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Chicago Metropolitan
Agency for Planning

2012 Expressway Atlas

Annual Average Daily Traffic on Northeastern Illinois Expressways

Part 1:
Introduction
Methods
System Data





Chicago Metropolitan
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Introduction

The 2012 Expressway Atlas provides a desktop reference of average annual daily traffic (AADT) volumes and other traffic system statistics, as well as graphics, for northeastern Illinois. The data included in the Expressway Atlas is useful as baseline data for traffic planning. The data is also useful as an input to traffic simulation models and many other expressway-system studies such as safety analysis and pavement design.

The 2012 Expressway Atlas is the first Expressway Atlas produced by the Chicago Metropolitan Agency for Planning (CMAP) and is also the first atlas produced for Illinois Department of Transportation (IDOT) expressways and ramps in over a decade. The previous six expressway travel atlases were produced by the Chicago Area Transportation Study (CATS) in 1965, 1972, 1984, 1990, 1995, and 2001.

Methods

The 2012 Expressway Atlas reflects traffic trends on IDOT expressways and ramps equipped with traffic counting devices in northeastern Illinois for 2012. The traffic count information used to create the 2012 Expressway Atlas was provided by IDOT, with the analysis of the traffic count information performed by the CMAP congestion management staff. Graphics were also produced to illustrate the AADT volumes that traversed each expressway link and ramp in 2012.

The primary source of IDOT traffic count data are inductive loop detectors, which are embedded in the pavement along the IDOT system, including entrance and exit ramps. The inductive loop detects the presence and passage of vehicles. This data is transmitted to a central control system. IDOT then applies an algorithm to calculate a count from the percent of time the inductive loop detected a vehicle.

The 2012 Expressway Atlas contains figures and graphics at the regional level and at the facility level, as well as detailed AADT flow graphics. CMAP staff used the American Association of State Highway and Transportation Officials (AASHTO) formula for calculating pre-balanced AADT for each mainline count station and ramp on the IDOT system. The AASHTO formula for AADT is:

$$AADT = \frac{1}{7} \sum_{i=1}^7 \left[\frac{1}{12} \sum_{j=1}^{12} \left(\frac{1}{n} \sum_{k=1}^n VOL_{ijk} \right) \right]$$

Where: VOL = Daily traffic for day k, of day-of-week i, and month j

i = Day of the week

j = Month of the year



$k = 1$ when the day is the first occurrence of that day of the week in a month, 4 when it is the fourth day of the week.

$n =$ Number of days of that day of the week during that month (usually between 1 and 5 depending on the number of missing data)

The AASHTO method calculates an average day of week for each month, then an annual average value for each day of the week, and finally a single annual average daily value is computed for each ramp and mainline count station. This method helps to clean the data of counting errors caused by equipment failure or the effects of non-representative days such as blizzards or floods that produce severe outliers in the data.

Many of the figures and graphics were produced through a process of traffic balancing. Traffic balancing is a process used to adjust ramp counts, when necessary, to match mainline station counts. In the event of missing count data for the entire year or if the AADT for a location was determined to have data quality issues, historical count information was used in the balancing process.

The regional figures and graphics provide area-wide traffic trends for the year 2012. Through the balancing process, an AADT for all mainline count stations and ramps are calculated. With this data, along with milepost information, a VMT is calculated for each facility and then a regional total is calculated. This information is displayed in the VMT table along with historical VMT data. The mainline AADT map provides a visual display of the distribution of traffic on IDOT expressways for an average day in 2012. A construction map and table are also included in this section because major construction projects have been known to cause a reduction in traffic volumes on construction routes and an increase in volumes on nearby routes.

The facility-level figures and graphics reflect traffic trends for the year 2012 and are presented by direction for each expressway segment. The facility AADT map provides a visual representation of the amount of traffic experienced on a segment during an average day. The directional AADT table is a detailed count, link by link, for the facility for both historic and current-year AADT. The daily and monthly factors for each facility were calculated using the AASHTO formulas. The AASTHO method to calculate the daily factors was to divide the annual average day of the week (AADW) value by the AADT. To calculate the monthly factors, divide the monthly average daily traffic counts (MADT) by the AADT. The weekday and weekend hourly graphics depict the percentage of AADT by hour for ramps and mainline count stations. The red color indicates hours with higher percentages, which usually appear during peak period hours in the morning and evening, and green represents hours with lower hourly percentages, which normally occur in the overnight hours.

