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Dear Data User:

This dataset includes the analysis year 2015 inputs and outputs from the Air Quality Conformity Analysis completed in the October 2015. The horizon year is 2040 and reflects the policies and projects adopted in the *GO TO 2040* Regional Comprehensive Plan Update.

The air quality analysis is completed twice annually, in the first quarter and the third quarter. The data associated with the analysis is named based on the year the analysis was completed (C15) and the quarter it was completed (Q1 or Q3). The files in this dataset are therefore referred to as C15Q3 data.

The analysis years for this conformity cycle include 2010, 2015, 2025, 2030 and 2040. We associate scenario numbers with the analysis years as shown below. You will notice the scenario numbers 100 – 600 referenced in many of the filenames or in headers within the files. The CMAP Data Sharing Hub includes one dataset for each of the analysis years.

2010 – 100	2015 – 200	2025 - 400
2030 – 500	2040 - 600	

<u>Resource Descriptions</u>

Data Description C15Q3 2015 October 2015 (Data_Description_C15Q3_200_10-22-2015.pdf)
This .pdf describes the contents of the files within the dataset.

Trip Generation C15Q3 2015 Spreadsheet October 2015 (Tg_C15Q3_200.xlsx)
This is an Excel workbook containing the trip generation inputs and outputs by trip generation zone, the most disaggregate modeling geography. The trip generation zone id is subzone09. The information can be linked to the trip generation zone shapefile, described later, via the variable subzone09. This file includes a number of variables related to low and high income workers. The definition of a low income worker for our purposes is a worker who earns less than the regional median income. A high income worker earns more than the regional median income. The variables are defined this way:

Subzone09	trip generation zone
FIPS code	census county code
County Name	county name
State	Illinois, Wisconsin or Indiana, because the modeled region covers multiple states
PUMA 1	1% PUMA id
PUMA 2	5% PUMA id
Zone09	traffic analysis zone that the subzone09 is aggregated up to
Chicago	flag for “in Chicago” 1=yes, 0=no
CBD	flag for “in Chicago CBD” 1=yes, 0=no
Row-column	area of the region 1=inner Chicago, 2=outer and inner suburbs, 3=mid-suburban, 4= fringe

	and external area
Area sq. mi	area of the subzone
Households	number of households
Adults per household	average number of adults per household
Workers per household	average number of workers per household
Children per household	average number of children per household
Income quartile index	ratio of the zonal average income to the regional median
Work auto mode share	mode share of work trips from the zone
Pedestrian environment factor	walkability index
Workers in non-institutional group quarters	workers living in group quarters
Non-works in non-institutional group quarters	nonworkers living in group quarters
Group quarters worker trip rate	trip rate of workers living in group quarters
Group quarters worker non-motorized commute share	non-motorized work trip share for group quarters workers
Retail employment	zonal retail employment
Total employment	total zonal employment
High income worker share	percent of zonal workers who earn more than the regional median income
Non-home based productions	non home based productions
Non-home based attractions	non home based attractions
Home based work low income productions	home based work low income productions
Home based work high income productions	home based work high income productions
Home based work low income attractions	home based work low income attractions
Home based work high income attractions	home based work high income attractions
Home based other productions	home based other productions
Home based other attractions	home based other attractions
CMAP Region	1=in CMAP region, 0=outside CMAP region

Trip Generation C15Q3 2015 Emme Matrices October 2015 (PandA_C15Q3_200.zip)
This compressed file contains 8 Emme format files of person trip productions and attractions which were imported and used as origin and destination totals for the trip distribution model. The source of this data is the trip generation outputs described previously, aggregated up to the traffic analysis zone system zone09. These are ASCII text files in Emme batchin format. The information can be linked to the traffic analysis zone shapefile zone09, described later, via the zone number.

File Name	Contents	File Name	Contents
Hwphi.in	Home-based work productions, high income	Hwahi.in	Home-based work attractions, high income
Hwplo.in	Home-based work productions, low income	Hwalo.in	Home-based work attractions, low income
Hop.in	Home-based other productions	Hoa.in	Home-based other attractions
Nhp.in	Nonhome based productions	Nha.in	Nonhome based attractions

The production files have 3 lines of headers followed by “origin zone” “all:” “trips” in each of the remaining records.

The attraction files have 3 lines of headers followed by “all” “destination zone :” “trips” in each of the remaining records.

