

# **Appendix 1: Air Quality Conformity**

This document serves as an appendix to:

**MORPC 2021-2024 TIP (Transportation Improvement Program)**

and

**LCATS 2021-2024 TIP (Transportation Improvement Program)**

and

**CORPO 2021-2024 TIP (Transportation Improvement Program)**

This is also the air quality conformity for the:

**MORPC 2020-2050 Metropolitan Transportation Plan**

And

**LCATS 2050 Metropolitan Transportation Plan**

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# Section I: Introduction

The Clean Air Act Amendments of 1990 expanded transportation's role in contributing to national clean air goals. The 1990 amendments expand the requirements of "transportation conformity" as:

*Conformity to the (air quality implementation) plan's purpose of eliminating or reducing the severity and number of violations of the national ambient air quality standards and achieving expeditious attainment of such standards; and that such activities will not (i) cause or contribute to any new violations of any standards in any area, (ii) increase the frequency or severity of any existing violation of any standard in any areas, or (iii) delay timely attainment of any standard or any required interim emission reductions or other milestones in any area.*

The CAAA defines nonattainment areas as geographic regions of the country that do not meet the National Ambient Air Quality Standards (NAAQS). In Ohio, the Ohio Environmental Protection Agency (Ohio EPA) is the lead agency for coordinating development of the State Implementation Plan (SIP). The SIP includes actions done on a statewide basis as well as actions done within each specific nonattainment area of the state to achieve the air quality standards.

Redesignation requests to attainment are SIP revisions that document that the NAAQS have been met and provide a maintenance plan to ensure meeting the standards for the next ten years. The first item of documentation contained in a redesignation request is three consecutive years of air quality monitoring data that meet the NAAQS. Second, an inventory of point source, area source and mobile source emissions is developed. The total of the three sources is certified as the attainment emission levels that will allow the air quality standards to be met. Next, emission projections for each source are made to the end of the maintenance period. It must be documented that the total emissions will not exceed the attainment emissions level. Any difference between the total future emissions and the total attainment level emissions is considered a safety margin.

Specifically for on road mobile emissions, budgets are established in the SIP. These budgets are the future projections plus any of the safety margins that the local area may choose to allocate.

One of the requirements is that plans, programs and projects do not delay the timely implementation of transportation control measures (TCMs) in the applicable SIP. Transportation conformity is the process of analyzing the projects included in the Transportation Plan to ensure they do not lead to violations in the air quality standards or delay obtaining the standard. The documentation of this process is called the conformity determination. This appendix is the transportation conformity documentation for the four-county Columbus ozone non-attainment area.

# Section II: Background

## 1-Hour Ozone Standard

Under the CAAA Franklin, Delaware and Licking counties were designated a marginal nonattainment area for ozone. This designation was based on 1988 air quality data that violated the NAAQS for ozone. At ground level, ozone is formed by the reaction of volatile organic compounds (VOCs) and nitrogen oxides (NOx). The CAAA requires that VOC and NOx emissions be reduced to lower the amount of ground-level ozone. Since 1988 the nonattainment area has had no violations of the 1-hour standards. However, the area must comply with the nonattainment area requirements in the CAAA.

In January 1994, the Ohio EPA working with the Ohio Department of Transportation (ODOT), the Mid-Ohio Regional Planning Commission (MORPC), and the Licking County Area Transportation Study (LCATS) submitted a redesignation request to the United States Environmental Protection Agency (U.S. EPA) for the three-county nonattainment area. On April 11, 1994, the Ohio EPA provided additional information to U.S. EPA. On February 1, 1996, a direct final rule was published in the Federal Register approving the redesignation request. The approval was effective April 1, 1996.

## 8-Hour Ozone Standard

On April 15, 2004, U.S. EPA issued final designations with regard to the 8-hour ozone standard and final rules on conformity requirements for these areas. It resulted in expanding the Central Ohio non-attainment area to expand to six counties: Franklin, Delaware, Licking, Knox, Fairfield and Madison.

Ohio EPA submitted an ozone redesignation package to U.S. EPA in March 2009. In September 15, 2009 Federal Register, U.S. EPA approved the redesignation to attainment effective September 15, 2009. Ohio submitted the SIP revision requests to U.S. EPA on October 30, 2012, and December 12, 2012, respectively. On March 19, 2013, the 1997 Ozone standard SIP (MOVES based) motor vehicle emission budgets (MVEB) for the region are established.

The U.S. EPA promulgated a new 8- hour ozone standard in 2008 and on July 20, 2012, the 6-county region was redesignated marginal non-attainment. On December 21, 2016, U.S. EPA approved of redesignating the Columbus area to attainment of the 2008 ozone NAAQS (National Ambient Air Quality Standard). The maintenance plan submitted by Ohio EPA was also approved with new mobile source budgets as shown in in Table 1, which were used for conformity determination for the six county area.

**Table 1: On Road Mobile Source Budgets for the Columbus 6 county 2008 8-Hour Ozone Maintenance Area (VOC, NOx)**

[Tons per summer day]

Year	2020	2030
VOC	50.66	44.31
NOx	90.54	85.13

Source: Federal Register Vol. 81, No. 245, December 21, 2016

Effected on August 3, 2018, US EPA designated the Columbus region as a 2015 Ozone Standard marginal nonattainment area. The area, however, only includes four counties: Franklin, Delaware, Licking, and Fairfield. Madison and Knox Counties are now considered attainment. In 2019 The Ohio EPA submitted a redesignation request to U.S. EPA. The redesignation to attainment with approved MVEB via Federal Register notices on July 3, 2019 and August 21, 2019. Table 1a provides the MVEB for the 4 county 2016 ozone standard maintenance area.

**Table 1a: On Road Mobile Source Budgets for the Columbus four county 2015 8-Hour Ozone Maintenance Area (VOC, NOx)**

[Tons per summer day]

Year	2023	2030
VOC	28.67	22.03
NOx	29.28	20.98

Conformity determination will be based on comparisons to both set of MVEB shown in Table 1 and Table 1a.

### PM2.5 Standards

April 14, 2005, U.S. EPA issued final designations with regard to the 1997 PM2.5 standard. Franklin, Delaware, Licking, Fairfield counties and Franklin Township in Coshocton County were designated as a non-attainment area for the annual PM2.5 standard. On November 7, 2013 U.S. EPA approved re-designation of the Columbus area to attainment of the 1997 annual PM 2.5 standard of 15 µg/m<sup>3</sup> (15 micrograms per cubic meter) for fine particulate matter, FR 66845, Vol. 78, No. 216.

A new annual PM 2.5 standard was promulgated by U.S. EPA in 2012 which strengthened the annual fine particle standard to 12 micrograms per cubic meter (µg/m<sup>3</sup>). On December 18, 2014, the EPA issued final area designations for the 2012 annual national air quality standard for fine particulate matter (PM2.5) which showed counties in Central Ohio are in attainment of the standard.

On August 24, 2016, FR 58010, Vol 81 (effective on October 24, 2016) EPA finalized the rules that revokes the 1997 primary annual PM2.5 NAAQS in areas that are designated as attainment or maintenance for that NAAQS. As a result of the revocation and being an area meeting the current PM2.5 NAAQS, as an area that has already been redesignated to attainment for the 1997 annual PM2.5 NAAQS, transportation conformity for PM2.5 no longer applies central Ohio.

### NOx Waiver

The CAAA allows the U.S. EPA administrator to issue a waiver of the NOx requirements if the administrator determines that additional reductions of NOx would not contribute to attainment of the air quality standards. A final rule approving a NOx waiver was published in the July 13, 1995, Federal Register. The NOx waiver removed the build/no-build test and the less than 1990 test that apply to NOx. However, an area that is redesignated to attainment must still meet the approved NOx budget for the conformity analysis. Thus, the NOx waiver is no longer applicable to the Columbus area.

## Transportation Conformity Procedures

On November 24, 1993, U.S. EPA published regulations, 40 CFR 51 Subpart T, which define the specific process necessary to demonstrate conformity of transportation plans, TIPs and projects. Three updates to the conformity have also been finalized and incorporated into the Ohio Administrative Code (OAC). With the implementation regulations for the 8-hour ozone standard and the PM 2.5 standard, new procedures were established to demonstrate conformity for each of these pollutants. The conformity regulations identified three tests to be performed at various milestone or horizon years to show conformity. These are a budget test, a build/no build test and a no greater than 2002 baseline test. The test that must be satisfied depends upon the status of an area's SIP submittals. As an ozone area with approved on road mobile budgets, the budget test will be used.

This appendix documents the conformity determination process for the ozone maintenance area.

## Multiple Metropolitan Planning Organizations

The six-county ozone area consist of two metropolitan planning organizations (MPOs), MORPC and LCATS with area outside of the two MPO's in Fairfield, Madison, and Knox Counties that are part of the Central Ohio Rural Planning Organization (CORPO) Rural Transportation Planning Organization area. The MORPC transportation planning area consists of Franklin County, Delaware County, New Albany, Pataskala and Etna Township in Licking County, Violet and Bloom Townships in Fairfield County and Jerome Township in Union County. The LCATS transportation planning area covers the remainder of Licking County. The CORPO transportation planning area consists of Fairfield, Knox, Madison, Marrison, Morrow, Pickaway and Union counties.

Each MPO and CORPO develops a transportation plan for its respective transportation study area. The conformity procedures require that the entire non-attainment area be considered as a whole. This requires that the transportation plans and any projects in the non-MPO area be considered together to make a conformity determination. This appendix documents the process used to combine the entire area to make a single conformity determination. This document serves as an appendix to the MORPC 2020-2050 Metropolitan Transportatin Plan, the LCATS 2050 Transportation Plan and the MORPC, LCATS and CORPO 2021-2024 Transportation Improvement Programs.

## Latest Planning Assumptions

The Transportation Plans' conformity analysis readily meets this requirement. A 10/11/2000 U.S. DOT/U.S. EPA memorandum further emphasized the use of latest planning assumptions highlighting the following areas: 1) Model Validation; 2) Land Use, Population and Employment Projections; and 3) Travel and Congestion. The following addresses these issues.

### 1) Model Validation

For the travel demand model in the maintenance area, model validation is a joint process between MORPC, LCATS and the ODOT Office of Technical Services. In December 2004, a new complete validated model was accepted and installed for use at MORPC. The new model covers all of the MORPC and LCATS area including portions of Pickaway, Madison and Union Counties along with additional portions of Fairfield County outside of the MORPC MPO area. Further, ODOT working with MORPC completed another model update in 2019 and

MORPC continuously updates the highway and transit network information and maintains accurate networks for future year analysis.

- 2) **Future Networks**  
The Transportation Plan horizon year for MORPC and LCATS is 2050. Based on Interagency consultation for the ozone conformity analysis, the years 2020, 2023, 2030, 2040 and 2050 are being used. The Transportation Plans list the projects included and Section III lists the projects included for each analysis year.
- 3) **Land Use, Population and Employment Projections**  
MORPC continually monitors land use, population and employment information. MORPC performs complete land use inventories every five years. The complete documentation of the process and future forecasts is provided in *Future Land use Scenario Methodology* appendix to the Transportation Plan. MORPC coordinates with LCATS for updates to the variables for their area.
- 4) **Travel and Congestion**  
Based on the validated model, highway and transit changes since then, the most up-to-date land use, population and employment projections, 24-hour ADT volumes are produced. MOVES software is used to create the emission factors. ODOT in conjunction with MORPC and inter-agency consultation ensures the emission factors used in this process are based on the most up-to-date assumptions.

### **Urban Transportation Modeling Process**

The MORPC model covers Franklin County, Delaware County, Licking County and portions of Fairfield, Pickaway, Madison and Union counties. The model employs activity-based modeling procedures. Output from the urban model is link-by-link directional 24-hour traffic volumes for the existing or future regional transportation network. These 24-hour traffic volumes provide the basis for performing the air quality analysis. ODOT, MORPC and LCATS jointly hold the models and provide extensive technical support for each other. The non-modeled areas in the Fairfield, Madison, Knox and Coshocton counties utilize Highway Performance Monitoring System (HPMS) data.

### **Air Quality Modeling Process**

The Transportation Plan conformity demonstration for Ohio's urbanized nonattainment and maintenance areas utilize the capabilities of the urban transportation models to perform milestone year and Transportation Plan horizon year analyses required under the conformity regulations. The modeling process identifies the growth in vehicle miles of travel and changes in the travel patterns resulting from the projects proposed in the non-attainment or maintenance area transportation plans and programs.

Motor Vehicle Emissions Simulator (MOVES) is the U.S. EPA official software for estimating emissions. Using MOVES, emission factor files were generated for the analysis. Programs and corresponding MOVES parameters were developed in consultation with Ohio EPA.

Table 2 summarizes the settings used in the MOVES run specification file and the MOVES County-Data Manager. Further details in specific inputs that are not using default values are provided below.

**Table 2 – MOVES Inputs**

<b>RunSpec Parameter Settings</b>	
MOVES Version	MOVES2014a
Scale	Custom Domain
MOVES Modeling Technique	Emission Factor Method Rates per Profile (grams/vehicle) Rates per Distance (grams/mile) Rates per Vehicle (grams/vehicle)
Time Span	Time Aggregation: Hour 1 Month representing average July temperatures All hours of day selected 16 speed bins Weekdays only
Geographic Bounds	Franklin, Delaware, Licking, Fairfield, Madison & Knox Counties.
Vehicles/Equipment	All source types, gasoline and diesel
Road Type	All road types including off-network
Pollutants and Processes	Total Gaseous Hydrocarbons, Non-Methane Hydrocarbons, Volatile Organic Compounds, NO <sub>x</sub> , NO, NO <sub>2</sub> , Total Energy Consumption
Strategies	None
General Output	Units = grams, joules and miles
Output Emissions	Time = hour, Location = custom area, on-road emission rates by road type and source use type.
Advance Performance	None
<b>County Data Manager Sources</b>	
Source Type Population	Combination of local and default data Local data (2010) ODOT from motor vehicle registration Default data used for source types 41, 51, 54, 61, and 62 Future year growth rate based on MPO model Household growth rate.
Vehicle Type VMT	Combination of local and default data HPMSVTypeYear VMT = daily VMT from travel demand model monthVMTFraction = local dayVMTFraction=default hourVMTFraction=local
I/M Program	None
Fuel Formulation	Default



Fuel Supply	Default Future runs modified for reformulated gas, RVP, etc. for summer analyses
Metereology Data	Local data obtained from NOAA National Climatic Data Center. Data consist of monthly high and low temperatures and daily relative humidity for 2002.
Ramp Fraction	Using the base year travel demand model for VHT fractions. Future fractions assumed constant
Road Type Distribution	Use ODOT county summary VMT categorized by federal functional classes
Age Distribution	Combination of local and default data. Local data (2010) ODOT from motor vehicle registration Default data used for source types 41, 51, 54, 61, and 62 The same age distribution used for all analysis years
Average Speed Distribution	Default
Alternative Fuel Type	Default

### Temperature and Relative Humidity

Temperatures used for the Ozone analysis are representative of the month of July in 2002 based on NOAA data from the National Climate Data Center website. Data for Port Columbus International Airport was used because it was the most complete compared to other airports in the non-attainment area. To get the correct format for MOVES, the data was entered into a spreadsheet provided by U.S. EPA which was designed to convert Mobile6 data to MOVES. An average July hourly temperature and relative humidity distribution profile can be seen in Table 3.

**Table 3 – July Temperature and Relative Humidity Data for Ozone Analysis**

Hour	Temperature	Relative Humidity
1	72.0	78.0
2	70.8	80.0
3	69.8	82.0
4	69.1	84.0
5	68.6	86.0
6	68.0	85.0
7	67.5	81.0
8	67.9	75.0
9	70.5	69.0
10	74.7	63.0
11	78.9	59.0
12	82.6	54.0
13	85.8	52.0
14	87.5	51.0
15	88.1	50.0
16	88.3	48.0
17	87.9	50.0
18	86.7	51.0
19	84.6	54.0
20	81.9	60.0
21	79.2	64.0
22	76.9	69.0
23	75.2	73.0
24	73.6	76.0

Ramp Fraction

Ramp fractions were derived using the base year travel demand model VHT fractions. Ramp fractions can be seen in Table 4. Base year fractions were assumed to apply to future years.

**Table 4 – Ramp Fractions**

RoadTypeID	Road Description	Ramp Fraction
2	Rural Restricted Access	0.02
4	Urban Restricted Access	0.13

Source Type Population

Source type population is based on a combination of local and MOVES default data. Local data was provided by ODOT based on 2010 motor vehicle registration. Default data is used for source types 41, 51, 54, 61, and 62. Future year growth rate is based on MPO model growth in cars which is an independent variable to the travel demand model. Table 5 shows source type population for the analyzed counties in 2008.

**Table 5 – Source Type Population for year 2008**

Source Type	sourceTypeName	Franklin	Delaware	Licking	Fairfield	Madison & Knox
11	MotorCycle	55,222	6,868	8,999	2,444	3,565
21	Passenger Car	878,901	97,120	128,334	35,905	43,829
31	Passenger Truck	383,900	44,774	58,759	16,550	31,914
32	Light Commercial Truck	11,553	1,348	1,768	498	1,280
41	Intercity Bus	294	66	83	23	66
42	Transit Bus	79	18	22	6	35
43	School Bus	1,582	357	446	126	405
51	Refuse truck	228	39	49	13	37
52	Single Unit Short-haul Truck	205	35	44	12	1,553
53	Single Unit Long-haul Truck	264	44	57	15	198
54	Motor Home	1,102	184	235	65	181
61	Comb Short-haul Truck	3,144	653	905	154	780
62	Comb Long-haul Truck	3,616	750	1,040	178	897

### Vehicle Age Distribution

Vehicle age distribution information was derived using Ohio Bureau of Motor Vehicle registration data for year 2010. The data was given to Ohio EPA who supplied a VIN decoder that allowed ODOT to create correctly formatted MOVES inputs. MOVES default data is used for source types 41, 51, 54, 61, and 62. The registration data for most populous four counties were obtained in the non-attainment area and combined to create a regional vehicle age distribution file. This data is applied to all six counties in the region. The same age distribution will be used for all analysis years.

## Vehicle Type VMT and VMT Fractions

The first component of the VMT inputs is the Yearly HPMS VMT, but the travel demand model was used instead of ODOT's HMPS data since it was felt that the model would better predict future year VMT. ODOT's CMS post-processor was run for each year to generate congestion reports, which includes total daily VMT. The vehicle type percentages of the total VMT were based on ODOT's weigh-in-motion (WIM) data. Since there are not enough WIM stations for lower class facilities in the non-attainment area, a statewide average of all ODOT WIM data collectors was used. Daily VMT was then converted to yearly. The same method was used to generate all other analysis years.

## Output Emission Factors

Table 6 shows the first record in a MOVES sample output (rate per distance) emission file for year 2008. For any given month, day of week, hour of the day, pollutant, and process; the rate per distance varies by road type, and speed bin. Rates per distance emissions are applied to link and intrazonal VMT.

**Table 6 – Sample Emission File (Rate per Distance)**

Heading:	MOVESScenarioID	MOVESRunID	yearID	monthID	dayID	hourID
Record:	OhioCustomDomain	6	2008	7	5	1
Heading:	linkID	pollutantID	processID	sourceTypeID	SCC	fuelTypeID
Record:	990250201	3	0	1		0
Heading:	modelYearID	roadTypeID	avgSpeedBinID	temperature	relHumidity	ratePerDistance
Record:	0	2	1	48.9333	73	12.9489

Table 7 shows the first record in a MOVES sample output (rate per vehicle) emission file for year 2008. The rate per vehicle varies for any combinations of month, day of week, hour of the day, pollutant, and process. Rates per vehicle emissions are applied to the vehicle source type population.

**Table 7 – Sample Emission File (Rate per Vehicle)**

Heading:	MOVESScenarioID	MOVESRunID	yearID	monthID	dayID
Record:	OhioCustomDomain	6	2008	7	5
Heading:	hourID	zoneID	pollutantID	processID	sourceTypeID
Record:	1	990250	3	0	2
Heading:	SCC	fuelTypeID	modelYearID	temperature	ratePerVehicle
Record:		0	0	48.9333	0.054967

## Analysis Years

The analysis years for transportation conformity must include the Transportation Plan horizon year, any milestone years, and any interim years (to be less than ten years between analysis years). The Transportation Plan horizon year for MORPC and LCATS is 2050. The analysis years were determined, through the interagency consultation process. Thus, the years 2020, 2023, 2030, 2040 and 2050 are used for the ozone conformity analysis, since the future budget years established are 2023, 2020 and 2030.

## Air Quality Consultation Process

The 1990 Clean Air Act amendments required identification of the consultation procedures that Ohio's air quality and transportation agencies will follow in the conformity process. To fulfill this requirement, the Ohio EPA has adopted Ohio Administrative Code 3745-101-04 to define the interagency consultation procedures used on air quality issues. These rules define a "straw man" process, whereby the lead agencies in the conformity process assume responsibility for preparing and distributing draft documents, with supporting information, and ensuring that each affected party involved in the conformity process is included in the consultation process. In addition, a Memorandum of Understanding (MOU) between MORPC, LCATS, ODOT and Ohio EPA has been signed to clarify OAC 3745-101-04 for the Columbus maintenance area. As a result of SAFETEA-LU Ohio EPA led the process to update MOU. This process concluded with signatures from all parties obtained in February/March 2008. These were reaffirmed with updated signatures in 2014.

The Columbus ozone area Transportation Plan's conformity process employed the consultation procedures embodied in the rules. The procedures used in the current air quality analysis are comparable to the previous TIP and Transportation Plan conformity determinations. As necessary air quality consultation reports on conformity process for the Transportation Plan are prepared and distributed to MORPC's TAC and Transportation Policy committees, LCATS Policy Committee, ODOT, Ohio EPA, FHWA, FTA, and U.S. EPA. In addition, MORPC has had various telephone conversations and e-mail correspondence with Ohio EPA, ODOT and FHWA. Ohio EPA has also discussed various issues of transportation conformity with U.S. EPA. Documentation is provided in attachments to this appendix.

# Section III: Quantitative Analysis

## Projects Included in the Air Quality Analysis

Every location-specific project listed in the Metropolitan Transportation Plans are included in the Transportation Plan networks and listed in the following project listing. MORPC meets with the local agencies to identify potential MTP projects. We also compile projects based on the local agencies' Capital Improvement Plans and any local thoroughfare and/or comprehensive plans. Thus, both federally funded and non-federally funded projects are included. Our model network includes all the projects that can be coded on the regional network. These listings include intersection improvements and other minor network changes which are potentially exempt projects as defined the conformity regulations (40 CFR in sections 93.126 and 93.127). There are no TCM's in the SIP for the Columbus area. Thus, the projects included in the transportation plans are consistent with those stated in the SIP. The following tables (Tables 8-11) identify the projects that are included in the analysis for the years 2023, 2030, 2040 and 2050 respectively. 2020 represents the existing transportation system so no projects included in the transportation plans will be completed in 2020.

**Table 8: Additional Projects identified for year 2023**

Plan Project ID	Project Description (2023)
8	Cosgray Rd. extension from Alton & Darby Creek Rd. s. of Davis Rd. to Scioto & Darby Creek Rd. at Cosgray Rd., New Roadway 2 lane(s) each direction with complete street facilities
53	Cassady Ave. from Bexley north corp. limit to Agler Rd., Add turn lanes and complete street facilities to 2 lane roadway
69	Worthington-Galena Rd. from Wilson Bridge Rd./Huntley Rd. to Sancus Blvd., Widen road from 2 lanes to 4 lanes total both directions with complete street facilities
94	Cosgray Rd. from Scioto & Darby Creek Rd. to Baldwin Rd., Widen road from 2 lanes to 4 lanes total both directions with complete street facilities
126	I-71 (East Innerbelt) from I-70/I-71 (South Innerbelt) to I-670/Fort Hayes Interchange, Widen freeway from 6 lanes to 8 lanes total both directions
135	I-70 (East Freeway) at I-270 (East Outerbelt), Reconfigure slip, loop and/or directional interchange ramps
147	James Rd. from Livingston Ave. to Main St. (US 40), Add turn lanes and complete street facilities to 4 lane roadway

Plan Project ID	Project Description (2023)
196	Broad St. (SR 16) at James Rd., Add/Modify turn lanes and add complete street facilities
209	Morse Rd. at Westerville Rd. (SR 3), Add/Modify turn lanes and add complete street facilities
212	Dublin-Granville Rd. (SR 161) at Karl Rd., Add/Modify turn lanes and add complete street facilities
232	Scioto Darby Rd. at Walcutt Rd., Add/Modify turn lanes and add complete street facilities
270	I-70/I-71 (South Innerbelt) from I-71S/SR 315 (west interchange) to I-70E/I-71N (east interchange), Widen freeway from 6 lanes to 10 lanes total both directions
376	I-71 from Pickaway County Line to SR-665, Widen freeway from 4 lanes to 6 lanes total both directions
386	US 33 at SR-161/Post Road, Interchange modification
422	Winchester Blvd from Kroger/Home Depot Shopping Center to Rager Rd/Sims Rd., New Roadway 1 lane(s) each direction with complete street facilities
565	Reynoldsburg-New Albany Rd. at Clark State Rd., Add/Modify turn lanes and add complete street facilities
604	Hilliard-Rome Rd. at Feder Rd./Fisher Rd., Add/Modify turn lanes and add complete street facilities
765	Lewis Center Rd. at Worthington Rd./Rome Corners Rd., Construct roundabout with complete street facilities
770	High St. (US_23) at Rathmell Ave., Add/Modify turn lanes and add complete street facilities
1563	Fishinger Rd. from US-33/Riverside Dr. to Kenny Rd., Add turn lanes and complete street facilities to 4 lane roadway
1837	Greengate Blvd. Extension from Diley Rd. to Hill Rd., New Roadway 1 lane(s) each direction with complete street facilities
1838	Eichhorn St. Extension from current terminus to 3500 ' west, New Roadway 1 lane(s) each direction with complete street facilities

**Table 9: Additional Projects identified for year 2030**

Plan Project ID	Project Description (2030)
3	Williams Rd. from Alum Creek Dr. to Hamilton Rd., Add turn lanes and complete street facilities to 2 lane roadway
23	Tuttle Crossing Blvd. extension from Avery Rd. to Wilcox Rd., New Roadway 2 lane(s) each direction with complete street facilities
26	Avery Rd. from Rings Rd. to Woerner-Temple Rd., Widen road from 2 lanes to 4 lanes total both directions with complete street facilities
42	Avery Rd. from Britton-Cosgray connector to Tuttle Crossing Blvd. extension, Widen road from 2 lanes to 4 lanes total both directions with complete street facilities
58	I-70 (East Freeway) at Brice Rd., Interchange modification
77	SR 256 (Hill Rd.) from Diley Rd. to Town Square Dr., Widen road from 2 lanes to 4 lanes total both directions with complete street facilities
81	US 33 (Southeast Freeway) from Gender Rd. (SR 674) to Hill Rd./Diley Rd., Convert 4 lane roadway to 4 lane freeway
82	US 33 (Southeast Freeway) from Hamilton Rd. (SR 317) to Gender Rd. (SR 674), Convert 4 lane roadway to 4 lane freeway
83	US 33 (Southeast Freeway) at Bixby Rd., New interchange
88	Home Rd. extension from Green Meadows Dr. to Lewis Center Rd. (east of railroad), New Roadway 2 lane(s) each direction with complete street facilities
92	Broad St. (SR 16) from McNaughten Rd. to Taylor Rd., Widen road from 4 lanes to 6 lanes total both directions with complete street facilities
95	Valleyside Dr. from US 36 (William St.) to SR 37 (Central Ave.) at Lexington Blvd., New Roadway 1 lane(s) each direction with complete street facilities
100	SR 665 (London-Groveport Rd.) from Hoover Rd. to SR 104 (Jackson Pk.), Widen road from 2 lanes to 4 lanes total both directions with complete street facilities
108	Britton Pkwy. from Davidson Rd. to Hayden Run Rd., Widen road from 2 lanes to 4 lanes total both directions with complete street facilities
130	Avery Rd. from Hayden Run Rd. (south of) to Britton-Cosgray connector, Widen road from 2 lanes to 4 lanes total both directions with complete street facilities
133	US 23 (Columbus Pk.) at SR 315 and Stratford Rd., Add/Modify turn lanes and add complete street facilities
148	Rings-Tuttle Crossing connector from Rings Rd. (at Rings Rd. relocation) to Tuttle Crossing Blvd., New Roadway 1 lane(s) each direction with complete street facilities
166	US 33/SR 161 at Frantz Rd/Post Rd., Add/Modify turn lanes and add complete street facilities



Plan Project ID	Project Description (2030)
183	Stygler Rd. from Johnstown Rd. to US 62, Add turn lanes and complete street facilities to 2 lane roadway
188	I-270 (South Outerbelt) at High St. (US 23), Interchange modification
226	Liberty Rd. at Jewett Rd., Add/Modify turn lanes and add complete street facilities
235	Hill Rd. (SR 256) at Refugee Rd., Add/Modify turn lanes and add complete street facilities
261	Glenn Pkwy. from Berlin Station Rd. to Glenn Rd. (south of US 36/SR 37), New Roadway 2 lane(s) each direction with complete street facilities
262	Lazelle Rd. from Sancus Blvd. to Worthington-Galena Rd., Add turn lanes and complete street facilities to 2 lane roadway
271	I-70 (East Freeway) from I-71 (East Innerbelt) to Kelton Ave., Widen freeway from 8 lanes to 10 lanes total both directions
320	US 23 (Columbus Pk.) from Lazelle Rd. (Franklin Co. line) to US 42, Access Management to limit and consolidate intersections and driveways
322	Sunbury Pkwy. (east section) from Wilson Rd. south extension (future) to US 36, New Roadway 2 lane(s) each direction with complete street facilities
323	Four Winds Dr. (south extension) from 3B's & K Rd. (north of Cheshire Rd.) to US 36/SR 37, New Roadway 2 lane(s) each direction with complete street facilities
324	Sunbury Pkwy. (west section) from US 36/SR 37 to Four Winds Dr. extension (future), New Roadway 2 lane(s) each direction with complete street facilities
325	Sunbury Pkwy. (middle section) from Four Winds Dr. extension (future) to Wilson Rd. south extension (future), New Roadway 2 lane(s) each direction with complete street facilities
328	US 36/SR 37 from SR 521 to I-71, Access Management to limit and consolidate intersections and driveways
330	Lyra Dr. from Gemini Pl. to Powell Rd., New Roadway 2 lane(s) each direction with complete street facilities
338	Old 3C Hwy. from Mt. Royal Ave. to Freeman Rd., Add turn lanes and complete street facilities to 2 lane roadway
348	Cheshire Rd. from Domigan Rd. to US 36/SR 37 (Cherry St.), Add turn lanes and complete street facilities to 2 lane roadway
354	McCorkle Blvd. extension from Broadway Ave. to Old County Line Rd., New Roadway 1 lane(s) each direction with complete street facilities
359	Lazelle Rd. from High St. (US 23) to Flint Rd., Add turn lanes and complete street facilities to 2 lane roadway
377	US 33 at Pickerington Rd., New interchange

Plan Project ID	Project Description (2030)
384	I-71 at Sunbury Parkway, New interchange
385	I-71 at Jackson Pike Ramp at SR 104 (Frank Road), Modify ramp termni intersection(s)
411	SR 315 at Bethel Rd, Modify ramp termni intersection(s)
414	US 33 (Columbus-Lancaster Rd) from Hill Rd/Diley Rd to US-33/Carroll Interchange, Convert 4 lane roadway to 4 lane freeway
424	Avery-Muirfield Dr. from US 33 to Post Rd, Widen road from 4 lanes to 6 lanes total both directions with complete street facilities
435	Perimeter Dr. from Holt Rd./Perimeter Loop Dr. to Emerald Pkwy, Widen road from 2 lanes to 4 lanes total both directions with complete street facilities
436	Cosgray Rd. Extension from Scioto and Darby Creek Rd. to Alton Darby Creek Rd., New Roadway 1 lane(s) each direction with complete street facilities
442	Tuttle Crossing Blvd. extension from Cosgray Rd. to Avery Rd., New Roadway 2 lane(s) each direction with complete street facilities
443	Tuttle Crossing Blvd. extension from Amity Pike to Cosgray Rd., New Roadway 2 lane(s) each direction with complete street facilities
454	Hamilton Rd. from Central College Rd. to Harlem Rd., New Roadway 2 lane(s) each direction with complete street facilities
457	Market St. extension from Reynoldsburg-New Albany Rd./High St. to 3rd St. extension, New Roadway 1 lane(s) each direction with complete street facilities
486	Kinnear Rd. extension from Olentangy River Rd. to Cannon Dr., New Roadway 1 lane(s) each direction with complete street facilities
539	Johnstown Rd. from Stygler Rd. to Olde Ridenour Rd., Add turn lanes and complete street facilities to 2 lane roadway
540	Johnstown Rd. from Olde Ridenour Rd. to James Rd., Add turn lanes and complete street facilities to 2 lane roadway
542	US 62/SR 3 (Harrisburg Pk.) from Eakin Rd./Hopkins Ave. to Brown Rd., Add turn lanes and complete street facilities to 2 lane roadway
547	Front St. from Broad St. to Hickory St., Convert from 4 one-way lanes to 4 lanes total both directions with complete street facilities
548	Marconi Blvd. from Broad St. to Hickory St., Convert from 3 one-way lanes to 2 lanes total both directions with complete street facilities
549	Hamilton Rd. from Morse Rd. to Chilmark Dr., Widen road from 2 lanes to 4 lanes total both directions with complete street facilities
550	Sawmill Rd. from I-270 to Hard Rd., Widen road from 4 lanes to 6 lanes total both directions with complete street facilities
564	Wilcox Rd. at Hayden Run Rd., Add/Modify turn lanes and add complete street facilities

Plan Project ID	Project Description (2030)
566	SR 315 at Home Rd., Add/Modify turn lanes and add complete street facilities
569	William St. (US 36) from Lewis St. to E. Central ave. (SR 37), Add turn lanes and complete street facilities to 2 lane roadway
605	Livingston Ave. at Barnett Rd., Add/Modify turn lanes and add complete street facilities
619	East Main St. from High St. to Waggoner Ave., High Capacity Transit
633	Big Walnut Rd. from Africa Rd. to Worthington Rd., Widen road from 2 lanes to 4 lanes total both directions with complete street facilities
643	Dublin - Columbus from Dublin to Downtown Columbus, High Capacity Transit
682	Rickenbacker Pkwy Extension from Ashville Pike to Pontious Rd., New Roadway 2 lane(s) each direction with complete street facilities
693	Smothers Rd. at Schott Rd./Red Bank Rd., Construct roundabout with complete street facilities
766	Sunbury Rd. at Agler Rd./Cassady Ave., Add/Modify turn lanes and add complete street facilities
767	Mound St. at Central Ave./Harrisburg Pk., Add/Modify turn lanes and add complete street facilities
772	Main St. from I-270 to McNaughten Rd., Add turn lanes and complete street facilities to 4 lane roadway
775	Livingston Ave. from Front St. to High St., Convert from 2 one-way lanes to 2 lanes total both directions with complete street facilities
787	I-70 from I-270 to Brice Rd., Widen freeway from 6 lanes to 8 lanes total both directions
788	I-70 from Brice Rd. to SR 256, Widen freeway from 6 lanes to 8 lanes total both directions
790	I-270 at Morse Rd., Modify ramp termni intersection(s)
811	Altair Pkwy extension from Altair Pkwy (existing) to State St. (at Hoff Rd.), New Roadway 1 lane(s) each direction with complete street facilities
812	Westar Blvd. extension from Westar Blvd. (existing) to County Line Rd. (at Thompson Ave.), New Roadway 1 lane(s) each direction with complete street facilities
838	I-70 at Hamilton Rd., Modify ramp termni intersection(s)
842	Toy Rd./Saltzgaber Rd. from Centerpoint Dr. to Groveport Rd., Add turn lanes and complete street facilities to 2 lane roadway
875	West Case St. (proposed) from Big Bear Ave. to Traditions Way, New Roadway 1 lane(s) each direction with complete street facilities
876	Village Pointe Dr. extension from Case Ave. to West Case St. (Proposed), New Roadway 1 lane(s) each direction with complete street facilities
877	Depot St. extension (north) from Case Ave. to Adventure Park Dr., New Roadway 1 lane(s) each direction with complete street facilities
878	Sharp St. extension (west) from N. Liberty St. to Depot St. (proposed), New Roadway 1 lane(s) each direction with complete street facilities
879	Sharp St. extension (east) from existing Sharp St. end to Grace Dr., New Roadway 1 lane(s) each direction with complete street facilities
880	Hall St. extension from Scioto St. to Sharp St. (proposed), New Roadway 1 lane(s) each direction with complete street facilities

Plan Project ID	Project Description (2030)
881	Depot St. extension (south) from Powell City Hall to Liberty St., New Roadway 1 lane(s) each direction with complete street facilities
904	Tuttle Crossing Blvd. extension from Rings Rd. to Houchard Rd., New Roadway 2 lane(s) each direction with complete street facilities
911	I-71 (North Freeway) from I-670 to I-270, Apply traffic management strategies to specific lanes during specified times of day
921	John Shields Pkwy. from Riverside Dr. to Shawan Falls Dr. (proposed), New Roadway 1 lane(s) each direction with complete street facilities
922	Shawan Falls Dr. extension from Existing Shawan Falls Dr. to John Shields Pkwy (proposed), New Roadway 1 lane(s) each direction with complete street facilities
923	Post Rd. realignment and extension from Kilgour Pl. to Shawan Falls Dr., New Roadway 1 lane(s) each direction with complete street facilities
941	SR-315 at John Herrick Dr./12th Ave., Interchange modification
1119	Dublin-Granville Rd. at Linworth Rd., Add/Modify turn lanes and add complete street facilities
1120	Dublin-Granville Rd. at Olentangy River Rd., Add/Modify turn lanes and add complete street facilities
1192	John Shields Pkwy from Village Pkwy to Dublin Center Dr., New Roadway 1 lane(s) each direction with complete street facilities
1196	Shier Rings Rd from Shamrock Ct to Metro Pl N, New Roadway 1 lane(s) each direction with complete street facilities
1206	Wilson Rd. South from Rider Rd. to Cheshire Rd., New Roadway 2 lane(s) each direction with complete street facilities
1231	Demorest - Elm Connector from Demorest Rd. to Elm St., New Roadway 1 lane(s) each direction with complete street facilities
1233	Demorest Connector from Demorest Rd. at Rensch Rd. to Demorst Dr. at US-62, New Roadway 1 lane(s) each direction with complete street facilities
1257	Burber Dr from W Granville St to Sunbury Meadows Dr, New Roadway 1 lane(s) each direction with complete street facilities
1338	Hamilton Rd from Morse Rd to Preserve Blvd, Widen road from 3 lanes to 5 lanes total both directions with complete street facilities
1347	US 36 & SR-37 from Foley St to SR-521, Widen road from 2 lanes to 4 lanes total both directions with complete street facilities
1349	Home Rd (extension) from Graphics Way to Green Meadows Dr, New Roadway 1 lane(s) each direction with complete street facilities
1351	Cassady Ave from CSX Railroad to 7th Ave., Add turn lanes and complete street facilities to 2 lane roadway
1358	E. Broad St at Hamilton Rd, Add/Modify turn lanes and add complete street facilities
1363	SR-61 at Wilson Rd (SR-656), Add/Modify turn lanes and add complete street facilities
1365	SR-161 at US 62, Add/Modify turn lanes and add complete street facilities
1368	Olentangy St at Beech Ridge, Add/Modify turn lanes and add complete street facilities
1369	Alum Creek Dr at Rohr Rd, Add/Modify turn lanes and add complete street facilities