The flow graphics provide detailed AADT volumes for the entire IDOT expressway system equipped with counting devices. The AADT flow graphics provide link-by-link and ramp-by-ramp counts using highly detailed drawings representing portions of each expressway facility.



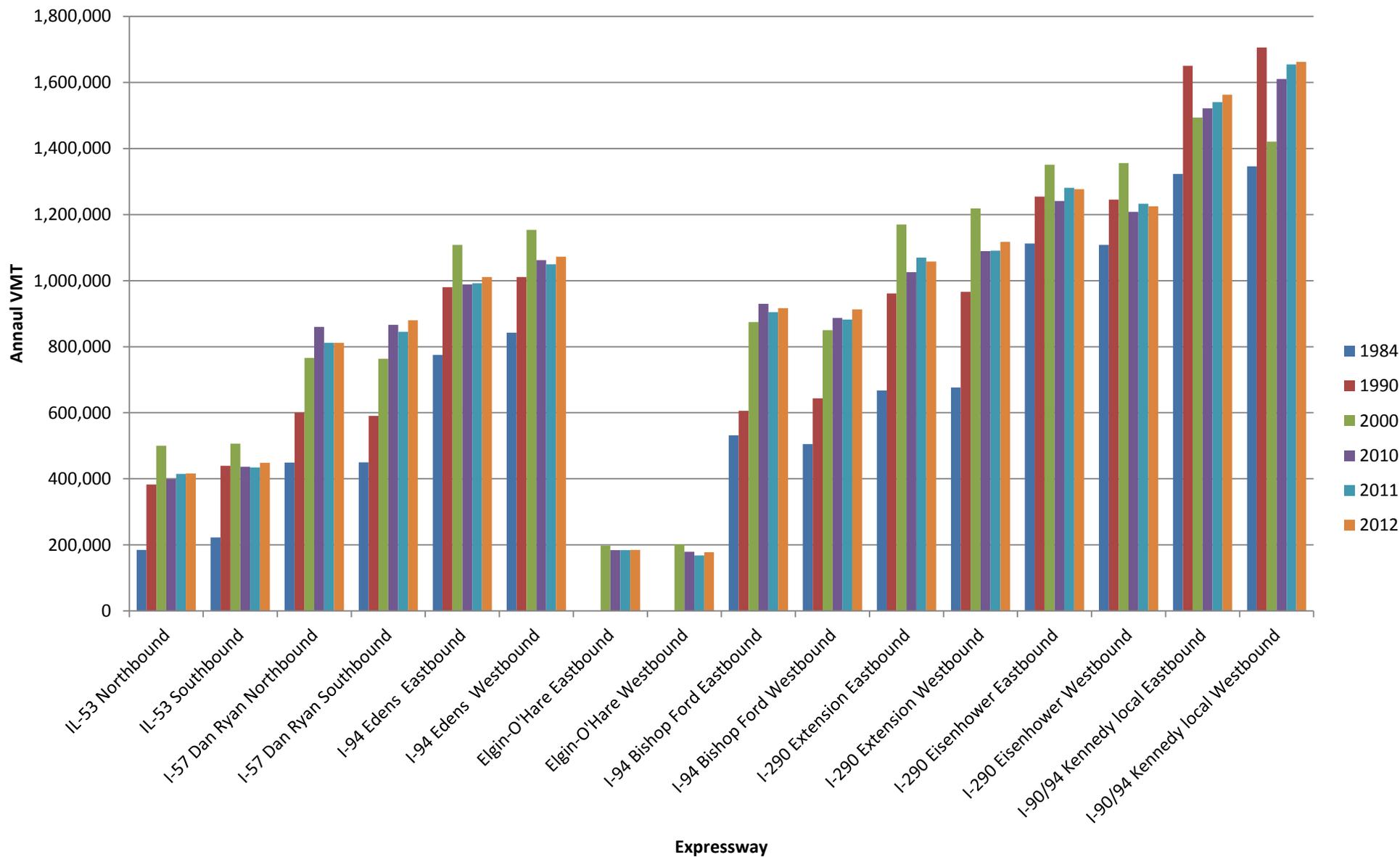
IDOT Expressway System Equipped with Traffic Counting Devices 2012



