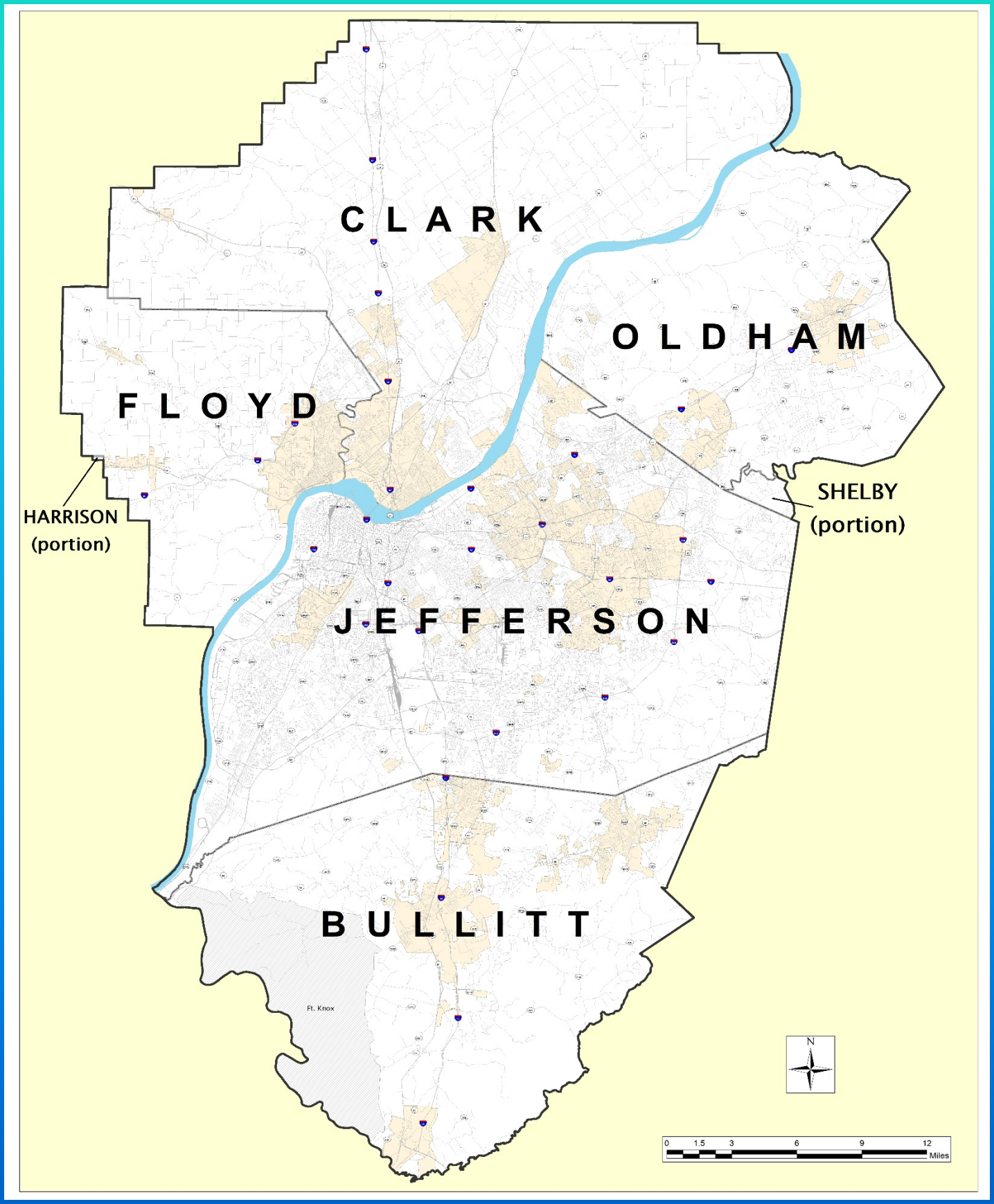
TRANSPORTATION CONFORMITY

LOUISVILLE, KY-IN AREA

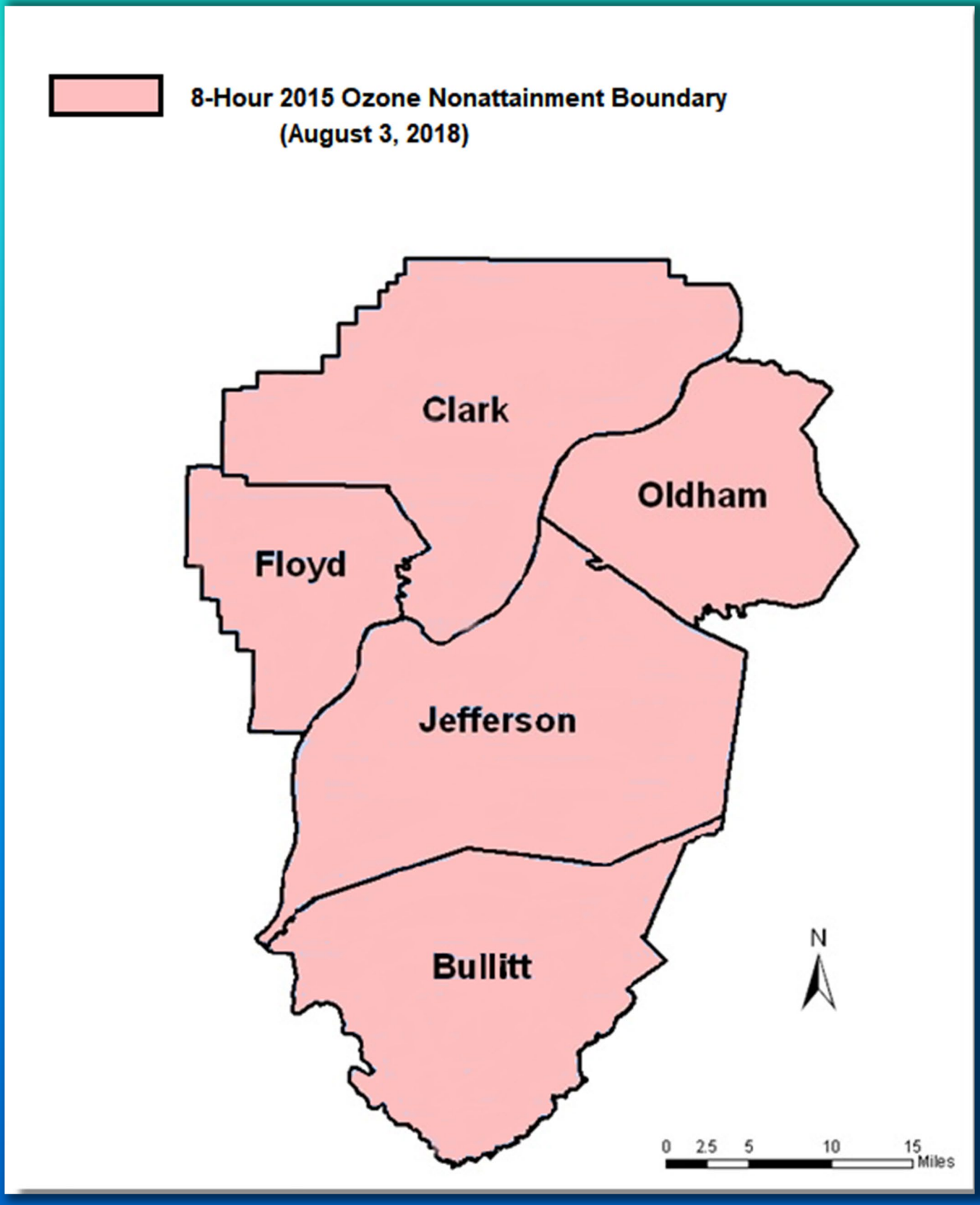
Kentuckiana Regional Planning & Development Agency

Transportation Conformity Process

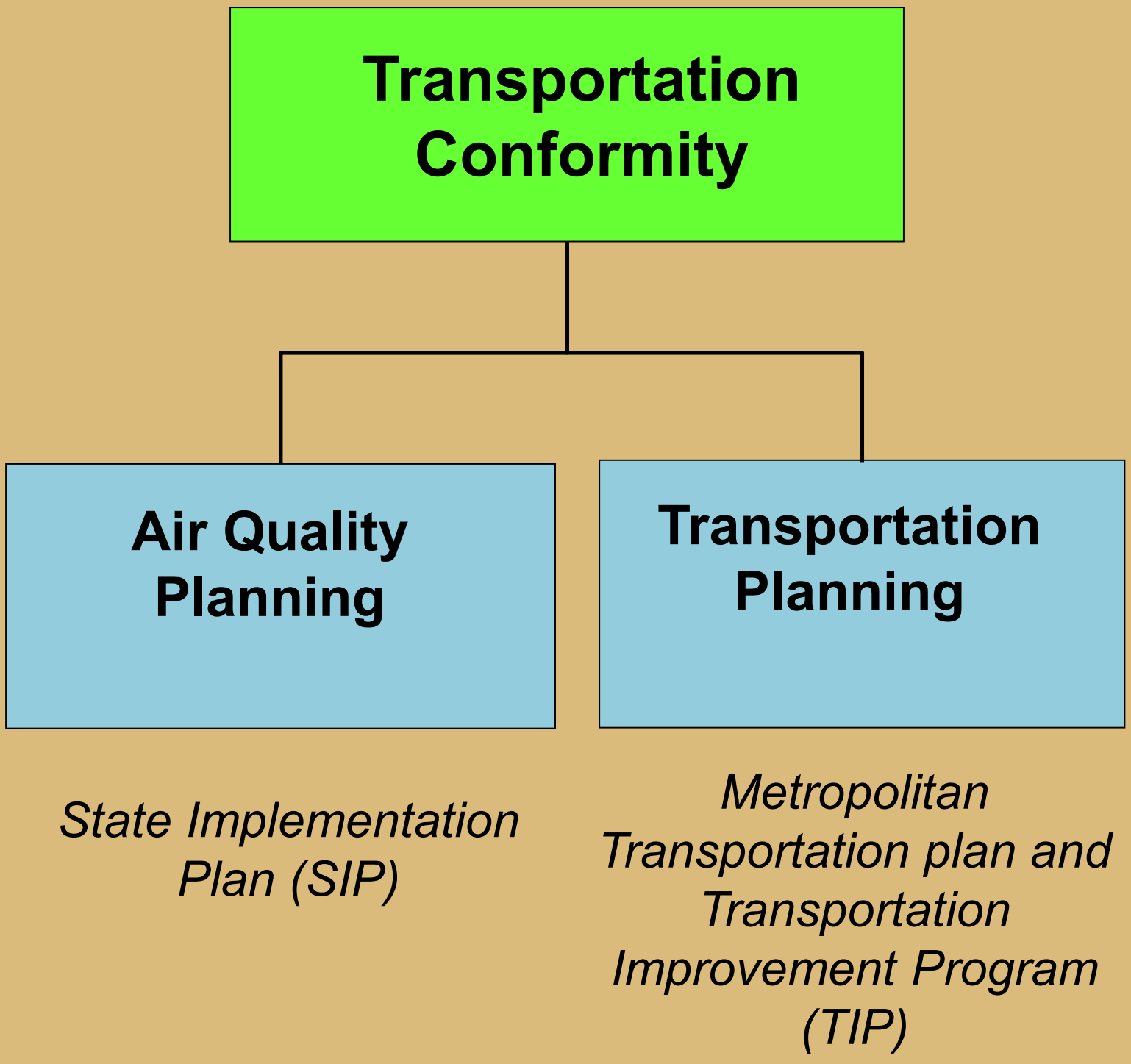
Louisville, KY-IN Metropolitan Planning Area (MPA)



Louisville, KY-IN Nonattainment Area



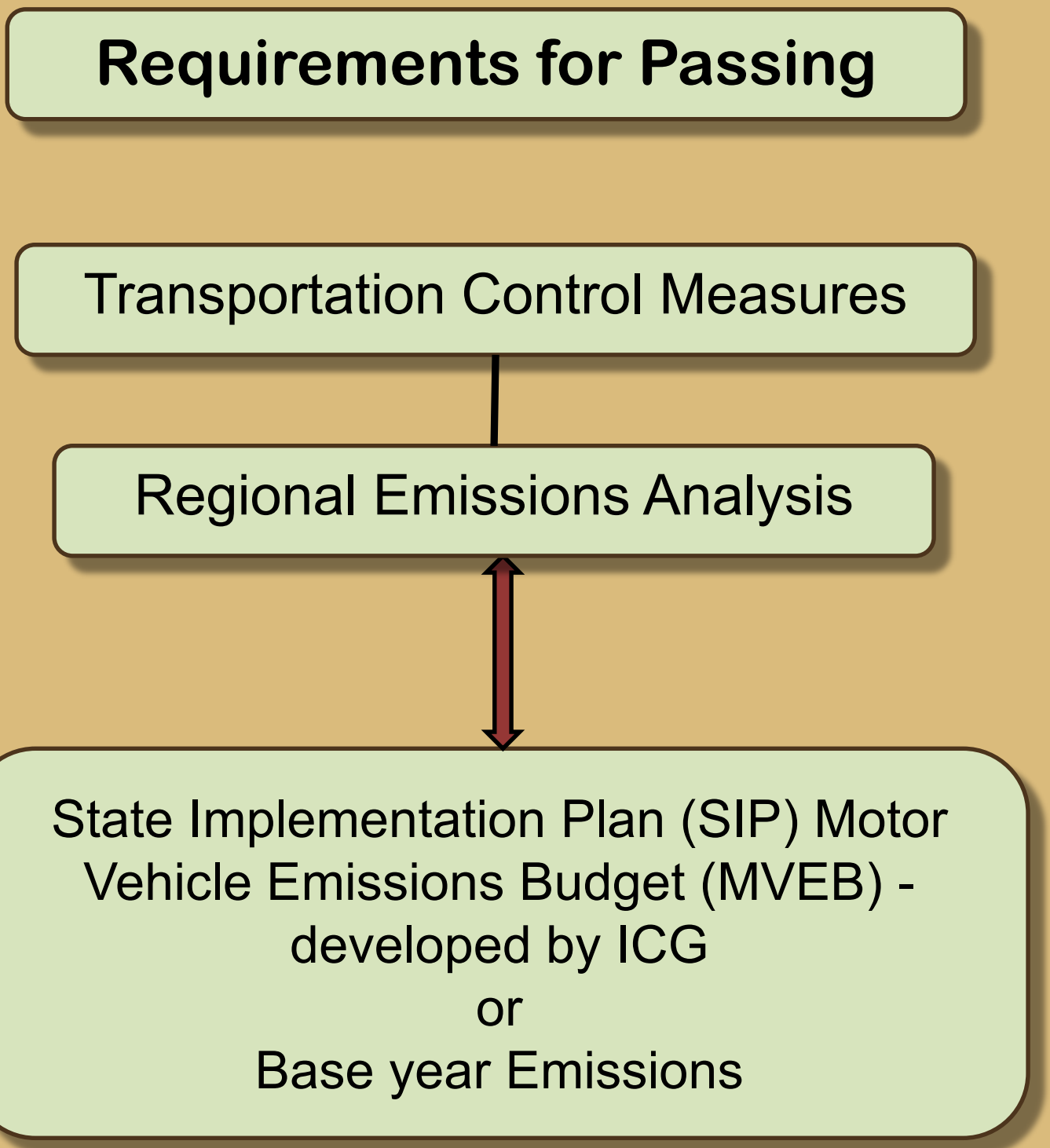
Transportation Conformity



Transportation Conformity

- Meaning of Conformity to the Purpose of the SIP
- Transportation Plans and TIPs
  - Will not cause or contribute to new air quality violations,
  - Will not worsen existing violations, or
  - Will not delay timely attainment of the relevant NAAQS or any interim milestones

Transportation Conformity



What Is Subject to Transportation Conformity?

