



# Air Quality Conformity

## Appendix 1 to SFY 2018-2021 MORPC TIP

Franklin, Delaware, Licking, Fairfield, Madison and Knox County  
Ozone Maintenance Area



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April 28, 2017

# **Appendix 1: Air Quality Conformity**

This document serves as an appendix to both:

**MORPC 2018-2021 TIP (Transportation Improvement Program)**

and

**LCATS 2018-2021 TIP (Transportation Improvement Program)**

And this is an update of the air quality conformity for the:

**MORPC 2016-2040 Metropolitan Transportation Plan**

And

**LCATS 2040 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 six-county Columbus ozone maintenance area and the four-plus county PM2.5 maintenance 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 are to be used for conformity determination.

**Table 1: On Road Mobile Source Budgets for the Columbus 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

## 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. The SIP maintenance plan established 2015 and 2022 budgets (MVEBs). as follows:

**Table 2: On Road Mobile Source Budgets for the Columbus annual PM2.5 (PM2.5, NOx)**  
[Tons per year]

Year	2015	2022
PM2.5	873.46	559.13
NOx	25,084.11	12,187.50

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. 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.

Each MPO 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 two 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 2018-2021 Transportation Improvement Program and the LCATS Transportation Improvement Program.

## 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 non-attainment 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, MORPC continuously updates the highway and transit network information and maintains accurate networks for future year analysis. In 2009 MORPC completed a new validation of the model for the year 2005.
- 2) **Future Networks**  
The Transportation Plan horizon year for MORPC and LCATS is 2040. Based on Interagency consultation for the ozone conformity analysis, the years 2020, 2030 and 2040 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 3 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 3 – 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 4.

**Table 4 – 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 5. Base year fractions were assumed to apply to future years.

**Table 5 – 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 6 shows source type population for the analyzed counties in 2008.

**Table 6 – 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 7 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 7 – 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 8 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 8 – 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 (maintenance plan out year, 2040), and any interim years (to be less than ten

years between analysis years). The Transportation Plan horizon year for MORPC and LCATS is 2040. The analysis years were determined, through the interagency consultation process. Thus, the years 2020, 2030 and 2040 are used for the ozone conformity analysis, since the future budget years established are 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 9-11) identify the projects that are included in the analysis for the years 2020, 2030, and 2040 respectively.

**Table 9: Additional Projects identified for year 2020**

Plan Project ID	Project Description (2020)
7	Hayden Run Blvd. from Golden Cascade Dr. to Avery Rd., New Roadway 2 lane(s) each direction with complete street facilities
9	Leppert Rd. from Scioto Darby Rd. to Hayden Run Rd., Add turn lanes and complete street facilities to 2 lane roadway
11	Lazelle Rd. from Flint Rd. to Sancus Blvd., Widen road from 2 lanes to 4 lanes total both directions with complete street facilities
13	Hamilton Rd. ext. from Hamilton Rd. (s. of old Dub.-Granvl. Rd) to Dublin-Granville Rd., New Roadway 2 lane(s) each direction with complete street facilities
23	Tuttle Crossing Blvd. extension from Avery Rd. to Wilcox Rd., New Roadway 2 lane(s) each direction with complete street facilities
34	Alum Creek Dr. from Refugee Rd. to Frebis Ave., Widen road from 2 lanes to 4 lanes total both directions with complete street facilities
36	US 23 at Pennsylvania Ave., Interchange modification
54	Hamilton Rd. from Chilmark Dr. to Hamilton Rd. realignment (ID 13), Widen road from 2 lanes to 4 lanes total both directions with complete street facilities

Plan Project ID	Project Description (2020)
66	Trueman Blvd.-Edwards Farms Rd. connector from Davidson Rd. to Edwards Farms Rd., New Roadway 2 lane(s) each direction with complete street facilities
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
72	Sunbury Rd. from County Line Rd./Smothers Rd. to Maxtown Rd., Add turn lanes and complete street facilities to 2 lane roadway
76	I-70 (East Freeway) at SR 310 (Hazelton-Etna Rd.), Interchange modification
79	Hamilton Rd. (SR 317) from Refugee Rd. to I-70 (East Freeway), Add turn lanes and complete street facilities to 4 lane roadway
88	Home Rd. extension from US 23 (Columbus Pk.) to Lewis Center Rd. (east of railroad), New Roadway 2 lane(s) each direction with complete street facilities
91	Scioto & Darby Creek Rd. from Leppert Rd. to Bradford Dr., Widen road from 2 lanes to 4 lanes total both directions with complete street facilities
98	Old State Rd. from Polaris Pkwy. (SR 750) to Orange Rd., Widen road from 2 lanes to 4 lanes total both directions with complete street facilities
104	Houk Rd. from US 36 (William St.) to SR 37 (Central Ave.), Add turn lanes and complete street facilities to 2 lane roadway
133	US 23 (Columbus Pk.) at SR 315 and Stratford Rd., Add/Modify turn lanes and add complete street facilities
146	Polaris Pkwy. from I-71 (North Freeway) to to Worthington Rd., Widen road from 4 lanes to 6 lanes total both directions with complete street facilities
147	James Rd. from Livingston Ave. to Main St. (US 40), Add turn lanes and complete street facilities to 4 lane roadway
168	Taylor Rd. from Taylor Rd. SW to Windsor Rd., Add turn lanes and complete street facilities to 2 lane roadway
213	Cleveland Ave. (SR 710) at Schrock Rd. (SR 710), 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

Plan Project ID	Project Description (2020)
235	Hill Rd. (SR 256) at Refugee Rd., Add/Modify turn lanes and add complete street facilities
239	Winchester Pike at Ebright Rd./Shannon Rd., Add/Modify turn lanes and add complete street facilities
242	Gender Rd. at Refugee Rd., Add/Modify turn lanes and add complete street facilities
248	Avery-Muirfield Dr. at Perimeter Dr. & Perimeter Loop Dr., Add/Modify turn lanes and add complete street facilities
262	Lazelle Rd. from Sancus Blvd. to Worthington-Galena Rd., Add turn lanes and complete street facilities to 2 lane roadway
338	Old 3C Hwy. from Mt. Royal Ave. to Freeman Rd., Add turn lanes and complete street facilities to 2 lane roadway
342	US 23 (Columbus Pk.) at Orange Rd., Add/Modify turn lanes and add complete street facilities
346	Refugee Rd. from Wheatfield Dr. to Woodstock Ave., Widen road from 2 lanes to 4 lanes total both directions 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
375	I-270 from I-70 to US-33/SR-161, Widen freeway from 6 lanes to 8 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
379	US 33 from Hamilton Road to I-270 EB ramps, Widen freeway from 4 lanes to 6 lanes total both directions
385	I-71 at Jackson Pike Ramp at SR 104 (Frank Road), Modify ramp termni intersection(s)
539	Johnstown Rd. from Stygler Rd. to Olde Ridenour Rd., Add turn lanes and complete street facilities to 2 lane roadway
541	Winchester Pike at Bixby Rd./Brice Rd., Add/Modify turn lanes and add complete street facilities
542	US 62/SR 3 (Harrisburg Pk.) from Eakin Rd./Hopkins Ave. to Brown Rd., Add turn lanes



Plan Project ID	Project Description (2020)
	and complete street facilities to 2 lane roadway
546	Joyce Ave. from Seventeenth Ave. to Kenmore 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
565	Reynoldsburg-New Albany Rd. at Clark State Rd., Add/Modify turn lanes and add complete street facilities
566	SR 315 at Home Rd., Add/Modify turn lanes and add complete street facilities
567	Georgesville Rd. at Holt Rd./Automall Dr., Add/Modify turn lanes and add complete street facilities
568	Worthington Rd. at Big Walnut 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
570	Alkire Rd. at Darby Creek Dr., Add/Modify turn lanes and add complete street facilities
571	Westerville Rd. at Innis 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
605	Livingston Ave. at Barnett Rd., Add/Modify turn lanes and add complete street facilities
632	SR 3 at Galena Rd., Add/Modify turn lanes and add complete street facilities

Plan Project ID	Project Description (2020)
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
693	Smothers Rd. at Schott Rd./Red Bank Rd., Construct roundabout with complete street facilities
764	Gender Rd. at Groveport 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
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
769	Home Rd. at Steitz Rd., Add/Modify turn lanes and add complete street facilities
770	High St. at Rathmell Ave., 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
1117	I-70/I-71 (South Innerbelt) at I-70E/I-71N (east interchange), Reconfigure slip, loop and/or directional interchange ramps

**Table 10: 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
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

Plan Project ID	Project Description (2030)
12	Sunbury Rd. from Agler Rd. to Morse Rd., Add turn lanes and complete street facilities to 2 lane roadway
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 6 lanes total both directions with complete street facilities
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
53	Cassady Ave. from Bexley north corp. limit to Agler Rd., Add turn lanes and complete street facilities to 2 lane roadway
58	I-70 (East Freeway) at Brice Rd., Interchange modification
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
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
70	Worthington-Galena Rd. from Sancus Blvd. to Lazelle Rd., Add turn lanes and complete street facilities to 2 lane roadway
75	SR 310 (Hazelton-Etna Rd.) from I-70 (East Freeway) to US 40 (National Rd.), Widen road from 2 lanes to 4 lanes total both directions with complete street facilities
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
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

Plan Project ID	Project Description (2030)
90	Glenn Pkwy. Extension from Existing Glenn Pkwy. to Berlin Station Rd., New Roadway 2 lane(s) each direction with complete street facilities
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
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
97	Home Rd. from Section Line Rd. to US 23 (Columbus Pk.), 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
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
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
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
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
118	Livingston Ave. from Country Club Rd. to Briceton Dr., Add turn lanes and complete street facilities to 4 lane roadway
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
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
129	Courtright Dr. extension from SR 256 (Hill Rd.) to Milnor Rd., New Roadway 1 lane(s) each direction with complete street facilities
135	I-70 (East Freeway) at I-270 (East Outerbelt), Reconfigure slip, loop and/or directional interchange ramps
140	I-71 (South Freeway) at I-270 (South Outerbelt), Reconfigure slip, loop and/or directional interchange ramps

