APPENDIX B - DRAFT

Air Quality Conformity Documentation




RTP

2026
Regional Transportation Plan

Chicago Metropolitan Agency for Planning

Table of contents

2026 Regional Transportation Plan and federal fiscal year 2027-2032 TIP conformity

Conformity Determination

Transportation conformity requires a conformity determination for the adoption, acceptance, or approval of long-range transportation plans and transportation improvement programs (TIPs) developed by metropolitan planning organizations (MPOs). Transportation conformity also requires a conformity determination for the approval, funding, or implementation of Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) funded projects and regionally significant projects not receiving FHWA or FTA funding. The conformity determination demonstrates that transportation plans and TIPs will not cause new air quality violations, worsen existing violations, or delay timely attainment of the National Ambient Air Quality Standards (NAAQS).

The Chicago Metropolitan Agency for Planning's (CMAP) MPO Policy Committee is the decision-making body responsible for approving — along with the Illinois Department of Transportation (IDOT), FHWA, and FTA — that the 2026 Regional Transportation Plan (RTP) and the Federal Fiscal Year 2027-2032 Transportation Improvement Program (FFY 27-32 TIP) conform to the Motor Vehicle Emissions Budget (MVEB) in the State Implementation Plans (SIPs) for the 8-hour ozone standard based on the results of the regional emissions analysis.

This appendix documents how CMAP fulfils the transportation conformity requirements set forth in Section 176(c) of the Clean Air Act (42 U.S.C. 7506(c)) and the regulations set forth in 40 CFR Part 93.100–93.129 in support of a finding of conformity for the 2026 RTP and FFY 2027-2032 TIP.

The transportation conformity analysis, process, and determination are the subject of a public comment period from June 15 through July 31, 2026. CMAP will recognize, consider and respond to comments received during that time. A conformity determination for the 2026 RTP and FFY 2027-2032 TIP will be brought to the MPO Policy Committee and CMAP Board for consideration and approval on October 14, 2026.

Ozone nonattainment

The U.S. Environmental Protection Agency (USEPA) has issued NAAQS for a number of criteria pollutants for decades. In 1997, the first 8-hour ozone NAAQS were finalized and nonattainment areas were identified, including one for the Chicago region (northeastern Illinois, parts of northwestern Indiana, and southeastern Wisconsin). The USEPA subsequently revised the 8-hour ozone NAAQS, first in 2008 and again in 2015, each time making the standard more stringent and classifying the Chicago region as a nonattainment area. As part of the implementation of the 2008 8-hour ozone NAAQS, the USEPA revoked the 1997 8-Hour Ozone NAAQs because the 2008 standard is more stringent. Typically, only the most current NAAQS in effect. However, when the USEPA issued the 2015 8-hour ozone NAAQS, it did not also revoke the 2008 8-hour ozone NAAQS due to a court decision. As a result, both the 2008 and 2015 8-hour ozone NAAQS remain in place.

When a nonattainment area is designated, it is also classified as being at a specific level of nonattainment.[1] Ozone is the only criteria pollutant the USEPA has designated as a nonattainment area in the CMAP region.

Summary of the 8-hour ozone transportation conformity process

1997 ozone NAAQS

The more stringent 2008 ozone NAAQS triggered a revision of the 1997 ozone NAAQS. However, a revision to the maintenance SIP for the 1997 ozone NAAQS was finalized on November 5, 2014, by USEPA.[2] That revision contained a new MVEB that CMAP was required to demonstrate conformity to, of 60.13 tons per day for volatile organic compounds (VOCs) and 150.27 tons per day for nitrogen oxide gases (NO_X).

2008 ozone NAAQS

On July 20, 2012, the USEPA finalized the Chicago-Naperville, IL-IN-WI nonattainment area for the 2008 ozone NAAQS.[3] In Illinois, the nonattainment area encompasses Cook, DuPage, Kane, Lake, McHenry, and Will counties; Aux Sable and Goose Lake townships in Grundy County; and Oswego Township in Kendall County. In Indiana, Lake and Porter counties were included in the nonattainment area. In Wisconsin, the nonattainment area includes the portion of Kenosha County bounded by the Lake Michigan shoreline on the east, the Kenosha County boundary on the north, the Kenosha County boundary on the south, and the I–94 corridor, including the entire corridor, on the west.

The state air quality agency in each state is responsible for the SIP for the portion of the nonattainment area in that state. The Illinois Environmental Protection Agency (IEPA) is the agency responsible for developing, submitting, and implementing the SIP for the Illinois portion of the Chicago-Naperville, IL-IN-WI nonattainment area, often referred to as the Northeast Illinois (NEIL) nonattainment area.

The Chicago-Naperville, IL-IN-WI nonattainment area was first classified as a *marginal* nonattainment area, and as a result, a new MVEB was not needed. On May 4, 2016, the nonattainment area was reclassified to *moderate* nonattainment after failing to attain the 2008

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[1] USEPA, "Ozone Designation and Classification Information," August 2025, https://www.epa.gov/green-book/ozone-designation-and-classification-information.

[2] Approval and Promulgation of Air Quality Implementation Plans; Illinois; Revision to the Chicago 8-Hour Ozone Maintenance Plan 79 FR 60073.

[3] Air Quality Designations for the 2008 Ozone National Ambient Air Quality Standards for Several Counties in Illinois, Indiana, and Wisconsin; Corrections to Inadvertent Errors in Prior Designations (June 11, 2012) 77 FR 34221.

ozone NAAQS by July 20, 2015.[4] On August 23, 2019, the nonattainment area was reclassified again, this time to *serious* nonattainment, because the region did not attain the 2008 ozone NAAQS by the attainment date of July 20, 2018.[5] On April 13, 2022, the USEPA published a notice proposing another reclassification, this time to *severe* nonattainment for failing to attain the 2008 ozone NAAQS by July 20, 2021.[6]

On May 20, 2022, before the final rule for a reclassification to *severe*, the USEPA determined that the Illinois portion of the Chicago-Naperville, IL-IN-WI area was attaining the 2008 8-hour ozone NAAQS. USEPA redesignated the area to attainment for the 2008 ozone NAAQS and approved a revision to the 2008 ozone NAAQS SIP.[7] The SIP revision contained the IEPA's plan for maintaining the 2008 ozone NAAQS through 2035. A component of the SIP revision was new MVEBs of 65 tons per day of VOC and 110 tons per day of NO_X for 2035. As a result, CMAP was required to include 2035 as a conformity analysis year and to use the new MVEB for 2035 and later years to demonstrate conformity to.

