

RTP

2026

Regional Transportation Plan

DRAFT

Chicago Metropolitan Agency for Planning

Acknowledgments

The 2026 Regional Transportation Plan (RTP) was made possible by collaboration with a wide range of stakeholders across northeastern Illinois. The Chicago Metropolitan Agency for Planning (CMAP) is appreciative of all those who generously contributed their time, expertise, and perspectives throughout the planning process. Below is an acknowledgment of some of the many valued partners that helped develop the 2026 RTP.

CMAP Board

Frank Beal, Chicago
Mayor Gerald Bennet, Palos Hills, Southwest Cook County
President Matthew Brolley, Montgomery, Kane/Kendall Counties
Mayor Jada Curry, Lynwood, Suburban Cook County
Mayor Gary Grasso, Burr Ridge, DuPage County
Mayor Paul Hoefert, Mount Prospect, Northwest Cook County
Nina Idemudia, Chicago
Abolfazl "Kouros" Mohammadian, Governor's Office
Mayor John Noak, Romeoville, Will County
Leanne Redden, MPO Policy Committee
President Richard Reinbold, Richton Park, South Cook County
Mayor Nancy Rotering, Highland Park, Lake County
Joanna Ruiz, Chicago
Carolyn Schofield, McHenry County
Anne Sheahan, Chicago
Matthew Walsh, West Cook County
Jung Yoon, Chicago

CMAP MPO Policy Committee

Frank Beal, CMAP
County Executive Jennifer Bertino-Tarrant, Will County
Secretary Gia Biagi, Illinois Department of Transportation
President Matthew Brolley, Montgomery, CMAP
Kelley Brookins, Federal Transit Administration
County Board Chair Michael Buehler, McHenry County
County Board Chair Deb Conroy, DuPage County
Jim Derwinski, Metra
Thomas Evenson, Class One Railroads
County Board Vice Chair Scott Gengler, Kendall County
County Board Chair Sandy Hart, Lake County
Jennifer "Sis" Killen, Cook County
Richard Kwasneski, Pace
Nora Leerhsen, Chicago Transit Authority
County Board Chair Corinne Pierog, Kane County
Leanne Redden, Regional Transportation Authority
Cassaundra Rouse, Illinois Tollway
Mayor Jeffery Schielke, Batavia, Council of Mayors
Vershun Tolliver, Federal Highway Administration
William Cheaks, Chicago Department of Transportation

CMAP Transportation Committee

Cara Bader, Chicago Transit Authority
Kevin Carrier, Lake County
Lynnette Ciavarella, Metra
Gabe Desmond, Illinois Environmental Protection Agency
Jon Paul Diipla, Federal Highway Administration
Heidi Files, Kane County
Brandon Geber, Illinois Department of Transportation
Chris Heibert, Southeastern Wisconsin Regional Planning Commission
Scott Hennings, McHenry County
Mark Kane, Federal Transit Administration
Christina Kupkowski, Will County
Aimee Lee, CMAP
Heidi Lichtenberger, Kendall County
Erik Llewellyn, Pace
Mary Nicol, Chicago Department of Transportation
Tara Orbon, Cook County Department of Transportation and Highways
Jose Rios, Illinois Department of Transportation District 1
Karyn Robles, Illinois Tollway
Mayor Leon Rockingham, North Chicago, Council of Mayors
Amy Rynell, Active Transportation Alliance
Joe Schofer, Northwestern University
P.S. Sriraj, University of Illinois at Chicago
Steve Travia, DuPage County Division of Transportation
Tom Vander Woude, Northwestern Indiana Regional Planning Commission
Audrey Wennink, Metropolitan Planning Council
Kyle Whitehead, Regional Transportation Authority

2026 RTP testimonials

Ben Chargot
Jeanette Chavarria-Torres
LaShawn Miller
Erik Varela
Bailey Werner
Terry Witt

Table of Contents

04 Making the most of our moment

10 Strengthen connections between people and places

22 Prioritize safety and public health

30 Mitigate pollution and invest in resilient infrastructure

40 Support economic prosperity and inclusive growth

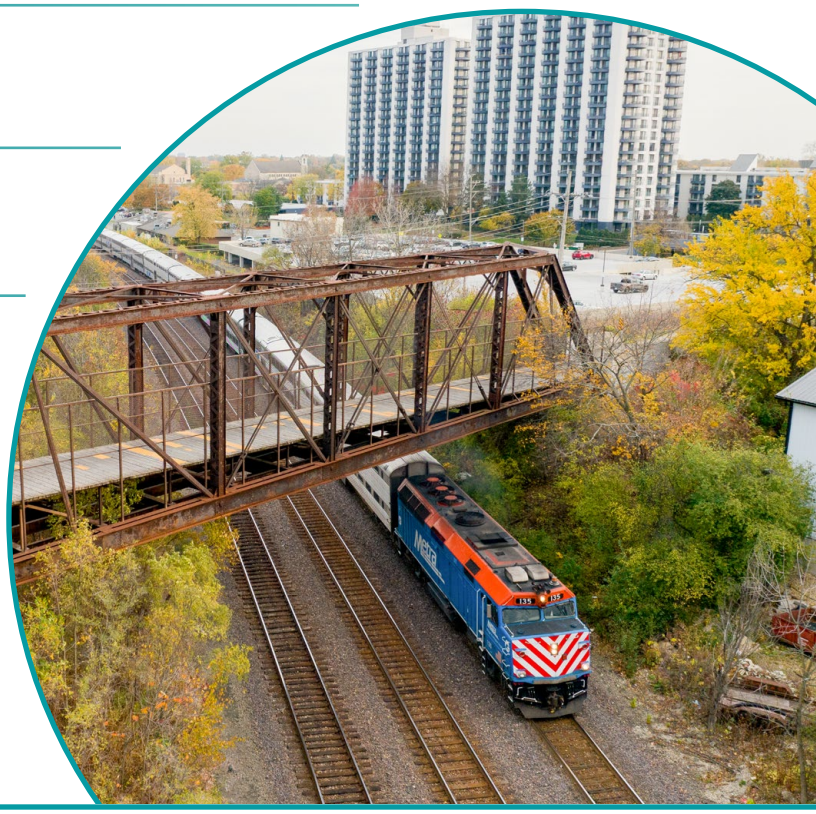
51 Strategically govern, fund, and preserve the system

63 Priority investments

82 Conclusion

87 Glossary

92 Appendices



Making the most of our moment

Before the sun rises, northeastern Illinois is already moving.

Freight trains thread through the region's rail yards, sorting cargo bound for every corner of the continent. On expressways and arterials, the first trucks of the day roll in every direction, keeping supply chains running before most businesses open their doors. Along the region's waterways, barges carry bulk goods to and from port facilities that connect northeastern Illinois to global markets. At the region's international airports, aircraft land and take off roughly every 30 seconds, linking the region to hundreds of cities around the world.[1] And across local communities, early-shift workers make their way to bus stops and rail platforms, beginning journeys that will carry them across neighborhoods and county lines, and back again by nightfall.

This is what a world-class transportation network looks like — not as a diagram on a page, but as a dynamic and evolving system that unites a region of 8.6 million people.

Northeastern Illinois did not arrive here by accident. Today's transportation network is the result of generations of bold, sustained investment in infrastructure: the elevated rail lines that shaped Chicago's urban form, the expressways that connected the region's suburbs to its core, and the freight corridors that turned a prairie crossroads into the logistics capital of North America. Each generation of regional leaders inherited a system built by those who came before and chose to sustain and strengthen it. The transportation network that exists today is the outcome of those choices — and one of the greatest economic and civic assets any metropolitan region in the world can claim.

That inheritance now stands at a crossroads.

The infrastructure that makes all this possible — bridges, tracks, signals, roads, port facilities, runways — is aging. Much of it was built for a different century, and a significant share has not received the sustained investment needed to keep it performing at its best. Funding streams that once supported the system are losing ground to rising construction costs and changing travel patterns. The region's safety record is moving in the wrong direction, and extreme weather is testing the resilience of critical infrastructure.



At the same time, the region is sitting on unrealized potential. Many communities built around transit stations experience infrequent service, and freight corridors remain constrained by at-grade crossings that were identified for improvement decades ago. Critical bike networks stop at municipal borders rather than at key destinations. The transit system — which serve almost a million trips each day — could serve many more with greater frequency, improved reliability, and more seamless connections across the region.

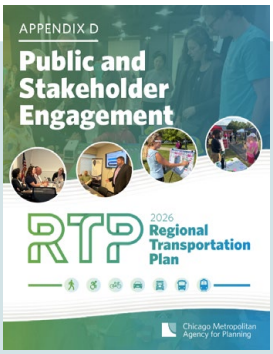
The question northeastern Illinois must answer is *what kind of region will our residents inherit by 2050*?



The answer is not written yet. But it will be shaped, in large part, by the transportation decisions made today. Every child heading to school, every worker commuting across county lines, and every older adult accessing essential services will live with the transportation system this generation chooses to leave behind.

The 2026 Regional Transportation Plan (RTP) takes that responsibility seriously. It begins with an honest accounting of what the region has: a transportation system, forged over generations, that connects and empowers people and communities. That system was not built by any single agency or level of government, but rather, through generations of collective effort — by people across every level of government, every trade, and every community who chose, repeatedly, to build for future generations.

The strategies in this plan recognize that our best transportation future will not be built from scratch. Instead, it will require preserving what works, repairing what is failing, and unlocking the region's untapped potential as a transportation hub that, when it functions as it was designed to, is second to none. It will also require making deliberate choices about where development occurs, what infrastructure is built, and who maintains it — decisions that have the potential to either honor or burden future generations.



Robust engagement ensures that the 2026 RTP is not solely a CMAP plan — it is a shared blueprint for transportation stakeholders across northeastern Illinois.

The RTP frames the region's responsibilities through five interconnected chapters: mobility, safety, climate, economy, and the financial foundations necessary to support progress. These chapters are not parallel topics; they are five aspects of a single question: how can northeastern Illinois lead a transportation system worthy of what it has inherited? Each chapter closes with a set of strategies that converge in a final section on priority investments, which represent the projects and programs that best translate the plan's goals into action.

Taken together, this plan is an argument for urgency. The early-shift worker waiting at an unsheltered bus stop, the freight operator navigating a corridor in need of improvement, and the family living near an interchange that floods after heavy rain — none of them are waiting for 2050. They are experiencing the consequences of deferred decisions today. At the same time, every infrastructure choice made now carries obligations that will reverberate for generations. The transportation system northeastern Illinois leaves behind will reflect, in large part, the choices this plan recommends and the actions the region takes.