Plan Project ID	Project Description (2030)
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
174	Bixby Rd. from Ebright Rd. to US 33 (Southeast Freeway), Add turn lanes and complete street facilities to 2 lane roadway
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
178	I-71 (South Freeway) at Stringtown Rd., Interchange modification
182	Courtright Rd. extension from Milnor Rd. to Pickerington Rd. at Stemen Rd., New Roadway 1 lane(s) each direction with complete street facilities
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
192	Frantz Rd. extension from Post Rd. to High St. (Dublin Rd./SR 745), New Roadway 1 lane(s) each direction with complete street facilities
193	Eiterman Rd. relocation from Cosgray Rd. to Eiterman Rd., New Roadway 2 lane(s) each direction with 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
227	Churchman Rd. (Rings Rd. relocation) from Marmion Dr. to Rings Rd. (west of 3rd Ave in Amlin), New Roadway 1 lane(s) each direction with 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
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
272	Riggins Rd. extension from Wilcox Rd. to Avery Rd., New Roadway 2 lane(s) each direction with complete street facilities
321	Wilson Rd. south extension (future) from Cheshire Rd. to US 36/SR 37, New Roadway 2 lane(s) each direction with complete street facilities

Plan Project ID	Project Description (2030)
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
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
330	Lyra Dr. from Gemini Pl. to Powell Rd., New Roadway 2 lane(s) each direction with complete street facilities
339	Old 3C Hwy. from Tussic Street Rd. to Harrison St. (Galena), Add turn lanes and complete street facilities to 2 lane roadway
343	Shanahan Rd. from US 23 (Columbus Pk.) to Piatt Rd., Add turn lanes and complete street facilities to 2 lane roadway
344	3B's & K Rd. from Plumb Rd. to US 36/SR 37, Add turn lanes and complete street facilities to 2 lane roadway
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
349	SR 37 (Cherry St./Granville St.) from US 36/SR 3 to Walnut St., Add turn lanes and complete street facilities to 2 lane roadway
350	Cannon Rd. (relocation) from King Ave. to Kinnear Rd. extension (future), New Roadway 2 lane(s) each direction with complete street facilities
380	SR 161 from US-62 to Beech Road, Widen freeway from 4 lanes to 6 lanes total both directions
383	I-71 at TR 109 (Big Walnut Road), New interchange

Plan Project ID	Project Description (2030)
384	I-71 at Sunbury Parkway, New interchange
425	Brand Rd. from Avery Rd to Hyland-Croy Rd, Widen road from 2 lanes to 4 lanes total both directions with complete street facilities
426	Cosgray Rd. from Dublin South Corp Limit to Tuttle Crossing Blvd., Widen road from 2 lanes to 4 lanes total both directions with complete street facilities
427	Cosgray Rd. from Tuttle Crossing Blvd. 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
430	Eiterman Rd. from Bobcat Way to Shier Rings Rd., Add turn lanes and complete street facilities to 2 lane roadway
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
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
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
437	Research Pkwy. from Eiterman Rd. to SR 161/Post 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 1 lane(s) each direction with complete street facilities
443	Tuttle Crossing Blvd. extension from Amity Pike to Cosgray Rd., New Roadway 1 lane(s) each direction with complete street facilities
459	South Horseshoe Rd. from E. Dublin-Granville Rd. 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
461	Beech Rd. connector from West Beech Rd. to East Beech Rd., New Roadway 1 lane(s) each direction with complete street facilities

Plan Project ID	Project Description (2030)
462	Smith's Mill Rd. extension from Smith's Mill Rd. North to Harrison 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
464	SR-161 from Harlem Rd. to US-62, Widen freeway from 4 lanes to 6 lanes total both directions
475	East Beech Rd. from South Horseshoe Rd. to Worthington Rd., New Roadway 1 lane(s) each direction with complete street facilities
530	Innovation Way from Existing Innovation Way end to Mink St. Rd., New Roadway 1 lane(s) each direction with complete street facilities
537	Old 3C Hwy from Freeman Rd. to Tussic Rd., Add turn lanes and complete street facilities to 2 lane roadway
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
682	Rickenbacker Pkwy Extension from Ashville Pike to Pontious Rd., New Roadway 2 lane(s) each direction with complete street facilities
745	Cottswold Dr. extension from US 23 to Stratford 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
748	SR 37 (W Central Ave.) from CSX Railway to Lexington Blvd., Add turn lanes and complete street facilities to 2 lane roadway
749	SR 37 (E Central Ave.) from US 23 to US 36, Add turn lanes and complete street facilities to 2 lane roadway
787	I-70 from I-270 to Brice Rd., Widen freeway from 6 lanes to 8 lanes total both directions
805	Allen Rd. extension from Stemen Rd. to Auult Rd., New Roadway 1 lane(s) each direction with 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



Plan Project ID	Project Description (2030)
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
813	Thompson Ave. from County 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
875	West Case St. (proposed) from Big Bear Ave. to Traditions Way, 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
881	Depot St. extension (south) from Powell City Hall to Liberty St., New Roadway 1 lane(s) each direction with complete street facilities
882	Grace Dr. extension from Powell Rd. to Liberty St., New Roadway 1 lane(s) each direction with complete street facilities
883	Liberty - Grace connector (north) from Liberty St. to Grace Dr extension (proposed), New Roadway 1 lane(s) each direction with complete street facilities
884	Liberty - Grace connector (south) from Liberty St. to Grace Dr. extension (proposed), New Roadway 1 lane(s) each direction with complete street facilities
904	Tuttle Crossing Blvd. extension from Rings Rd. to Houchard Rd., New Roadway 1 lane(s) each direction with complete street facilities
907	I-670 from 4th St. to I-270, Apply traffic management strategies to specific lanes during specified times of day

Plan Project ID	Project Description (2030)
908	I-70 (east freeway) from Alum Creek Dr. to SR 310, 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. extension from Kilgour Pl to High St./Dublin Rd., New Roadway 1 lane(s) each direction with complete street facilities
924	John Shields Pkwy Phase 2 from Dale Dr. to Village Pkwy., New Roadway 1 lane(s) each direction with complete street facilities
925	Village Center Pkwy extension from Existing Village Center Pkwy to SR 161, New Roadway 1 lane(s) each direction with complete street facilities
936	Dempsey Rd. from I-270 to Sunbury Rd., Add turn lanes and complete street facilities to 2 lane roadway
1108	Easton Square Place extension from Morse Crossing to Stelzer Rd., 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
1183	Blaney Rd. (CR-15) Extension/Realignment from Home Rd. to US 42, New Roadway 2 lane(s) each direction with complete street facilities
1184	Ravenhill Pkwy extension from Existing western terminus to Mitchell-Dewitt Rd., New Roadway 1 lane(s) each direction with complete street facilities
1188	Watkins-California Rd. realignment from Watkins-California Rd. to US 42, New Roadway 1 lane(s) each direction with complete street facilities
1190	Long Rd. from Columbus St. to Diley Rd., Add turn lanes and complete street facilities to 2 lane roadway
1192	John Shields Pkwy from Village Pkwy to Dublin Center Dr., New Roadway 1 lane(s) each direction with complete street facilities

Plan Project ID	Project Description (2030)
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LCATS IR70 widening through Licking County

**Table 11: Additional Projects identified for year 2040**

Plan Project ID	Project Description (2040)
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| 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             |
| 2  | Mckinley Ave. from Grandview Ave. to Central Ave., Add turn lanes and complete street facilities to 4 lane roadway   |
| 14 | Watkins Rd. from Groveport Rd. to Alum Creek Dr., 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                                    |
| 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         |
| 33 | Gender Rd. from US 33 (Southeast Freeway) to Brice Rd., Widen road from 2 lanes to 4 lanes total both directions with complete street facilities           |
| 39 | Trabue Rd./Renner Rd. from Hilliard-Rome Rd. to Conrail overpass, Widen road from 2 lanes to 4 lanes total both directions with complete street facilities |
| 40 | I-270 (North Outerbelt) at SR 315 (Olentangy Freeway), Reconfigure slip, loop and/or directional interchange ramps   |
| 49 | Hudson St. from McGuffey Rd. to Cleveland Ave. (SR 3), 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  |

Plan Project ID	Project Description (2040)
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
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
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
93	Roberts Rd. from Alton & Darby Creek Rd. to Hilliard Rome Rd., Widen road from 2 lanes to 4 lanes total both directions with complete street facilities
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
110	Waggoner Rd. from Main St. (US 40) to Broad St. (SR 16), 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
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
166	US 33/SR 161 at Frantz Rd/Post Rd., Add/Modify turn lanes and add complete street facilities

Plan Project ID	Project Description (2040)
173	Waggoner Rd. from Broad St. (SR 16) to Havens Corners Rd., Add turn lanes and complete street facilities to 2 lane roadway
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
177	Groveport Rd. from Williams Rd. to Alum Creek Dr., Add turn lanes and complete street facilities to 2 lane roadway
187	Third Ave. from Edgehill Rd. to Olentangy River Rd., Widen road from 2 lanes to 4 lanes total both directions with complete street facilities
189	I-70/I-71 (South Innerbelt) at I-71S/SR 315 (west interchange), Reconfigure slip, loop and/or directional interchange ramps
196	Broad St. (SR 16) at James Rd., Add/Modify turn lanes and add complete street facilities
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
209	Morse Rd. at Westerville Rd. (SR 3), 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
212	Dublin-Granville Rd. (SR 161) at Karl Rd., Add/Modify turn lanes and add complete street facilities
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
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