2015 ozone NAAQS

On October 26, 2015, the USEPA issued the final rule for the 2015 ozone NAAQS and published the nonattainment area designations on April 30, 2018. A nonattainment area for Chicago, IL-IN-WI was designated and classified as *marginal* nonattainment, which meant a new MVEB was not needed.[8] The original NEIL portion of the nonattainment area was the same as the 2008 ozone nonattainment area, with one exception: it did not include McHenry County. On July,14, 2021, the USEPA finalized a change to the Chicago-area nonattainment area and added McHenry County, thereby making the nonattainment area geography the same for both the 2008 and 2015 ozone NAAQS.[9]

On November 7, 2022, the nonattainment area was reclassified from *marginal* to *moderate* for the 2015 ozone NAAQS.[10] As part of the reclassification, the IEPA was required to revise the 2018 ozone SIP to show further emissions reductions. This process included developing a new MVEB that would reflect the emission reductions contained in the revised 2015 ozone SIP. On February 12, 2026, the USEPA proposed a final rule for the *moderate* attainment SIP for the Illinois portion of the Chicago, IL-IN-WI nonattainment area.[11] The proposed final rule includes a revised MVEB of 52.47

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[4] Determinations of Attainment by the Attainment Date, Extensions of the Attainment Date, and Reclassification of Several Areas for the 2008 Ozone National Ambient Air Quality Standards 81 FR 26697.
[5] Determinations of Attainment by the Attainment Date, Extensions of the Attainment Date, and Reclassification of Several Areas Classified as Moderate for the 2008 Ozone National Ambient Air Quality Standards 84 FR 44238.
[6] Determinations of Attainment by the Attainment Date, Extension of the Attainment Date, and Reclassification of Areas Classified as Serious for the 2008 Ozone National Ambient Air Quality Standards 87 FR 21825.
[7] Air Plan Approval; Illinois; Redesignation of the Illinois Portion of the Chicago-Naperville, Illinois-Indiana-Wisconsin Area to Attainment of the 2008 Ozone Standard 87 FR 30828.
[8] Additional Air Quality Designations for the 2015 Ozone National Ambient Air Quality Standards 83 FR 25776.
[9] Revised Air Quality Designations for the 2015 Ozone National Ambient Air Quality Standards 86 FR 31438.
[10] Determinations of Attainment by the Attainment Date, Extensions of the Attainment Date, and Reclassification of Areas Classified as Marginal for the 2015 Ozone National Ambient Air Quality Standards 87 FR 60897.
[11] Air Plan Approval; Illinois; Moderate Attainment Plan Elements for the Chicago and Metro East Areas for the 2015 Ozone Standard 87 FR 60897.

tons per day of VOC and 165.78 tons per day of NO_X. The proposed rule was finalized and approved by the USEPA on May 14, 2026.[12] The approved revised MVEB was used by CMAP to demonstrate conformity of the 2026 RTP and the FFY 2027-2032 TIP.

On January 16, 2025, the nonattainment area was reclassified from *moderate* to *serious* nonattainment due to a failure to attain the NAAQS by the attainment date of August 3, 2024. IEPA will be required to develop a revised MVEB as part of the 2015 ozone SIP for the serious classification; thus, the MVEB will be revised in the near future.

In summary, the 2015 ozone nonattainment area is currently classified as *serious* nonattainment. When a revision to the SIP associated with the serious classification is approved by the USEPA, CMAP will use that MVEB in its conformity determination. Until that occurs, CMAP will use the MVEB from the *moderate* nonattainment SIP revision.

Transportation conformity process

Overview

The transportation conformity process applies to long-range transportation plans, TIPs, transportation projects funded with FHWA or FTA funds, and regionally significant projects that are not using FHWA or FTA funding. As such, the 2026 RTP and the FFY 2027-2032 TIP must have a conformity determination. A conformity determination must demonstrate through a regional emissions analysis that the 2026 RTP and FFY 2027-2032 TIP conform to the MVEB for the nonattainment area. The USEPA's transportation conformity regulations describe the relevant process and procedures to be used.[13]

The MPO Policy Committee is the decision-making body that determines whether the region's transportation plan and TIP conform to applicable SIPs and that emissions, taken as a whole from the transportation plan and TIP, will not negatively affect the region's ability to meet NAAQS attainment deadlines. Conformity to a SIP means that the region's transportation plan and program:

- Will not cause or contribute to any new violations of the NAAQS;
- Will not worsen any existing violations; and
- Will not delay timely attainment of the NAAQS.

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[12] Air Plan Approval; Illinois; Moderate Attainment Plan Elements for the Chicago and Metro East Areas for the 2015 Ozone Standard 91 FR 27207

[13] USEPA, "Transportation Conformity Regulations as of April 2012" April 2012, https://nepis.epa.gov/Exe/ZyPDF.cgi/P100E7CS.PDF?Dockey=P100E7CS.PDF.

This demonstration compares motor vehicle emissions estimates from modeling on-road mobile-source emissions from transportation projects in the 2026 RTP and FFY 2027-2032 TIP that are not exempt from transportation conformity with the MVEB contained in the applicable SIP for each analysis year.

