel particulate matter from delivery trucks (*modify depending on the type and extent of the associated development*). Travel to other destinations would be reduced with subsequent decreases in emissions at those locations.

Because the estimated VMT under each of the Build Alternatives are nearly the same, varying by less than ___ (*specify*) percent, it is expected there would be no appreciable difference in overall MSAT emissions among the various Build Alternatives. For all Alternatives, emissions are virtually certain to be lower than present levels in the design year as a result of the Environmental Protection Agency’s (EPA) national control programs that are projected to reduce annual MSAT emissions by over 90 percent from 2010 to 2050 (Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents, Federal Highway Administration, October 12, 2016). Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the EPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the study area are likely to be lower in the future than they are today.

(The following discussion would apply to new interchanges in areas already developed to some degree. For new construction in anticipation of economic development in rural or largely undeveloped areas, this discussion would be applicable only to populated areas, such as residences, schools, and businesses.)

The travel lanes contemplated as part of the project alternatives will have the effect of moving some traffic closer to nearby homes, schools and businesses; therefore, under each alternative there may be localized areas where ambient concentrations of mobile source air toxics (MSAT) would be higher under certain Alternatives than others. The localized differences in MSAT concentrations would likely be most pronounced along the new/expanded roadway sections that would be built at _____ (*specify location*), under Alternatives _____ (*specify*), and along _____ (*specify route*) under Alternatives _____ (*specify*). However, the magnitude and the duration of these potential increases cannot be reliably quantified due to incomplete or unavailable information in forecasting project-specific MSAT health impacts. Further, under all Alternatives, overall future MSAT are expected to be substantially lower than today due to implementation of the Environmental Protection Agency's (EPA) vehicle and fuel regulations.

In sum, under all Build Alternatives in the design year it is expected there would be slightly higher MSAT emissions in the study area relative to the No Build Alternative due to increased VMT. There also could be increases in MSAT levels in a few localized areas where VMT increases. However, EPA's vehicle and fuel regulations will bring about significantly lower MSAT levels for the area in the future than today.

(4) Minor Improvements or Expansions to Intermodal Centers or Other Projects that Affect Truck Traffic

(The description for these types of projects depends on the nature of the project. The key factor from an MSAT standpoint is the change in truck and rail activity and the resulting change in MSAT emissions patterns.)

For each alternative in this EIS/EA (*specify*), the amount of mobile source air toxics (MSAT) emitted would be proportional to the amount of truck vehicle miles traveled (VMT) and rail activity, assuming that other variables (such as travel not associated with the intermodal center) are the same for each alternative. The truck VMT and rail activity estimated for each of the Build Alternatives are higher than that for the No Build Alternative, because of the additional activity associated with the expanded intermodal center. Refer to Table ___ (*specify*). This increase in truck VMT and rail activity associated with the Build Alternatives would lead to higher MSAT emissions (particularly diesel particulate matter) in the vicinity of the intermodal center. The higher emissions could be offset somewhat by two factors: 1) the decrease in regional truck traffic due to increased use of rail for inbound and outbound freight; and 2) increased speeds on area highways due to the decrease in truck traffic. The extent to which these emissions decreases will offset intermodal center-related emissions increases is not known.

Because the estimated truck VMT and rail activity under each of the Build Alternatives are nearly the same, varying by less than ___ (*specify*) percent, it is expected there would be no appreciable difference in overall MSAT emissions among the various alternatives. Also, regardless of the alternative chosen, emissions will likely be lower than present levels in the design year as a result of the Environmental Protection Agency's (EPA) national control programs that are projected to reduce annual MSAT emissions by over 90 percent from 2010 to 2050 (Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents, Federal Highway Administration, October 12, 2016). Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the EPA-projected reductions are so significant (even after accounting for VMT growth) that MSAT emissions in the study area are likely to be lower in the future as well.

(The following discussion may apply if the intermodal center is close to other development.)