Plan Project ID	Project Description (2030)
1373	Worthington Rd at Freeman Rd, Add/Modify turn lanes and add complete street facilities
1380	E. Broad St from I-270 to Outerbelt St, Widen road from 0 lanes to 0 lanes total both directions with complete street facilities
1394	Meadow Grove Dr. extension from Holton Rd. to Tournament Way, New Roadway 1 lane(s) each direction with complete street facilities
1405	US-36 at SR-257, Add/Modify turn lanes and add complete street facilities
1408	US-23 at SR-750, Add/Modify turn lanes and add complete street facilities
1409	SR-315 at Jewett Rd., Add/Modify turn lanes and add complete street facilities
1411	SR-161 at Maple Canyon Dr., Add/Modify turn lanes and add complete street facilities
1412	Broad St. at Reynoldsburg-New Albany Rd., Add/Modify turn lanes and add complete street facilities
1414	Cleveland Ave. at Hudson St., Add/Modify turn lanes and add complete street facilities
1416	E Mound St. at S 3rd St., Add/Modify turn lanes and add complete street facilities
1490	Hamilton Rd. from SR-161 to Central College Rd., Widen road from 2 lanes to 4 lanes total both directions with complete street facilities
1555	Scioto Darby Creek Rd. at Walcutt Rd./Leap Rd., Construct roundabout with complete street facilities
1582	I-71 (North Freeway) SB at I-270 WB, Reconfigure slip, loop and/or directional interchange ramps
1585	SR-315 SB at Kinnear Rd., Modify ramp termni intersection(s)
1717	US-42 at SR-257/Klondike Rd., Add/Modify turn lanes and add complete street facilities
1718	SR-605 at Fancher Rd., Add/Modify turn lanes and add complete street facilities
1719	Morse Rd. at Babbitt Rd., Add/Modify turn lanes and add complete street facilities
1720	Westerville Rd. (SR-3) at Minerva Lake Rd., Add/Modify turn lanes and add complete street facilities
1721	Reynoldsburg-New Albany Rd. at Havens Rd., Add/Modify turn lanes and add complete street facilities
1771	Brice Rd. at Scarborough Blvd., Add/Modify turn lanes and add complete street facilities
1785	Pontious Rd. from Rickenbacker Pkwy (proposed) to Rohr Rd., Widen road from 2 lanes to 4 lanes total both directions with complete street facilities
1787	SR-310 (Hazelton-Etna Rd.) from I-70 (East Freeway) to Blacklick Eastern Rd. (SR-204), Widen road from 2 lanes to 4 lanes total both directions with complete street facilities
1818	Etna Pkwy extension from US-40 to Blacklick-Eastern Rd. (SR-204), New Roadway 1 lane(s) each direction with complete street facilities
LCATS	SR-79 (Walnut Rd.) from SR-360 to bend at 4-lane section at Park Avenue, Add turn lanes and complete street facilities to 2 lane roadway
LCATS	SR-204 (Refugee Rd.) from west Corp (Deep Cut Rd.) limit to Millersport Road NE, Add turn lanes and complete street facilities to 2 lane roadway
LCATS	
	SR-204 (Refugee Rd.) at Millersport Rd NE, Construct roundabout with complete streets facilities

Plan Project ID	Project Description (2030)
LCATS	Granville St. at Locust St. and 5th St., Construct roundabout with complete streets facilities
LCATS	West Church St. from 30th St to 21st St., Add turn lanes and complete street facilities to 2 lane roadway
LCATS	Thornwood Dr. at Irving Wick Dr., Add/Modify turn lanes and add complete street facilities
LCATS	W Main St. at Terrace Ave. Add/Modify turn lanes and add complete street facilities
LCATS	Sharon Valley Rd. and Country Club Dr., Construct roundabout with complete streets facilities
LCATS	SR-661 at New Burg St., Construct roundabout with complete streets facilities
LCATS	SR-13 (4th St.) at Main St., Construct roundabout with complete streets facilities
LCATS	SR-13 (4th St.) at Church St., Construct roundabout with complete streets facilities
LCATS	SR-13 (4th St.) from Railroad St. to National Dr., Add turn lanes and complete street facilities to 2 lane roadway
LCATS	Thornwood Crossing from Cherry Valley Rd to Thornwood Dr. Construct new 4 lane bridge

**Table 10: Additional Projects identified for year 2040**

Plan Project ID	Project Description (2040)
1	Lockbourne Rd. from SR 104 (Frank-Refugee Freeway) to Livingston Ave. (US 33), Add turn lanes and complete street facilities to 2 lane roadway
12	Sunbury Rd. from Agler Rd. to Morse Rd., Add turn lanes and complete street facilities to 2 lane roadway
17	Veterans Pkwy. from US 23 at US 42 to US 36/SR 37, New Roadway 2 lane(s) each direction with complete street facilities
33	Gender Rd. from US 33 (Southeast Freeway) to Brice Rd., Add turn lanes and complete street facilities to 2 lane roadway
39	Trabue Rd./Renner Rd. from Hilliard-Rome Rd. to Conrail overpass, Add turn lanes and complete street facilities to 2 lane roadway
43	Kinnear Rd. from North Star Rd. to Olentangy River Rd., Add turn lanes and complete street facilities to 2 lane roadway
48	Sunbury Rd. from Morse Rd. to SR 161, Add turn lanes and complete street facilities to 2 lane roadway
49	Hudson St. from McGuffey Rd. to Cleveland Ave. (SR 3), Add turn lanes and complete street facilities to 2 lane roadway
50	Sinclair Rd. from Freeway Dr. South to SR 161 (Dublin-Granville Rd.), Add turn lanes and complete street facilities to 2 lane roadway
55	Sunbury Rd. from Leonard Ave. to Agler Rd., Add turn lanes and complete street facilities to 2 lane roadway

59	Courtright Rd. from Refugee Rd. to Livingston Ave., Add turn lanes and complete street facilities to 2 lane roadway
60	I-70 (East Freeway) at SR 256 and at Taylor Rd./SR 204, Interchange modification
62	Williams Rd. from Corr Rd./Lockbourne Rd. to Alum Creek Dr., Add turn lanes and complete street facilities to 2 lane roadway
63	Groveport Rd. from Watkins Rd. to Williams Rd., Add turn lanes and complete street facilities to 2 lane roadway
67	US 33 (Riverside Dr.) from Lane Ave. to Fishinger Rd., Add turn lanes and complete street facilities to 4 lane roadway
70	Worthington-Galena Rd. from Sancus Blvd. to Lazelle Rd., Add turn lanes and complete street facilities to 2 lane roadway
80	I-270 (South Outerbelt) at US 33 (Southeast Freeway), Reconfigure slip, loop and/or directional interchange ramps
84	Tussing Rd. from Brice Rd. to SR 256 (Reynoldsburg-Baltimore Rd.), Widen road from 2 lanes to 4 lanes total both directions with complete street facilities
85	US 62/SR 3 (Harrisburg Pk.) from Hyde Rd. to Eakin Rd./Hopkins Ave., Add turn lanes and complete street facilities to 2 lane roadway
93	Roberts Rd. from Alton & Darby Creek Rd. to Hilliard Rome Rd., Add turn lanes and complete street facilities to 2 lane roadway
96	Sawmill Pkwy. extension from US 42 at Sawmill Pkwy. (s. of Slack Rd.) to Section Line Rd. (south of Airport Rd.), New Roadway 1 lane(s) each direction with complete street facilities
97	Home Rd. from Section Line Rd. to Olentangy River Rd., Widen road from 2 lanes to 4 lanes total both directions with complete street facilities
99	US 36/SR 37 from I-71 to SR 3, Widen road from 2 lanes to 4 lanes total both directions with complete street facilities
118	Livingston Ave. from Country Club Rd. to Briceton Dr., Add turn lanes and complete street facilities to 4 lane roadway
119	Karl Rd. from Morse Rd. to SR 161 (Dublin-Granville Rd.), Add turn lanes and complete street facilities to 4 lane roadway
127	Cemetery Rd. from Main St. (Hilliard) to Norwich St., Widen road from 2 lanes to 4 lanes total both directions with complete street facilities
151	Hill Rd. relocation from Busey Rd. at Hill Rd. (s. leg) to Hill Rd. north of Busey Rd., New Roadway 1 lane(s) each direction with complete street facilities
152	Hill Rd. from Hill Rd. relocation (n. of Busey Rd.) to Columbus St. (SR 256), Add turn lanes and complete street facilities to 2 lane roadway
153	Busey Rd. from Bowen Rd. to Allen Rd., Add turn lanes and complete street facilities to 2 lane roadway
155	Bixby Rd. from US 33 (Southeast Freeway) to Winchester Pk., Widen road from 2 lanes to 4 lanes total both directions with complete street facilities

157	Mink St. from National Rd. (US 40) to Broad St. (SR 16), Add turn lanes and complete street facilities to 2 lane roadway
162	Glenn Rd. from Curve Rd. to US 36/SR 37, Widen road from 2 lanes to 4 lanes total both directions with complete street facilities
165	Britton Pkwy. from Britton Rd. extension to Tuttle Crossing Blvd., Widen road from 2 lanes to 4 lanes total both directions with complete street facilities
175	Bixby-Sims connector from Bixby Rd. (west of US 33) to Sims Rd. (at Winchester Blvd. extension), New Roadway 2 lane(s) each direction with complete street facilities
176	SR 317 (London-Groveport Rd.) from Alum Creek Dr. to Main St. (Groveport Rd.), Widen road from 2 lanes to 4 lanes total both directions with complete street facilities
177	Groveport Rd. from Williams Rd. to Alum Creek Dr., Add turn lanes and complete street facilities to 2 lane roadway
180	Georgesville Rd. from Hall Rd. to Clime Rd. (south leg), Add turn lanes and complete street facilities to 4 lane roadway
189	I-70/I-71 (South Innerbelt) at I-71S/SR 315 (west interchange), Reconfigure slip, loop and/or directional interchange ramps
197	Cleveland Ave. at Oakland Park Ave., Add/Modify turn lanes and add complete street facilities
199	Livingston Ave. (US 33) at Alum Creek Dr., Add/Modify turn lanes and add complete street facilities
208	High St. (US 23) at Obetz Rd., Add/Modify turn lanes and add complete street facilities
211	Henderson Rd. at Olentangy River Rd., Add/Modify turn lanes and add complete street facilities
214	Goodale Blvd. from Edgeworth St. to Olentangy River Rd./Twin Rivers Dr., Add turn lanes and complete street facilities to 4 lane roadway
218	Ebright-Bixby interchange connector from Ebright Rd. (north of rail line) to Bixby-Sims connector (future), New Roadway 2 lane(s) each direction with complete street facilities
223	Hills Miller Rd. at Troy Rd., Add/Modify turn lanes and add complete street facilities
225	Cheshire Rd. at Galena Rd./Rome Corners Rd., Add/Modify turn lanes and add complete street facilities
260	US 23 (Columbus Pk.) at Cheshire Rd., Add/Modify turn lanes and add complete street facilities
264	US 23 from Pennsylvania Ave. to Hills-Miller Rd., Access Management to limit and consolidate intersections and driveways
326	Four Winds Dr. (north extension) from US 36/SR 37 to 3B's & K Rd., New Roadway 1 lane(s) each direction with complete street facilities
345	Cannon Dr. from Kinnear Rd. extension (future) to Lane Ave., New Roadway 2 lane(s) each direction with complete street facilities
347	US 33 (College Ave.) at Petzinger Rd., New interchange
380	SR 161 from US-62 to Beech Road, Widen freeway from 4 lanes to 6 lanes total both directions
381	I-270 at Broad Street (west outerbelt), Interchange modification
383	I-71 at TR 109 (Big Walnut Road), New interchange



387	I-270 at Cemetery Road, Interchange modification
416	US 33 at Hamilton Rd./Williams Rd., Interchange modification
419	US 33/SR 161 from Dublin-Plain City Rd (SR 161/Post Rd) to Avery-Muirfield Dr, Widen freeway from 4 lanes to 6 lanes total both directions
427	Cosgray Rd. from Tuttle Crossing Blvd. (proposed) to Shier Rings Rd., Add turn lanes and complete street facilities to 2 lane roadway
428	Cosgray Rd. from Shier Rings Rd. to Fishel Drive South, Add turn lanes and complete street facilities to 2 lane roadway
429	Cosgray Rd. from Fishel Drive South to SR 161 (Post Rd.), Widen road from 2 lanes to 4 lanes total both directions with complete street facilities
430	Eiterman Rd. from Bobcat Way to Shier Rings Rd., Add turn lanes and complete street facilities to 2 lane roadway
434	Industrial Pkwy from US 42 to Memorial Dr (Plain City), Widen road from 2 lanes to 4 lanes total both directions with complete street facilities
440	Shier Rings Rd. from Eiterman Rd. to Avery Rd., Widen road from 2 lanes to 4 lanes total both directions with complete street facilities
452	Jeanette Rd. extension from Westbrook Dr. to Scioto Darby Rd., New Roadway 1 lane(s) each direction with complete street facilities
453	Norwich St. from Cemetery Rd. to Scioto Darby Rd., New Roadway 1 lane(s) each direction with complete street facilities
456	Smith's Mill - Central College connector from Smith's Mill Rd. to Central College Rd., New Roadway 1 lane(s) each direction with complete street facilities
459	South Horseshoe Rd. from Thiesen Dr. to East Beech Rd., New Roadway 1 lane(s) each direction with complete street facilities
460	West Beech Rd. from E. Dublin-Granville Rd. to South Horseshoe Rd., New Roadway 1 lane(s) each direction with complete street facilities
464	SR-161 from Harlem Rd. to US-62, Widen freeway from 4 lanes to 6 lanes total both directions
469	Beech Rd/Clark State Rd. at Morse Rd., Construct roundabout with complete street facilities
474	Dublin-Granville Rd. (SR-161) from Sawmill Rd. to Aeros Dr., Add turn lanes and complete street facilities to 2 lane roadway
475	East Beech Rd. from South Horseshoe Rd. to Worthington Rd., New Roadway 1 lane(s) each direction with complete street facilities
607	Delaware Northeast Bypass/Byxbe Pkwy from US 23 to US 36, New Roadway 2 lane(s) each direction with complete street facilities
636	Powell Rd. from Old State Rd. to I-71, Add turn lanes and complete street facilities to 2 lane roadway
637	Powell Rd. from I-71 to Worthington Rd., Add turn lanes and complete street facilities to 2 lane roadway
694	Africa Rd. from County Line Rd. to Westar Rd., Widen road from 2 lanes to 4 lanes total both directions with complete street facilities

740	Piatt Rd. extension from Lewis Center to Piatt Rd., New Roadway 1 lane(s) each direction with complete street facilities
746	Jeg's Blvd. extension from US 42 to Sawmill Pkwy., New Roadway 1 lane(s) each direction with complete street facilities
751	Merrick Pkwy from Troy Rd. to US 23, New Roadway 1 lane(s) each direction with complete street facilities
782	Refugee Rd. from Mink Rd. to SR 310, Add turn lanes and complete street facilities to 2 lane roadway
789	I-270 at Easton Way, Modify ramp termni intersection(s)
792	Groveport Rd. from Swisher Rd. to SR 317, Add turn lanes and complete street facilities to 2 lane roadway
793	SR 317 at Rohr Rd., Add/Modify turn lanes and add complete street facilities
808	Cleveland Ave. from County Line Rd. to Polaris Pkwy., Widen road from 4 lanes to 6 lanes total both directions with complete street facilities
809	State St. from County Line Rd. to Polaris Pkwy., Widen road from 2 lanes to 4 lanes total both directions with complete street facilities
813	Thompson Ave. from Countyl Line Rd. to Polaris Pkwy., New Roadway 1 lane(s) each direction with complete street facilities
819	Tech Center Dr. extension from Science Blvd. to Taylor Station Rd., New Roadway 1 lane(s) each direction with complete street facilities
907	I-670 WB from 4th St. to I-270, Apply traffic management strategies to specific lanes during specified times of day
908	I-70 (east freeway) from Alum Creek Dr. to SR 310, Apply traffic management strategies to specific lanes during specified times of day
910	SR 315 from I-670 to I-270, Apply traffic management strategies to specific lanes during specified times of day
925	Village Center Pkwy extension from Existing Village Center Pkwy to SR 161, New Roadway 1 lane(s) each direction with complete street facilities
937	Schrock Rd. at Cooper Rd., Add/Modify turn lanes and add complete street facilities
944	I-71 at Hudson St., Modify ramp termni intersection(s)
946	Cleveland Ave. at Weber Rd., Add/Modify turn lanes and add complete street facilities
947	Northwest Blvd. at Chambers Rd., Add/Modify turn lanes and add complete street facilities
948	Grandview Ave. at Fifth Ave., Add/Modify turn lanes and add complete street facilities
949	Grandview Ave. at Third Ave., Add/Modify turn lanes and add complete street facilities
950	Broad St. at Taylor Station Rd., Add/Modify turn lanes and add complete street facilities
956	Grandview Ave. extension from Mckinley Ave. to Broad St., New Roadway 2 lane(s) each direction with complete street facilities
957	Hague Ave. extension from Briggs Rd. to Alkire Rd. (west of Riverbend Subd, east of Southwestern Rd.), New Roadway 1 lane(s) each direction with complete street facilities
988	West Broad St. from Norton Rd. to High St., High Capacity Transit

1107	Sullivant Ave. at Hague Ave., Add/Modify turn lanes and add complete street facilities
1109	Ole Country Lane extension from Ole Country Lane end to Cassidy Ave., New Roadway 1 lane(s) each direction with complete street facilities
1116	Science Blvd. extension from Tech Center Dr. to Taylor Rd., New Roadway 1 lane(s) each direction with complete street facilities
1183	Blaney Rd. (CR-15) Extension/Realignment from Home Rd. to US 42, New Roadway 2 lane(s) each direction with complete street facilities
1194	Blaney Rd. (CR-15) Extension/Realignment from US 42 to Crottinger Rd., New Roadway 2 lane(s) each direction with complete street facilities
1199	Advancement Avenue from Eiterman Rd to Darree Fields, New Roadway 1 lane(s) each direction with complete street facilities
1200	Technology Way from Fisher Dr S to Intersection of Eiterman Rd and SR161, New Roadway 2 lane(s) each direction with complete street facilities
1202	Dublin-Granville Rd. (SR-161) from Aeros Dr to Hutchinson St, Add turn lanes and complete street facilities to 2 lane roadway
1203	Dublin-Granville Rd. (SR-161) from Strathaven Dr. to Olentangy River Rd., Add turn lanes and complete street facilities to 2 lane roadway
1223	Demorest Rd. from Southwest Blvd. to Big Run South Rd., Add turn lanes and complete street facilities to 2 lane roadway
1228	Grove City - Broadway Connector from Grove City Rd. to Broadway (US 62), New Roadway 1 lane(s) each direction with complete street facilities
1238	Seeds - Hoover Connector from Seeds Rd. to Hoover Rd., New Roadway 1 lane(s) each direction with complete street facilities
1239	London-Groveport Connector from London Groveport Rd. to Seeds - Hoover Connector (Proposed), New Roadway 1 lane(s) each direction with complete street facilities
1247	Hawthorne Pkwy Extension from Hawthorne Pkwy. to Jackson Pike (SR 104), New Roadway 1 lane(s) each direction with complete street facilities
1248	Holton - Buckeye Connector from Holton Rd. to Buckeye Pkwy., New Roadway 1 lane(s) each direction with complete street facilities
1255	Cheshire Dr from Mill Stone Dr to Golf Course Rd, New Roadway 1 lane(s) each direction with complete street facilities
1256	Sedgwick Ave from N Columbus St to N Miller St, New Roadway 1 lane(s) each direction with complete street facilities
1353	Demorest Rd. from Southwest Blvd. to Grove City Rd., Add turn lanes and complete street facilities to 2 lane roadway
1359	US-36/SR-37 at Galena Rd, Add/Modify turn lanes and add complete street facilities
1364	SR-161 at Cleveland Ave, Add/Modify turn lanes and add complete street facilities
1371	London-Groveport Rd at Rohr Rd, Add/Modify turn lanes and add complete street facilities
1372	US 23 at Hyatts Rd, Add/Modify turn lanes and add complete street facilities

1395	Holt Rd. Extension from Grove City Rd. to Rensch Rd., New Roadway 1 lane(s) each direction with complete street facilities
1396	Holt Rd. Extension (phase 2) from Rensch Rd. to Harrisburg Pike/US-62, New Roadway 1 lane(s) each direction with complete street facilities
1406	US-36 at CR-605, Add/Modify turn lanes and add complete street facilities
1413	Broad St. at McNaughten Rd., Add/Modify turn lanes and add complete street facilities
1415	E Main St. (US-40) at Hamilton Rd., Add/Modify turn lanes and add complete street facilities
1418	Westerville Rd. at Albert Ave., Add/Modify turn lanes and add complete street facilities
1419	W Broad St. at S Murray Hill Rd., Add/Modify turn lanes and add complete street facilities
1422	Lockbourne Rd. at SR-317, Construct roundabout with complete street facilities
1424	Cleveland Ave. at Innis Rd., Add/Modify turn lanes and add complete street facilities
1425	Cooke Rd. from I-71 to Cleveland Ave., Add turn lanes and complete street facilities to 2 lane roadway
1426	Ferris Rd. from Karl Rd. to Westerville Rd., Add turn lanes and complete street facilities to 2 lane roadway
1481	Souder Ave. extension from Dublin Rd. to Twin Rivers Dr., New Roadway 1 lane(s) each direction with complete street facilities
1485	Morse Rd. from Stygler Rd. to Cherrybottom rd., Widen road from 4 lanes to 6 lanes total both directions with complete street facilities
1494	Old State Rd. from Lazelle Rd. to Polaris Pkwy, Widen road from 2 lanes to 4 lanes total both directions with complete street facilities
1495	Orion Pl/Worthington Rd. from County Line Rd. to Polaris Pkwy, Widen road from 2 lanes to 4 lanes total both directions with complete street facilities
1498	Brice Rd. at Shannon Rd., Add/Modify turn lanes and add complete street facilities
1535	Waggoner Rd. at Clark State Rd., Construct roundabout with complete street facilities
1577	Town St. at McDowell St., Add/Modify turn lanes and add complete street facilities
1590	SR-315 at Lane Ave., Interchange modification
1592	Scioto Darby Rd. from Cosgray Rd. to Leppert Rd., Widen road from 2 lanes to 4 lanes total both directions with complete street facilities
1595	Williams Rd. at Lockbourne Rd./Corr Rd., Add/Modify turn lanes and add complete street facilities
1647	SR-104 from SR-665 to Pickaway County Line (continue to SR-762), Widen road from 2 lanes to 4 lanes total both directions with complete street facilities
1649	Groveport Rd. at Williams Rd., Add/Modify turn lanes and add complete street facilities
1724	Polaris Pkwy/SR 750 at S Old State Rd., Add/Modify turn lanes and add complete street facilities
1725	E Wilson Bridge Rd. at N High St./US-23, Add/Modify turn lanes and add complete street facilities
1727	SR-161 at Ambleside Dr./Satinwood Dr., Add/Modify turn lanes and add complete street facilities

1728	SR-161 at Sharon Woods Blvd/Tamarack Blvd., Add/Modify turn lanes and add complete street facilities
1730	Bethel Rd. at Olentangy River rd., Add/Modify turn lanes and add complete street facilities
1732	Morse Rd. at Karl Rd., Add/Modify turn lanes and add complete street facilities
1733	Morse Rd. at Tamarack Blvd., Add/Modify turn lanes and add complete street facilities
1734	Morse Rd. at Northtowne Blvd/Walford St., Add/Modify turn lanes and add complete street facilities
1736	Morse Rd. at Stelzer Rd., Add/Modify turn lanes and add complete street facilities
1738	Westerville Rd./SR-3 at Ferris Rd./Walnut Creek Dr., Add/Modify turn lanes and add complete street facilities
1740	Sunbury Rd. at Innis Rd./McCutcheon Rd., Add/Modify turn lanes and add complete street facilities
1742	Westerville Rd. at Oakland Park Ave., Add/Modify turn lanes and add complete street facilities
1747	Hilliard-Rome Rd. at Westchester Woods Blvd., Add/Modify turn lanes and add complete street facilities
1748	Hilliard-Rome Rd. at Renner Rd., Add/Modify turn lanes and add complete street facilities
1750	Olentangy River Rd. at King Ave., Add/Modify turn lanes and add complete street facilities
1751	Olentangy River Rd. at W 5th Ave., Add/Modify turn lanes and add complete street facilities
1752	N High St. at E 5th Ave., Add/Modify turn lanes and add complete street facilities
1753	5th Ave. at Summit St./US-23, Add/Modify turn lanes and add complete street facilities
1754	E 11th Ave. at Cleveland Ave/SR-3, Add/Modify turn lanes and add complete street facilities
1756	W Broad St. at N Front St., Add/Modify turn lanes and add complete street facilities
1757	E Broad St. at N 3rd St., Add/Modify turn lanes and add complete street facilities
1765	Livingston Ave. at Nelson Rd., Add/Modify turn lanes and add complete street facilities
1767	Brice Rd. at Livingston Ave., Add/Modify turn lanes and add complete street facilities
1783	US-33 from Post Rd./SR-161 to US-42, Widen freeway from 4 lanes to 6 lanes total both directions
1784	Scioto Darby Creek Rd. from Leap Rd. to Dublin Rd., Add turn lanes and complete street facilities to 2 lane roadway
1786	Broad St. from Hamilton Rd. to I-270 (East Outerbelt), Widen road from 4 lanes to 6 lanes total both directions with complete street facilities
1788	Winchester Pike from Hamilton Rd. to Gender Rd., Widen road from 2 lanes to 4 lanes total both directions with complete street facilities
1789	Twin Rivers Dr. from Goodale Blvd. to Dublin Rd. (US-33), Widen road from 2 lanes to 4 lanes total both directions with complete street facilities
1790	Souder Ave. from Broad St. to Dublin Rd. (US-33), Widen road from 2 lanes to 4 lanes total both directions with complete street facilities
1792	US-42 from SR-736 to Industrial Pkwy (CR-1), Add turn lanes and complete street facilities to 2 lane roadway

1793	US-42 from Industrial Pkwy (CR-1) to Bell Rd./Wells Rd. (CR-19), Widen road from 2 lanes to 4 lanes total both directions with complete street facilities
1796	US-42 from Section Line Rd. (CR-5) to US-23, Add turn lanes and complete street facilities to 2 lane roadway
1803	Groveport Rd. from Parsons Ave. to SR-104, Add turn lanes and complete street facilities to 2 lane roadway
1806	McCutcheon Rd. from Stelzer Rd. to Sunbury Rd., Add turn lanes and complete street facilities to 2 lane roadway
1809	Sancus Blvd. from Worthington Woods Blvd. to Syracuse Ln., Add turn lanes and complete street facilities to 2 lane roadway
1811	Sullivant Ave. from Georgesville Rd. to Norton Rd., Add turn lanes and complete street facilities to 2 lane roadway
1815	Roberts Rd. from Wilson Rd. to Dublin Rd., Add turn lanes and complete street facilities to 2 lane roadway
1820	Delaware NE Bypass (Eastern Leg) from Byxbe Pkwy (Proposed) to US-36, New Roadway 2 lane(s) each direction with complete street facilities
1821	Lewis Center Rd. from Home Rd. extension to S. Old State Rd., Widen road from 2 lanes to 4 lanes total both directions with complete street facilities
1822	Lewis Center Rd. from S. Old State Rd. to Africa Rd., Widen road from 2 lanes to 4 lanes total both directions with complete street facilities
1836	Central Ave (SR-37) from US-23 to Foley St., Add turn lanes and complete street facilities to 2 lane roadway
LCATS	Granville Rd. from Thornwood Crossing Interchange to E Broadway, Newark Granville Rd between Thornwood Crossing Interchange & Broadway/College intersection
LCATS	Thornwood Dr. at Main St./James Rd., Add/Modify turn lanes and add complete street facilities
LCATS	Main St. from Cherry Valley Rd. to Thornwood Dr., Add turn lanes and complete street facilities to 2 lane roadway
LCATS	Dayton Rd. from south of SR-16 to north of SR-16, Construct new 2-lane bridge
LCATS	SR-16 at Marne Rd., New interchange
LCATS	I-70 from SR-37 to SR-79, Widen freeway from 4 lanes to 6 lanes total both directions

**Table 11: Additional Projects identified for year 2050**

Plan Project ID	Project Description (2050)
18	Galloway Rd.-Hilliard Rome Rd. connector from Broad St. (US 40) to Feder Rd., New Roadway 2 lane(s) each direction with complete street facilities
19	Hall Rd. from Galloway Rd. to Georgesville Rd., Add turn lanes and complete street facilities to 2 lane roadway

30	Broad St. (SR 16) from Taylor Rd. to Etna Pkwy., Widen road from 2 lanes to 4 lanes total both directions with complete street facilities
64	I-70 (East Freeway) from SR 256 (Baltimore-Reynoldsburg Rd.) to SR 310 (Hazelton-Etna Rd.), Widen freeway from 4 lanes to 6 lanes total both directions
94	Cosgray Rd. from Scioto & Darby Creek Rd. to Hayden Run Rd, Widen road from 2 lanes to 4 lanes total both directions with complete street facilities
102	SR 665 (London-Groveport Rd.) from US 62 (Harrisburg Pk.) to Gateway West Dr., Add turn lanes and complete street facilities to 2 lane roadway
111	SR 310 (Hazelton-Etna Rd.) from US 40 (National Rd.) to Mill Street Rd., Add turn lanes and complete street facilities to 2 lane roadway
112	Renner Rd. from Alton & Darby Creek Rd. to Whispering Willow Ln./Bellow falls Pl., Add turn lanes and complete street facilities to 2 lane roadway
113	Noe Bixby Rd. from Winchester Pk. to Main St. (US 40), Add turn lanes and complete street facilities to 2 lane roadway
122	Johnstown Rd. from Goshen La. to Stygler Rd., Add turn lanes and complete street facilities to 2 lane roadway
220	Big Walnut Rd. at Old 3C Hwy., Add/Modify turn lanes and add complete street facilities
221	Big Walnut Rd. at Tussic Street Rd., Add/Modify turn lanes and add complete street facilities
222	South Old State Rd. at Cheshire Rd., Add/Modify turn lanes and add complete street facilities
224	Cheshire Rd. at Africa Rd., Add/Modify turn lanes and add complete street facilities
236	Pickerington Rd. (Center St.) at Milnor Rd./Meadows Blvd., Add/Modify turn lanes and add complete street facilities
237	Olentangy St. (Powell Rd./SR 750) at Liberty St., Add/Modify turn lanes and add complete street facilities
248	Avery-Muirfield Dr. at Perimeter Dr. & Perimeter Loop Dr., Construct roundabout with complete street facilities
250	Columbus St. (Wright Rd.) from Diley Rd. to Hill Rd. (SR 256), Add turn lanes and complete street facilities to 2 lane roadway
251	SR 521 at Bowtown Rd., Add/Modify turn lanes and add complete street facilities
254	William St. (US 36) at Channing St., Add/Modify turn lanes and add complete street facilities
255	William St. (US 36/US 42) at Lake St. (US 42), Add/Modify turn lanes and add complete street facilities
256	William St. (US 36) at Curtis St., Add/Modify turn lanes and add complete street facilities
258	Central Ave. (SR 37) at Locust Curve Dr., Add/Modify turn lanes and add complete street facilities
259	US 23 (Columbus Pk.) at Cottswold Dr., Add/Modify turn lanes and add complete street facilities
268	Walnut St. at Bevelhymer Rd., Add/Modify turn lanes and add complete street facilities
331	Sawmill Rd. from Hard Rd. to Delaware Co. line, Widen road from 4 lanes to 6 lanes total both directions with complete street facilities

343	Shanahan Rd. from US 23 (Columbus Pk.) to Piatt Rd., Add turn lanes and complete street facilities to 2 lane roadway
399	I-70 from I-670 to Broad St (US 40), Widen freeway from 4 lanes to 6 lanes total both directions
400	I-70 at Livingston Ave., Interchange modification
423	High St (Canal Winchester) at US 33, New Roadway 1 lane(s) each direction with complete street facilities
433	Hyland-Croy Rd. from Post Rd. to Brock Rd., Widen road from 2 lanes to 4 lanes total both directions with complete street facilities
455	Walnut St. extension from US 62 (Johnstown Rd.) to Beech Rd., New Roadway 1 lane(s) each direction with complete street facilities
463	Clover Valley Rd. extension from Jug St. to Innovation Way extension, New Roadway 1 lane(s) each direction with complete street facilities
465	Dublin-Granville Rd. at Fodor Rd./Market St., Construct roundabout with complete street facilities
468	Kitzmiller Rd. at Smith's Mill Rd., Construct roundabout with complete street facilities
470	Main St. (US 40) at Taylor Rd., Add/Modify turn lanes and add complete street facilities
669	SR-665 from SR-104 to Scioto St., New Roadway 2 lane(s) each direction with complete street facilities
679	US 23 from I-270 S to Pickaway County Line (and continue to South Bloomfield), Convert 4 lane roadway to 4 lane freeway
692	SR 605 at Walnut St., Construct roundabout with complete street facilities
722	SR 674 Realignment from Gender Rd. to Winchester Southern Rd., New Roadway 2 lane(s) each direction with complete street facilities
723	Refugee Rd. at Pickerington Rd., Construct roundabout with complete street facilities
742	Piatt-Roloson extension from Piatt Rd. to Roloson Rd., New Roadway 1 lane(s) each direction with complete street facilities
743	Pollock Rd. from Pollock/US 23 intersection to US 23 to the south, Add/Modify turn lanes and add complete street facilities
783	Etna Pkwy from US 40 to SR 16, Widen road from 2 lanes to 4 lanes total both directions with complete street facilities
785	US 23 at SR 665/SR 317, New interchange
791	Groveport Rd. at Richardson Rd./Groveport Park entrance, Add/Modify turn lanes and add complete street facilities
810	County Line Rd. from Cleveland Ave. to Africa Rd., Widen road from 4 lanes to 6 lanes total both directions with complete street facilities
825	Hill Rd. at Basil-Western Rd., Construct roundabout with complete street facilities
836	I-70 - US 33 Connector (SE) from I-70 (East Freeway) to US 33 (SE), New Roadway 2 lane(s) each direction with complete street facilities
841	SR 317/Hamilton Rd. at Venture Place/Homer Ohio Ln., Add/Modify turn lanes and add complete street facilities



850	Richardson - Ebright Connector from Richardson Rd. to Ebright Rd., New Roadway 1 lane(s) each direction with complete street facilities
852	SR 204 at Milnor Rd., Construct roundabout with complete street facilities
853	SR 204 at Harmon Rd., Add/Modify turn lanes and add complete street facilities
854	SR 204 at Taylor rd., Add/Modify turn lanes and add complete street facilities
936	Dempsey Rd. from I-270 to Sunbury Rd., Add turn lanes and complete street facilities to 2 lane roadway
945	Phillipi Rd. at Railroad crossing, New railroad grade seperated bridge
962	Cassady - Stelzer Connector from Cassady Ave. to Stelzer Rd., New Roadway 1 lane(s) each direction with complete street facilities
1114	Jetway Blvd. extension from Jetway Blvd. end to Agler Rd., New Roadway 1 lane(s) each direction with complete street facilities
1115	Drake Rd. extension from Drake Rd. end to Jetway Blvd., New Roadway 1 lane(s) each direction with complete street facilities
1182	Alum Creek Dr. from SR 317 to Groveport Rd., Widen road from 4 lanes to 6 lanes total both directions with complete street facilities
1190	Long Rd. from Columbus St. to Diley Rd., Add turn lanes and complete street facilities to 2 lane roadway
1214	US-42 - US-23 Connector from US-42 to US-23, New Roadway 1 lane(s) each direction with complete street facilities
1221	South Section Line Rd at Hyatts Rd Intersection, Add/Modify turn lanes and add complete street facilities
1235	SR-665/South Connector from London Groveport Rd. to South Connector to Gateway West, New Roadway 1 lane(s) each direction with complete street facilities
1243	Hoover Connector from Hoover Rd. to London-Groveport Connector (proposed), New Roadway 1 lane(s) each direction with complete street facilities
1245	London-Groveport - Borrer Connector from London Groveport Rd. to Borrer Rd., New Roadway 1 lane(s) each direction with complete street facilities
1252	N Miller Dr from Prarie Run Dr to Village of Sunbury Line, New Roadway 1 lane(s) each direction with complete street facilities
1253	US-36 Bypass from US-36 East of Sunbury to US-36 West of Sunbury, New Roadway 1 lane(s) each direction with complete street facilities
1356	Norton Rd at Johnson Rd, Add/Modify turn lanes and add complete street facilities
1357	Livingston Ave at James Rd, Add/Modify turn lanes and add complete street facilities
1361	Liberty St at Seldom Seen Rd, Add/Modify turn lanes and add complete street facilities
1362	Broadway at Demorest, Add/Modify turn lanes and add complete street facilities
1366	Forest Dr at Smith's Mill Rd, Add/Modify turn lanes and add complete street facilities
1392	SR-161 from Cosgray Rd. to Franklin County Line, Widen road from 2 lanes to 4 lanes total both directions with complete street facilities

1397	South Connector from Harrisburg Pike/US-62 to Bill Lotz Way/Haughn Rd. Extension (proposed), New Roadway 1 lane(s) each direction with complete street facilities
1399	Bill Lotz Way/Haughn Rd. Extension from Gateway West Dr. to Haughn Connector, New Roadway 1 lane(s) each direction with complete street facilities
1400	North Meadows to Haughn Connector (overpass) from Hoover Rd. to Haughn Connector, New Roadway 1 lane(s) each direction with complete street facilities
1404	US-36 at Wilson Rd., Add/Modify turn lanes and add complete street facilities
1410	Livingston Ave. at SR-317, Add/Modify turn lanes and add complete street facilities
1420	Broad St. at Georgesville Rd., Add/Modify turn lanes and add complete street facilities
1421	E Broad St. at I-270 (East Outerbelt), Modify ramp termni intersection(s)
1428	Taylor Station Rd. at Claycraft Rd., Construct roundabout with complete street facilities
1472	Agler Rd. Extension from Sunbury Rd to Cleveland Ave., New Roadway 2 lane(s) each direction with complete street facilities
1488	Trabue Rd./Renner Rd. from Alton Darby to Hilliard-Rome Rd., Widen road from 2 lanes to 4 lanes total both directions with complete street facilities
1496	Polaris Pkwy (SR-750) from Powell Rd. to Capella Dr., Widen road from 4 lanes to 6 lanes total both directions with complete street facilities
1501	Dublin-Granville Rd. (SR-161) at Sawmill Rd., Add/Modify turn lanes and add complete street facilities
1502	Refugee Rd. at Hines Rd., Add/Modify turn lanes and add complete street facilities
1504	Roberts Rd. at Spindler Rd., Add/Modify turn lanes and add complete street facilities
1533	Reynoldsburg-New Albany Rd. at Havens Rd., Construct roundabout with complete street facilities
1541	Clark State Rd. from Dixon Rd. to Beech Rd., Add turn lanes and complete street facilities to 2 lane roadway
1547	I-270 N Exit Ramp at US-33 W, Reconfigure slip, loop and/or directional interchange ramps
1567	Frank Rd. from US 62/Harrisburg Pike to I-71, Add turn lanes and complete street facilities to 4 lane roadway
1594	I-670 WB/I-71 SB at US-23/Third St. S, Interchange modification
1644	US-23 at Williams Rd., Add/Modify turn lanes and add complete street facilities
1646	US-23 at SR-665/SR-317, Add/Modify turn lanes and add complete street facilities
1650	SR 204/Blacklick Eastern Rd. from Summerfield Way to Violet Twp Line (east), Widen road from 2 lanes to 4 lanes total both directions with complete street facilities
1697	Broad St. marked crosswalk and ped signal/signage at Lazelle St., Add/Modify turn lanes and add complete street facilities
1706	Walcutt Rd. from Trabue Rd. to Scioto Darby Creek Rd., Add turn lanes and complete street facilities to 2 lane roadway
1711	Southeast Corridor from High St. (Downtown Columbus) to Groveport Rd., High Capacity Transit
1714	SR-315 at I-670, Reconfigure slip, loop and/or directional interchange ramps

1715	Pickerington Rd. realignment from South of Pickerington Church of Nazerene to Existing Pickerington Rd. northeast of Ault Rd., New Roadway 2 lane(s) each direction with complete street facilities
1716	Stemen-Pickerington Connector from Stemen Rd. to Old Pickerington Rd. cul-de-sac (proposed), New Roadway 2 lane(s) each direction with complete street facilities
1726	Dublin Granville Rd./SR-161 at Busch Blvd., Add/Modify turn lanes and add complete street facilities
1735	Cleveland Ave. at Morse Rd., Add/Modify turn lanes and add complete street facilities
1737	Hamilton Rd. at Morse Rd., Add/Modify turn lanes and add complete street facilities
1739	Cleveland Ave. at Huy Rd., Add/Modify turn lanes and add complete street facilities
1741	McCutcheon Rd. at Stelzer Rd., Add/Modify turn lanes and add complete street facilities
1758	E Broad St. at Rosehill Rd., Add/Modify turn lanes and add complete street facilities
1761	Sullivant Ave. at S Central Ave., Add/Modify turn lanes and add complete street facilities
1763	E Main St. at James Rd., Add/Modify turn lanes and add complete street facilities
1766	Livingston Ave. at Noe Bixby Rd./Woodcrest Rd., Add/Modify turn lanes and add complete street facilities
1777	Georgesville Rd. at Clime Rd., Add/Modify turn lanes and add complete street facilities
1779	Stringtown Rd. at Marlane Dr., Add/Modify turn lanes and add complete street facilities
1794	US-42 from Bell Rd/Wells Rd. (CR-19) to Watkins Rd. (CR-104), Add turn lanes and complete street facilities to 2 lane roadway
1795	US-42 from Watkins Rd. (CR-104) to Section Line Rd. (CR-5), Add turn lanes and complete street facilities to 2 lane roadway
1800	Linworth Rd. from Wilson Bridge Rd. to Hard Rd., Add turn lanes and complete street facilities to 2 lane roadway
1814	Wilson Rd. from Trabue Rd. to Roberts Rd., Add turn lanes and complete street facilities to 2 lane roadway
1816	Allen Rd. from US-33 to Stemen Rd., Add turn lanes and complete street facilities to 2 lane roadway
LCATS	Johnstown Bypass from US-62 north of Sportsman Club Rd. to Duncan Plains Rd./Mink St., New Roadway, 1 lane(s) each direction with complete street facilities

## Conformity Analysis for Ozone

The conformity analysis consists of comparing the pollutant burden in the non-attainment area resulting from the projects listed in the MORPC and LCATS Transportation Plans to the approved emission budgets.