The Northeastern Illinois region

8.6 million residents

2.6 million acres of diverse land uses spanning agriculture, industry, natural areas, urban centers, and suburban communities

284 municipalities

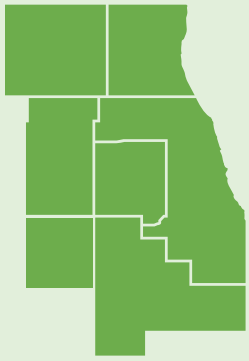
3.3 million households

22nd largest economy in the world if the region was considered a separate country. Surpassing countries such as Ireland and Sweden.



4.5 million jobs in the region

$742 billion generated in gross regional product, surpassing that of 39 individual states.



About the Chicago Metropolitan Agency for Planning (CMAP)

CMAP is the federally designated metropolitan planning organization (MPO) and the state-designated regional planning agency for northeastern Illinois. The region includes Cook, DuPage, Kane, Kendall, Lake, McHenry, and Will counties, as well as Aux Sable Township in Grundy County and Sandwich and Somonauk townships in DeKalb County. CMAP supports the region by conducting research, developing plans, and coordinating investment across transportation, land use, economic development, and the environment. The 2026 RTP is one of CMAP's core planning responsibilities and is developed in partnership with local governments, transportation agencies, and residents across northeastern Illinois.

The regional transportation system underpins northeastern Illinois' economy and quality of life. This network includes extensive infrastructure assets across aviation, freight, roadway, maritime, transit, bicycle, and pedestrian infrastructure. In 2023, the transportation network facilitated more than 331 million transit trips, 372 million tons of truck cargo, and 57 billion regional vehicle miles traveled (VMT), reflecting the scale of daily movement that connects people to jobs, goods to markets, and communities to one another.

About the regional transportation planning process

The development of the RTP is a recurring process required by both state and federal law. Federal requirements ensure that investments in the regional transportation system are non-discriminatory, environmentally responsible, and financially viable. State mandates promote consistency with statewide plans and require consideration of how transportation intersects with other topics, such as economic activity and land use. Together, these requirements ensure that the RTP is well-rounded and collaborative.

In CMAP's 20-year history, the agency has fulfilled these responsibilities through individual comprehensive plans for the region — GO TO 2040 and ON TO 2050, and their subsequent updates. To enable more focused planning on specific topics and greater flexibility as regional needs evolve, CMAP is transitioning to a "family of plans" approach. Under this model, a long-term regional vision will guide a series of topic-specific planning efforts. At the time of publication, northeastern Illinois is collaborating to develop The Century Plan, which is scheduled for adoption in 2027. The Century Plan will serve as the region's overarching vision and inform future RTP cycles.

The 2026 RTP is one of the first plans developed under this new approach to regional planning. As a result, northeastern Illinois' current comprehensive plan — ON TO 2050 — continues to serve as a foundation for the RTP. The RTP carries forward ON TO 2050's principles of inclusive growth, prioritized investment, and resilience, and builds on its mobility chapter, which commits to a modern multimodal system that adapts to changing travel demand, a system that works better for everyone, and making transformative investments.



ON TO 2050 guiding principles

Inclusive growth: Growing our economy through opportunity for all

Prioritized investment: Carefully targeting resources to maximize benefit

Resilience: Preparing for rapid changes, both known and unknown

Three core questions guided the RTP development process:

- What transportation system does the region want?
- What are the challenges and opportunities ahead?
- And how will the region implement its transportation goals?

To answer these questions, the RTP process took a thoughtful and measured approach. Transportation plans from across the region, as well as recent consensus-driven plans and studies from both CMAP and partners, were reviewed. Research and data analysis provided insights into existing conditions and future needs and helped identify key policy considerations. CMAP's Existing Conditions Report established a data-driven baseline for the plan by assessing current transportation trends, system performance, and regional needs. The Emerging Priorities Report identified key issues and opportunities likely to shape northeastern Illinois' transportation future, helping focus the RTP on the most pressing strategic challenges ahead. Crucially, performance-based planning informed the evaluation and prioritization of investments.

Coordination and collaboration with regional partners informed every aspect of the RTP. CMAP's Transportation Committee, Board, and MPO Policy Committee provided critical feedback and guidance. Resource groups comprised of key partners and stakeholders helped shape congestion management strategies, the financial plan, as well as the list of constrained Regional Capital Projects (RCPs) and the accompanying list of priority investments. Engagement with implementing agencies, professional associations, community groups, advocacy organizations, and business leaders strongly influenced the plan throughout its development. Additionally, nearly 1,800 residents shared their transportation experiences and perspectives via public questionnaire.

About the transportation system

Northeastern Illinois has invested in the development, operation, and ongoing maintenance of transportation infrastructure for more than a century. Today, the region supports a large and highly connected multimodal network that facilitates both passenger and freight movement, serving as the region's backbone as a nationally and internationally significant transportation hub.



Aviation

Northeastern Illinois is home to a diverse network of aviation facilities that support regional and international travel, air cargo, and broader economic activity.

- 2 international airports
- 49 million airplane boardings (2023)
- 2 million tons of air freight cargo transported (2023)



Freight

Freight is a critical element of northeastern Illinois' economy and transportation system. In 2023, the region's freight network moved nearly 700 million tons of goods to, from, and within the region, with a total value of more than $1 trillion.

- 3,900 miles of freight rail
- All six Class I freight railroads
- More than 200,000 jobs (2024)



Roads & bridges

The roadway network ranges from limited access interstate highways that support regional and interregional travel to local streets that provide direct access to residential and commercial land uses.

- 34,000+ miles of public roadways
- 3,660 bridges
- 425 miles of interstate highways



Sidewalks & bike paths

Active transportation infrastructure is a critical resource in the region. These facilities also play an important role in improving transportation safety, expanding mobility options, and supporting regional public health and environmental goals.

39,000+ miles of sidewalk

6.8 million divvy bike and scooter rides (2025)

1,400 miles of bikeways



Transit

Northeastern Illinois is served by an extensive public transit network. In 2024, transit riders in the region took 367.6 million unlinked passenger trips, ranking third nationwide in total transit usage, behind only New York City and Los Angeles.

391 train stations

11 commuter rail lines

273 bus routes



Waterways

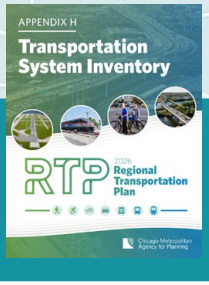
Northeastern Illinois is served by three ports and six navigable waterways, which support the transport of industrial materials and bulk commodities into, out of, and through the region.

The Illinois International Port handled over 9 million tons of goods (2023)

336 miles of navigable water

The Joliet Regional Port handled over 7 million tons of goods (2023)

Learn more about the infrastructure, vehicles, and people who move northeastern Illinois in the **Transportation System Inventory report**





Strengthen connections between people and places

Transportation connects people to a diverse range of destinations. Decades of investment have positioned northeastern Illinois as an international transportation hub, supported by an expansive network of roads, bridges, airports, ports, rail, and transit. This vast array of transportation assets is the backbone for the region's economic prosperity and quality of life.

Regional transportation needs are dynamic and continue to evolve. The COVID-19 pandemic reshaped when and how residents travel, affecting congestion patterns, remote work, and transit ridership. In this changing landscape, the need for reliable, safe, and accessible travel options remains essential.

The region's wealth of transportation assets provides a strong foundation for strengthened connections, but the system remains unfinished and, in some respects, under stress. This chapter examines three dimensions of that challenge:

- **Reliability:** congestion affects the daily movement of people and goods across every county in the region and extends beyond peak-hour traffic alone.
- **Multimodal choice:** driving remains the dominant mode, but reducing congestion, serving more residents, and achieving climate and safety goals depend on expanding transit, walking, and biking.
- **Accessibility:** for many residents — particularly people with disabilities and older adults — the current system does not function effectively.

None of these challenges can be addressed by any single agency acting alone. Congestion does not stop at jurisdictional boundaries, transit riders routinely cross county lines, and the hundreds of municipalities responsible for sidewalks and local roads collectively determine whether the regional system is accessible. The strategies that follow require coordinated action across all levels of government, planning disciplines, and community partners.

Greater reliability and efficiency are critical for regional mobility

Northeastern Illinois' vast transportation network supports millions of trips each day, reflecting the movement of both people and goods. However, persistent congestion limits mobility, resulting in frustrating and costly delays.



Some level of congestion is typical in major metropolitan areas, but it is particularly acute in northeastern Illinois, which frequently ranks among the most congested in the country. While some congestion is predictable — such as rush hour traffic — unexpected delays result from crashes, construction, extreme weather, major events, and other disruptions. This unpredictable congestion undermines travel reliability.

Travel time reliability — measured by the worst delays compared to normal travel times — reveals where unpredictable congestion most frequently disrupts traffic flow. Across northeastern Illinois' seven counties, segments of roads and highways experience unreliable

travel conditions. Among the least reliable corridors are I-90 and I-94 on Chicago's North Side, I-290 throughout Cook County, and I-80 in southern Cook County.[2] Because these corridors serve dense residential areas and major employment centers, congestion challenges significantly affect the movement of both people and goods.

Aging infrastructure is a significant contributor to unreliable travel times and exacerbates congestion.[3] Long-term deferred maintenance leads to frequent and unexpected disruptions, including signal outages and lane closures due to pavement failures. As a historic transportation hub with expansive infrastructure, northeastern Illinois faces substantial maintenance needs. For example, more than 70 percent of expressways owned by the Illinois Department of Transportation (IDOT) are over 50 years old — exceeding the functional life of these critical assets.[4] Prioritizing system preservation will help reduce long-term costs, minimize disruptions, and support a more efficient and reliable network.