It should be noted that the CMAP MPO region and the 2015 ozone nonattainment area have similar geographic boundaries but are not identical. The entire Illinois portion of the nonattainment area is within the CMAP MPO region. The CMAP region, however, extends beyond the geography of the nonattainment area by including all of Kendall County, not just Oswego Township, and Somonauk and Sandwich townships in Dekalb County. CMAP only conducts transportation conformity for the NEIL portion of the Chicago-Naperville, IL-IN-WI nonattainment area. The Northwest Indiana Regional Planning Commission is the MPO for northwestern Indiana, and the Southeastern Wisconsin Regional Planning Commission is the MPO for southeastern Wisconsin. Each MPO is required to provide a conformity determination only for the long-range plans and TIPs within its MPO boundaries that fall within the 2015 ozone nonattainment area.

Interagency consultation process

Interagency consultation is a requirement of transportation conformity regulations. These procedures are described below and through the work of CMAP's committees, working committees, and other groups as described in the region's public participation plan.[14]

The interagency consultation working group is comprised of CMAP, IEPA, IDOT, the Regional Transportation Authority (RTA), FHWA, FTA, USEPA, and other entities as needed. The interagency consultation working group facilitates local, regional, and state decision-making processes by providing a forum for federal, state, regional, and local agencies to coordinate and collaborate. Decisions made through the interagency consultation process provide technical and regulatory guidance that is incorporated into the transportation conformity process used at CMAP.

Interagency consultation assures early and proactive participation, so that the long-range transportation plan, TIP development process, and transportation conformity process are integrated. Interagency consultation also serves as a forum for communication so that concerns can be addressed to prevent or resolve potential issues as they relate to the conformity process — while also providing an opportunity to share expertise in interpreting air quality regulations, emissions modeling procedures, and best practices.

CMAP's interagency consultation process consists of two tiers. Tier I participants include federal representatives from headquarters in Washington, D.C., the heads of state agencies and the governor. Tier II participants include federal representatives from USEPA Region 5, FTA Region 5, FHWA's Division Office, IEPA, IDOT, RTA, and CMAP. In addition to the standing members,

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[14] CMAP, "Public Participation Plan," 2024, https://cmap.illinois.gov/wp-content/uploads/Public-Participation-Plan-FINAL.pdf.

representatives from local transportation implementing agencies and other stakeholders are invited to attend, as appropriate. Tier I consultation is convened in the event the Tier II working group is unable to resolve a particular issue. The need for a Tier I interagency consultation meeting has not occurred in several years as the Tier II interagency consultation working group has a long history of working collaboratively and proactively to address potential issues, new regulations, and requirements.

The Tier II interagency consultation working group met and provided input into the conformity process used to make a conformity determination for the 2026 RTP and FFY 2027-2032 TIP. The interagency consultation working group meets on an as-needed basis, but typically at least twice a year. To provide a reference for discussion items and issue resolution, CMAP may prepare meeting summaries following the completion of each scheduled interagency consultation meeting. Agendas, meeting materials, and recordings or minutes from previous Tier II Interagency Consultation working group meetings are available on the CMAP website.[15]

Public participation

The Public Participation Plan adopted by the CMAP Board and the MPO Policy Committee in January 2024 establishes the mechanisms by which CMAP reaches out to its many stakeholders and the public.

A formal public comment period for the draft Transportation Conformity Analysis for the 2015 8-hour ozone NAAQS will be held from June 15 to July 31, 2026. A formal public hearing will be held on August 6, 2026. Comments will be accepted U.S. mail and email.

CMAP or the Tier II Interagency Consultation working group will respond to any public comments received during the public comment period on the conformity analysis.

Procedures for determining regional transportation demand

The procedures for determining regional transportation demand are subject to requirements in the transportation conformity regulations at 40 CFR 93.122. Along with input from CMAP's socioeconomic forecast, CMAP's trip-based model leverages the inherent behavioral connections among regional policy, land use, demographics, and transportation infrastructure to quantify travel demand patterns and transportation system performance in northeastern Illinois. Together, the socioeconomic forecast and trip-based model work in tandem to satisfy the conformity regulations relating to transportation demand. Since portions of northeastern Illinois are in nonattainment, the requirements in section (b) of 40 CFR 93.122 also apply (Table 1).

[15] CMAP, "Tier II Consultation," https://cmap.illinois.gov/engagement/forums/tier-ii-consultation/.

Table 1. Procedures for determining regional transportation-related emissions per 40 CFR 93.122(b).

Requirement	How the requirement is satisfied
Paragraph (b) (1) (i). Network-based travel models must be validated against observed counts (peak and off-peak, if possible) for a base year that is not more than 10 years prior to the date of the conformity determination. Model forecasts must be analyzed for reasonableness and compared to historical trends and other factors, and the results must be documented.	CMAP's trip-based model reflects a 2019 base year is validated against various survey data sources, most notably CMAP's 2018-2019 My Daily Travel. Survey respondents reported all travel, allowing CMAP to capture both peak and off-peak travel behaviors. The trip-based model was recently validated against current observed data including Census data products such as the 2021 Census Transportation Planning Products.
Requirement	How the requirement is satisfied
Paragraph (b) (1) (ii). Land use, population, employment, and other network-based travel model assumptions must be documented and based on the best available information.	The regional socioeconomic forecast uses census data along with Moody's Analytics employment forecast to project population, households, and employment for northeastern Illinois at the regional level. The local socioeconomic forecast uses the regional forecast, census data, county assessors, CoStar, Dun & Bradstreet, Ecopia, NAVTEQ, and CMAP's Northeastern Illinois Development Database to assemble the 2020 base year. The local forecast is implemented using UrbanSim, an integrated land use modeling framework composed of multiple interacting submodels. For each forecast year from 2020 to 2050, UrbanSim simulates the location decisions of new and relocating households and employment across the region at the census block level.