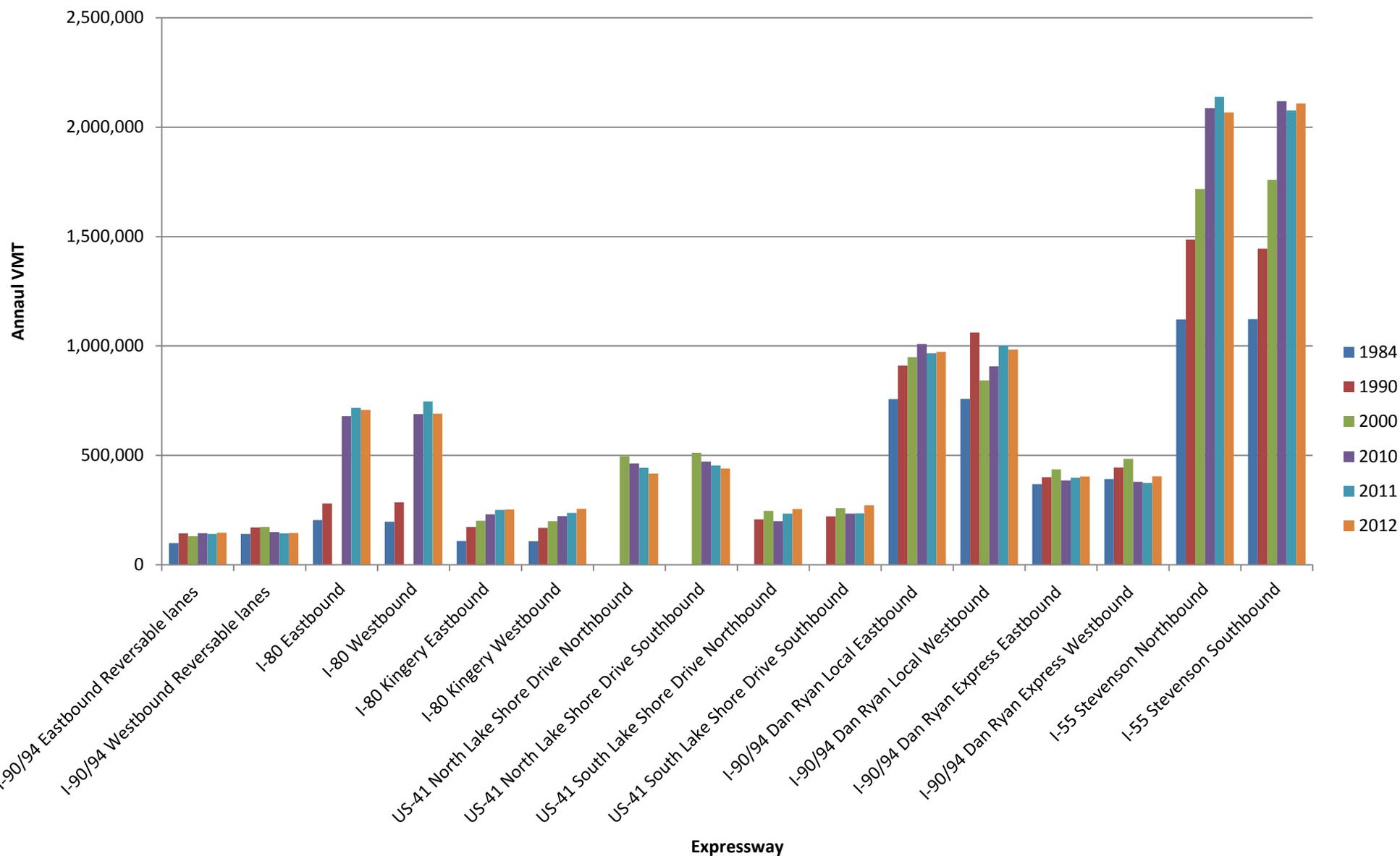
IDOT Expressway VMT from Roadway Detectors