Figure 1: Columbus / Newark six county 2008 8-Hour ozone Maintenance Area

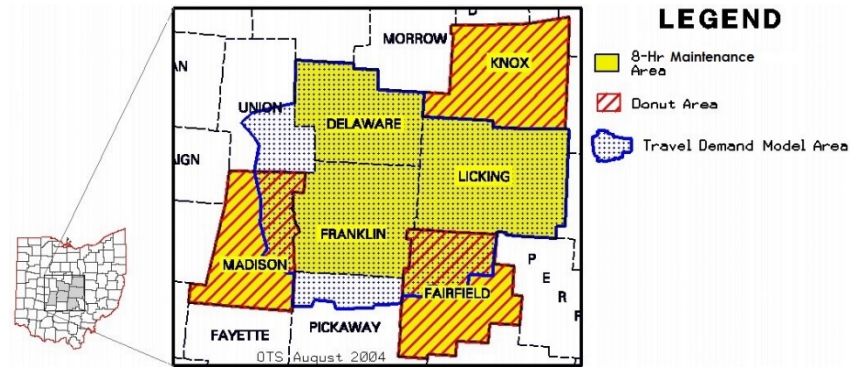
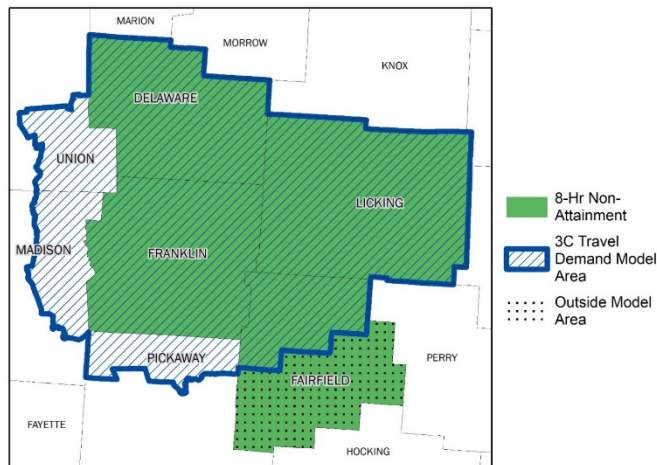


Figure 1a: Columbus / Newark four county 2015 8-Hour Non-Attainment Area



The ozone area has established budgets for VOC and NO<sub>x</sub> for the six county area with regard to the 2008 ozone standard and for the 4 county area with regard to the 2015 ozone standard. Thus, the conformity test requirements is the budget test with the budgets being the values shown previously in Table 1 for the six county area and in Table1a for the four county area.

The Regional model is used in evaluating emissions for the Franklin, Delaware and Licking counties. Modeled portions of Fairfield, and Madison Counties are also evaluated by using Regional model. The VOC and NO<sub>x</sub> emissions modeled are summarized in the following Tables.

Emission estimates summary of results is presented in the next sections.

**Areas within The Regional Travel Demand Model**

**Table 12: Emission Estimations for On-Road Mobile Sources - Franklin County**

<b>Franklin County</b>	2020	2023	2030	2040	2050
VMT (miles/day)	34,699,375	35,632,162	37,886,899	41,017,093	43,804,452
VOC (tons/day)	19.218	17.256	13.007	9.322	9.229
NOx (tons/day)	22.921	17.298	11.330	7.411	7.673

**Table 13: Emission Estimations for On-Road Mobile Sources - Delaware County**

<b>Delaware County</b>	2020	2023	2030	2040	2050
VMT (miles/day)	5,766,015	6,006,201	6,548,833	7,262,572	7,959,669
VOC (tons/day)	2.954	2.672	2.051	1.511	1.539
NOx (tons/day)	3.526	2.679	1.781	1.187	1.261

**Table 14: Emission Estimations for On-Road Mobile Sources - Licking County**

<b>Licking County</b>	2020	2023	2030	2040	2050
VMT (miles/day)	5,642,919	5,787,266	6,108,481	6,614,045	7,181,446
VOC (tons/day)	2.891	2.573	1.907	1.356	1.360
NOx (tons/day)	3.525	2.647	1.709	1.117	1.178

**Areas partially within The Regional Travel Demand Model**

Counties that are partially within regional travel demand model are Fairfield County, and Madison County. Tables 15a, and 15b, summarize emissions estimates for Fairfield County, for the areas within and outside travel demand model area, respectively. Results presented in Table 15a is for the area covered by the travel demand model. Table 15b is for the area not covered by the travel demand model, obtained by using HPMS data. Table 15c presents the emissions for the entire Fairfield County, which is simply sum of emissions from Tables 15a, and 15b.

**Table 15a: Emission Estimations for Fairfield County within the Travel Demand Model Area**

<b>Fairfield County</b>	2020	2023	2030	2040	2050
VMT (miles/day)	2,174,922	2,258,776	2,444,084	2,684,711	2,923,567
VOC (tons/day)	1.201	1.081	0.821	0.594	0.597
NOx (tons/day)	1.357	1.022	0.674	0.445	0.469

**Table 15b: Emission Estimations for Fairfield County outside of the Travel Demand Model Area- using HPMS data**

<b>Fairfield County</b>	2020	2023	2030	2040	2050
VMT (miles/day)	2,171,709	2,289,290	2,561,688	2,947,200	3,336,187
VOC (tons/day)	0.942	0.821	0.610	0.459	0.464
NOx (tons/day)	1.207	0.901	0.594	0.407	0.438

**Table 15c: Emission Estimations for Fairfield County**

<b>Fairfield County</b>	2020	2023	2030	2040	2050
VMT (miles/day)	4,346,631	4,548,066	5,005,772	5,631,911	6,259,754
VOC (tons/day)	2.143	1.902	1.430	1.054	1.061
NOx (tons/day)	2.564	1.923	1.269	0.852	0.907

Tables 16a, and 16b, summarize emissions estimates for Madison County, for the areas within and outside travel demand area, respectively. Results presented in Table 16a is for the area covered by the travel demand model. Table 16b is for the area not covered by the travel demand model, obtained based on HPMS VMT. Table 16c presents the emissions for the entire Madison county, which is simply sum of emissions from Tables 16a, and 16b.

**Table 16a: Emission Estimations for Madison County within the Travel Demand Model Area**

<b>Madison County</b>	2020	2023	2030	2040	2050
VMT (miles/day)	1,251,139	1,285,770	1,365,180	1,486,604	1,608,409
VOC (tons/day)	0.593	0.532	0.394	0.277	0.278
NOx (tons/day)	0.793	0.603	0.395	0.260	0.273

**Table 16b: Emission Estimations for Madison County outside of the Travel Demand Model Area - using HPMS data**

<b>Madison County</b>	2020	2023	2030	2040	2050
VMT (miles/day)	2,537,872	2,650,225	2,888,182	3,232,507	3,569,851
VOC (tons/day)	0.862	0.757	0.566	0.419	0.425
NOx (tons/day)	1.323	1.002	0.658	0.445	0.474

**Table 16c: Emission Estimations for Madison County**

<b>Madison County</b>	2020	2023	2030	2040	2050
VMT (miles/day)	3,789,011	3,935,995	4,253,362	4,719,111	5,178,260
VOC (tons/day)	1.455	1.289	0.960	0.696	0.703
NOx (tons/day)	2.115	1.605	1.052	0.705	0.746

**Area outside Regional Travel Demand Model**

Table 17, summarizes emissions estimates for Knox County, and the results presented in this Table used methodology based on HPMS data.

**Table 17: Emission Estimations for Knox County – using only HPMS**

<b>Knox County</b>	2020	2023	2030	2040	2050
VMT (miles/day)	1,246,184	1,256,871	1,282,084	1,315,826	1,350,851

VOC (tons/day)	0.635	0.555	0.413	0.301	0.301
NOx (tons/day)	0.721	0.529	0.332	0.209	0.213

### Emissions Summary for the Columbus/Central Ohio Area

Tables 18 and 19, summarize VOC and NOx emissions estimates respectively for the analysis years. The summary presented in the following tables is from the aforementioned in Tables 12 through 17.

**Table 18: VOC Emission Inventory Summary (tons/day)**

VOC	2020	2023	2030	2040	2050
<b>Franklin</b>	19.218	17.256	13.007	9.322	9.229
<b>Delaware</b>	2.954	2.672	2.051	1.511	1.539
<b>Licking</b>	2.891	2.573	1.907	1.356	1.360
<b>Fairfield</b>	2.143	1.902	1.430	1.054	1.061
<b>Madison</b>	1.455	1.289	0.960	0.696	0.703
<b>Knox</b>	0.635	0.555	0.413	0.301	0.301
<b>Total</b>	<b>29.294</b>	<b>26.247</b>	<b>19.768</b>	<b>14.240</b>	<b>14.192</b>

**Table 19: NOx Emission Inventory Summary (tons/day)**

NOx	2020	2023	2030	2040	2050
<b>Franklin</b>	22.921	17.298	11.330	7.411	7.673
<b>Delaware</b>	3.526	2.679	1.781	1.187	1.261
<b>Licking</b>	3.525	2.647	1.709	1.117	1.178
<b>Fairfield</b>	2.564	1.923	1.269	0.852	0.907
<b>Madison</b>	2.115	1.605	1.052	0.705	0.746
<b>Knox</b>	0.721	0.529	0.332	0.209	0.213
<b>Total</b>	<b>35.372</b>	<b>26.681</b>	<b>17.474</b>	<b>11.482</b>	<b>11.979</b>

### Conformity Determination for Ozone

Table 20 and 20a illustrates that the emissions for VOC and NO<sub>x</sub> are less than their corresponding six county and 4 county budgets. Thus, the MORPC and LCATS Transportation Plans are in conformity with the requirements of the CAAA and the SIP.

**Table 20: Air Quality Analysis for the Columbus 6 County 2008 8-hour Ozone Maintenance Area**

	VOC (tons/day)	Budget (tons/day)	NOx (tons/day)	Budget (tons/day)
2020	26.247	50.64	26.681	90.54
2030	19.768	44.31	17.474	85.13
2040	14.240	44.31	11.482	85.13
2050	14.192	44.31	11.979	85.13

**Table 20a: Air Quality Analysis for the Columbus 4 County 2015 8-hour Ozone Non-Attainment Area**

	VOC (tons/day)	Budget (tons/day)	NOx (tons/day)	Budget (tons/day)
2023	2023	24.403	28.67	24.547
2030	2030	18.395	22.03	16.089
2040	2040	13.242	22.03	10.568
2050	2050	13.188	22.03	11.020



# Attachment A-Technical Air Quality Information

## Appendix A – Model Script, Figures illustrating Data

### Ozone Analysis Reports Data

#### CUBE VOYAGER PROGRAM SCRIPT FOR COMPUTING VOC & NOx EMISSIONS

```
[CMS (AQ), Produce Viper Network Output]
;<<Process Template>>;
;Input Network File: {cm3neti,filename,"Input Network File Name",x,..\..\Networks\2020\AQ_asgn_2020.net","Network File (*.net)|*.net"}
;Output Network File: {cm3neto,filename,"Output Network File Name",x,..\..\Ozone\output\AQ_2020out.net","Network File (*.net)|*.net"}
;Output CSV Summary File: {cm3sumo,filename,"Output CSV Summary File",x,..\..\Ozone\output\fra20.csv","Report File (*.csv;*.txt)|*.csv;*.txt"}
;Output TXT Report File: {cm3rpto,filename,"Output TXT Report File",x,..\..\Ozone\output\fra20.rpt","Report File (*.rpt;*.txt)|*.rpt;*.txt"}
;Output CSV Hourly File: {cm3hro,filename,"Output CSV Hourly File (Needed for benefits calc but very big)",x,"NONE","Report File (*.csv;*.txt)|*.csv;*.txt"}
;Note: {cm3junkname,note,"Optional Air Quality Files, Leave Blank When Not Doing Air Quality Calculations"}
;AQ Run Type: {cm3aqtype,combolist,"AQ Run Type","MOVES","NONE","MOBILE"}
;AQ Comment Line: {cm3aqcom,editbox,"Optional AQ Report Comment",T,"Ozone Analysis with MOVES - MORPC"}
;Input Network Emissions Factors: {cm3efffile,filename,"Input Network (per distance)Emissions Factors",x,..\..\Ozone\factors\2020MORPC_ozone_3source_rpd.csv","Emissions File (*.fac;*.csv)|*.fac;*.csv"}
;Input Vehicle (MOV) or Intrazonal (MOB) Emissions Factors: {cm3iefffile,filename,"Input Vehicle (MOV) or Intrazonal (MOB) Emissions Factors",x,..\..\Ozone\factors\2020MORPC_ozone_3source_rpv.csv","Emissions File (*.crd; *.csv)|*.crd; *.csv"}
;Input area file: {cm3afile,filename,"Input Area File",x,..\..\TripTables\TAZ_areain.txt","Text File (*.txt; *.prn)|*.txt; *.prn"}
;Input Intrazonal Trips File: {cm3ifile,filename,"Input Intrazonal Trips (Matrix must be OMS format else use text)",x,..\..\TripTables\2020\FRA2020.txt","Matrix or Text File (*.txt; *.prn; *.mat; *.trp)|*.txt; *.prn; *.mat; *.trp"}
;Intrazonal File Type: {cm3iztype,combolist,"Intrazonal File Type","TEXT","NONE","OMSTABLE"}
;Input vehicle file: {cm3vfile,filename,"Input Vehicle File (Moves Only)",x,..\..\Ozone\factors\Source_Type_Pop_2020_MORPC_on-Model.csv","Text File (*.csv)|*.csv"}
;Space: {cm3space,note,"Parameters"}
;Truck PCE: {cm3tpce,editbox,"Truck PCE",N,"2.0"}
;Capacity Field: {cm3capf,comboedit,"Capacity Field","CAP24","CAP1","CAP2","CAP3","CAP4"}
;Hourly/Model Capacity Factor: {cm3kfact,editbox,"Hourly/Model(usually daily) Capacity Factor",N,"0.10"}
;AQ Season Factor: {cm3aqfact,comboedit,"AQ Season Factor (Ozone Only)","1.08","1.00"}
;Set Priority Code from ADMCLASS?:{cm3pri,combolist,"Set Priority Code from ADMCLASS? (CMSCOST can use)","NO","SW","OMS"}
;Run Mode: {cm3rmode,combolist,"Run Mode (usually use Normal for AQ)","NORMAL","4PERIOD_OMS","4PERIOD_SW","4PERIOD_MARKETSEGMENTS_SW"}
;Note: {cm3junkname2,note,"Normal Mode Inputs (if you specify another mode the fields are predetermined)"}
;Volume Field: {cm3vol1f,comboedit,"Volume Field","VOL24_TOT","V_1","LOADEDVOL","WINTERVOL","SUMMERSVOL"}
;Truck Volume Field: {cm3trkf,comboedit,"Truck Volume Field (leave to NONE for AQ unless EFs generated by source)","NONE","VOL24_TRK","VOL24_TRKHV","V2_1"}
;<<End Parameters>>;
*if exist tempcms.txt DEL tempcms.txt
```

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```
*if exist summary.rpt DEL summary.rpt
*if exist hourly.rpt DEL hourly.rpt
*if exist cmstext.rpt DEL cmstext.rpt
COPY FILE=county.dat
ADA 1 4
ALL 2 3
ASD 3 4
ATB 4 4
ATH 5 4
AUG 6 4
BEL 7 3
BRO 8 4
BUT 9 2
CAR10 4
CHP11 4
CLA12 3
CLE13 2
CLI14 4
COL15 4
COS16 4
CRA17 4
CUY18 1
DAR19 4
DEF20 4
DEL21 2
ERI22 3
FAI23 4
FAY24 4
FRA25 1
FUL26 4
GAL27 4
GEA28 2
GRE29 2
GUE30 4
HAM31 1
HAN32 4
HAR33 4
HAS34 4
HEN35 4
HIG36 4
HOC37 4
HOL38 4
HUR39 4
JAC40 4
JEF41 3
KNO42 4
LAK43 2
LAW44 3
```

LIC45 3  
 LOG46 4  
 LOR47 2  
 LUC48 2  
 MAD49 4  
 MAH50 2  
 MAR51 4  
 MED52 2  
 MEG53 4  
 MER54 4  
 MIA55 2  
 MOE56 4  
 MOT57 2  
 MRG58 4  
 MRW59 4  
 MUS60 4  
 NOB61 4  
 OTT62 4  
 PAU63 4  
 PER64 4  
 PIC65 4  
 PIK66 4  
 POR67 2  
 PRE68 4  
 PUT69 4  
 RIC70 3  
 ROS71 4  
 SAN72 4  
 SCI73 4  
 SEN74 4  
 SHE75 4  
 STA76 2  
 SUM77 2  
 TRU78 2  
 TUS79 4  
 UNI80 4  
 VAN81 4  
 VIN82 4  
 WAR83 2  
 WAS84 3  
 WAY85 4  
 WIL86 4  
 WOO87 2  
 WYA88 4  
 ENDCOPY

COPY FILE=dailya.dat

HOUR	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
15	16	17	18	19	20	21	22	23							

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PCTADT																	
URB FWY		0.9	0.6	0.5	0.6	0.9	2.2	5.2	7.3	6.4	5.2	4.9	5.1	5.3	5.5	6.1	
7.2	8.0	7.9	5.8	4.2	3.4	2.9	2.2	1.5									
URB ART		0.7	0.4	0.3	0.3	0.6	1.5	3.5	5.7	5.5	5.1	5.3	6.2	6.5	6.4	6.8	
7.6	8.2	8.1	6.2	4.8	4.0	3.0	1.9	1.3									
RUR FWY		1.4	1.1	0.9	1.0	1.3	2.2	3.7	5.2	5.4	5.4	5.6	5.6	5.7	6.0	6.5	
7.1	7.5	7.0	5.6	4.5	3.8	3.2	2.5	2.0									
RUR ART		0.8	0.5	0.4	0.5	1.0	2.4	4.8	6.2	5.5	5.3	5.5	5.8	6.0	6.0	6.7	
7.6	8.1	7.7	5.6	4.2	3.5	2.8	1.9	1.3									
PCTADT TRK																	
URB FWY		2.1	1.9	1.8	2.0	2.4	3.0	3.9	4.6	5.3	6.0	6.3	6.4	6.4	6.4	6.3	
5.8	5.2	4.6	4.1	3.7	3.4	3.1	2.8	2.4									
URB ART		1.1	0.9	1.0	1.2	1.6	2.3	3.9	5.9	6.9	6.7	7.1	7.6	7.4	7.2	7.4	
7.2	6.0	5.0	3.7	2.8	2.3	1.9	1.5	1.3									
RUR FWY		2.6	2.2	2.1	2.3	2.6	3.1	3.5	4.0	4.5	5.1	5.6	5.8	5.8	5.8	5.8	
5.6	5.3	4.9	4.6	4.3	4.0	3.8	3.5	3.1									
RUR ART		1.5	1.3	1.4	1.6	2.2	3.0	4.2	5.3	6.1	6.7	7.0	7.1	7.0	6.9	6.8	
6.3	5.5	4.6	3.8	3.1	2.6	2.3	2.1	1.7									
PCTDIR																	
URB FWY		38	40	40	46	56	64	70	70	68	62	58	52	52	52	50	
46	38	38	46	52	46	42	42	40									
URB ART		44	46	44	48	54	62	66	68	64	56	54	52	50	50	50	
46	40	38	46	52	48	46	46	46									
RUR FWY		44	46	48	54	60	68	68	64	58	54	52	50	50	52	52	
48	42	40	44	48	48	44	46	44									
RUR ART		40	42	44	48	58	66	72	68	60	56	54	50	50	50	50	
46	40	38	46	50	46	44	44	44									
LOS E VC																	
		0	0.625	1.25	1.875	2.5	3.125	3.75	4.375	5	5.625	6.25	6.875	7.5	8.125	8.75	
9.375	10	10.625	11.25	11.875	12.5	13.125	13.75	14.375									
SPEEDVC																	
curve1		75	75	75	75	75	75	74.9	74.8	74.6	74.2	73.5	72.3	70.5	67.8	64.2	
59.5	54	47.7	41.2	34.9	28.9	23.7	19.2	15.5									
curve2		70	70	70	70	70	70	70	69.9	69.8	69.6	69.2	68.4	67.1	65.1	62.2	
58.2	53	47	40.5	33.9	27.7	22.2	17.6	13.8									
curve3		65	65	65	65	65	65	65	65	65	64.9	64.8	64.4	63.8	62.6	60.5	
57	52	45.4	37.8	29.9	22.7	16.7	12.1	8.6									
curve4		60	60	60	60	60	60	60	60	60	59.9	59.8	59.6	59.1	58.2	56.7	
54.3	50.8	46.1	40.3	33.8	27.3	21.3	16.2	12.2									
curve5		55	55	55	55	55	55	55	55	55	55	55	54.9	54.7	54.3	53.6	
52.3	50	46.5	41.5	35.3	28.5	21.9	16.1	11.5									
curve6		60	60	60	60	60	60	60	60	59.9	59.8	59.7	59.4	59.1	58.5	57.7	
56.5	55	53.1	50.7	47.9	44.7	41.1	37.3	33.4									
curve7		55	55	55	55	55	55	55	55	54.9	54.9	54.7	54.5	54.2	53.8	53.1	
52.2	50.9	49.3	47.3	44.9	42.1	39	35.7	32.2									
curve8		50	50	50	50	50	50	50	50	49.9	49.9	49.8	49.6	49.4	49	48.5	
47.7	46.7	45.4	43.8	41.8	39.5	36.8	33.9	30.9									

curve9	45	45	45	45	45	45	45	45	45	45	44.9	44.8	44.7	44.4	44.1	43.6
43	42.1	40.9	39.4	37.6	35.5	33.1	30.5	27.8								
curve10	50	50	50	50	50	49.9	49.8	49.7	49.4	49	48.4	47.5	46.5	45.1	43.5	41.7
39.6	37.3	34.9	32.4	29.8	27.3	24.9	22.6	20.4								
curve11	50	50	50	50	50	50	49.9	49.7	49.4	48.9	48	46.7	44.9	42.5	39.6	36.2
32.6	28.7	25	21.4	18.2	15.3	12.9	10.8	9								
curve12	50	50	50	50	50	50	49.9	49.8	49.6	49.1	48.2	46.8	44.5	41.4	37.5	32.9
28	23.1	18.7	14.9	11.8	9.2	7.2	5.7	4.5								
curve13	40	40	40	40	40	40	40	39.9	39.8	39.5	39.2	38.6	37.8	36.7	35.3	33.5
31.4	29	26.4	23.7	21.1	18.5	16.1	13.9	12								
curve14	40	40	40	40	40	40	39.9	39.8	39.6	39.1	38.5	37.5	36.1	34.3	32.1	29.4
26.5	23.5	20.5	17.7	15.1	12.8	10.7	9	7.6								
curve15	40	40	40	40	40	40	39.9	39.7	39.4	38.8	37.9	36.5	34.7	32.3	29.5	26.4
23.2	20	17	14.3	11.9	9.9	8.2	6.8	5.6								
curve16	35	35	35	35	35	35	34.9	34.8	34.5	34	33.2	32.1	30.5	28.5	26.1	23.5
20.6	17.9	15.2	12.8	10.7	8.9	7.4	6.1	5.1								
curve17	35	35	35	35	35	35	34.9	34.7	34.4	33.9	33.1	32	30.3	28.3	25.8	23.1
20.3	17.5	14.9	12.5	10.4	8.6	7.2	5.9	4.9								
curve18	35	35	35	35	35	35	34.9	34.6	34.2	33.5	32.4	30.9	28.8	26.3	23.4	20.4
17.4	14.6	12.1	9.9	8.1	6.6	5.4	4.4	3.6								
curve19	30	30	30	30	30	30	29.9	29.8	29.5	29	28.2	27.1	25.6	23.7	21.5	19.1
16.6	14.2	12	10	8.3	6.8	5.6	4.6	3.8								
curve20	30	30	30	30	30	30	29.9	29.7	29.4	28.9	28.1	26.9	25.3	23.4	21.1	18.6
16.1	13.6	11.4	9.5	7.8	6.4	5.3	4.3	3.6								
curve21	30	30	30	30	30	30	29.9	29.7	29.3	28.7	27.7	26.2	24.4	22.1	19.6	17
14.4	12	9.9	8.1	6.6	5.4	4.4	3.6	2.9								

VC RATIO TO LOS CONVERSION (VALUE SHOWN IS LOWER LIMIT FOR THAT LOS) (URBAN ROADS USE SPEED BREAKS BELOW FOR LOS DETERMINATION) (ALL USE THE BASE VC'S TO DETERMINE EXCEEDANCE)

	BASE	RUR2	FWY
A	0.00	0.00	0.00
B	0.30	0.00	0.25
C	0.50	0.10	0.40
D	0.70	0.30	0.60
E	0.90	0.50	0.80
F	1.00	1.00	1.00
F+	1.10	1.10	1.10
F++	1.30	1.30	1.30

SPEED VC RATIO BREAKS FOR URBAN STREETS (HIGHEST SPEED FOR GIVEN LOS & FF SPEED)

FFS	B	C	D	E	F
>47	42.	34.	27.	21.	16.
>37	35.	28.	22.	17.	13.
>32	30.	24.	18.	14.	10.
<33	25.	19.	13.	9.	7.

LEVEL OF SERVICE THRESHOLD BY AREA  
NUM LOS DEFINITION

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```

1 F CINCINNATI,CLEVELAND,COLUMBUS CENTRAL MPO COUNTIES (CUY,FRA,HAM)
2 E OTHER TMA MPOS (AKRON,CANTON,DAYTON,TOLEDO,YOUNGSTOWN + NON-CENTRAL COUNTIES FROM 1)
3 E OTHER MPOS & PARTS OF AREAS 1 & 2 OUTSIDE URBANIZED AREA
4 E RURAL NON MPO COUNTIES

```

```

PEAK SPREADING MODEL INFO (SET MAX ITERATIONS TO 0 TO DISABLE PEAK SPREADING)
MAX VC RATIO FWY: 1.30
MAX VC RATIO ART: 1.30
MAX ITERATIONS : 1000

```

```
TRUCK PCE: {cm3tpce}
```

```

AQ SEASON FACTOR: {cm3aqfact}
ENDCOPY

```

```

rrmode='{cm3rrmode}'
if(rrmode='NORMAL')
COPY FILE=dailyb.dat

```

```

MODEL CLASS PARAMETERS (MAX 4 CLASSES, HOURS 0-23 W/ NO OVERLAP IN CLASS, ALLOCATE ENTIRE CLASS AS TRUCK(1) OR NOT(0))
CLS TRK      0      1      0      0      0      0      0      0      0      0      0      0      0      0      0
0
CLS BEG      0      0      0      0      0      0      0      0      0      0      0      0      0      0      0
0
CLS END      23     23     0      0      0      0      0      0      0      0      0      0      0      0      0
0
CLS NUM      1      3      0      0      0      0      0      0      0      0      0      0      0      0      0
0
ENDCOPY

```

```

volff='li.1.{cm3volff}'
trkfff='{cm3trkff}'
if (trkfff == 'NONE')
trkff='_zero'
else
trkff='li.1.{cm3trkff}'
endif
volls='_zero'
vol2s='_zero'
vol3s='_zero'
vol4s='_zero'
vol5s='_zero'
vol6s='_zero'
vol7s='_zero'
vol8s='_zero'
vol9s='_zero'
voll10s='_zero'
voll11s='_zero'
voll12s='_zero'

```

```

voll3s='_zero'
voll4s='_zero'
voll5s='_zero'
voll6s='_zero'
elseif(rrmode='4PERIOD_OMS')
COPY FILE=dailyb.dat

```

```

MODEL CLASS PARAMETERS (MAX 4 CLASSES, HOURS 0-23 W/ NO OVERLAP IN CLASS, ALLOCATE ENTIRE CLASS AS TRUCK(1) OR NOT(0))
CLS TRK      0      0      0      0      1      1      1      1      0      0      0      0      0      0      0
0
CLS BEG      18      6      9      14     18      6      9      14     0      0      0      0      0      0      0
0
CLS END       5      8     13     17      5      8     13     17     0      0      0      0      0      0      0
0
CLS NUM       1      1      1      1      3      3      3      3     0      0      0      0      0      0      0
0
ENDCOPY

```

```

volff='_zero'
trkff='_zero'
voll1s='li.1.volnt_aut'
voll2s='li.1.volam_aut'
voll3s='li.1.volmd_aut'
voll4s='li.1.volpm_aut'
voll5s='li.1.volnt_trk'
voll6s='li.1.volam_trk'
voll7s='li.1.volmd_trk'
voll8s='li.1.volpm_trk'
voll9s='_zero'
voll10s='_zero'
voll11s='_zero'
voll12s='_zero'
voll13s='_zero'
voll14s='_zero'
voll15s='_zero'
voll16s='_zero'

```

```

elseif(rrmode='4PERIOD_SW')
COPY FILE=dailyb.dat

```

```

MODEL CLASS PARAMETERS (MAX 4 CLASSES, HOURS 0-23 W/ NO OVERLAP IN CLASS, ALLOCATE ENTIRE CLASS AS TRUCK(1) OR NOT(0))
CLS TRK      0      0      0      0      1      1      1      1      0      0      0      0      0      0      0
0
CLS BEG      19      7     10     16     19      7     10     16     0      0      0      0      0      0      0
0
CLS END       6      9     15     18      6      9     15     18     0      0      0      0      0      0      0
0
CLS NUM       1      1      1      1      3      3      3      3     0      0      0      0      0      0      0
0
ENDCOPY

```



```

volff='_zero'
trkff='_zero'
voll1s='li.1.evol_aut'
vol2s='li.1.amvol_aut'
vol3s='li.1.mdvol_aut'
vol4s='li.1.pmvol_aut'
vol5s='li.1.evol_trk'
vol6s='li.1.amvol_trk'
vol7s='li.1.mdvol_trk'
vol8s='li.1.pmvol_trk'
vol9s='_zero'
voll10s='_zero'
voll11s='_zero'
voll12s='_zero'
voll13s='_zero'
voll14s='_zero'
voll15s='_zero'
voll16s='_zero'
elseif(rrmode='4PERIOD_MARKETSEGMENTS_SW')
COPY FILE=dailyb.dat

```

```

MODEL CLASS PARAMETERS (MAX 4 CLASSES, HOURS 0-23 W/ NO OVERLAP IN CLASS, ALLOCATE ENTIRE CLASS AS TRUCK(1) OR NOT(0))
CLS TRK      0      0      0      0      1      1      1      1      0      0      0      0      0      0      0
0
CLS BEG      19      7      10     16     19      7      10     16     19      7      10     16     19      7      10
16
CLS END      6       9      15     18      6       9      15     18      6       9      15     18      6       9      15
18
CLS NUM      1       1       1       1       3       3       3       3       2       2       2       2       4       4       4
4

```

```

ENDCOPY
volff='_zero'
trkff='_zero'
voll1s='li.1.evol_autwk'
vol2s='li.1.amvol_autwk'
vol3s='li.1.mdvol_autwk'
vol4s='li.1.pmvol_autwk'
vol5s='li.1.evol_trkhv'
vol6s='li.1.amvol_trkhv'
vol7s='li.1.mdvol_trkhv'
vol8s='li.1.pmvol_trkhv'
vol9s='li.1.evol_autnw'
voll10s='li.1.amvol_autnw'
voll11s='li.1.mdvol_autnw'
voll12s='li.1.pmvol_autnw'
voll13s='li.1.evol_trklt'
voll14s='li.1.amvol_trklt'
voll15s='li.1.mdvol_trklt'

```

```

    voll6s='li.1.pmvol_trklt'
endif

*if exist daily.dat del daily.dat
*copy dailya.dat+dailyb.dat daily.dat
*del dailya.dat
*del dailyb.dat
RUN PGM=NETWORK
  NETI={cm3neti.q}
  LINKO=templnk.txt, format = TXT, include = a(6),b(6),junk1(1),junk1(4),junks(1),moffpspd(4),
    ctoll(4),junkb(1),lanes(1),twidth(2),junkb(1),terrain(1),junk1(1),junkb(1),
    cap(6),vol(6),loneway(1),boffpspd(4),ttoll(4),junkb(1),blanes(1),areatype(1),admclass(1),
    junkb(1),bterrain(1),junk1(1),junkb(1),bcap(6),bvol(6),medturn(1),pcttrk(2),junk1(2),
    funclass(2),lnkgrp(2),mpostspd(2),jurisdic(1),county(3),rtenumb(5),junk1(7),nhs(1),
    fedfunc(2),trkvol(5),junkp(1),junk1(30),junk1(30),junk1(30),junk1(21),mdist(6),
    vol1(6),vol2(6),vol3(6),vol4(6),vol5(6),vol6(6),vol7(6),vol8(6),vol9(6),vol10(6),vol11(6),
    vol12(6),vol13(6),vol14(6),vol15(6),vol16(6),vol17(6),vol18(6),vol19(6),vol20(6),vol21(6),
    vol22(6),vol23(6),vol24(6),vol25(6),vol26(6),vol27(6),vol28(6),vol29(6),vol30(6)
  NODEO=tempnod.txt, format = TXT, include = junkn(1),n(6),x(11),y(11)
  PHASE=NODEMERGE
    junkn='N'
  ENDPHASE
  PHASE=LINKMERGE
    _zero=0
    junk1=0
    junks='S'
    junkp='P'
    fffff='{cm3pri}'
  /*;commented out 04/02/2012

if(fffff=='SW')
  if(li.1.admclass==1 && li.1.district <13 && li.1.district>0)
    junkp='P' ;state system
  elseif(li.1.district<13 && li.1.district>0)
    junkp='G' ;non-state
  else
    junkp='U' ;out of state
  endif
elseif(fffff='OMS')
  if(li.1.admclass<6)
    junkp='P'
  else
    junkp='G'
  endif
endif
/*;commented out 04/02/2012

jurisdic=' '
nhs=0

```

```

fedfunc=li.1.fedfunc1

junkb=' '
ctoll=0; =cartoll*10
ttoll=0; =trktoll*10
mdist = LI.1.DIST*1000
moffpspd=li.1.offpspd*100
mpeakspd=li.1.peakspd*100
cap=li.1.{cm3capf}*{cm3kfact}
loneway='1' ; el_oneway change
bcap=0
bvol=0
boffpspd=0
bpeakspd=0
blanes=0
bterrain=0
mpostspd=round(li.1.postspd)
vol=@volff@
trkvol=@trkfff@
vol1=@vol1s@
vol2=@vol2s@
vol3=@vol3s@
vol4=@vol4s@
vol5=@vol5s@
vol6=@vol6s@
vol7=@vol7s@
vol8=@vol8s@
vol9=@vol9s@
vol10=@vol10s@
vol11=@vol11s@
vol12=@vol12s@
vol13=@vol13s@
vol14=@vol14s@
vol15=@vol15s@
vol16=@vol16s@
ENDPHASE
ENDRUN
aqmode='{cm3aqtype}'
if(aqmode=='MOBILE')
*copy {cm3effile.q} tempfef.txt
*N:\AQ\MOVES\utils\postcms10.exe templnk.txt tempcms.txt N tempfef.txt {cm3rmode}
*del tempfef.txt
else
*N:\AQ\MOVES\utils\postcms10.exe templnk.txt tempcms.txt N NONE {cm3rmode}
endif
if(aqmode=='MOVES')
*copy {cm3effile.q} tempfef.txt
if(rrmode='NORMAL' && trkfff == 'NONE')

```

```

*N:\AQ\MOVES\utils\movesnet.exe hourly.rpt tempfef.txt cmstext.rpt {cm3aqfact}
else
*N:\AQ\MOVES\utils\movesnet.exe hourly.rpt tempfef.txt cmstext.rpt {cm3aqfact} 1 {cm3tpce} 3
endif
endif

RUN PGM=NETWORK
NETI[1]={cm3neti.q}
LINKI[2]=tempcms.txt var=a,1-6,b,8-13,
          cVMT,97-111,cTRKVMT,113-128,cVOLPERLANE,130-137,cCONINDEX,139-146,
          cVCRATIO,148-155,cPEAKHOUR,157-160,cVHT,162-169,cCONGDELAY,171-178,
          cPHYSDelay,180-187,cSPDLIMDELAY,189-196,cDELAYRATIO,198-205,
          cDIR1HRSEXCEED,229-232,cDIR2HRSEXCEED,234-237,cPKVMT,253-267,cEXCEEDVMT,269-283,
          cEXCEEDPKVMT,285-299,cLOS,317,1,,1,
          select=(substr(record,1,1)!='A')
NODEI[2]=tempnod.txt var=n,2-7, x,8-18, y,19-29
NETO={cm3neto.q}
MERGE RECORD=F
ENDRUN

iiztype='{cm3iztype}'
if(iiztype=='TEXT')
*copy {cm3ifile.q} tempif.txt
elseif(iiztype=='OMSTABLE')

RUN PGM=MATRIX
FILEO PRINTO[1] = tempif.txt
FILEI MATI[1] = {cm3ifile.q}
MW[1]=mi.1.5+mi.1.10+mi.1.15
jloop
if(j=i)
print list=i(4.0),mw[1][j](6.0),printo=1
endif
endjloop
ENDRUN

endif

if(iiztype!='NONE')
*copy {cm3afile.q} tempaf.txt

if(aqmode=='MOBILE')
*copy {cm3ieffile.q} tempief.txt
*N:\AQ\MOVES\utils\intracal2.exe tempif.txt summary.rpt tempaf.txt tempief.txt
*del tempief.txt

elseif(aqmode=='MOVES')
*N:\AQ\MOVES\utils\movesintra.exe tempif.txt tempfef.txt tempaf.txt cmstext.rpt {cm3aqfact}