The additional freight activity contemplated as part of the project alternatives will have the effect of increasing diesel emissions in the vicinity of nearby homes, schools, and businesses; therefore, under each alternative there may be localized areas where ambient concentrations of MSAT would be higher than under the No Build alternative. The localized differences in MSAT concentrations would likely be most pronounced under Alternatives _____ (*specify*). However, as discussed above, the magnitude and the duration of these potential differences cannot be reliably quantified due to incomplete or unavailable information in forecasting project-specific health impacts. Even though there may be differences among the Alternatives, on a region-wide basis, EPA's vehicle and fuel regulations, coupled with fleet turnover, will cause substantial reductions over time that in almost all cases the MSAT levels in the future will be significantly lower than today.

(Insert a description of any emissions-reduction activities that are associated with the project, such as truck and train idling limitations or technologies, such as auxiliary power units; alternative fuels or engine retrofits for container-handling equipment, etc.)

In sum, the Build Alternatives in the design year could be associated with higher levels of MSAT emissions in the study area, relative to the No Build Alternative, along with some benefit from improvements in speeds and reductions in region-wide truck traffic. There also could be slightly higher differences in MSAT levels among Alternatives in a few localized areas where freight activity occurs closer to homes, schools, and businesses. Under all alternatives, MSAT levels are likely to decrease over time due to nationally mandated cleaner vehicles and fuels.

MSAT MITIGATION STRATEGIES

Although there is no obligation to identify and consider MSAT mitigation strategies as part of a qualitative analysis, such strategies may be part of a project's design. Refer to the examples provided in (4) Minor Improvements or Expansions to Intermodal Centers

or Other Projects that Affect Truck Traffic, or Appendix E. For these and similar circumstances, MSAT mitigation strategies should be discussed as part of a qualitative analysis.

CEQ PROVISIONS COVERING INCOMPLETE OR UNAVAILABLE INFORMATION (40 CFR 1502.22)

The introductory language for qualitative analysis should be followed by a 40 CFR 1502 assessment of incomplete or unavailable information. Refer to Appendix C for details.

APPENDIX C – Council on Environmental Quality (CEQ) Provisions Covering Incomplete or Unavailable Information (40 CFR 1502.22)

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 mobile source air toxic (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 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, https://www.epa.gov/iris/). 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). A number of HEI studies are summarized in Appendix D of FHWA's Updated Interim Guidance 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 Special Report 16, https://www.healtheffects.org/publication/mobile-source-air-toxics-critical-review-literature-exposure-and-health-effects) or in the future as vehicle emissions substantially decrease.

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.

It is particularly difficult to reliably forecast 70-year lifetime MSAT concentrations and exposure near roadways; to determine the portion of time that people are actually exposed at a specific location; and to establish the extent attributable to a proposed action, especially given that some of the information needed is unavailable.

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 (Special Report 16, https://www.healtheffects.org/publication/mobile-source-air-toxics-critical-review-literature-exposure-and-health-effects). 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 states that with respect to diesel engine exhaust, "[t]he absence of adequate data to develop a sufficiently confident dose-response relationship from the epidemiologic studies has prevented the estimation of inhalation carcinogenic risk (https://www.epa.gov/iris)."

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 an "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 deemed acceptable (https://www.cadc.uscourts.gov/internet/opinions.nsf/284E23FFE079CD5985257800005 0C9DA/$file/07-1053-1120274.pdf).

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.

Due to the limitations cited, a discussion such as the example provided in this Appendix (reflecting any local and project-specific circumstances), should be included regarding incomplete or unavailable information in accordance with Council on Environmental Quality (CEQ) regulations [40 CFR 1502.22(b)]. The FHWA Headquarters and Resource Center staff, Victoria Martinez (787) 771-2524, James Gavin (202) 366-1473, and Michael Claggett (505) 820-2047, are available to provide guidance and technical assistance and support.

APPENDIX D – FHWA Sponsored Mobile Source Air Toxics Research Efforts

Human epidemiology and animal toxicology experiments indicate that many chemicals or mixtures termed air toxics have the potential to impact human health. As toxicology, epidemiology and air contaminant measurement techniques have improved over the decades, scientists and regulators have increased their focus on the levels of each chemical or material in the air in an effort to link potential exposures with potential health effects.