- CAA 176(c) and 40 CFR 93.102(a) describe the actions that are subject
- Transportation plans
- Transportation improvement programs (TIPs)
- Regionally significant non-federal projects
  - included in regional emissions analysis
  - No project-level conformity determination is required
- Non-exempt “federal” projects, i.e., those that:
  - Receive FHWA or FTA funding or
  - Require FHWA or FTA approval

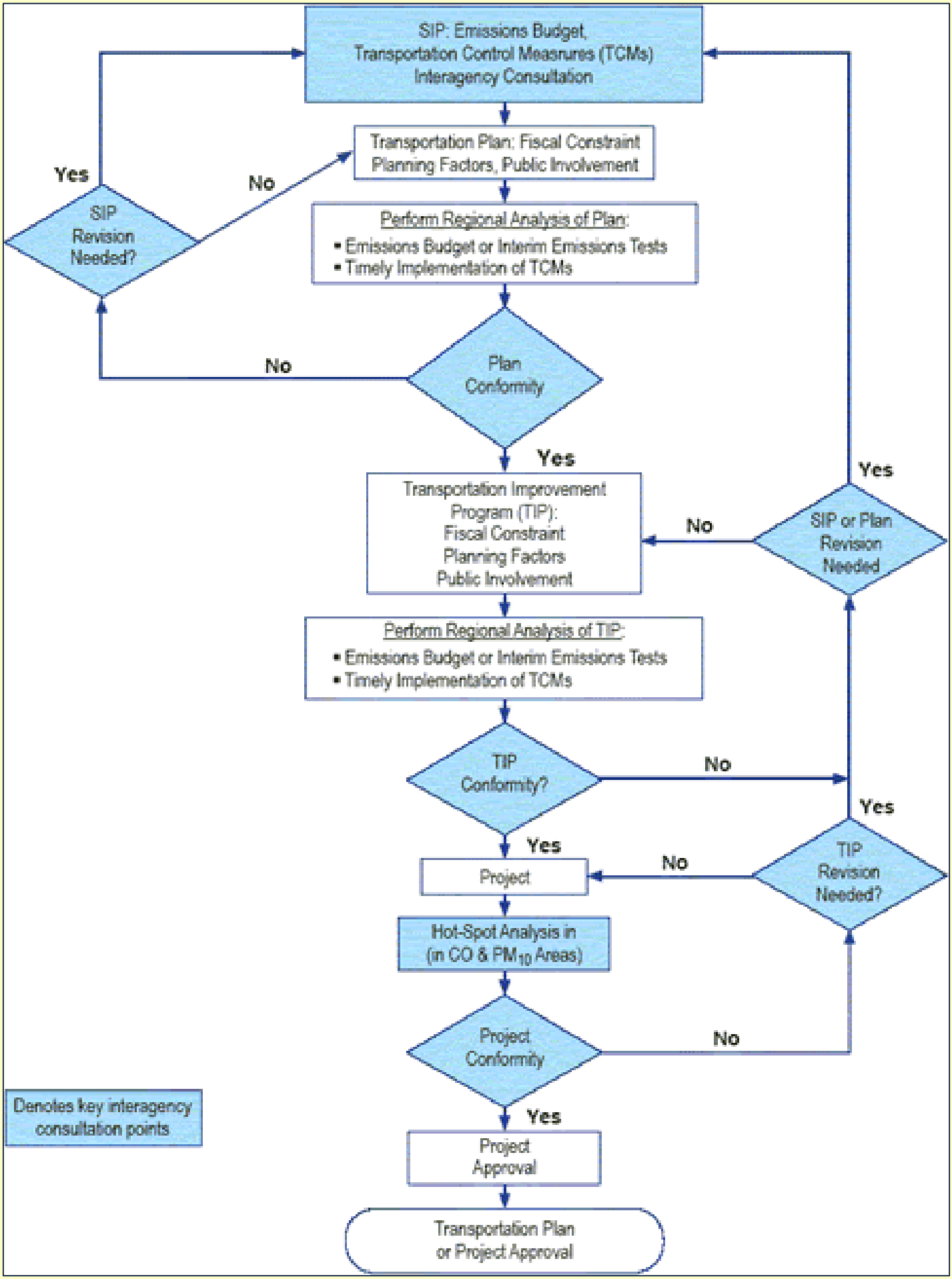
Projects Exempt from Transportation Conformity Requirements

- Projects exempt from all conformity requirements (40 CFR 93.126)
  - e.g., certain projects under categories for safety, mass transit, air quality and other

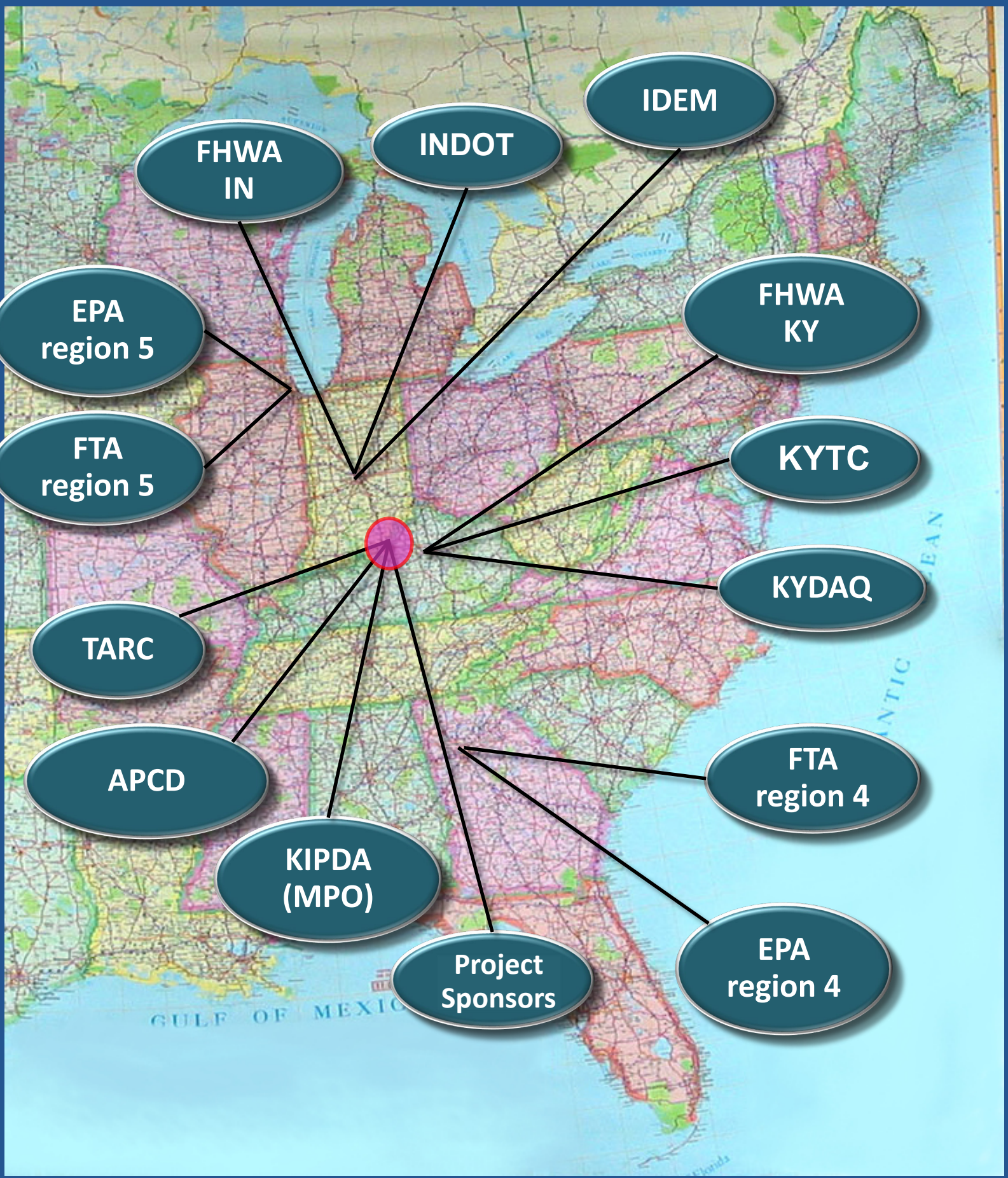
- Projects exempt from regional emissions analysis (40 CFR 93.127)
  - e.g., intersection channelization, interchange reconfiguration

- Traffic signal synchronization projects (40 CFR 93.128)

FHWA – Transportation Conformity



CONFORMITY PARTNERS



Conformity Process for TP / TIP Updates / Amendments

(As specified in the MOU)

Project Changes

Interagency Consultation

Regional Emissions Analysis (if necessary)

Documentation

Informal Review by Conformity Partners, Public Review, and Review by Subcommittees

Review and Action by Technical Committee

Review and Action by Policy Committee (MPO)

Federal Conformity Determination

Consultation

Schedule
Pollutants/Precursors
Model Inputs
Horizon Year
Conformity Tests
TCMs

Amendment 5 and 6 of Horizon 2035 Metropolitan Transportation Plan
Amendment 5 and 6 of FY 2015 - FY 2018 Transportation Improvement Program
April 2016

KIPDA ID	State ID	Project Name	Project Description	Project Sponsor	Description of Plan Amendment	Description of TIP Amendment	Effect on AQ Analysis
INDIANA PROJECTS							
	1600436	I-65	Implementation of a truck parking information management system using existing ITS technology on I-65 to help truckers more quickly and reliably identify accurate and up-to-date information about the availability of safe truck parking for needed rest and overnight stays. Using TIGER funds.	INDOT	Added to Plan as part of the Regional Truck Parking Information and Management System.	Add FY 2018 Construction $4,149,751 federal and $5,095,189 total; TIGER funds.	Exempt
		Jeffersonville Truck to Rail and Rail to Water Improvements	Construction of a double rail loop and rail-to-barge transfer facility with additional rail and turnouts, construction of a rail siding extension that will allow rail carriers to deliver a 90 car unit trail to the port, and construction of a truck-to-rail intermodal facility in the vicinity of Connector Rd. to accommodate increasing truck traffic expected from the East End Bridge over the Ohio River.	Port of Indiana	Add project to Plan; $17,000,000 project cost; Completion in 2019.	Add FY 2017 Construction $10,000,000 federal and $17,000,000 total; TIGER funds.	Exempt
539	0400935	Salem Noble Road	Reconstruct as a 2 lane road from IN 62 to IN 403.	Clark County	No change to Plan	Delete FY 2016 ROW; STP-Urban funds.	Exempt
KENTUCKY PROJECTS							
223	404.01	Cooper Chapel Road Phase 3	Phase 3: Extend and construct 2 lane roadway with a continuous center-turn lane from KY 864 (Beulah Church Road) to US 31E (Bardstown Road) at Bardstown Falls Road. Project will include consideration of bicycle and pedestrian facilities.	Lou. Metro Public Works	No change to Plan	Move FY 2016 ROW to FY 2017; Move FY 2017 Utilities to FY 2018; and delete FY 2018 Construction; STP-Urban funds.	Non-Exempt, No change to model .
	527.00	I-65	Improve ingress/egress with I-65 for the Cedar Grove Industrial Park by constructing a new interchange and connector, and reconstructing the I-65 SB exit ramp to KY 480.	KYTC	Add project to Plan; $35,500,000 project cost; Open to public in 2022.	Add project to TIP; Add FY 2015 Design $2,000,000; State funds.	Non-Exempt, Add to 2025, 2030, and 2035 scenarios.
		Morgan Conservation Park Trail Maintenance and Trailhead	Construction of an ADA accessible trail, placement of water and electricity services and construction of a composting pit comfort station at Morgan Conservation Park.	Oldham County	Add project to Plan; $177,161 project cost; Open to public in 2017.	Add project to TIP; Add FY 2016 Construction $72,000 federal and $177,161 total; Recreational Trails funds.	Exempt
		TARC Job Access Trips	Project will provide transportation services for paratransit trips to work that require travel beyojd the service area required by the ADA.	TARC	Add project to Plan; $819,926 project cost. Completion in 2017	Add FY 2017 Operations $409,913 federal and $819,926 total; Section 5310 funds.	Exempt