Bailey Werner

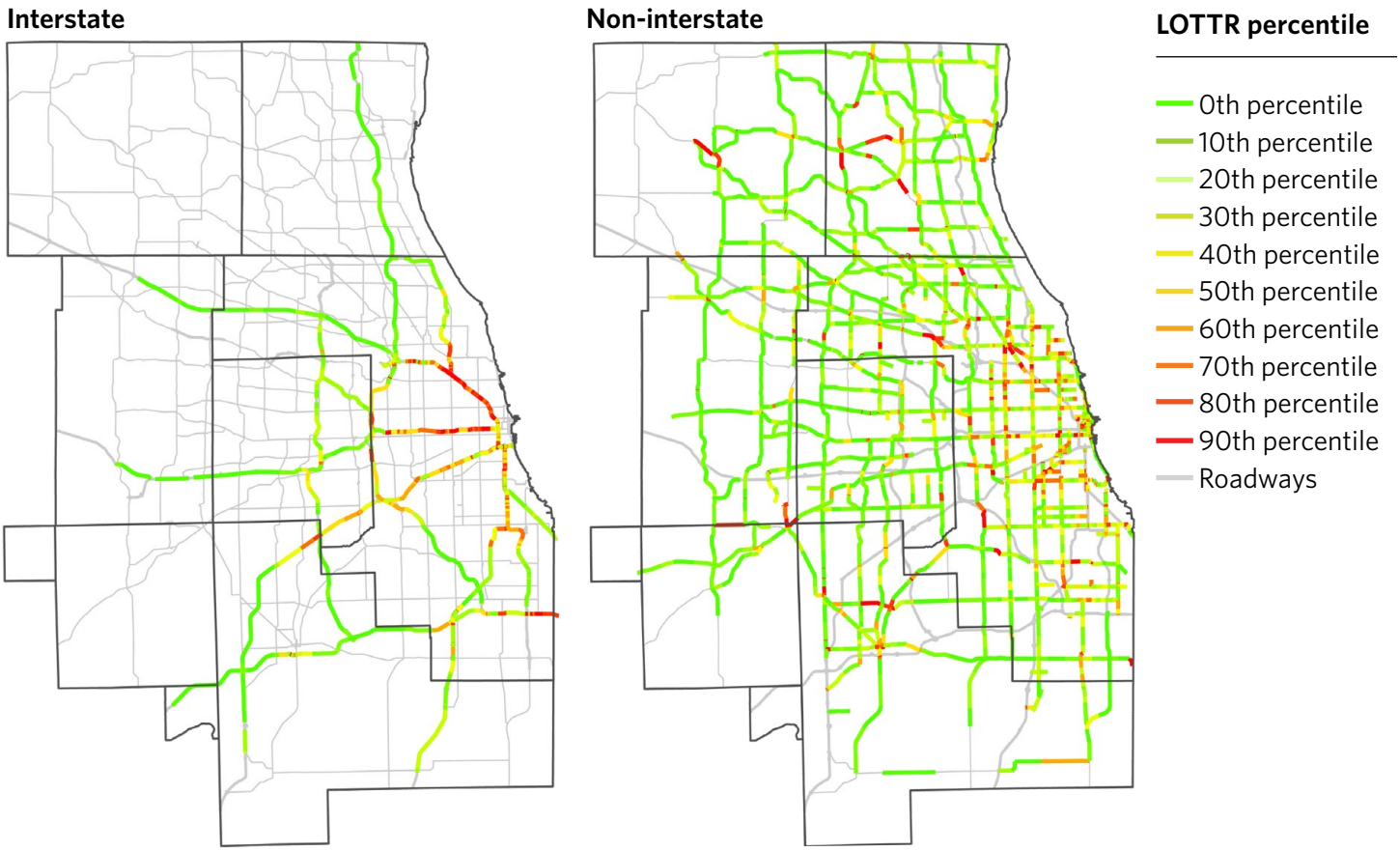
Bike and Metra commuter

Bailey Werner's commute from Chicago's Near Northwest Side to Libertyville shows how stronger connections can expand access to opportunity across northeastern Illinois. Her trip combines biking to her local Metra station, riding commuter rail to Libertyville, and biking the final stretch to her office. For Bailey, maintaining transit as a cost effective alternative to driving is especially important, and increasing the availability of protected bike lanes would make the journey feel even safer. Her story illustrates how many transit users bring bikes and scooters aboard to solve the "last mile" challenge between stations and destinations. Bailey's experience reflects how coordinated investments in biking and transit can create a more flexible, connected transportation system that helps improve mobility.

"I bike, take the train, and bike again — it's what makes my commute work."



Figure 1: Interstate and non-interstate level of travel time reliability (LOTTR) on the National Highway System, 2022



Source: FHWA National Performance Management Research Data Set. LOTTR is defined as the ratio of the 80th percentile travel time to normal travel time (50th percentile).

Recent changes in travel behavior have also reshaped congestion patterns. Northeastern Illinois experienced a three-fold increase in the number of residents who work remotely in the years following the COVID-19 pandemic. Increased remote work means that more people have greater flexibility during weekday afternoons — resulting in more local trips to run errands, participate in social events, and other outings. As a result, average speeds during the 2:00 to 4:00 p.m. window are now lower than pre-pandemic levels, indicating heightened congestion challenges outside of traditional rush-hour periods.

Economic activity also influences congestion. Growth in e-commerce and supply chain disruptions have increased freight-related delays, particularly at rail crossings. Freight rail travel times have more than doubled — from an average of about 5 hours in 2016 to approximately 13 hours in 2025. With more than 1,400 at-grade crossings, the region experiences significant delays where rail and roadway networks intersect. In 2023 alone, these crossings contributed an estimated 4,220 hours of additional vehicle delay. Investing in the efficient movement of northeastern Illinois' vast freight network is essential to support reliable mobility for both people and goods.

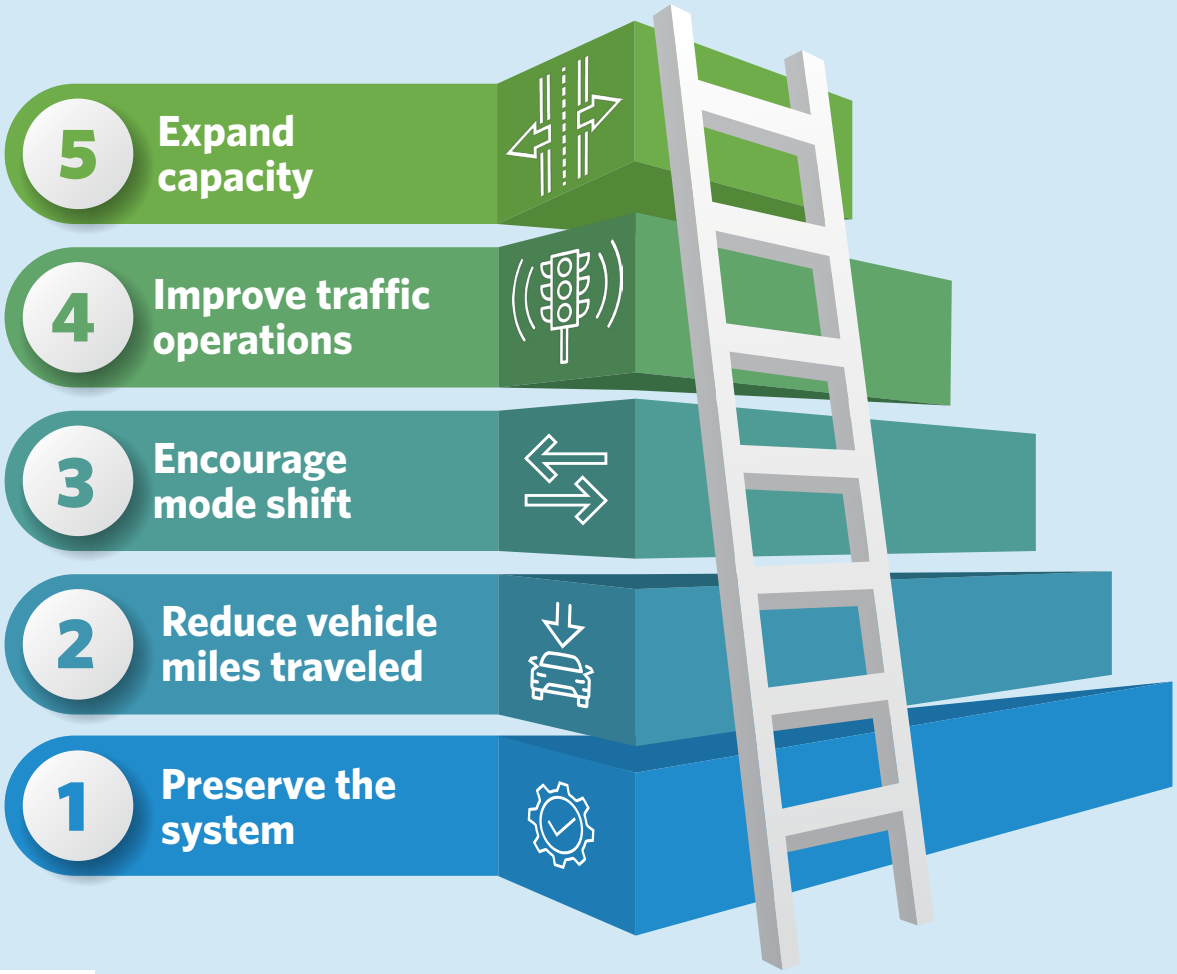
Congestion is a shared challenge that affects the transportation system's ability to provide safe, reliable, and efficient connections. The tools to address it are held by multiple levels of government, community partners, and planning disciplines. Regional efforts to mitigate congestion must be as comprehensive and multijurisdictional as its underlying causes.

Strategies for addressing congestion

To address congestion, transportation agencies should prioritize strategies that are the most effective, efficient, and practical — maximizing limited resources while delivering a better, more reliable transportation system.

The *Congestion Management Strategy Guidebook* introduces the Mobility Solutions Ladder, a framework that prioritizes optimizing the existing system and improving travel choices before expanding capacity through:

- System preservation to ensure that transportation infrastructure remains in good working condition and supports travel reliability.
- Strategies to reduce VMT and encourage mode shift to rebalance how the system is used — reducing car traffic while increasing multimodal access to destinations.
- Actions to improve traffic operations through technology and improved incident management to minimize unexpected slowdowns.