Air toxics emissions from mobile sources have the potential to impact human health and often represent a regulatory agency concern. The FHWA has responded to this concern by developing an integrated research program to answer the most important transportation community questions related to air toxics, human health, and the NEPA process. To this end, FHWA has performed, or funded several research efforts.

There are hundreds, if not thousands of published analyses of air pollution, air pollution from mobile sources, near road air pollution, and health. It would not be practical to list them all, as they vary in terms of quality, methodology, spatial, temporal and geographic applicability and other possible factors. However, several of the studies either initiated or supported by FHWA are described below.

THE NATIONAL NEAR ROADWAY MSAT STUDY

The FHWA, in conjunction with the EPA and a consortium of State departments of transportation, studied the concentration and physical behavior of MSAT and mobile source PM 2.5 in Las Vegas, Nevada and Detroit, Michigan. The study criteria dictated that the study site be open to traffic and have 150,000 Annual Average Daily Traffic or more. These studies were intended to provide knowledge about the dispersion of MSAT emissions with the ultimate goal of enabling more informed transportation and environmental decisions at the project-level. The Las Vegas study was unique in that the monitored data was collected for the entire year. Both the Las Vegas, NV and Detroit, MI reports revealed there are a large number of influences in these urban settings and researchers must look beyond the roadway to find all the pollution sources in the near road environment. Additionally, meteorology played a large role in the concentrations measured in the near road study area. More information is available at http://www.fhwa.dot.gov/environment/air_quality/air_toxics/index.cfm.

DIESEL EMISSIONS

Advanced Collaborative Emissions Study

In 2015 the Health Effects Institute (HEI) released the last in a three part series of reports in a multiyear research effort to study the health effects of diesel emissions: *Advanced Collaborative Emissions Study* (ACES) https://www.healtheffects.org/publication/advanced-collaborative-emissions-study-aces-lifetime-cancer-and-non-cancer-assessment. This included reports on Subchronic

Exposure Results: Biologic Responses in Rats and Mice and Assessment of Genotoxicity and Lifetime Cancer and Non-Cancer Assessment in Rats Exposed to New-Technology Diesel Exhaust. The Executive Summary "summarizes the main findings of emissions and health testing of new technology heavy-duty diesel engines capable of meeting US 2007/2010 and EURO VI/6 diesel emissions standards. The results demonstrated the dramatic improvements in emissions and the absence of any significant health effects. The Executive Summary presents the main findings of all three phases of the project and places the results in the context of health risk assessment, noting that 'the overall toxicity of exhaust from modern diesel engines is significantly decreased compared with the toxicity of emissions from traditional-technology diesel engines.'" https://www.healtheffects.org/publication/executive-summary-advanced-collaborative-emissions-study-aces

Diesel Emissions and Lung Cancer: An Evaluation of Recent Epidemiological Evidence for Quantitative Risk Assessment (Special Report 19)

In 2015 the Health Effects Institute (HEI) released Special Report 19 https://www.healtheffects.org/publication/diesel-emissions-and-lung-cancer-evaluation-recent-epidemiological-evidence-quantitative that contains "the intensive review and analysis of the studies of mine and truck workers exposed to older diesel engine exhaust." The purpose was to review two epidemiological studies of diesel exhaust and lung cancer "to consider whether data or results from these studies might also be used to quantify lung cancer risk in populations exposed to diesel exhaust at lower concentrations and with different temporal patterns, such as those experienced by the general population in urban areas worldwide." To date, the Environmental Protection Agency (EPA) has not established a cancer risk screening level for diesel exhaust*. In its report, HEI's Diesel Epidemiology Panel concluded that "the studies are well prepared and are useful for applying the data to calculate the cancer risk due to exposure to diesel exhaust. The Panel noted, however, that efforts to apply these studies to estimate human risk at today's ambient levels will need to consider the much lower levels of emission pollutants from newer diesel technology as well as the limitations . . . identified in each study." In the Report (page 6), it is stated that "detailed evaluations of these studies . . . lay the groundwork for a systematic characterization of the exposure–response relationship and associated uncertainties in a quantitative risk assessment, should one be undertaken" by the EPA.