```

```

*del tempfef.txt
endif

*del tempfaf.txt
*DEL tempfif.txt
endif

if(aqmode=='MOVES')
*copy {cm3ieffile.q} tempief.txt
*copy {cm3vfile.q} tempveh.txt
*N:\AQ\MOVES\utils\movesveh.exe tempveh.txt tempief.txt cmstext.rpt {cm3aqfact}
*del tempveh.txt
*del tempief.txt
endif

if(aqmode=='MOVES')
*echo MOVES BASED EMISSIONS REPORT > tempcom.txt
elseif(aqmode=='MOBILE')
*echo MOBILE BASED EMISSIONS REPORT >> tempcom.txt
else
*echo NO EMISSIONS ANALYSIS CONDUCTED >> tempcom.txt
endif
*echo {cm3aqcom} >> tempcom.txt
*echo Loaded Network:           {cm3neti} >> tempcom.txt
*echo Network Emission Factors: {cm3effile} >> tempcom.txt
if(aqmode=='MOVES')
*echo Vehicle Emission Factors: {cm3ieffile} >> tempcom.txt
*echo Vehicle Population       : {cm3vfile} >> tempcom.txt
else
*echo Intrazonal Emission Factors: {cm3ieffile} >> tempcom.txt
endif
*echo Intrazonal Trips      : {cm3ifile} >> tempcom.txt
*echo Area File (sq mi):    {cm3afile} >> tempcom.txt
*echo Volume Field Used:    {cm3volf} >> tempcom.txt
*echo Truck Volume Field Used: {cm3trkf} >> tempcom.txt
*echo Capacity Field Used:   {cm3capf} >> tempcom.txt
*echo ----- >> tempcom.txt
*copy /B tempcom.txt+cmstext.rpt {cm3rpto.q}
*if exist {cm3sumo.q} del {cm3sumo.q}
*rename summary.rpt {cm3sumo.q}
*del tempcom.txt
*del cmstext.rpt
*DEL tempnod.txt
*DEL templnk.txt
*DEL tempcms.txt
hhro=rightstr('{cm3hro}',4)
if(hhro=='NONE')
*del hourly.rpt

```

```
else
*if exist {cm3hro.q} del {cm3hro.q}
*rename hourly.rpt {cm3hro.q}
endif
```

## Appendix – MORPC Travel Demand Model Emissions Run Report for 2020

### Ozone Analysis

#### MOVES BASED EMISSIONS REPORT

Ozone Analysis with MOVES - MORPC

Loaded Network: ..\..\3C Model Results\2020\MOR20L24ASN\_BASE.NET  
 Network Emission Factors: ..\..\Ozone\_upd\factors\MORPC\_2020\_ozone\_3source\_rpd.csv  
 Vehicle Emission Factors: ..\..\Ozone\_upd\factors\MORPC\_2020\_ozone\_3source\_rpv.csv  
 Vehicle Population : ..\..\Ozone\_upd\factors\Source\_Type\_Pop\_2020\_MORPC\_on-Model.csv  
 Intrazonal Trips : ..\..\3C Model Results\2020\DEL2020.txt  
 Area File (sq mi): ..\..\3C Model Results\3C\_TAZ\_areain.txt  
 Volume Field Used: VOL24\_TOT  
 Truck Volume Field Used: NONE  
 Capacity Field Used: CAPHRAM

#### ----- CMS/AQ REPORT

POSTCMS10, UPDATED DEC 2009, GTG

DATE:03/27/2020 TIME:15:15:28

#### PARAMETER FILE DUMP (DAILY.DAT FILE)

HOUR	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
15	16	17	18	19	20	21	22	23							
PCTADT															
URB FWY	0.9	0.6	0.5	0.6	1	2.5	5.4	7.3	6.2	5	4.8	5	5.2	5.5	6.2
7.3	8	8	5.8	4.1	3.4	2.9	2.2	1.6							
URB ART	0.6	0.4	0.3	0.4	0.7	2	4	6.3	5.7	5	5.1	5.8	6.2	6.2	6.8
7.7	8.3	8.2	6.1	4.5	3.6	2.8	1.9	1.2							
RUR FWY	1.2	1	0.9	1	1.4	2.6	4.4	5.4	5.1	5.2	5.5	5.7	5.9	6.2	6.7
7.3	7.4	7	5.4	4.3	3.5	2.9	2.3	1.7							
RUR ART	0.8	0.6	0.5	0.7	1.2	2.7	5.2	6.4	5.6	5.2	5.2	5.5	5.7	5.9	6.4
7.5	8.1	7.9	5.6	4.1	3.3	2.7	1.9	1.3							
PCTADT T															
URB FWY	1.8	1.6	1.6	1.8	2.2	3.1	4.2	4.9	5.6	6.2	6.5	6.6	6.5	6.5	6.4
6	5.3	4.6	4.2	3.6	3.2	2.9	2.5	2.2							
URB ART	0.9	0.8	0.9	1.1	1.6	2.6	4.6	6.3	7.1	7.3	7.3	7.3	7.3	7.3	7.3
7	5.8	4.7	3.4	2.7	2.2	1.8	1.5	1.2							
RUR FWY	2.1	1.9	1.8	2	2.4	3.2	4.1	4.5	4.9	5.5	5.8	6	6.1	6.1	6
5.8	5.5	5.1	4.6	4.2	3.7	3.3	3	2.5							
RUR ART	1.5	1.4	1.4	1.7	2.3	3.1	4.6	5.4	6.2	6.6	6.8	6.9	6.8	6.8	6.6
6.2	5.5	4.6	3.7	3.1	2.6	2.4	2.1	1.8							
PCTDIR															

URB FWY	38	40	40	46	56	64	70	70	68	62	58	52	52	52	50
46	38	38	46	52	46	42	42	40							
URB ART	44	46	44	48	54	62	66	68	64	56	54	52	50	50	50
46	40	38	46	52	48	46	46	46							
RUR FWY	44	46	48	54	60	68	68	64	58	54	52	50	50	52	52
48	42	40	44	48	48	44	46	44							
RUR ART	40	42	44	48	58	66	72	68	60	56	54	50	50	50	50
46	40	38	46	50	46	44	44	44							
LOS E VC	0	0.625	1.25	1.875	2.5	3.125	3.75	4.375	5	5.625	6.25	6.875	7.5	8.125	8.75
9.375	10	10.625	11.25	11.875	12.5	13.125	13.75	14.375							
SPEEDVC															
curve1	75	75	75	75	75	75	74.9	74.8	74.6	74.2	73.5	72.3	70.5	67.8	64.2
59.5	54	47.7	41.2	34.9	28.9	23.7	19.2	15.5							
curve2	70	70	70	70	70	70	70	70	69.9	69.8	69.6	69.2	68.4	67.1	65.1
58.2	53	47	40.5	33.9	27.7	22.2	17.6	13.8							
curve3	65	65	65	65	65	65	65	65	65	65	64.9	64.8	64.4	63.8	62.6
57	52	45.4	37.8	29.9	22.7	16.7	12.1	8.6							
curve4	60	60	60	60	60	60	60	60	60	60	59.9	59.8	59.6	59.1	58.2
54.3	50.8	46.1	40.3	33.8	27.3	21.3	16.2	12.2							
curve5	55	55	55	55	55	55	55	55	55	55	55	55	54.9	54.7	54.3
52.3	50	46.5	41.5	35.3	28.5	21.9	16.1	11.5							
curve6	60	60	60	60	60	60	60	60	60	59.9	59.8	59.7	59.4	59.1	58.5
56.5	55	53.1	50.7	47.9	44.7	41.1	37.3	33.4							
curve7	55	55	55	55	55	55	55	55	55	54.9	54.9	54.7	54.5	54.2	53.8
52.2	50.9	49.3	47.3	44.9	42.1	39	35.7	32.2							
curve8	50	50	50	50	50	50	50	50	50	49.9	49.9	49.8	49.6	49.4	49
47.7	46.7	45.4	43.8	41.8	39.5	36.8	33.9	30.9							
curve9	45	45	45	45	45	45	45	45	45	45	44.9	44.8	44.7	44.4	44.1
43	42.1	40.9	39.4	37.6	35.5	33.1	30.5	27.8							
curve10	50	50	50	50	49.9	49.8	49.7	49.4	49	48.4	47.5	46.5	45.1	43.5	41.7
39.6	37.3	34.9	32.4	29.8	27.3	24.9	22.6	20.4							
curve11	50	50	50	50	50	50	49.9	49.7	49.4	48.9	48	46.7	44.9	42.5	39.6
32.6	28.7	25	21.4	18.2	15.3	12.9	10.8	9							
curve12	50	50	50	50	50	49.9	49.8	49.6	49.1	48.2	46.8	44.5	41.4	37.5	32.9
28	23.1	18.7	14.9	11.8	9.2	7.2	5.7	4.5							
curve13	40	40	40	40	40	40	40	39.9	39.8	39.5	39.2	38.6	37.8	36.7	35.3
31.4	29	26.4	23.7	21.1	18.5	16.1	13.9	12							
curve14	40	40	40	40	40	39.9	39.8	39.6	39.1	38.5	37.5	36.1	34.3	32.1	29.4
26.5	23.5	20.5	17.7	15.1	12.8	10.7	9	7.6							
curve15	40	40	40	40	40	39.9	39.7	39.4	38.8	37.9	36.5	34.7	32.3	29.5	26.4
23.2	20	17	14.3	11.9	9.9	8.2	6.8	5.6							
curve16	35	35	35	35	35	34.9	34.8	34.5	34	33.2	32.1	30.5	28.5	26.1	23.5
20.6	17.9	15.2	12.8	10.7	8.9	7.4	6.1	5.1							



curve17	35	35	35	35	35	34.9	34.7	34.4	33.9	33.1	32	30.3	28.3	25.8	23.1
20.3	17.5	14.9	12.5	10.4	8.6	7.2	5.9	4.9							
curve18	35	35	35	35	35	34.9	34.6	34.2	33.5	32.4	30.9	28.8	26.3	23.4	20.4
17.4	14.6	12.1	9.9	8.1	6.6	5.4	4.4	3.6							
curve19	30	30	30	30	30	29.9	29.8	29.5	29	28.2	27.1	25.6	23.7	21.5	19.1
16.6	14.2	12	10	8.3	6.8	5.6	4.6	3.8							
curve20	30	30	30	30	30	29.9	29.7	29.4	28.9	28.1	26.9	25.3	23.4	21.1	18.6
16.1	13.6	11.4	9.5	7.8	6.4	5.3	4.3	3.6							
curve21	30	30	30	30	30	29.9	29.7	29.3	28.7	27.7	26.2	24.4	22.1	19.6	17
14.4	12	9.9	8.1	6.6	5.4	4.4	3.6	2.9							
curve22	55	54.9	54.4	53.2	51.1	47.9	44.0	39.5	34.9	30.4	26.2	22.4	19.2	16.4	14.0
12.0	10.4	9.0	7.8	6.8	6.0	5.3	4.7	4.1							

VC RATIO TO LOS CONVERSION (VALUE SHOWN IS LOWER LIMIT FOR THAT LOS) (URBAN ROADS USE SPEED BREAKS BELOW FOR LOS DETERMINATION) (ALL USE THE BASE VC'S TO DETERMINE EXCEEDANCE)

	BASE	RUR2	FWY
A	0.00	0.00	0.00
B	0.30	0.00	0.25
C	0.50	0.10	0.40
D	0.70	0.30	0.60
E	0.90	0.50	0.80
F	1.00	1.00	1.00
F+	1.10	1.10	1.10
F++	1.30	1.30	1.30

SPEED VC RATIO BREAKS FOR URBAN STREETS (HIGHEST SPEED FOR GIVEN LOS & FF SPEED)

FFS	B	C	D	E	F
>47	42.	34.	27.	21.	16.
>37	35.	28.	22.	17.	13.
>32	30.	24.	18.	14.	10.
<33	25.	19.	13.	9.	7.

LEVEL OF SERVICE THRESHOLD BY AREA

NUM LOS DEFINITION

1	F	CINCINNATI, CLEVELAND, COLUMBUS CENTRAL MPO COUNTIES (CUY, FRA, HAM)
2	E	OTHER TMA MPOS (AKRON, CANTON, DAYTON, TOLEDO, YOUNGSTOWN + NON-CENTRAL COUNTIES FROM 1)
3	E	OTHER MPOS & PARTS OF AREAS 1 & 2 OUTSIDE URBANIZED AREA
4	E	RURAL NON MPO COUNTIES

PEAK SPREADING MODEL INFO (SET MAX ITERATIONS TO 0 TO DISABLE PEAK SPREADING)

MAX VC RATIO FWY: 1.30  
 MAX VC RATIO ART: 1.30  
 MAX ITERATIONS : 1000

TRUCK PCE: 2.0

AQ SEASON FACTOR: 1.08

MODEL CLASS PARAMETERS (MAX 4 CLASSES, HOURS 0-23 W/ NO OVERLAP IN CLASS, ALLOCATE ENTIRE CLASS AS TRUCK(1) OR NOT(0))															
CLS TRK	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
0															
CLS BEG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0															
CLS END	23	23	0	0	0	0	0	0	0	0	0	0	0	0	0
0															
CLS NUM	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0
0															

MOVES NETWORK LINK EMISSIONS OUTPUT

COUNTY	MONTH	VMT	HC	NOX	SO2	PM2.5
ADA	JANUARY		0.	0.0000	0.0000	0.0000
ALL	JANUARY		0.	0.0000	0.0000	0.0000
ASD	JANUARY		0.	0.0000	0.0000	0.0000
ATB	JANUARY		0.	0.0000	0.0000	0.0000
ATH	JANUARY		0.	0.0000	0.0000	0.0000
AUG	JANUARY		0.	0.0000	0.0000	0.0000
BEL	JANUARY		0.	0.0000	0.0000	0.0000
BRO	JANUARY		0.	0.0000	0.0000	0.0000
BUT	JANUARY		0.	0.0000	0.0000	0.0000
CAR	JANUARY		0.	0.0000	0.0000	0.0000
CHP	JANUARY		0.	0.0000	0.0000	0.0000
CLA	JANUARY		0.	0.0000	0.0000	0.0000
CLE	JANUARY		0.	0.0000	0.0000	0.0000
CLI	JANUARY		0.	0.0000	0.0000	0.0000
COL	JANUARY		0.	0.0000	0.0000	0.0000
COS	JANUARY		0.	0.0000	0.0000	0.0000
CRA	JANUARY		0.	0.0000	0.0000	0.0000
CUY	JANUARY		0.	0.0000	0.0000	0.0000
DAR	JANUARY		0.	0.0000	0.0000	0.0000
DEF	JANUARY		0.	0.0000	0.0000	0.0000
DEL	JANUARY	5315068.	0.	0.0000	0.0000	0.0000
ERI	JANUARY		0.	0.0000	0.0000	0.0000
FAI	JANUARY	1992417.	0.	0.0000	0.0000	0.0000
FAY	JANUARY		0.	0.0000	0.0000	0.0000
FRA	JANUARY	32028798.	0.	0.0000	0.0000	0.0000
FUL	JANUARY		0.	0.0000	0.0000	0.0000
GAL	JANUARY		0.	0.0000	0.0000	0.0000
GEA	JANUARY		0.	0.0000	0.0000	0.0000

GRE	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
GUE	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
HAM	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
HAN	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
HAR	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
HAS	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
HEN	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
HIG	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
HOC	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
HOL	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
HUR	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
JAC	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
JEF	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
KNO	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
LAK	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
LAW	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
LIC	JANUARY	5199969.	0.0000	0.0000	0.0000	0.0000
LOG	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
LOR	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
LUC	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
MAD	JANUARY	1154910.	0.0000	0.0000	0.0000	0.0000
MAH	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
MAR	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
MED	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
MEG	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
MER	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
MIA	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
MOE	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
MOT	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
MRG	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
MRW	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
MUS	JANUARY	77062.	0.0000	0.0000	0.0000	0.0000
NOB	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
OTT	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
PAU	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
PER	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
PIC	JANUARY	850747.	0.0000	0.0000	0.0000	0.0000
PIK	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
POR	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
PRE	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
PUT	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
RIC	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
ROS	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
SAN	JANUARY	0.	0.0000	0.0000	0.0000	0.0000

SCI	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
SEN	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
SHE	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
STA	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
SUM	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
TRU	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
TUS	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
UNI	JANUARY	1742077.	0.0000	0.0000	0.0000	0.0000
VAN	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
VIN	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
WAR	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
WAS	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
WAY	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
WIL	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
WOO	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
WYA	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
XXX	JANUARY	154774.	0.0000	0.0000	0.0000	0.0000
TOT	JANUARY	48500448.	0.0000	0.0000	0.0000	0.0000
ADA	APRIL	0.	0.0000	0.0000	0.0000	0.0000
ALL	APRIL	0.	0.0000	0.0000	0.0000	0.0000
ASD	APRIL	0.	0.0000	0.0000	0.0000	0.0000
ATB	APRIL	0.	0.0000	0.0000	0.0000	0.0000
ATH	APRIL	0.	0.0000	0.0000	0.0000	0.0000
AUG	APRIL	0.	0.0000	0.0000	0.0000	0.0000
BEL	APRIL	0.	0.0000	0.0000	0.0000	0.0000
BRO	APRIL	0.	0.0000	0.0000	0.0000	0.0000
BUT	APRIL	0.	0.0000	0.0000	0.0000	0.0000
CAR	APRIL	0.	0.0000	0.0000	0.0000	0.0000
CHP	APRIL	0.	0.0000	0.0000	0.0000	0.0000
CLA	APRIL	0.	0.0000	0.0000	0.0000	0.0000
CLE	APRIL	0.	0.0000	0.0000	0.0000	0.0000
CLI	APRIL	0.	0.0000	0.0000	0.0000	0.0000
COL	APRIL	0.	0.0000	0.0000	0.0000	0.0000
COS	APRIL	0.	0.0000	0.0000	0.0000	0.0000
CRA	APRIL	0.	0.0000	0.0000	0.0000	0.0000
CUY	APRIL	0.	0.0000	0.0000	0.0000	0.0000
DAR	APRIL	0.	0.0000	0.0000	0.0000	0.0000
DEF	APRIL	0.	0.0000	0.0000	0.0000	0.0000
DEL	APRIL	5315068.	0.0000	0.0000	0.0000	0.0000
ERI	APRIL	0.	0.0000	0.0000	0.0000	0.0000
FAI	APRIL	1992417.	0.0000	0.0000	0.0000	0.0000
FAY	APRIL	0.	0.0000	0.0000	0.0000	0.0000
FRA	APRIL	32028798.	0.0000	0.0000	0.0000	0.0000
FUL	APRIL	0.	0.0000	0.0000	0.0000	0.0000

GAL	APRIL	0.	0.0000	0.0000	0.0000	0.0000
GEA	APRIL	0.	0.0000	0.0000	0.0000	0.0000
GRE	APRIL	0.	0.0000	0.0000	0.0000	0.0000
GUE	APRIL	0.	0.0000	0.0000	0.0000	0.0000
HAM	APRIL	0.	0.0000	0.0000	0.0000	0.0000
HAN	APRIL	0.	0.0000	0.0000	0.0000	0.0000
HAR	APRIL	0.	0.0000	0.0000	0.0000	0.0000
HAS	APRIL	0.	0.0000	0.0000	0.0000	0.0000
HEN	APRIL	0.	0.0000	0.0000	0.0000	0.0000
HIG	APRIL	0.	0.0000	0.0000	0.0000	0.0000
HOC	APRIL	0.	0.0000	0.0000	0.0000	0.0000
HOL	APRIL	0.	0.0000	0.0000	0.0000	0.0000
HUR	APRIL	0.	0.0000	0.0000	0.0000	0.0000
JAC	APRIL	0.	0.0000	0.0000	0.0000	0.0000
JEF	APRIL	0.	0.0000	0.0000	0.0000	0.0000
KNO	APRIL	0.	0.0000	0.0000	0.0000	0.0000
LAK	APRIL	0.	0.0000	0.0000	0.0000	0.0000
LAW	APRIL	0.	0.0000	0.0000	0.0000	0.0000
LIC	APRIL	5199969.	0.0000	0.0000	0.0000	0.0000
LOG	APRIL	0.	0.0000	0.0000	0.0000	0.0000
LOR	APRIL	0.	0.0000	0.0000	0.0000	0.0000
LUC	APRIL	0.	0.0000	0.0000	0.0000	0.0000
MAD	APRIL	1154910.	0.0000	0.0000	0.0000	0.0000
MAH	APRIL	0.	0.0000	0.0000	0.0000	0.0000
MAR	APRIL	0.	0.0000	0.0000	0.0000	0.0000
MED	APRIL	0.	0.0000	0.0000	0.0000	0.0000
MEG	APRIL	0.	0.0000	0.0000	0.0000	0.0000
MER	APRIL	0.	0.0000	0.0000	0.0000	0.0000
MIA	APRIL	0.	0.0000	0.0000	0.0000	0.0000
MOE	APRIL	0.	0.0000	0.0000	0.0000	0.0000
MOT	APRIL	0.	0.0000	0.0000	0.0000	0.0000
MRG	APRIL	0.	0.0000	0.0000	0.0000	0.0000
MRW	APRIL	0.	0.0000	0.0000	0.0000	0.0000
MUS	APRIL	77062.	0.0000	0.0000	0.0000	0.0000
NOB	APRIL	0.	0.0000	0.0000	0.0000	0.0000
OTT	APRIL	0.	0.0000	0.0000	0.0000	0.0000
PAU	APRIL	0.	0.0000	0.0000	0.0000	0.0000
PER	APRIL	0.	0.0000	0.0000	0.0000	0.0000
PIC	APRIL	850747.	0.0000	0.0000	0.0000	0.0000
PIK	APRIL	0.	0.0000	0.0000	0.0000	0.0000
POR	APRIL	0.	0.0000	0.0000	0.0000	0.0000
PRE	APRIL	0.	0.0000	0.0000	0.0000	0.0000
PUT	APRIL	0.	0.0000	0.0000	0.0000	0.0000
RIC	APRIL	0.	0.0000	0.0000	0.0000	0.0000

ROS	APRIL	0.	0.0000	0.0000	0.0000	0.0000
SAN	APRIL	0.	0.0000	0.0000	0.0000	0.0000
SCI	APRIL	0.	0.0000	0.0000	0.0000	0.0000
SEN	APRIL	0.	0.0000	0.0000	0.0000	0.0000
SHE	APRIL	0.	0.0000	0.0000	0.0000	0.0000
STA	APRIL	0.	0.0000	0.0000	0.0000	0.0000
SUM	APRIL	0.	0.0000	0.0000	0.0000	0.0000
TRU	APRIL	0.	0.0000	0.0000	0.0000	0.0000
TUS	APRIL	0.	0.0000	0.0000	0.0000	0.0000
UNI	APRIL	1742077.	0.0000	0.0000	0.0000	0.0000
VAN	APRIL	0.	0.0000	0.0000	0.0000	0.0000
VIN	APRIL	0.	0.0000	0.0000	0.0000	0.0000
WAR	APRIL	0.	0.0000	0.0000	0.0000	0.0000
WAS	APRIL	0.	0.0000	0.0000	0.0000	0.0000
WAY	APRIL	0.	0.0000	0.0000	0.0000	0.0000
WIL	APRIL	0.	0.0000	0.0000	0.0000	0.0000
WOO	APRIL	0.	0.0000	0.0000	0.0000	0.0000
WYA	APRIL	0.	0.0000	0.0000	0.0000	0.0000
XXX	APRIL	154774.	0.0000	0.0000	0.0000	0.0000
TOT	APRIL	48500448.	0.0000	0.0000	0.0000	0.0000
ADA	JULY	0.	0.0000	0.0000	0.0000	0.0000
ALL	JULY	0.	0.0000	0.0000	0.0000	0.0000
ASD	JULY	0.	0.0000	0.0000	0.0000	0.0000
ATB	JULY	0.	0.0000	0.0000	0.0000	0.0000
ATH	JULY	0.	0.0000	0.0000	0.0000	0.0000
AUG	JULY	0.	0.0000	0.0000	0.0000	0.0000
BEL	JULY	0.	0.0000	0.0000	0.0000	0.0000
BRO	JULY	0.	0.0000	0.0000	0.0000	0.0000
BUT	JULY	0.	0.0000	0.0000	0.0000	0.0000
CAR	JULY	0.	0.0000	0.0000	0.0000	0.0000
CHP	JULY	0.	0.0000	0.0000	0.0000	0.0000
CLA	JULY	0.	0.0000	0.0000	0.0000	0.0000
CLE	JULY	0.	0.0000	0.0000	0.0000	0.0000
CLI	JULY	0.	0.0000	0.0000	0.0000	0.0000
COL	JULY	0.	0.0000	0.0000	0.0000	0.0000
COS	JULY	0.	0.0000	0.0000	0.0000	0.0000
CRA	JULY	0.	0.0000	0.0000	0.0000	0.0000
CUY	JULY	0.	0.0000	0.0000	0.0000	0.0000
DAR	JULY	0.	0.0000	0.0000	0.0000	0.0000
DEF	JULY	0.	0.0000	0.0000	0.0000	0.0000
DEL	JULY	5740273.	0.6879	2.5413	0.0000	0.0000
ERI	JULY	0.	0.0000	0.0000	0.0000	0.0000
FAI	JULY	2151811.	0.2791	0.9729	0.0000	0.0000
FAY	JULY	0.	0.0000	0.0000	0.0000	0.0000

FRA	JULY	34591104.	4.4782	16.5439	0.0000	0.0000
FUL	JULY	0.	0.0000	0.0000	0.0000	0.0000
GAL	JULY	0.	0.0000	0.0000	0.0000	0.0000
GEA	JULY	0.	0.0000	0.0000	0.0000	0.0000
GRE	JULY	0.	0.0000	0.0000	0.0000	0.0000
GUE	JULY	0.	0.0000	0.0000	0.0000	0.0000
HAM	JULY	0.	0.0000	0.0000	0.0000	0.0000
HAN	JULY	0.	0.0000	0.0000	0.0000	0.0000
HAR	JULY	0.	0.0000	0.0000	0.0000	0.0000
HAS	JULY	0.	0.0000	0.0000	0.0000	0.0000
HEN	JULY	0.	0.0000	0.0000	0.0000	0.0000
HIG	JULY	0.	0.0000	0.0000	0.0000	0.0000
HOC	JULY	0.	0.0000	0.0000	0.0000	0.0000
HOL	JULY	0.	0.0000	0.0000	0.0000	0.0000
HUR	JULY	0.	0.0000	0.0000	0.0000	0.0000
JAC	JULY	0.	0.0000	0.0000	0.0000	0.0000
JEF	JULY	0.	0.0000	0.0000	0.0000	0.0000
KNO	JULY	0.	0.0000	0.0000	0.0000	0.0000
LAK	JULY	0.	0.0000	0.0000	0.0000	0.0000
LAW	JULY	0.	0.0000	0.0000	0.0000	0.0000
LIC	JULY	5615967.	0.6732	2.5403	0.0000	0.0000
LOG	JULY	0.	0.0000	0.0000	0.0000	0.0000
LOR	JULY	0.	0.0000	0.0000	0.0000	0.0000
LUC	JULY	0.	0.0000	0.0000	0.0000	0.0000
MAD	JULY	1247302.	0.1381	0.5721	0.0000	0.0000
MAH	JULY	0.	0.0000	0.0000	0.0000	0.0000
MAR	JULY	0.	0.0000	0.0000	0.0000	0.0000
MED	JULY	0.	0.0000	0.0000	0.0000	0.0000
MEG	JULY	0.	0.0000	0.0000	0.0000	0.0000
MER	JULY	0.	0.0000	0.0000	0.0000	0.0000
MIA	JULY	0.	0.0000	0.0000	0.0000	0.0000
MOE	JULY	0.	0.0000	0.0000	0.0000	0.0000
MOT	JULY	0.	0.0000	0.0000	0.0000	0.0000
MRG	JULY	0.	0.0000	0.0000	0.0000	0.0000
MRW	JULY	0.	0.0000	0.0000	0.0000	0.0000
MUS	JULY	83227.	0.0081	0.0386	0.0000	0.0000
NOB	JULY	0.	0.0000	0.0000	0.0000	0.0000
OTT	JULY	0.	0.0000	0.0000	0.0000	0.0000
PAU	JULY	0.	0.0000	0.0000	0.0000	0.0000
PER	JULY	0.	0.0000	0.0000	0.0000	0.0000
PIC	JULY	918806.	0.1027	0.3878	0.0000	0.0000
PIK	JULY	0.	0.0000	0.0000	0.0000	0.0000
POR	JULY	0.	0.0000	0.0000	0.0000	0.0000
PRE	JULY	0.	0.0000	0.0000	0.0000	0.0000

PUT	JULY	0.	0.0000	0.0000	0.0000	0.0000
RIC	JULY	0.	0.0000	0.0000	0.0000	0.0000
ROS	JULY	0.	0.0000	0.0000	0.0000	0.0000
SAN	JULY	0.	0.0000	0.0000	0.0000	0.0000
SCI	JULY	0.	0.0000	0.0000	0.0000	0.0000
SEN	JULY	0.	0.0000	0.0000	0.0000	0.0000
SHE	JULY	0.	0.0000	0.0000	0.0000	0.0000
STA	JULY	0.	0.0000	0.0000	0.0000	0.0000
SUM	JULY	0.	0.0000	0.0000	0.0000	0.0000
TRU	JULY	0.	0.0000	0.0000	0.0000	0.0000
TUS	JULY	0.	0.0000	0.0000	0.0000	0.0000
UNI	JULY	1881444.	0.2154	0.8604	0.0000	0.0000
VAN	JULY	0.	0.0000	0.0000	0.0000	0.0000
VIN	JULY	0.	0.0000	0.0000	0.0000	0.0000
WAR	JULY	0.	0.0000	0.0000	0.0000	0.0000
WAS	JULY	0.	0.0000	0.0000	0.0000	0.0000
WAY	JULY	0.	0.0000	0.0000	0.0000	0.0000
WIL	JULY	0.	0.0000	0.0000	0.0000	0.0000
WOO	JULY	0.	0.0000	0.0000	0.0000	0.0000
WYA	JULY	0.	0.0000	0.0000	0.0000	0.0000
XXX	JULY	167156.	0.0243	0.0864	0.0000	0.0000
TOT	JULY	52380484.	6.6047	24.5359	0.0000	0.0000

MOVES INTRAZONAL EMISSIONS OUTPUT						
MONTH	VMT	HC	NOX	SO2	PM2.5	
JANUARY	23836.	0.0000	0.0000	0.0000	0.0000	
APRIL	23836.	0.0000	0.0000	0.0000	0.0000	
JULY	25742.	0.0046	0.0133	0.0000	0.0000	

MOVES VEHICLE BASED EMISSIONS OUTPUT						
MONTH	VEHICLES	HC	NOX	SO2	PM2.5	
JANUARY	2089669.	0.0000	0.0000	0.0000	0.0000	
APRIL	2089669.	0.0000	0.0000	0.0000	0.0000	
JULY	2256843.	21.7172	9.3775	0.0000	0.0000	

## Appendix – MORPC Travel Demand Model Emissions Run Report for 2023

### Ozone Analysis

#### MOVES BASED EMISSIONS REPORT

Ozone Analysis with MOVES - MORPC

Loaded Network: ..\..\3C Model Results\2023\MOR23L24ASN\_BASE.NET  
Network Emission Factors: ..\..\Ozone\_upd\factors\MORPC\_2023\_ozone\_3source\_rpd.csv  
Vehicle Emission Factors: ..\..\Ozone\_upd\factors\MORPC\_2023\_ozone\_3source\_rpv.csv  
Vehicle Population : ..\..\Ozone\_upd\factors\Source\_Type\_Pop\_2023\_MORPC\_on-Model.csv

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Air Quality Conformity Appendix

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MORPC 2020-2050 Metropolitan Transportation Plan  
LCATS 2050 Metropolitan Transportation Plan  
MORPC 2021-2024 Transportation Improvement Program  
Air  
LCATS 2021-2024 Transportation Improvement Program  
CORPO 2021-2024 Transportation Improvement Program



Intrazonal Trips : ..\..\3C Model Results\2023\DEL2023.txt  
 Area File (sq mi): ..\..\3C Model Results\3C\_TAZ\_areain.txt  
 Volume Field Used: VOL24\_TOT  
 Truck Volume Field Used: NONE  
 Capacity Field Used: CAPHRAM

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 CMS/AQ REPORT  
 POSTCMS10, UPDATED DEC 2009, GTG  
 DATE:03/27/2020 TIME:15:18:15

PARAMETER FILE DUMP (DAILY.DAT FILE)

HOUR	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
15	16	17	18	19	20	21	22	23							
PCTADT															
URB FWY	0.9	0.6	0.5	0.6	1	2.5	5.4	7.3	6.2	5	4.8	5	5.2	5.5	6.2
7.3	8	8	5.8	4.1	3.4	2.9	2.2	1.6							
URB ART	0.6	0.4	0.3	0.4	0.7	2	4	6.3	5.7	5	5.1	5.8	6.2	6.2	6.8
7.7	8.3	8.2	6.1	4.5	3.6	2.8	1.9	1.2							
RUR FWY	1.2	1	0.9	1	1.4	2.6	4.4	5.4	5.1	5.2	5.5	5.7	5.9	6.2	6.7
7.3	7.4	7	5.4	4.3	3.5	2.9	2.3	1.7							
RUR ART	0.8	0.6	0.5	0.7	1.2	2.7	5.2	6.4	5.6	5.2	5.2	5.5	5.7	5.9	6.4
7.5	8.1	7.9	5.6	4.1	3.3	2.7	1.9	1.3							
PCTADT T															
URB FWY	1.8	1.6	1.6	1.8	2.2	3.1	4.2	4.9	5.6	6.2	6.5	6.6	6.5	6.5	6.4
6	5.3	4.6	4.2	3.6	3.2	2.9	2.5	2.2							
URB ART	0.9	0.8	0.9	1.1	1.6	2.6	4.6	6.3	7.1	7.3	7.3	7.3	7.3	7.3	7.3
7	5.8	4.7	3.4	2.7	2.2	1.8	1.5	1.2							
RUR FWY	2.1	1.9	1.8	2	2.4	3.2	4.1	4.5	4.9	5.5	5.8	6	6.1	6.1	6
5.8	5.5	5.1	4.6	4.2	3.7	3.3	3	2.5							
RUR ART	1.5	1.4	1.4	1.7	2.3	3.1	4.6	5.4	6.2	6.6	6.8	6.9	6.8	6.8	6.6
6.2	5.5	4.6	3.7	3.1	2.6	2.4	2.1	1.8							
PCTDIR															
URB FWY	38	40	40	46	56	64	70	70	68	62	58	52	52	52	50
46	38	38	46	52	46	42	42	40							
URB ART	44	46	44	48	54	62	66	68	64	56	54	52	50	50	50
46	40	38	46	52	48	46	46	46							
RUR FWY	44	46	48	54	60	68	68	64	58	54	52	50	50	52	52
48	42	40	44	48	48	44	46	44							
RUR ART	40	42	44	48	58	66	72	68	60	56	54	50	50	50	50
46	40	38	46	50	46	44	44	44							
LOS E VC															
	0	0.625	1.25	1.875	2.5	3.125	3.75	4.375	5	5.625	6.25	6.875	7.5	8.125	8.75
9.375	10	10.625	11.25	11.875	12.5	13.125	13.75	14.375							
SPEEDVC															
curve1	75	75	75	75	75	75	74.9	74.8	74.6	74.2	73.5	72.3	70.5	67.8	64.2
59.5	54	47.7	41.2	34.9	28.9	23.7	19.2	15.5							

curve2		70	70	70	70	70	70	70	70	69.9	69.8	69.6	69.2	68.4	67.1	65.1	62.2	
58.2	53	47	40.5	33.9	27.7	22.2	17.6	13.8										
curve3		65	65	65	65	65	65	65	65	65	65	64.9	64.8	64.4	63.8	62.6	60.5	
57	52	45.4	37.8	29.9	22.7	16.7	12.1	8.6										
curve4		60	60	60	60	60	60	60	60	60	60	59.9	59.8	59.6	59.1	58.2	56.7	
54.3	50.8	46.1	40.3	33.8	27.3	21.3	16.2	12.2										
curve5		55	55	55	55	55	55	55	55	55	55	55	55	55	54.9	54.7	54.3	53.6
52.3	50	46.5	41.5	35.3	28.5	21.9	16.1	11.5										
curve6		60	60	60	60	60	60	60	60	60	59.9	59.8	59.7	59.4	59.1	58.5	57.7	
56.5	55	53.1	50.7	47.9	44.7	41.1	37.3	33.4										
curve7		55	55	55	55	55	55	55	55	55	54.9	54.9	54.7	54.5	54.2	53.8	53.1	
52.2	50.9	49.3	47.3	44.9	42.1	39	35.7	32.2										
curve8		50	50	50	50	50	50	50	50	50	49.9	49.9	49.8	49.6	49.4	49	48.5	
47.7	46.7	45.4	43.8	41.8	39.5	36.8	33.9	30.9										
curve9		45	45	45	45	45	45	45	45	45	45	44.9	44.8	44.7	44.4	44.1	43.6	
43	42.1	40.9	39.4	37.6	35.5	33.1	30.5	27.8										
curve10		50	50	50	50	49.9	49.8	49.7	49.4	49	48.4	47.5	46.5	45.1	43.5	41.7		
39.6	37.3	34.9	32.4	29.8	27.3	24.9	22.6	20.4										
curve11		50	50	50	50	50	49.9	49.7	49.4	48.9	48	46.7	44.9	42.5	39.6	36.2		
32.6	28.7	25	21.4	18.2	15.3	12.9	10.8	9										
curve12		50	50	50	50	50	49.9	49.8	49.6	49.1	48.2	46.8	44.5	41.4	37.5	32.9		
28	23.1	18.7	14.9	11.8	9.2	7.2	5.7	4.5										
curve13		40	40	40	40	40	40	39.9	39.8	39.5	39.2	38.6	37.8	36.7	35.3	33.5		
31.4	29	26.4	23.7	21.1	18.5	16.1	13.9	12										
curve14		40	40	40	40	40	39.9	39.8	39.6	39.1	38.5	37.5	36.1	34.3	32.1	29.4		
26.5	23.5	20.5	17.7	15.1	12.8	10.7	9	7.6										
curve15		40	40	40	40	40	39.9	39.7	39.4	38.8	37.9	36.5	34.7	32.3	29.5	26.4		
23.2	20	17	14.3	11.9	9.9	8.2	6.8	5.6										
curve16		35	35	35	35	35	34.9	34.8	34.5	34	33.2	32.1	30.5	28.5	26.1	23.5		
20.6	17.9	15.2	12.8	10.7	8.9	7.4	6.1	5.1										
curve17		35	35	35	35	35	34.9	34.7	34.4	33.9	33.1	32	30.3	28.3	25.8	23.1		
20.3	17.5	14.9	12.5	10.4	8.6	7.2	5.9	4.9										
curve18		35	35	35	35	35	34.9	34.6	34.2	33.5	32.4	30.9	28.8	26.3	23.4	20.4		
17.4	14.6	12.1	9.9	8.1	6.6	5.4	4.4	3.6										
curve19		30	30	30	30	30	29.9	29.8	29.5	29	28.2	27.1	25.6	23.7	21.5	19.1		
16.6	14.2	12	10	8.3	6.8	5.6	4.6	3.8										
curve20		30	30	30	30	30	29.9	29.7	29.4	28.9	28.1	26.9	25.3	23.4	21.1	18.6		
16.1	13.6	11.4	9.5	7.8	6.4	5.3	4.3	3.6										
curve21		30	30	30	30	30	29.9	29.7	29.3	28.7	27.7	26.2	24.4	22.1	19.6	17		
14.4	12	9.9	8.1	6.6	5.4	4.4	3.6	2.9										
curve22		55	54.9	54.4	53.2	51.1	47.9	44.0	39.5	34.9	30.4	26.2	22.4	19.2	16.4	14.0		
12.0	10.4	9.0	7.8	6.8	6.0	5.3	4.7	4.1										

VC RATIO TO LOS CONVERSION (VALUE SHOWN IS LOWER LIMIT FOR THAT LOS) (URBAN ROADS USE SPEED BREAKS BELOW FOR LOS DETERMINATION) (ALL USE THE BASE VC'S TO DETERMINE EXCEEDANCE)

	BASE	RUR2	FWY
A	0.00	0.00	0.00
B	0.30	0.00	0.25

C 0.50 0.10 0.40  
 D 0.70 0.30 0.60  
 E 0.90 0.50 0.80  
 F 1.00 1.00 1.00  
 F+ 1.10 1.10 1.10  
 F++ 1.30 1.30 1.30

SPEED VC RATIO BREAKS FOR URBAN STREETS (HIGHEST SPEED FOR GIVEN LOS & FF SPEED)

FFS B C D E F  
 >47 42. 34. 27. 21. 16.  
 >37 35. 28. 22. 17. 13.  
 >32 30. 24. 18. 14. 10.  
 <33 25. 19. 13. 9. 7.