Requirement	How the requirement is satisfied
Paragraph (b) (1) (iii). Scenarios of land development and use must be consistent with the future transportation system alternatives for which emissions are being estimated. The distribution of employment and residences for different transportation options must be reasonable.	CMAP's conformity analysis uses the adopted socioeconomic forecast to inform the distribution of population, households, and employment across northeastern Illinois. The forecast is generated using UrbanSim, which explicitly represents the relationship between land use patterns, market dynamics, development activity, and employment accessibility. By simulating how households and businesses respond to changing conditions, including available housing supply, pricing, zoning capacity, and transportation accessibility, the model produces development patterns that are reasonable and internally consistent with planned transportation investments. Forecast outputs are integrated into the regional travel demand model, which includes a feedback mechanism to ensure that land use patterns and transportation system performance remain aligned throughout the analysis.
Requirement	How the requirement is satisfied
Paragraph (b) (1) (iv). A capacity-sensitive assignment methodology must be used, and emissions estimates must be based on a methodology which differentiates between peak and off-peak link volumes and speeds and uses speeds based on final assigned volumes.	Separate capacity restraint assignments are produced to estimate vehicle miles and travel speeds for eight time periods during the day, allowing the model to capture variation in travel behavior during peak and off-peak times. Specifically, the peak time periods, 7 to 9 a.m. and 4 to 6 p.m., when many travelers are traveling to and from work are modeled as distinct time periods from the remaining portions of the day. Since the trip-based model runs a capacity-constrained assignment, final link volumes and speeds reflect the unique congestion experienced on the roadway for each time period.

Requirement	How the requirement is satisfied
Paragraph (b) (1) (v). Zone-to-zone travel impedances used to distribute trips between origin and destination pairs must be in reasonable agreement with the travel times that are estimated from final assigned traffic volumes. Where use of transit currently is anticipated to be a significant factor in satisfying transportation demand, these times should also be used for modeling mode splits.	The trip-based model divides northeastern Illinois into 3632 zones, providing zone-to-zone travel times and distances for each zone pair. The modeling process includes three iterations through mode choice-destination choice, time-of-day modeling, and time-of-day assignment. For the first iteration, congestion is preloaded onto the network from a similar model run. After each iteration, the method of successive averages is used to combine the link volumes from the previous iteration with the current one, to balance final volumes. Transit trips via bus are accounted for on the roadway during these iterations to ensure the associated capacity implications are accounted for. Transit trips via rail modes are calculated separately as they do not impact the roadway directly. The final highway volumes and times are based on the balanced values from the third iteration.
Requirement	How the requirement is satisfied
Paragraph. (b) (1) (vi). Network-based travel models must be reasonably sensitive to changes in the time(s), cost(s), and other factors affecting travel choices.	The hierarchical nested logit mode-destination choice model contains the full range of pricing (or cost) variables in the individual utility equation expressions. In this model, nine discrete modal alternatives are available for mode choice. Each modal alternative has its own utility equation with cost variables such as walking speed, drivers value of time, destination zone parking cost, rail station parking cost, automobile operating cost (cents per mile), tolls, and transit fares. It is important to note that the separate vehicle classes experience different toll rates and toll rate weights, based on differing values of time for the vehicle classes. See the Travel Demand Model Documentation Appendix for a comprehensive explanation of the costs and other factors considered for each modal alternative in the mode-destination choice model.

Requirement	How the requirement is satisfied
Paragraph (b) (2). Reasonable methods in accordance with good practice must be used to estimate traffic speeds and delays in a manner that is sensitive to the estimated volume of travel on each roadway segment represented in the network-based travel model.	The capacity-constrained equilibrium assignment ensures that traffic speeds and delays are accurately captured as additional trips are assigned to the network. By performing three iterations of mode choice-destination choice, time-of-day modeling, and time-of-day assignment, the model can dynamically reflect congestion patterns in the region. Previous versions of the trip-based model included as many as five iterations, but testing verified that three iterations was sufficient to find a balanced equilibrium during the method of successive averaging step.
Requirement	How the requirement is satisfied
Paragraph (b) (3). Highway Performance Monitoring System (HPMS) estimates of vehicle miles traveled (VMT) shall be considered the primary measure of VMT within the portion of the nonattainment or maintenance area and for the functional classes of roadways included in HPMS, for urban areas which are sampled on a separate urban area basis.	Following the completion of the trip-based model, travel volumes and speeds are reformatted from the nine modal alternatives into the HPMS vehicle types and link volumes are assigned to their respective road type. For more information about how these conversions occur, see the "Travel Data from CMAP's Travel Demand Model" below.

Estimating regional teleworking behavior

To capture teleworking behavior, the trip-based model includes a work from home (WFH) allocation method that identifies households as having either no workers teleworking or at least one worker teleworking. This allocation method informs the trip-generation model, where household trip enumeration applies trips from the appropriate WFH or non-WFH household category.

Data from CMAP's 2024-2025 My Daily Travel survey and the Bureau of Labor Statistics Current Population Survey, using January through August 2025 data, were used to develop current telework rates for northeastern Illinois. Monday and Friday currently have higher rates of teleworking, while Tuesday through Thursday see more workers commuting to the office. For this reason, modeled rates reflect Tuesday-through-Thursday telework behavior. Worker income and the North American Industry Classification System's industry group are also considered during the WFH allocation process.

Latest planning assumptions

Socioeconomic forecast

A major input to any transportation demand modeling process is the socioeconomic data used to develop the number and types of trips to be assigned to the transportation system. There are three components to this data: the geographic, or spatial, component; the socioeconomic variables used to describe or characterize these areas; and the base and forecast years, which define the time horizons for the analysis.

CMAP has systematically forecasted 2050 population, employment, and economic activity. Travel demand models are then used to estimate travel behavior, congestion, and VMT resulting from these forecasts. Population and employment estimates were developed in five-year increments through the regional socioeconomic forecast process. These forecasts are used for interim conformity years and are tested against transportation improvements expected to be implemented at the time. A description of the method used to prepare forecasts and data summaries are included in the 2026 RTP Socioeconomic Forecast Appendix.

Transit operating policies

The RTA develops operating and capital budgets and plans that are updated annually and serve as the basis for the effect of transit operating policies on travel demand model estimates. These documents include near-term projections of key transit operating policies, including fare, service, and ridership levels.