*HEI 1999 Diesel Exhaust review identified numerous limitations of epidemiological studies available at that time and did not recommend a cancer risk due to exposure to diesel exhaust be established. See the HEI Diesel Epidemiology Expert Panel. 1999. Diesel Emissions and Lung Cancer: Epidemiology and Quantitative Risk Assessment. Special Report. Cambridge, MA: Health Effects Institute. https://www.healtheffects.org/publication/diesel-emissions-and-lung-cancer-epidemiology-and-quantitative-risk-assessment

TRAFFIC-RELATED AIR POLLUTION

Mobile Source Air Toxic Hot Spot

Given concerns about the possibility of MSAT exposure in the near road environment, The Health Effects Institute (HEI) dedicated a number of research efforts at trying to find a MSAT "hotspot." In 2011 three studies were published that tested this hypothesis. In general the authors confirm that while highways are a source of air toxics, they were unable to find that highways were the only source of these pollutants and determined that near road exposures were often no different or no higher than background or ambient levels of exposure, and hence no true hot spots were identified. These studies provide additional information:

- Lioy, P.J., et al (2011). Personal and Ambient Exposures to Air Toxics in Camden, New Jersey, Health Effects Institute No. 160, https://www.healtheffects.org/publication/personal-and-ambient-exposures-air-toxics-camden-new-jersey, page 137
- Spengler, J., et al (2011). Air Toxics Exposure from Vehicle Emissions at a U.S. Border Crossing: Buffalo Peace Bridge Study, Health Effects Institute No. 158, https://www.healtheffects.org/publication/air-toxics-exposure-vehicle-emissions-us-border-crossing-buffalo-peace-bridge-study, page 143
- Fujita, E.M., et al (2011). Concentrations of Air Toxics in Motor Vehicle–Dominated Environments, Health Effects Institute No. 156, https://www.healtheffects.org/publication/concentrations-air-toxics-motor-vehicle-dominated-environments, page 87 - where monitored on-road emissions were higher than emission levels monitored near road residences, but the issue of hot spot was not ultimately discussed.

Traffic-Related Air Pollution: A Critical Review of the Literature on Emissions, Exposure, and Health Effects

In 2010, HEI released Special Report #17, investigating the health effects of traffic related air pollution. The goal of the research was to synthesize available information on the effects of traffic on health. Researchers looked at linkages between: (1) traffic emissions (at the tailpipe) with ambient air pollution in general, (2) concentrations of ambient pollutants with human exposure to pollutants from traffic, (3) exposure to pollutants from traffic with human-health effects and toxicologic data, and (4) toxicologic data with epidemiological associations. Challenges in making exposure assessments, such as quality and quantity of emissions data and models, were investigated, as was the appropriateness of the use of proximity as an exposure-assessment model. Overall, researchers felt that there was "sufficient" evidence for causality for the exacerbation of asthma. Evidence was "suggestive but not sufficient" for other health outcomes such as cardiovascular mortality and others. Study authors also note that past epidemiologic studies may not provide an appropriate assessment of future health associations as vehicle emissions are decreasing overtime. The report is available from HEI's website at https://www.healtheffects.org/publication/traffic-related-air-pollution-critical-review-literature-emissions-exposure-and-health.

HEI SPECIAL REPORT #16

In 2007, the HEI published Special Report #16: Mobile-Source Air Toxics: A Critical Review of the Literature on Exposure and Health Effects. The purpose of this Report was to accomplish the following tasks:

- Use information from the peer-reviewed literature to summarize the health effects of exposure to the 21 MSATs defined by the EPA in 2001;
- Critically analyze the literature for a subset of priority MSAT; and
- Identify and summarize key gaps in existing research and unresolved questions about the priority MSAT.

The HEI chose to review literature for acetaldehyde, acrolein, benzene, 1,3-butadiene, formaldehyde, naphthalene, and polycyclic organic matter (POM). Diesel exhaust was included, but not reviewed in this study since it had been reviewed by HEI and EPA recently. In general, the Report concluded that the cancer health effects due to mobile sources are difficult to discern since the majority of quantitative assessments are derived from occupational cohorts with high concentration exposures and some cancer potency estimates are derived from animal models. The Report suggested that substantial improvements in analytical sensitively and specificity of biomarkers would provide better linkages between exposure and health effects. Noncancer endpoints were not a central focus of most research, and therefore require further investigation. Subpopulation susceptibility also requires additional evaluation. The study is available from HEI's website at https://www.healtheffects.org/publication/mobile-source-air-toxics-critical-review-literature-exposure-and-health-effects.