Distributed Trip Tables C15Q3 2015 October 2015 (Trips_C15Q3_200.zip)
This compressed file includes thirteen ASCII text file matrices in Emme batchin format. They include 4 rows of headers, with the remaining trip records formatted:

Origin D_1:$Trips_1$ D_2:$Trips_2$ D_3:$Trips_3$ D_4:$Trips_4$.

The CMAP network assignment process requires the truck vehicle trips (actual matrix contents) to be converted to vehicle equivalents. The factors used are b-plate and light trucks=1 vehicle equivalent, medium trucks=2 vehicle equivalents, and heavy trucks=3 vehicle equivalents.

Because of the unique way the transit network is coded, the transit trip tables cannot be assigned directly to the transit network. Please contact me if you need more information on this topic.

File Contents and Control Totals

Filename Format	Contents	2015
Mf1.txt P/A	Home-based work auto person trips	7,482,296
Mf2.txt P/A	Home-based other auto person trips	10,293,400
Mf3.txt O/D	Nonhome based auto person trips	5,969,996
Mf4.txt O/D	B-plate trucks Vehicle trips	1,747,879
Mf5.txt O/D	Light Trucks Vehicle trips	491,232
Mf6.txt O/D	Medium Truck Vehicle trips	399,835
Mf7.txt O/D	Heavy Trucks Vehicle trips	232,273
Mf8.txt O/D	Auto Point of Entry Vehicle trips	343,831
Mf9.txt O/D	Truck Point of EntryVehicle trips	147,356
Mf10.txt O/D	Airport TripsVehicle trips	69,543
Mf14.txt (P/A)	Home-based work transit person trips	920,235
Mf42.txt (P/A)	Home-based other transit person trips	692,658
Mf43.txt O/D	Nonhome based transit person trips	213,375

These totals existed within the model. Rounding of decimals while exporting may cause your totals to vary slightly.

Distributed Work Trip Tables C15Q3 2015 October 2015 (Worktrips_C15Q3_200.zip)
This folder contains the work trip details tables. The low and high income trip tables represent travel made by workers who earn below and above the regional median income. The individual trip tables sum to the totals for home based work auto and home based work transit trips shown in the previous section.

Name Format	Contents	2015
Mf36.txt P/A	Home-based work total person trips, low income	4,172,889
Mf37.txt P/A	Home-based work total person trips high income	4,229,654
Mf40.txt P/A	Home based work transit person trips, low income	435,618
Mf41.txt P/A	Home-based work transit person trips high income	484,617
Mf48.txt P/A	Home-based work auto person trips low income	3,736,742
Mf49.txt P/A	Home-based work auto person trips, high income	3,744,790

These totals existed within the model. Rounding of decimals while exporting may cause your totals to vary slightly.

Loaded Highway Networks C15Q3 2015 October 2015 (Net_C15Q3_200.zip)
This compressed file includes files named net.p1 – net.p8 . These are ASCII format assigned Emme highway network files exported from the database for period 1 through period 8, denoted by the file extensions .p1 - .p8. Each network file consists of two parts. The first part is the node file, the second part is the link file. The time period we usually use the network for is shown in the header, although the network file itself has no consideration of the number of

hours the period lasts. The period link capacity would be calculated during the modeling process using @emcap*lanes*hours in the period for each link.

I have also included a "daily" network that has all links (including both directions of reversible lanes) and an associated attribute table that has the daily assigned volume in vehicles.

The compressed file also contains files titled attribs.p1 – attribs.p8 . These are ASCII format Emme extra attribute files for periods1 through period 8, denoted by the file extensions .p1 - .p8. The file format and contents of the networks and network extra attributes is presented on the following page.

The periods are defined:

Period 1: 8pm-6am	Period 2: 6am-7am	Period 3: 7am-9am	Period 4: 9am-10am
Period 5: 10am-2pm	Period 6: 2pm-4pm	Period 7: 4pm-6pm	Period 8: 6pm-8pm

Many people are interested in using the congested link travel times. The congested link travel times in minutes are included as "timau" in the extra attribute file. Use caution, however, as these times are raw model results. CMAP adjusts the arterial speeds before using them in the air quality analysis software. Also, you will notice that links with an i-node or j-node less than 2000 have the same congested times in all periods. These are centroid connectors and the travel time is based on distance, not on congestion.