LEVEL OF SERVICE THRESHOLD BY AREA

NUM LOS DEFINITION

1 F CINCINNATI,CLEVELAND,COLUMBUS CENTRAL MPO COUNTIES (CUY,FRA,HAM)  
 2 E OTHER TMA MPOS (AKRON,CANTON,DAYTON,TOLEDO,YOUNGSTOWN + NON-CENTRAL COUNTIES FROM 1)  
 3 E OTHER MPOS & PARTS OF AREAS 1 & 2 OUTSIDE URBANIZED AREA  
 4 E RURAL NON MPO COUNTIES

PEAK SPREADING MODEL INFO (SET MAX ITERATIONS TO 0 TO DISABLE PEAK SPREADING)

MAX VC RATIO FWY: 1.30  
 MAX VC RATIO ART: 1.30  
 MAX ITERATIONS : 1000

TRUCK PCE: 2.0

AQ SEASON FACTOR: 1.08

MODEL CLASS PARAMETERS (MAX 4 CLASSES, HOURS 0-23 W/ NO OVERLAP IN CLASS, ALLOCATE ENTIRE CLASS AS TRUCK(1) OR NOT(0))

CLS TRK	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0																
CLS BEG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0																
CLS END	23	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0																
CLS NUM	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0																

MOVES NETWORK LINK EMISSIONS OUTPUT

COUNTY	MONTH	VMT	HC	NOX	SO2	PM2.5
ADA	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
ALL	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
ASD	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
ATB	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
ATH	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
AUG	JANUARY	0.	0.0000	0.0000	0.0000	0.0000

BEL	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
BRO	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
BUT	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
CAR	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
CHP	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
CLA	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
CLE	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
CLI	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
COL	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
COS	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
CRA	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
CUY	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
DAR	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
DEF	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
DEL	JANUARY	5536593.	0.0000	0.0000	0.0000	0.0000
ERI	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
FAI	JANUARY	2069253.	0.0000	0.0000	0.0000	0.0000
FAY	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
FRA	JANUARY	32890410.	0.0000	0.0000	0.0000	0.0000
FUL	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
GAL	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
GEA	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
GRE	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
GUE	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
HAM	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
HAN	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
HAR	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
HAS	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
HEN	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
HIG	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
HOC	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
HOL	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
HUR	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
JAC	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
JEF	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
KNO	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
LAK	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
LAW	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
LIC	JANUARY	5333191.	0.0000	0.0000	0.0000	0.0000
LOG	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
LOR	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
LUC	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
MAD	JANUARY	1186937.	0.0000	0.0000	0.0000	0.0000
MAH	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
MAR	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
MED	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
MEG	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
MER	JANUARY	0.	0.0000	0.0000	0.0000	0.0000

MIA	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
MOE	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
MOT	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
MRG	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
MRW	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
MUS	JANUARY	79433.	0.0000	0.0000	0.0000	0.0000
NOB	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
OTT	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
PAU	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
PER	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
PIC	JANUARY	875660.	0.0000	0.0000	0.0000	0.0000
PIK	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
POR	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
PRE	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
PUT	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
RIC	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
ROS	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
SAN	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
SCI	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
SEN	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
SHE	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
STA	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
SUM	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
TRU	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
TUS	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
UNI	JANUARY	1824816.	0.0000	0.0000	0.0000	0.0000
VAN	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
VIN	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
WAR	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
WAS	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
WAY	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
WIL	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
WOO	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
WYA	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
XXX	JANUARY	159416.	0.0000	0.0000	0.0000	0.0000
TOT	JANUARY	49937276.	0.0000	0.0000	0.0000	0.0000
ADA	APRIL	0.	0.0000	0.0000	0.0000	0.0000
ALL	APRIL	0.	0.0000	0.0000	0.0000	0.0000
ASD	APRIL	0.	0.0000	0.0000	0.0000	0.0000
ATB	APRIL	0.	0.0000	0.0000	0.0000	0.0000
ATH	APRIL	0.	0.0000	0.0000	0.0000	0.0000
AUG	APRIL	0.	0.0000	0.0000	0.0000	0.0000
BEL	APRIL	0.	0.0000	0.0000	0.0000	0.0000
BRO	APRIL	0.	0.0000	0.0000	0.0000	0.0000
BUT	APRIL	0.	0.0000	0.0000	0.0000	0.0000
CAR	APRIL	0.	0.0000	0.0000	0.0000	0.0000
CHP	APRIL	0.	0.0000	0.0000	0.0000	0.0000
CLA	APRIL	0.	0.0000	0.0000	0.0000	0.0000

CLE	APRIL	0.	0.0000	0.0000	0.0000	0.0000
CLI	APRIL	0.	0.0000	0.0000	0.0000	0.0000
COL	APRIL	0.	0.0000	0.0000	0.0000	0.0000
COS	APRIL	0.	0.0000	0.0000	0.0000	0.0000
CRA	APRIL	0.	0.0000	0.0000	0.0000	0.0000
CUY	APRIL	0.	0.0000	0.0000	0.0000	0.0000
DAR	APRIL	0.	0.0000	0.0000	0.0000	0.0000
DEF	APRIL	0.	0.0000	0.0000	0.0000	0.0000
DEL	APRIL	5536593.	0.0000	0.0000	0.0000	0.0000
ERI	APRIL	0.	0.0000	0.0000	0.0000	0.0000
FAI	APRIL	2069253.	0.0000	0.0000	0.0000	0.0000
FAY	APRIL	0.	0.0000	0.0000	0.0000	0.0000
FRA	APRIL	32890410.	0.0000	0.0000	0.0000	0.0000
FUL	APRIL	0.	0.0000	0.0000	0.0000	0.0000
GAL	APRIL	0.	0.0000	0.0000	0.0000	0.0000
GEA	APRIL	0.	0.0000	0.0000	0.0000	0.0000
GRE	APRIL	0.	0.0000	0.0000	0.0000	0.0000
GUE	APRIL	0.	0.0000	0.0000	0.0000	0.0000
HAM	APRIL	0.	0.0000	0.0000	0.0000	0.0000
HAN	APRIL	0.	0.0000	0.0000	0.0000	0.0000
HAR	APRIL	0.	0.0000	0.0000	0.0000	0.0000
HAS	APRIL	0.	0.0000	0.0000	0.0000	0.0000
HEN	APRIL	0.	0.0000	0.0000	0.0000	0.0000
HIG	APRIL	0.	0.0000	0.0000	0.0000	0.0000
HOC	APRIL	0.	0.0000	0.0000	0.0000	0.0000
HOL	APRIL	0.	0.0000	0.0000	0.0000	0.0000
HUR	APRIL	0.	0.0000	0.0000	0.0000	0.0000
JAC	APRIL	0.	0.0000	0.0000	0.0000	0.0000
JEF	APRIL	0.	0.0000	0.0000	0.0000	0.0000
KNO	APRIL	0.	0.0000	0.0000	0.0000	0.0000
LAK	APRIL	0.	0.0000	0.0000	0.0000	0.0000
LAW	APRIL	0.	0.0000	0.0000	0.0000	0.0000
LIC	APRIL	5333191.	0.0000	0.0000	0.0000	0.0000
LOG	APRIL	0.	0.0000	0.0000	0.0000	0.0000
LOR	APRIL	0.	0.0000	0.0000	0.0000	0.0000
LUC	APRIL	0.	0.0000	0.0000	0.0000	0.0000
MAD	APRIL	1186937.	0.0000	0.0000	0.0000	0.0000
MAH	APRIL	0.	0.0000	0.0000	0.0000	0.0000
MAR	APRIL	0.	0.0000	0.0000	0.0000	0.0000
MED	APRIL	0.	0.0000	0.0000	0.0000	0.0000
MEG	APRIL	0.	0.0000	0.0000	0.0000	0.0000
MER	APRIL	0.	0.0000	0.0000	0.0000	0.0000
MIA	APRIL	0.	0.0000	0.0000	0.0000	0.0000
MOE	APRIL	0.	0.0000	0.0000	0.0000	0.0000
MOT	APRIL	0.	0.0000	0.0000	0.0000	0.0000
MRG	APRIL	0.	0.0000	0.0000	0.0000	0.0000
MRW	APRIL	0.	0.0000	0.0000	0.0000	0.0000
MUS	APRIL	79433.	0.0000	0.0000	0.0000	0.0000

NOB	APRIL	0.	0.0000	0.0000	0.0000	0.0000
OTT	APRIL	0.	0.0000	0.0000	0.0000	0.0000
PAU	APRIL	0.	0.0000	0.0000	0.0000	0.0000
PER	APRIL	0.	0.0000	0.0000	0.0000	0.0000
PIC	APRIL	875660.	0.0000	0.0000	0.0000	0.0000
PIK	APRIL	0.	0.0000	0.0000	0.0000	0.0000
POR	APRIL	0.	0.0000	0.0000	0.0000	0.0000
PRE	APRIL	0.	0.0000	0.0000	0.0000	0.0000
PUT	APRIL	0.	0.0000	0.0000	0.0000	0.0000
RIC	APRIL	0.	0.0000	0.0000	0.0000	0.0000
ROS	APRIL	0.	0.0000	0.0000	0.0000	0.0000
SAN	APRIL	0.	0.0000	0.0000	0.0000	0.0000
SCI	APRIL	0.	0.0000	0.0000	0.0000	0.0000
SEN	APRIL	0.	0.0000	0.0000	0.0000	0.0000
SHE	APRIL	0.	0.0000	0.0000	0.0000	0.0000
STA	APRIL	0.	0.0000	0.0000	0.0000	0.0000
SUM	APRIL	0.	0.0000	0.0000	0.0000	0.0000
TRU	APRIL	0.	0.0000	0.0000	0.0000	0.0000
TUS	APRIL	0.	0.0000	0.0000	0.0000	0.0000
UNI	APRIL	1824816.	0.0000	0.0000	0.0000	0.0000
VAN	APRIL	0.	0.0000	0.0000	0.0000	0.0000
VIN	APRIL	0.	0.0000	0.0000	0.0000	0.0000
WAR	APRIL	0.	0.0000	0.0000	0.0000	0.0000
WAS	APRIL	0.	0.0000	0.0000	0.0000	0.0000
WAY	APRIL	0.	0.0000	0.0000	0.0000	0.0000
WIL	APRIL	0.	0.0000	0.0000	0.0000	0.0000
WOO	APRIL	0.	0.0000	0.0000	0.0000	0.0000
WYA	APRIL	0.	0.0000	0.0000	0.0000	0.0000
XXX	APRIL	159416.	0.0000	0.0000	0.0000	0.0000
TOT	APRIL	49937276.	0.0000	0.0000	0.0000	0.0000
ADA	JULY	0.	0.0000	0.0000	0.0000	0.0000
ALL	JULY	0.	0.0000	0.0000	0.0000	0.0000
ASD	JULY	0.	0.0000	0.0000	0.0000	0.0000
ATB	JULY	0.	0.0000	0.0000	0.0000	0.0000
ATH	JULY	0.	0.0000	0.0000	0.0000	0.0000
AUG	JULY	0.	0.0000	0.0000	0.0000	0.0000
BEL	JULY	0.	0.0000	0.0000	0.0000	0.0000
BRO	JULY	0.	0.0000	0.0000	0.0000	0.0000
BUT	JULY	0.	0.0000	0.0000	0.0000	0.0000
CAR	JULY	0.	0.0000	0.0000	0.0000	0.0000
CHP	JULY	0.	0.0000	0.0000	0.0000	0.0000
CLA	JULY	0.	0.0000	0.0000	0.0000	0.0000
CLE	JULY	0.	0.0000	0.0000	0.0000	0.0000
CLI	JULY	0.	0.0000	0.0000	0.0000	0.0000
COL	JULY	0.	0.0000	0.0000	0.0000	0.0000
COS	JULY	0.	0.0000	0.0000	0.0000	0.0000
CRA	JULY	0.	0.0000	0.0000	0.0000	0.0000
CUY	JULY	0.	0.0000	0.0000	0.0000	0.0000

DAR	JULY	0.	0.0000	0.0000	0.0000	0.0000
DEF	JULY	0.	0.0000	0.0000	0.0000	0.0000
DEL	JULY	5979521.	0.5677	1.8630	0.0000	0.0000
ERI	JULY	0.	0.0000	0.0000	0.0000	0.0000
FAI	JULY	2234793.	0.2293	0.7070	0.0000	0.0000
FAY	JULY	0.	0.0000	0.0000	0.0000	0.0000
FRA	JULY	35521644.	3.6682	12.0423	0.0000	0.0000
FUL	JULY	0.	0.0000	0.0000	0.0000	0.0000
GAL	JULY	0.	0.0000	0.0000	0.0000	0.0000
GEA	JULY	0.	0.0000	0.0000	0.0000	0.0000
GRE	JULY	0.	0.0000	0.0000	0.0000	0.0000
GUE	JULY	0.	0.0000	0.0000	0.0000	0.0000
HAM	JULY	0.	0.0000	0.0000	0.0000	0.0000
HAN	JULY	0.	0.0000	0.0000	0.0000	0.0000
HAR	JULY	0.	0.0000	0.0000	0.0000	0.0000
HAS	JULY	0.	0.0000	0.0000	0.0000	0.0000
HEN	JULY	0.	0.0000	0.0000	0.0000	0.0000
HIG	JULY	0.	0.0000	0.0000	0.0000	0.0000
HOC	JULY	0.	0.0000	0.0000	0.0000	0.0000
HOL	JULY	0.	0.0000	0.0000	0.0000	0.0000
HUR	JULY	0.	0.0000	0.0000	0.0000	0.0000
JAC	JULY	0.	0.0000	0.0000	0.0000	0.0000
JEF	JULY	0.	0.0000	0.0000	0.0000	0.0000
KNO	JULY	0.	0.0000	0.0000	0.0000	0.0000
LAK	JULY	0.	0.0000	0.0000	0.0000	0.0000
LAW	JULY	0.	0.0000	0.0000	0.0000	0.0000
LIC	JULY	5759846.	0.5467	1.8404	0.0000	0.0000
LOG	JULY	0.	0.0000	0.0000	0.0000	0.0000
LOR	JULY	0.	0.0000	0.0000	0.0000	0.0000
LUC	JULY	0.	0.0000	0.0000	0.0000	0.0000
MAD	JULY	1281892.	0.1130	0.4198	0.0000	0.0000
MAH	JULY	0.	0.0000	0.0000	0.0000	0.0000
MAR	JULY	0.	0.0000	0.0000	0.0000	0.0000
MED	JULY	0.	0.0000	0.0000	0.0000	0.0000
MEG	JULY	0.	0.0000	0.0000	0.0000	0.0000
MER	JULY	0.	0.0000	0.0000	0.0000	0.0000
MIA	JULY	0.	0.0000	0.0000	0.0000	0.0000
MOE	JULY	0.	0.0000	0.0000	0.0000	0.0000
MOT	JULY	0.	0.0000	0.0000	0.0000	0.0000
MRG	JULY	0.	0.0000	0.0000	0.0000	0.0000
MRW	JULY	0.	0.0000	0.0000	0.0000	0.0000
MUS	JULY	85787.	0.0068	0.0291	0.0000	0.0000
NOB	JULY	0.	0.0000	0.0000	0.0000	0.0000
OTT	JULY	0.	0.0000	0.0000	0.0000	0.0000
PAU	JULY	0.	0.0000	0.0000	0.0000	0.0000
PER	JULY	0.	0.0000	0.0000	0.0000	0.0000
PIC	JULY	945713.	0.0834	0.2809	0.0000	0.0000
PIK	JULY	0.	0.0000	0.0000	0.0000	0.0000



POR	JULY	0.	0.0000	0.0000	0.0000	0.0000
PRE	JULY	0.	0.0000	0.0000	0.0000	0.0000
PUT	JULY	0.	0.0000	0.0000	0.0000	0.0000
RIC	JULY	0.	0.0000	0.0000	0.0000	0.0000
ROS	JULY	0.	0.0000	0.0000	0.0000	0.0000
SAN	JULY	0.	0.0000	0.0000	0.0000	0.0000
SCI	JULY	0.	0.0000	0.0000	0.0000	0.0000
SEN	JULY	0.	0.0000	0.0000	0.0000	0.0000
SHE	JULY	0.	0.0000	0.0000	0.0000	0.0000
STA	JULY	0.	0.0000	0.0000	0.0000	0.0000
SUM	JULY	0.	0.0000	0.0000	0.0000	0.0000
TRU	JULY	0.	0.0000	0.0000	0.0000	0.0000
TUS	JULY	0.	0.0000	0.0000	0.0000	0.0000
UNI	JULY	1970802.	0.1811	0.6442	0.0000	0.0000
VAN	JULY	0.	0.0000	0.0000	0.0000	0.0000
VIN	JULY	0.	0.0000	0.0000	0.0000	0.0000
WAR	JULY	0.	0.0000	0.0000	0.0000	0.0000
WAS	JULY	0.	0.0000	0.0000	0.0000	0.0000
WAY	JULY	0.	0.0000	0.0000	0.0000	0.0000
WIL	JULY	0.	0.0000	0.0000	0.0000	0.0000
WOO	JULY	0.	0.0000	0.0000	0.0000	0.0000
WYA	JULY	0.	0.0000	0.0000	0.0000	0.0000
XXX	JULY	172169.	0.0194	0.0603	0.0000	0.0000
TOT	JULY	53932260.	5.4139	17.8818	0.0000	0.0000
MOVES	INTRAZONAL EMISSIONS OUTPUT					
	MONTH	VMT	HC	NOX	SO2	PM2.5
	JANUARY	24703.	0.0000	0.0000	0.0000	0.0000
	APRIL	24703.	0.0000	0.0000	0.0000	0.0000
	JULY	26680.	0.0037	0.0094	0.0000	0.0000
MOVES	VEHICLE BASED EMISSIONS OUTPUT					
	MONTH	VEHICLES	HC	NOX	SO2	PM2.5
	JANUARY	2252120.	0.0000	0.0000	0.0000	0.0000
	APRIL	2252120.	0.0000	0.0000	0.0000	0.0000
	JULY	2432290.	20.0373	7.7483	0.0000	0.0000

## Appendix – MORPC Travel Demand Model Emissions Run Report for 2030

### Ozone Analysis

#### MOVES BASED EMISSIONS REPORT

Ozone Analysis with MOVES - MORPC

Loaded Network: ..\..\3C Model Results\2030\MOR30L24ASN\_BASE.NET

Network Emission Factors: ..\..\Ozone\_upd\factors\MORPC\_2030\_ozone\_3source\_rpd.csv

Vehicle Emission Factors: ..\..\Ozone\_upd\factors\MORPC\_2030\_ozone\_3source\_rpv.csv

May 2020

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MORPC 2020-2050 Metropolitan Transportation Plan

Air Quality Conformity Appendix

LCATS 2050 Metropolitan Transportation Plan

MORPC 2021-2024 Transportation Improvement Program

LCATS 2021-2024 Transportation Improvement Program

CORPO 2021-2024 Transportation Improvement Program

Vehicle Population : ..\..\Ozone\_upd\factors\Source\_Type\_Pop\_2030\_MORPC\_on-Model.csv  
 Intrazonal Trips : ..\..\3C Model Results\2030\DEL2030.txt  
 Area File (sq mi): ..\..\3C Model Results\3C\_TAZ\_areain.txt  
 Volume Field Used: VOL24\_TOT  
 Truck Volume Field Used: NONE  
 Capacity Field Used: CAPHRAM

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 CMS/AQ REPORT  
 POSTCMS10, UPDATED DEC 2009, GTG  
 DATE:04/30/2020 TIME:17:30:45

PARAMETER FILE DUMP (DAILY.DAT FILE)

HOURL	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
15	16	17	18	19	20	21	22	23							
PCTADT															
URB FWY	0.9	0.6	0.5	0.6	1	2.5	5.4	7.3	6.2	5	4.8	5	5.2	5.5	6.2
7.3	8	8	5.8	4.1	3.4	2.9	2.2	1.6							
URB ART	0.6	0.4	0.3	0.4	0.7	2	4	6.3	5.7	5	5.1	5.8	6.2	6.2	6.8
7.7	8.3	8.2	6.1	4.5	3.6	2.8	1.9	1.2							
RUR FWY	1.2	1	0.9	1	1.4	2.6	4.4	5.4	5.1	5.2	5.5	5.7	5.9	6.2	6.7
7.3	7.4	7	5.4	4.3	3.5	2.9	2.3	1.7							
RUR ART	0.8	0.6	0.5	0.7	1.2	2.7	5.2	6.4	5.6	5.2	5.2	5.5	5.7	5.9	6.4
7.5	8.1	7.9	5.6	4.1	3.3	2.7	1.9	1.3							
PCTADT T															
URB FWY	1.8	1.6	1.6	1.8	2.2	3.1	4.2	4.9	5.6	6.2	6.5	6.6	6.5	6.5	6.4
6	5.3	4.6	4.2	3.6	3.2	2.9	2.5	2.2							
URB ART	0.9	0.8	0.9	1.1	1.6	2.6	4.6	6.3	7.1	7.3	7.3	7.3	7.3	7.3	7.3
7	5.8	4.7	3.4	2.7	2.2	1.8	1.5	1.2							
RUR FWY	2.1	1.9	1.8	2	2.4	3.2	4.1	4.5	4.9	5.5	5.8	6	6.1	6.1	6
5.8	5.5	5.1	4.6	4.2	3.7	3.3	3	2.5							
RUR ART	1.5	1.4	1.4	1.7	2.3	3.1	4.6	5.4	6.2	6.6	6.8	6.9	6.8	6.8	6.6
6.2	5.5	4.6	3.7	3.1	2.6	2.4	2.1	1.8							
PCTDIR															
URB FWY	38	40	40	46	56	64	70	70	68	62	58	52	52	52	50
46	38	38	46	52	46	42	42	40							
URB ART	44	46	44	48	54	62	66	68	64	56	54	52	50	50	50
46	40	38	46	52	48	46	46	46							
RUR FWY	44	46	48	54	60	68	68	64	58	54	52	50	50	52	52
48	42	40	44	48	48	44	46	44							
RUR ART	40	42	44	48	58	66	72	68	60	56	54	50	50	50	50
46	40	38	46	50	46	44	44	44							
LOS E VC															
	0	0.625	1.25	1.875	2.5	3.125	3.75	4.375	5	5.625	6.25	6.875	7.5	8.125	8.75
9.375	10	10.625	11.25	11.875	12.5	13.125	13.75	14.375							
SPEEDVC															
curvel	75	75	75	75	75	75	74.9	74.8	74.6	74.2	73.5	72.3	70.5	67.8	64.2
59.5	54	47.7	41.2	34.9	28.9	23.7	19.2	15.5							

curve2		70	70	70	70	70	70	70	70	69.9	69.8	69.6	69.2	68.4	67.1	65.1	62.2
58.2	53	47	40.5	33.9	27.7	22.2	17.6	13.8									
curve3		65	65	65	65	65	65	65	65	65	65	64.9	64.8	64.4	63.8	62.6	60.5
57	52	45.4	37.8	29.9	22.7	16.7	12.1	8.6									
curve4		60	60	60	60	60	60	60	60	60	60	59.9	59.8	59.6	59.1	58.2	56.7
54.3	50.8	46.1	40.3	33.8	27.3	21.3	16.2	12.2									
curve5		55	55	55	55	55	55	55	55	55	55	55	55	54.9	54.7	54.3	53.6
52.3	50	46.5	41.5	35.3	28.5	21.9	16.1	11.5									
curve6		60	60	60	60	60	60	60	60	60	59.9	59.8	59.7	59.4	59.1	58.5	57.7
56.5	55	53.1	50.7	47.9	44.7	41.1	37.3	33.4									
curve7		55	55	55	55	55	55	55	55	55	54.9	54.9	54.7	54.5	54.2	53.8	53.1
52.2	50.9	49.3	47.3	44.9	42.1	39	35.7	32.2									
curve8		50	50	50	50	50	50	50	50	50	49.9	49.9	49.8	49.6	49.4	49	48.5
47.7	46.7	45.4	43.8	41.8	39.5	36.8	33.9	30.9									
curve9		45	45	45	45	45	45	45	45	45	45	44.9	44.8	44.7	44.4	44.1	43.6
43	42.1	40.9	39.4	37.6	35.5	33.1	30.5	27.8									
curve10		50	50	50	50	49.9	49.8	49.7	49.4	49	48.4	47.5	46.5	45.1	43.5	41.7	
39.6	37.3	34.9	32.4	29.8	27.3	24.9	22.6	20.4									
curve11		50	50	50	50	50	49.9	49.7	49.4	48.9	48	46.7	44.9	42.5	39.6	36.2	
32.6	28.7	25	21.4	18.2	15.3	12.9	10.8	9									
curve12		50	50	50	50	50	49.9	49.8	49.6	49.1	48.2	46.8	44.5	41.4	37.5	32.9	
28	23.1	18.7	14.9	11.8	9.2	7.2	5.7	4.5									
curve13		40	40	40	40	40	40	39.9	39.8	39.5	39.2	38.6	37.8	36.7	35.3	33.5	
31.4	29	26.4	23.7	21.1	18.5	16.1	13.9	12									
curve14		40	40	40	40	40	39.9	39.8	39.6	39.1	38.5	37.5	36.1	34.3	32.1	29.4	
26.5	23.5	20.5	17.7	15.1	12.8	10.7	9	7.6									
curve15		40	40	40	40	40	39.9	39.7	39.4	38.8	37.9	36.5	34.7	32.3	29.5	26.4	
23.2	20	17	14.3	11.9	9.9	8.2	6.8	5.6									
curve16		35	35	35	35	35	34.9	34.8	34.5	34	33.2	32.1	30.5	28.5	26.1	23.5	
20.6	17.9	15.2	12.8	10.7	8.9	7.4	6.1	5.1									
curve17		35	35	35	35	35	34.9	34.7	34.4	33.9	33.1	32	30.3	28.3	25.8	23.1	
20.3	17.5	14.9	12.5	10.4	8.6	7.2	5.9	4.9									
curve18		35	35	35	35	35	34.9	34.6	34.2	33.5	32.4	30.9	28.8	26.3	23.4	20.4	
17.4	14.6	12.1	9.9	8.1	6.6	5.4	4.4	3.6									
curve19		30	30	30	30	30	29.9	29.8	29.5	29	28.2	27.1	25.6	23.7	21.5	19.1	
16.6	14.2	12	10	8.3	6.8	5.6	4.6	3.8									
curve20		30	30	30	30	30	29.9	29.7	29.4	28.9	28.1	26.9	25.3	23.4	21.1	18.6	
16.1	13.6	11.4	9.5	7.8	6.4	5.3	4.3	3.6									
curve21		30	30	30	30	30	29.9	29.7	29.3	28.7	27.7	26.2	24.4	22.1	19.6	17	
14.4	12	9.9	8.1	6.6	5.4	4.4	3.6	2.9									
curve22		55	54.9	54.4	53.2	51.1	47.9	44.0	39.5	34.9	30.4	26.2	22.4	19.2	16.4	14.0	
12.0	10.4	9.0	7.8	6.8	6.0	5.3	4.7	4.1									

VC RATIO TO LOS CONVERSION (VALUE SHOWN IS LOWER LIMIT FOR THAT LOS) (URBAN ROADS USE SPEED BREAKS BELOW FOR LOS DETERMINATION) (ALL USE THE BASE VC'S TO DETERMINE EXCEEDANCE)

	BASE	RUR2	FWY
A	0.00	0.00	0.00
B	0.30	0.00	0.25

C 0.50 0.10 0.40  
 D 0.70 0.30 0.60  
 E 0.90 0.50 0.80  
 F 1.00 1.00 1.00  
 F+ 1.10 1.10 1.10  
 F++ 1.30 1.30 1.30

SPEED VC RATIO BREAKS FOR URBAN STREETS (HIGHEST SPEED FOR GIVEN LOS & FF SPEED)

FFS B C D E F  
 >47 42. 34. 27. 21. 16.  
 >37 35. 28. 22. 17. 13.  
 >32 30. 24. 18. 14. 10.  
 <33 25. 19. 13. 9. 7.

LEVEL OF SERVICE THRESHOLD BY AREA

NUM LOS DEFINITION

1 F CINCINNATI,CLEVELAND,COLUMBUS CENTRAL MPO COUNTIES (CUY,FRA,HAM)  
 2 E OTHER TMA MPOS (AKRON,CANTON,DAYTON,TOLEDO,YOUNGSTOWN + NON-CENTRAL COUNTIES FROM 1)  
 3 E OTHER MPOS & PARTS OF AREAS 1 & 2 OUTSIDE URBANIZED AREA  
 4 E RURAL NON MPO COUNTIES

PEAK SPREADING MODEL INFO (SET MAX ITERATIONS TO 0 TO DISABLE PEAK SPREADING)

MAX VC RATIO FWY: 1.30  
 MAX VC RATIO ART: 1.30  
 MAX ITERATIONS : 1000

TRUCK PCE: 2.0

AQ SEASON FACTOR: 1.08

MODEL CLASS PARAMETERS (MAX 4 CLASSES, HOURS 0-23 W/ NO OVERLAP IN CLASS, ALLOCATE ENTIRE CLASS AS TRUCK(1) OR NOT(0))

CLS TRK	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
0															
CLS BEG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0															
CLS END	23	23	0	0	0	0	0	0	0	0	0	0	0	0	0
0															
CLS NUM	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0
0															

MOVES NETWORK LINK EMISSIONS OUTPUT

COUNTY	MONTH	VMT	HC	NOX	SO2	PM2.5
ADA	JANUARY		0.	0.0000	0.0000	0.0000
ALL	JANUARY		0.	0.0000	0.0000	0.0000
ASD	JANUARY		0.	0.0000	0.0000	0.0000
ATB	JANUARY		0.	0.0000	0.0000	0.0000
ATH	JANUARY		0.	0.0000	0.0000	0.0000
AUG	JANUARY		0.	0.0000	0.0000	0.0000

BEL	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
BRO	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
BUT	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
CAR	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
CHP	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
CLA	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
CLE	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
CLI	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
COL	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
COS	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
CRA	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
CUY	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
DAR	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
DEF	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
DEL	JANUARY	6036997.	0.0000	0.0000	0.0000	0.0000
ERI	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
FAI	JANUARY	2238955.	0.0000	0.0000	0.0000	0.0000
FAY	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
FRA	JANUARY	34973296.	0.0000	0.0000	0.0000	0.0000
FUL	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
GAL	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
GEA	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
GRE	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
GUE	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
HAM	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
HAN	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
HAR	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
HAS	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
HEN	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
HIG	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
HOC	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
HOL	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
HUR	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
JAC	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
JEF	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
KNO	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
LAK	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
LAW	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
LIC	JANUARY	5629606.	0.0000	0.0000	0.0000	0.0000
LOG	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
LOR	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
LUC	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
MAD	JANUARY	1260386.	0.0000	0.0000	0.0000	0.0000
MAH	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
MAR	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
MED	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
MEG	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
MER	JANUARY	0.	0.0000	0.0000	0.0000	0.0000

MIA	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
MOE	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
MOT	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
MRG	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
MRW	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
MUS	JANUARY	84877.	0.0000	0.0000	0.0000	0.0000
NOB	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
OTT	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
PAU	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
PER	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
PIC	JANUARY	933773.	0.0000	0.0000	0.0000	0.0000
PIK	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
POR	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
PRE	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
PUT	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
RIC	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
ROS	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
SAN	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
SCI	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
SEN	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
SHE	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
STA	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
SUM	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
TRU	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
TUS	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
UNI	JANUARY	2009964.	0.0000	0.0000	0.0000	0.0000
VAN	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
VIN	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
WAR	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
WAS	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
WAY	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
WIL	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
WOO	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
WYA	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
XXX	JANUARY	170087.	0.0000	0.0000	0.0000	0.0000
TOT	JANUARY	53317744.	0.0000	0.0000	0.0000	0.0000
ADA	APRIL	0.	0.0000	0.0000	0.0000	0.0000
ALL	APRIL	0.	0.0000	0.0000	0.0000	0.0000
ASD	APRIL	0.	0.0000	0.0000	0.0000	0.0000
ATB	APRIL	0.	0.0000	0.0000	0.0000	0.0000
ATH	APRIL	0.	0.0000	0.0000	0.0000	0.0000
AUG	APRIL	0.	0.0000	0.0000	0.0000	0.0000
BEL	APRIL	0.	0.0000	0.0000	0.0000	0.0000
BRO	APRIL	0.	0.0000	0.0000	0.0000	0.0000
BUT	APRIL	0.	0.0000	0.0000	0.0000	0.0000
CAR	APRIL	0.	0.0000	0.0000	0.0000	0.0000
CHP	APRIL	0.	0.0000	0.0000	0.0000	0.0000
CLA	APRIL	0.	0.0000	0.0000	0.0000	0.0000

CLE	APRIL	0.	0.0000	0.0000	0.0000	0.0000
CLI	APRIL	0.	0.0000	0.0000	0.0000	0.0000
COL	APRIL	0.	0.0000	0.0000	0.0000	0.0000
COS	APRIL	0.	0.0000	0.0000	0.0000	0.0000
CRA	APRIL	0.	0.0000	0.0000	0.0000	0.0000
CUY	APRIL	0.	0.0000	0.0000	0.0000	0.0000
DAR	APRIL	0.	0.0000	0.0000	0.0000	0.0000
DEF	APRIL	0.	0.0000	0.0000	0.0000	0.0000
DEL	APRIL	6036997.	0.0000	0.0000	0.0000	0.0000
ERI	APRIL	0.	0.0000	0.0000	0.0000	0.0000
FAI	APRIL	2238955.	0.0000	0.0000	0.0000	0.0000
FAY	APRIL	0.	0.0000	0.0000	0.0000	0.0000
FRA	APRIL	34973296.	0.0000	0.0000	0.0000	0.0000
FUL	APRIL	0.	0.0000	0.0000	0.0000	0.0000
GAL	APRIL	0.	0.0000	0.0000	0.0000	0.0000
GEA	APRIL	0.	0.0000	0.0000	0.0000	0.0000
GRE	APRIL	0.	0.0000	0.0000	0.0000	0.0000
GUE	APRIL	0.	0.0000	0.0000	0.0000	0.0000
HAM	APRIL	0.	0.0000	0.0000	0.0000	0.0000
HAN	APRIL	0.	0.0000	0.0000	0.0000	0.0000
HAR	APRIL	0.	0.0000	0.0000	0.0000	0.0000
HAS	APRIL	0.	0.0000	0.0000	0.0000	0.0000
HEN	APRIL	0.	0.0000	0.0000	0.0000	0.0000
HIG	APRIL	0.	0.0000	0.0000	0.0000	0.0000
HOC	APRIL	0.	0.0000	0.0000	0.0000	0.0000
HOL	APRIL	0.	0.0000	0.0000	0.0000	0.0000
HUR	APRIL	0.	0.0000	0.0000	0.0000	0.0000
JAC	APRIL	0.	0.0000	0.0000	0.0000	0.0000
JEF	APRIL	0.	0.0000	0.0000	0.0000	0.0000
KNO	APRIL	0.	0.0000	0.0000	0.0000	0.0000
LAK	APRIL	0.	0.0000	0.0000	0.0000	0.0000
LAW	APRIL	0.	0.0000	0.0000	0.0000	0.0000
LIC	APRIL	5629606.	0.0000	0.0000	0.0000	0.0000
LOG	APRIL	0.	0.0000	0.0000	0.0000	0.0000
LOR	APRIL	0.	0.0000	0.0000	0.0000	0.0000
LUC	APRIL	0.	0.0000	0.0000	0.0000	0.0000
MAD	APRIL	1260386.	0.0000	0.0000	0.0000	0.0000
MAH	APRIL	0.	0.0000	0.0000	0.0000	0.0000
MAR	APRIL	0.	0.0000	0.0000	0.0000	0.0000
MED	APRIL	0.	0.0000	0.0000	0.0000	0.0000
MEG	APRIL	0.	0.0000	0.0000	0.0000	0.0000
MER	APRIL	0.	0.0000	0.0000	0.0000	0.0000
MIA	APRIL	0.	0.0000	0.0000	0.0000	0.0000
MOE	APRIL	0.	0.0000	0.0000	0.0000	0.0000
MOT	APRIL	0.	0.0000	0.0000	0.0000	0.0000
MRG	APRIL	0.	0.0000	0.0000	0.0000	0.0000
MRW	APRIL	0.	0.0000	0.0000	0.0000	0.0000
MUS	APRIL	84877.	0.0000	0.0000	0.0000	0.0000