Since the most recent conformity determination was adopted in January 2026, transit operating policies—including fares and service levels—and assumed transit ridership have not changed. However, changes to transit service and ridership are regularly evaluated, and adjustments can be made to reflect changes in the transportation model.

Transit fares and highway cost included in conformity analysis

The transportation model used in the conformity analysis requires information on the cost of transportation by mode. Of particular importance is the relative costs of transportation compared with all other costs and the relative costs of transit and auto modes compared with each other. Auto costs used in the model are based on the costs of owning and operating an automobile, parking, and tollways. Transit costs include information on the base fares, transfers, and access costs.

It was assumed the relative costs of the two transportation modes, highway and transit, would be the same in the future years as in the base year. This treatment of future costs for the transit mode and the toll component of auto operating cost is consistent with observed trends.

Transportation control measures

There are no transportation control measures in any approved ozone SIP for the nonattainment area, nor have any been suggested for incorporation into the ozone SIP at this time; thus, no such measures are identified.

Emissions modeling inputs

CMAP used the USEPA's Mobile Vehicle Emissions Simulator (MOVES), specifically MOVES4, for estimating emissions for the 2026 RTP and the FFY 2027-2032 TIP.[16] Transportation conformity can be done using MOVES4 until December 11, 2026, per the federal register notice.[17] While the USEPA released MOVES5, at the December 5, 2025, Tier II Interagency Consultation meeting, it was decided that MOVES4 was the appropriate model to use for emissions modeling of the 2026 RTP and FFY 2027-2032 TIP. The technical guidance developed for the MOVES4 model is what CMAP used in developing input data to be used in MOVES4.[18]

Meteorology

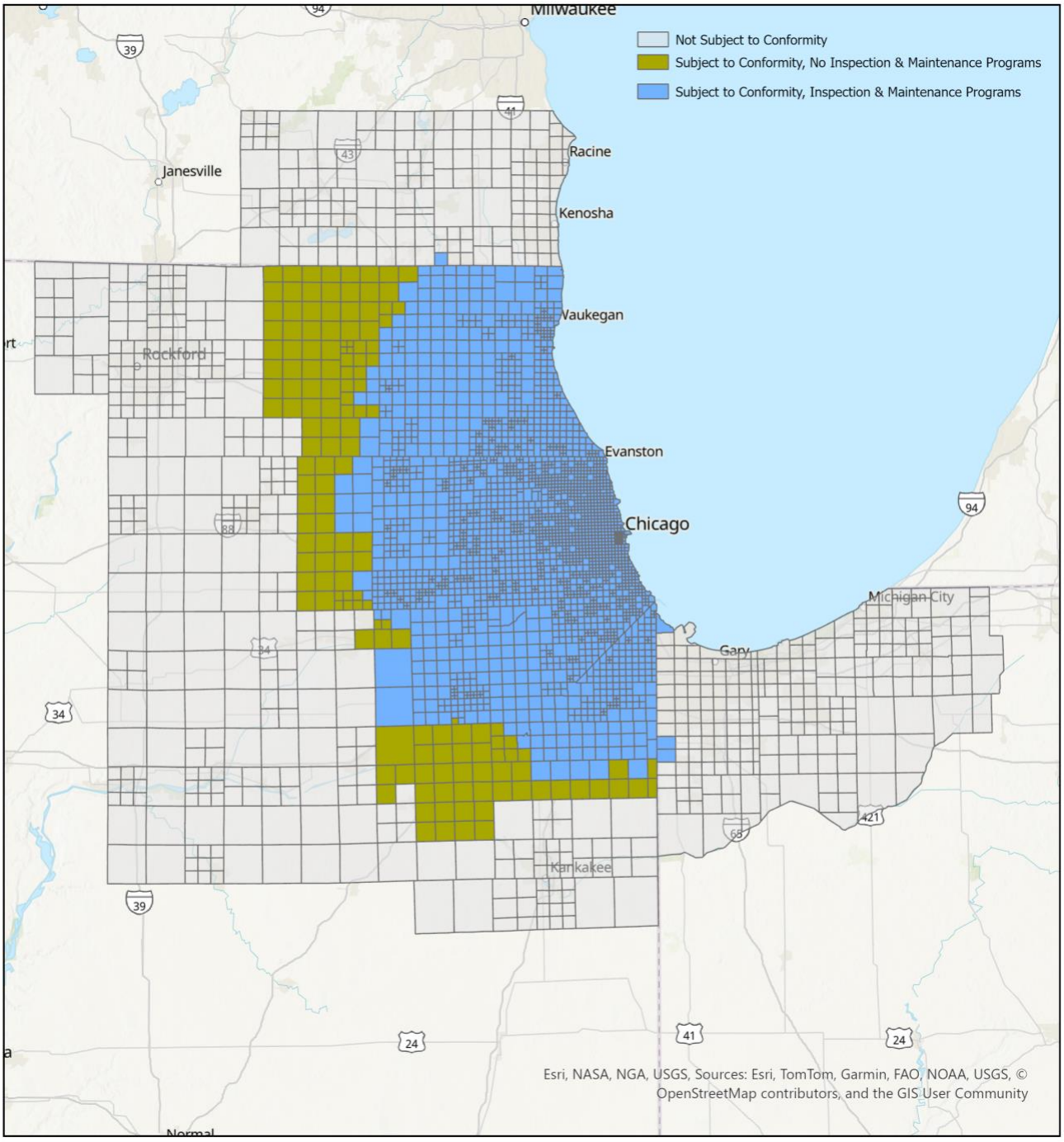
Local temperature and humidity data are required inputs for SIP and regional conformity analysis using MOVES. Ambient air temperature is a key factor in estimating vehicle emission rates because it significantly affects many pollutant processes. MOVES requires hourly input of temperature, in degrees Fahrenheit, and relative humidity, from 0 to 100 percent, for each hour selected in the RunSpec. Therefore, MOVES requires a 24-hour temperature and humidity profile to model a full day of emissions on an hourly basis.