Going One Step Beyond: A Neighborhood Scale Air Toxics Assessment in North Denver (The Good Neighbor Project)

In 2007, the Denver Department of Environmental Health (DDEH) issued a technical report entitled *Going One Step Beyond: A Neighborhood Scale Air Toxics Assessment in North Denver (The Good Neighbor Project)*. This research project was funded by FHWA. In this study, DDEH conducted a neighborhood-scale air toxics assessment in North Denver, which includes a portion of the proposed I-70 East project area. Residents in this area have been very concerned about both existing health effects in their neighborhoods (from industrial activities, hazardous waste sites, and traffic) and potential health impacts from changes to I-70.

The study was designed to compare modeled levels of the six priority MSATs identified in FHWA's 2006 guidance with measurements at existing MSAT monitoring sites in the study area. MOBILE6.2 emissions factors and the ISC3ST dispersion model were used (some limited testing of the CALPUFF model was also performed). Key findings include: 1) modeled mean annual concentrations from highways were well below estimated Integrated Risk Information System (IRIS) cancer and non-cancer risk values for all six MSAT; 2) modeled concentrations dropped off sharply within 50 meters of roadways; 3) modeled MSAT concentrations tended to be higher along highways near the Denver Central Business District (CBD) than along the I-70 East corridor (in some cases, they were higher within the CBD itself, as were the monitored values); and 4) dispersion

model results were generally lower than monitored concentrations but within a factor of two at all locations.

KANSAS CITY PM CHARACTERIZATION STUDY (KANSAS CITY STUDY)

This study was initiated by EPA to conduct exhaust emissions testing on 480 light-duty, gasoline vehicles in the Kansas City Metropolitan Area (KCMA). Major goals of the study included characterizing PM emissions distributions of a sample of gasoline vehicles in Kansas City; characterizing gaseous and PM toxics exhaust emissions; and characterizing the fraction of high emitters in the fleet. In the process, sampling methodologies were evaluated. Overall, results from the study were used to populate databases for the MOVES emissions model. The FHWA was one of the research sponsors. This study is available on EPA's website at: https://www3.epa.gov/otaq/emission-factors-research/documents/420r08009.pdf

ESTIMATING THE TRANSPORTATION CONTRIBUTION TO PARTICULATE MATTER POLLUTION (AIR TOXICS SUPERSITE STUDY)

The purpose of this study was to improve understanding of the role of highway transportation sources in particulate matter (PM) pollution. In particular, it was important to examine uncertainties, such as the effects of the spatial and temporal distribution of travel patterns, consequences of vehicle fleet mix and fuel type, the contribution of vehicle speed and operating characteristics, and influences of geography and weather. The fundamental methodology of the study was to combine EPA research-grade air quality monitoring data in a representative sample of metropolitan areas with traffic data collected by State departments of transportation (DOTs) and local governments.

Phase I of the study, the planning and data evaluation stage, assessed the characteristics of EPA's ambient PM monitoring initiatives and recruited State DOTs and local government to participate in the research. After evaluating and selecting potential metropolitan areas based on the quality of PM and traffic monitoring data, nine cities were selected to participate in Phase II. The goal of Phase II was to determine whether correlations could be observed between traffic on highway facilities and ambient PM concentrations. The Phase I report was published in September 2002. Phase II included the collection of traffic and air quality data and data analysis. Ultimately, six cities participated: New York City (Queens), Baltimore, Pittsburgh, Atlanta, Detroit and Los Angeles.

In Phase II, air quality and traffic data were collected. The air quality data was obtained from the EPA Air Quality System, Supersite personnel, and NARSTO data archive site. Traffic data included intelligent transportation system (ITS) roadway surveillance, coverage counts (routine traffic monitoring) and supplemental counts (specifically for research project). Analyses resulted in the conclusion that only a weak correlation existed between PM2.5 concentrations and traffic activity for several of the sites. The existence of general trends indicates a relationship, which however is primarily unquantifiable.