NOB	APRIL	0.	0.0000	0.0000	0.0000	0.0000
OTT	APRIL	0.	0.0000	0.0000	0.0000	0.0000
PAU	APRIL	0.	0.0000	0.0000	0.0000	0.0000
PER	APRIL	0.	0.0000	0.0000	0.0000	0.0000
PIC	APRIL	933773.	0.0000	0.0000	0.0000	0.0000
PIK	APRIL	0.	0.0000	0.0000	0.0000	0.0000
POR	APRIL	0.	0.0000	0.0000	0.0000	0.0000
PRE	APRIL	0.	0.0000	0.0000	0.0000	0.0000
PUT	APRIL	0.	0.0000	0.0000	0.0000	0.0000
RIC	APRIL	0.	0.0000	0.0000	0.0000	0.0000
ROS	APRIL	0.	0.0000	0.0000	0.0000	0.0000
SAN	APRIL	0.	0.0000	0.0000	0.0000	0.0000
SCI	APRIL	0.	0.0000	0.0000	0.0000	0.0000
SEN	APRIL	0.	0.0000	0.0000	0.0000	0.0000
SHE	APRIL	0.	0.0000	0.0000	0.0000	0.0000
STA	APRIL	0.	0.0000	0.0000	0.0000	0.0000
SUM	APRIL	0.	0.0000	0.0000	0.0000	0.0000
TRU	APRIL	0.	0.0000	0.0000	0.0000	0.0000
TUS	APRIL	0.	0.0000	0.0000	0.0000	0.0000
UNI	APRIL	2009964.	0.0000	0.0000	0.0000	0.0000
VAN	APRIL	0.	0.0000	0.0000	0.0000	0.0000
VIN	APRIL	0.	0.0000	0.0000	0.0000	0.0000
WAR	APRIL	0.	0.0000	0.0000	0.0000	0.0000
WAS	APRIL	0.	0.0000	0.0000	0.0000	0.0000
WAY	APRIL	0.	0.0000	0.0000	0.0000	0.0000
WIL	APRIL	0.	0.0000	0.0000	0.0000	0.0000
WOO	APRIL	0.	0.0000	0.0000	0.0000	0.0000
WYA	APRIL	0.	0.0000	0.0000	0.0000	0.0000
XXX	APRIL	170087.	0.0000	0.0000	0.0000	0.0000
TOT	APRIL	53317744.	0.0000	0.0000	0.0000	0.0000
ADA	JULY	0.	0.0000	0.0000	0.0000	0.0000
ALL	JULY	0.	0.0000	0.0000	0.0000	0.0000
ASD	JULY	0.	0.0000	0.0000	0.0000	0.0000
ATB	JULY	0.	0.0000	0.0000	0.0000	0.0000
ATH	JULY	0.	0.0000	0.0000	0.0000	0.0000
AUG	JULY	0.	0.0000	0.0000	0.0000	0.0000
BEL	JULY	0.	0.0000	0.0000	0.0000	0.0000
BRO	JULY	0.	0.0000	0.0000	0.0000	0.0000
BUT	JULY	0.	0.0000	0.0000	0.0000	0.0000
CAR	JULY	0.	0.0000	0.0000	0.0000	0.0000
CHP	JULY	0.	0.0000	0.0000	0.0000	0.0000
CLA	JULY	0.	0.0000	0.0000	0.0000	0.0000
CLE	JULY	0.	0.0000	0.0000	0.0000	0.0000
CLI	JULY	0.	0.0000	0.0000	0.0000	0.0000
COL	JULY	0.	0.0000	0.0000	0.0000	0.0000
COS	JULY	0.	0.0000	0.0000	0.0000	0.0000
CRA	JULY	0.	0.0000	0.0000	0.0000	0.0000
CUY	JULY	0.	0.0000	0.0000	0.0000	0.0000



DAR	JULY	0.	0.0000	0.0000	0.0000	0.0000
DEF	JULY	0.	0.0000	0.0000	0.0000	0.0000
DEL	JULY	6519957.	0.4119	1.1976	0.0000	0.0000
ERI	JULY	0.	0.0000	0.0000	0.0000	0.0000
FAI	JULY	2418071.	0.1645	0.4514	0.0000	0.0000
FAY	JULY	0.	0.0000	0.0000	0.0000	0.0000
FRA	JULY	37771160.	2.6130	7.6277	0.0000	0.0000
FUL	JULY	0.	0.0000	0.0000	0.0000	0.0000
GAL	JULY	0.	0.0000	0.0000	0.0000	0.0000
GEA	JULY	0.	0.0000	0.0000	0.0000	0.0000
GRE	JULY	0.	0.0000	0.0000	0.0000	0.0000
GUE	JULY	0.	0.0000	0.0000	0.0000	0.0000
HAM	JULY	0.	0.0000	0.0000	0.0000	0.0000
HAN	JULY	0.	0.0000	0.0000	0.0000	0.0000
HAR	JULY	0.	0.0000	0.0000	0.0000	0.0000
HAS	JULY	0.	0.0000	0.0000	0.0000	0.0000
HEN	JULY	0.	0.0000	0.0000	0.0000	0.0000
HIG	JULY	0.	0.0000	0.0000	0.0000	0.0000
HOC	JULY	0.	0.0000	0.0000	0.0000	0.0000
HOL	JULY	0.	0.0000	0.0000	0.0000	0.0000
HUR	JULY	0.	0.0000	0.0000	0.0000	0.0000
JAC	JULY	0.	0.0000	0.0000	0.0000	0.0000
JEF	JULY	0.	0.0000	0.0000	0.0000	0.0000
KNO	JULY	0.	0.0000	0.0000	0.0000	0.0000
LAK	JULY	0.	0.0000	0.0000	0.0000	0.0000
LAW	JULY	0.	0.0000	0.0000	0.0000	0.0000
LIC	JULY	6079974.	0.3829	1.1492	0.0000	0.0000
LOG	JULY	0.	0.0000	0.0000	0.0000	0.0000
LOR	JULY	0.	0.0000	0.0000	0.0000	0.0000
LUC	JULY	0.	0.0000	0.0000	0.0000	0.0000
MAD	JULY	1361216.	0.0791	0.2656	0.0000	0.0000
MAH	JULY	0.	0.0000	0.0000	0.0000	0.0000
MAR	JULY	0.	0.0000	0.0000	0.0000	0.0000
MED	JULY	0.	0.0000	0.0000	0.0000	0.0000
MEG	JULY	0.	0.0000	0.0000	0.0000	0.0000
MER	JULY	0.	0.0000	0.0000	0.0000	0.0000
MIA	JULY	0.	0.0000	0.0000	0.0000	0.0000
MOE	JULY	0.	0.0000	0.0000	0.0000	0.0000
MOT	JULY	0.	0.0000	0.0000	0.0000	0.0000
MRG	JULY	0.	0.0000	0.0000	0.0000	0.0000
MRW	JULY	0.	0.0000	0.0000	0.0000	0.0000
MUS	JULY	91667.	0.0047	0.0187	0.0000	0.0000
NOB	JULY	0.	0.0000	0.0000	0.0000	0.0000
OTT	JULY	0.	0.0000	0.0000	0.0000	0.0000
PAU	JULY	0.	0.0000	0.0000	0.0000	0.0000
PER	JULY	0.	0.0000	0.0000	0.0000	0.0000
PIC	JULY	1008475.	0.0594	0.1764	0.0000	0.0000
PIK	JULY	0.	0.0000	0.0000	0.0000	0.0000

POR	JULY	0.	0.0000	0.0000	0.0000	0.0000
PRE	JULY	0.	0.0000	0.0000	0.0000	0.0000
PUT	JULY	0.	0.0000	0.0000	0.0000	0.0000
RIC	JULY	0.	0.0000	0.0000	0.0000	0.0000
ROS	JULY	0.	0.0000	0.0000	0.0000	0.0000
SAN	JULY	0.	0.0000	0.0000	0.0000	0.0000
SCI	JULY	0.	0.0000	0.0000	0.0000	0.0000
SEN	JULY	0.	0.0000	0.0000	0.0000	0.0000
SHE	JULY	0.	0.0000	0.0000	0.0000	0.0000
STA	JULY	0.	0.0000	0.0000	0.0000	0.0000
SUM	JULY	0.	0.0000	0.0000	0.0000	0.0000
TRU	JULY	0.	0.0000	0.0000	0.0000	0.0000
TUS	JULY	0.	0.0000	0.0000	0.0000	0.0000
UNI	JULY	2170761.	0.1316	0.4224	0.0000	0.0000
VAN	JULY	0.	0.0000	0.0000	0.0000	0.0000
VIN	JULY	0.	0.0000	0.0000	0.0000	0.0000
WAR	JULY	0.	0.0000	0.0000	0.0000	0.0000
WAS	JULY	0.	0.0000	0.0000	0.0000	0.0000
WAY	JULY	0.	0.0000	0.0000	0.0000	0.0000
WIL	JULY	0.	0.0000	0.0000	0.0000	0.0000
WOO	JULY	0.	0.0000	0.0000	0.0000	0.0000
WYA	JULY	0.	0.0000	0.0000	0.0000	0.0000
XXX	JULY	183694.	0.0140	0.0381	0.0000	0.0000
TOT	JULY	57583164.	3.8596	11.3432	0.0000	0.0000
MOVES INTRAZONAL EMISSIONS OUTPUT						
MONTH	VMT	HC	NOX	SO2	PM2.5	
JANUARY	26737.	0.0000	0.0000	0.0000	0.0000	0.0000
APRIL	26737.	0.0000	0.0000	0.0000	0.0000	0.0000
JULY	28876.	0.0027	0.0059	0.0000	0.0000	0.0000
MOVES VEHICLE BASED EMISSIONS OUTPUT						
MONTH	VEHICLES	HC	NOX	SO2	PM2.5	
JANUARY	2529559.	0.0000	0.0000	0.0000	0.0000	0.0000
APRIL	2529559.	0.0000	0.0000	0.0000	0.0000	0.0000
JULY	2731924.	15.3420	5.4729	0.0000	0.0000	0.0000

## Appendix – MORPC Travel Demand Model Emission Run Report for 2040

### Ozone Analysis

#### MOVES BASED EMISSIONS REPORT

Ozone Analysis with MOVES - MORPC

Loaded Network: ..\..\3C Model Results\2040\MOR40L24ASN\_BASE.NET  
Network Emission Factors: ..\..\Ozone\_upd\factors\MORPC\_2040\_ozone\_3source\_rpd.csv  
Vehicle Emission Factors: ..\..\Ozone\_upd\factors\MORPC\_2040\_ozone\_3source\_rpv.csv  
Vehicle Population : ..\..\Ozone\_upd\factors\Source\_Type\_Pop\_2040\_MORPC\_on-Model.csv  
Intra-zonal Trips : ..\..\3C Model Results\2040\DEL2040.txt  
Area File (sq mi): ..\..\3C Model Results\3C\_TAZ\_areain.txt  
Volume Field Used: VOL24\_TOT

May 2020

Air Quality Conformity Appendix

81 MORPC 2020-2050 Metropolitan Transportation Plan  
LCATS 2050 Metropolitan Transportation Plan  
MORPC 2021-2024 Transportation Improvement Program  
LCATS 2021-2024 Transportation Improvement Program  
CORPO 2021-2024 Transportation Improvement Program

Truck Volume Field Used: NONE  
 Capacity Field Used: CAPHRAM

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 CMS/AQ REPORT  
 POSTCMS10, UPDATED DEC 2009, GTG  
 DATE:04/30/2020 TIME:17:49:31

PARAMETER FILE DUMP (DAILY.DAT FILE)

HOURLY	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
15	16	17	18	19	20	21	22	23							
PCTADT															
URB FWY	0.9	0.6	0.5	0.6	1	2.5	5.4	7.3	6.2	5	4.8	5	5.2	5.5	6.2
7.3	8	8	5.8	4.1	3.4	2.9	2.2	1.6							
URB ART	0.6	0.4	0.3	0.4	0.7	2	4	6.3	5.7	5	5.1	5.8	6.2	6.2	6.8
7.7	8.3	8.2	6.1	4.5	3.6	2.8	1.9	1.2							
RUR FWY	1.2	1	0.9	1	1.4	2.6	4.4	5.4	5.1	5.2	5.5	5.7	5.9	6.2	6.7
7.3	7.4	7	5.4	4.3	3.5	2.9	2.3	1.7							
RUR ART	0.8	0.6	0.5	0.7	1.2	2.7	5.2	6.4	5.6	5.2	5.2	5.5	5.7	5.9	6.4
7.5	8.1	7.9	5.6	4.1	3.3	2.7	1.9	1.3							
PCTADT T															
URB FWY	1.8	1.6	1.6	1.8	2.2	3.1	4.2	4.9	5.6	6.2	6.5	6.6	6.5	6.5	6.4
6	5.3	4.6	4.2	3.6	3.2	2.9	2.5	2.2							
URB ART	0.9	0.8	0.9	1.1	1.6	2.6	4.6	6.3	7.1	7.3	7.3	7.3	7.3	7.3	7.3
7	5.8	4.7	3.4	2.7	2.2	1.8	1.5	1.2							
RUR FWY	2.1	1.9	1.8	2	2.4	3.2	4.1	4.5	4.9	5.5	5.8	6	6.1	6.1	6
5.8	5.5	5.1	4.6	4.2	3.7	3.3	3	2.5							
RUR ART	1.5	1.4	1.4	1.7	2.3	3.1	4.6	5.4	6.2	6.6	6.8	6.9	6.8	6.8	6.6
6.2	5.5	4.6	3.7	3.1	2.6	2.4	2.1	1.8							
PCTDIR															
URB FWY	38	40	40	46	56	64	70	70	68	62	58	52	52	52	50
46	38	38	46	52	46	42	42	40							
URB ART	44	46	44	48	54	62	66	68	64	56	54	52	50	50	50
46	40	38	46	52	48	46	46	46							
RUR FWY	44	46	48	54	60	68	68	64	58	54	52	50	50	52	52
48	42	40	44	48	48	44	46	44							
RUR ART	40	42	44	48	58	66	72	68	60	56	54	50	50	50	50
46	40	38	46	50	46	44	44	44							
LOS E VC															
	0	0.625	1.25	1.875	2.5	3.125	3.75	4.375	5	5.625	6.25	6.875	7.5	8.125	8.75
9.375	10	10.625	11.25	11.875	12.5	13.125	13.75	14.375							
SPEEDVC															
curve1	75	75	75	75	75	75	74.9	74.8	74.6	74.2	73.5	72.3	70.5	67.8	64.2
59.5	54	47.7	41.2	34.9	28.9	23.7	19.2	15.5							
curve2	70	70	70	70	70	70	70	69.9	69.8	69.6	69.2	68.4	67.1	65.1	62.2
58.2	53	47	40.5	33.9	27.7	22.2	17.6	13.8							
curve3	65	65	65	65	65	65	65	65	65	64.9	64.8	64.4	63.8	62.6	60.5
57	52	45.4	37.8	29.9	22.7	16.7	12.1	8.6							

curve4		60	60	60	60	60	60	60	60	60	60	60	60	59.9	59.8	59.6	59.1	58.2	56.7
54.3	50.8	46.1	40.3	33.8	27.3	21.3	16.2	12.2											
curve5		55	55	55	55	55	55	55	55	55	55	55	55	55	55	54.9	54.7	54.3	53.6
52.3	50	46.5	41.5	35.3	28.5	21.9	16.1	11.5											
curve6		60	60	60	60	60	60	60	60	60	60	60	59.9	59.8	59.7	59.4	59.1	58.5	57.7
56.5	55	53.1	50.7	47.9	44.7	41.1	37.3	33.4											
curve7		55	55	55	55	55	55	55	55	55	55	55	54.9	54.9	54.7	54.5	54.2	53.8	53.1
52.2	50.9	49.3	47.3	44.9	42.1	39	35.7	32.2											
curve8		50	50	50	50	50	50	50	50	50	50	50	49.9	49.9	49.8	49.6	49.4	49	48.5
47.7	46.7	45.4	43.8	41.8	39.5	36.8	33.9	30.9											
curve9		45	45	45	45	45	45	45	45	45	45	45	45	44.9	44.8	44.7	44.4	44.1	43.6
43	42.1	40.9	39.4	37.6	35.5	33.1	30.5	27.8											
curve10		50	50	50	50	50	49.9	49.8	49.7	49.4	49	48.4	47.5	46.5	45.1	43.5	41.7		
39.6	37.3	34.9	32.4	29.8	27.3	24.9	22.6	20.4											
curve11		50	50	50	50	50	50	49.9	49.7	49.4	48.9	48	46.7	44.9	42.5	39.6	36.2		
32.6	28.7	25	21.4	18.2	15.3	12.9	10.8	9											
curve12		50	50	50	50	50	49.9	49.8	49.6	49.1	48.2	46.8	44.5	41.4	37.5	32.9			
28	23.1	18.7	14.9	11.8	9.2	7.2	5.7	4.5											
curve13		40	40	40	40	40	40	39.9	39.8	39.5	39.2	38.6	37.8	36.7	35.3	33.5			
31.4	29	26.4	23.7	21.1	18.5	16.1	13.9	12											
curve14		40	40	40	40	40	39.9	39.8	39.6	39.1	38.5	37.5	36.1	34.3	32.1	29.4			
26.5	23.5	20.5	17.7	15.1	12.8	10.7	9	7.6											
curve15		40	40	40	40	40	39.9	39.7	39.4	38.8	37.9	36.5	34.7	32.3	29.5	26.4			
23.2	20	17	14.3	11.9	9.9	8.2	6.8	5.6											
curve16		35	35	35	35	35	34.9	34.8	34.5	34	33.2	32.1	30.5	28.5	26.1	23.5			
20.6	17.9	15.2	12.8	10.7	8.9	7.4	6.1	5.1											
curve17		35	35	35	35	35	34.9	34.7	34.4	33.9	33.1	32	30.3	28.3	25.8	23.1			
20.3	17.5	14.9	12.5	10.4	8.6	7.2	5.9	4.9											
curve18		35	35	35	35	35	34.9	34.6	34.2	33.5	32.4	30.9	28.8	26.3	23.4	20.4			
17.4	14.6	12.1	9.9	8.1	6.6	5.4	4.4	3.6											
curve19		30	30	30	30	30	29.9	29.8	29.5	29	28.2	27.1	25.6	23.7	21.5	19.1			
16.6	14.2	12	10	8.3	6.8	5.6	4.6	3.8											
curve20		30	30	30	30	30	29.9	29.7	29.4	28.9	28.1	26.9	25.3	23.4	21.1	18.6			
16.1	13.6	11.4	9.5	7.8	6.4	5.3	4.3	3.6											
curve21		30	30	30	30	30	29.9	29.7	29.3	28.7	27.7	26.2	24.4	22.1	19.6	17			
14.4	12	9.9	8.1	6.6	5.4	4.4	3.6	2.9											
curve22		55	54.9	54.4	53.2	51.1	47.9	44.0	39.5	34.9	30.4	26.2	22.4	19.2	16.4	14.0			
12.0	10.4	9.0	7.8	6.8	6.0	5.3	4.7	4.1											

VC RATIO TO LOS CONVERSION (VALUE SHOWN IS LOWER LIMIT FOR THAT LOS) (URBAN ROADS USE SPEED BREAKS BELOW FOR LOS DETERMINATION) (ALL USE THE BASE VC'S TO DETERMINE EXCEEDANCE)

	BASE	RUR2	FWY
A	0.00	0.00	0.00
B	0.30	0.00	0.25
C	0.50	0.10	0.40
D	0.70	0.30	0.60
E	0.90	0.50	0.80
F	1.00	1.00	1.00

F+ 1.10 1.10 1.10  
 F++ 1.30 1.30 1.30

SPEED VC RATIO BREAKS FOR URBAN STREETS (HIGHEST SPEED FOR GIVEN LOS & FF SPEED)

FFS B C D E F  
 >47 42. 34. 27. 21. 16.  
 >37 35. 28. 22. 17. 13.  
 >32 30. 24. 18. 14. 10.  
 <33 25. 19. 13. 9. 7.

LEVEL OF SERVICE THRESHOLD BY AREA

NUM LOS DEFINITION

1 F CINCINNATI,CLEVELAND,COLUMBUS CENTRAL MPO COUNTIES (CUY,FRA,HAM)  
 2 E OTHER TMA MPOS (AKRON,CANTON,DAYTON,TOLEDO,YOUNGSTOWN + NON-CENTRAL COUNTIES FROM 1)  
 3 E OTHER MPOS & PARTS OF AREAS 1 & 2 OUTSIDE URBANIZED AREA  
 4 E RURAL NON MPO COUNTIES

PEAK SPREADING MODEL INFO (SET MAX ITERATIONS TO 0 TO DISABLE PEAK SPREADING)

MAX VC RATIO FWY: 1.30  
 MAX VC RATIO ART: 1.30  
 MAX ITERATIONS : 1000

TRUCK PCE: 2.0

AQ SEASON FACTOR: 1.08

MODEL CLASS PARAMETERS (MAX 4 CLASSES, HOURS 0-23 W/ NO OVERLAP IN CLASS, ALLOCATE ENTIRE CLASS AS TRUCK(1) OR NOT(0))

CLS TRK	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
0															
CLS BEG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0															
CLS END	23	23	0	0	0	0	0	0	0	0	0	0	0	0	0
0															
CLS NUM	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0
0															

MOVES NETWORK LINK EMISSIONS OUTPUT

COUNTY	MONTH	VMT	HC	NOX	SO2	PM2.5
ADA	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
ALL	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
ASD	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
ATB	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
ATH	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
AUG	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
BEL	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
BRO	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
BUT	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
CAR	JANUARY	0.	0.0000	0.0000	0.0000	0.0000

CHP	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
CLA	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
CLE	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
CLI	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
COL	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
COS	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
CRA	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
CUY	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
DAR	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
DEF	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
DEL	JANUARY	6694972.	0.0000	0.0000	0.0000	0.0000
ERI	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
FAI	JANUARY	2461311.	0.0000	0.0000	0.0000	0.0000
FAY	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
FRA	JANUARY	37863436.	0.0000	0.0000	0.0000	0.0000
FUL	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
GAL	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
GEA	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
GRE	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
GUE	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
HAM	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
HAN	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
HAR	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
HAS	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
HEN	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
HIG	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
HOC	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
HOL	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
HUR	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
JAC	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
JEF	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
KNO	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
LAK	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
LAW	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
LIC	JANUARY	6095631.	0.0000	0.0000	0.0000	0.0000
LOG	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
LOR	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
LUC	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
MAD	JANUARY	1372659.	0.0000	0.0000	0.0000	0.0000
MAH	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
MAR	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
MED	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
MEG	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
MER	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
MIA	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
MOE	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
MOT	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
MRG	JANUARY	0.	0.0000	0.0000	0.0000	0.0000

MRW	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
MUS	JANUARY	92732.	0.0000	0.0000	0.0000	0.0000
NOB	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
OTT	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
PAU	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
PER	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
PIC	JANUARY	1025910.	0.0000	0.0000	0.0000	0.0000
PIK	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
POR	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
PRE	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
PUT	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
RIC	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
ROS	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
SAN	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
SCI	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
SEN	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
SHE	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
STA	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
SUM	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
TRU	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
TUS	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
UNI	JANUARY	2253905.	0.0000	0.0000	0.0000	0.0000
VAN	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
VIN	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
WAR	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
WAS	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
WAY	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
WIL	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
WOO	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
WYA	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
XXX	JANUARY	186295.	0.0000	0.0000	0.0000	0.0000
TOT	JANUARY	58028396.	0.0000	0.0000	0.0000	0.0000
ADA	APRIL	0.	0.0000	0.0000	0.0000	0.0000
ALL	APRIL	0.	0.0000	0.0000	0.0000	0.0000
ASD	APRIL	0.	0.0000	0.0000	0.0000	0.0000
ATB	APRIL	0.	0.0000	0.0000	0.0000	0.0000
ATH	APRIL	0.	0.0000	0.0000	0.0000	0.0000
AUG	APRIL	0.	0.0000	0.0000	0.0000	0.0000
BEL	APRIL	0.	0.0000	0.0000	0.0000	0.0000
BRO	APRIL	0.	0.0000	0.0000	0.0000	0.0000
BUT	APRIL	0.	0.0000	0.0000	0.0000	0.0000
CAR	APRIL	0.	0.0000	0.0000	0.0000	0.0000
CHP	APRIL	0.	0.0000	0.0000	0.0000	0.0000
CLA	APRIL	0.	0.0000	0.0000	0.0000	0.0000
CLE	APRIL	0.	0.0000	0.0000	0.0000	0.0000
CLI	APRIL	0.	0.0000	0.0000	0.0000	0.0000
COL	APRIL	0.	0.0000	0.0000	0.0000	0.0000
COS	APRIL	0.	0.0000	0.0000	0.0000	0.0000

CRA	APRIL	0.	0.0000	0.0000	0.0000	0.0000
CUY	APRIL	0.	0.0000	0.0000	0.0000	0.0000
DAR	APRIL	0.	0.0000	0.0000	0.0000	0.0000
DEF	APRIL	0.	0.0000	0.0000	0.0000	0.0000
DEL	APRIL	6694972.	0.0000	0.0000	0.0000	0.0000
ERI	APRIL	0.	0.0000	0.0000	0.0000	0.0000
FAI	APRIL	2461311.	0.0000	0.0000	0.0000	0.0000
FAY	APRIL	0.	0.0000	0.0000	0.0000	0.0000
FRA	APRIL	37863436.	0.0000	0.0000	0.0000	0.0000
FUL	APRIL	0.	0.0000	0.0000	0.0000	0.0000
GAL	APRIL	0.	0.0000	0.0000	0.0000	0.0000
GEA	APRIL	0.	0.0000	0.0000	0.0000	0.0000
GRE	APRIL	0.	0.0000	0.0000	0.0000	0.0000
GUE	APRIL	0.	0.0000	0.0000	0.0000	0.0000
HAM	APRIL	0.	0.0000	0.0000	0.0000	0.0000
HAN	APRIL	0.	0.0000	0.0000	0.0000	0.0000
HAR	APRIL	0.	0.0000	0.0000	0.0000	0.0000
HAS	APRIL	0.	0.0000	0.0000	0.0000	0.0000
HEN	APRIL	0.	0.0000	0.0000	0.0000	0.0000
HIG	APRIL	0.	0.0000	0.0000	0.0000	0.0000
HOC	APRIL	0.	0.0000	0.0000	0.0000	0.0000
HOL	APRIL	0.	0.0000	0.0000	0.0000	0.0000
HUR	APRIL	0.	0.0000	0.0000	0.0000	0.0000
JAC	APRIL	0.	0.0000	0.0000	0.0000	0.0000
JEF	APRIL	0.	0.0000	0.0000	0.0000	0.0000
KNO	APRIL	0.	0.0000	0.0000	0.0000	0.0000
LAK	APRIL	0.	0.0000	0.0000	0.0000	0.0000
LAW	APRIL	0.	0.0000	0.0000	0.0000	0.0000
LIC	APRIL	6095631.	0.0000	0.0000	0.0000	0.0000
LOG	APRIL	0.	0.0000	0.0000	0.0000	0.0000
LOR	APRIL	0.	0.0000	0.0000	0.0000	0.0000
LUC	APRIL	0.	0.0000	0.0000	0.0000	0.0000
MAD	APRIL	1372659.	0.0000	0.0000	0.0000	0.0000
MAH	APRIL	0.	0.0000	0.0000	0.0000	0.0000
MAR	APRIL	0.	0.0000	0.0000	0.0000	0.0000
MED	APRIL	0.	0.0000	0.0000	0.0000	0.0000
MEG	APRIL	0.	0.0000	0.0000	0.0000	0.0000
MER	APRIL	0.	0.0000	0.0000	0.0000	0.0000
MIA	APRIL	0.	0.0000	0.0000	0.0000	0.0000
MOE	APRIL	0.	0.0000	0.0000	0.0000	0.0000
MOT	APRIL	0.	0.0000	0.0000	0.0000	0.0000
MRG	APRIL	0.	0.0000	0.0000	0.0000	0.0000
MRW	APRIL	0.	0.0000	0.0000	0.0000	0.0000
MUS	APRIL	92732.	0.0000	0.0000	0.0000	0.0000
NOB	APRIL	0.	0.0000	0.0000	0.0000	0.0000
OTT	APRIL	0.	0.0000	0.0000	0.0000	0.0000
PAU	APRIL	0.	0.0000	0.0000	0.0000	0.0000
PER	APRIL	0.	0.0000	0.0000	0.0000	0.0000



PIC	APRIL	1025910.	0.0000	0.0000	0.0000	0.0000
PIK	APRIL	0.	0.0000	0.0000	0.0000	0.0000
POR	APRIL	0.	0.0000	0.0000	0.0000	0.0000
PRE	APRIL	0.	0.0000	0.0000	0.0000	0.0000
PUT	APRIL	0.	0.0000	0.0000	0.0000	0.0000
RIC	APRIL	0.	0.0000	0.0000	0.0000	0.0000
ROS	APRIL	0.	0.0000	0.0000	0.0000	0.0000
SAN	APRIL	0.	0.0000	0.0000	0.0000	0.0000
SCI	APRIL	0.	0.0000	0.0000	0.0000	0.0000
SEN	APRIL	0.	0.0000	0.0000	0.0000	0.0000
SHE	APRIL	0.	0.0000	0.0000	0.0000	0.0000
STA	APRIL	0.	0.0000	0.0000	0.0000	0.0000
SUM	APRIL	0.	0.0000	0.0000	0.0000	0.0000
TRU	APRIL	0.	0.0000	0.0000	0.0000	0.0000
TUS	APRIL	0.	0.0000	0.0000	0.0000	0.0000
UNI	APRIL	2253905.	0.0000	0.0000	0.0000	0.0000
VAN	APRIL	0.	0.0000	0.0000	0.0000	0.0000
VIN	APRIL	0.	0.0000	0.0000	0.0000	0.0000
WAR	APRIL	0.	0.0000	0.0000	0.0000	0.0000
WAS	APRIL	0.	0.0000	0.0000	0.0000	0.0000
WAY	APRIL	0.	0.0000	0.0000	0.0000	0.0000
WIL	APRIL	0.	0.0000	0.0000	0.0000	0.0000
WOO	APRIL	0.	0.0000	0.0000	0.0000	0.0000
WYA	APRIL	0.	0.0000	0.0000	0.0000	0.0000
XXX	APRIL	186295.	0.0000	0.0000	0.0000	0.0000
TOT	APRIL	58028396.	0.0000	0.0000	0.0000	0.0000
ADA	JULY	0.	0.0000	0.0000	0.0000	0.0000
ALL	JULY	0.	0.0000	0.0000	0.0000	0.0000
ASD	JULY	0.	0.0000	0.0000	0.0000	0.0000
ATB	JULY	0.	0.0000	0.0000	0.0000	0.0000
ATH	JULY	0.	0.0000	0.0000	0.0000	0.0000
AUG	JULY	0.	0.0000	0.0000	0.0000	0.0000
BEL	JULY	0.	0.0000	0.0000	0.0000	0.0000
BRO	JULY	0.	0.0000	0.0000	0.0000	0.0000
BUT	JULY	0.	0.0000	0.0000	0.0000	0.0000
CAR	JULY	0.	0.0000	0.0000	0.0000	0.0000
CHP	JULY	0.	0.0000	0.0000	0.0000	0.0000
CLA	JULY	0.	0.0000	0.0000	0.0000	0.0000
CLE	JULY	0.	0.0000	0.0000	0.0000	0.0000
CLI	JULY	0.	0.0000	0.0000	0.0000	0.0000
COL	JULY	0.	0.0000	0.0000	0.0000	0.0000
COS	JULY	0.	0.0000	0.0000	0.0000	0.0000
CRA	JULY	0.	0.0000	0.0000	0.0000	0.0000
CUY	JULY	0.	0.0000	0.0000	0.0000	0.0000
DAR	JULY	0.	0.0000	0.0000	0.0000	0.0000
DEF	JULY	0.	0.0000	0.0000	0.0000	0.0000
DEL	JULY	7230570.	0.3221	0.8180	0.0000	0.0000
ERI	JULY	0.	0.0000	0.0000	0.0000	0.0000

FAI	JULY	2658216.	0.1265	0.3055	0.0000	0.0000
FAY	JULY	0.	0.0000	0.0000	0.0000	0.0000
FRA	JULY	40892512.	1.9879	5.1119	0.0000	0.0000
FUL	JULY	0.	0.0000	0.0000	0.0000	0.0000
GAL	JULY	0.	0.0000	0.0000	0.0000	0.0000
GEA	JULY	0.	0.0000	0.0000	0.0000	0.0000
GRE	JULY	0.	0.0000	0.0000	0.0000	0.0000
GUE	JULY	0.	0.0000	0.0000	0.0000	0.0000
HAM	JULY	0.	0.0000	0.0000	0.0000	0.0000
HAN	JULY	0.	0.0000	0.0000	0.0000	0.0000
HAR	JULY	0.	0.0000	0.0000	0.0000	0.0000
HAS	JULY	0.	0.0000	0.0000	0.0000	0.0000
HEN	JULY	0.	0.0000	0.0000	0.0000	0.0000
HIG	JULY	0.	0.0000	0.0000	0.0000	0.0000
HOC	JULY	0.	0.0000	0.0000	0.0000	0.0000
HOL	JULY	0.	0.0000	0.0000	0.0000	0.0000
HUR	JULY	0.	0.0000	0.0000	0.0000	0.0000
JAC	JULY	0.	0.0000	0.0000	0.0000	0.0000
JEF	JULY	0.	0.0000	0.0000	0.0000	0.0000
KNO	JULY	0.	0.0000	0.0000	0.0000	0.0000
LAK	JULY	0.	0.0000	0.0000	0.0000	0.0000
LAW	JULY	0.	0.0000	0.0000	0.0000	0.0000
LIC	JULY	6583282.	0.2889	0.7691	0.0000	0.0000
LOG	JULY	0.	0.0000	0.0000	0.0000	0.0000
LOR	JULY	0.	0.0000	0.0000	0.0000	0.0000
LUC	JULY	0.	0.0000	0.0000	0.0000	0.0000
MAD	JULY	1482472.	0.0591	0.1792	0.0000	0.0000
MAH	JULY	0.	0.0000	0.0000	0.0000	0.0000
MAR	JULY	0.	0.0000	0.0000	0.0000	0.0000
MED	JULY	0.	0.0000	0.0000	0.0000	0.0000
MEG	JULY	0.	0.0000	0.0000	0.0000	0.0000
MER	JULY	0.	0.0000	0.0000	0.0000	0.0000
MIA	JULY	0.	0.0000	0.0000	0.0000	0.0000
MOE	JULY	0.	0.0000	0.0000	0.0000	0.0000
MOT	JULY	0.	0.0000	0.0000	0.0000	0.0000
MRG	JULY	0.	0.0000	0.0000	0.0000	0.0000
MRW	JULY	0.	0.0000	0.0000	0.0000	0.0000
MUS	JULY	100150.	0.0034	0.0127	0.0000	0.0000
NOB	JULY	0.	0.0000	0.0000	0.0000	0.0000
OTT	JULY	0.	0.0000	0.0000	0.0000	0.0000
PAU	JULY	0.	0.0000	0.0000	0.0000	0.0000
PER	JULY	0.	0.0000	0.0000	0.0000	0.0000
PIC	JULY	1107983.	0.0456	0.1186	0.0000	0.0000
PIK	JULY	0.	0.0000	0.0000	0.0000	0.0000
POR	JULY	0.	0.0000	0.0000	0.0000	0.0000
PRE	JULY	0.	0.0000	0.0000	0.0000	0.0000
PUT	JULY	0.	0.0000	0.0000	0.0000	0.0000
RIC	JULY	0.	0.0000	0.0000	0.0000	0.0000

ROS	JULY	0.	0.0000	0.0000	0.0000	0.0000
SAN	JULY	0.	0.0000	0.0000	0.0000	0.0000
SCI	JULY	0.	0.0000	0.0000	0.0000	0.0000
SEN	JULY	0.	0.0000	0.0000	0.0000	0.0000
SHE	JULY	0.	0.0000	0.0000	0.0000	0.0000
STA	JULY	0.	0.0000	0.0000	0.0000	0.0000
SUM	JULY	0.	0.0000	0.0000	0.0000	0.0000
TRU	JULY	0.	0.0000	0.0000	0.0000	0.0000
TUS	JULY	0.	0.0000	0.0000	0.0000	0.0000
UNI	JULY	2434218.	0.1014	0.2943	0.0000	0.0000
VAN	JULY	0.	0.0000	0.0000	0.0000	0.0000
VIN	JULY	0.	0.0000	0.0000	0.0000	0.0000
WAR	JULY	0.	0.0000	0.0000	0.0000	0.0000
WAS	JULY	0.	0.0000	0.0000	0.0000	0.0000
WAY	JULY	0.	0.0000	0.0000	0.0000	0.0000
WIL	JULY	0.	0.0000	0.0000	0.0000	0.0000
WOO	JULY	0.	0.0000	0.0000	0.0000	0.0000
WYA	JULY	0.	0.0000	0.0000	0.0000	0.0000
XXX	JULY	201198.	0.0108	0.0266	0.0000	0.0000
TOT	JULY	62670672.	2.9447	7.6335	0.0000	0.0000

MOVES INTRAZONAL EMISSIONS OUTPUT						
MONTH	VMT	HC	NOX	SO2	PM2.5	
JANUARY	29632.	0.0000	0.0000	0.0000	0.0000	0.0000
APRIL	29632.	0.0000	0.0000	0.0000	0.0000	0.0000
JULY	32002.	0.0021	0.0040	0.0000	0.0000	0.0000

MOVES VEHICLE BASED EMISSIONS OUTPUT						
MONTH	VEHICLES	HC	NOX	SO2	PM2.5	
JANUARY	2718164.	0.0000	0.0000	0.0000	0.0000	0.0000
APRIL	2718164.	0.0000	0.0000	0.0000	0.0000	0.0000
JULY	2935617.	10.8549	3.4116	0.0000	0.0000	0.0000

## Appendix – MORPC Travel Demand Model Emission Run Report for 2050

### Ozone Analysis

#### MOVES BASED EMISSIONS REPORT

Ozone Analysis with MOVES - MORPC

Loaded Network: ..\..\3C Model Results\2050\MOR50L24ASN\_BASE.NET  
 Network Emission Factors: ..\..\Ozone\_upd\factors\MORPC\_2050\_ozone\_3source\_rpd.csv  
 Vehicle Emission Factors: ..\..\Ozone\_upd\factors\MORPC\_2050\_ozone\_3source\_rpv.csv  
 Vehicle Population : ..\..\Ozone\_upd\factors\Source\_Type\_Pop\_2050\_MORPC\_on-Model.csv  
 Intrazonal Trips : ..\..\3C Model Results\2050\DEL2050.txt  
 Area File (sq mi): ..\..\3C Model Results\3C\_TAZ\_areain.txt  
 Volume Field Used: VOL24\_TOT  
 Truck Volume Field Used: NONE  
 Capacity Field Used: CAPHRAM

#### ----- CMS/AQ REPORT

POSTCMS10, UPDATED DEC 2009, GTG  
 DATE:04/30/2020 TIME:18:04:15

#### PARAMETER FILE DUMP (DAILY.DAT FILE)

15	16	17	18	19	20	21	22	23	7	8	9	10	11	12	13	14
PCTADT																
URB FWY	0.9	0.6	0.5	0.6	1	2.5	5.4	7.3	6.2	5	4.8	5	5.2	5.5	6.2	
7.3	8	8	5.8	4.1	3.4	2.9	2.2	1.6								
URB ART	0.6	0.4	0.3	0.4	0.7	2	4	6.3	5.7	5	5.1	5.8	6.2	6.2	6.8	
7.7	8.3	8.2	6.1	4.5	3.6	2.8	1.9	1.2								
RUR FWY	1.2	1	0.9	1	1.4	2.6	4.4	5.4	5.1	5.2	5.5	5.7	5.9	6.2	6.7	
7.3	7.4	7	5.4	4.3	3.5	2.9	2.3	1.7								
RUR ART	0.8	0.6	0.5	0.7	1.2	2.7	5.2	6.4	5.6	5.2	5.2	5.5	5.7	5.9	6.4	
7.5	8.1	7.9	5.6	4.1	3.3	2.7	1.9	1.3								
PCTADT T																
URB FWY	1.8	1.6	1.6	1.8	2.2	3.1	4.2	4.9	5.6	6.2	6.5	6.6	6.5	6.5	6.4	
6	5.3	4.6	4.2	3.6	3.2	2.9	2.5	2.2								
URB ART	0.9	0.8	0.9	1.1	1.6	2.6	4.6	6.3	7.1	7.3	7.3	7.3	7.3	7.3	7.3	
7	5.8	4.7	3.4	2.7	2.2	1.8	1.5	1.2								
RUR FWY	2.1	1.9	1.8	2	2.4	3.2	4.1	4.5	4.9	5.5	5.8	6	6.1	6.1	6	
5.8	5.5	5.1	4.6	4.2	3.7	3.3	3	2.5								
RUR ART	1.5	1.4	1.4	1.7	2.3	3.1	4.6	5.4	6.2	6.6	6.8	6.9	6.8	6.8	6.6	
6.2	5.5	4.6	3.7	3.1	2.6	2.4	2.1	1.8								
PCTDIR																
URB FWY	38	40	40	46	56	64	70	70	68	62	58	52	52	52	50	
46	38	38	46	52	46	42	42	40								
URB ART	44	46	44	48	54	62	66	68	64	56	54	52	50	50	50	
46	40	38	46	52	48	46	46	46								