KIPDA
7/31/2019

Regional Travel Estimates

Analysis based on Transportation Plan as updated/amended

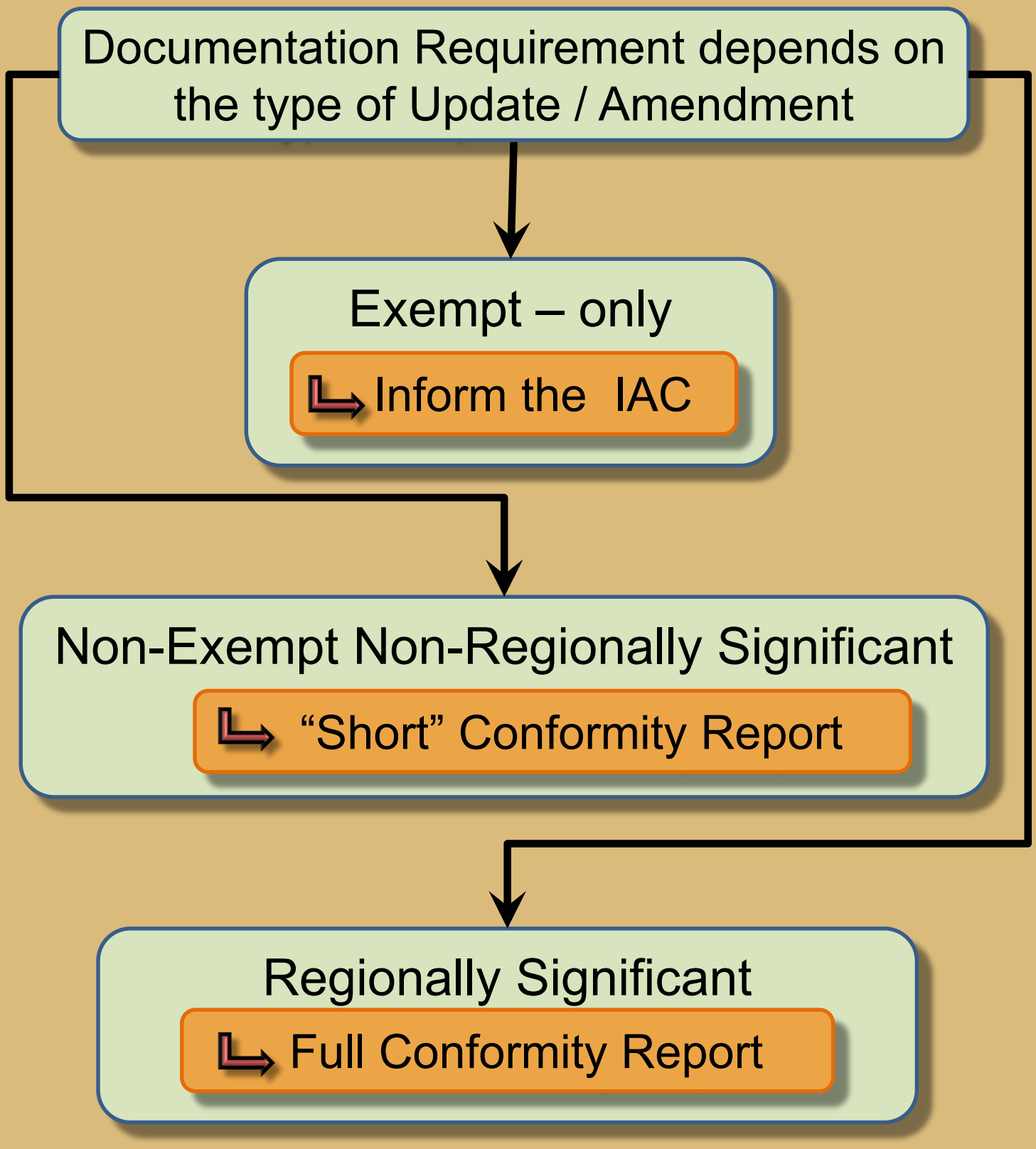
Primary analysis tool is the regional travel demand forecasting model

- ***Uses socioeconomic data/forecasts from local land use agencies***
- ***Is a traditional 4-step model with a single "feedback" loop***
- ***Produces link-based traffic volumes and congested speeds***

Model output is post-processed to allow adjustment of VMT and speeds

Post-processed model output sent to APCD to allow for the calculation of emissions

Conformity Documentation

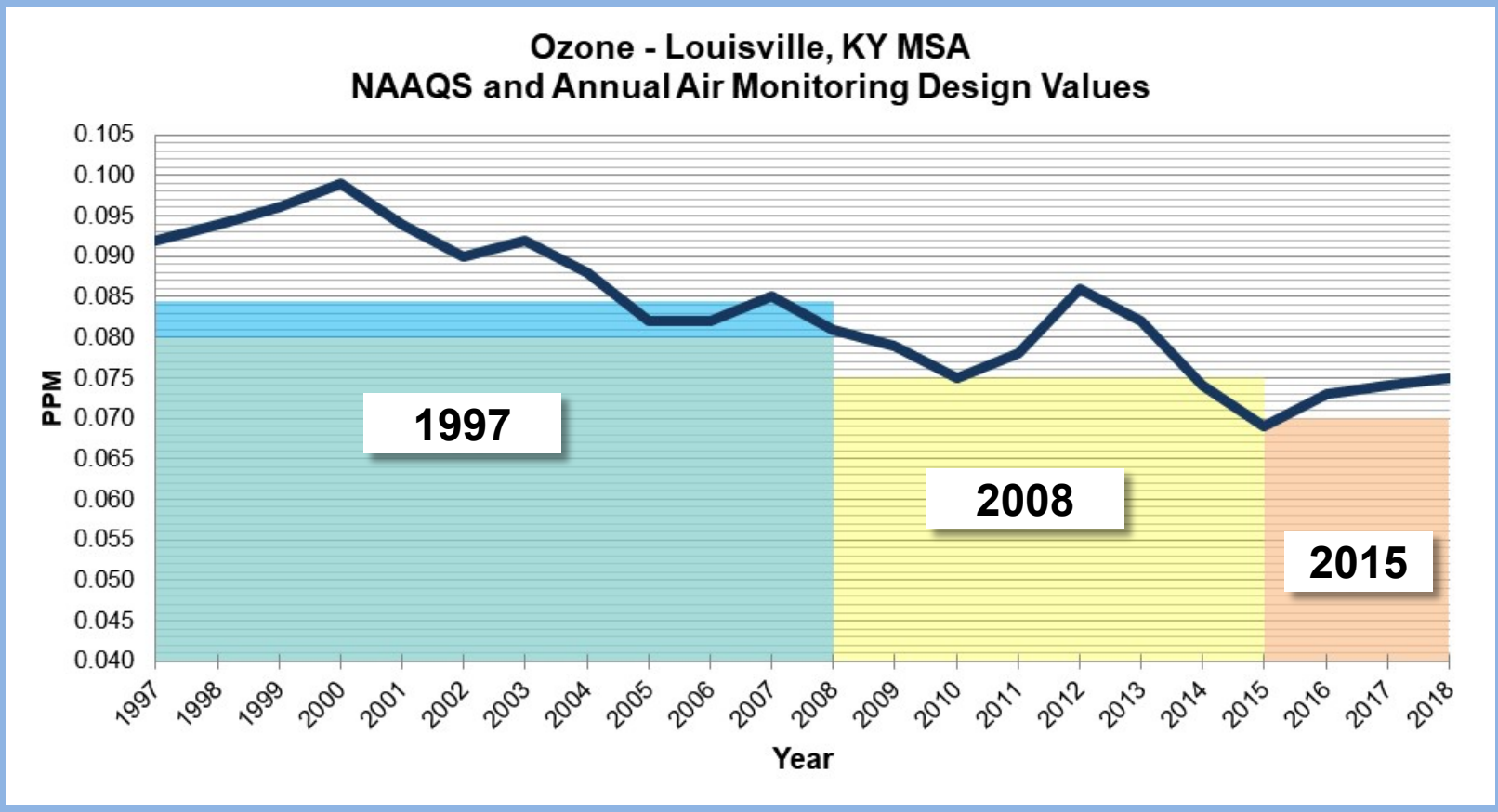


Louisville Metro Air Pollution Control District (APCD)

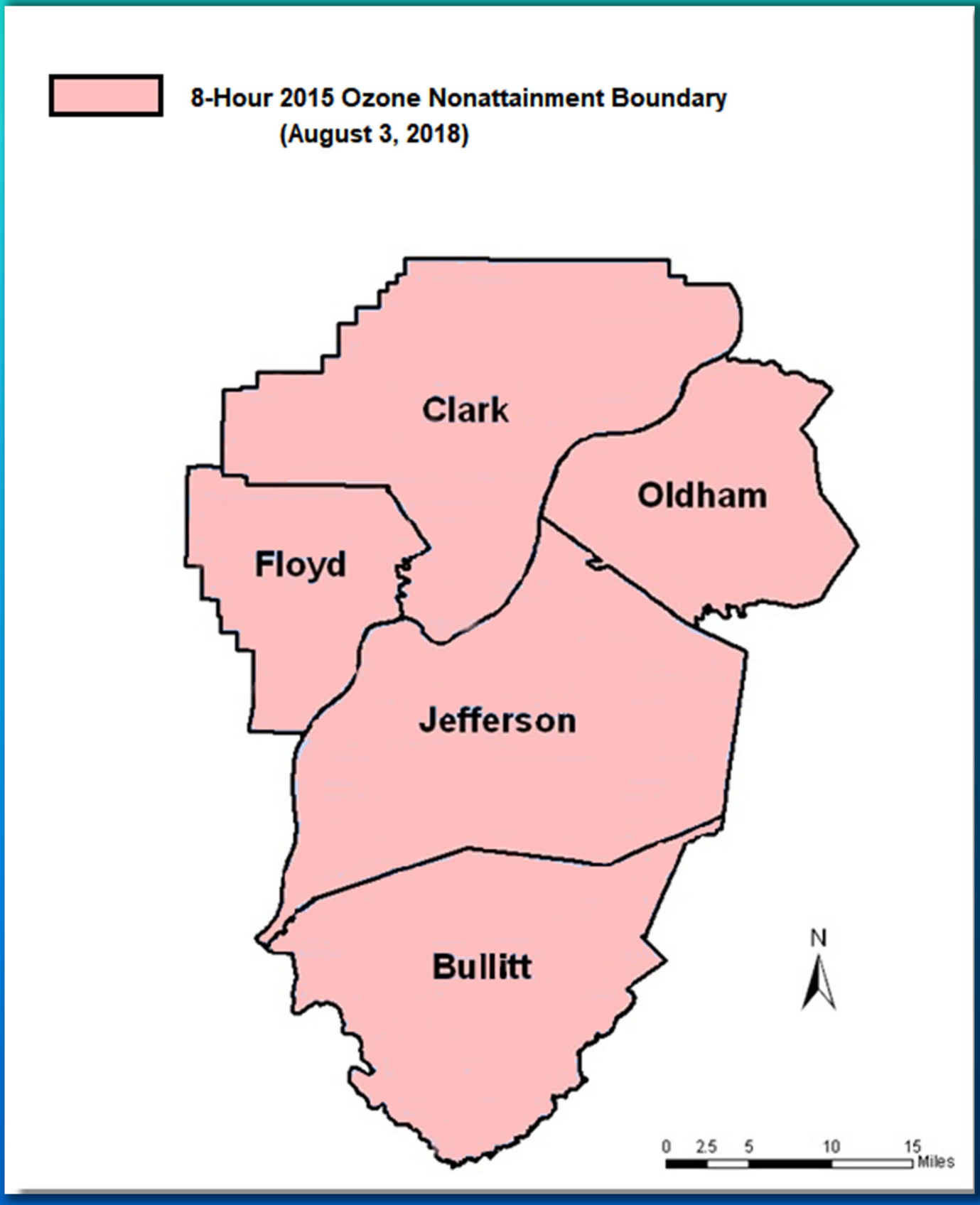
Transportation Conformity Emissions Analysis

2015 NAAQS OZONE NONATTAINMENT

KY: Bullitt, Jefferson, Oldham
IN: Clark, Floyd



Louisville, KY-IN Nonattainment Area



Development of SIPs

Travel Demand Model analyses and summaries

Development of onroad mobile emission inventory

Consultation on onroad Motor Vehicle Emissions Budgets (MVEBs) and TCMs

Development of SIP documentation

Public review

State/Local approval

SIP is submitted to US EPA for approval

Emission Estimates Provided by APCD

VMT by county by MOBILE 6 facility type by speed bin by year for Clark, Floyd (IN) and Jefferson, Bullitt and Oldham (KY) counties developed by KIPDA and provided to APCD

Emission totals calculated by APCD using MOVES in inventory mode

Emission estimates by county by year developed for each pollutant by APCD

Louisville Area (5 county) Transportation Conformity Analysis

First analysis year within 5 years, within 10 years thereafter including planned year of attainment

Every 5 years ensures both requirements with least complication and better consistency

2018, 2019 (current year)