Expressway	1984	1990	2000	2010	2011	2012
IL-53 Northbound	184,775	382,559	500,161	398,911	415,198	416,348
IL-53 Southbound	222,958	439,638	506,883	436,544	434,350	448,235
I-57 Dan Ryan Northbound	449,404	600,477	766,188	859,724	811,451	811,917
I-57 Dan Ryan Southbound	450,132	590,271	763,534	865,977	845,347	879,837
I-94 Edens Eastbound	775,174	979,936	1,107,772	988,640	992,318	1,010,812
I-94 Edens Westbound	842,212	1,010,654	1,153,287	1,061,950	1,049,598	1,072,793
Elgin-O'Hare Eastbound	-	-	197,453	184,398	184,150	185,238
Elgin-O'Hare Westbound	-	-	201,784	179,244	168,272	178,240
I-94 Bishop Ford Eastbound	531,841	606,038	874,268	930,082	904,375	916,157
I-94 Bishop Ford Westbound	504,978	643,850	849,725	887,430	882,056	913,156
I-290 Extension Eastbound	667,494	960,999	1,169,370	1,025,605	1,069,764	1,057,543
I-290 Extension Westbound	676,384	966,399	1,218,710	1,089,012	1,090,526	1,117,046
I-290 Eisenhower Eastbound	1,112,610	1,254,417	1,350,628	1,240,984	1,281,044	1,276,993
I-290 Eisenhower Westbound	1,108,271	1,245,097	1,355,959	1,208,316	1,232,798	1,225,190
I-90/94 Kennedy local Eastbound	1,323,081	1,650,155	1,493,186	1,521,475	1,540,208	1,562,777
I-90/94 Kennedy local Westbound	1,345,714	1,705,321	1,421,093	1,610,128	1,654,570	1,662,107
I-90/94 Eastbound Reversible lanes	99,120	143,016	131,131	144,043	140,927	146,118
I-90/94 Westbound Reversible lanes	141,007	170,700	172,443	149,834	143,824	145,759
I-80 Eastbound	204,615	279,835	-	679,775	717,094	707,665
I-80 Westbound	196,909	285,918	-	689,195	746,275	690,396
I-80 Kingery Eastbound	109,178	172,931	201,138	230,579	251,202	252,639
I-80 Kingery Westbound	107,820	169,032	199,597	222,171	237,423	255,601
US-41 North Lake Shore Drive Northbound	-	-	496,177	463,216	442,956	416,728
US-41 North Lake Shore Drive Southbound	-	-	511,622	471,789	454,310	440,286
US-41 South Lake Shore Drive Northbound	-	207,629	246,955	199,325	234,280	254,613
US-41 South Lake Shore Drive Southbound	-	221,149	259,697	233,781	234,928	271,604
I-90/94 Dan Ryan Local Eastbound	757,120	910,099	949,004	1,008,842	966,469	972,976
I-90/94 Dan Ryan Local Westbound	758,054	1,061,048	842,611	906,608	1,001,771	984,093
I-90/94 Dan Ryan Express Eastbound	368,771	400,051	436,106	385,476	398,317	403,265
I-90/94 Dan Ryan Express Westbound	391,945	444,118	484,870	378,996	373,806	404,728
I-55 Stevenson Northbound	1,121,651	1,485,483	1,717,359	2,087,048	2,138,169	2,066,856
I-55 Stevenson Southbound	1,122,638	1,444,341	1,758,656	2,118,377	2,076,321	2,108,163
Total VMT	15,573,856	20,431,161	23,337,367	24,857,475	25,114,097	25,255,879