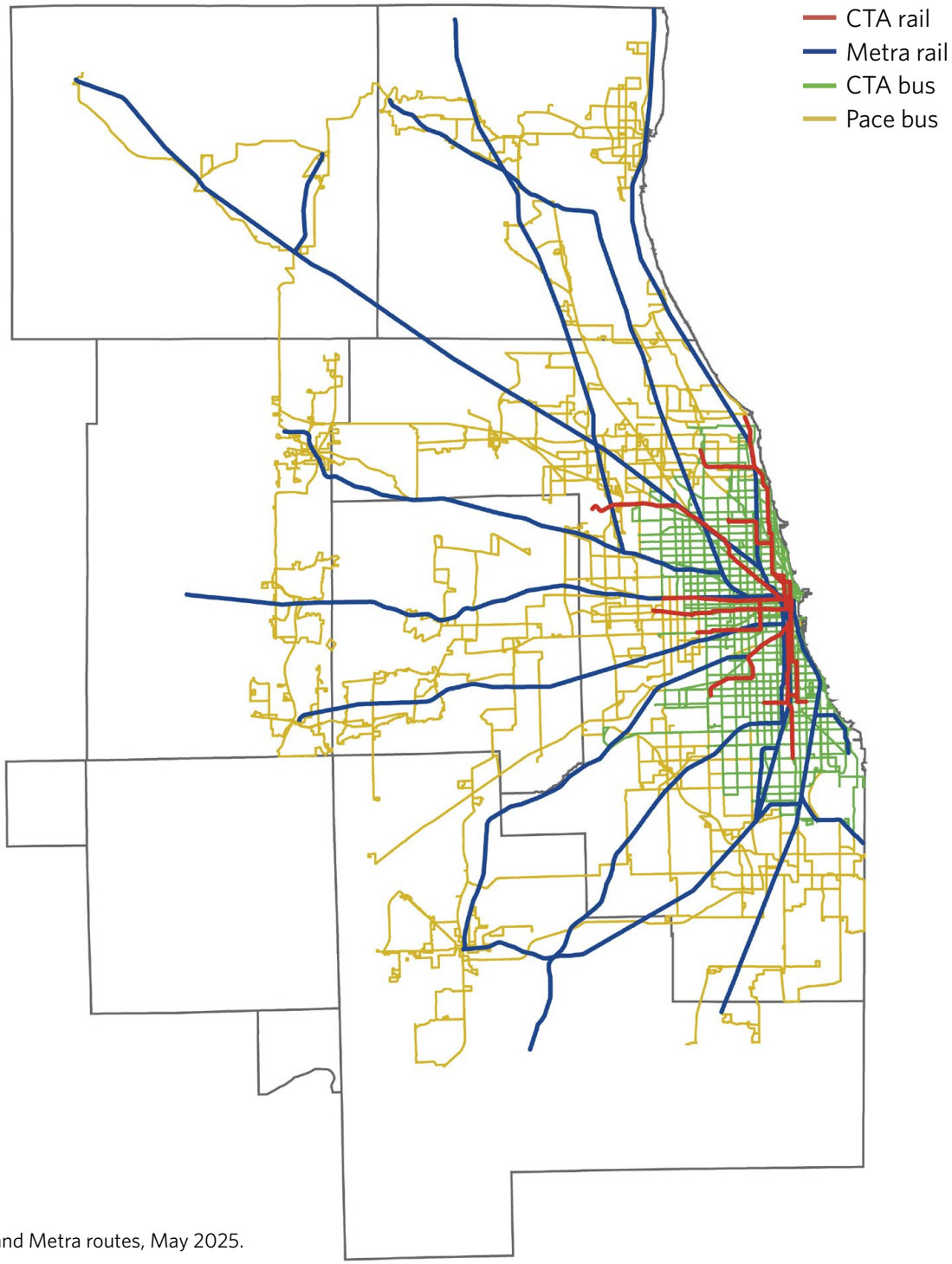
cmap.is/cmp
Together, these strategies reduce congestion and improve mobility. For more information, check out the full guidebook.

Multimodal options are essential to shift more trips to non-driving modes

Driving remains the most common way people travel in northeastern Illinois. Shifting more trips to transit, walking, rolling, and other non-driving modes is essential to reduce congestion and improve mobility across the region.

By 2050, VMT is projected to grow nearly 6 percent on interstates and up to 16 percent on arterial roads, reaching approximately 60 billion miles annually. Growth at this scale would increase congestion, lengthen travel times, and place additional strain on infrastructure maintenance needs. Investments in demand management and mode shift are essential to mitigate these impacts.

Figure 2: Public transit routes in northeastern Illinois mainly support trips to and from the urban core



Source: CTA, Pace, and Metra routes, May 2025.

The relationship between transportation and land use strongly influences how far people travel, what travel options are available to them, and how efficiently the transportation system operates overall. This is especially true for the region's transit network, which includes 11 commuter rail lines, 8 rapid transit rail lines, and 273 bus routes. Service is most frequent in areas with higher population density, particularly Chicago and its inner-ring suburbs. Since population density and land use patterns significantly determine access, transit-oriented development can make transit a viable option for more communities.[5]

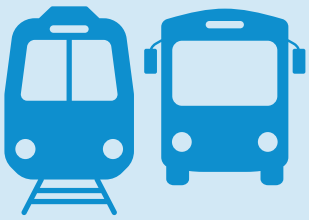
How, where, and when residents use transit is evolving. The current system is mostly designed for trips to-and-from the urban core, with the most frequent service supporting the traditional nine-to-five commute schedule. Since the COVID-19 pandemic, however, ridership recovery has been significantly higher for both the Chicago Transit Authority (CTA) and Metra during weekends and midday periods, rather than typical rush hours. To address these shifts and ensure that transit is a reliable option for a wide variety of trips, transit agencies are planning to invest in more frequent transit services that provide stronger connections across the region.



Population, jobs, and households are all expected to grow across the region

This growth will lead to greater demand for travel, especially on the region's suburban and rural roads connecting residents to job centers. Multifaceted strategies to mitigate congestion will be crucial to prevent longer, more unreliable travel times.

Sidewalks and bikeways play a critical role in supporting local mobility and first- and last-mile connections. In 2023, 38 percent of commutes were by modes other than driving alone, including transit, carpooling, walking, and biking. Many of these trips begin as a pedestrian trip, making infrastructure like sidewalks, curb ramps, and crossings essential. Addressing gaps in bicycle and pedestrian networks is critical to strengthen connections within and between communities.



Transit reform and funding in northeastern Illinois

In 2025, Governor J.B. Pritzker signed the Northern Illinois Transit Authority Act, which enacts a series of reforms and identifies nearly $1.5 billion in new revenues for the transit system. Reforms are scheduled for implementation starting in 2026 and will continue over multiple years.

Progress is needed to make transportation accessible to everyone

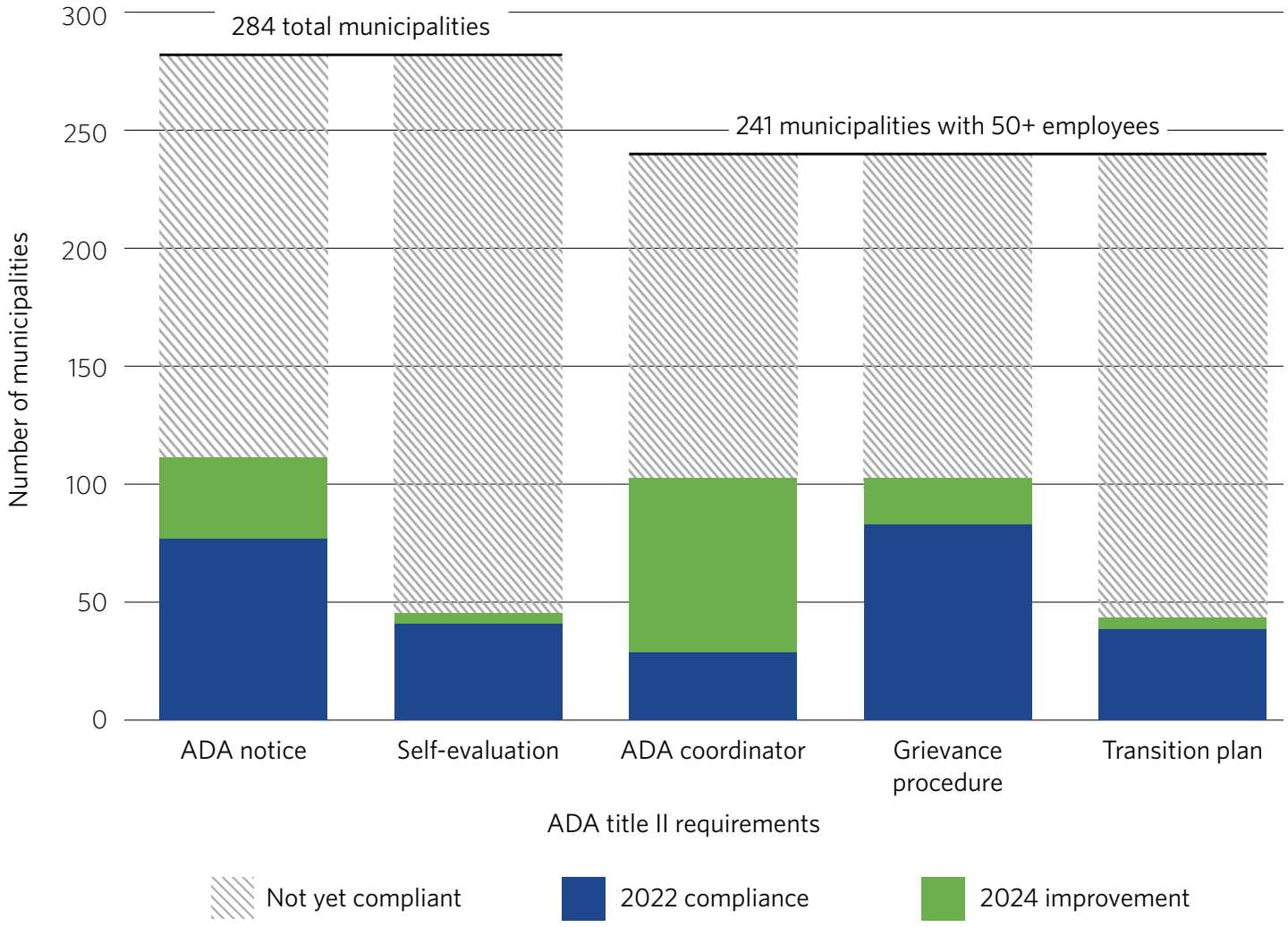
For the regional transportation system to function effectively, it must be accessible to all people, regardless of their ability. While recent investments have made crucial progress in accessibility, significant gaps remain.

Today, 1 in 5 residents with disabilities does not travel on an average day, compared to fewer than 1 in 10 residents without disabilities — signaling that there are accessibility barriers that make travel difficult or, in some cases, impossible. Addressing these shortcomings is critical to improve access to transportation and enable a higher quality of life for all.

Northeastern Illinois is home to more than 800,000 residents with disabilities — approximately 10 percent of the population. All people have the potential to experience some form of a disability during their lives, but it becomes increasingly likely with age. In recent years, the region's population of residents aged 65 and older have become a greater share of the total population — with this trend forecasted to continue for decades to come. Ensuring transportation infrastructure and services are accessible across all life stages is critical to supporting independence and mobility.

Compliance with the Americans with Disabilities Act (ADA) remains uneven. As of 2025, only 15 percent of municipalities in the region had completed an ADA-required accessibility evaluation of their roads and sidewalks, and just 18 percent of those required to have an accessibility transition plan actually had one in place. Although accessible transportation options — such as paratransit, Dial-a-Ride, and ride-hailing services — have increased in recent years, they are often fragmented, underfunded, or cost-prohibitive. Greater coordination and sustained investment are needed to create a system that works for all users.

Figure 3: Compliance with the Americans with Disabilities Act remains uneven across the region's municipalities



Source: CMAP analysis of a 2022 phone-based survey, 2024 web-scan of municipal sites, and IDOT data.