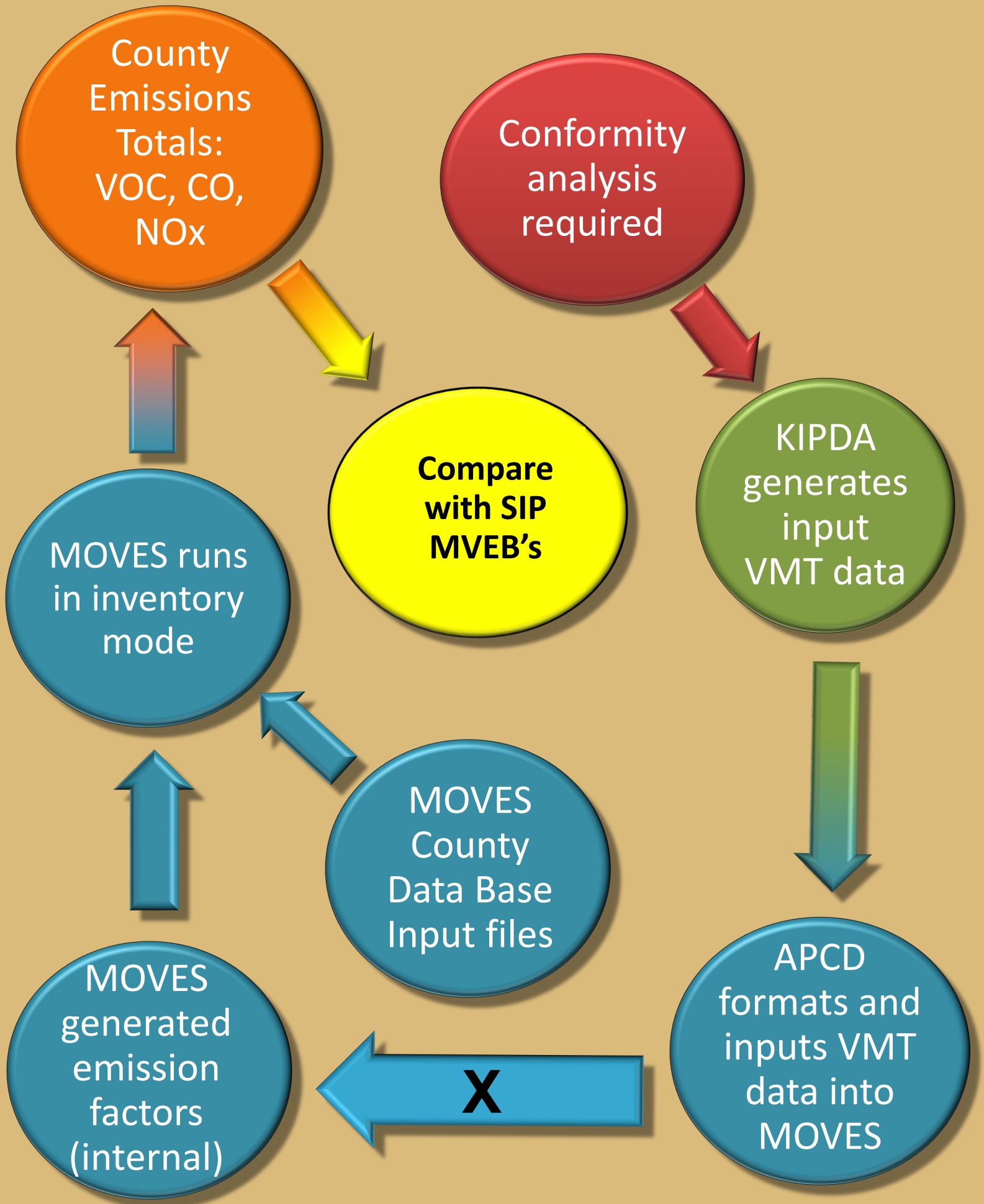
Analysis Years

2020 | 2025 | 2030 | 2035

2020, … 2025 (current year)

2020 | 2025 | 2030 | 2035 | 2040

KIPDA-APCD ANALYSIS PROCESS



MOVES Inputs

Locally derived/non-default inputs

VMT from KIPDA TDFM for RoadTypeDistrib, AvgSpeedDistrib, VehTypeVMT, RampFracs

Fleet age distribution and vehicle populations from state contracted VIN-decoding (POLK/IHS) data, with MOVES default fill-in for HD using ratios (per FHWA guidance)

KY: Conventional gasoline for Bullitt and Oldham and RFG for Jefferson

IN: Clark and Floyd - RVP

I/M programs discontinued in 2006 (Clark, Floyd, IN) and 2003 (Jefferson, KY)

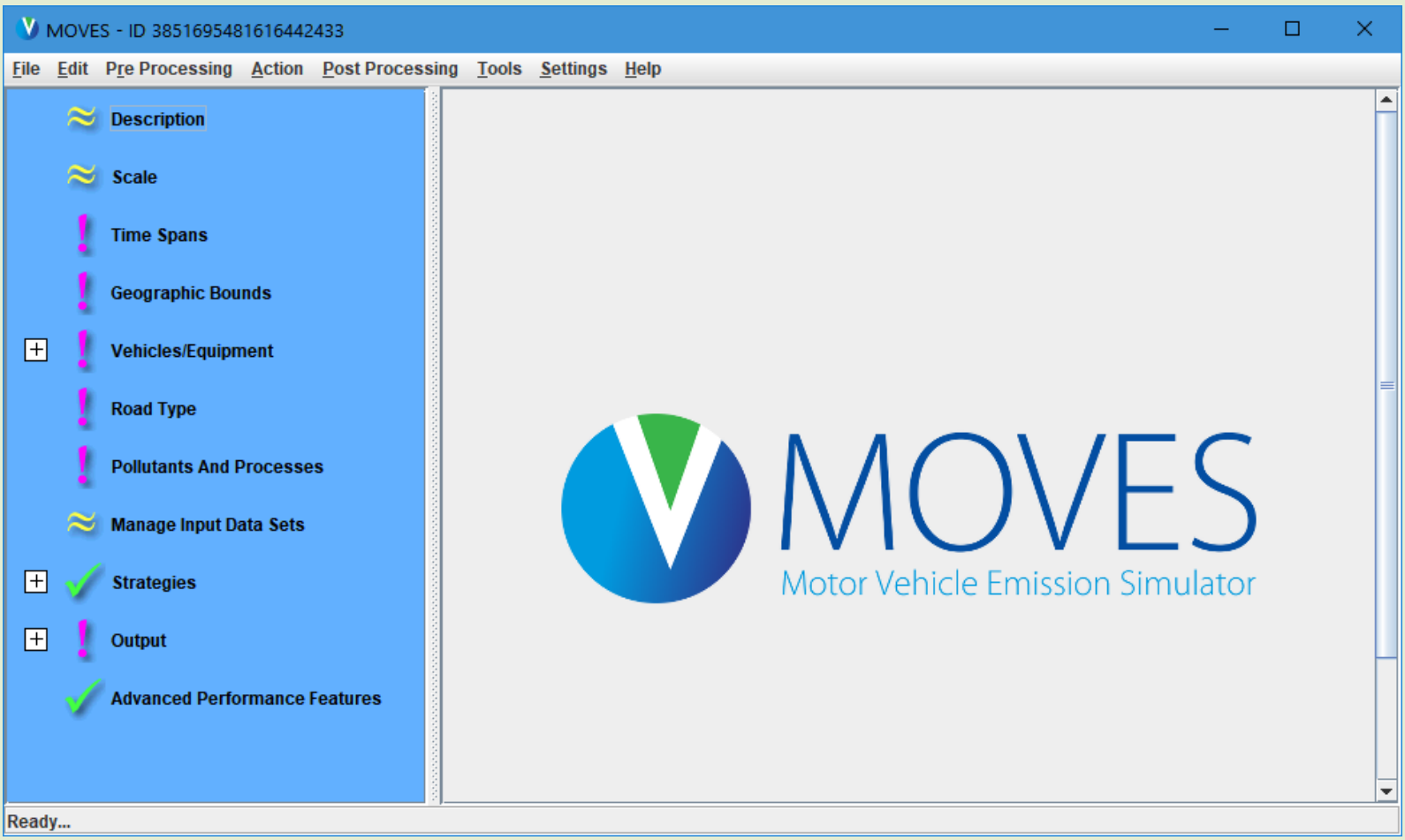
Meteorology: Airport met data, conservative historical “worst case” July (used to be just 4:00pm hour in MOBILE 6.2)

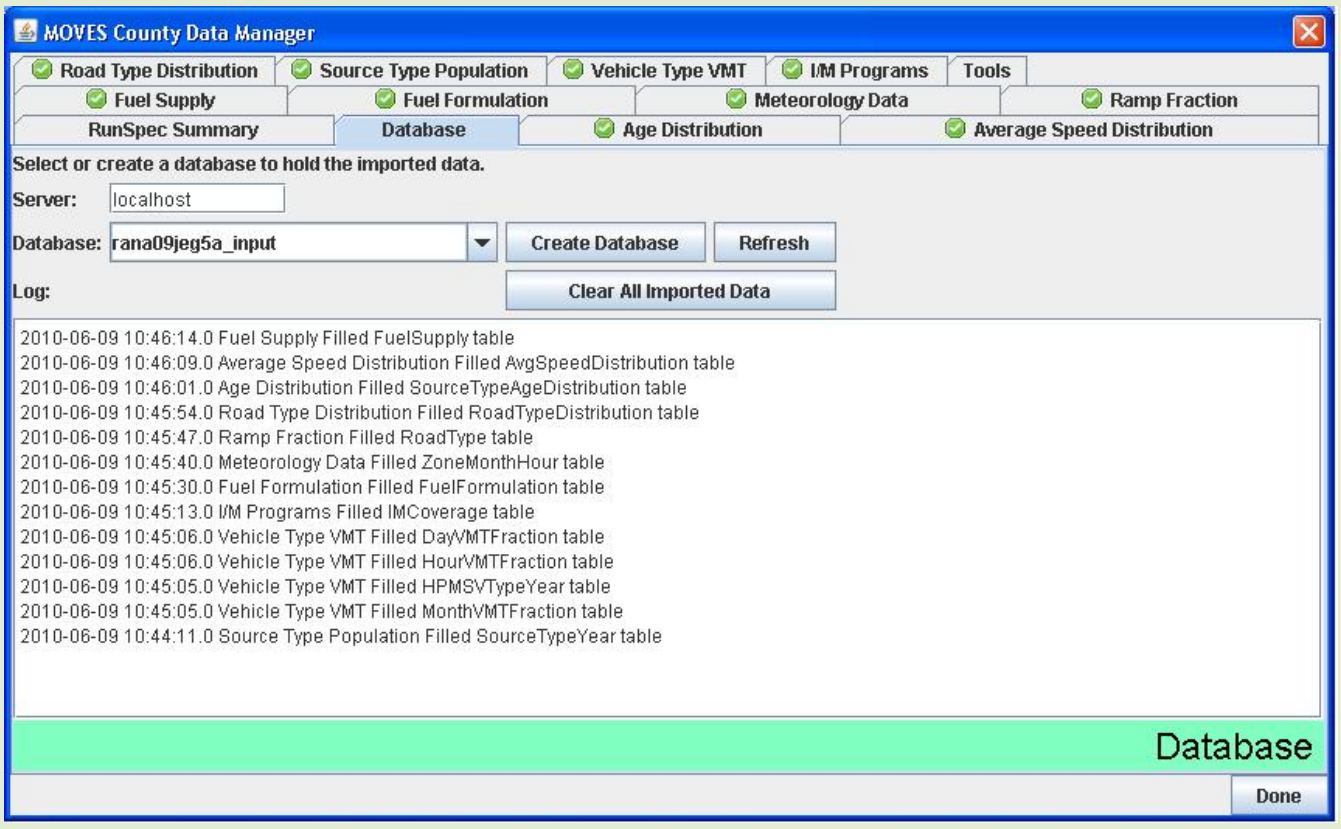
INPUT FILE DATA SETS (15) FOR MOVES COUNTY DATABASE

(Vehicle) Age Distribution *
Source Type (Vehicle) Population *
Average Speed Distribution *
Vehicle Type VMT *
Month VMT, Day VMT, Hour VMT, AVFT
Ramp Fractions *
Road Type Distribution *
Fuel Formulation, Supply, Fuel Usage Fractions
Meteorology (humidity, temperature) *
I/M Programs (or default none)

** Locally developed data*

MOVES 2014b (current version)