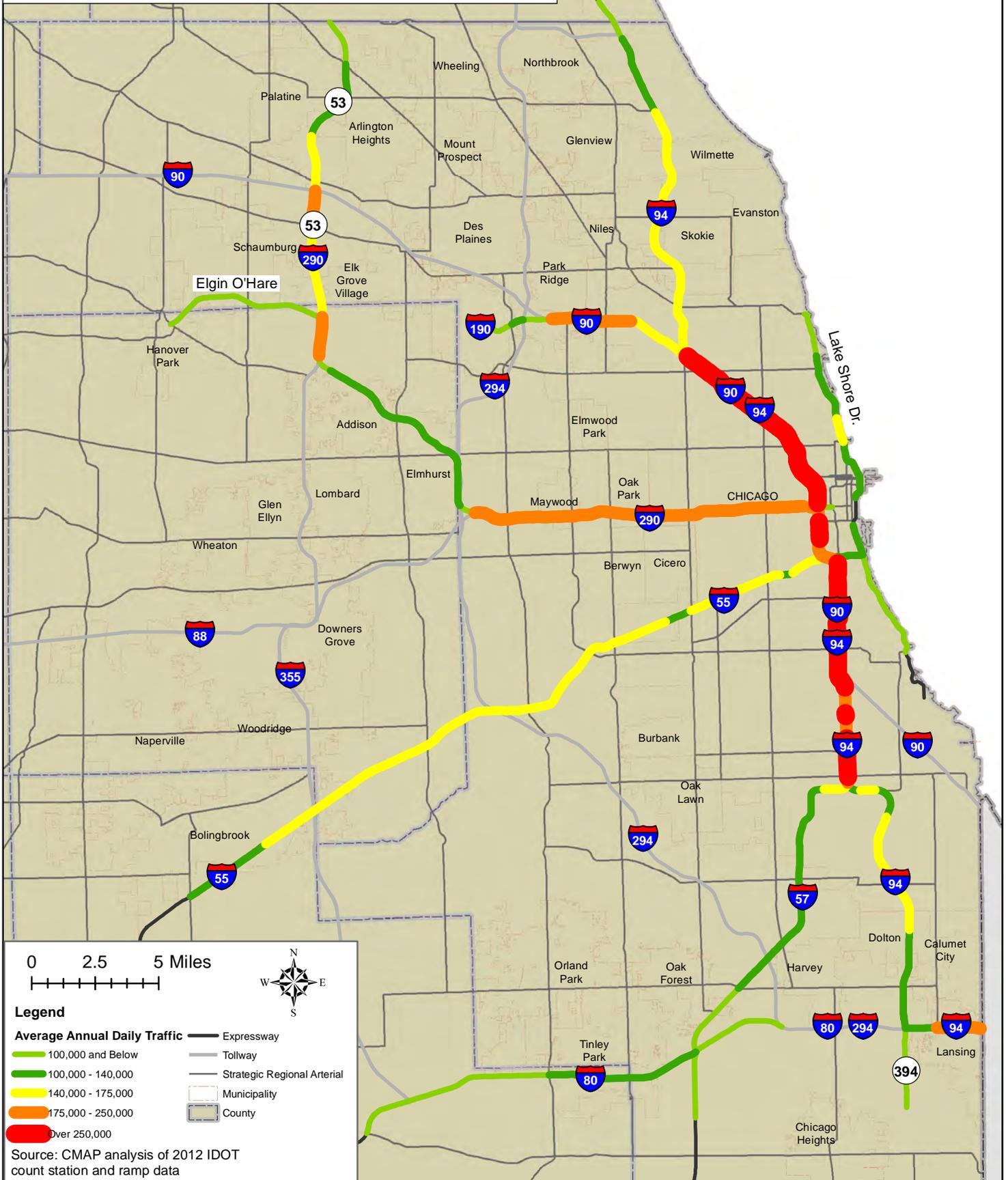
Annual IDOT Expressway Vehicle Miles Traveled (VMT) 1984, 1990, 2000 & 2010-2012