Transit is a particularly important mode for people with disabilities. While agencies have made progress improving the accessibility of transit facilities, nearly one-third of rail stations in the region remain inaccessible for people who need elevators, ramps, audio and visual announcements, or other features to navigate transit effectively. Continued investment in transit station improvements — including efforts by CTA, Metra, and Pace — will help close gaps. These investments provide benefits beyond ADA compliance, including improved safety, better wayfinding, enhanced real-time information, stronger connections between neighborhoods, and increased economic opportunity. Improving station accessibility is both a civil rights obligation and a strategic investment in the region's mobility and economic strength. Together, these improvements move the region closer to its goal of providing universal access to northeastern Illinois' expansive transit system.

Improving mobility requires more than expanding roadway capacity. Strengthening connections between people and places depends on strategic investments in congestion mitigation, multimodal networks, and fully accessible infrastructure. Achieving a more efficient and effective transportation system will require agencies, stakeholders, and communities to collaborate in new and more coordinated ways. If successful, northeastern Illinois can make transformational improvements to regional mobility and quality of life.

Ben Chargott

Client Success and Training Specialist, Access Living

Ben Chargott relies on public transit not just for convenience, but for independence. As a staff member at Access Living — a disability rights organization — with a visual impairment, Ben navigates Chicago using the CTA alongside his guide dog Keating. He relies on features like audible announcements, tactile warning strips, and accessible station design to travel safely and confidently. His daily commute on the Brown Line connects him to work, colleagues, and the broader city without assistance. Ben points to the need for more consistent accessibility features, including additional elevators and clearer real-time communication. His experience underscores that a truly effective transportation system is one that works for everyone — enabling independence, dignity, and equal access to opportunity.

"Public transit gives me independence — I can get where I need to go on my own."



Strategies to strengthen connections between people and places

Objective: Improve the reliability of the transportation system

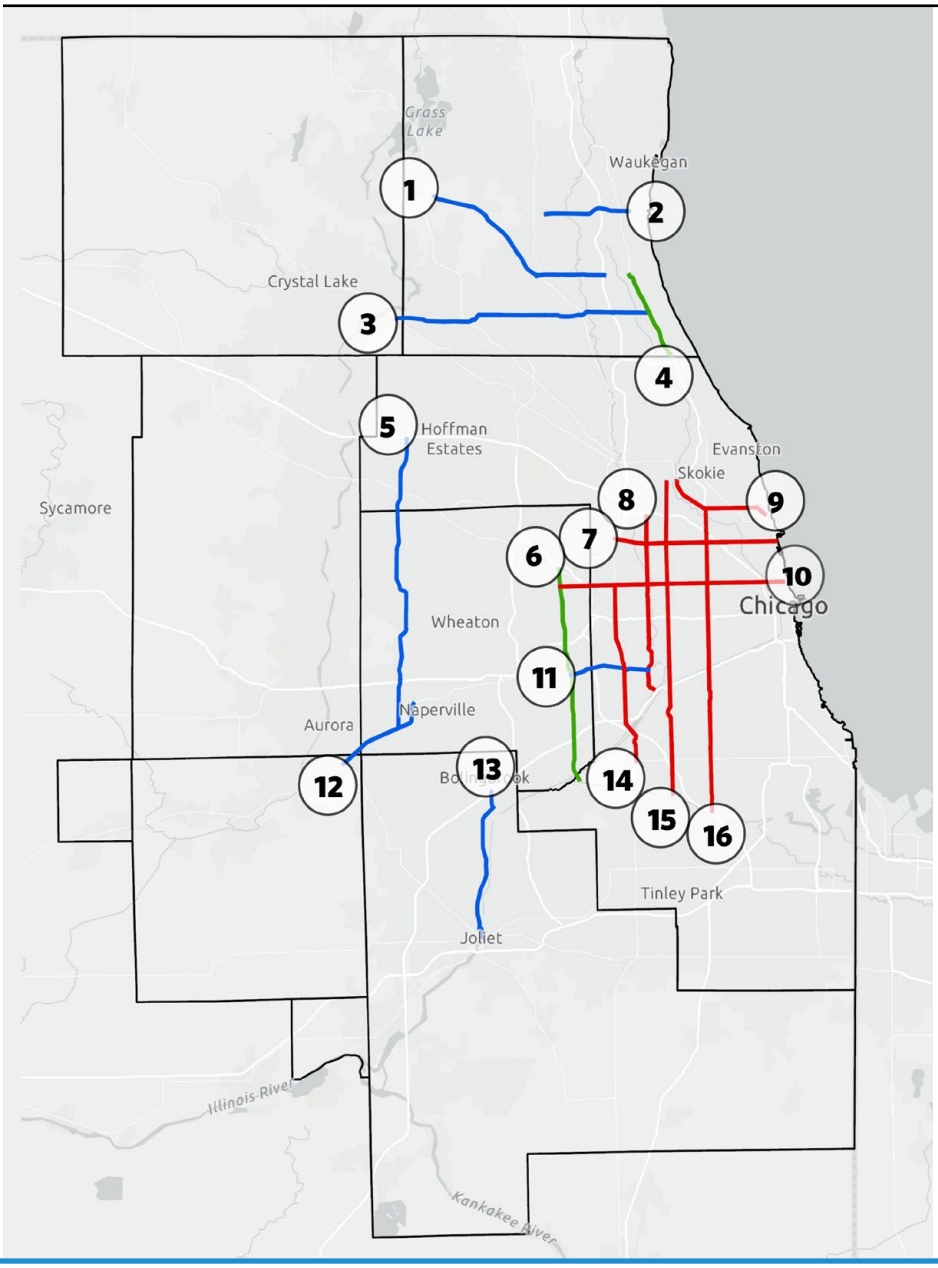
Plan proactively for asset lifecycle management to minimize disruptions

Transportation agencies should implement asset management practices that account for the full lifecycle of their facilities — from construction to maintenance and eventual replacement. Keeping roads, bridges, bikeways, and transit infrastructure in good condition reduces operational limitations that reduce efficiency (such as slow zones on rail tracks or load-posted bridges on roadways) and minimizes the risk of unexpected disruptions that create congestion.

Advance comprehensive corridor planning

Regional agencies and stakeholders should collaborate on corridor plans to manage congestion. No single agency has all the tools needed, and congestion does not stop at jurisdictional borders. Coordinated planning across agencies and disciplines can improve outcomes, particularly along the region's most congested and unreliable corridors.

Figure 4: Arterial corridors with high levels of unreliable travel times should be prioritized in regional congestion management efforts



1. IL 60
2. IL 137/Buckley Rd
3. IL 22
4. US 41
5. IL 59
6. IL 83
7. IL 19/Irving Park Rd
8. IL 171
9. US 14
10. IL 64/North Ave
11. US 34/Ogden Ave
12. US 34/Ogden Ave
13. IL 53
14. US 45
15. IL 43/Harlem Ave
16. IL 50/Cicero Ave

- Traditional suburban arterial
- Limited-access arterial
- Multi-use urban corridor

CMAP's ongoing congestion management process has identified a set of corridors that experience high levels of unreliable travel times. Moving forward, these segments should be prioritized in regional corridor planning efforts to address congestion.

Implement demand management measures

The region should explore congestion pricing. By introducing a direct cost for the use of the most congested roadways during peak periods, congestion pricing can shift travel to different times, routes, destinations, or modes. When paired with flexible work arrangements and mode shift strategies, congestion pricing has the potential to reduce vehicle travel when and where there is high demand, improving overall system reliability.

Deploy intelligent transportation systems (ITS) and operational improvements

Transportation agencies should implement ITS strategies, including signal optimization, transit signal priority, and a regional traffic management center. The region should also improve operational tactics, such as traffic incident management, to reduce unexpected slowdowns from crashes and other incidents while enhancing safety.

Objective: Invest in transit and active transportation to promote mode shift

Develop a more integrated regional transit system

As the region transitions to the Northern Illinois Transit Authority, it should focus on coordinated service planning and routing, seamless transfers, integrated fares, and strategic capital investments. Improved coordination will ensure efficient travel for riders and maximize the cost-effectiveness of capital investments.

Implement a regional rail service model

The region should provide all-day, frequent regional rail service, taking advantage of its vast rail network to serve more trip types. A regional rail approach would align with today's travel needs — supporting downtown-oriented trips, suburb-to-suburb trips, and city-to-suburb trips — while also expanding travel options on weekends and during off-peak hours.

Enable faster and more reliable bus service

The region should prioritize transit within the roadway through measures such as transit signal priority, queue jump lanes, improved stations, and, where appropriate, dedicated lanes. Transportation partners should advance planning, funding, staffing, and enforcement mechanisms for dedicated bus infrastructure, while remaining sensitive to local conditions, including freight activity, emergency access, and bicyclist and pedestrian safety.

Improve the connectivity of sidewalks, bikeways, and related infrastructure

To increase active transportation, transportation agencies should invest in well-connected networks of infrastructure for biking, walking, and other forms of micromobility. While regional active transportation systems have expanded, significant gaps remain. Additional investment in sidewalks, crossings, and local bicycle infrastructure is needed to support everyday travel and improve access to transit.

Objective: Achieve universal accessibility

Invest in transit stops, stations, and vehicles

The region should invest in the transit system to improve accessibility, safety, and the overall rider experience. Accessibility features — including audio and visual announcements, Braille and large print signs, tactile surfaces, elevators, ramps, and platform-train gap fillers — are essential. Modernized passenger information, improved wayfinding, enhanced safety and security features, and rehabilitated station facilities are critical to optimize the experience for all riders and make transit a preferred travel option for more people.

Ensure local infrastructure is fully accessible

The region should invest in sidewalks that are well-connected, in good condition, meet accessibility standards, and are maintained for safe, comfortable, and reliable use in all seasons, improving access to destinations for all. Stakeholders should improve door-to-door accessibility, ensuring safe and convenient access between transportation modes and final destinations.

Strengthening connections between people and places is the transportation system's fundamental purpose, and achieving it is a shared responsibility. But a system that connects people while putting their safety at risk is not a fully realized system. The next chapter examines the growing traffic safety crisis on the region's roads. Addressing this challenge is not separate from improving mobility — it is essential to achieving it and requires the same collaborative regional approach.

RTP indicators to track regional mobility	Today's trendline	Desired trendline
Interstate and non-interstate travel time reliability The percentage of roads in the region considered reliable by comparing the worst delays to normal travel times during morning rush, midday, evening rush, and weekends		
Incident clearance time The median number of minutes before a traffic incident (crash or other roadway obstruction) is addressed		
VMT per household The average number of miles driven by individual households in the region over the course of a year		
Trips to work via modes other than single occupancy vehicles (SOV) The share of commute trips completed by non-SOV modes, including working from home, carpooling, walking, biking, and taking transit		
Population near high-frequency transit The percentage of population residing within 1/2 mile of high-frequency transit stations		
Municipal ADA transition plans The number of municipalities with an ADA transition plan		



Prioritize safety and public health

All people deserve access to a safe transportation system. National and local trends, however, indicate the region — and the country as a whole — is experiencing a roadway safety crisis. This trend began as early as 2014, when traffic fatalities started to rise, ultimately peaking at more than 700 lives lost in 2021 — the deadliest year on the region's roads in decades. While northeastern Illinois has seen modest improvements in recent years, the region has significant progress to make to achieve zero traffic-related deaths by 2050.