Plan Project ID	Project Description (2040)
223	Hills Miller Rd. at Troy 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
225	Cheshire Rd. at Galena Rd./Rome Corners Rd., Add/Modify turn lanes and add complete street facilities
226	Liberty Rd. at Jewett Rd., Add/Modify turn lanes and add complete street facilities
233	Milnor Rd. from Pickerington Rd. to Refugee Rd., Add turn lanes and complete street facilities to 2 lane roadway
236	Pickerington Rd. (Center St.) at Milnor Rd./Meadows Blvd., Add/Modify turn lanes and add 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
260	US 23 (Columbus Pk.) at Cheshire Rd., Add/Modify turn lanes and add complete street facilities
263	Old State Rd. from Orange Rd. to Lewis Center Rd., Widen road from 2 lanes to 4 lanes total both directions with complete street facilities
271	I-70 (East Freeway) from I-71 (East Innerbelt) to Kelton Ave., Widen freeway from 8 lanes to 10 lanes total both directions
386	US 33 at SR-161/Post Road, Interchange modification
387	I-270 at Cemetery Road, Interchange modification
414	US 33 (Columbus-Lancaster Rd) from Hill Rd/Diley Rd to Lancaster Bypass, Convert 4 lane roadway to 4 lane freeway
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
422	Winchester Blvd from Kroger/Home Depot Shopping Center to West, New Roadway 1 lane(s) each direction with complete street facilities
423	High St (Canal Winchester) at US 33, New Roadway 1 lane(s) each direction with complete street facilities

Plan Project ID	Project Description (2040)
453	Norwich St. from Cemetery Rd. to Scioto Darby Rd., 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
471	Palmer Rd. from Graham Rd. to Ravine Way (corp limit), Add turn lanes and complete street facilities to 2 lane roadway
474	Dublin-Granville Rd. from Sawmill Rd. to Linworth Rd., Widen road from 2 lanes to 4 lanes total both directions with complete street facilities
482	Champion Ave. at Mt. Vernon Ave., Add/Modify turn lanes and add complete street facilities
483	Champion Ave. at Broad St., Add/Modify turn lanes and add complete street facilities
575	Merrick - Troy Connector from Merrick Blvd. to Troy Rd., New Roadway 1 lane(s) each direction with complete street facilities
581	Ferguson - Vernon Connector from Ferguson Ave. to Vernon Ave., New Roadway 1 lane(s) each direction with complete street facilities
598	Hyatts Rd. at Liberty Rd., Add/Modify turn lanes and add complete street facilities
607	Delaware Northeast Bypass from US 23 to US 36, New Roadway 2 lane(s) each direction with complete street facilities
648	Hudson St. at Indianola Ave., Add/Modify turn lanes and add complete street facilities
651	Olentangy River Rd. at Goodale Blvd., Add/Modify turn lanes and add complete street facilities
652	King Ave. at Olentangy River Rd., Add/Modify turn lanes and add complete street facilities
654	Seventeenth Ave. at I-71 off ramp, Add/Modify turn lanes and add complete street facilities
676	Trabue Rd. at Dublin Rd., Add/Modify turn lanes and add complete street facilities
679	US 23 from I-270 S to Pickaway County Line, Convert 4 lane roadway to 4 lane freeway

Plan Project ID	Project Description (2040)
704	Tremont Rd. at Redding Rd., Construct roundabout with complete street facilities
723	Refugee Rd. at Pickerington Rd., Construct roundabout with complete street facilities
727	Scioto-Darby Rd. at Leap Rd., Add/Modify turn lanes and add complete street facilities
735	High St. at Greenlawn Ave., Add/Modify turn lanes and add complete street facilities
750	US 36/SR 37 from Bowtown Rd. to SR 37 split, Widen road from 2 lanes to 4 lanes total both directions with complete street facilities
751	Merrick Pkwy from Troy Rd. to US 23, New Roadway 1 lane(s) each direction with complete street facilities
781	SR 161 at Cosgray Rd., Construct roundabout with complete street facilities
782	Refugee Rd. from Mink Rd. to SR 310, Add turn lanes and complete street facilities to 2 lane roadway
792	Groveport Rd. from Swisher Rd. to SR 317, Add turn lanes and complete street facilities to 2 lane roadway
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
815	Stygler Rd. at Agler Rd., Add/Modify turn lanes and add complete street facilities
818	Havens Corners Rd. from Hamilton Rd. to Taylor Station Rd., Add turn lanes and complete street facilities to 2 lane roadway
834	Etna Rd. from Hamilton Rd. to Country Club Rd., Add turn lanes and complete street facilities to 2 lane roadway
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
838	I-70 at Hamilton Rd., Modify ramp termini intersection(s)
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

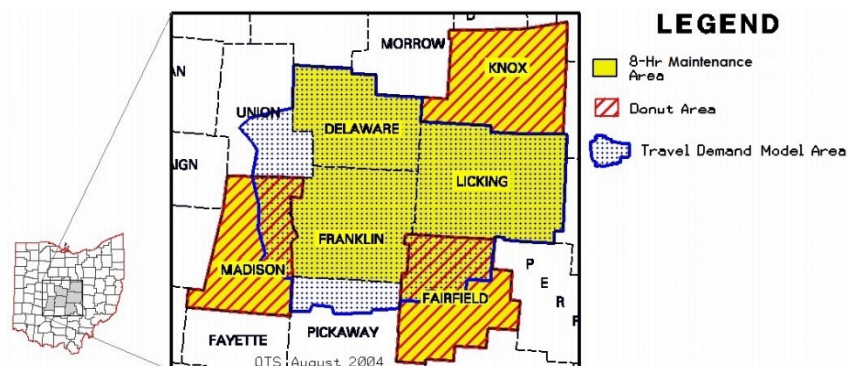


Plan Project ID	Project Description (2040)
854	SR 204 at Taylor rd., Add/Modify turn lanes and add complete street facilities
856	Ackerman Rd. at Fred Taylor, Add/Modify turn lanes and add complete street facilities
868	Kinneer Rd. at Kenny Rd., Add/Modify turn lanes and add complete street facilities
910	SR 315 from I-670 to I-270, Apply traffic management strategies to specific lanes during specified times of day
911	I-71 (North Freeway) from I-670 to I-270, Apply traffic management strategies to specific lanes during specified times of day
935	College Ave. from Otterbein Ave. to Spring Rd., Add turn lanes and complete street facilities to 2 lane roadway
937	Schrock Rd. at Cooper 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
953	Livingston Ave. from High St. to Mohawk St., Convert from 3 one-way lanes to 2 lanes total both directions with complete street facilities
961	Main St. from High St. to Grant Ave., Convert from 2 one-way lanes to 2 lanes total both directions with complete street facilities
1107	Sullivant Ave. at Hague Ave., Add/Modify turn lanes and add complete street facilities
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

## 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.

Fig 1: Columbus / Newark 8-Hour Maintenance Area



The ozone area has established 8-hour budgets for VOC and NOx for the six county area. Thus, the conformity test requirements is the budget test with the budgets being the values shown previously in Table 1.

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 NOx 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

Franklin County	2020	2030	2040
VMT (miles/day)	36,397,300	38,706,44	40,999,74
VOC (tons/day)	29.458	18.814	13.724
NOx (tons/day)	36.537	16.541	11.100

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

Delaware County	2020	2030	2040
VMT (miles/day)	6,394,806	7,418,478	8,373,924
VOC (tons/day)	3.170	2.184	1.668
NOx (tons/day)	4.678	2.306	1.612

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

<b>Licking County</b>	2020	2030	2040
VMT (miles/day)	6,303,579	7,008,387	7,745,117
VOC (tons/day)	3.719	2.402	1.829
NOx (tons/day)	5.134	2.382	1.653

**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	2030	2040
VMT (miles/day)	2,071,59	2,249,322	2,360,826
VOC (tons/day)	1.010	0.613	0.495
NOx (tons/day)	1.492	0.662	0.463

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

<b>Fairfield County</b>	2020	2030	2040
VMT (miles/day)	2,242,634	2,641,843	3,036,549
VOC (tons/day)	0.942	0.610	0.459
NOx (tons/day)	1.207	0.594	0.407

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

<b>Fairfield County</b>	2020	2030	2040
VMT (miles/day)	4,314,229	4,891,165	5,397,375
VOC (tons/day)	1.952	1.223	0.954
NOx (tons/day)	2.699	1.256	0.870

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	2030	2040
VMT (miles/day)	1,013,786	1,149,796	1,284,039
VOC (tons/day)	0.471	0.321	0.247
NOx (tons/day)	0.713	0.347	0.245

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

<b>Madison County</b>	2020	2030	2040
VMT (miles/day)	2,601,728	2,962,869	3,315,531
VOC (tons/day)	0.862	0.566	0.419
NOx (tons/day)	1.323	0.658	0.445

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

<b>Madison County</b>	2020	2030	2040
VMT (miles/day)	3,615,514	4,112,665	4,599,570
VOC (tons/day)	1.333	0.887	0.666
NOx (tons/day)	2.036	1.005	0.690

**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	2030	2040
VMT (miles/day)	1,297,675	1,342,317	1,382,776
VOC (tons/day)	0.635	0.413	0.301
NOx (tons/day)	0.721	0.332	0.209

**Total Emissions for the Columbus/Central Ohio area**

Table 18, summarizes emissions estimates for the entire six county area. These emissions presented here is simply sum of all emissions in six counties summarized in Tables 12 through 17.

**Table 18: Emission Estimations for On-Road Mobile Sources for Columbus/Central Ohio**

<b>Central Ohio Area</b>	<b>2020</b>	<b>2030</b>	<b>2040</b>
VMT (miles/day)	58,323,103	63,479,460	68,498,509
VOC (tons/day)	40.265	25.923	19.142
NOx (tons/day)	51.805	23.823	16.134

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

Tables 19 and 20, 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 19: VOC Emission Inventory Summary (tons/day)**

<b>VOC</b>	<b>2020</b>	<b>2030</b>	<b>2040</b>
<b>Franklin</b>	29.458	18.814	13.724
<b>Delaware</b>	3.170	2.184	1.668
<b>Licking</b>	3.719	2.402	1.829
<b>Fairfield</b>	1.952	1.223	0.954
<b>Madison</b>	1.333	0.887	0.666
<b>Knox</b>	0.635	0.413	0.301
<b>Total</b>	<b>40.265</b>	<b>25.923</b>	<b>19.142</b>

**Table 20: NOx Emission Inventory Summary (tons/day)**

<b>NOx</b>	<b>2020</b>	<b>2030</b>	<b>2040</b>
<b>Franklin</b>	36.537	16.541	11.100
<b>Delaware</b>	4.678	2.306	1.612
<b>Licking</b>	5.134	2.382	1.653
<b>Fairfield</b>	2.699	1.256	0.870
<b>Madison</b>	2.036	1.005	0.690
<b>Knox</b>	0.721	0.332	0.209
<b>Total</b>	<b>51.805</b>	<b>23.823</b>	<b>16.134</b>

### Conformity Determination for Ozone

Table 21 illustrates that the emissions for VOC and NO<sub>x</sub> are less than their corresponding budgets. Thus, the MORPC and LCATS Transportation Plans are in conformity with the requirements of the CAAA and the SIP.