Annual IDOT Expressway Vehicle Miles Traveled (VMT) 1984, 1990, 2000 & 2010-2012



Northeastern Illinois Expressway Annual Average Daily Traffic 2012



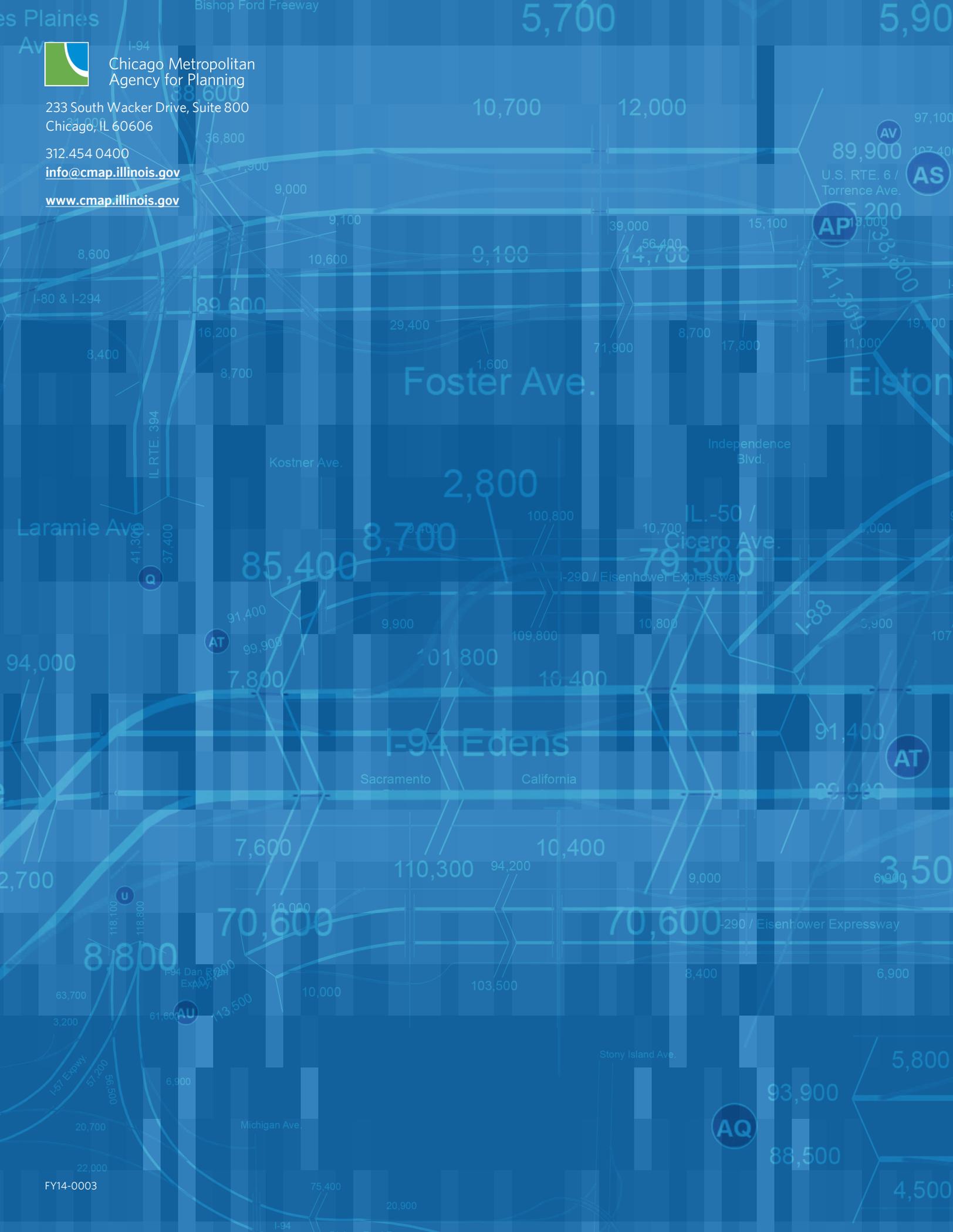
Northeastern Illinois Expressway Construction 2012