Through the countywide safety action plans, CMAP and regional partners are working toward **zero traffic deaths by 2050**.

Historically, transportation planning has prioritized the fast and efficient movement of vehicles, often at the expense of safety. Today, the region's mobility, climate, and economic goals depend on investments that serve a broader range of users — including people walking, biking, and taking transit alongside those who are driving. Achieving this vision will require the region to challenge longstanding practices and treat safety as a shared responsibility across all modes and levels of government.

Understanding the factors driving the current crisis is a critical first step. This chapter examines three interconnected issues: the increasing severity of crashes and the forces behind it, the disproportionate risks faced by certain populations, and the Safe System Approach (SSA), which provides a framework for mitigating the structural causes of traffic deaths.[6] Shared responsibility is central to the SSA and reflects a system where multiple levels of government design roadways, set speed limits, make land use decisions, and enforce laws. Progress will require all of them to work from the same framework. The strategies in this chapter focus on speed management, roadway design, protective infrastructure, and prioritized investment in communities and corridors where risk is greatest.

Traffic crashes are becoming more deadly

Figure 5: Serious injuries caused by traffic crashes in northeastern Illinois

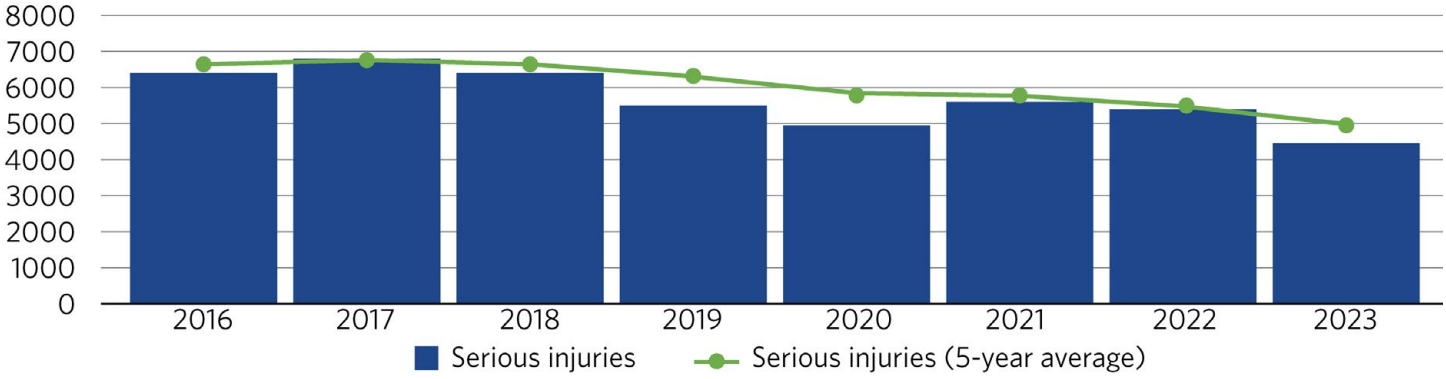
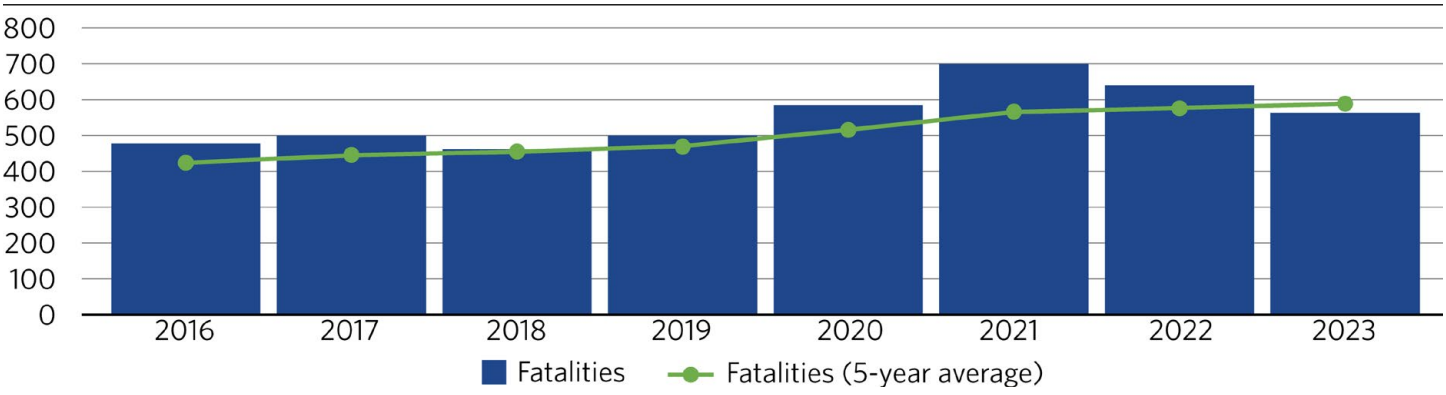
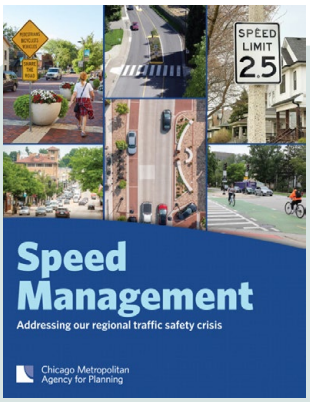


Figure 6: Fatalities caused by traffic crashes in northeastern Illinois



Deaths and serious injuries caused by traffic crashes remain significant, regionwide challenges that cost lives and devastate local communities. Following the onset of COVID-19, the region experienced a sharp increase in traffic fatalities alongside a decline in serious injuries. In subsequent years, crashes resulting in serious injuries have declined but traffic fatalities remain elevated — indicating that crashes are becoming more deadly. These grave outcomes cost lives and send the region in the opposite direction of its safety targets.

Changes in the size, weight, and shape of the vehicle fleet have made crashes more deadly. Consumer demand for larger vehicles has grown steadily over the past 50 years. In 1975, smaller vehicles like wagons and sedans accounted for about 80 percent of vehicles produced nationally; by 2021, that share had declined to approximately 30 percent. Meanwhile, larger vehicles such as SUVs increased from 2 percent to more than 55 percent of vehicles produced. In addition to being larger and heavier, these vehicles often have higher and more blunt front ends, which increase the force of impact in collisions. As a result, these changes increase the kinetic energy in crashes — resulting in more fatal outcomes, even at lower speeds.



The Speed Management Report explores the factors that contribute to speed-related traffic safety risks and provides recommendations on road design, speed limits, education, and fair enforcement.

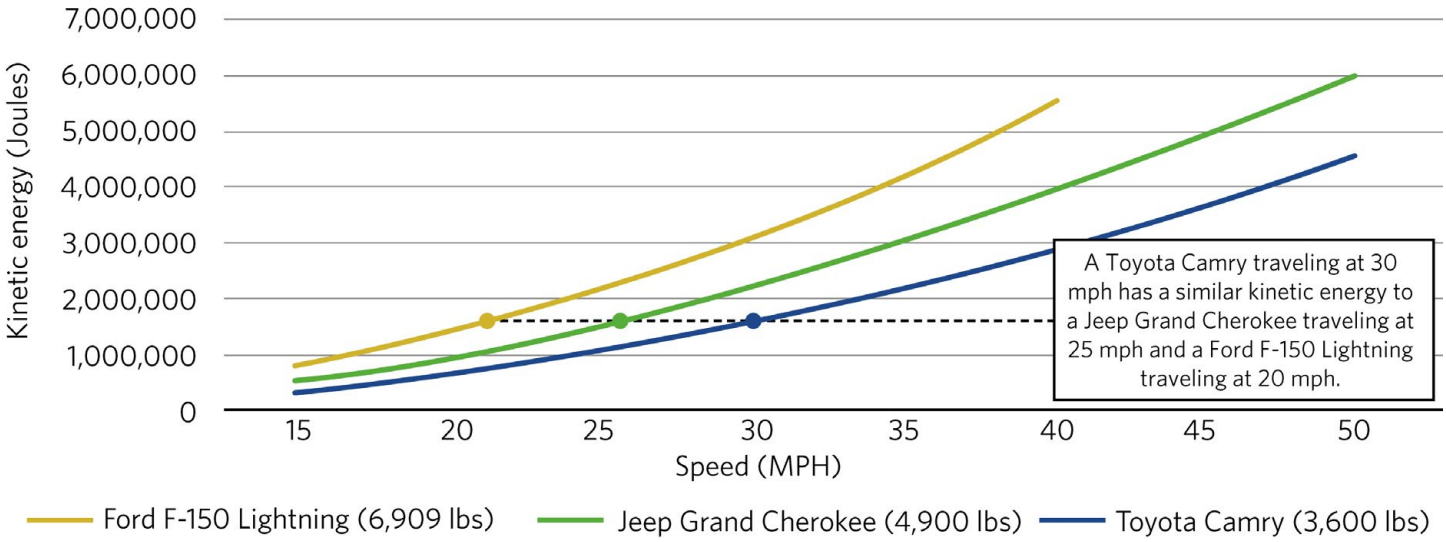
What is kinetic energy, and why does it matter in traffic safety?

Kinetic energy is the energy embodied in a moving object, such as a vehicle in motion. The Safe System Approach aims to reduce the kinetic energy in crashes and prevent crashes from being fatal by reducing the speed and/or mass of a vehicle.

Speeding is also contributing to the increasing number of fatalities. From 2019 to 2023, speed accounted for more than 43 percent of traffic fatalities — making it a leading cause of deadly crashes.[7] Speed-related fatalities increased sharply during the pandemic and remain above pre-pandemic levels.

Speed limits play a critical role in improving safety outcomes. Higher speeds affect a driver's reaction time and field of vision, decreasing their ability to avoid hazards in the roadway and increasing the distance needed for a vehicle to fully stop to avoid a crash. Current speed limits do not account for the recent trend towards larger and heavier passenger vehicles. Ultimately, speed limit policies and speed management strategies should prioritize the safety of all road users, especially in highly populated areas where pedestrians, bicyclists, and transit users share the roadway.