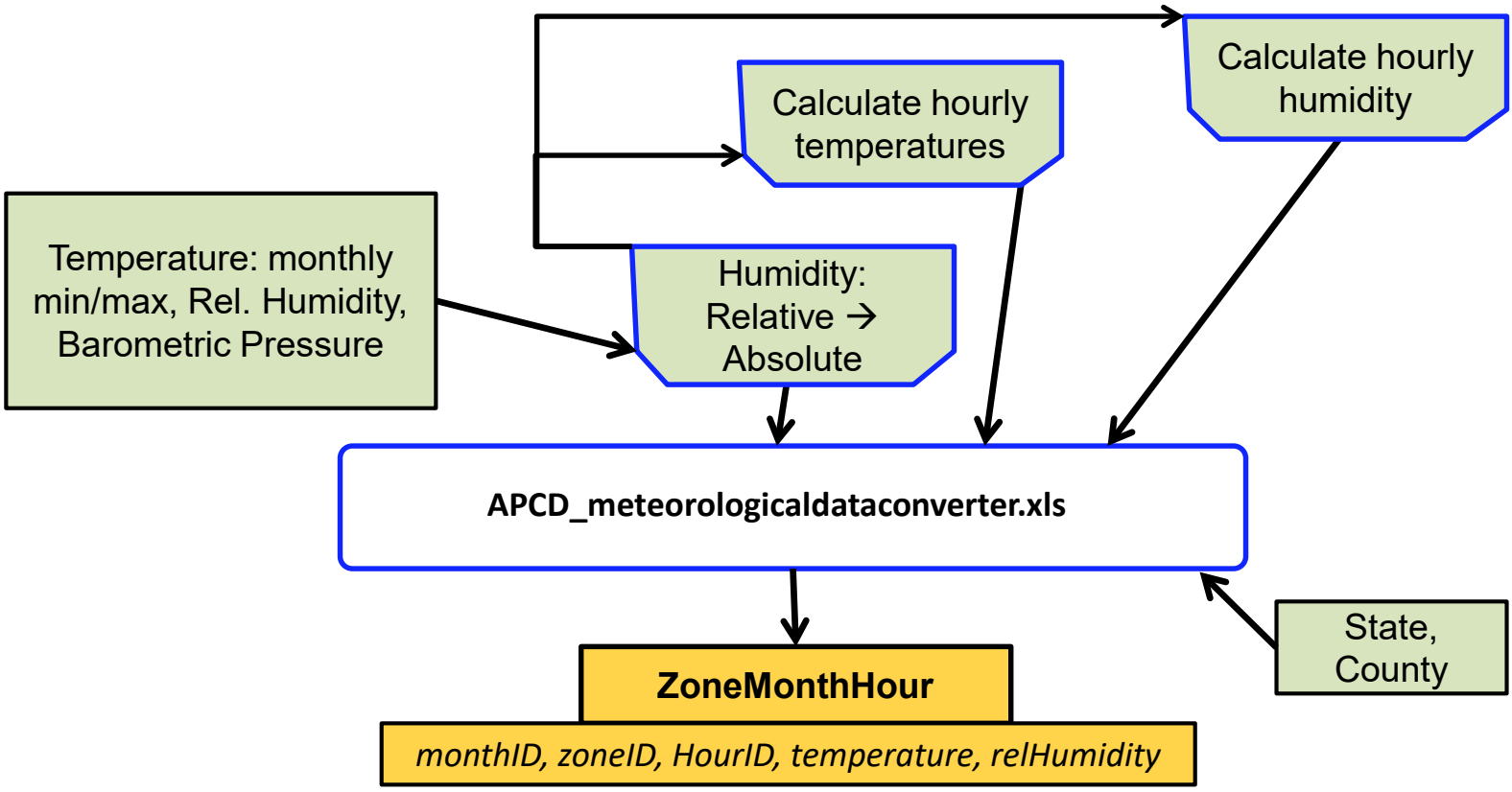


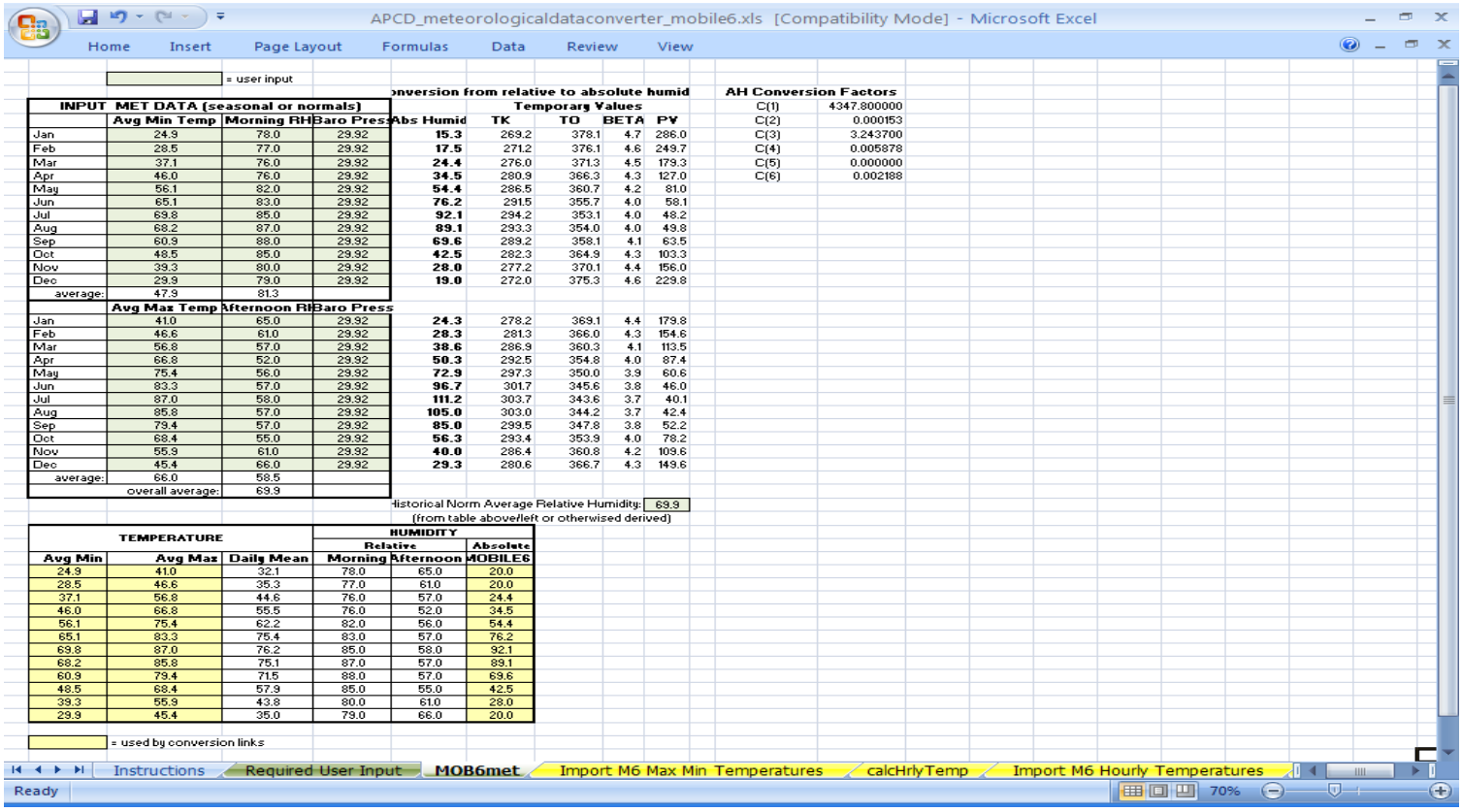


VMT DATA CONVERSION / FORMAT FOR MOVES (customized EPA tools)

COUNTY DATABASE MANAGER INPUT DEVELOPMENT

>> METEOROLOGY <<





APCD_meteorologicaldataconverter_mobile6.xls [Compatibility Mode] - Microsoft Excel

Home | Insert | Page Layout | Formulas | Data | Review | View

= user input

INPUT MET DATA (seasonal or normals)				Conversion from relative to absolute humid: Temporary Values				
	Avg Min Temp	Morning RH	Baro Press	Abs Humid	TK	TO	BETA	PV
Jan	24.9	78.0	29.92	**15.3**	269.2	378.1	4.7	286.0
Feb	28.5	77.0	29.92	**17.5**	271.2	376.1	4.6	249.7
Mar	37.1	76.0	29.92	**24.4**	276.0	371.3	4.5	179.3
Apr	46.0	76.0	29.92	**34.5**	280.9	366.3	4.3	127.0
May	56.1	82.0	29.92	**54.4**	286.5	360.7	4.2	81.0
Jun	65.1	83.0	29.92	**76.2**	291.5	355.7	4.0	58.1
Jul	69.8	85.0	29.92	**92.1**	294.2	353.1	4.0	48.2
Aug	68.2	87.0	29.92	**89.1**	293.3	354.0	4.0	49.8
Sep	60.9	88.0	29.92	**69.6**	289.2	358.1	4.1	63.5
Oct	48.5	85.0	29.92	**42.5**	282.3	364.9	4.3	103.3
Nov	39.3	80.0	29.92	**28.0**	277.2	370.1	4.4	156.0
Dec	29.9	79.0	29.92	**19.0**	272.0	375.3	4.6	229.8
average:	47.9	81.3						
	Avg Max Temp	Afternoon RH	Baro Press					
Jan	41.0	65.0	29.92	**24.3**	278.2	369.1	4.4	179.8
Feb	46.6	61.0	29.92	**28.3**	281.3	366.0	4.3	154.6
Mar	56.8	57.0	29.92	**38.6**	286.9	360.3	4.1	113.5
Apr	66.8	52.0	29.92	**50.3**	292.5	354.8	4.0	87.4
May	75.4	56.0	29.92	**72.9**	297.3	350.0	3.9	60.6
Jun	83.3	57.0	29.92	**96.7**	301.7	345.6	3.8	46.0
Jul	87.0	58.0	29.92	**111.2**	303.7	343.6	3.7	40.1
Aug	85.8	57.0	29.92	**105.0**	303.0	344.2	3.7	42.4
Sep	79.4	57.0	29.92	**85.0**	299.5	347.8	3.8	52.2
Oct	68.4	55.0	29.92	**56.3**	293.4	353.9	4.0	78.2
Nov	55.9	61.0	29.92	**40.0**	286.4	360.8	4.2	109.6
Dec	45.4	66.0	29.92	**29.3**	280.6	366.7	4.3	149.6
average:	66.0	58.5						
overall average:		69.9						

AH Conversion Factors

C(1)	4347.800000
C(2)	0.000153
C(3)	3.243700
C(4)	0.005878
C(5)	0.000000
C(6)	0.002188

Historical Norm Average Relative Humidity: 69.9
(from table above/left or otherwised derived)

TEMPERATURE			HUMIDITY		
			Relative		Absolute
Avg Min	Avg Max	Daily Mean	Morning	Afternoon	MOBILE6
24.9	41.0	32.1	78.0	65.0	20.0
28.5	46.6	35.3	77.0	61.0	20.0
37.1	56.8	44.6	76.0	57.0	24.4
46.0	66.8	55.5	76.0	52.0	34.5
56.1	75.4	62.2	82.0	56.0	54.4
65.1	83.3	75.4	83.0	57.0	76.2
69.8	87.0	76.2	85.0	58.0	92.1
68.2	85.8	75.1	87.0	57.0	89.1
60.9	79.4	71.5	88.0	57.0	69.6
48.5	68.4	57.9	85.0	55.0	42.5
39.3	55.9	43.8	80.0	61.0	28.0
29.9	45.4	35.0	79.0	66.0	20.0

= used by conversion links

Instructions | Required User Input | MOB6met | Import M6 Max Min Temperatures | calcHrlyTemp | Import M6 Hourly Temperatures

Ready 70%

VMT DATA CONVERSION / FORMAT FOR MOVES (customized EPA tools)

COUNTY DATABASE MANAGER INPUT DEVELOPMENT

>> AVERAGE SPEED DISTRIBUTION <<

speed distribution (fractions) by hour for speed bins (urban)

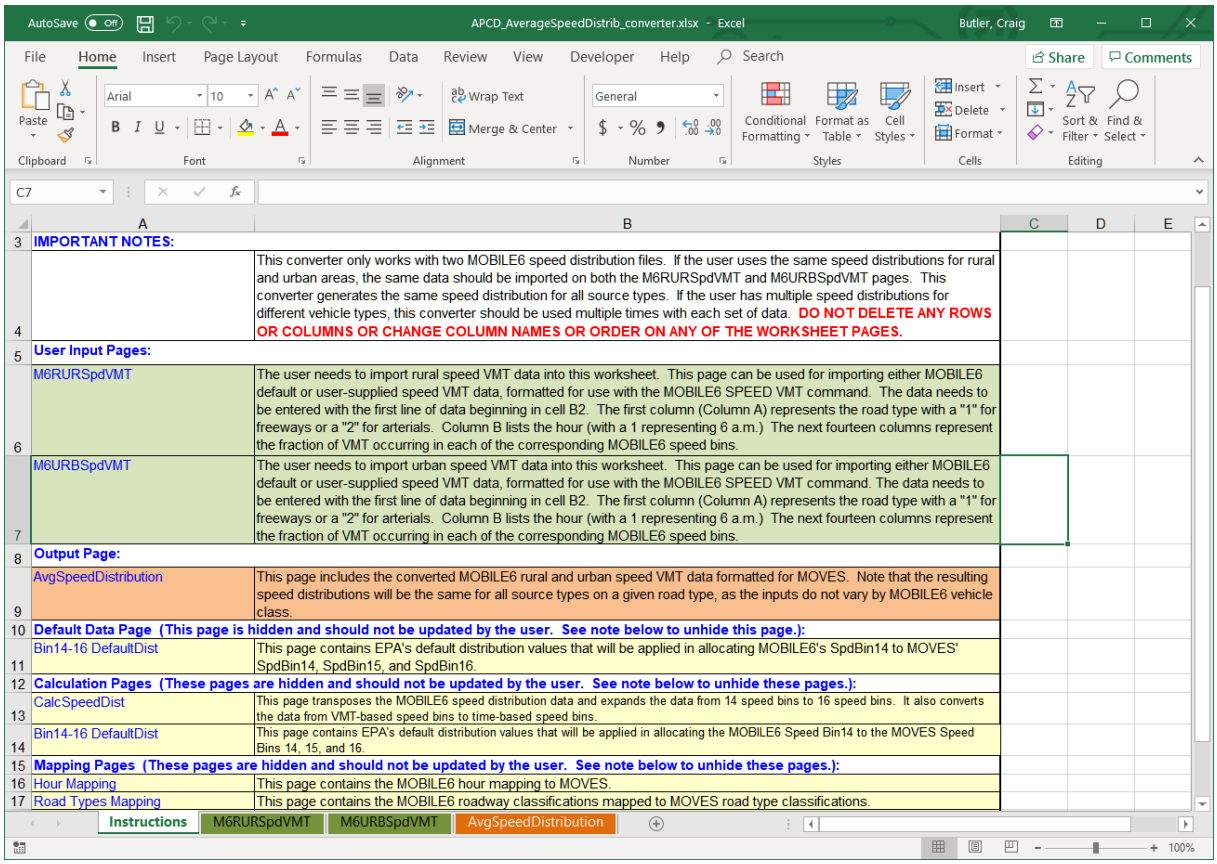
↓

APCD_AverageSpeedDistrib_converter.xls

↓

AverageSpeedDistribution

sourceTypeID, roadTypeID, hourDayID, avgSpeedBinID, avgSpeedFraction



AutoSave Off | APCD_AverageSpeedDistrib_converter.xlsx - Excel | Butler, Craig

File Home Insert Page Layout Formulas Data Review View Developer Help Search | Share | Comments

Paste | Arial | 10 | Wrap Text | General | Merge & Center | Conditional Formatting | Format as Table | Cell Styles | Insert | Delete | Format | Sort & Filter | Find & Select

Clipboard | Font | Alignment | Number | Styles | Cells | Editing

C7

	A	B
3	**IMPORTANT NOTES:**	
4		This converter only works with two MOBILE6 speed distribution files. If the user uses the same speed distributions for rural and urban areas, the same data should be imported on both the M6RURSpdVMT and M6URBSpdVMT pages. This converter generates the same speed distribution for all source types. If the user has multiple speed distributions for different vehicle types, this converter should be used multiple times with each set of data. **DO NOT DELETE ANY ROWS OR COLUMNS OR CHANGE COLUMN NAMES OR ORDER ON ANY OF THE WORKSHEET PAGES.**
5	**User Input Pages:**	
6	M6RURSpdVMT	The user needs to import rural speed VMT data into this worksheet. This page can be used for importing either MOBILE6 default or user-supplied speed VMT data, formatted for use with the MOBILE6 SPEED VMT command. The data needs to be entered with the first line of data beginning in cell B2. The first column (Column A) represents the road type with a "1" for freeways or a "2" for arterials. Column B lists the hour (with a 1 representing 6 a.m.) The next fourteen columns represent the fraction of VMT occurring in each of the corresponding MOBILE6 speed bins.
7	M6URBSpdVMT	The user needs to import urban speed VMT data into this worksheet. This page can be used for importing either MOBILE6 default or user-supplied speed VMT data, formatted for use with the MOBILE6 SPEED VMT command. The data needs to be entered with the first line of data beginning in cell B2. The first column (Column A) represents the road type with a "1" for freeways or a "2" for arterials. Column B lists the hour (with a 1 representing 6 a.m.) The next fourteen columns represent the fraction of VMT occurring in each of the corresponding MOBILE6 speed bins.
8	**Output Page:**	
9	AvgSpeedDistribution	This page includes the converted MOBILE6 rural and urban speed VMT data formatted for MOVES. Note that the resulting speed distributions will be the same for all source types on a given road type, as the inputs do not vary by MOBILE6 vehicle class.
10	**Default Data Page (This page is hidden and should not be updated by the user. See note below to unhide this page.):**	
11	Bin14-16 DefaultDist	This page contains EPA's default distribution values that will be applied in allocating MOBILE6's SpdBin14 to MOVES' SpdBin14, SpdBin15, and SpdBin16.
12	**Calculation Pages (These pages are hidden and should not be updated by the user. See note below to unhide these pages.):**	
13	CalcSpeedDist	This page transposes the MOBILE6 speed distribution data and expands the data from 14 speed bins to 16 speed bins. It also converts the data from VMT-based speed bins to time-based speed bins.
14	Bin14-16 DefaultDist	This page contains EPA's default distribution values that will be applied in allocating the MOBILE6 Speed Bin14 to the MOVES Speed Bins 14, 15, and 16.
15	**Mapping Pages (These pages are hidden and should not be updated by the user. See note below to unhide these pages.):**	
16	Hour Mapping	This page contains the MOBILE6 hour mapping to MOVES.
17	Road Types Mapping	This page contains the MOBILE6 roadway classifications mapped to MOVES road type classifications.