Limitations of the study include the assumption that traffic sources are close enough to ambient monitors to provide sufficiently strong source strength, that vehicle activity is an appropriate surrogate for mobile emissions, and lack of knowledge of other factors such as non-traffic sources of PM and its precursors. A paper documenting the work of Phase II was presented at EPA's 13th International Emissions Inventory Conference and is available at http://www.epa.gov/ttn/chief/conference/ei13/mobile/black.pdf.

APPENDIX E – MSAT Mitigation Strategies

Lessening the effects of mobile source air toxics should be considered for projects with substantial construction-related MSAT emissions that are likely to occur over an extended building period, and for post-construction scenarios where the NEPA analysis indicates potentially meaningful MSAT levels. Such mitigation efforts should be evaluated based on the circumstances associated with individual projects, and they may not be appropriate in all cases. However, there are a number of available mitigation strategies and solutions for countering the effects of MSAT emissions.

Mitigating for Construction MSAT Emissions

Construction activity may generate a temporary increase in MSAT emissions. Project-level assessments that render a decision to pursue construction emission mitigation will benefit from a number of technologies and operational practices that should help lower short-term MSAT. In addition, the Federal Highway Administration has supported a host of diesel retrofit technologies in the Congestion Mitigation and Air Quality Improvement (CMAQ) Program provisions – technologies that are designed to lessen a number of MSATs.[1]

Construction mitigation includes strategies that reduce engine activity or reduce emissions per unit of operating time, such as reducing the numbers of trips and extended idling. Operational agreements that reduce or redirect work or shift times to avoid community exposures can have positive benefits when sites are near populated areas. For example, agreements that stress work activity outside normal hours of an adjacent school campus would be operations-oriented mitigation. Verified emissions control technology retrofits or fleet modernization of engines for construction equipment could be appropriate mitigation strategies. Technology retrofits could include particulate matter traps, oxidation catalysts, and other devices that provide an after-treatment of exhaust emissions. Implementing maintenance programs per manufacturers' specifications to ensure engines perform at EPA certification levels, as applicable, and to ensure retrofit technologies perform at verified standards, as applicable, could also be deemed appropriate. The use of clean fuels, such as ultra-low sulfur diesel, biodiesel, or natural gas also can be a very cost-beneficial strategy.

The EPA has listed a number of approved diesel retrofit technologies; many of these can be deployed as emissions mitigation measures for equipment used in construction. This listing can be found at: https://www.epa.gov/verified-diesel-tech/verified-technologies-list-clean-diesel.

Post-Construction Mitigation for Projects with Potentially Significant MSAT Levels

Travel demand management strategies and techniques that reduce overall vehicle-mile of travel; reduce a particular type of travel, such as long-haul freight or commuter travel; or improve the transportation system's efficiency will mitigate MSAT emissions. Examples of such strategies include congestion pricing, commuter incentive programs, and

increases in truck weight or length limits. Operational strategies that focus on speed limit enforcement or traffic management policies may help reduce MSAT emissions even beyond the benefits of fleet turnover. Well-traveled highways with high proportions of heavy-duty diesel truck activity may benefit from active Intelligent Transportation System programs, such as traffic management centers or incident management systems. Similarly, anti-idling strategies, such as truck-stop electrification can complement projects that focus on new or increased freight activity.

Planners also may want to consider the benefits of establishing buffer zones between new or expanded highway alignments and populated areas. Modifications of local zoning or the development of guidelines that are more protective also may be useful in separating emissions and receptors.

The initial decision to pursue MSAT emissions mitigation should be the result of interagency consultation at the earliest juncture. Options available to project sponsors should be identified through careful information gathering and the required level of deliberation to assure an effective course of action. Such options may include local programs, whether voluntary or with incentives, to replace or rebuild older diesel engines with updated emissions controls. Information on EPA clean diesel programs can be found at https://www.epa.gov/cleandiesel.

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[1] http://www.fhwa.dot.gov/environment/air_quality/cmaq/policy_and_guidance/2013_guidance/index.cfm