**Table 21: Air Quality Analysis for the Columbus Ozone Maintenance Area**

	VOC (tons/day)	Budget (tons/day)	NOx (tons/day)	Budget (tons/day)
2020	40.265	50.66	51.805	90.54
2030	25.923	44.31	23.823	85.13
2040	19.142	44.31	16.134	85.13

# Attachment A-Technical Air Quality Information

Franklin, Delaware, Licking, Fairfield, Madison and Knox  
County Ozone Maintenance Area

## 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: {cm3effile,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: {cm3ieffile,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: {cm3volvf,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
*if exist summary.rpt DEL summary.rpt
*if exist hourly.rpt DEL hourly.rpt
```

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```
*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
```

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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

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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							

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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	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	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							

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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
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
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																

ENDCOPY  
volff='li.1.{cm3volff}'  
trkfff='{cm3trkff}'  
if (trkfff == 'NONE')  
trkff='\_zero'  
else  
trkff='li.1.{cm3trkff}'  
endif  
vol1s='\_zero'  
vol2s='\_zero'  
vol3s='\_zero'  
vol4s='\_zero'  
vol5s='\_zero'  
vol6s='\_zero'  
vol7s='\_zero'  
vol8s='\_zero'  
vol9s='\_zero'  
vol10s='\_zero'  
vol11s='\_zero'  
vol12s='\_zero'  
vol13s='\_zero'  
vol14s='\_zero'  
vol15s='\_zero'  
vol16s='\_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
0																
CLS BEG	18	6	9	14	18	6	9	14	0	0	0	0	0	0	0	0
0																

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```

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'
  volls='li.1.volnt_aut'
  vol2s='li.1.volam_aut'
  vol3s='li.1.volmd_aut'
  vol4s='li.1.volpm_aut'
  vol5s='li.1.volnt_trk'
  vol6s='li.1.volam_trk'
  vol7s='li.1.volmd_trk'
  vol8s='li.1.volpm_trk'
  vol9s='_zero'
  voll0s='_zero'
  voll1s='_zero'
  voll2s='_zero'
  voll3s='_zero'
  voll4s='_zero'
  voll5s='_zero'
  voll6s='_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'
  volls='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'
  voll0s='_zero'
  voll1s='_zero'
  voll2s='_zero'

```

```

voll3s='_zero'
voll4s='_zero'
voll5s='_zero'
voll6s='_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'
voll2s='li.1.amvol_autwk'
voll3s='li.1.mdvol_autwk'
voll4s='li.1.pvol_autwk'
voll5s='li.1.evol_trkhv'
voll6s='li.1.amvol_trkhv'
voll7s='li.1.mdvol_trkhv'
voll8s='li.1.pvol_trkhv'
voll9s='li.1.evol_autnw'
voll10s='li.1.amvol_autnw'
voll11s='li.1.mdvol_autnw'
voll12s='li.1.pvol_autnw'
voll13s='li.1.evol_trklt'
voll14s='li.1.amvol_trklt'
voll15s='li.1.mdvol_trklt'
voll16s='li.1.pvol_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={cm3netiq}
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),
voll(6),vol2(6),vol3(6),vol4(6),vol5(6),vol6(6),vol7(6),vol8(6),vol9(6),voll10(6),voll11(6),

```

```

        voll2(6),voll3(6),voll4(6),voll5(6),voll6(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=@trkff@
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} tempef.txt
*N:\AQ\MOVES\utils\postcms10.exe templnk.txt tempcms.txt N tempef.txt {cm3rmode}
*del tempef.txt
else
*N:\AQ\MOVES\utils\postcms10.exe templnk.txt tempcms.txt N NONE {cm3rmode}
endif
if(aqmode=='MOVES')
*copy {cm3effile.q} tempef.txt
if(rrmode='NORMAL' && trkfff == 'NONE')
*N:\AQ\MOVES\utils\movesnet.exe hourly.rpt tempef.txt cmstext.rpt {cm3aqfact}
else
*N:\AQ\MOVES\utils\movesnet.exe hourly.rpt tempef.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.1.1.5+mi.1.1.10+mi.1.1.15
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 tempief.txt tempaf.txt cmstext.rpt {cm3aqfact}
*del tempief.txt
endif