2012 Interstate Construction Activity

ROADWAY	LOCATION	WORK ACTIVITY AND CAPACITY CONSTRUCTION
Tri-State Tollway (I-94 North)	@ Russell Road	Bridge Replacement from June to November 2012
I-94 Edens Expressway	@ Devon Avenue	1 Lane Closed Each Direction, July to August 2012
Tri-State Tollway (I-94 North)	IL 22 (Half Day Road) to Lake Cook Road	Pavement Rehab, Nighttime Closures (10pm to 5pm); Summer 2012
Tri-State Tollway (I-94 North)	Atkinson Road to IL 176	Pavement Rehab, Nighttime Closures (10pm to 5pm); Summer 2012
Tri-State Tollway (I-294)	Tri-Level Bridge Project: NB I-294 Ramp to WB I-90 Mainline	Ramp Closed with Detour (Unknown Route), spring Fall 2012
Tri-State Tollway (I-294)	Balmoral Avenue to 95th Street	Resurfacing, intermittent lane shifts and closures, spring end of 2012,
I-190/I-294 TriState	CN RR to Des Plaines River	Storm Sewer Installation, april 2012 too Nov. 2012
I-90 Kennedy Expy	@ Oriole Avenue	Bridge Replacement from April to November 2012
I-90/94 Dan Ryan Expy	Maxwell Street to 26th Place	Bridge Repair (19 superstructures), August 2011 to December 2012
I-90/94 Dan Ryan Expy	Cermak Road to Canal Street	Painting 54 Bridges, Aug 2011 to Sept. 2012
I-90/94 Dan Ryan Expy	at Roosevelt Road /Union Avenue	Rehab of Pump Station
I-90/94 Dan Ryan Expy	I-290 to Polk Street	Barrier Wall Installation, Signing Modification, Drainage Revisions, Retaining Wall, Shoulder Widening, April - December 2012
I-94/90 Kennedy Expressway	Hubbard Street to I-290	New Retaining Wall, Ramp Pavement and Signing, June 2009 to August 2013
I-55 Stevenson Expy	@ Central Avenue	Bridge Deck Rebuild for SPUI interchange - Ramps Closed, unsure of sequence, Nov. 2011 to Nov. 2013
I-57	@ Pulaski Road	Bridge Deck Replacement, Nov. 2011 to Nov. 2012
I-57	@ I-294 Tri-State Tollway	Bridge Deck Replacement, Lane Widening, Nov. 2010 to Nov. 2012
I-290 Eisenhower Expressway	Western Avenue to Wells Street	Barrier Wall Installation, Signing Modification, Drainage Revisions, Retaining Wall, Shoulder Widening, April - December 2012
I-290 Eisenhower Extension	@ Lake Street, Elmhurst	Interchange Reconstruction, Mar. 2011 to Nov. 2012
I-55 Stevenson Expy	Lorenzo Road to I-80	Fiber Optic Cable Installation, Oct 2010 to Nov. 2012
I-55 Stevenson Expy	I-80 to Naperville Road	Fiber Optic Cable Installation, Oct 2010 to sep. 2012
I-55 Stevenson Expy	@ Arsenal Road	Interchange and Frontage Rd Reconstruction, Nov. 2010 to Nov. 2012, & Bridge Removal and Relocation of Arsenal Rd, Aug. 2011 to May 2013
I-80	Parker Road east to Wolf Road	Noise Barrier Installation at 5 locations, Nov. 2011 to Nov. 2012
I-80	@ US 30	Mast Lighting Installation, aug 2012 to June 2013, EB I80 to US 30 ramp and US 30 to EB I-80 ramp closed Aug to Dec 2012
I-290 Eisenhower Expressway	@ Wacker Drive, EB off and WB on	Ramp Closesd, Wacker Dr Rehab/Rebuild, To Dec 2012
I-290 Eisenhower Extension	@ St Charles Road, from WB St. Charles Road to WB I-290	Ramp Closed, Oct. to Dec 2012
I-55 Stevenson Expy	SB @ IL 129	exit Ramp to IL 129, permanently closed (duration of calendar 2012)
I-90 Jane Addams Tollway	Randall Road west to McHenry/Boone Line	Shoulder Widening/Bridge Rconstruction, Duration CY 2012
I-88 Ronald Reagan Tollway	Deerpath Road to IL 56	Rebuild/Widen, rebuild ramps from/to IL 56
I-294	@ I-57 interchange area	Rebuld Bridges over 147th St (Sibley/IL 83);
US 41 (Lake Shore Drive- North)	@ Fullerton Pkwy	Fullerton closed from Cannon to US 41 Nov. to Dec. 2012

The Chicago Metropolitan Agency for Planning (CMAP) is the region's official comprehensive planning organization. Its GO TO 2040 planning campaign is helping the region's seven counties and 284 communities to implement strategies that address transportation, housing, economic development, open space, the environment, and other quality of life issues.



Chicago Metropolitan Agency for Planning

233 South Wacker Drive, Suite 800
Chicago, IL 60606

312.454.0400
info@cmap.illinois.gov

www.cmap.illinois.gov