The MOVES database includes default average monthly temperature and humidity data for every county in the country, but the USEPA does not recommend using the default data for regional conformity analyses. Default temperature and humidity data are based on average temperatures for each county from the National Climatic Data Center for the period from 2001 to 2011. The IEPA provided CMAP with a 2025 meteorology input file, which provides consistency between CMAP and IEPA's emissions modeling, as IEPA used it in developing the SIP.

[16] Official Release of the MOVES4 Motor Vehicle Emissions Model for SIPs and Transportation Conformity 88 FR 62567.
[17] Official Release of the MOVES5 Motor Vehicle Emissions Model for SIPs and Transportation Conformity 89 FR 99862.

Inspection and Maintenance Program (I/M)

Figure 1. CMAP modeling zones with I/M and non-IM areas



A component of the SIP developed by the IEPA includes a vehicle inspection and maintenance program for passenger cars for a portion of the nonattainment area. Gasoline-powered passenger cars that are registered in the I/M area are subject to emissions inspections after they are four years

old (e.g. 2020 vehicles were inspected in 2024 for the first time).[19] The area in blue on the map is the I/M area. The IEPA provides the I/M file to CMAP. Areas of the nonattainment area that are not subject to the inspection and maintenance program are shown in green on the map.

MOVES input data from CMAP's trip-based model

CMAP's trip-based model (TBM) provides road-type distribution, weekday average speed distribution, weekday hour VMT fraction, and HPMS daily VMT as inputs to MOVES4 for each analysis year and by I/M and non-I/M geographies. The TBM input files are only for weekday travel. Weekend travel data is derived from MOVES default data.

Modeled vehicle types from the TBM are mapped to the MOVES source type and HPMS types (Table 2). The TBM models one average weekday of travel over eight time periods. The daily number of vehicles by vehicle type is determined for each link in the TBM roadway network by summing the number of vehicles of that type from each time period in the model. The daily link volume in vehicle equivalents is multiplied by the link length to obtain daily VMT on the link. Daily link vehicle hours traveled (VHT) are calculated by dividing the link VMT by link speed.

Table 2. Vehicle type categories

Trip-based model vehicle type	MOVES HPMS type	MOVES source type
Automobile	Motorcycles (10)	Motorcycle (11)
	Light duty vehicles (25)	Passenger car (21)
		Passenger truck (31)
B-plate trucks	Buses (40)	Light commercial truck (32)
Transit bus		Intercity bus (41)
		Transit bus (42)
		School bus (43)
Medium duty trucks under 200 miles		Refuse truck (51)
Light trucks and medium duty trucks under 200 miles	Single unit trucks (50)	Single unit short-haul truck (52)
Medium duty trucks over 200 miles		Single unit long-haul truck (53)
Heavy duty trucks under 200 miles		Motor home (54)
Heavy duty trucks over 200 miles	Combination trucks (60	Combination short-haul truck (61)
Heavy duty trucks over 200 miles		Combination long-haul truck (62)

[19] Illinois Environmental Protection Agency, "Vehicle Emissions Testing Program," accessed May 2026, https://epa.illinois.gov/topics/air-quality/mobile-sources/vehicle-emissions-testing.html

The links in the TBM are assigned a volume-delay function, which is an equation that represents the congestion occurring on the link as traffic volumes increase. The functions distinguish between links with signalized intersections, freeways, expressways, metered freeway entrance ramps, and links with tolls. The link-level volume-delay function is used to assign each link from the TBM to a MOVES road type. The TBM does not model off-network road types, so data is only obtained for rural restricted access, rural unrestricted access, urban restricted access, and urban unrestricted access road types. The road type VMT fraction for each source type–road type combination is calculated as the source type-road type VMT divided by the total source type VMT.

The average-speed-distribution MOVES4 input represents the share of vehicles traveling within a specified speed bin for each source type–road type–day -hour group. MOVES speed bins are defined in the MOVES4 technical guidance[20] and the TBM provides data for each hour of the day for a 24-hour period for the weekdays. The average speed fraction for each source type–road type–hour–speed bin group is calculated by dividing the group level VHT by the VHT for the source type–road type–hour group.

The hour VMT fraction input shares for weekdays are calculated similarly to the average speed distribution. For each source type – road type – hour group, the VMT share is calculated by dividing the group level VMT by the VMT for the source type – road type group.

Finally, MOVES4 requires annual VMT as an input, so additional steps are taken to convert VMT from the TBM into annual estimates for MOVES modelling. The daily VMT from each TBM automobile type is summed corresponding to its HPMS group for each road type. Using 2021 monthly and day-of-week factor data from IDOT, daily VMT by HPMS is expanded to annual VMT estimates. Because the TBM does not explicitly model motorcycle activity, additional data processing is required to assign a portion of automobile VMT to the motorcycle source type. IDOT provided CMAP with VMT percentages by HPMS type, which were used to calculate the average share of VMT between motorcycles and passenger cars and light trucks (Table 3). These average shares are then used to apportion TBM automobile VMT into the motorcycle and light-duty-vehicle source types.

Table 3. VMT share by road type

Road type	Motorcycle share	Light duty vehicles share
Rural restricted access	1.26%	98.74%
Rural unrestricted access	0.95%	99.05%
Urban restricted access	0.81%	99.19%
Urban unrestricted access	0.80%	99.20%

[20] U.S. Environmental Protection Agency, "MOVES4 Technical Guidance: Using MOVES to Prepare Emission Inventories for State Implementation Plans and Transportation Conformity," August 2023, https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P101862T.pdf.