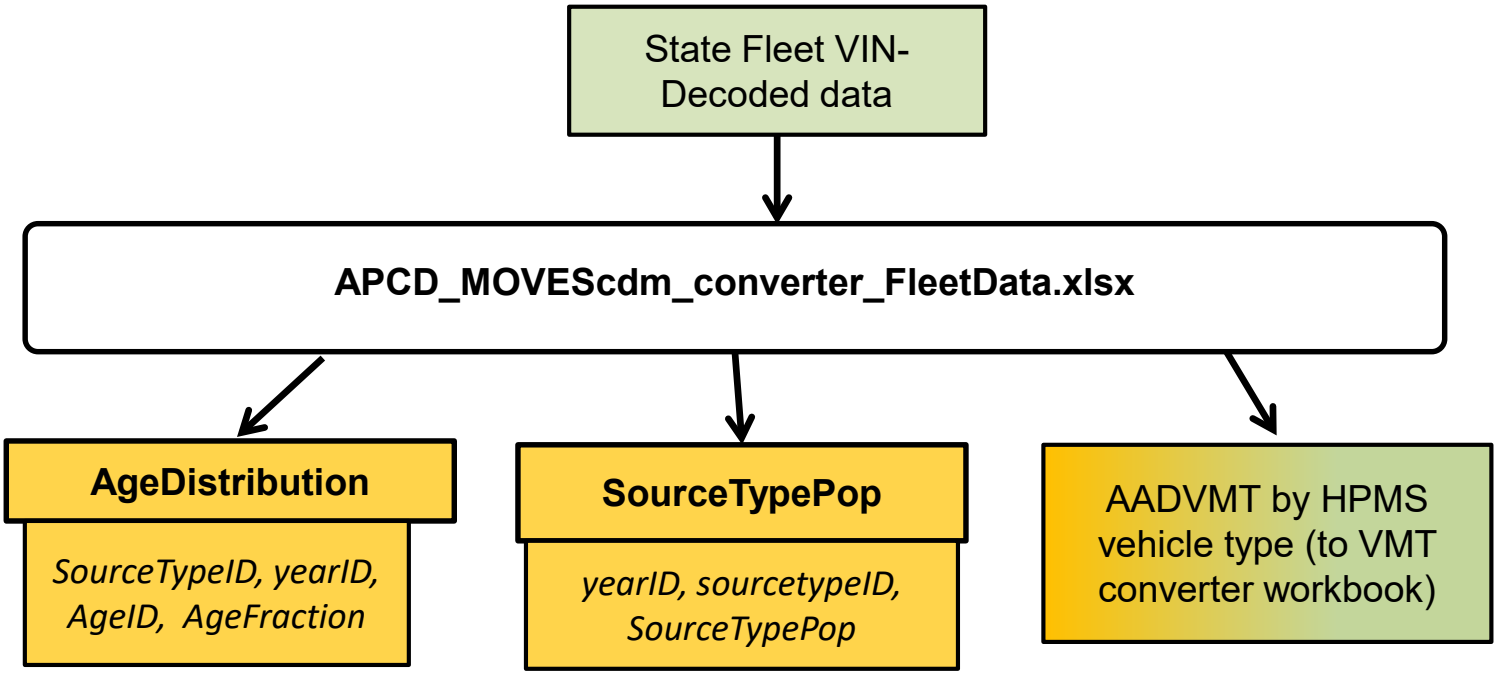
Instructions | M6RURSpdVMT | M6URBSpdVMT | AvgSpeedDistribution

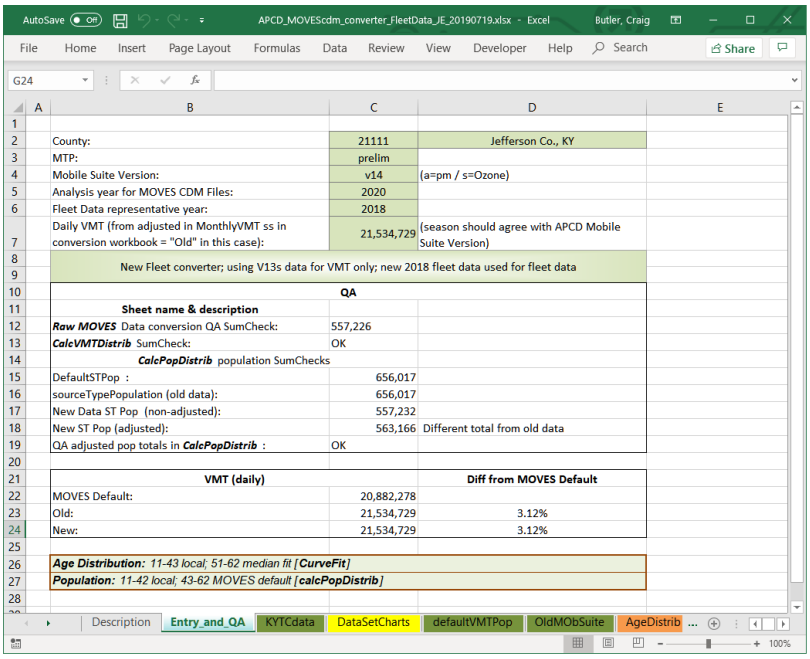
100%

VMT DATA CONVERSION / FORMAT FOR MOVES (customized EPA tools)

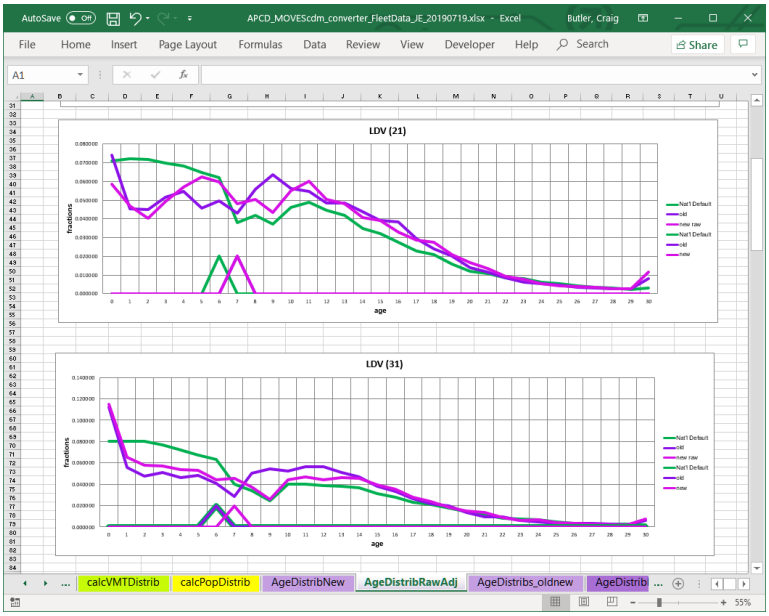
COUNTY DATABASE MANAGER INPUT DEVELOPMENT

>> Vehicle Age Distribution, Source Type Population <<





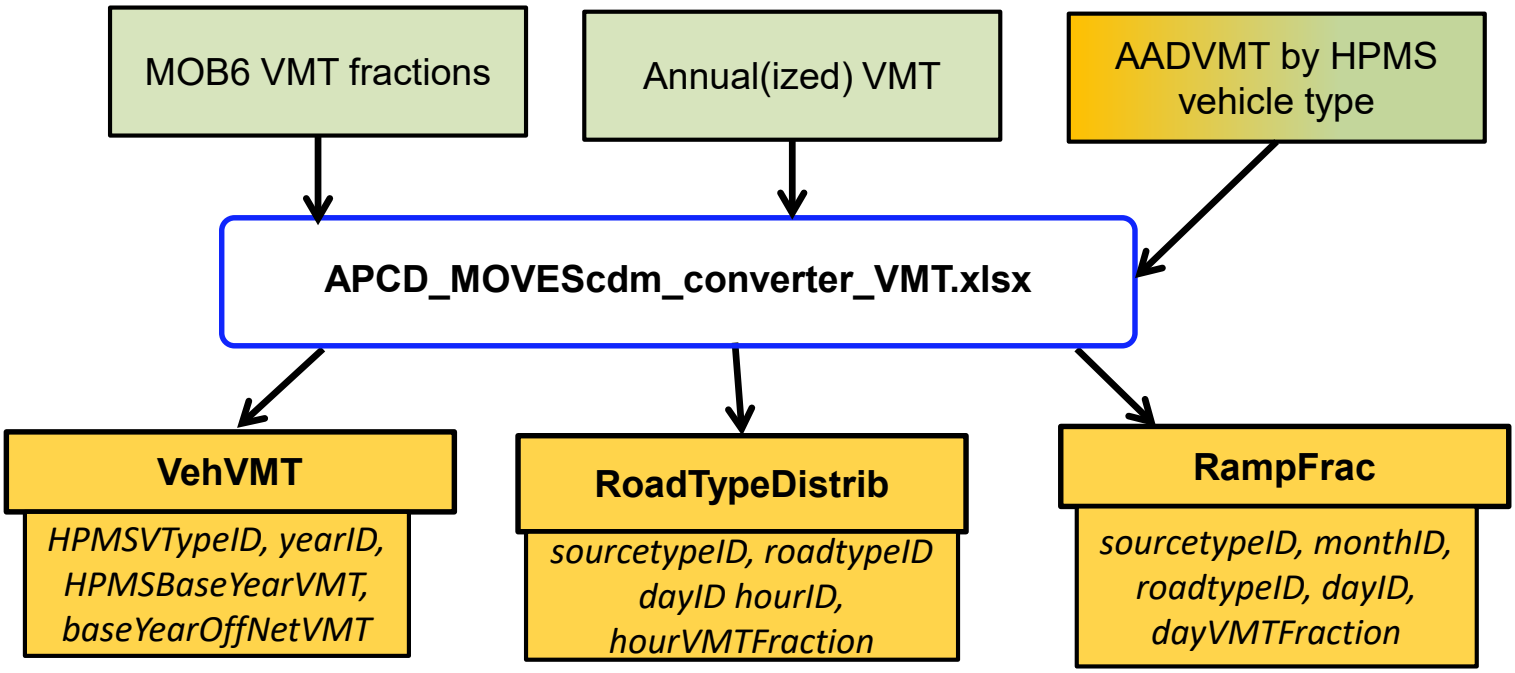
	County:	21111	Jefferson Co., KY
	MTP:	prelim	
	Mobile Suite Version:	v14	(a=pm / s=Ozone)
	Analysis year for MOVES CDM Files:	2020	
	Fleet Data representative year:	2018	
	Daily VMT (from adjusted in MonthlyVMT ss in conversion workbook = "Old" in this case):	21,534,729	(season should agree with APCD Mobile Suite Version)
	New Fleet converter; using V13s data for VMT only; new 2018 fleet data used for fleet data		
	QA		
	Sheet name & description		
	Raw MOVES Data conversion QA SumCheck:	557,226	
	CalcVMTDistrib SumCheck:	OK	
	CalcPopDistrib population SumChecks		
	DefaultSTPop :	656,017	
	sourceTypePopulation (old data):	656,017	
	New Data ST Pop (non-adjusted):	557,232	
	New ST Pop (adjusted):	563,166	Different total from old data
	QA adjusted pop totals in ***CalcPopDistrib*** :	OK	
	VMT (daily)		**Diff from MOVES Default**
	MOVES Default:	20,882,278	
	Old:	21,534,729	3.12%
	New:	21,534,729	3.12%
	Age Distribution: *11-43 local; 51-62 median fit [**CurveFit**]*		
	Population: *11-42 local; 43-62 MOVES default [**calcPopDistrib**]*		