Network and extra attribute file layout.

Network File contains two sections, nodes and links whose starts are marked by "t nodes init" and "t links init."

T nodes init										
a*	1	686803	1905336	0	0	0	0001			
** denotes centroid*	*node#*	*x-coord*	*y-coord*	*user1*	*user2*	*user3*	*node label*			
t links init										
a	1	15213	0.12	ASHThml b	1	1.0	6	0	0	0
add link	*inode*	*jnode*	*length mi.*	*modes*	*type*	*lanes*	*volume delay function*	*user1*	*user2*	*user3*

Extra Attribute File Contents

inode	jnode	@speed	@width	@parkl	@toll	@sigic	@tipid
1	15213	30	10	0	0	0	0
inode	*jnode*	*posted speed*	*lane width*	*parking allowed 0=no 1=yes*	*toll in dollars*	*signal interconnect 0=no 1=yest*	*Links with a number or *** are links with TIP Projects*

@ftime	@emcap	@avelw	@vadt	timau
0	0	10	375	3.5
free flow travel time	*capacity per lane per hour*	*average lane width*	*period assigned* ***modeled*** *volumes in vehicles*	*Congested auto travel time in minutes*

Disregard the field titled "total," which is meaningless and only results from the method of exporting the data.

Additional Description of Highway Link Variables
The following table provides information on how the network volume delay functions and modes are defined, as well as a little descriptive information about some of the additional network attributes.

Modes	Volume Delay Function codes
A = Generalized auto S = Single occupant auto H = High occupancy vehicle T = General truck b = B plate truck l = Light truck m = Medium truck h = heavy truck	1 = arterial street 2 = freeway 3 = freeway/expressway to arterial street 4 = expressway 5 = freeway/expressway to freeway/expressway ramp 6 = auto access to network 7 = link where toll is paid 8 = metered expressway entrance ramp
Lanes = number of driving lanes parkl = number of parking lanes on link avelw, width = average width of link's driving lanes	ftime = uncongested travel time on link emcap = lane capacity at level of service E

AM Peak Loaded Highway Network C15Q3 2015 October 2015 (Ampk_C15Q3_200.zip)
This is a shapefile exported from the travel demand model software and contains the highway assignment results for the am peak (7-9am) traffic volumes in vehicles. These links are directional and the volumes in vehicles are contained in "data1". Coordinates are IL State Plane East, Nad27.

PM Peak Loaded Highway Network C15Q3 2015 October 2015 (Pmpk_C15Q3_200.zip)
This is a shapefile exported from the travel demand model software and contains the highway assignment results for the pm peak (4-6 pm) traffic volumes in vehicles. These links are directional and the volumes in vehicles are contained in "data1". Coordinates are IL State Plane East, Nad27.

Daily Highway Network C15Q3 2015 October 2015 (Hwyshp_C15Q3_200.zip)
This is a shapefile exported from the travel demand model software and representing the daily assigned volumes. It includes all the links available throughout the day by direction. For example, both directions of the reversible lanes are included. Using node numbers as unique identifiers, the data attribute files from the loaded highway networks can be linked to this file. This file also includes daily link volumes by class, in vehicle equivalents. Coordinates are IL State Plane East, Nad27.

Vehicle class volumes are: @avauv - auto SOV vehicles, @avh2v – auto HOV 2 vehicles, @avh3v – auto HOV 3+ vehicles, @avbq - b-plate trucks, @avlqv - light trucks, @avmqv - medium trucks vehicle equivalents, @avhqv - heavy trucks vehicle equivalents

@vadt contains the sum of vehicle class vehicle equivalents converted to vehicles (@avauv+@avh2v+@avh3v +@avbqv+@avlqv+(@avmqv/2)+(@avhqv/3).