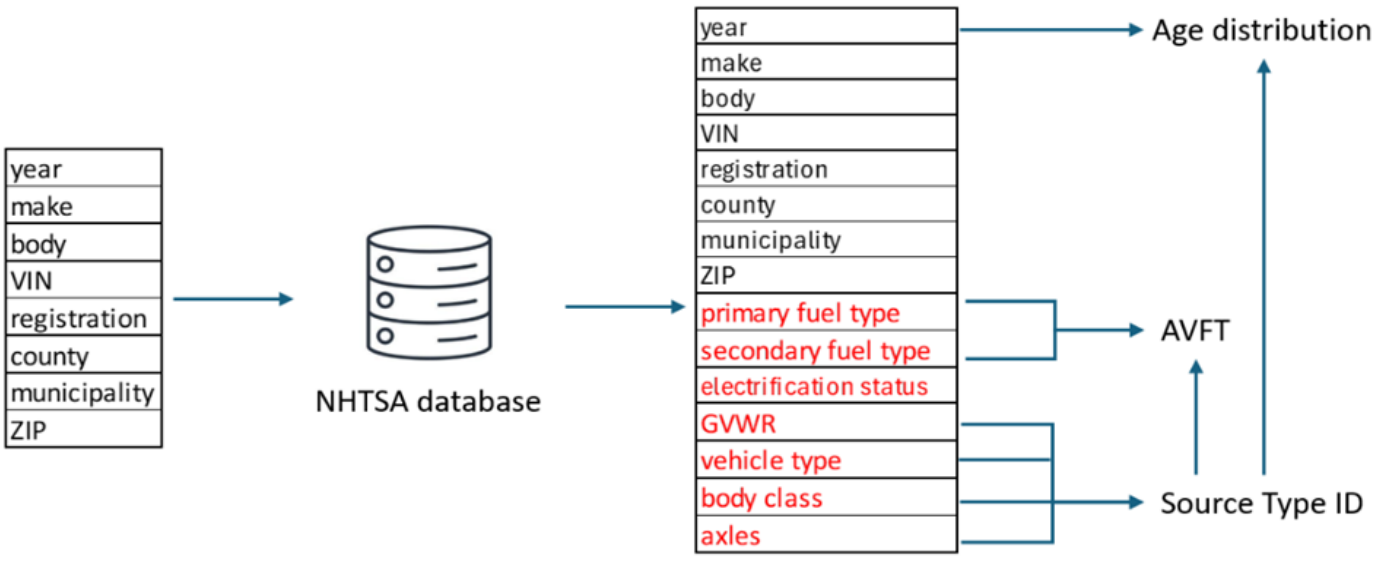
It is important to note that CMAP's TBM models an average weekday; therefore, model outputs are only used as weekday inputs for MOVES4 when both weekday and weekend data are required, except for VMT, which is addressed above. Default weekend data is used for the average speed distribution and hour VMT fraction. Please refer to the 2026 RTP Travel Demand Model Documentation Appendix for more information about the trip-based model.

Vehicle data

CMAP receives vehicle registration data annually from the Illinois Secretary of State. This data is used to produce three MOVES input files: the number of vehicles by MOVES source type ID, the age distribution of vehicles by source type ID, and the advanced vehicle fuel technology file. These three files are inputs to the MOVES model and serve as the baseline data by which future year inputs are generated.

To process this data and prepare it for use in MOVES, CMAP developed a VIN decoding process that converts VIN data into vehicle information, including fuel type, gross vehicle weight rating (GVWR), vehicle type, body class, and number of axles. Once the vehicle fleet data is generated, it is grouped by inspection and maintenance (I/M) areas and non-I/M areas for emissions modeling. The steps in the process are shown below (Figure 1). The process includes checks of each VIN against the National Highway Traffic Safety Administration's latest database, and uses the EPA's report,[21] which categorizes vehicles into several specific vehicle types (Table 2) together with GVWR, vehicle body class, and vehicle type from the check results.

Figure 2. CMAP's VIN decoding process



[21] USEPA, "Population and Activity of Onroad Vehicles in MOVES4," August 2023, https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P101867U.pdf.

Source type ID

MOVES requires source type inputs that provide the number of vehicles for each vehicle type. The number of vehicles by type is used by MOVES to calculate start and evaporative emissions. Start and evaporative emissions depend on the number of vehicles and VMT, but the number of vehicles is the more significant contributing factor. For emissions modeling in future scenarios, the USEPA does not have suitable tools to predict the number of vehicles by MOVES source type ID. CMAP uses the latest vehicle type counts as the baseline year data in this process, assuming that the trend in vehicle numbers, expressed as percentage change, is the same as the growth in VMT in CMAP's transportation demand model.

Age distribution

The age distribution of vehicle fleets varies greatly across regions. On a per-mile basis, older vehicles generally emit more than newer ones of the same type because of the aging of emission control systems and changes in emission standards. CMAP converts vehicle registration data into the latest year data categorized by vehicle type, age (0 to 30 years), and proportions. For future year scenarios, CMAP uses a projection spreadsheet tool[22] from the USEPA to project this data.

Alternate vehicle fuel and technology (AVFT)

Vehicle fuel usage affects emissions modeling results as well as the accurate prediction of vehicle sales and technology transitions. This data is also generated when running the VIN decoder and is categorized by vehicle type, model year, fuel type and engine type.

The AVFT tool allows users to modify the vehicle mix in MOVES simulations. It projects distributions for fuel types including:

- gasoline
- diesel
- E-85
- compressed natural gas
- battery electric
- fuel cell electric

The primary purpose of this tool is to project future fuel type distributions by combining local historical data with projected national trends. For example, if modeling calendar year 2030, MOVES requires a fuel type distribution for every model year between 2000 and 2030.

[22] USEPA, "Age Distribution Projects Tool for MOVES," July 2025, https://www.epa.gov/system/files/documents/2025-07/moves5-age-distribution-projection-tool-2025-07.xltm.