May 2020

Air Quality Conformity Appendix

91 MORPC 2020-2050 Metropolitan Transportation Plan  
 LCATS 2050 Metropolitan Transportation Plan  
 MORPC 2021-2024 Transportation Improvement Program  
 Air  
 LCATS 2021-2024 Transportation Improvement Program  
 CORPO 2021-2024 Transportation Improvement Program

RUR FWY	44	46	48	54	60	68	68	64	58	54	52	50	50	52	52
48	42	40	44	48	48	44	46	44							
RUR ART	40	42	44	48	58	66	72	68	60	56	54	50	50	50	50
46	40	38	46	50	46	44	44								
LOS E VC	0	0.625	1.25	1.875	2.5	3.125	3.75	4.375	5	5.625	6.25	6.875	7.5	8.125	8.75
9.375	10	10.625	11.25	11.875	12.5	13.125	13.75	14.375							
SPEEDVC															
curve1	75	75	75	75	75	75	74.9	74.8	74.6	74.2	73.5	72.3	70.5	67.8	64.2
59.5	54	47.7	41.2	34.9	28.9	23.7	19.2	15.5							
curve2	70	70	70	70	70	70	70	69.9	69.8	69.6	69.2	68.4	67.1	65.1	62.2
58.2	53	47	40.5	33.9	27.7	22.2	17.6	13.8							
curve3	65	65	65	65	65	65	65	65	65	64.9	64.8	64.4	63.8	62.6	60.5
57	52	45.4	37.8	29.9	22.7	16.7	12.1	8.6							
curve4	60	60	60	60	60	60	60	60	60	59.9	59.8	59.6	59.1	58.2	56.7
54.3	50.8	46.1	40.3	33.8	27.3	21.3	16.2	12.2							
curve5	55	55	55	55	55	55	55	55	55	55	55	54.9	54.7	54.3	53.6
52.3	50	46.5	41.5	35.3	28.5	21.9	16.1	11.5							
curve6	60	60	60	60	60	60	60	60	59.9	59.8	59.7	59.4	59.1	58.5	57.7
56.5	55	53.1	50.7	47.9	44.7	41.1	37.3	33.4							
curve7	55	55	55	55	55	55	55	55	54.9	54.9	54.7	54.5	54.2	53.8	53.1
52.2	50.9	49.3	47.3	44.9	42.1	39	35.7	32.2							
curve8	50	50	50	50	50	50	50	50	49.9	49.9	49.8	49.6	49.4	49	48.5
47.7	46.7	45.4	43.8	41.8	39.5	36.8	33.9	30.9							
curve9	45	45	45	45	45	45	45	45	45	44.9	44.8	44.7	44.4	44.1	43.6
43	42.1	40.9	39.4	37.6	35.5	33.1	30.5	27.8							
curve10	50	50	50	50	50	49.9	49.8	49.7	49.4	49	48.4	47.5	46.5	45.1	43.5
39.6	37.3	34.9	32.4	29.8	27.3	24.9	22.6	20.4							
curve11	50	50	50	50	50	50	49.9	49.7	49.4	48.9	48	46.7	44.9	42.5	39.6
32.6	28.7	25	21.4	18.2	15.3	12.9	10.8	9							
curve12	50	50	50	50	50	50	49.9	49.8	49.6	49.1	48.2	46.8	44.5	41.4	37.5
28	23.1	18.7	14.9	11.8	9.2	7.2	5.7	4.5							
curve13	40	40	40	40	40	40	40	39.9	39.8	39.5	39.2	38.6	37.8	36.7	35.3
31.4	29	26.4	23.7	21.1	18.5	16.1	13.9	12							
curve14	40	40	40	40	40	40	39.9	39.8	39.6	39.1	38.5	37.5	36.1	34.3	32.1
26.5	23.5	20.5	17.7	15.1	12.8	10.7	9	7.6							
curve15	40	40	40	40	40	40	39.9	39.7	39.4	38.8	37.9	36.5	34.7	32.3	29.5
23.2	20	17	14.3	11.9	9.9	8.2	6.8	5.6							
curve16	35	35	35	35	35	35	34.9	34.8	34.5	34	33.2	32.1	30.5	28.5	26.1
20.6	17.9	15.2	12.8	10.7	8.9	7.4	6.1	5.1							
curve17	35	35	35	35	35	35	34.9	34.7	34.4	33.9	33.1	32	30.3	28.3	25.8
20.3	17.5	14.9	12.5	10.4	8.6	7.2	5.9	4.9							
curve18	35	35	35	35	35	35	34.9	34.6	34.2	33.5	32.4	30.9	28.8	26.3	23.4
17.4	14.6	12.1	9.9	8.1	6.6	5.4	4.4	3.6							
curve19	30	30	30	30	30	30	29.9	29.8	29.5	29	28.2	27.1	25.6	23.7	21.5
16.6	14.2	12	10	8.3	6.8	5.6	4.6	3.8							
curve20	30	30	30	30	30	30	29.9	29.7	29.4	28.9	28.1	26.9	25.3	23.4	21.1
16.1	13.6	11.4	9.5	7.8	6.4	5.3	4.3	3.6							

curve21	30	30	30	30	30	29.9	29.7	29.3	28.7	27.7	26.2	24.4	22.1	19.6	17
14.4	12	9.9	8.1	6.6	5.4	4.4	3.6	2.9							
curve22	55	54.9	54.4	53.2	51.1	47.9	44.0	39.5	34.9	30.4	26.2	22.4	19.2	16.4	14.0
12.0	10.4	9.0	7.8	6.8	6.0	5.3	4.7	4.1							

VC RATIO TO LOS CONVERSION (VALUE SHOWN IS LOWER LIMIT FOR THAT LOS) (URBAN ROADS USE SPEED BREAKS BELOW FOR LOS DETERMINATION) (ALL USE THE BASE VC'S TO DETERMINE EXCEEDANCE)

	BASE	RUR2	FWY
A	0.00	0.00	0.00
B	0.30	0.00	0.25
C	0.50	0.10	0.40
D	0.70	0.30	0.60
E	0.90	0.50	0.80
F	1.00	1.00	1.00
F+	1.10	1.10	1.10
F++	1.30	1.30	1.30

SPEED VC RATIO BREAKS FOR URBAN STREETS (HIGHEST SPEED FOR GIVEN LOS & FF SPEED)

FFS	B	C	D	E	F
>47	42.	34.	27.	21.	16.
>37	35.	28.	22.	17.	13.
>32	30.	24.	18.	14.	10.
<33	25.	19.	13.	9.	7.

LEVEL OF SERVICE THRESHOLD BY AREA

NUM LOS DEFINITION

- 1 F CINCINNATI, CLEVELAND, COLUMBUS CENTRAL MPO COUNTIES (CUY, FRA, HAM)
- 2 E OTHER TMA MPOS (AKRON, CANTON, DAYTON, TOLEDO, YOUNGSTOWN + NON-CENTRAL COUNTIES FROM 1)
- 3 E OTHER MPOS & PARTS OF AREAS 1 & 2 OUTSIDE URBANIZED AREA
- 4 E RURAL NON MPO COUNTIES

PEAK SPREADING MODEL INFO (SET MAX ITERATIONS TO 0 TO DISABLE PEAK SPREADING)

MAX VC RATIO FWY: 1.30  
 MAX VC RATIO ART: 1.30  
 MAX ITERATIONS : 1000

TRUCK PCE: 2.0

AQ SEASON FACTOR: 1.08

MODEL CLASS PARAMETERS (MAX 4 CLASSES, HOURS 0-23 W/ NO OVERLAP IN CLASS, ALLOCATE ENTIRE CLASS AS TRUCK(1) OR NOT(0))

CLS	TRK	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
0																
CLS	BEG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0																
CLS	END	23	23	0	0	0	0	0	0	0	0	0	0	0	0	0
0																

CLS NUM 1 3 0 0 0 0 0 0 0 0 0 0 0 0 0 0

MOVES NETWORK LINK EMISSIONS OUTPUT

COUNTY	MONTH	VMT	HC	NOX	SO2	PM2.5
ADA	JANUARY		0.	0.0000	0.0000	0.0000
ALL	JANUARY		0.	0.0000	0.0000	0.0000
ASD	JANUARY		0.	0.0000	0.0000	0.0000
ATB	JANUARY		0.	0.0000	0.0000	0.0000
ATH	JANUARY		0.	0.0000	0.0000	0.0000
AUG	JANUARY		0.	0.0000	0.0000	0.0000
BEL	JANUARY		0.	0.0000	0.0000	0.0000
BRO	JANUARY		0.	0.0000	0.0000	0.0000
BUT	JANUARY		0.	0.0000	0.0000	0.0000
CAR	JANUARY		0.	0.0000	0.0000	0.0000
CHP	JANUARY		0.	0.0000	0.0000	0.0000
CLA	JANUARY		0.	0.0000	0.0000	0.0000
CLE	JANUARY		0.	0.0000	0.0000	0.0000
CLI	JANUARY		0.	0.0000	0.0000	0.0000
COL	JANUARY		0.	0.0000	0.0000	0.0000
COS	JANUARY		0.	0.0000	0.0000	0.0000
CRA	JANUARY		0.	0.0000	0.0000	0.0000
CUY	JANUARY		0.	0.0000	0.0000	0.0000
DAR	JANUARY		0.	0.0000	0.0000	0.0000
DEF	JANUARY		0.	0.0000	0.0000	0.0000
DEL	JANUARY	7337385.	0.	0.0000	0.0000	0.0000
ERI	JANUARY		0.	0.0000	0.0000	0.0000
FAI	JANUARY	2681546.	0.	0.0000	0.0000	0.0000
FAY	JANUARY		0.	0.0000	0.0000	0.0000
FRA	JANUARY	40434708.	0.	0.0000	0.0000	0.0000
FUL	JANUARY		0.	0.0000	0.0000	0.0000
GAL	JANUARY		0.	0.0000	0.0000	0.0000
GEA	JANUARY		0.	0.0000	0.0000	0.0000
GRE	JANUARY		0.	0.0000	0.0000	0.0000
GUE	JANUARY		0.	0.0000	0.0000	0.0000
HAM	JANUARY		0.	0.0000	0.0000	0.0000
HAN	JANUARY		0.	0.0000	0.0000	0.0000
HAR	JANUARY		0.	0.0000	0.0000	0.0000
HAS	JANUARY		0.	0.0000	0.0000	0.0000
HEN	JANUARY		0.	0.0000	0.0000	0.0000
HIG	JANUARY		0.	0.0000	0.0000	0.0000
HOC	JANUARY		0.	0.0000	0.0000	0.0000
HOL	JANUARY		0.	0.0000	0.0000	0.0000
HUR	JANUARY		0.	0.0000	0.0000	0.0000
JAC	JANUARY		0.	0.0000	0.0000	0.0000
JEF	JANUARY		0.	0.0000	0.0000	0.0000
KNO	JANUARY		0.	0.0000	0.0000	0.0000
LAK	JANUARY		0.	0.0000	0.0000	0.0000

LAW	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
LIC	JANUARY	6618738.	0.0000	0.0000	0.0000	0.0000
LOG	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
LOR	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
LUC	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
MAD	JANUARY	1485161.	0.0000	0.0000	0.0000	0.0000
MAH	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
MAR	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
MED	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
MEG	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
MER	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
MIA	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
MOE	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
MOT	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
MRG	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
MRW	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
MUS	JANUARY	100597.	0.0000	0.0000	0.0000	0.0000
NOB	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
OTT	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
PAU	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
PER	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
PIC	JANUARY	1121710.	0.0000	0.0000	0.0000	0.0000
PIK	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
POR	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
PRE	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
PUT	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
RIC	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
ROS	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
SAN	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
SCI	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
SEN	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
SHE	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
STA	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
SUM	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
TRU	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
TUS	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
UNI	JANUARY	2482710.	0.0000	0.0000	0.0000	0.0000
VAN	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
VIN	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
WAR	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
WAS	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
WAY	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
WIL	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
WOO	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
WYA	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
XXX	JANUARY	202657.	0.0000	0.0000	0.0000	0.0000
TOT	JANUARY	62447524.	0.0000	0.0000	0.0000	0.0000
ADA	APRIL	0.	0.0000	0.0000	0.0000	0.0000



ALL	APRIL	0.	0.0000	0.0000	0.0000	0.0000
ASD	APRIL	0.	0.0000	0.0000	0.0000	0.0000
ATB	APRIL	0.	0.0000	0.0000	0.0000	0.0000
ATH	APRIL	0.	0.0000	0.0000	0.0000	0.0000
AUG	APRIL	0.	0.0000	0.0000	0.0000	0.0000
BEL	APRIL	0.	0.0000	0.0000	0.0000	0.0000
BRO	APRIL	0.	0.0000	0.0000	0.0000	0.0000
BUT	APRIL	0.	0.0000	0.0000	0.0000	0.0000
CAR	APRIL	0.	0.0000	0.0000	0.0000	0.0000
CHP	APRIL	0.	0.0000	0.0000	0.0000	0.0000
CLA	APRIL	0.	0.0000	0.0000	0.0000	0.0000
CLE	APRIL	0.	0.0000	0.0000	0.0000	0.0000
CLI	APRIL	0.	0.0000	0.0000	0.0000	0.0000
COL	APRIL	0.	0.0000	0.0000	0.0000	0.0000
COS	APRIL	0.	0.0000	0.0000	0.0000	0.0000
CRA	APRIL	0.	0.0000	0.0000	0.0000	0.0000
CUY	APRIL	0.	0.0000	0.0000	0.0000	0.0000
DAR	APRIL	0.	0.0000	0.0000	0.0000	0.0000
DEF	APRIL	0.	0.0000	0.0000	0.0000	0.0000
DEL	APRIL	7337385.	0.0000	0.0000	0.0000	0.0000
ERI	APRIL	0.	0.0000	0.0000	0.0000	0.0000
FAY	APRIL	2681546.	0.0000	0.0000	0.0000	0.0000
FRA	APRIL	40434708.	0.0000	0.0000	0.0000	0.0000
FUL	APRIL	0.	0.0000	0.0000	0.0000	0.0000
GAL	APRIL	0.	0.0000	0.0000	0.0000	0.0000
GEA	APRIL	0.	0.0000	0.0000	0.0000	0.0000
GRE	APRIL	0.	0.0000	0.0000	0.0000	0.0000
GUE	APRIL	0.	0.0000	0.0000	0.0000	0.0000
HAM	APRIL	0.	0.0000	0.0000	0.0000	0.0000
HAN	APRIL	0.	0.0000	0.0000	0.0000	0.0000
HAR	APRIL	0.	0.0000	0.0000	0.0000	0.0000
HAS	APRIL	0.	0.0000	0.0000	0.0000	0.0000
HEN	APRIL	0.	0.0000	0.0000	0.0000	0.0000
HIG	APRIL	0.	0.0000	0.0000	0.0000	0.0000
HOC	APRIL	0.	0.0000	0.0000	0.0000	0.0000
HOL	APRIL	0.	0.0000	0.0000	0.0000	0.0000
HUR	APRIL	0.	0.0000	0.0000	0.0000	0.0000
JAC	APRIL	0.	0.0000	0.0000	0.0000	0.0000
JEF	APRIL	0.	0.0000	0.0000	0.0000	0.0000
KNO	APRIL	0.	0.0000	0.0000	0.0000	0.0000
LAK	APRIL	0.	0.0000	0.0000	0.0000	0.0000
LAW	APRIL	0.	0.0000	0.0000	0.0000	0.0000
LIC	APRIL	6618738.	0.0000	0.0000	0.0000	0.0000
LOG	APRIL	0.	0.0000	0.0000	0.0000	0.0000
LOR	APRIL	0.	0.0000	0.0000	0.0000	0.0000
LUC	APRIL	0.	0.0000	0.0000	0.0000	0.0000
MAD	APRIL	1485161.	0.0000	0.0000	0.0000	0.0000

MAH	APRIL	0.	0.0000	0.0000	0.0000	0.0000
MAR	APRIL	0.	0.0000	0.0000	0.0000	0.0000
MED	APRIL	0.	0.0000	0.0000	0.0000	0.0000
MEG	APRIL	0.	0.0000	0.0000	0.0000	0.0000
MER	APRIL	0.	0.0000	0.0000	0.0000	0.0000
MIA	APRIL	0.	0.0000	0.0000	0.0000	0.0000
MOE	APRIL	0.	0.0000	0.0000	0.0000	0.0000
MOT	APRIL	0.	0.0000	0.0000	0.0000	0.0000
MRG	APRIL	0.	0.0000	0.0000	0.0000	0.0000
MRW	APRIL	0.	0.0000	0.0000	0.0000	0.0000
MUS	APRIL	100597.	0.0000	0.0000	0.0000	0.0000
NOB	APRIL	0.	0.0000	0.0000	0.0000	0.0000
OTT	APRIL	0.	0.0000	0.0000	0.0000	0.0000
PAU	APRIL	0.	0.0000	0.0000	0.0000	0.0000
PER	APRIL	0.	0.0000	0.0000	0.0000	0.0000
PIC	APRIL	1121710.	0.0000	0.0000	0.0000	0.0000
PIK	APRIL	0.	0.0000	0.0000	0.0000	0.0000
POR	APRIL	0.	0.0000	0.0000	0.0000	0.0000
PRE	APRIL	0.	0.0000	0.0000	0.0000	0.0000
PUT	APRIL	0.	0.0000	0.0000	0.0000	0.0000
RIC	APRIL	0.	0.0000	0.0000	0.0000	0.0000
ROS	APRIL	0.	0.0000	0.0000	0.0000	0.0000
SAN	APRIL	0.	0.0000	0.0000	0.0000	0.0000
SCI	APRIL	0.	0.0000	0.0000	0.0000	0.0000
SEN	APRIL	0.	0.0000	0.0000	0.0000	0.0000
SHE	APRIL	0.	0.0000	0.0000	0.0000	0.0000
STA	APRIL	0.	0.0000	0.0000	0.0000	0.0000
SUM	APRIL	0.	0.0000	0.0000	0.0000	0.0000
TRU	APRIL	0.	0.0000	0.0000	0.0000	0.0000
TUS	APRIL	0.	0.0000	0.0000	0.0000	0.0000
UNI	APRIL	2482710.	0.0000	0.0000	0.0000	0.0000
VAN	APRIL	0.	0.0000	0.0000	0.0000	0.0000
VIN	APRIL	0.	0.0000	0.0000	0.0000	0.0000
WAR	APRIL	0.	0.0000	0.0000	0.0000	0.0000
WAS	APRIL	0.	0.0000	0.0000	0.0000	0.0000
WAY	APRIL	0.	0.0000	0.0000	0.0000	0.0000
WIL	APRIL	0.	0.0000	0.0000	0.0000	0.0000
WOO	APRIL	0.	0.0000	0.0000	0.0000	0.0000
WYA	APRIL	0.	0.0000	0.0000	0.0000	0.0000
XXX	APRIL	202657.	0.0000	0.0000	0.0000	0.0000
TOT	APRIL	62447524.	0.0000	0.0000	0.0000	0.0000
ADA	JULY	0.	0.0000	0.0000	0.0000	0.0000
ALL	JULY	0.	0.0000	0.0000	0.0000	0.0000
ASD	JULY	0.	0.0000	0.0000	0.0000	0.0000
ATB	JULY	0.	0.0000	0.0000	0.0000	0.0000
ATH	JULY	0.	0.0000	0.0000	0.0000	0.0000
AUG	JULY	0.	0.0000	0.0000	0.0000	0.0000
BEL	JULY	0.	0.0000	0.0000	0.0000	0.0000

BRO	JULY	0.	0.0000	0.0000	0.0000	0.0000
BUT	JULY	0.	0.0000	0.0000	0.0000	0.0000
CAR	JULY	0.	0.0000	0.0000	0.0000	0.0000
CHP	JULY	0.	0.0000	0.0000	0.0000	0.0000
CLA	JULY	0.	0.0000	0.0000	0.0000	0.0000
CLE	JULY	0.	0.0000	0.0000	0.0000	0.0000
CLI	JULY	0.	0.0000	0.0000	0.0000	0.0000
COL	JULY	0.	0.0000	0.0000	0.0000	0.0000
COS	JULY	0.	0.0000	0.0000	0.0000	0.0000
CRA	JULY	0.	0.0000	0.0000	0.0000	0.0000
CUY	JULY	0.	0.0000	0.0000	0.0000	0.0000
DAR	JULY	0.	0.0000	0.0000	0.0000	0.0000
DEF	JULY	0.	0.0000	0.0000	0.0000	0.0000
DEL	JULY	7924376.	0.3372	0.8597	0.0000	0.0000
ERI	JULY	0.	0.0000	0.0000	0.0000	0.0000
FAI	JULY	2896069.	0.1306	0.3188	0.0000	0.0000
FAY	JULY	0.	0.0000	0.0000	0.0000	0.0000
FRA	JULY	43669488.	2.0232	5.2359	0.0000	0.0000
FUL	JULY	0.	0.0000	0.0000	0.0000	0.0000
GAL	JULY	0.	0.0000	0.0000	0.0000	0.0000
GEA	JULY	0.	0.0000	0.0000	0.0000	0.0000
GRE	JULY	0.	0.0000	0.0000	0.0000	0.0000
GUE	JULY	0.	0.0000	0.0000	0.0000	0.0000
HAM	JULY	0.	0.0000	0.0000	0.0000	0.0000
HAN	JULY	0.	0.0000	0.0000	0.0000	0.0000
HAR	JULY	0.	0.0000	0.0000	0.0000	0.0000
HAS	JULY	0.	0.0000	0.0000	0.0000	0.0000
HEN	JULY	0.	0.0000	0.0000	0.0000	0.0000
HIG	JULY	0.	0.0000	0.0000	0.0000	0.0000
HOC	JULY	0.	0.0000	0.0000	0.0000	0.0000
HOL	JULY	0.	0.0000	0.0000	0.0000	0.0000
HUR	JULY	0.	0.0000	0.0000	0.0000	0.0000
JAC	JULY	0.	0.0000	0.0000	0.0000	0.0000
JEF	JULY	0.	0.0000	0.0000	0.0000	0.0000
KNO	JULY	0.	0.0000	0.0000	0.0000	0.0000
LAK	JULY	0.	0.0000	0.0000	0.0000	0.0000
LAW	JULY	0.	0.0000	0.0000	0.0000	0.0000
LIC	JULY	7148237.	0.2980	0.8027	0.0000	0.0000
LOG	JULY	0.	0.0000	0.0000	0.0000	0.0000
LOR	JULY	0.	0.0000	0.0000	0.0000	0.0000
LUC	JULY	0.	0.0000	0.0000	0.0000	0.0000
MAD	JULY	1603973.	0.0609	0.1860	0.0000	0.0000
MAH	JULY	0.	0.0000	0.0000	0.0000	0.0000
MAR	JULY	0.	0.0000	0.0000	0.0000	0.0000
MED	JULY	0.	0.0000	0.0000	0.0000	0.0000
MEG	JULY	0.	0.0000	0.0000	0.0000	0.0000
MER	JULY	0.	0.0000	0.0000	0.0000	0.0000
MIA	JULY	0.	0.0000	0.0000	0.0000	0.0000

MOE	JULY	0.	0.0000	0.0000	0.0000	0.0000
MOT	JULY	0.	0.0000	0.0000	0.0000	0.0000
MRG	JULY	0.	0.0000	0.0000	0.0000	0.0000
MRW	JULY	0.	0.0000	0.0000	0.0000	0.0000
MUS	JULY	108645.	0.0035	0.0133	0.0000	0.0000
NOB	JULY	0.	0.0000	0.0000	0.0000	0.0000
OTT	JULY	0.	0.0000	0.0000	0.0000	0.0000
PAU	JULY	0.	0.0000	0.0000	0.0000	0.0000
PER	JULY	0.	0.0000	0.0000	0.0000	0.0000
PIC	JULY	1211446.	0.0474	0.1241	0.0000	0.0000
PIK	JULY	0.	0.0000	0.0000	0.0000	0.0000
POR	JULY	0.	0.0000	0.0000	0.0000	0.0000
PRE	JULY	0.	0.0000	0.0000	0.0000	0.0000
PUT	JULY	0.	0.0000	0.0000	0.0000	0.0000
RIC	JULY	0.	0.0000	0.0000	0.0000	0.0000
ROS	JULY	0.	0.0000	0.0000	0.0000	0.0000
SAN	JULY	0.	0.0000	0.0000	0.0000	0.0000
SCI	JULY	0.	0.0000	0.0000	0.0000	0.0000
SEN	JULY	0.	0.0000	0.0000	0.0000	0.0000
SHE	JULY	0.	0.0000	0.0000	0.0000	0.0000
STA	JULY	0.	0.0000	0.0000	0.0000	0.0000
SUM	JULY	0.	0.0000	0.0000	0.0000	0.0000
TRU	JULY	0.	0.0000	0.0000	0.0000	0.0000
TUS	JULY	0.	0.0000	0.0000	0.0000	0.0000
UNI	JULY	2681327.	0.1043	0.3085	0.0000	0.0000
VAN	JULY	0.	0.0000	0.0000	0.0000	0.0000
VIN	JULY	0.	0.0000	0.0000	0.0000	0.0000
WAR	JULY	0.	0.0000	0.0000	0.0000	0.0000
WAS	JULY	0.	0.0000	0.0000	0.0000	0.0000
WAY	JULY	0.	0.0000	0.0000	0.0000	0.0000
WIL	JULY	0.	0.0000	0.0000	0.0000	0.0000
WOO	JULY	0.	0.0000	0.0000	0.0000	0.0000
WYA	JULY	0.	0.0000	0.0000	0.0000	0.0000
XXX	JULY	218870.	0.0111	0.0279	0.0000	0.0000
TOT	JULY	67443328.	3.0150	7.8741	0.0000	0.0000

MOVES INTRAZONAL EMISSIONS OUTPUT						
MONTH	VMT	HC	NOX	SO2	PM2.5	
JANUARY	32679.	0.0000	0.0000	0.0000	0.0000	
APRIL	32679.	0.0000	0.0000	0.0000	0.0000	
JULY	35293.	0.0022	0.0042	0.0000	0.0000	

MOVES VEHICLE BASED EMISSIONS OUTPUT						
MONTH	VEHICLES	HC	NOX	SO2	PM2.5	
JANUARY	2999576.	0.0000	0.0000	0.0000	0.0000	
APRIL	2999576.	0.0000	0.0000	0.0000	0.0000	
JULY	3239542.	10.7293	3.6427	0.0000	0.0000	

**Appendix – MORPC HPMS VMT and Emissions (Outside of Travel Demand Model Area)**

**2020**

MOVES BASED HPMS EMISSIONS REPORT

MORPC area AQ analysis - Ozone emissions Analysis - OFF Model FAI

Input VMT File: ..\factors\FAI\_Off-Model\_VMT\_2020.csv  
 Network Emission Factors: ..\factors\MORPC\_2020\_ozone\_3source\_rpd.csv  
 Vehicle Emission Factors: ..\factors\MORPC\_2020\_ozone\_3source\_rpv.csv  
 Vehicle Population: ..\factors\FAI\_Off-Model\_source\_type\_pop\_2020.csv

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 DATE:03/27/2020 TIME:15:29:47

PARAMETER FILE DUMP (DAILY.DAT FILE)

15	16	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
PCTADT																
URB FWY		0.9	0.6	0.5	0.6	0.9	2.2	5.2	7.3	6.4	5.2	4.9	5.1	5.3	5.5	6.1
7.2	8.0	7.9	5.8	4.2	3.4	2.9	2.2	1.5								
URB ART		0.7	0.4	0.3	0.3	0.6	1.5	3.5	5.7	5.5	5.1	5.3	6.2	6.5	6.4	6.8
7.6	8.2	8.1	6.2	4.8	4.0	3.0	1.9	1.3								
RUR FWY		1.4	1.1	0.9	1.0	1.3	2.2	3.7	5.2	5.4	5.4	5.6	5.6	5.7	6.0	6.5
7.1	7.5	7.0	5.6	4.5	3.8	3.2	2.5	2.0								
RUR ART		0.8	0.5	0.4	0.5	1.0	2.4	4.8	6.2	5.5	5.3	5.5	5.8	6.0	6.0	6.7
7.6	8.1	7.7	5.6	4.2	3.5	2.8	1.9	1.3								

AQ SEASON FACTOR: 1.08000004

MOVES HPMS EMISSIONS OUTPUT

MONTH	VMT	HC	NOX	SO2	PM2.5
JANUARY	2010842.	0.0000	0.0000	0.0000	0.0000
APRIL	2010842.	0.0000	0.0000	0.0000	0.0000
JULY	2171709.	0.2594	0.9125	0.0000	0.0000

MOVES VEHICLE BASED EMISSIONS OUTPUT

MONTH	VEHICLES	HC	NOX	SO2	PM2.5
JANUARY	65671.	0.0000	0.0000	0.0000	0.0000
APRIL	65671.	0.0000	0.0000	0.0000	0.0000
JULY	70925.	0.6825	0.2947	0.0000	0.0000

MOVES BASED HPMS EMISSIONS REPORT

MORPC area AQ analysis - Ozone emissions Analysis - OFF Model KNO

Input VMT File: ..\factors\KNO\_Off-Model\_VMT\_2020.csv  
 Network Emission Factors: ..\factors\MORPC\_2020\_ozone\_3source\_rpd.csv  
 Vehicle Emission Factors: ..\factors\MORPC\_2020\_ozone\_3source\_rpv.csv  
 Vehicle Population: ..\factors\KNO\_Off-Model\_source\_type\_pop\_2020.csv

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 DATE:03/27/2020 TIME:15:30:10

PARAMETER FILE DUMP (DAILY.DAT FILE)

HOUR	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
15	16	17	18	19	20	21	22	23							
PCTADT															
URB FWY	0.9	0.6	0.5	0.6	0.9	2.2	5.2	7.3	6.4	5.2	4.9	5.1	5.3	5.5	6.1
7.2	8.0	7.9	5.8	4.2	3.4	2.9	2.2	1.5							
URB ART	0.7	0.4	0.3	0.3	0.6	1.5	3.5	5.7	5.5	5.1	5.3	6.2	6.5	6.4	6.8
7.6	8.2	8.1	6.2	4.8	4.0	3.0	1.9	1.3							
RUR FWY	1.4	1.1	0.9	1.0	1.3	2.2	3.7	5.2	5.4	5.4	5.6	5.6	5.7	6.0	6.5
7.1	7.5	7.0	5.6	4.5	3.8	3.2	2.5	2.0							
RUR ART	0.8	0.5	0.4	0.5	1.0	2.4	4.8	6.2	5.5	5.3	5.5	5.8	6.0	6.0	6.7
7.6	8.1	7.7	5.6	4.2	3.5	2.8	1.9	1.3							

AQ SEASON FACTOR: 1.08000004

MOVES HPMS EMISSIONS OUTPUT

MONTH	VMT	HC	NOX	SO2	PM2.5
JANUARY	1153874.	0.0000	0.0000	0.0000	0.0000
APRIL	1153874.	0.0000	0.0000	0.0000	0.0000
JULY	1246184.	0.1393	0.5073	0.0000	0.0000

MOVES VEHICLE BASED EMISSIONS OUTPUT

MONTH	VEHICLES	HC	NOX	SO2	PM2.5
JANUARY	47677.	0.0000	0.0000	0.0000	0.0000
APRIL	47677.	0.0000	0.0000	0.0000	0.0000
JULY	51491.	0.4955	0.2140	0.0000	0.0000

MOVES BASED HPMS EMISSIONS REPORT

MORPC area AQ analysis - Ozone emissions Analysis - OFF Model MAD  
 Input VMT File: ..\factors\MAD\_Off-Model\_VMT\_2020.csv  
 Network Emission Factors: ..\factors\MORPC\_2020\_ozone\_3source\_rpd.csv  
 Vehicle Emission Factors: ..\factors\MORPC\_2020\_ozone\_3source\_rpv.csv  
 Vehicle Population: ..\factors\MAD\_Off-Model\_source\_type\_pop\_2020.csv

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 DATE:03/27/2020 TIME:15:30:33

PARAMETER FILE DUMP (DAILY.DAT FILE)

HOUR	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
15	16	17	18	19	20	21	22	23							
PCTADT															
URB FWY	0.9	0.6	0.5	0.6	0.9	2.2	5.2	7.3	6.4	5.2	4.9	5.1	5.3	5.5	6.1
7.2	8.0	7.9	5.8	4.2	3.4	2.9	2.2	1.5							
URB ART	0.7	0.4	0.3	0.3	0.6	1.5	3.5	5.7	5.5	5.1	5.3	6.2	6.5	6.4	6.8
7.6	8.2	8.1	6.2	4.8	4.0	3.0	1.9	1.3							

RUR FWY	1.4	1.1	0.9	1.0	1.3	2.2	3.7	5.2	5.4	5.4	5.6	5.6	5.7	6.0	6.5
7.1	7.5	7.0	5.6	4.5	3.8	3.2	2.5	2.0							
RUR ART	0.8	0.5	0.4	0.5	1.0	2.4	4.8	6.2	5.5	5.3	5.5	5.8	6.0	6.0	6.7
7.6	8.1	7.7	5.6	4.2	3.5	2.8	1.9	1.3							

AQ SEASON FACTOR: 1.08000004

MOVES HPMS EMISSIONS OUTPUT	MONTH	VMT	HC	NOX	SO2	PM2.5
	JANUARY	2349881.	0.0000	0.0000	0.0000	0.0000
	APRIL	2349881.	0.0000	0.0000	0.0000	0.0000
	JULY	2537872.	0.2473	1.0574	0.0000	0.0000

MOVES VEHICLE BASED EMISSIONS OUTPUT	MONTH	VEHICLES	HC	NOX	SO2	PM2.5
	JANUARY	59126.	0.0000	0.0000	0.0000	0.0000
	APRIL	59126.	0.0000	0.0000	0.0000	0.0000
	JULY	63856.	0.6145	0.2653	0.0000	0.0000

## 2023

### MOVES BASED HPMS EMISSIONS REPORT

MORPC area AQ analysis - Ozone emissions Analysis - OFF Model FAI

Input VMT File: ..\factors\FAI\_Off-Model\_VMT\_2023.csv  
 Network Emission Factors: ..\factors\MORPC\_2023\_ozone\_3source\_rpd.csv  
 Vehicle Emission Factors: ..\factors\MORPC\_2023\_ozone\_3source\_rpv.csv  
 Vehicle Population: ..\factors\FAI\_Off-Model\_source\_type\_pop\_2023.csv

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 DATE:03/27/2020 TIME:15:30:54

### PARAMETER FILE DUMP (DAILY.DAT FILE)

HOUR	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
15	16	17	18	19	20	21	22	23							
PCTADT															
URB FWY	0.9	0.6	0.5	0.6	0.9	2.2	5.2	7.3	6.4	5.2	4.9	5.1	5.3	5.5	6.1
7.2	8.0	7.9	5.8	4.2	3.4	2.9	2.2	1.5							
URB ART	0.7	0.4	0.3	0.3	0.6	1.5	3.5	5.7	5.5	5.1	5.3	6.2	6.5	6.4	6.8
7.6	8.2	8.1	6.2	4.8	4.0	3.0	1.9	1.3							
RUR FWY	1.4	1.1	0.9	1.0	1.3	2.2	3.7	5.2	5.4	5.4	5.6	5.6	5.7	6.0	6.5
7.1	7.5	7.0	5.6	4.5	3.8	3.2	2.5	2.0							
RUR ART	0.8	0.5	0.4	0.5	1.0	2.4	4.8	6.2	5.5	5.3	5.5	5.8	6.0	6.0	6.7
7.6	8.1	7.7	5.6	4.2	3.5	2.8	1.9	1.3							

AQ SEASON FACTOR: 1.08000004

MOVES HPMS EMISSIONS OUTPUT	MONTH	VMT	HC	NOX	SO2	PM2.5
	JANUARY	2119713.	0.0000	0.0000	0.0000	0.0000
	APRIL	2119713.	0.0000	0.0000	0.0000	0.0000
	JULY	2289290.	0.2142	0.6664	0.0000	0.0000

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MOVES VEHICLE BASED EMISSIONS OUTPUT						
MONTH	VEHICLES	HC	NOX	SO2	PM2.5	
JANUARY	68207.	0.0000	0.0000	0.0000	0.0000	
APRIL	68207.	0.0000	0.0000	0.0000	0.0000	
JULY	73664.	0.6068	0.2347	0.0000	0.0000	

MOVES BASED HPMS EMISSIONS REPORT  
MORPC area AQ analysis - Ozone emissions Analysis - OFF Model KNO  
Input VMT File: ..\factors\KNO\_Off-Model\_VMT\_2023.csv  
Network Emission Factors: ..\factors\MORPC\_2023\_ozone\_3source\_rpd.csv  
Vehicle Emission Factors: ..\factors\MORPC\_2023\_ozone\_3source\_rpv.csv  
Vehicle Population: ..\factors\KNO\_Off-Model\_source\_type\_pop\_2023.csv

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DATE:03/27/2020 TIME:15:31:11

PARAMETER FILE DUMP (DAILY.DAT FILE)

15	16	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
PCTADT		17	18	19	20	21	22	23								
URB FWY	0.9	0.6	0.5	0.6	0.9	2.2	5.2	7.3	6.4	5.2	4.9	5.1	5.3	5.5	6.1	
7.2	8.0	7.9	5.8	4.2	3.4	2.9	2.2	1.5	5.7	5.5	5.1	5.3	6.2	6.5	6.4	6.8
URB ART	0.7	0.4	0.3	0.3	0.6	1.5	3.5	5.7	5.5	5.1	5.3	6.2	6.5	6.4	6.8	
7.6	8.2	8.1	6.2	4.8	4.0	3.0	1.9	1.3	5.7	5.5	5.1	5.3	6.2	6.5	6.4	6.8
RUR FWY	1.4	1.1	0.9	1.0	1.3	2.2	3.7	5.2	5.4	5.4	5.6	5.6	5.7	6.0	6.5	
7.1	7.5	7.0	5.6	4.5	3.8	3.2	2.5	2.0	6.2	5.5	5.3	5.5	5.8	6.0	6.0	6.7
RUR ART	0.8	0.5	0.4	0.5	1.0	2.4	4.8	6.2	5.5	5.3	5.5	5.8	6.0	6.0	6.7	
7.6	8.1	7.7	5.6	4.2	3.5	2.8	1.9	1.3								

AQ SEASON FACTOR: 1.08000004

MOVES HPMS EMISSIONS OUTPUT						
MONTH	VMT	HC	NOX	SO2	PM2.5	
JANUARY	1163769.	0.0000	0.0000	0.0000	0.0000	
APRIL	1163769.	0.0000	0.0000	0.0000	0.0000	
JULY	1256871.	0.1102	0.3566	0.0000	0.0000	

MOVES VEHICLE BASED EMISSIONS OUTPUT						
MONTH	VEHICLES	HC	NOX	SO2	PM2.5	
JANUARY	50033.	0.0000	0.0000	0.0000	0.0000	
APRIL	50033.	0.0000	0.0000	0.0000	0.0000	
JULY	54036.	0.4451	0.1721	0.0000	0.0000	

MOVES BASED HPMS EMISSIONS REPORT  
MORPC area AQ analysis - Ozone emissions Analysis - OFF Model MAD  
Input VMT File: ..\factors\MAD\_Off-Model\_VMT\_2023.csv  
Network Emission Factors: ..\factors\MORPC\_2023\_ozone\_3source\_rpd.csv  
Vehicle Emission Factors: ..\factors\MORPC\_2023\_ozone\_3source\_rpv.csv  
Vehicle Population: ..\factors\MAD\_Off-Model\_source\_type\_pop\_2023.csv