*del tempaf.txt
*DEL tempif.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

```

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```

*echo {cm3aqcom} >> tempcom.txt
*echo Loaded Network:           {cm3net1} >> 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: ..\..\Networks\2020\AQ\_asgn\_2020.net  
 Network Emission Factors: ..\..\Ozone\factors\2020MORPC\_ozone\_3source\_rpd.csv  
 Vehicle Emission Factors: ..\..\Ozone\factors\2020MORPC\_ozone\_3source\_rpv.csv  
 Vehicle Population : ..\..\Ozone\factors\Source\_Type\_Pop\_2020\_MORPC\_on-Model.csv  
 Intrazonal Trips : ..\..\TripTables\2020\FRA2020.txt  
 Area File (sq mi): ..\..\TripTables\TAZ\_areaain.txt  
 Volume Field Used: VOL24\_TOT  
 Truck Volume Field Used: NONE  
 Capacity Field Used: CAP24

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

POSTCMS10, UPDATED DEC 2009, GTG  
 DATE:04/20/2017 TIME:14:39:06

#### 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	8.0	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	8.2	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	7.5	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	8.1	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	5.2	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	6.0	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	5.3	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	5.5	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	46	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	40	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	42	44	46	48	54	60	68	68	64	58	54	52	50	50	52	52
48	42	40	44	48	48	44	46	44								

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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	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	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	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	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	30	29.9	29.7	29.3	28.7	27.7	26.2	24.4	22.1	19.6
14.4	12	9.9	8.1	6.6	5.4	4.4	3.6	2.9							17

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LCATS 2018-2021 Transportation Improvement Program

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

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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	5913909.	0.0000	0.0000	0.0000	0.0000
ERI	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
FAI	JANUARY	1910414.	0.0000	0.0000	0.0000	0.0000
FAY	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
FRA	JANUARY	33673400.	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	5822304.	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	937542.	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	79683.	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	878477.	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	1870769.	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	127043.	0.0000	0.0000	0.0000	0.0000
TOT	JANUARY	51198492.	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	5913909.	0.0000	0.0000	0.0000	0.0000
ERI	APRIL	0.	0.0000	0.0000	0.0000	0.0000
FAY	APRIL	1910414.	0.0000	0.0000	0.0000	0.0000
FAY	APRIL	0.	0.0000	0.0000	0.0000	0.0000
FRA	APRIL	33673400.	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	5822304.	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	937542.	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	79683.	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	878477.	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	1870769.	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	127043.	0.0000	0.0000	0.0000	0.0000
TOT	APRIL	51198492.	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	6387022.	1.4317	3.8155	0.0000	0.0000
ERI	JULY	0.	0.0000	0.0000	0.0000	0.0000
FAI	JULY	2063247.	0.4555	1.2145	0.0000	0.0000

FAY	JULY	0.	0.0000	0.0000	0.0000	0.0000
FRA	JULY	36367272.	13.3076	29.8153	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	6288089.	1.6791	4.1849	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	1012545.	0.2126	0.5818	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	86058.	0.0189	0.0517	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	948755.	0.1818	0.5200	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	2020431.	0.5938	1.4454	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	137207.	0.0199	0.0642	0.0000	0.0000
TOT	JULY	55294372.	17.8921	41.6800	0.0000	0.0000

MOVES	INTRAZONAL	EMISSIONS	OUTPUT			
	MONTH	VMT	HC	NOX	SO2	PM2.5
	JANUARY	27804.	0.0000	0.0000	0.0000	0.0000
	APRIL	27804.	0.0000	0.0000	0.0000	0.0000
	JULY	30028.	0.0054	0.0155	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 2030

### Ozone Analysis

#### MOVES BASED EMISSIONS REPORT

Ozone Analysis with MOVES - MORPC

Loaded Network: ..\..\Networks\2030\AQ\_asgn\_2030.net  
 Network Emission Factors: ..\..\Ozone\factors\2030MORPC\_ozone\_3source\_rpd.csv  
 Vehicle Emission Factors: ..\..\Ozone\factors\2030MORPC\_ozone\_3source\_rpv.csv  
 Vehicle Population : ..\..\Ozone\factors\Source\_Type\_Pop\_2030\_MORPC\_on-Model.csv  
 Intrazonal Trips : ..\..\TripTables\2030\FRA2030.txt  
 Area File (sq mi): ..\..\TripTables\TAZ\_areaain.txt  
 Volume Field Used: VOL24\_TOT  
 Truck Volume Field Used: NONE  
 Capacity Field Used: CAP24

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

POSTCMS10, UPDATED DEC 2009, GTG  
 DATE:04/20/2017 TIME:14:54:36

#### 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	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								

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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	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	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	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	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	30	29.9	29.7	29.3	28.7	27.7	26.2	24.4	22.1	19.6
14.4	12	9.9	8.1	6.6	5.4	4.4	3.6	2.9							17

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LCATS 2018-2021 Transportation Improvement Program

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

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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	6859975.	0.0000	0.0000	0.0000	0.0000
ERI	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
FAI	JANUARY	2073598.	0.0000	0.0000	0.0000	0.0000
FAY	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
FRA	JANUARY	35810024.	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	6472848.	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	1063256.	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	88198.	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	933198.	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	2198015.	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	142898.	0.0000	0.0000	0.0000	0.0000
TOT	JANUARY	55624972.	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	6859975.	0.0000	0.0000	0.0000	0.0000
ERI	APRIL	0.	0.0000	0.0000	0.0000	0.0000
FAI	APRIL	2073598.	0.0000	0.0000	0.0000	0.0000
FAY	APRIL	0.	0.0000	0.0000	0.0000	0.0000
FRA	APRIL	35810024.	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	6472848.	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	1063256.	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	88198.	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	933198.	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	2198015.	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	142898.	0.0000	0.0000	0.0000	0.0000
TOT	APRIL	55624972.	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	7408773.	0.8726	1.7663	0.0000	0.0000
ERI	JULY	0.	0.0000	0.0000	0.0000	0.0000
FAI	JULY	2239486.	0.2446	0.5062	0.0000	0.0000

FAY	JULY	0.	0.0000	0.0000	0.0000	0.0000
FRA	JULY	38674828.	7.5183	12.6775	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	6990676.	0.9593	1.8239	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	1148317.	0.1282	0.2660	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	95254.	0.0113	0.0232	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	1007853.	0.1033	0.2224	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	2373856.	0.3648	0.6750	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	154330.	0.0116	0.0284	0.0000	0.0000
TOT	JULY	60074972.	10.2097	17.9832	0.0000	0.0000

MOVES INTRAZONAL EMISSIONS OUTPUT						
MONTH	VMT	HC	NOX	SO2	PM2.5	
JANUARY	29277.	0.0000	0.0000	0.0000	0.0000	0.0000
APRIL	29277.	0.0000	0.0000	0.0000	0.0000	0.0000
JULY	31620.	0.0030	0.0064	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: ..\..\Networks\2040\AQ\_asgn\_2040.net  
 Network Emission Factors: ..\..\Ozone\factors\2040MORPC\_ozone\_3source\_rpd.csv  
 Vehicle Emission Factors: ..\..\Ozone\factors\2040MORPC\_ozone\_3source\_rpv.csv  
 Vehicle Population : ..\..\Ozone\factors\Source\_Type\_Pop\_2040\_MORPC\_on-Model.csv  
 Intrazonal Trips : ..\..\TripTables\2040\FRA2040.txt  
 Area File (sq mi): ..\..\TripTables\TAZ\_areaain.txt  
 Volume Field Used: VOL24\_TOT  
 Truck Volume Field Used: NONE  
 Capacity Field Used: CAP24

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

POSTCMS10, UPDATED DEC 2009, GTG  
 DATE:04/20/2017 TIME:15:37:43

#### 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	8.0	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		7.9	5.8	4.2	3.4	2.9	2.2	1.5								
URB ART	8.2	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		8.1	6.2	4.8	4.0	3.0	1.9	1.3								
RUR FWY	7.5	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		7.0	5.6	4.5	3.8	3.2	2.5	2.0								
RUR ART	8.1	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		7.7	5.6	4.2	3.5	2.8	1.9	1.3								
PCTADT TRK																
URB FWY	5.2	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		4.6	4.1	3.7	3.4	3.1	2.8	2.4								
URB ART	6.0	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		5.0	3.7	2.8	2.3	1.9	1.5	1.3								
RUR FWY	5.6	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		4.9	4.6	4.3	4.0	3.8	3.5	3.1								
RUR ART	6.3	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		4.6	3.8	3.1	2.6	2.3	2.1	1.7								
PCTDIR																
URB FWY	46	38	40	40	46	56	64	70	70	68	62	58	52	52	52	50
46		38	46	52	46	42	42	40								
URB ART	46	44	46	44	48	54	62	66	68	64	56	54	52	50	50	50
46		38	46	52	48	46	46	46								
RUR FWY	48	44	46	48	54	60	68	68	64	58	54	52	50	50	52	52
48		40	44	48	48	44	46	44								

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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	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	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	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	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	30	29.9	29.7	29.3	28.7	27.7	26.2	24.4	22.1	19.6