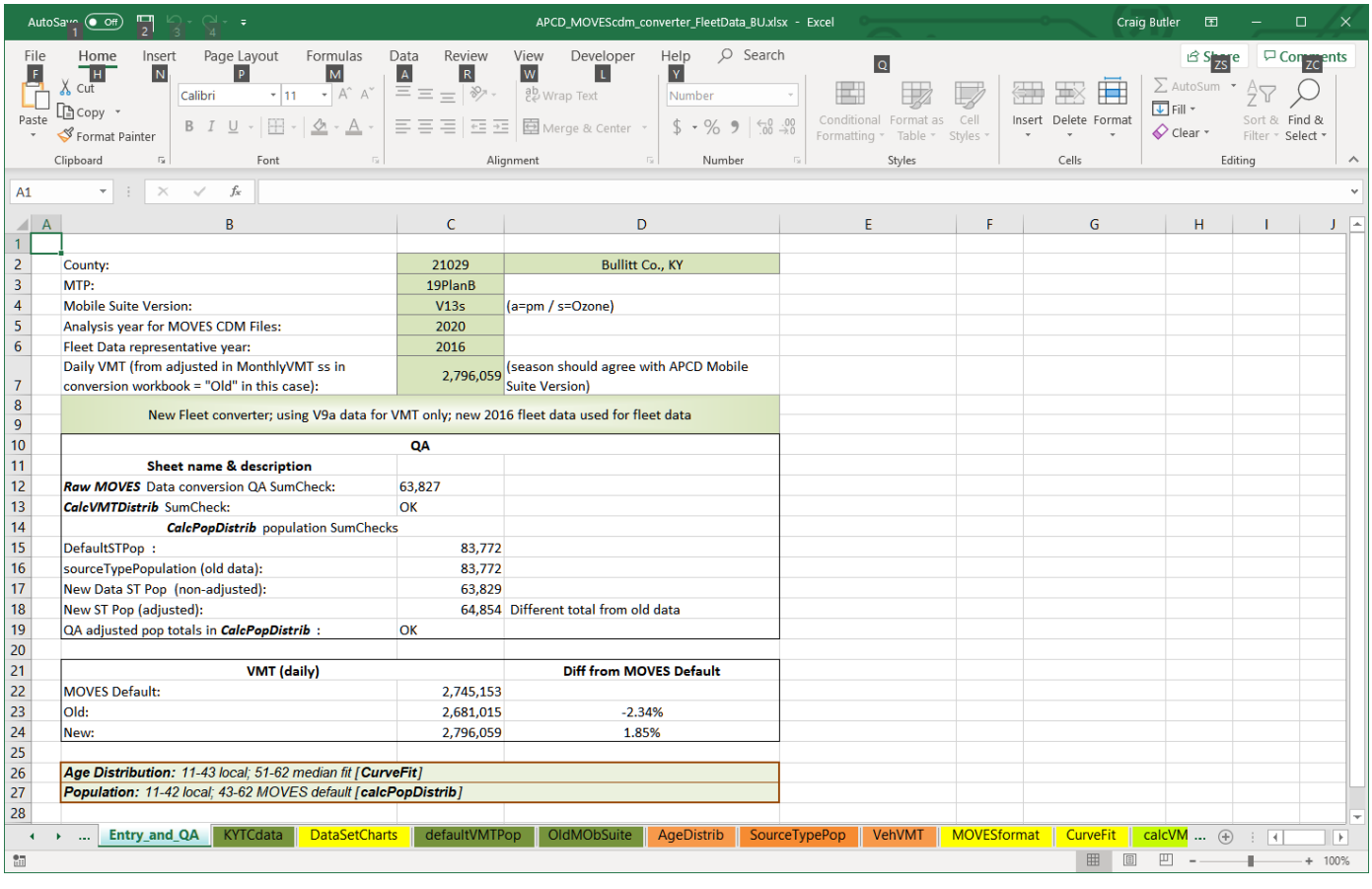


VMT DATA CONVERSION / FORMAT FOR MOVES (customized EPA tools)

COUNTY DATABASE MANAGER INPUT DEVELOPMENT

>> BY VEHICLE TYPE, ROAD DISTRIBUTION, RAMP FRACTIONS <<





APCD_MOVEScdm_converter_FleetData_BU.xlsx - Excel

	County:	21029	Bullitt Co., KY
	MTP:	19PlanB	
	Mobile Suite Version:	V13s	(a=pm / s=Ozone)
	Analysis year for MOVES CDM Files:	2020	
	Fleet Data representative year:	2016	
	Daily VMT (from adjusted in MonthlyVMT ss in conversion workbook = "Old" in this case):	2,796,059	(season should agree with APCD Mobile Suite Version)
	New Fleet converter; using V9a data for VMT only; new 2016 fleet data used for fleet data		

QA		
Sheet name & description		
Raw MOVES Data conversion QA SumCheck:	63,827	
CalcVMTDistrib SumCheck:	OK	
CalcPopDistrib population SumChecks		
DefaultSTPop :	83,772	
sourceTypePopulation (old data):	83,772	
New Data ST Pop (non-adjusted):	63,829	
New ST Pop (adjusted):	64,854	Different total from old data
QA adjusted pop totals in ***CalcPopDistrib*** :	OK	

VMT (daily)		Diff from MOVES Default
MOVES Default:	2,745,153	
Old:	2,681,015	-2.34%
New:	2,796,059	1.85%

Age Distribution: *11-43 local; 51-62 median fit [**CurveFit**]*

Population: *11-42 local; 43-62 MOVES default [**calcPopDistrib**]*

Entry_and_QA | KYTCdata | DataSetCharts | defaultVMTPop | OldMObSuite | AgeDistrib | SourceTypePop | VehVMT | MOVESformat | CurveFit | calcVM

APCD "Mobile Suite" Custom MySQL Batch File System

MSDOS batch files run from command prompt

Autoload_v13s.bat

Create input file databases (for each run)

Load data from input files into databases

MOVESbatch_v13s.bat

Execute all (20) ozone season runs

Z:\> MOVESbatch_v13s >> Batchlog_v13.txt
(convenient log file to check for errors)

Export_v13s.bat

Automatically export all data into format needed for Excel spreadsheets, into a single folder

APCD "Mobile Suite" Custom MySQL Batch File System

Autoload_v13s.bat

Create input file databases (for each run)

createdbs_in_out_je20v13s.sql

```
echo CREATE INPUT DATABASES
call "C:\...\bin\mysql" --user=moves --password=moves < "C:\...createdbs_in_out_je20v13s.sql"
```

```
CREATE database v13_in_je20s;
USE v13_in_je20s;
flush tables;
CREATE TABLE avft select * from _v13_in_generic.avft;
CREATE TABLE avgspeeddistribution select * from _v13_in_generic.avgspeeddistribution;
CREATE TABLE county select * from _v13_in_generic.county;
CREATE TABLE dayvmtfraction select * from _v13_in_generic.dayvmtfraction;
CREATE TABLE fuelformulation select * from _v13_in_generic.fuelformulation;
CREATE TABLE fuelsupply select * from _v13_in_generic.fuelsupply;
CREATE TABLE state select * from _v13_in_generic.state;
CREATE TABLE year select * from _v13_in_generic.year;
CREATE TABLE zone select * from _v13_in_generic.zone;
CREATE TABLE zonemonthhour select * from _v13_in_generic.zonemonthhour;
CREATE TABLE zoneroadtype select * from _v13_in_generic.zoneroadtype;

CREATE database v13_out_je20s;
USE v13_out_je20s;
flush tables;
CREATE TABLE activitytype select * from _v13_out_generic.activitytype;
CREATE TABLE baserateoutput select * from _v13_out_generic.baserateoutput;
CREATE TABLE baserateunits select * from _v13_out_generic.baserateunits;
CREATE TABLE bundletracking select * from _v13_out_generic.bundletracking;
CREATE TABLE movesactivityoutput select * from _v13_out_generic.movesactivityoutput;
CREATE TABLE moveserror select * from _v13_out_generic.moveserror;
CREATE TABLE moveseventlog select * from _v13_out_generic.moveseventlog;
CREATE TABLE rateperhour select * from _v13_out_generic.rateperhour;
CREATE TABLE rateperprofile select * from _v13_out_generic.rateperprofile;
CREATE TABLE rateperstart select * from _v13_out_generic.rateperstart;
CREATE TABLE ratepervehicle select * from _v13_out_generic.ratepervehicle;
CREATE TABLE startspervehicle select * from _v13_out_generic.startspervehicle;

exit
```

APCD “Mobile Suite” Custom MySQL Batch File System

Autoload_v13s.bat

Load data from input files into databases

```
echo  COPY INPUT FILES INTO DATABASE FOLDERS
copy Z:\inputs\_v13\_Oz20\KY\je\*.csv "C:\ProgramData\MySQL\MySQL Server 5.6\data\v13_in_je20s"
echo LOAD INPUT FILE DATA INTO DATABASES
call "C:\...\bin\mysql" --user=moves --password=moves < "C:\MySQL\scripts\v13\loaddb_in_je20v13s.sql"
del "C:\ProgramData\MySQL\MySQL Server 5.6\data\v13_in_je20s\*.csv"
```

```
use v13_in_je20s;

ALTER table avgspeeddistribution change avgspeedfraction avgspeedfraction DECIMAL(8,7);
LOAD DATA INFILE "AvgSpeedDistrib.csv" INTO TABLE avgspeeddistribution FIELDS TERMINATED BY ","
IGNORE 1 LINES;
ALTER table avgspeeddistribution change avgspeedfraction avgspeedfraction FLOAT;

DELETE FROM county;
ALTER table county change GPAFract GPAFract DECIMAL(5,2);
ALTER table county change barometricPressure barometricPressure DECIMAL(6,3);
INSERT INTO county (countyID,stateID,countyName,Altitude,GPAFract,barometricPressure) VALUES
(21111,21,"Jefferson County","L",0,29.514);
ALTER table county change GPAFract GPAFract FLOAT;
ALTER table county change barometricPressure barometricPressure FLOAT;

ALTER table roadtypedistribution change roadtypeVMTFraction roadtypeVMTFraction DECIMAL(8,7);
LOAD DATA INFILE "RoadTypeDistrib.csv" INTO TABLE roadtypedistribution FIELDS TERMINATED BY ","
IGNORE 1 LINES;
ALTER table roadtypedistribution change roadtypeVMTFraction roadtypeVMTFraction FLOAT;

ALTER table sourcetypeagedistribution change agefraction agefraction DECIMAL(8,7);
LOAD DATA INFILE "AgeDistrib.csv" INTO TABLE sourcetypeagedistribution FIELDS TERMINATED BY ","
IGNORE 1 LINES;
ALTER table sourcetypeagedistribution change agefraction agefraction FLOAT;

ALTER table sourcetypeyear change SourceTypePopulation SourceTypePopulation DECIMAL(8,0);
LOAD DATA INFILE "SourceTypePop.csv" INTO TABLE sourcetypeyear FIELDS TERMINATED BY "," IGNORE 1
LINES (yearID,sourceTypeID,sourceTypePopulation);
ALTER table sourcetypeyear change SourceTypePopulation SourceTypePopulation FLOAT;

DELETE FROM state;
INSERT INTO state (stateID,stateName,stateAbbr) VALUES (21,"KENTUCKY","KY");

DELETE FROM year;
INSERT INTO year (yearID,isBaseYear,FuelYearID) VALUES (2020,"Y",2020);

exit
```

APCD “Mobile Suite” Custom MySQL Batch File System

MOVESbatch_v13s.bat

Execute all (20) ozone season runs

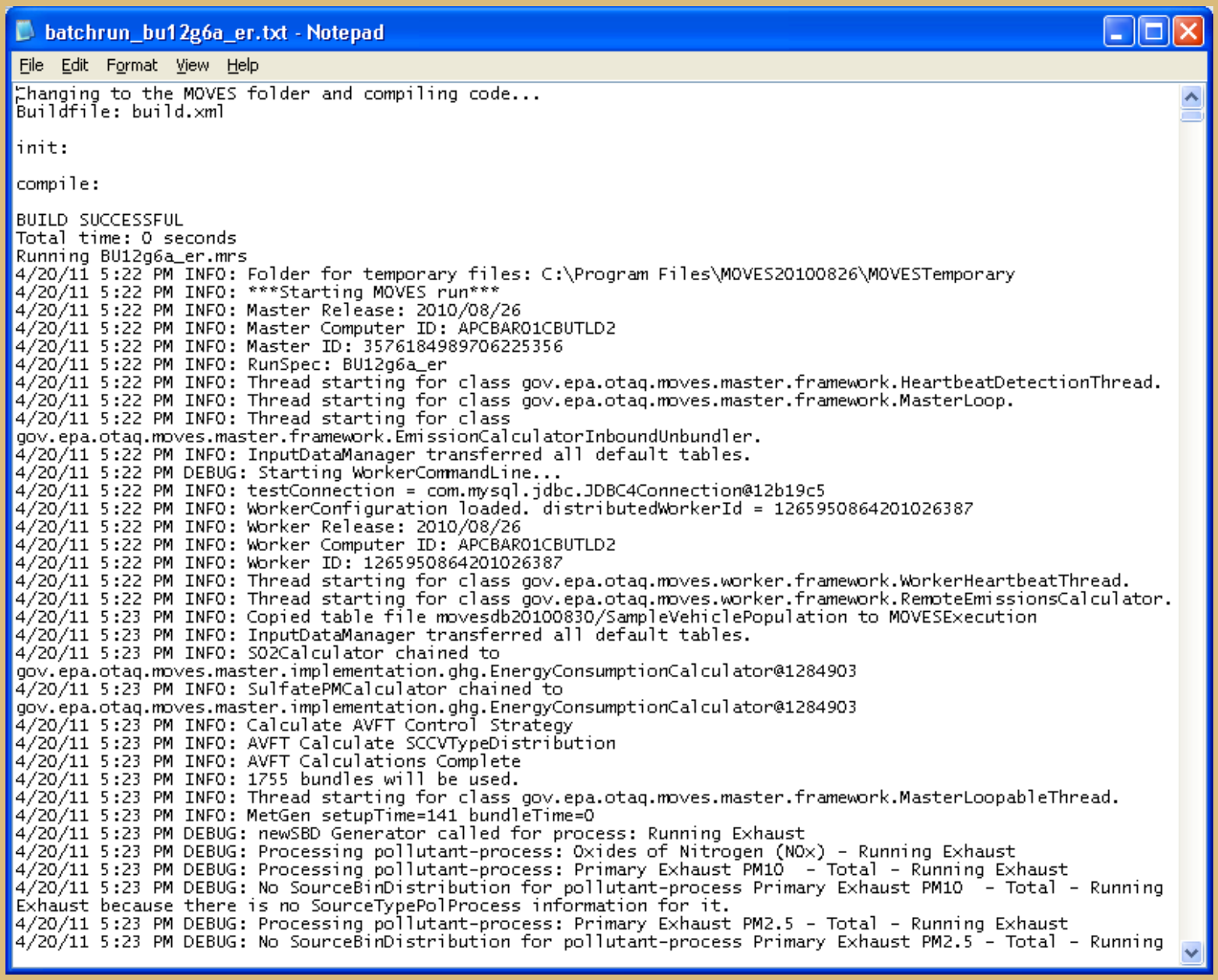
Z:\> MOVESbatch_v13s >> Batchlog_v13.txt
(convenient log file to check for errors)

```
@echo off
rem Script generated by the MOVES Multiple RunSpec Creator
rem Based on control file: Z:\BatchFiles\moves2014.bat
rem ------------------------------------------------------
echo Changing to the MOVES folder and compiling code...
C:
cd "C:\Users\Public\EPA\MOVES\MOVES2014b"
call setenv.bat
call ant compile
REM ============================================
REM ----------  O3
echo Running BU20v13s.mrs
java -Xmx512M gov.epa.otaq.moves.master.commandline.MOVESCommandLine -r "Z:\... BU20v13s.mrs"
echo .
echo Running JE20v13s.mrs
java -Xmx512M gov.epa.otaq.moves.master.commandline.MOVESCommandLine -r "Z:\... JE20v13s.mrs"
echo .
echo Running OL20v13s.mrs
java -Xmx512M gov.epa.otaq.moves.master.commandline.MOVESCommandLine -r "Z:\... OL20v13s.mrs"
echo .
echo Running CL20v13s.mrs
java -Xmx512M gov.epa.otaq.moves.master.commandline.MOVESCommandLine -r "Z:\... CL20v13s.mrs"
echo .
echo Running FL20v13s.mrs
java -Xmx512M gov.epa.otaq.moves.master.commandline.MOVESCommandLine -r "Z:\... FL20v13s.mrs"
echo .
echo  ********   FINISHED BATCH RUN    ********
cd Z:\batchfiles
```

MOVES Batch Run Log File

Text editor Ctrl-F “error” – none, good run!