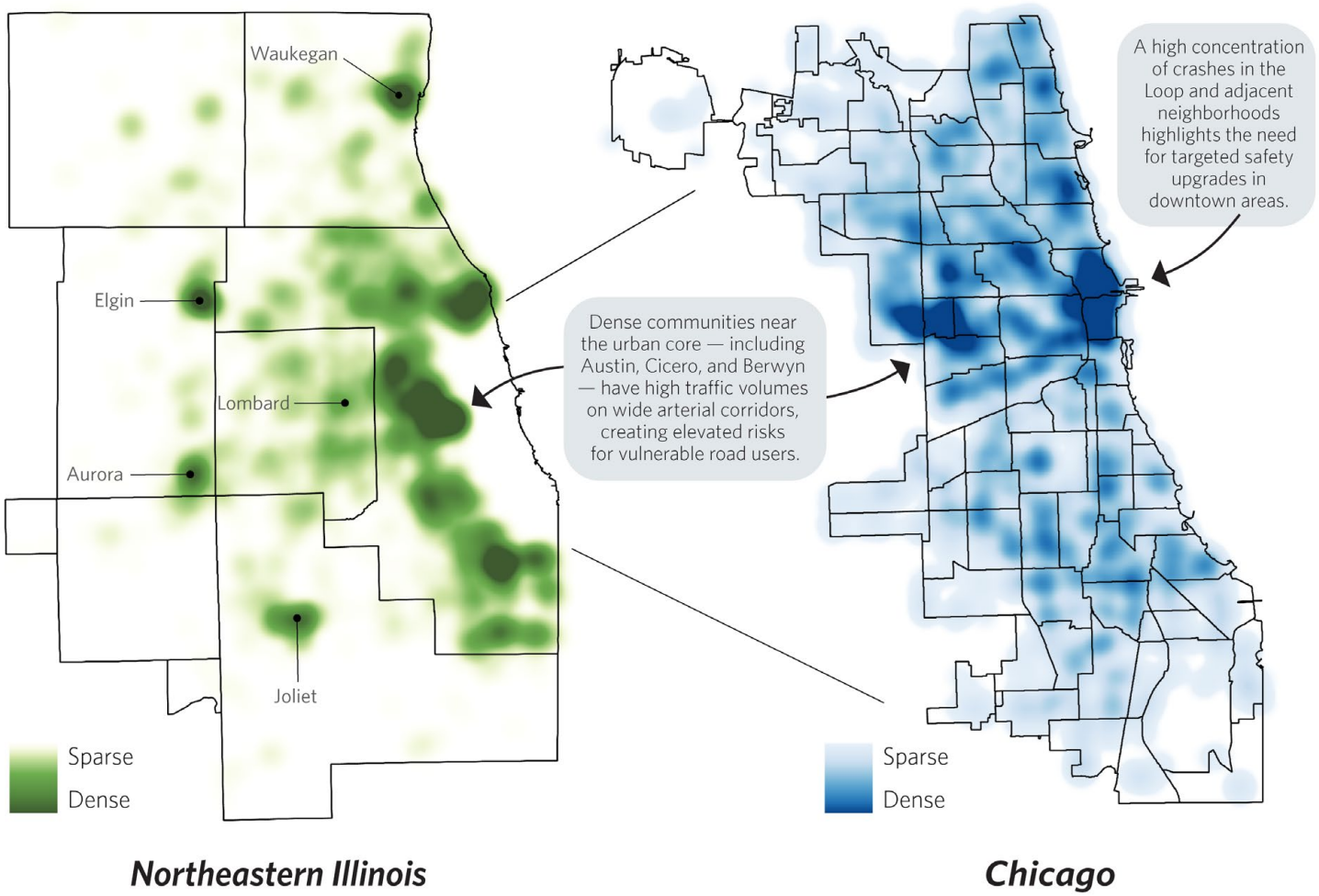
Figure 7: When traveling at the same speed, heavier vehicles carry more kinetic energy than lighter vehicles



Source: CMAP analysis of car and driver and EPA data, 2022.

Figure 8: Pedestrian and bicycle crashes are concentrated in city and suburban centers, 2020 to 2024

Heatmap of bicycle and pedestrian fatal and serious injury crashes, 2020-2024

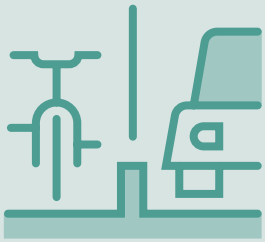


Note: Scales differ between the two maps. Crash densities are not directly comparable.
Source: CMAP analysis of IDOT crash report data

Some road users experience greater risk and harm

Traffic safety affects all road users, but fatal and serious injury crashes disproportionately affect certain segments of the population. Despite being involved in less than 3 percent of all traffic crashes, bicyclists and pedestrians account for more than 25 percent of crash fatalities. People of color are also overrepresented in harmful safety outcomes, with Black residents experiencing a traffic fatality rate of more than 14 deaths per 100,000 people — nearly triple the rate for white and Hispanic residents. Children and older adults also face elevated risks. These outcomes are often the result of greater exposure to crash risk, such as long commutes or dependence on modes like walking and biking.

Following the onset of COVID-19, crashes involving bicyclists and pedestrians initially declined, likely due to fewer people driving in response to pandemic restrictions. However, between 2020 and 2023, fatalities among these groups increased and remain above pre-pandemic levels. People outside of vehicles are particularly vulnerable to serious or fatal injuries when involved in a crash because they lack the external protection that cars provide. Infrastructure such as medians, connected sidewalks, improved crosswalks, and protected bike lanes significantly reduce these risks.



What we heard from you

In the RTP's public questionnaire, both drivers and bicyclists ranked protected bike lanes as a top priority.

Terry Witt
Retired veteran and bicycle advocate

At 80 years old, Terry Witt sees bicycling as more than recreation — it is a pathway to safer streets, better health, and stronger communities. A longtime Bartlett resident, Terry uses local trails, side paths, and bike lanes for errands, exercise, and connections to Metra service into Chicago. He credits biking with improving his heart health, physical fitness, and mental clarity, while also reducing travel costs and reliance on cars. Terry values recent investments that make biking safer, including separated paths, raised crossings, and improved intersections, but believes continued advocacy is needed to make streets safer for everyone. His experience highlights how thoughtful transportation design can save lives, expand options, and support wellbeing at every age.

"The infrastructure is really being built for safety — that's what helps people feel comfortable getting on their bikes."



Some segments of the population also face higher exposure to safety risks. Historical policies and practices that entrenched neighborhood segregation by race, ethnicity, and income continue to affect traffic safety outcomes today. High-volume and high-speed roads are common in areas with a high proportion of low-income residents and people of color, increasing traffic safety risks for those who live there. People in these communities also tend to have longer commutes and rely on non-driving modes, like walking, biking, and taking transit — all of which increase their exposure to fast-moving vehicles. Strategic planning and prioritized resources to save lives are especially crucial in areas where risk and harm are greatest.

Improving traffic safety is essential for the region's overall success. In response to worsening trends, transportation partners have adopted the SSA, a framework that addresses safety in complex systems by preventing crashes, reducing severity, and ultimately saving lives.

The SSA has been effective in preventing fatalities and serious injuries from crashes. Sweden, largely credited with pioneering the implementation of SSA strategies, reduced traffic fatalities by approximately 50 percent between 2000 and 2014 after implementing SSA practices. New Zealand, despite growing traffic volumes and prior failures to meet traffic safety targets, also achieved the lowest roadway fatality year in decades just a few years after implementing an action plan based on the SSA. Multiple other countries that have advanced comprehensive and systemic approaches to traffic safety have seen safety outcomes improve significantly — contrasting sharply against recent trends in our region, state, and broader nation.[8]

Figure 9: The Safe System Approach is a holistic and comprehensive approach to address roadway safety



Source: FHWA, USDOT.

CMAP and its partners are applying the SSA to planning and implementation efforts. The six countywide safety action plans developed through CMAP's Safe Travel for All program were an important step to integrate SSA principles and improve safety in the region.[9] These plans emphasize proactive, data-driven strategies and expand the range of tools and funding available to improve safety. Continued regional alignment will be critical to sustaining progress.

Preventing fatal and serious injury crashes requires a collaborative and multifaceted approach. Policies and practices that prioritize safety must be embedded in roadway design, land use decisions, and system operations. Education and the fair enforcement of violations also play important roles in fostering a culture of shared responsibility.

Traffic-related injuries and deaths are unacceptable and preventable. Reducing risk requires layered interventions, including safer roadway design, context-sensitive speed management, protective infrastructure, and a shared commitment to safety. Through sustained investment and regional collaboration, northeastern Illinois can achieve a safer transportation system.

Strategies to prioritize safety and public health

Objective: Reduce fatal and serious injury crashes across all modes through a Safe System Approach

Develop a regional Safe System Approach framework that fosters a culture of shared responsibility

Building on the 2025 countywide safety action plans, the region should develop a regional safety framework that incorporates local priorities and federal guidance. This framework should inform transportation policy and practice, while fostering a culture of traffic safety among transportation professionals and road users.

Integrate multimodal street design principles into policy, planning, and design

Transportation agencies should embed SSA principles into the design, construction, and maintenance of multimodal roadways. Ensuring safe access for people walking, biking, using mobility devices, and accessing transit will improve safety, expand mobility, and support public health through increased physical activity and reduced pollution.

Objective: Manage speeds to match context and reduce crash severity

Set context-appropriate speed limits

Transportation agencies should evaluate and adjust speed limits to recognize their impact on traffic safety, especially in urbanized transportation corridors with high levels of pedestrian and bicyclist activity. Roadway context and operational features should inform posted speed limits and prioritize reduced risk of injury.

Control unsafe vehicle speeds through roadway design and speed-management tools

The region should expand the use of traffic-calming measures and multimodal street design principles that encourage appropriate speeds and reduce crash severity. These include raised pedestrian crossings, speed humps, curb extensions, speed feedback signs, signal timing, and more. Transportation agencies should review standards and practices to support the broader deployment of these tools.

Objective: Prioritize safety investments where risk and harm are greatest

Implement protective infrastructure that reduces crash risks

Transportation agencies should expand the use of protective infrastructure such as sidewalks, raised medians, and concrete barriers for bike lanes, as well as improve signals and crossings to provide near-term safety benefits. Investments should be prioritized in areas with the highest levels of safety risks and multimodal conflict.

Advance proactive, systemic safety improvements along corridors and at intersections with an increased risk of severe crashes

While crash history is one important indicator of safety risks, it is critical to understand what roadway or intersection qualities contribute to crashes and to use that knowledge to identify and implement solutions systemically to prevent future crashes in locations that share those features.

Invest in railroad and track-adjacent infrastructure to improve visibility and access control for safer crossings

Transportation agencies should enhance safety measures at rail crossings through improved signaling, lighting, and auditory warning systems. Technologies that support emergency response — such as real-time routing during train blockages — should be deployed. Protections at informal crossing locations should also be implemented to reduce high-risk exposure. Where possible, separate road users from transit passengers boarding trains using over- or underpasses.