14.4	12	9.9	8.1	6.6	5.4	4.4	3.6	2.9							17

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Air Quality Conformity Appendix

LCATS 2018-2021 Transportation Improvement Program

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

April 28, 2017

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Air Quality Conformity Appendix

LCATS 2018-2021 Transportation Improvement Program



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	7742872.	0.0000	0.0000	0.0000	0.0000
ERI	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
FAI	JANUARY	2175469.	0.0000	0.0000	0.0000	0.0000
FAY	JANUARY	0.	0.0000	0.0000	0.0000	0.0000
FRA	JANUARY	37931984.	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	7152940.	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	1187338.	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	100447.	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	995666.	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	2537791.	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	158878.	0.0000	0.0000	0.0000	0.0000
TOT	JANUARY	59967072.	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	7742872.	0.0000	0.0000	0.0000	0.0000
ERI	APRIL	0.	0.0000	0.0000	0.0000	0.0000
FAI	APRIL	2175469.	0.0000	0.0000	0.0000	0.0000
FAY	APRIL	0.	0.0000	0.0000	0.0000	0.0000
FRA	APRIL	37931984.	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	7152940.	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	1187338.	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	100447.	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	995666.	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	2537791.	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	158878.	0.0000	0.0000	0.0000	0.0000
TOT	APRIL	59967072.	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	8362302.	0.7101	1.2658	0.0000	0.0000
ERI	JULY	0.	0.0000	0.0000	0.0000	0.0000
FAI	JULY	2349506.	0.2105	0.3629	0.0000	0.0000

FAY	JULY	0.	0.0000	0.0000	0.0000	0.0000
FRA	JULY	40966544.	5.8456	8.7214	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	7725176.	0.7788	1.2975	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	1282325.	0.1050	0.1921	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	108482.	0.0094	0.0171	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	1075319.	0.0818	0.1526	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	2740814.	0.3064	0.5024	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	171589.	0.0092	0.0193	0.0000	0.0000
TOT	JULY	64764440.	8.0523	12.5256	0.0000	0.0000

MOVES INTRAZONAL EMISSIONS OUTPUT						
MONTH	VMT	HC	NOX	SO2	PM2.5	
JANUARY	30744.	0.0000	0.0000	0.0000	0.0000	0.0000
APRIL	30744.	0.0000	0.0000	0.0000	0.0000	0.0000
JULY	33203.	0.0022	0.0041	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 HPMS VMT and Emissions (Outside of Travel Demand Model Area)**

**2020**

MOVES BASED HPMS EMISSIONS REPORT  
MORPC area AQ analysis - Ozone emissions Analysis  
Input VMT File: ..\factors\MORPC\_FAI\_Off-Model\_VMT\_2020.csv  
Network Emission Factors: ..\factors\2020MORPC\_ozone\_3source\_rpd.csv  
Vehicle Emission Factors: ..\factors\2020MORPC\_ozone\_3source\_rpv.csv  
Vehicle Population: ..\factors\Source\_Type\_Pop\_2020\_MORPC\_off-model\_FAI.csv

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DATE:04/26/2017 TIME:16:28:38

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	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  
Input VMT File: ..\factors\MORPC\_KNO\_Off-Model\_VMT\_2020.csv  
Network Emission Factors: ..\factors\2020MORPC\_ozone\_3source\_rpd.csv  
Vehicle Emission Factors: ..\factors\2020MORPC\_ozone\_3source\_rpv.csv  
Vehicle Population: ..\factors\Source\_Type\_Pop\_2020\_MORPC\_off-model\_KNO.csv

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DATE:04/26/2017 TIME:16:32:14

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

Input VMT File: ..\factors\MORPC\_MAD\_Off-Model\_VMT\_2020.csv  
 Network Emission Factors: ..\factors\2020MORPC\_ozone\_3source\_rpd.csv  
 Vehicle Emission Factors: ..\factors\2020MORPC\_ozone\_3source\_rpv.csv  
 Vehicle Population: ..\factors\Source\_Type\_Pop\_2020\_MORPC\_off-model\_MAD.csv

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 DATE:04/26/2017 TIME:16:32:38

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							

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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	

### 2030

#### MOVES BASED HPMS EMISSIONS REPORT

MORPC area AQ analysis - Ozone emissions Analysis

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

Network Emission Factors: ..\factors\2030MORPC\_ozone\_3source\_rpd.csv

Vehicle Emission Factors: ..\factors\2030MORPC\_ozone\_3source\_rpv.csv

Vehicle Population: ..\factors\Source\_Type\_Pop\_2030\_MORPC\_off-model\_FAI.csv

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DATE:04/26/2017 TIME:16:33:08

#### 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	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	

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JULY 80155. 0.4501 0.1606 0.0000 0.0000

MOVES BASED HPMS EMISSIONS REPORT

MORPC area AQ analysis - Ozone emissions Analysis

Input VMT File: ..\factors\MORPC\_KNO\_Off-Model\_VMT\_2030.csv
Network Emission Factors: ..\factors\2030MORPC\_ozone\_3source\_rpd.csv
Vehicle Emission Factors: ..\factors\2030MORPC\_ozone\_3source\_rpv.csv
Vehicle Population: ..\factors\Source\_Type\_Pop\_2030\_MORPC\_off-model\_KNO.csv

DATE:04/26/2017 TIME:16:33:26

PARAMETER FILE DUMP (DAILY.DAT FILE)

Table with 17 columns (0-16) and 10 rows (PCTADT, URB FWY, URB ART, RUR FWY, RUR ART) showing hourly emission factors.

AQ SEASON FACTOR: 1.08000004

MOVES HPMS EMISSIONS OUTPUT

Table with 7 columns (MONTH, VMT, HC, NOX, SO2, PM2.5) and 4 rows (JANUARY, APRIL, JULY).

MOVES VEHICLE BASED EMISSIONS OUTPUT

Table with 7 columns (MONTH, VEHICLES, HC, NOX, SO2, PM2.5) and 4 rows (JANUARY, APRIL, JULY).

MOVES BASED HPMS EMISSIONS REPORT

MORPC area AQ analysis - Ozone emissions Analysis

Input VMT File: ..\factors\MORPC\_MAD\_Off-Model\_VMT\_2030.csv
Network Emission Factors: ..\factors\2030MORPC\_ozone\_3source\_rpd.csv
Vehicle Emission Factors: ..\factors\2030MORPC\_ozone\_3source\_rpv.csv
Vehicle Population: ..\factors\Source\_Type\_Pop\_2030\_MORPC\_off-model\_MAD.csv

DATE:04/26/2017 TIME:16:34:16

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	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

MOVES VEHICLE BASED EMISSIONS OUTPUT

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**

MOVES BASED HPMS EMISSIONS REPORT

MORPC area AQ analysis - Ozone emissions Analysis

Input VMT File: ..\factors\MORPC\_FAI\_Off-Model\_VMT\_2040.csv  
 Network Emission Factors: ..\factors\2040MORPC\_ozone\_3source\_rpd.csv  
 Vehicle Emission Factors: ..\factors\2040MORPC\_ozone\_3source\_rpv.csv  
 Vehicle Population: ..\factors\Source\_Type\_Pop\_2040\_MORPC\_off-model\_FAI.csv

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 DATE:04/26/2017 TIME:16:34:43

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								

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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	0.0000
APRIL	2728889.	0.0000	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	0.0000
APRIL	82731.	0.0000	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

Input VMT File: ..\factors\MORPC\_KNO\_Off-Model\_VMT\_2040.csv  
Network Emission Factors: ..\factors\2040MORPC\_ozone\_3source\_rpd.csv  
Vehicle Emission Factors: ..\factors\2040MORPC\_ozone\_3source\_rpv.csv  
Vehicle Population: ..\factors\Source\_Type\_Pop\_2040\_MORPC\_off-model\_KNO.csv

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DATE:04/26/2017 TIME:16:35:09

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	0.0000
APRIL	1218357.	0.0000	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	0.0000
APRIL	61991.	0.0000	0.0000	0.0000	0.0000	0.0000

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JULY            66950.    0.2476    0.0778    0.0000    0.0000

MOVES BASED HPMS EMISSIONS REPORT

MORPC area AQ analysis - Ozone emissions Analysis

Input VMT File:            ..\factors\MORPC\_MAD\_Off-Model\_VMT\_2040.csv  
 Network Emission Factors: ..\factors\2040MORPC\_ozone\_3source\_rpd.csv  
 Vehicle Emission Factors: ..\factors\2040MORPC\_ozone\_3source\_rpv.csv  
 Vehicle Population:        ..\factors\Source\_Type\_Pop\_2040\_MORPC\_off-model\_MAD.csv

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 DATE:04/26/2017 TIME:16:35:29

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	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	0.0000
APRIL	2993062.	0.0000	0.0000	0.0000	0.0000
JULY	3232507.	0.1121	0.3489	0.0000	0.0000

MOVES VEHICLE BASED EMISSIONS OUTPUT

MONTH	VEHICLES	HC	NOX	SO2	PM2.5
JANUARY	76874.	0.0000	0.0000	0.0000	0.0000
APRIL	76874.	0.0000	0.0000	0.0000	0.0000
JULY	83024.	0.3070	0.0965	0.0000	0.0000

# Attachment B-Consultation Correspondence

Franklin, Delaware, Licking, Fairfield, Madison and Knox  
County Ozone Maintenance Area

**From:** Maietta, Anthony [mailto:maietta.anthony@epa.gov]  
**Sent:** Friday, February 03, 2017 12:39 PM  
**To:** Michael.Maleski@epa.ohio.gov; Dave.Moore1@dot.ohio.gov; leigh.oesterling@dot.gov;  
(Vanessa.Adams@dot.gov) <Vanessa.Adams@dot.gov>  
**Cc:** Nino.Brunello@dot.ohio.gov; Nick Gill <ngill@morpc.org>; mhill@lcounty.com;  
Caraline.Griffith@dot.ohio.gov  
**Subject:** RE: 2018 - 2021 TIP air quality conformity interagency consultation

EPA concurs as well.

Have a good weekend everyone,

-Tony

Anthony Maietta  
EPA Region 5  
[maietta.anthony@epa.gov](mailto:maietta.anthony@epa.gov)  
(312) 353-8777

**From:** [Michael.Maleski@epa.ohio.gov](mailto:Michael.Maleski@epa.ohio.gov) [mailto:Michael.Maleski@epa.ohio.gov]  
**Sent:** Friday, February 03, 2017 11:36 AM  
**To:** [Dave.Moore1@dot.ohio.gov](mailto:Dave.Moore1@dot.ohio.gov); [leigh.oesterling@dot.gov](mailto:leigh.oesterling@dot.gov); Maietta, Anthony  
<[maietta.anthony@epa.gov](mailto:maietta.anthony@epa.gov)>; ([Vanessa.Adams@dot.gov](mailto:Vanessa.Adams@dot.gov)) <[Vanessa.Adams@dot.gov](mailto:Vanessa.Adams@dot.gov)>  
**Cc:** [Nino.Brunello@dot.ohio.gov](mailto:Nino.Brunello@dot.ohio.gov); [ngill@morpc.org](mailto:ngill@morpc.org); [mhill@lcounty.com](mailto:mhill@lcounty.com);  
[Caraline.Griffith@dot.ohio.gov](mailto:Caraline.Griffith@dot.ohio.gov)  