Use *batchfilename.bat* >> *logfile.txt* (DOS command) to record batch run



APCD "Mobile Suite" Custom MySQL Batch File System

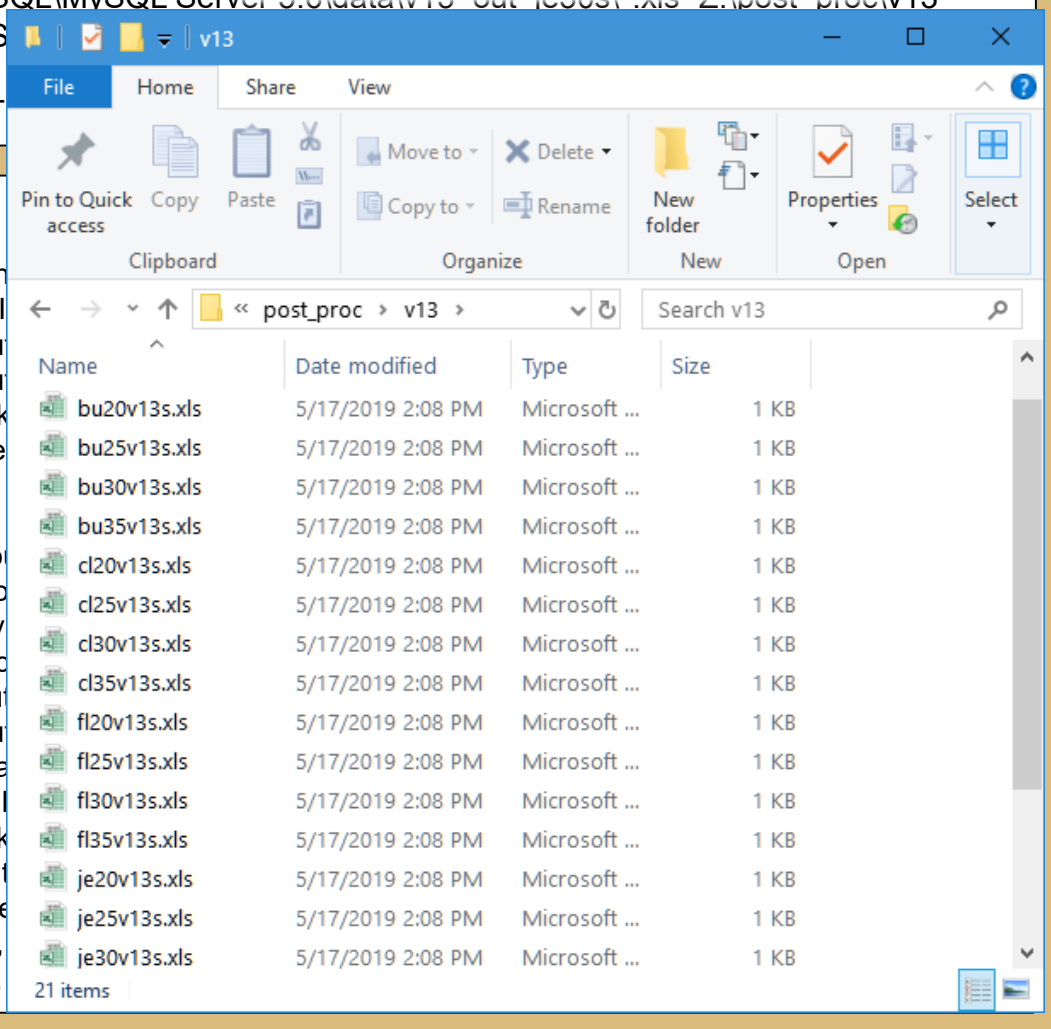
Export_v13s.bat

Automatically export all data into format needed for Excel spreadsheets, into a single folder

```
REM ******************************************************
REM   3_Export_v13s.bat
REM   EXPORTS MOVES RUN DATABASE DATA TO POST-PROC FOLDER
REM ******************************************************
call "C:\Program Files\MySQL\MySQL Server 5.6\bin\mysql" --user=moves --password=moves <
"C:\MySQL\scripts\v13\Export_v13s.sql"
REM -----  Ozone
move /Y "C:\ProgramData\MySQL\MySQL Server 5.6\data\v13_out_je20s\*.xls" Z:\post_proc\v13
move /Y "C:\ProgramData\MySQL\MySQL Serv                                              v13
move /Y "C:\ProgramData\MySQL\MySQL Server 5.6\data\v13_out_je20s\*.xls" Z:\post_proc\v13
move /Y "C:\ProgramData\MyS
REM .
REM ****  FINISHED EXPORT
```

Excel Files Exported Into Folder

```
-- Ozone
use v13_out_je20s
SELECT movesdb20180517.coun
v13_out_je20s.movesoutput.yearI
movesdb20180517.pollutant.pollu
movesdb20180517.pollutant.pollu
movesdb20180517.dayofanyweek
Round (sum(v13_out_je20s.move
AS TonsPerDay
INTO OUTFILE "je20v13s.xls"
FROM v13_out_je20s.movesoutpu
LEFT JOIN movesdb20180517.co
movesdb20180517.county.county
LEFT JOIN movesdb20180517.po
v13_out_je20s.movesoutput.pollu
movesdb20180517.pollutant.pollu
LEFT JOIN movesdb20180517.da
v13_out_je20s.movesoutput.DayI
movesdb20180517.dayofanyweek
WHERE v13_out_je20s.movesout
v13_out_je20s.movesoutput.proce
GROUP BY countyName, yearID,
ORDER BY countyName, yearID,
```



ANALYSIS RESULTS (APCD TO KIPDA)

TOTAL EMISSIONS CALCULATED BY APCD FOR KIPDA

APCD Mobile Suite Assumptions - version V13 using MOVES 2014b (Dec. 2015 update, patches to 5/20/19) rcb 5/20/19

KIPDA 19PlanB, 5/9/19

Ozone / Summer Season (tons per summer day)

	2020			2025			2030			2035		
	NOx	VOC	CO	NOx	VOC	CO	NOx	VOC	CO	NOx	VOC	CO
Clark	5.48	2.07	36.84	3.60	1.57	30.26	2.89	1.13	23.28	2.56	0.89	17.36
Floyd	3.90	2.46	28.07	2.47	1.92	23.04	1.90	1.38	17.66	1.58	1.07	13.11
Bullitt	3.72	1.28	18.06	2.49	0.94	15.15	1.89	0.71	12.07	1.58	0.58	9.41
Jefferson	14.51	7.56	132.61	8.63	5.46	105.22	5.66	4.01	78.10	4.24	3.12	58.61
Oldham	1.61	0.66	9.00	1.03	0.49	7.49	0.69	0.36	5.68	0.50	0.28	4.41
	29.21	14.04	224.57	18.22	10.39	181.16	13.03	7.59	136.79	10.46	5.94	102.90

MOVES emission calculations using APCD Mobile Suite inputs V13 rcb 5/20/19

V12: 18PlanA, 8/21/18 V13: 19PlanB, 5/20/19

(v12=IN14,KY16 fleet data; V13=IN14,KY16 fleet data)

(V13-V12)/V12

V13 vs V12 DIFFERENCES

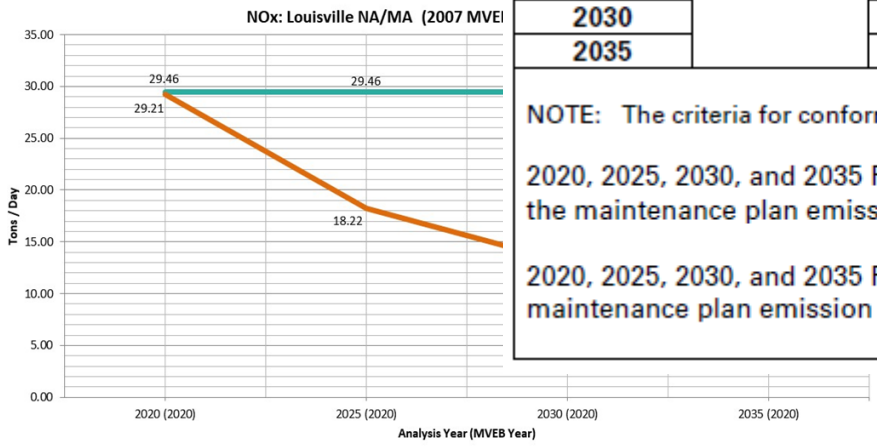
Ozone / summer (tons per summer day) EMISSIONS

	2020			2025			2030			2035		
	NOx	VOC	CO	NOx	VOC	CO	NOx	VOC	CO	NOx	VOC	CO
Clark	8.19%	2.65%	7.51%	7.15%	2.10%	7.80%	6.75%	1.05%	7.83%	6.69%	0.68%	8.88%
Floyd	14.61%	3.95%	9.09%	15.73%	4.02%	10.85%	18.90%	4.91%	11.57%	23.07%	6.28%	11.78%
Bullitt	-5.67%	-5.03%	-6.02%	-8.04%	-6.05%	-6.34%	-8.59%	-7.28%	-6.50%	-9.14%	-8.53%	-6.68%
Jefferson	-2.71%	-3.29%	-2.52%	-2.79%	-3.57%	-2.59%	-2.77%	-4.29%	-2.75%	-2.53%	-4.95%	-0.95%
Oldham	-3.87%	-3.34%	-3.00%	-3.83%	-3.72%	-3.06%	-4.48%	-4.94%	-3.52%	-5.00%	-6.15%	-3.78%
Total:	0.75%	-1.41%	0.02%	0.39%	-1.66%	0.22%	0.88%	-2.29%	0.20%	1.56%	-2.72%	1.37%

VMT: V13 vs. V12

PM2.5	2020	2025	2030	2035
Bullitt	-5.38%	-1.37%	1.87%	4.67%
Clark	-10.24%	-9.90%	-11.45%	-11.78%
Floyd	-14.61%	-13.38%	-13.57%	-12.62%
Jefferson	-5.75%	-6.28%	-7.89%	-8.70%
Oldham	-10.00%	-8.59%	-7.45%	-6.35%

Ozone



SUMMER WEEKDAY EMISSIONS FOR THE 8-HOUR MAINTENANCE AREA (kg/day)

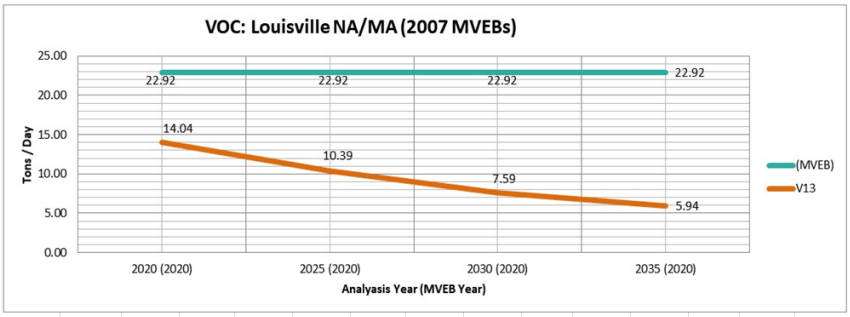
EMISSION LEVELS FOR VARIOUS YEARS

YEAR	Area	VOCs	NOx	PASS
2020	Regional	12734	26501	YES
2025		9422	16531	YES
2030		6882	11819	YES
2035		5386	9487	YES

NOTE: The criteria for conformity are as follows:

2020, 2025, 2030, and 2035 Regional emission levels for VOCs must be below the maintenance plan emission budget of 22.92 tons/day or 20,793 kg/day.

2020, 2025, 2030, and 2035 Regional emission levels for NOx must be below the maintenance plan emission budget of 29.46 tons/day or 26,726 kg/day.



HELPFUL LINKS (TRANSPORTATION CONFORMITY)

EPA: Transportation Conformity:
https://www.epa.gov/state-and-local-transportation/transportation-conformity
- Current law, regulations and guidance
- Policy and technical guidance
- Project-level conformity
- General information, contacts and training
- Adequacy review of SIP submissions

State and Local Transportation Resources (EPA):
https://www.epa.gov/state-and-local-transportation
- Conformity, Vehicle I/M, SIP, GHG Planning, Models

DOT (FHWA) website:
https://www.fhwa.dot.gov/environment/air_quality/conformity/index.cfm
Basic Guide, Reference Guide, and Frequently Asked Questions
- Research and training
- Examples of Transportation Conformity Practice

Nonattainment/maintenance areas (EPA):
- EPA's Greenbook: https://www.epa.gov/green-book

QUESTIONS?

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