Table 4. Future AVFT file development process

Method	Mechanism	Use case
Proportional	Maintains the ratio between local and national data while following national growth curves.	Best general use: Preserves local uniqueness while accounting for unavoidable national market shifts.
National average	Replaces local projections with standard USEPA national defaults.	Gap filling: Useful when local data is sparse, unreliable, or statistically insignificant.
Known fractions	User codes specific values for specific years.	Policy modeling: Essential for modeling specific regulations (e.g., 100% EV sales by certain year). High effort.
Constant	Freezes the last complete model year distribution forward.	Conservative baseline: Simple, but often inaccurate for rapidly changing technology such as EVs.

CMAP uses proportional method to project vehicle types including passenger cars, passenger trucks, light duty commercial trucks, transit buses, school buses, other buses, refuse trucks, single unit short-haul trucks, motor homes, and combination short-haul trucks. CMAP uses the national average method to project single unit long-haul trucks and combination long-haul trucks.

Modeling input summary

Table 5. MOVES inputs summary

MOVES Inputs	**Notes**
Meteorology	Local data from IEPA
Source type population	Processed registration data from ILSOS
Age distribution	Processed registration data from ILSOS
Vehicle type VMT	Travel data from CMAP's trip-based model
Average speed distribution	Travel data from CMAP's trip-based model
Road type distribution	Travel data from CMAP's trip-based model
Fuels	Processed registration data from ILSOS
Inspection and maintenance programs	Local data from IEPA
Starts	MOVES default data
Hotelling	MOVES default data
Idle data	MOVES default data
Stage II refueling programs	MOVES default data

Motor vehicle emissions budgets and emissions model scenario years

In addition to the base year, five analysis years are included in the region's conformity analyses:

- 2019 – the base year
- 2026 – 2015 ozone NAAQS SIP requirement
- 2030 – an intervening year not more than 10 years apart from the preceding and succeeding scenario years
- 2035 – 2008 ozone NAAQS attainment SIP requirement
- 2040 – an intervening year not more than 10 years apart from the preceding and succeeding scenario years
- 2050 – the 2026 RTP horizon year

Changes to scenario years may occur as SIPs are revised but adhere to transportation conformity requirements in 40 CFR 93.106.

Motor vehicle emissions budget

CMAP has had an MVEB for ozone precursors, VOCs, and NO_X since the 1997 ozone NAAQS. As previously stated, a proposed final rule for *moderate* attainment of the 2015 ozone NAAQS was published in the *Federal Register* on February 12, 2026.[23] and approved on May 14, 2026.[24] The final rule includes a MVEB of 52.47 tons per day for VOC and 165.78 tons per day for NO_X. This is the MVEB CMAP used when demonstrating the 2026 RTP and FFY 2027-2032 TIP conform.

Off-network calculations

The final estimate of regional emissions does not include credit for off-network calculations. However, many of the projects not currently incorporated into the travel demand model have been programmed using federal Congestion Mitigation and Air Quality Improvement Program funds. These funds are programmed by CMAP based on the project's demonstrated air quality benefits. A benefit evaluation method has been developed for each type of project. The methods are structured so that, if appropriate, a project's benefits can be incorporated into the appropriate SIP by the IEPA as a transportation control measure (TCM) or used in conformity determinations.

[23] Air Plan Approval; Illinois; Moderate Attainment Plan Elements for the Chicago and Metro East Areas for the 2015 Ozone Standard 91 FR 6568.

[24] Air Plan Approval; Illinois; Moderate Attainment Plan Elements for the Chicago and Metro East Areas for the 2015 Ozone Standard 91 FR 27207

Modeled projects

Regional Capacity Projects (RCPs) that are fiscally constrained in the 2026 RTP and that have a not exempt work type associated with them; projects that are regionally significant but may not be RCPs; and projects that are neither RCPs nor regionally significant but have a not exempt work type must be included in conformity and are included in the transportation demand estimation modeling and emissions modeling processes. All projects in the TIP can be seen on the public eTIP website and conformity plan revision can be seen on the public website under the plan revisions tab.[25]

Transportation conformity results

The conformity analysis results for the 2026 RTP and FFY 2027-2032 TIP are provided below. CMAP maintains a policy of accepting plan revisions and updating the conformity analysis semiannually. The most recent conformity analysis results are listed on the CMAP conformity analysis webpage.[26]

The VOC and NO_X emissions estimates for each scenario year are shown in Table 6.

As shown in the table, the emission modeling results demonstrate that VOC and NO_X emissions are lower than the applicable MVEB contained in the SIP budget, and that conformity for the 8-hour ozone standard is demonstrated.

Table 6: VOC and NO_X emissions in tons per summer day for ozone conformity

	Volatile Organic Compounds		Nitrogen Oxides	
Year	**Northeastern Illinois**	**SIP Budget**	**Northeastern Illinois**	**SIP Budget**
2026	**51.53**	52.47	**111.35**	165.78
2030	**44.13**	52.47	**68.15**	165.78
2035	**37.94**	52.47	**43.01**	165.78
2040	**32.98**	52.47	**34.60**	165.78
2050	**26.44**	52.47	**30.74**	165.78

Conformity is demonstrated by comparison of analysis year emissions to the SIP budget

Notes:
Off-model benefits are not included in the total emissions estimates

Results updated as of May 2026

[25] CMAP, "eTIP," Plan Revisions for the Transportation Improvement Program, https://etip.cmap.illinois.gov/#tabs-2.
[26] CMAP, "Climate & Natural Resources: Air quality conformity analysis," https://cmap.illinois.gov/focus-areas/climate/air-quality/#air-quality-conformity-analysis.

Conclusion

CMAP has documented the process and procedures used for transportation conformity follow federal regulations. Through CMAP's conformity analysis it has been determined that the 2026 RTP and FFY 2027-2032 TIP conform to the MVEB for the region.

2026 Regional Transportation Plan

The Chicago Metropolitan Agency for Planning (CMAP) is the region's comprehensive planning organization. The agency and its partners developed and are now implementing ON TO 2050, a long-range plan to help the seven counties and 284 communities of northeastern Illinois implement strategies that address transportation, housing, economic development, open space, the environment, and other quality-of-life issues.

See cmap.illinois.gov for more information.

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