**Subject:** RE: 2018 - 2021 TIP air quality conformity interagency consultation

Dave,

Ohio EPA concurs with the TIP conformity summary and strategy.

Thanks,  
Mike

**From:** Maietta, Anthony [mailto:maietta.anthony@epa.gov]  
**Sent:** Thursday, February 02, 2017 2:25 PM  
**To:** Oesterling, Leigh (FHWA) <Leigh.Oesterling@dot.gov>;  
Dave.Moore1@dot.ohio.gov  
**Cc:** Nick Gill <ngill@morpc.org>; Burkett, Frank (FHWA)  
<Frank.Burkett@dot.gov>; Michael.Maleski@epa.ohio.gov  
**Subject:** RE: 2018 - 2021 TIP air quality conformity interagency consultation

EPA concurs with FHWA. Leigh is right-- the area was never designated nonattainment for the 2006 PM standard and the 1997 PM standard has been revoked for the area

-Tony

Anthony Maietta  
EPA Region 5  
[maietta.anthony@epa.gov](mailto:maietta.anthony@epa.gov)

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(312) 353-8777

**From:** Oesterling, Leigh (FHWA) [<mailto:Leigh.Oesterling@dot.gov>]  
**Sent:** Thursday, February 02, 2017 1:17 PM  
**To:** [Dave.Moore1@dot.ohio.gov](mailto:Dave.Moore1@dot.ohio.gov); Maietta, Anthony <[maietta.anthony@epa.gov](mailto:maietta.anthony@epa.gov)>  
**Cc:** [ngill@morpc.org](mailto:ngill@morpc.org); Burkett, Frank (FHWA) <[Frank.Burkett@dot.gov](mailto:Frank.Burkett@dot.gov)>  
**Subject:** RE: 2018 - 2021 TIP air quality conformity interagency consultation

FHWA concurs that Columbus/Newark no longer needs to demonstrate conformity for the 1997 PM 2.5 standard, as this standard has been revoked. (Columbus/Newark was never designated for the 2006 PM 2.5 standard).

Leigh

Leigh A. Oesterling, Planning & Environmental Team Leader  
Federal Highway Administration - Ohio Division  
200 N. High Street, Room 328  
Columbus, OH 43215  
(614) 280-6837  
[leigh.oesterling@dot.gov](mailto:leigh.oesterling@dot.gov)

**From:** [Dave.Moore1@dot.ohio.gov](mailto:Dave.Moore1@dot.ohio.gov) [<mailto:Dave.Moore1@dot.ohio.gov>]  
**Sent:** Thursday, February 02, 2017 1:27 PM  
**To:** Oesterling, Leigh (FHWA); Anthony Maietta ([Maietta.Anthony@epamail.epa.gov](mailto:Maietta.Anthony@epamail.epa.gov))  
**Cc:** [ngill@morpc.org](mailto:ngill@morpc.org)  
**Subject:** FW: 2018 - 2021 TIP air quality conformity interagency consultation

Leigh/Tony,

Can you please confirm that the Columbus/Newark air quality region no longer needs to demonstrate transportation conformity for the 2006 PM<sub>2.5</sub> standard?

Thanks  
DM

**From:** Moore, David  
**Sent:** Tuesday, January 31, 2017 7:27 AM  
**To:** 'Oesterling, Leigh ([leigh.oesterling@dot.gov](mailto:leigh.oesterling@dot.gov))' <[Leigh.Oesterling@dot.gov](mailto:Leigh.Oesterling@dot.gov)>; Anthony Maietta ([Maietta.Anthony@epamail.epa.gov](mailto:Maietta.Anthony@epamail.epa.gov)) <[Maietta.Anthony@epamail.epa.gov](mailto:Maietta.Anthony@epamail.epa.gov)>; Maleski, Michael <[Michael.Maleski@epa.ohio.gov](mailto:Michael.Maleski@epa.ohio.gov)>; ([Vanessa.Adams@dot.gov](mailto:Vanessa.Adams@dot.gov)) <[Vanessa.Adams@dot.gov](mailto:Vanessa.Adams@dot.gov)>  
**Cc:** Brunello, Antonino <[Nino.Brunello@dot.ohio.gov](mailto:Nino.Brunello@dot.ohio.gov)>; [ngill@morpc.org](mailto:ngill@morpc.org); 'mhill@lcounty.com' <[mhill@lcounty.com](mailto:mhill@lcounty.com)>; Griffith, Caraline <[Caraline.Griffith@dot.ohio.gov](mailto:Caraline.Griffith@dot.ohio.gov)>  
**Subject:** FW: 2018 - 2021 TIP air quality conformity interagency consultation

All,

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LCATS 2018-2021 Transportation Improvement Program



See attached Columbus-Newark, Ohio MPOs' 2018-2021 TIP conformity summary. The Columbus and Newark MPOs propose to demonstrate transportation conformity for their existing 2040 Transportation Plans and the new 2018-2021 TIPs based on new 2008 Ozone standard SIP budget test emission analyses.

Please review and advise whether additional interagency consultation via a conference call is needed.

Thanks  
DM

**From:** Hill, Matt [<mailto:mhill@lcounty.com>]  
**Sent:** Monday, January 30, 2017 2:26 PM  
**To:** 'Nick Gill' <[ngill@morpc.org](mailto:ngill@morpc.org)>; Moore, David <[Dave.Moore1@dot.ohio.gov](mailto:Dave.Moore1@dot.ohio.gov)>  
**Cc:** Oesterling, Leigh <[leigh.oesterling@dot.gov](mailto:leigh.oesterling@dot.gov)>; Griffith, Caraline <[Caraline.Griffith@dot.ohio.gov](mailto:Caraline.Griffith@dot.ohio.gov)>  
**Subject:** RE: 2018 - 2021 TIP air quality conformity interagency consultation

Nick,

Attached is the 2018 TIP Conformity, Word Document with LCATS dates.  
Matt

**From:** Nick Gill [<mailto:ngill@morpc.org>]  
**Sent:** Monday, January 30, 2017 9:41 AM  
**To:** [Dave.Moore1@dot.ohio.gov](mailto:Dave.Moore1@dot.ohio.gov); Hill, Matt  
**Cc:** [leigh.oesterling@dot.gov](mailto:leigh.oesterling@dot.gov); [Caraline.Griffith@dot.ohio.gov](mailto:Caraline.Griffith@dot.ohio.gov)  
**Subject:** RE: 2018 - 2021 TIP air quality conformity interagency consultation

All,

See attached Word document with MORPC responses/updates in red. Only major change from May 2016 MTP conformity document is the new budgets established for ozone per the December 21, 2016 Federal Register notice (attached).

Matt, please add your public involvement and Board adoption date to the document.

Thanks  
Nick

**From:** [Dave.Moore1@dot.ohio.gov](mailto:Dave.Moore1@dot.ohio.gov) [<mailto:Dave.Moore1@dot.ohio.gov>]  
**Sent:** Thursday, January 26, 2017 1:42 PM  
**To:** Nick Gill <[ngill@morpc.org](mailto:ngill@morpc.org)>; [mhill@lcounty.com](mailto:mhill@lcounty.com)  
**Cc:** [leigh.oesterling@dot.gov](mailto:leigh.oesterling@dot.gov); [Caraline.Griffith@dot.ohio.gov](mailto:Caraline.Griffith@dot.ohio.gov)  
**Subject:** 2018 - 2021 TIP air quality conformity interagency consultation  
Gentlemen,

Attached is a brief interagency consultation document. Will you please coordinate to add narrative and details describing the approach MORPC/LCATS will follow to establish transportation conformity for the new 2018 TIP?

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Ideally, the resulting document will provide sufficient information/details that we can accomplish interagency consultation via email, rather than a conference call.

Thanks

DM

## **Columbus & Newark MPOs 2018-2021 Transportation Improvement Program Conformity Analysis Summary**

Conformity Topics:

Narrative confirming that MORPC and LCATS are developing new 2018-2021 TIPs, necessitating new MPO(s) and US DOT conformity determinations effective July 1, 2017.

MORPC is preparing a new conformity analysis for the FY18-21 TIP. It will be an update to the analysis completed in May 2016 and approved by FHWA in June 2016 for the MORPC and LCATS 16-2040 Metropolitan Transportation Plans (MTP's).

- Latest planning assumptions – yes, no changes to those used for the MTP conformity from May 2016.
- Latest emissions modeling – yes, no changes to those used for the MTP conformity from May 2016.
- Timely implementation of TCM – No TCM's in the SIP and is explained in the conformity document
- Consistency of TIP projects with existing 2040 Transportation Plans – The conformity analysis is being redone to ensure networks are consistent with current schedule as to be listed in the FY18-21 TIP. The MTP's will be amended to reflect schedules that are not consistent with the schedules as listed when the MTP's were adopted.
- TIP Public Involvement schedules – These will be documented in the TIP document. The MORPC schedule is for the formal public involvement period to be from March 24 to April 23<sup>rd</sup> with an open house on April 4<sup>th</sup>.
- MPO Boards TIP approval schedules – MORPC Transportation Policy Committee Approval will be May 11. LCATS Policy Committee approval will be May 9.
- TIP and conformity documentation submission date – First Draft of conformity document will be Feb 3<sup>rd</sup> with the First Draft of the TIP. An update will be provided with the Final Draft by March 24<sup>th</sup>. The final will then be provided with the Final TIP submittal to ODOT due by May 1.
  - LCATS will adopt a draft for Public Comment March 14. The final will then be provided with the Final TIP submittal to ODOT due by May 1. With Resolution of Adopting May 9.

TIP conformity strategy – new emissions analyses or reliance on previous emissions analyses – New emissions analysis

### **Ozone**

Attainment status: 2008 8-Hour Ozone Standard attainment area (Federal Register Notice Final Rule 5/4/16)

8-Hour Geography: DEL, FAI, FRA, KNO, LIC, MAD Counties, OH

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LCATS 2018-2021 Transportation Improvement Program

SIP status:  
 Conformity Tests: 1997 8-Hour **SIP budget tests**  
 Analysis Years: 2020 8-Hour budget year  
 2030 Interim analysis year  
 2040 T-Plan(s) horizon year

	2020 Budget	2020 Emissions	2030 Budget	2030 Emissions	2040 Emissions
VOC	50.66		44.31		
NOx	90.54		85.13		

\*\*\*\*\*

**Below is correspondence prior to the May 2016 Conformity Determination for the 2040 MTPs**

**From:** Nick Gill  
**Sent:** Friday, April 22, 2016 8:42 AM  
**To:** 'Frank.Burkett@dot.gov'; 'Dave.Moore1@dot.ohio.gov'; 'Nino.Brunello@dot.state.oh.us'; 'Andrew.Shepler@dot.state.oh.us'; 'Andrew.Hurst@dot.state.oh.us'; 'mhill@lcounty.com'; 'Leigh.Oesterling@dot.gov'; 'Mike.Maleski@epa.ohio.gov'; 'Maietta.Anthony@epamail.epa.gov'; 'Vanessa.Adams@dot.gov'  
**Cc:** Maria Schaper; Thea Walsh; Zhuojun Jiang  
**Subject:** RE: MORPC/LCATS 2016 MTP Conformity Interagency Consultation - Draft MTP and Conformity document

All,

Following up to let you know that our public comment period was over last Friday and that we only received relatively minor comments. We will be making slight modifications to the MTP with the final version to be completed next week including updates to the various appendices.

Let me know ASAP if you have any comments.

We will be adopting the MTP during our May meetings. CAC on 5/2, TAC on 5/4 and Transportation Policy Committee on 5/12.

Thanks  
 Nick

**Nicholas T. Gill**  
 Assistant Director, Transportation Systems & Funding | **Mid-Ohio Regional Planning Commission**  
 T: 614.233.4151 | F: 614.233.4251 | [ngill@morpc.org](mailto:ngill@morpc.org)  
 111 Liberty Street, Suite 100 | Columbus, OH 43215



**From:** Nick Gill  
**Sent:** Tuesday, March 15, 2016 2:43 PM  
**To:** 'Frank.Burkett@dot.gov'; [Dave.Moore1@dot.ohio.gov](mailto:Dave.Moore1@dot.ohio.gov);  
[Nino.Brunello@dot.state.oh.us](mailto:Nino.Brunello@dot.state.oh.us); [Andrew.Shepler@dot.state.oh.us](mailto:Andrew.Shepler@dot.state.oh.us);  