Transit and Highway Skims C15Q3 2015 October 2015 (Transitskims_C15Q3_200.zip)
This directory contains the zipped "level of service" matrix files used in the model run. They are in Emme batchin format text files and can be read by any text editor. The file contents are as follows, with 9999's indicating zonal interchanges not connected by transit in the transit matrices:

mf22.txt = indexed transit in-vehicle minutes,
mf23.txt = indexed transit walk transfer minutes,
mf24.txt = indexed transit total wait time *2

mf25.txt = indexed transit peak headway*1.25
mf26.txt = indexed transit priority mode
mf27.txt = indexed final average transit fare
Mf44.txt = AM peak (7-9am) skimmed highway time
Mf45.txt = AM peak (7-9am) skimmed highway distance
Mf46.txt = Midday (10am-2pm) skimmed highway time
Mf47.txt = Midday (10am-2pm) skimmed highway distance
MF820.txt="allkzone" indexing file, see following

Allkzone, MF820: this is a zone indexing file needed to move transit trips to an "assignment" origin if a transit assignment is being undertaken. If this is needed, please contact me for details on how and why it is used.

Emme Transit Network Shapefile C15Q3 2015 October 2015 (Transitshp_C15Q3_200.zip)
This file contains the shapefile of the transit network exported from Emme. Coordinates are IL State Plane East, Nad27.

Emme Transit Network Batchin C15Q3 2015 October 2015 (Emme_tran_C15Q3_200.zip)
This compressed file contains the Emme format modeled transit network input files for the analysis year. Network.txt contains nodes and links. Itins.txt are the transit route itineraries. Attribs.txt are segment variables for the transit itineraries. Within attribs.txt, @ltime is the current scheduled time on the link. @hwytm is the modeled peak period auto travel time on the same link and @zfare is an attribute describing point where extra fares are charged.

Transit Network Codes

Transit Route Modes	Access Modes	Transfer Modes
A Generalized auto	w from Origin to Metra	m between Bus/Metra
B CTA Regular Bus	v from Origin to CTA Rail	c between Bus/CTA Rail
E CTA Express Bus	u from Origin to Bus	b between Bus/Bus (except on-the-node transfers)
P Pace Regular		
Q Pace Express	Egress Modes	r between CTA Rail/CTA Rail
L Pace Local	y CTA Rail to Destination	t between CTA Rail/ Metra
C CTA Rail	z Metra to Destination	d between Metra/ Metra
M Metra Rail	x Bus to Destination	

Emme Databank C15Q3 2015 October 2015 (Emmebank_C15Q3_200.zip)
This is the final databank for the analysis year and was created with Emme version 4.1. It was zipped using 7zip software because of its large size. Most of the files described in this document are exported from the databank. If you have the software, you can either use the exported files or use the Emme databank directly.

Emme Databank Matrix Directory C15Q3 2015 October 2015 (Emmemat_C15Q3_200.zip)
The current version of Emme stores matrices externally from the Emme databank. This file contains the entire directory of matrices referenced by the Emme databank described previously. If the user is interested in using the Emme databank with its matrices, this file should be downloaded and uncompressed in the same directory as the databank. This has also been zipped using 7zip software.

Subzone 2009 Geography (Subzone09_CMAP_2009.zip)
Subzone09.zip contains the compressed subzone09 shapefile which can be linked to the trip generation input files in each of the model year directories. It covers the entire modeled area. The coordinate system for this file is IL State Plane East, NAD 83 (feet)

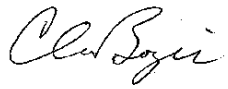
Traffic Analysis Zone 2009 Geography (Zone09_CMAP_2009.zip)
The 2015 Q3 conformity used traffic analysis zone system Zone09. This can be linked to trip productions and attractions and distributed trip table information. This geography covers the entire modeled area. The coordinate system is IL State Plane East, NAD 83 (feet)

Emme TOD Period Transit Network Batchin C15Q3 2015 October 2015 (emme_todtransit_C15Q3_200.zip)
This compressed file contains the Emme format modeled transit network input files for each of the eight time of day periods for the analysis year. Rail.network_<period> and bus.network_<period> contain nodes and links. Rail.itinerary_<period> and bus.itinerary_<period> are the transit route itineraries. Railnode.extatt_<period> and busnode.extatt_<period> are node variables for the transit network. Within the node variable files, @pspace is the number of parking spaces and @pcost is the cost of parking in cents. Access.network_<period> contains transit network access links.

Current Roadway Volumes
Current Arcview shape files of roadway volumes can be downloaded by county from IDOT's website http://gis.dot.illinois.gov/gist2/ . We do not have this data available pre-coded onto the roadway network.

I hope you find this information helpful. If you have any questions please don't hesitate to call me at 312 386-8744 or email me at cbozic@cmap.illinois.gov.

Sincerely,



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