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DATE:03/27/2020 TIME:15:31:31

PARAMETER FILE DUMP (DAILY.DAT FILE)

15	16	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
PCTADT																
URB FWY		0.9	0.6	0.5	0.6	0.9	2.2	5.2	7.3	6.4	5.2	4.9	5.1	5.3	5.5	6.1
7.2	8.0	7.9	5.8	4.2	3.4	2.9	2.2	1.5								
URB ART		0.7	0.4	0.3	0.3	0.6	1.5	3.5	5.7	5.5	5.1	5.3	6.2	6.5	6.4	6.8
7.6	8.2	8.1	6.2	4.8	4.0	3.0	1.9	1.3								
RUR FWY		1.4	1.1	0.9	1.0	1.3	2.2	3.7	5.2	5.4	5.4	5.6	5.6	5.7	6.0	6.5
7.1	7.5	7.0	5.6	4.5	3.8	3.2	2.5	2.0								
RUR ART		0.8	0.5	0.4	0.5	1.0	2.4	4.8	6.2	5.5	5.3	5.5	5.8	6.0	6.0	6.7
7.6	8.1	7.7	5.6	4.2	3.5	2.8	1.9	1.3								

AQ SEASON FACTOR: 1.08000004

MOVES HPMS EMISSIONS OUTPUT

MONTH	VMT	HC	NOX	SO2	PM2.5
JANUARY	2453912.	0.0000	0.0000	0.0000	0.0000
APRIL	2453912.	0.0000	0.0000	0.0000	0.0000
JULY	2650225.	0.2052	0.7883	0.0000	0.0000

MOVES VEHICLE BASED EMISSIONS OUTPUT

MONTH	VEHICLES	HC	NOX	SO2	PM2.5
JANUARY	62043.	0.0000	0.0000	0.0000	0.0000
APRIL	62043.	0.0000	0.0000	0.0000	0.0000
JULY	67006.	0.5520	0.2135	0.0000	0.0000

## 2030

MOVES BASED HPMS EMISSIONS REPORT

MORPC area AQ analysis - Ozone emissions Analysis - OFF Model FAI

Input VMT File: ..\factors\FAI\_Off-Model\_VMT\_2030.csv

Network Emission Factors: ..\factors\MORPC\_2030\_ozone\_3source\_rpd.csv

Vehicle Emission Factors: ..\factors\MORPC\_2030\_ozone\_3source\_rpv.csv

Vehicle Population: ..\factors\FAI\_Off-Model\_source\_type\_pop\_2030.csv

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DATE:03/27/2020 TIME:15:31:50

PARAMETER FILE DUMP (DAILY.DAT FILE)

15	16	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
PCTADT																

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LCATS 2021-2024 Transportation Improvement Program  
CORPO 2021-2024 Transportation Improvement Program

URB FWY	0.9	0.6	0.5	0.6	0.9	2.2	5.2	7.3	6.4	5.2	4.9	5.1	5.3	5.5	6.1
7.2	8.0	7.9	5.8	4.2	3.4	2.9	2.2	1.5	5.7	5.5	5.1	5.3	6.2	6.5	6.8
URB ART	0.7	0.4	0.3	0.3	0.6	1.5	3.5	5.7	5.5	5.1	5.3	6.2	6.5	6.4	6.8
7.6	8.2	8.1	6.2	4.8	4.0	3.0	1.9	1.3	5.2	5.4	5.4	5.6	5.6	5.7	6.0
RUR FWY	1.4	1.1	0.9	1.0	1.3	2.2	3.7	5.2	5.4	5.4	5.6	5.6	5.7	6.0	6.5
7.1	7.5	7.0	5.6	4.5	3.8	3.2	2.5	2.0	6.2	5.5	5.3	5.5	5.8	6.0	6.7
RUR ART	0.8	0.5	0.4	0.5	1.0	2.4	4.8	6.2	5.5	5.3	5.5	5.8	6.0	6.0	6.7
7.6	8.1	7.7	5.6	4.2	3.5	2.8	1.9	1.3							

AQ SEASON FACTOR: 1.08000004

MOVES HPMS EMISSIONS OUTPUT

MONTH	VMT	HC	NOX	SO2	PM2.5
JANUARY	2371933.	0.0000	0.0000	0.0000	0.0000
APRIL	2371933.	0.0000	0.0000	0.0000	0.0000
JULY	2561688.	0.1596	0.4336	0.0000	0.0000

MOVES VEHICLE BASED EMISSIONS OUTPUT

MONTH	VEHICLES	HC	NOX	SO2	PM2.5
JANUARY	74218.	0.0000	0.0000	0.0000	0.0000
APRIL	74218.	0.0000	0.0000	0.0000	0.0000
JULY	80155.	0.4501	0.1606	0.0000	0.0000

MOVES BASED HPMS EMISSIONS REPORT

MORPC area AQ analysis - Ozone emissions Analysis - OFF Model KNO

Input VMT File: ..\factors\KNO\_Off-Model\_VMT\_2030.csv  
 Network Emission Factors: ..\factors\MORPC\_2030\_ozone\_3source\_rpd.csv  
 Vehicle Emission Factors: ..\factors\MORPC\_2030\_ozone\_3source\_rpv.csv  
 Vehicle Population: ..\factors\KNO\_Off-Model\_source\_type\_pop\_2030.csv

DATE:03/27/2020 TIME:15:32:05

PARAMETER FILE DUMP (DAILY.DAT FILE)

HOUR	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
15	16	17	18	19	20	21	22	23							
PCTADT															
URB FWY	0.9	0.6	0.5	0.6	0.9	2.2	5.2	7.3	6.4	5.2	4.9	5.1	5.3	5.5	6.1
7.2	8.0	7.9	5.8	4.2	3.4	2.9	2.2	1.5	5.7	5.5	5.1	5.3	6.2	6.5	6.8
URB ART	0.7	0.4	0.3	0.3	0.6	1.5	3.5	5.7	5.5	5.1	5.3	6.2	6.5	6.4	6.8
7.6	8.2	8.1	6.2	4.8	4.0	3.0	1.9	1.3	5.2	5.4	5.4	5.6	5.6	5.7	6.0
RUR FWY	1.4	1.1	0.9	1.0	1.3	2.2	3.7	5.2	5.4	5.4	5.6	5.6	5.7	6.0	6.5
7.1	7.5	7.0	5.6	4.5	3.8	3.2	2.5	2.0	6.2	5.5	5.3	5.5	5.8	6.0	6.7
RUR ART	0.8	0.5	0.4	0.5	1.0	2.4	4.8	6.2	5.5	5.3	5.5	5.8	6.0	6.0	6.7
7.6	8.1	7.7	5.6	4.2	3.5	2.8	1.9	1.3							

AQ SEASON FACTOR: 1.08000004

MOVES HPMS EMISSIONS OUTPUT

MONTH	VMT	HC	NOX	SO2	PM2.5
JANUARY	1187115.	0.0000	0.0000	0.0000	0.0000
APRIL	1187115.	0.0000	0.0000	0.0000	0.0000
JULY	1282084.	0.0747	0.2117	0.0000	0.0000

MONTH	VEHICLES	HC	NOX	SO2	PM2.5
JANUARY	55771.	0.0000	0.0000	0.0000	0.0000
APRIL	55771.	0.0000	0.0000	0.0000	0.0000
JULY	60233.	0.3383	0.1207	0.0000	0.0000

MOVES BASED HPMS EMISSIONS REPORT

MORPC area AQ analysis - Ozone emissions Analysis - OFF Model MAD

Input VMT File: ..\factors\MAD\_Off-Model\_VMT\_2030.csv  
 Network Emission Factors: ..\factors\MORPC\_2030\_ozone\_3source\_rpd.csv  
 Vehicle Emission Factors: ..\factors\MORPC\_2030\_ozone\_3source\_rpv.csv  
 Vehicle Population: ..\factors\MAD\_Off-Model\_source\_type\_pop\_2030.csv

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 DATE:03/27/2020 TIME:15:32:27

PARAMETER FILE DUMP (DAILY.DAT FILE)

HOUR	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
15	16	17	18	19	20	21	22	23							
PCTADT															
URB FWY	0.9	0.6	0.5	0.6	0.9	2.2	5.2	7.3	6.4	5.2	4.9	5.1	5.3	5.5	6.1
7.2	8.0	7.9	5.8	4.2	3.4	2.9	2.2	1.5							
URB ART	0.7	0.4	0.3	0.3	0.6	1.5	3.5	5.7	5.5	5.1	5.3	6.2	6.5	6.4	6.8
7.6	8.2	8.1	6.2	4.8	4.0	3.0	1.9	1.3							
RUR FWY	1.4	1.1	0.9	1.0	1.3	2.2	3.7	5.2	5.4	5.4	5.6	5.6	5.7	6.0	6.5
7.1	7.5	7.0	5.6	4.5	3.8	3.2	2.5	2.0							
RUR ART	0.8	0.5	0.4	0.5	1.0	2.4	4.8	6.2	5.5	5.3	5.5	5.8	6.0	6.0	6.7
7.6	8.1	7.7	5.6	4.2	3.5	2.8	1.9	1.3							

AQ SEASON FACTOR: 1.08000004

MONTH	VMT	HC	NOX	SO2	PM2.5
JANUARY	2674242.	0.0000	0.0000	0.0000	0.0000
APRIL	2674242.	0.0000	0.0000	0.0000	0.0000
JULY	2888182.	0.1465	0.5080	0.0000	0.0000

MONTH	VEHICLES	HC	NOX	SO2	PM2.5
JANUARY	69155.	0.0000	0.0000	0.0000	0.0000
APRIL	69155.	0.0000	0.0000	0.0000	0.0000
JULY	74687.	0.4194	0.1496	0.0000	0.0000

**2040**

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 Air Quality Conformity Appendix

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 LCATS 2050 Metropolitan Transportation Plan  
 MORPC 2021-2024 Transportation Improvement Program  
 Air  
 LCATS 2021-2024 Transportation Improvement Program  
 CORPO 2021-2024 Transportation Improvement Program

MOVES BASED HPMS EMISSIONS REPORT

MORPC area AQ analysis - Ozone emissions Analysis - OFF Model FAI  
 Input VMT File: ..\factors\FAI\_Off-Model\_VMT\_2040.csv  
 Network Emission Factors: ..\factors\MORPC\_2040\_ozone\_3source\_rpd.csv  
 Vehicle Emission Factors: ..\factors\MORPC\_2040\_ozone\_3source\_rpv.csv  
 Vehicle Population: ..\factors\FAI\_Off-Model\_source\_type\_pop\_2040.csv

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 DATE:03/27/2020 TIME:15:32:49

PARAMETER FILE DUMP (DAILY.DAT FILE)

HOUR	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
15	16	17	18	19	20	21	22	23							
PCTADT															
URB FWY	0.9	0.6	0.5	0.6	0.9	2.2	5.2	7.3	6.4	5.2	4.9	5.1	5.3	5.5	6.1
7.2	8.0	7.9	5.8	4.2	3.4	2.9	2.2	1.5							
URB ART	0.7	0.4	0.3	0.3	0.6	1.5	3.5	5.7	5.5	5.1	5.3	6.2	6.5	6.4	6.8
7.6	8.2	8.1	6.2	4.8	4.0	3.0	1.9	1.3							
RUR FWY	1.4	1.1	0.9	1.0	1.3	2.2	3.7	5.2	5.4	5.4	5.6	5.6	5.7	6.0	6.5
7.1	7.5	7.0	5.6	4.5	3.8	3.2	2.5	2.0							
RUR ART	0.8	0.5	0.4	0.5	1.0	2.4	4.8	6.2	5.5	5.3	5.5	5.8	6.0	6.0	6.7
7.6	8.1	7.7	5.6	4.2	3.5	2.8	1.9	1.3							

AQ SEASON FACTOR: 1.08000004

MOVES HPMS EMISSIONS OUTPUT

MONTH	VMT	HC	NOX	SO2	PM2.5
JANUARY	2728889.	0.0000	0.0000	0.0000	0.0000
APRIL	2728889.	0.0000	0.0000	0.0000	0.0000
JULY	2947200.	0.1290	0.3032	0.0000	0.0000

MOVES VEHICLE BASED EMISSIONS OUTPUT

MONTH	VEHICLES	HC	NOX	SO2	PM2.5
JANUARY	82731.	0.0000	0.0000	0.0000	0.0000
APRIL	82731.	0.0000	0.0000	0.0000	0.0000
JULY	89349.	0.3304	0.1038	0.0000	0.0000

MOVES BASED HPMS EMISSIONS REPORT

MORPC area AQ analysis - Ozone emissions Analysis - OFF Model KNO  
 Input VMT File: ..\factors\KNO\_Off-Model\_VMT\_2040.csv  
 Network Emission Factors: ..\factors\MORPC\_2040\_ozone\_3source\_rpd.csv  
 Vehicle Emission Factors: ..\factors\MORPC\_2040\_ozone\_3source\_rpv.csv  
 Vehicle Population: ..\factors\KNO\_Off-Model\_source\_type\_pop\_2040.csv

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 DATE:03/27/2020 TIME:15:33:09

PARAMETER FILE DUMP (DAILY.DAT FILE)

HOUR	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
15	16	17	18	19	20	21	22	23							
PCTADT															
URB FWY	0.9	0.6	0.5	0.6	0.9	2.2	5.2	7.3	6.4	5.2	4.9	5.1	5.3	5.5	6.1
7.2	8.0	7.9	5.8	4.2	3.4	2.9	2.2	1.5							
URB ART	0.7	0.4	0.3	0.3	0.6	1.5	3.5	5.7	5.5	5.1	5.3	6.2	6.5	6.4	6.8
7.6	8.2	8.1	6.2	4.8	4.0	3.0	1.9	1.3							
RUR FWY	1.4	1.1	0.9	1.0	1.3	2.2	3.7	5.2	5.4	5.4	5.6	5.6	5.7	6.0	6.5
7.1	7.5	7.0	5.6	4.5	3.8	3.2	2.5	2.0							
RUR ART	0.8	0.5	0.4	0.5	1.0	2.4	4.8	6.2	5.5	5.3	5.5	5.8	6.0	6.0	6.7
7.6	8.1	7.7	5.6	4.2	3.5	2.8	1.9	1.3							

AQ SEASON FACTOR: 1.08000004

MOVES HPMS EMISSIONS OUTPUT	MONTH	VMT	HC	NOX	SO2	PM2.5
	JANUARY	1218357.	0.0000	0.0000	0.0000	0.0000
	APRIL	1218357.	0.0000	0.0000	0.0000	0.0000
	JULY	1315826.	0.0538	0.1316	0.0000	0.0000
MOVES VEHICLE BASED EMISSIONS OUTPUT	MONTH	VEHICLES	HC	NOX	SO2	PM2.5
	JANUARY	61991.	0.0000	0.0000	0.0000	0.0000
	APRIL	61991.	0.0000	0.0000	0.0000	0.0000
	JULY	66950.	0.2476	0.0778	0.0000	0.0000

MOVES BASED HPMS EMISSIONS REPORT

MORPC area AQ analysis - Ozone emissions Analysis - OFF Model MAD  
 Input VMT File: ..\factors\MAD\_Off-Model\_VMT\_2040.csv  
 Network Emission Factors: ..\factors\MORPC\_2040\_ozone\_3source\_rpd.csv  
 Vehicle Emission Factors: ..\factors\MORPC\_2040\_ozone\_3source\_rpv.csv  
 Vehicle Population: ..\factors\MAD\_Off-Model\_source\_type\_pop\_2040.csv

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 DATE:03/27/2020 TIME:15:33:27

PARAMETER FILE DUMP (DAILY.DAT FILE)

HOUR	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
15	16	17	18	19	20	21	22	23							
PCTADT															
URB FWY	0.9	0.6	0.5	0.6	0.9	2.2	5.2	7.3	6.4	5.2	4.9	5.1	5.3	5.5	6.1
7.2	8.0	7.9	5.8	4.2	3.4	2.9	2.2	1.5							
URB ART	0.7	0.4	0.3	0.3	0.6	1.5	3.5	5.7	5.5	5.1	5.3	6.2	6.5	6.4	6.8
7.6	8.2	8.1	6.2	4.8	4.0	3.0	1.9	1.3							
RUR FWY	1.4	1.1	0.9	1.0	1.3	2.2	3.7	5.2	5.4	5.4	5.6	5.6	5.7	6.0	6.5
7.1	7.5	7.0	5.6	4.5	3.8	3.2	2.5	2.0							

RUR ART	0.8	0.5	0.4	0.5	1.0	2.4	4.8	6.2	5.5	5.3	5.5	5.8	6.0	6.0	6.7
7.6	8.1	7.7	5.6	4.2	3.5	2.8	1.9	1.3							

AQ SEASON FACTOR: 1.08000004

MOVES HPMS EMISSIONS OUTPUT	MONTH	VMT	HC	NOX	SO2	PM2.5
	JANUARY	2993062.		0.0000	0.0000	0.0000
	APRIL	2993062.		0.0000	0.0000	0.0000
	JULY	3232507.		0.1121	0.3489	0.0000

MOVES VEHICLE BASED EMISSIONS OUTPUT	MONTH	VEHICLES	HC	NOX	SO2	PM2.5
	JANUARY	76874.		0.0000	0.0000	0.0000
	APRIL	76874.		0.0000	0.0000	0.0000
	JULY	83024.		0.3070	0.0965	0.0000

## 2050

### OVES BASED HPMS EMISSIONS REPORT

MORPC area AQ analysis - Ozone emissions Analysis - OFF Model FAI

Input VMT File: ..\factors\FAI\_Off-Model\_VMT\_2050.csv  
 Network Emission Factors: ..\factors\MORPC\_2050\_ozone\_3source\_rpd.csv  
 Vehicle Emission Factors: ..\factors\MORPC\_2050\_ozone\_3source\_rpv.csv  
 Vehicle Population: ..\factors\FAI\_Off-Model\_source\_type\_pop\_2050.csv

-----  
 DATE:03/27/2020 TIME:15:33:48

### PARAMETER FILE DUMP (DAILY.DAT FILE)

HOUR	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
15	16	17	18	19	20	21	22	23							
PCTADT															
URB FWY	0.9	0.6	0.5	0.6	0.9	2.2	5.2	7.3	6.4	5.2	4.9	5.1	5.3	5.5	6.1
7.2	8.0	7.9	5.8	4.2	3.4	2.9	2.2	1.5							
URB ART	0.7	0.4	0.3	0.3	0.6	1.5	3.5	5.7	5.5	5.1	5.3	6.2	6.5	6.4	6.8
7.6	8.2	8.1	6.2	4.8	4.0	3.0	1.9	1.3							
RUR FWY	1.4	1.1	0.9	1.0	1.3	2.2	3.7	5.2	5.4	5.4	5.6	5.6	5.7	6.0	6.5
7.1	7.5	7.0	5.6	4.5	3.8	3.2	2.5	2.0							
RUR ART	0.8	0.5	0.4	0.5	1.0	2.4	4.8	6.2	5.5	5.3	5.5	5.8	6.0	6.0	6.7
7.6	8.1	7.7	5.6	4.2	3.5	2.8	1.9	1.3							

AQ SEASON FACTOR: 1.08000004

MOVES HPMS EMISSIONS OUTPUT	MONTH	VMT	HC	NOX	SO2	PM2.5
	JANUARY	3089062.		0.0000	0.0000	0.0000
	APRIL	3089062.		0.0000	0.0000	0.0000
	JULY	3336187.		0.1379	0.3274	0.0000

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MOVES VEHICLE BASED EMISSIONS OUTPUT					
MONTH	VEHICLES	HC	NOX	SO2	PM2.5
JANUARY	91100.	0.0000	0.0000	0.0000	0.0000
APRIL	91100.	0.0000	0.0000	0.0000	0.0000
JULY	98388.	0.3259	0.1106	0.0000	0.0000

MOVES BASED HPMS EMISSIONS REPORT  
MORPC area AQ analysis - Ozone emissions Analysis - OFF Model KNO  
Input VMT File: ..\factors\KNO\_Off-Model\_VMT\_2050.csv  
Network Emission Factors: ..\factors\MORPC\_2050\_ozone\_3source\_rpd.csv  
Vehicle Emission Factors: ..\factors\MORPC\_2050\_ozone\_3source\_rpv.csv  
Vehicle Population: ..\factors\KNO\_Off-Model\_source\_type\_pop\_2050.csv

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DATE:03/27/2020 TIME:15:34:12

PARAMETER FILE DUMP (DAILY.DAT FILE)

15	16	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
PCTADT																
URB FWY	0.9	0.6	0.5	0.6	0.9	2.2	5.2	7.3	6.4	5.2	4.9	5.1	5.3	5.5	6.1	
7.2	8.0	7.9	5.8	4.2	3.4	2.9	2.2	1.5								
URB ART	0.7	0.4	0.3	0.3	0.6	1.5	3.5	5.7	5.5	5.1	5.3	6.2	6.5	6.4	6.8	
7.6	8.2	8.1	6.2	4.8	4.0	3.0	1.9	1.3								
RUR FWY	1.4	1.1	0.9	1.0	1.3	2.2	3.7	5.2	5.4	5.4	5.6	5.6	5.7	6.0	6.5	
7.1	7.5	7.0	5.6	4.5	3.8	3.2	2.5	2.0								
RUR ART	0.8	0.5	0.4	0.5	1.0	2.4	4.8	6.2	5.5	5.3	5.5	5.8	6.0	6.0	6.7	
7.6	8.1	7.7	5.6	4.2	3.5	2.8	1.9	1.3								

AQ SEASON FACTOR: 1.08000004

MOVES HPMS EMISSIONS OUTPUT					
MONTH	VMT	HC	NOX	SO2	PM2.5
JANUARY	1250788.	0.0000	0.0000	0.0000	0.0000
APRIL	1250788.	0.0000	0.0000	0.0000	0.0000
JULY	1350851.	0.0521	0.1288	0.0000	0.0000

MOVES VEHICLE BASED EMISSIONS OUTPUT					
MONTH	VEHICLES	HC	NOX	SO2	PM2.5
JANUARY	69575.	0.0000	0.0000	0.0000	0.0000
APRIL	69575.	0.0000	0.0000	0.0000	0.0000
JULY	75141.	0.2489	0.0845	0.0000	0.0000

MOVES BASED HPMS EMISSIONS REPORT  
MORPC area AQ analysis - Ozone emissions Analysis - OFF Model MAD  
Input VMT File: ..\factors\MAD\_Off-Model\_VMT\_2050.csv  
Network Emission Factors: ..\factors\MORPC\_2050\_ozone\_3source\_rpd.csv  
Vehicle Emission Factors: ..\factors\MORPC\_2050\_ozone\_3source\_rpv.csv  
Vehicle Population: ..\factors\MAD\_Off-Model\_source\_type\_pop\_2050.csv

-----  
 DATE:03/27/2020 TIME:15:34:37

PARAMETER FILE DUMP (DAILY.DAT FILE)

HOUR	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
15	16	17	18	19	20	21	22	23							
PCTADT															
URB FWY	0.9	0.6	0.5	0.6	0.9	2.2	5.2	7.3	6.4	5.2	4.9	5.1	5.3	5.5	6.1
7.2	8.0	7.9	5.8	4.2	3.4	2.9	2.2	1.5							
URB ART	0.7	0.4	0.3	0.3	0.6	1.5	3.5	5.7	5.5	5.1	5.3	6.2	6.5	6.4	6.8
7.6	8.2	8.1	6.2	4.8	4.0	3.0	1.9	1.3							
RUR FWY	1.4	1.1	0.9	1.0	1.3	2.2	3.7	5.2	5.4	5.4	5.6	5.6	5.7	6.0	6.5
7.1	7.5	7.0	5.6	4.5	3.8	3.2	2.5	2.0							
RUR ART	0.8	0.5	0.4	0.5	1.0	2.4	4.8	6.2	5.5	5.3	5.5	5.8	6.0	6.0	6.7
7.6	8.1	7.7	5.6	4.2	3.5	2.8	1.9	1.3							

AQ SEASON FACTOR: 1.08000004

MOVES HPMS EMISSIONS OUTPUT						
MONTH	VMT	HC	NOX	SO2	PM2.5	
JANUARY	3305417.	0.0000	0.0000	0.0000	0.0000	
APRIL	3305417.	0.0000	0.0000	0.0000	0.0000	
JULY	3569851.	0.1165	0.3688	0.0000	0.0000	
MOVES VEHICLE BASED EMISSIONS OUTPUT						
MONTH	VEHICLES	HC	NOX	SO2	PM2.5	
JANUARY	86275.	0.0000	0.0000	0.0000	0.0000	
APRIL	86275.	0.0000	0.0000	0.0000	0.0000	
JULY	93177.	0.3086	0.1048	0.0000	0.0000	



# Attachment B-Consultation Correspondence

**From:** Nick Gill

**Sent:** Tuesday, April 7, 2020 10:10 AM

**To:** ANTHONY.HILL@dot.ohio.gov; paul.braun@epa.ohio.gov; Kane, Mark (FTA) <Mark.Kane@dot.gov>; mhill@lcounty.com; Maietta.Anthony@epamail.epa.gov; Nathaniel.Brugler@dot.ohio.gov; Andrew.Shepler@dot.ohio.gov; frank.burkett@dot.gov

**Cc:** Maietta, Anthony <maietta.anthony@epa.gov>; noel.mehlo@dot.gov; Nino.Brunello@dot.ohio.gov; Sam.Granato@dot.ohio.gov; Mark.Byram@dot.ohio.gov; Greg.Giaimo@dot.ohio.gov

**Subject:** Columbus Air Quality Conformity

All,

I'm sure most of you are already aware. But just in case, we have completed the draft AQ conformity document for the Columbus ozone maintenance area. The AQ conformity document is for the SFY 2021-2024 TIPs for MORPC and LCATS and their respective new Metropolitan Transportation Plans.

It is attached or you can access from either of these two links (it is the same document)

MORPC MTP page: <https://www.morpc.org/mtp2050/>

MORPC TIP page: <https://www.morpc.org/program-service/transportation-improvement-program/>

Any Questions, let me know

Thanks

Nick

## Nicholas T. Gill

*Assistant Director, Transportation and Infrastructure Development* | Mid-Ohio Regional Planning Commission

T: 614.233.4151 | [ngill@morpc.org](mailto:ngill@morpc.org)

111 Liberty Street, Suite 100 | Columbus, OH 43215



**From:** ANTHONY.HILL@dot.ohio.gov <ANTHONY.HILL@dot.ohio.gov>

**Sent:** Tuesday, February 4, 2020 10:33 AM

**To:** Andy Reser <ARESER@oki.org>; Dave.Moore1@dot.ohio.gov; Nick Gill <NGILL@morpc.org>; paul.braun@epa.ohio.gov; Kane, Mark (FTA) <Mark.Kane@dot.gov>; mhill@lcounty.com; aramirez@mvrpc.org; Maietta.Anthony@epamail.epa.gov; Nathaniel.Brugler@dot.ohio.gov; Andrew.Shepler@dot.ohio.gov; frank.burkett@dot.gov

**Cc:** Maietta, Anthony <maietta.anthony@epa.gov>; noel.mehlo@dot.gov; Brett Porter <BPorter@oki.org>; Nino.Brunello@dot.ohio.gov; Sam.Granato@dot.ohio.gov; Mark.Byram@dot.ohio.gov; Greg.Giaimo@dot.ohio.gov

**Subject:** RE: Air Conformity Interagency Consultation for the Columbus and Cincinnati Regions

Hello All,

Attached is the finalized interagency consultation document with meeting minutes. Please integrate the document into the appropriate TIPS. If you have any questions, please contact me or call Dave.

Have a great day,

Anthony Hill

Transportation Planner  
ODOT Office of Statewide Planning & Research  
1980 W. Broad Street, Columbus, Ohio 43223  
(p) 614.752.2965  
transportation.ohio.gov



From: Dave.Moore1@dot.ohio.gov [mailto:Dave.Moore1@dot.ohio.gov]  
Sent: Wednesday, January 22, 2020 1:42 PM  
To: ANTHONY.HILL@dot.ohio.gov; Nick Gill <NGILL@morpc.org>; Andy Reser <ARESER@oki.org>; paul.braun@epa.ohio.gov; Kane, Mark (FTA) <Mark.Kane@dot.gov>; mhill@lcounty.com; aramirez@mvrpc.org; Maietta.Anthony@epamail.epa.gov; Nathaniel.Brugler@dot.ohio.gov; Andrew.Shepler@dot.ohio.gov; frank.burkett@dot.gov  
Cc: Maietta, Anthony <maietta.anthony@epa.gov>; noel.mehlo@dot.gov; Brett Porter <BPorter@oki.org>; Nino.Brunello@dot.ohio.gov; Sam.Granato@dot.ohio.gov; Mark.Byram@dot.ohio.gov; Greg.Giaino@dot.ohio.gov  
Subject: RE: Air Conformity Interagency Consultation for the Columbus and Cincinnati Regions

All,

Preparing for Friday's OKI & MORPC/LCATS 2021 – 2024 TIP air quality interagency consultation call please see the attached documents:

Conference call agenda

Cincinnati conformity summary

Columbus conformity summary

Thanks

DM

-----Original Appointment-----

From: Hill, Anthony

Sent: Monday, January 6, 2020 10:23 AM

To: Hill, Anthony; Nick Gill; Andy Reser; Braun, Paul; Kane, Mark (FTA); mhill@lcounty.com1; aramirez@mvrpc.org; Maietta.Anthony@epamail.epa.gov; Moore, David; Brugler, Nathaniel; Shepler, Andrew; Burkett, Frank (FHWA)

Cc: Maietta, Anthony; Mehlo, Noel; Brett Porter; Brunello, Antonino; Granato, Samuel; Byram, Mark; Giaimo, Gregory

Subject: Air Conformity Interagency Consultation for the Columbus and Cincinnati Regions

When: Friday, January 24, 2020 10:00 AM-11:30 AM (UTC-05:00) Eastern Time (US & Canada).

Where: Sykpe call and in person meeting at DOT CEN 3A Room

Hello All,

The Columbus/Cincinnati Regions Air conformity Interagency Consultation meeting will take place 01/24/2020 at 10am. If you are in the Columbus area, we will be meeting in ODOT Central Office Room 3A. For all others, please call into the Skype number listed below.

If you have any questions, please feel free to contact myself or Dave Moore.

Thank you and have a good day,

Anthony Hill

Transportation Planner

ODOT Office of Statewide Planning & Research

1980 W. Broad Street, Columbus, Ohio 43223

(p) 614.752.2965

transportation.ohio.gov



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Trouble Joining? [Try Skype Web App](#)

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MORPC 2020-2050 Metropolitan Transportation Plan

LCATS 2050 Metropolitan Transportation Plan

MORPC 2021-2024 Transportation Improvement Program

LCATS 2021-2024 Transportation Improvement Program

CORPO 2021-2024 Transportation Improvement Program

Join by phone

1-614-466-7177,,790950# (Ohio)

English (United States)

[Find a local number](#)

Conference ID: 790950

[Forgot your dial-in PIN?](#) | [Help](#)

## Air Quality Interagency Consultation Cincinnati and Columbus Air Quality Areas Ohio 2021-2024 TIP January 24, 2020 Conference Call

### Agenda

1. Overview:
  - a. Ohio is developing its SFY 2021 -2024 S/TIP
  - b. This conference call will review the procedures by which the Cincinnati and Columbus/Newark MPOs will demonstrate transportation air quality conformity for their respective SFY 2021 -2024 TIPs - See respective MPO's Conformity Summaries
  - c. Cincinnati – OKI
    - i. OKI will demonstrate transportation conformity for its existing 2040 Transportation Plan and new SFY 2021 -2024 TIP
    - ii. OKI is also currently conducting an update to its Transportation Plan with a 2050 horizon year
  - d. Columbus/Newark – MORPC/LCATS
    - i. MORPC & LCATS will demonstrate transportation conformity for updated 2050 Transportation Plans and new SFY 2021 -2024 TIPs
2. Review OKI and MORPC/LCATS Conformity Criteria and Procedures – See attached Conformity Summaries
  - a. Attainment status
  - b. Geography
  - c. Latest planning assumptions
  - d. Latest emissions model
  - e. Timely implementation of TCMS
  - f. Conformity networks
  - g. Budget tests/analysis years
  - h. Public involvement processes – include conformity results
  - i. MPO conformity determinations

## Air Quality Interagency Consultation Cincinnati and Columbus Air Quality Areas Ohio 2021-2024 TIP January 24, 2020 Conference Call

### Meeting Minutes

Call Participants:

#### MPOs

Ohio Department of Transportation (ODOT)

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116 MORPC 2020-2050 Metropolitan Transportation Plan  
LCATS 2050 Metropolitan Transportation Plan  
MORPC 2021-2024 Transportation Improvement Program  
LCATS 2021-2024 Transportation Improvement Program  
CORPO 2021-2024 Transportation Improvement Program

Dave Moore, Anthony Hill, Nino Brunello, Greg Giaimo, Mark Byram and Nate Brugler

**Licking County Area Transportation Study (LCATS)**

Matt Hill, Alex Nouanesengsy and Greg Huss

**Mid-Ohio Regional Planning Commission (MORPC)**

Nick Gill

**Miami Valley Regional Planning Commission (MVRPC)**

Ana Ramirez

**Ohio-Kentucky-Indiana Regional Council of Governments (OKI)**

Andy Reser, Brett Porter and Bob Koehler

**Federal**

**Federal Highway Administration (FHWA)**

Noel Mehlo

**Federal Transit Administration (FTA)**

Stewart McKenzie and Mark Kane

**Environmental Protection Agency (EPA)**

Anthony Maietta

Ohio is in the process of updating the S/TIP for the SFY 2021-2024 cycle. This conference call was conducted to review the processes and parameters by which the OKI and MORPC/LCATS MPO regions will demonstrate transportation conformity for their new MPO 2021-2024 TIPs.

ODOT initiated the call by welcoming the participants and providing a brief overview of the OKI and MORPC/LCATS 2021-2024 TIP conformity processes.

- OKI will be affecting a conformity analysis/determination for its existing 2040 Transportation Plan and new 2021-2024 TIP
  - OKI is concurrently working on a 2050 Transportation Plan update scheduled for completion in June 2020. Transportation conformity for OKI's 2050 Transportation Plan update will be initiated separate from 2021-2024 TIP development and conformity process.
- MORPC and LCATS are finalizing 2050 Transportation Plan Updates.
  - MORPC and LCATS will be affecting a conformity analysis/determination for their updated 2050 Transportation Plans and new 2021-2024 TIPs.

The floor was handed over to OKI to review the enclosed ***OKI Conformity Summary***. OKI staff discussed the following conformity criteria:

- The OKI region is a 2008 Standard Ozone Maintenance Area and a 2015 Ozone Standard nonattainment area.
- OKI staff reviewed the respective 2008 and 2015 Ozone standard geographies
- Transportation conformity will be demonstrated based on 2008 SIP Budget tests.
  - OKI advised that a correction to the Northern Kentucky region's NOX and VOC budgets in the ***OKI Conformity Summary*** document was needed. Note, the enclosed updated ***OKI Conformity Summary*** (attached document reflects the needed correction)
  - Budget analysis years will be 2020/2030/2040
- OKI emission estimates will be developed using the agency's latest planning assumptions
  - OKI emission estimates will be established using MOVES2014b

- ODOT provides OKI emission estimates for Clinton County. ODOT emission estimates will be established using MOVES2014a
- The Ohio SIP does not contain any TCMs
- Lastly, OKI staff reviewed the agency's upcoming TIP, conformity, and public involvement schedules. Conformity process and results documentation will be included in the OKI's TIP Public Involvement processes.
- The interagency consultation partners concurred with the OKI conformity process bullet points above.

MORPC then took over the discussion to talk about their enclosed **MORPC Conformity**

**Summary.** MORPC staff discussed the following conformity criteria:

- MORPC/LCATS region is a maintenance area for 2008 and 2015 Ozone.
- MORPC staff reviewed the respective 2008 and 2015 Ozone standard geographies
- Transportation conformity will be demonstrated based on 2008 and 2015 SIP budget tests
  - Budget analysis years are: 2008 Ozone – 2020/30/40/50 2015 Ozone – 2023/2030/40/50
- MORPC emission estimates will be developed with the agency's latest planning assumptions
  - Emission estimates be established using MOVES2014a
- The Ohio SIP does not contain any TCMs
- Lastly, MORPC staff reviewed the agency's upcoming TIP, conformity, and public involvement schedules. Conformity process and results documentation will be included in the MORPC's TIP Public Involvement processes.
- Once again, the collective group concurred with MORPC's analysis and plan.

Finally, ODOT summarized the totality of the statewide conformity efforts

- Conformity Efforts are as follows:
  - 1997 Ozone Orphan Areas was completed through email
    - Toledo, Lima, Dayton, Parkersburg, Wheeling, and Youngstown
  - SCATS & BHJ areas completed through email
  - NOACA, OKI & Columbus through conference calls.
- All areas of the state have gone through the Air Quality Interagency Consultation process now.
- This was agreed upon by all present

The meeting was adjourned.

## **Columbus & Newark MPOs 2050 Transportation Plan Update**

### **Conformity Analysis Summary**

The Columbus and Newark, Ohio MPOs (MORPC & LCATS) are advancing a new regional conformity determination on their new 2020-2050 Transportation Plans (MTPs) and 2021-2024 TIPs

#### **Interagency consultation topics**

- Designations

- 2015 Ozone Standard (DEL, FAI, FRA, LIC Counties, OH) – Maintenance area with approved Motor Vehicle Emission Budgets (MVEB) – 84FR31814 (July 3, 2019) & 84FR43508 (August 21, 2019)
- 2008 Ozone Standard (DEL, FAI, FRA, KNO, LIC, MAD Counties, OH)– Maintenance area with approved MVEB
- PM2.5 Standards – In attainment, no transportation conformity requirement
  
- Latest planning assumptions
  - MORPC and LCATS document their most recent work to maintain regional travel demand model variables current
  
- Latest emission modeling
  - This conformity determination will be a new emissions analyses
  
- Conformity Tests – Analysis years per tables below
  - 2015 Ozone Standard - conformity will be demonstrated based on MVEB established in the redesignation to attainment
  - 2008 Ozone Standard - conformity will be demonstrated based on MVEB established in the redesignation to attainment (still required despite new 2015 MVEB per 12/17/19 phone call with Anthony @ USEPA Region 5)
  
- MORPC and LCATS to provide lists of nonexempt fiscally constrained MTP/TIP projects and identification of the respective projects’ conformity analysis year network. Any projects that are outside of the respective MPO boundaries will also be identified.
  
- Conformity analysis schedule
  - AQ conformity runs – **January 2020**
  - Draft Document – **Early February 2020**
  - Public Involvement effort w/AQ conformity results – **Late-February to April 10**
  - MTP/TIP Conformity Determination Board approval - **May**



2015 Ozone Standard Analysis: 2023 – 2015 Ozone Standard SIP budget year  
 2030 – 2015 Ozone Standard SIP budget year  
 2040 - Interim analysis year  
 2050 - MTP(s) horizon year  
 Geography - DEL, FAI, FRA, LIC Counties, OH

Ozone Tons/Day						
	2023 Budget	2023 Emissions	2030 Budget	2030 Emissions	2040 Emissions	2050 Emissions
VOC	28.67		22.03			
NOx	29.28		20.98			

2008 Ozone Standard Analysis: 2020 – 2008 Ozone Standard SIP budget year  
 2030 – 2008 Ozone Standard SIP budget year  
 2040 - Interim analysis year  
 2050 - MTP(s) horizon year  
 Geography - DEL, FAI, FRA, KNO, LIC, MAD Counties, OH

Ozone Tons/Day						
	2020 Budget	2020 Emissions	2030 Budget	2030 Emissions	2040 Emissions	2050 Emissions
VOC	50.66		44.31			
NOx	90.54		85.13			