[Andrew.Hurst@dot.state.oh.us](mailto:Andrew.Hurst@dot.state.oh.us); [mhill@lcounty.com](mailto:mhill@lcounty.com); [Leigh.Oesterling@dot.gov](mailto:Leigh.Oesterling@dot.gov);  
[Mike.Maleski@epa.ohio.gov](mailto:Mike.Maleski@epa.ohio.gov); [Maietta.Anthony@epamail.epa.gov](mailto:Maietta.Anthony@epamail.epa.gov); [Vanessa.Adams@dot.gov](mailto:Vanessa.Adams@dot.gov)  
**Cc:** Maria Schaper; Thea Walsh  
**Subject:** RE: MORPC/LCATS 2016 MTP Conformity Interagency Consultation - Draft MTP and Conformity document

All,

Attached is the AQ conformity documentation for the MORPC and LCATS 2016-2040 Metropolitan Transportation Plans.

Complete information on the draft MORPC MTP is available at [www.morpc.org/mtp2040](http://www.morpc.org/mtp2040)

The complete draft LCATS MTP is available at [http://www.lcats.org/documents/documents/2040Plan/Transportation\\_Plan\\_2040\\_Draft\\_for\\_Public\\_comment.pdf](http://www.lcats.org/documents/documents/2040Plan/Transportation_Plan_2040_Draft_for_Public_comment.pdf)

The comment period on MORPC's Draft plan is through April 15.

The comment period on LCATS's Draft plan is through April 8.

Both MORPC and LCATS plan to adopt their MTP's during their May meetings.

Thanks and let me know if you have any questions.

Nick

**Nicholas T. Gill**  
Assistant Director, Transportation Systems & Funding | [Mid-Ohio Regional Planning Commission](http://www.morpc.org)  
T: 614.233.4151 | F: 614.233.4251 | [ngill@morpc.org](mailto:ngill@morpc.org)  
111 Liberty Street, Suite 100 | Columbus, OH 43215



From: Nick Gill [mailto:NGILL@morpc.org]  
Sent: Monday, February 08, 2016 12:14 PM  
To: Moore, David <Dave.Moore1@dot.ohio.gov>; Brunello, Antonino <Nino.Brunello@dot.ohio.gov>; Shepler, Andrew <Andrew.Shepler@dot.ohio.gov>; Hurst, Andrew <Andrew.Hurst@dot.ohio.gov>; mhill@lcounty.com1 <mhill@lcounty.com>; Oesterling, Leigh <leigh.oesterling@dot.gov>; Burkett, Frank <frank.burkett@dot.gov>; Maleski, Michael <Michael.Maleski@epa.ohio.gov>; Maietta.Anthony@epamail.epa.gov; vanessa.adams@dot.gov  
Cc: Maria Schaper <mschaper@morpc.org>  
Subject: MORPC/LCATS 2016 MTP Conformity Interagency Consultation

All,

MORPC & LCATS will be completing their new Metropolitan Transportation Plans this spring. Please see attached for interagency consultation for the conformity analysis for the Columbus area.

The only change to the last conformity process (completed spring 2015 for the SFY 16-19 TIP) is the change to the horizon year from 2035 to 2040.

I would like to complete consultation with concurrence or clarifications via email this week. If anyone feels a conference call is needed please respond with available times this Thursday or Friday (2/11 or 2/12).

Thanks  
Nick

**Nicholas T. Gill**

Assistant Director, Transportation Systems & Funding | [Mid-Ohio Regional Planning Commission](#)  
T: 614.233.4151 | F: 614.233.4251 | [ngill@morpc.org](mailto:ngill@morpc.org)  
111 Liberty Street, Suite 100 | Columbus, OH 43215



## Columbus & Newark MPOs 2040 Transportation Plan Update Conformity Analysis Summary

### Conformity Topics:

- The Columbus and Newark Ohio MPOs' quadrennial Transportation Plan (2040 horizon year) and conformity determination lapse date is August 2016.
- Conformity analysis will generally be the same as the analysis done in Spring 2015 for the SFY 16-19 TIP. Primary change is horizon year of 2040 instead of 2035.
- The tables below identify analysis years for the Ozone budget tests and PM<sub>2.5</sub> budget tests.
- The geography for the analysis includes both travel demand model and non-modeled areas. The procedures to establish the emission will be the same as used for previous conformity analyses.
- Emissions will be established based on most recent planning assumptions.

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- MORPC MTP Anticipated Schedule is:
  - Draft project list currently available
  - Full draft document with appendices and begin public involvement early March
  - Open House on March 15 from 4-7 pm
  - Close comment period mid April
  - Final document complete late April
- Adoption by MORPC Policy Committee on May 12
- LCATS MTP Anticipated Schedule
  - Draft project list currently available
  - Policy Board adopts draft for public comment March 8
  - Public Comment Period March 8 – April 8, 2016
  - Open House on March 30 from 4-7 pm at Licking County Library, 101 West Main St, Newark, Ohio 43055
  - Final document complete first week of May
  - Adoption of Transportation Plan by Policy Board May 10

## Ozone

Attainment status: 1997 8-Hour Ozone Attainment Area  
2008 Standard Ozone Nonattainment Area (re-designation to attainment pending)

8-Hour Geography: DEL, FAI, FRA, KNO, LIC, MAD Counties, OH

SIP Status: Re-designation/Maintenance Plan (1997 standard) approved MOVES budget, effective 3/19/13

Conformity Tests: 8-Hour **SIP budget tests** of MORPC & LCATS 2040 MTP/TIP analysis year networks & rural county STIP networks

Analysis Years: 2020 8-Hour budget year  
2030 Interim analysis year  
2040 MTP(s) horizon year

Ozone (tons/day)				
	2020 Budget	2020 Emissions	2030 Emissions	2040 Emissions
VOC	50.34			
NOx	99.12			

## PM<sub>2.5</sub>

Attainment status: 1997 PM<sub>2.5</sub> Attainment Maintenance Area  
2006 Standard PM<sub>2.5</sub> Attainment Area  
2012 Standard PM<sub>2.5</sub> Attainment Area

Geography: DEL, FAI, FRA, LIC Counties, & Franklin Township, COS County, OH

SIP Status: Redesignation/Maintenance Plan (1997 standard) approved, effective 11/7/13

Conformity Tests: SIP Maintenance Plan Budget tests

Analysis Years: 2020 1<sup>st</sup> Analysis year – aligned with Ozone Tests  
2022 Budget Year  
2030 Interim analysis year  
2040 MTP(s) horizon year

PM <sub>2.5</sub> (tons/year)						
	2015 Budget	2020 Emissions	2022 Budget	2022 Emissions	2030 Emissions	2040 Emissions
Direct PM	873.46		559.13			
NOx Precursor	25,084.11		12,187.50			

**From:** Dave.Moore1@dot.ohio.gov [mailto:Dave.Moore1@dot.ohio.gov]

**Sent:** Monday, February 08, 2016 1:51 PM

**To:** Nick Gill; Nino.Brunello@dot.ohio.gov; Andrew.Shepler@dot.ohio.gov; Andrew.Hurst@dot.ohio.gov; mhill@lcounty.com; leigh.oesterling@dot.gov; frank.burkett@dot.gov; Michael.Maleski@epa.ohio.gov; Maietta.Anthony@epamail.epa.gov; vanessa.adams@dot.gov

**Cc:** Maria Schaper

**Subject:** RE: MORPC/LCATS 2016 MTP Conformity Interagency Consultation

All,

[ODOT concurs with MORPC's documentation.](#)

Thanks

DM

**From:** Michael.Maleski@epa.ohio.gov [mailto:Michael.Maleski@epa.ohio.gov]

**Sent:** Friday, February 12, 2016 7:29 AM

**To:** Dave.Moore1@dot.ohio.gov; Nick Gill; Nino.Brunello@dot.ohio.gov; Andrew.Shepler@dot.ohio.gov; Andrew.Hurst@dot.ohio.gov; mhill@lcounty.com; leigh.oesterling@dot.gov; frank.burkett@dot.gov; Maietta.Anthony@epamail.epa.gov; vanessa.adams@dot.gov

**Cc:** Maria Schaper

**Subject:** RE: MORPC/LCATS 2016 MTP Conformity Interagency Consultation

All,

[Ohio EPA also concurs with MORPC's referenced conformity analysis summary.](#)

Thanks,

April 28, 2017

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Mike Maleski  
Ohio EPA - Division of Air Pollution Control  
Mailing Address: P.O. Box 1049, Columbus, OH 43216-1049  
Street Address: 50 West Town Street, Suite 700 Columbus, OH 43215  
Phone: 614-644-1961 Fax: 614-644-3681  
[michael.maleski@epa.ohio.gov](mailto:michael.maleski@epa.ohio.gov)



**From:** Maietta, Anthony [mailto:[maietta.anthony@epa.gov](mailto:maietta.anthony@epa.gov)]  
**Sent:** Friday, February 12, 2016 10:42 AM  
**To:** [Michael.Maleski@epa.ohio.gov](mailto:Michael.Maleski@epa.ohio.gov); [Dave.Moore1@dot.ohio.gov](mailto:Dave.Moore1@dot.ohio.gov); Nick Gill; [Nino.Brunello@dot.ohio.gov](mailto:Nino.Brunello@dot.ohio.gov);  
[Andrew.Shepler@dot.ohio.gov](mailto:Andrew.Shepler@dot.ohio.gov); [Andrew.Hurst@dot.ohio.gov](mailto:Andrew.Hurst@dot.ohio.gov); [mhill@lcounty.com](mailto:mhill@lcounty.com);  
[leigh.oesterling@dot.gov](mailto:leigh.oesterling@dot.gov); [frank.burkett@dot.gov](mailto:frank.burkett@dot.gov); [vanessa.adams@dot.gov](mailto:vanessa.adams@dot.gov)  
**Cc:** Maria Schaper  
**Subject:** RE: MORPC/LCATS 2016 MTP Conformity Interagency Consultation

EPA concurs as well

-Tony

Anthony Maietta  
EPA Region 5  
[maietta.anthony@epa.gov](mailto:maietta.anthony@epa.gov)  
(312) 353-8777

**From:** [Frank.Burkett@dot.gov](mailto:Frank.Burkett@dot.gov) [mailto:[Frank.Burkett@dot.gov](mailto:Frank.Burkett@dot.gov)]  
**Sent:** Thursday, February 25, 2016 11:23 AM  
**To:** Nick Gill; [Dave.Moore1@dot.ohio.gov](mailto:Dave.Moore1@dot.ohio.gov); [Nino.Brunello@dot.state.oh.us](mailto:Nino.Brunello@dot.state.oh.us);  
[Andrew.Shepler@dot.state.oh.us](mailto:Andrew.Shepler@dot.state.oh.us); [Andrew.Hurst@dot.state.oh.us](mailto:Andrew.Hurst@dot.state.oh.us); [mhill@lcounty.com](mailto:mhill@lcounty.com);  
[Leigh.Oesterling@dot.gov](mailto:Leigh.Oesterling@dot.gov); [Mike.Maleski@epa.ohio.gov](mailto:Mike.Maleski@epa.ohio.gov); [Maietta.Anthony@epamail.epa.gov](mailto:Maietta.Anthony@epamail.epa.gov);  
[Vanessa.Adams@dot.gov](mailto:Vanessa.Adams@dot.gov)  
**Cc:** Maria Schaper  
**Subject:** RE: MORPC/LCATS 2016 MTP Conformity Interagency Consultation

Nick,

I've discussed this with Leigh Oesterling and the Division concurs with your approach. Please ensure that this step, and any subsequent interagency coordination activity, is documented in your MTP conformity request.

Frank Burkett, Senior Planning Specialist  
Federal Highway Administration - Ohio Division  
200 N. High St. - Rm 328  
Columbus, OH 43215  
614-280-6838



**From:** Frank.Burkett@dot.gov [mailto:Frank.Burkett@dot.gov]  
**Sent:** Thursday, February 25, 2016 11:32 AM  
**To:** Nick Gill; Dave.Moore1@dot.ohio.gov; Nino.Brunello@dot.state.oh.us;  
Andrew.Shepler@dot.state.oh.us; Andrew.Hurst@dot.state.oh.us; mhill@lcounty.com;  
Leigh.Oesterling@dot.gov; Mike.Maleski@epa.ohio.gov; Maitta.Anthony@epamail.epa.gov;  
Vanessa.Adams@dot.gov  
**Cc:** Maria Schaper  
**Subject:** RE: MORPC/LCATS 2016 MTP Conformity Interagency Consultation

Nick,

FTA also concurs with your approach. I apologize for not mentioning that in my previous response.

Frank Burkett, Senior Planning Specialist  
Federal Highway Administration - Ohio Division  
200 N. High St. - Rm 328  
Columbus, OH 43215  
614-280-6838