Strengthen safety decision-making through improved data and transparency

The region should ensure that data on traffic safety and roadway characteristics are easily accessible, continuously improved, and as complete and accurate as possible. Safety trends should be regularly analyzed and summarized for stakeholders to support data-driven decision-making that aligns with improved safety outcomes.

A safer transportation system is foundational to achieving the goals of this plan. People will not walk, bike, or take transit in large numbers unless those options feel safe. Reducing emissions depends on mode shift, and mode shift depends on safety. Investments in safe roadway design, speed management, and protective infrastructure also improve air quality, reduce noise pollution, and support public health. The next chapter explores those connections in greater detail.

RTP indicators to track traffic safety

	Today's trendline	Desired trendline
Traffic fatalities The five-year rolling average of traffic fatalities in the region	↗	↘
Traffic-related serious injuries The five-year rolling average of traffic-related serious injuries in the region	↘	↘
Speeding-related fatalities The number of traffic fatalities where speeding is cited as a major cause	↗	↘
Non-motorized traffic fatalities and serious injuries The number of traffic fatalities and serious injuries that involve pedestrians and cyclists	↗	↘
Locally adopted safety action plans The number of local governments that have formally adopted local safety plans	↗	↗





Mitigate pollution and invest in resilient infrastructure



Transportation plays a central role in northeastern Illinois' climate and environmental outcomes. As a major source of emissions, the transportation sector contributes to air pollution that harms public health and affects the climate. At the same time, strategies to reduce emissions — especially from car and truck travel — can help northeastern Illinois meet regional emission-reduction targets. Meeting these targets is crucial to mitigate the effects of climate-related harms, such as flooding and extreme heat.

The region's transportation system is highly vulnerable to the effects of a changing climate. Recurring flooding and extreme heat threaten residents' wellbeing as well as the system's reliability, asset longevity, and fiscal outlook. This chapter examines both dimensions of that relationship: transportation as a source of pollution affecting public health and the environment, and the transportation system as infrastructure that must be made more resilient to the conditions ahead. Coordinated regional action across public and private sectors is essential to address both challenges — reducing the emissions the transportation system generates while protecting the system from climate impacts. Together, these efforts will help ensure continued access to the transportation infrastructure and services that northeastern Illinois residents and businesses depend on for decades to come.

LaShawn Miller

Founder of Finding Justice, community garden leader

LaShawn Miller views transportation, health, and the environment as deeply connected. At Finding Justice — a flower and vegetable garden on Chicago's West Side — she works to improve community wellbeing through fresh food, outdoor activity, and education. Living just four blocks away, she often walks to the garden and uses transit to reach destinations across the city. She also encourages residents to pick up produce locally, reducing the need for longer car trips. Her experience shows how transportation choices affect climate outcomes, public health, and daily quality of life — especially when communities have safe, reliable ways to walk, bike, and use transit.

"I try to keep a low carbon footprint — walking and taking transit is part of that."



Transportation is a major source of regional emissions

Transportation contributes to air pollution in several ways. Gasoline and diesel-fueled vehicles release gases like carbon dioxide and methane that affect the climate. Transportation activity produces air pollutants like ozone, fine particulate matter, and nitrogen oxides, which harm air quality and public health. Reducing these forms of pollution from the transportation sector is essential to meet climate goals, improve air quality, and protect public health — especially in areas near high levels of transportation activity.

ON TO 2050 calls for the region to reduce greenhouse gas (GHG) emissions by 80 percent between 2005 and 2050. The *Comprehensive Climate Action Plan for Greater Chicago* calls for a similar but more ambitious target to reduce GHG emissions by 86 percent by 2050. Achieving these goals requires deep reductions across all sectors, including reducing regional transportation emissions by 91 percent. The region has made progress, having reduced transportation emissions by 31 percent from their 2005 peak. Fully achieving this goal by 2050, however, will require broader and more sustained regional action across sectors.

In 2019, transportation accounted for roughly one-third of regional GHG emissions, making it the second largest emitting sector. On-road vehicles produce the majority of transportation emissions, with three categories accounting for 97 percent of those emissions: passenger cars, passenger trucks, and freight trucks.[10]



1/3 of regional GHG emissions come from the transportation sector

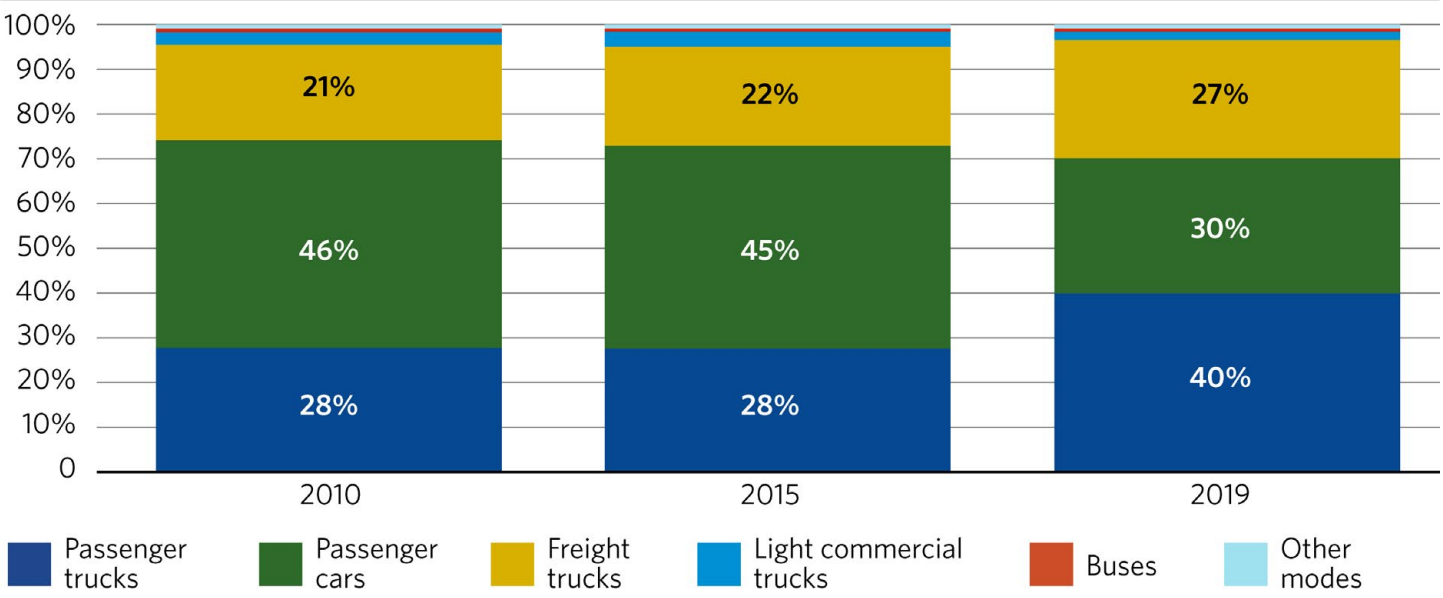


83 percent of transportation emissions come from on-road travel

Source: CMAP 2019 GHG inventory.

Recent trends indicate that consumer preferences are changing the composition of transportation emissions. Between 2010 and 2015, passenger cars produced the largest share of on-road emissions. From 2015 to 2019, however, that share declined and passenger trucks became the largest source, increasing from 28 to 40 percent of all on-road emissions.[11] Larger vehicles like SUVs and trucks emit more air pollution than smaller passenger cars. This shift in consumer preferences undercuts recent gains in vehicle fuel efficiency and complicates the region's ability to meet its emission-reduction targets.

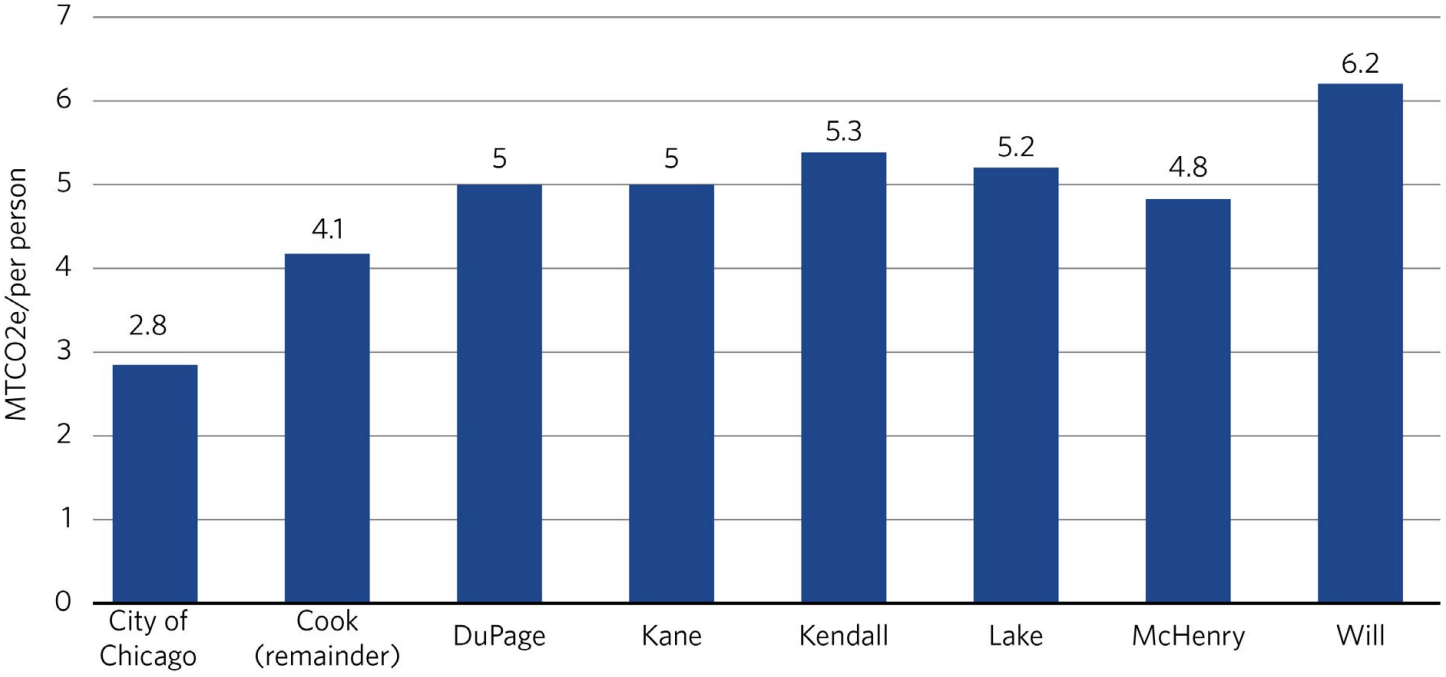
Figure 10: Trucks are becoming a greater share of the region's on-road transportation emissions



Source: CMAP Regional greenhouse gas emissions inventory (2019).

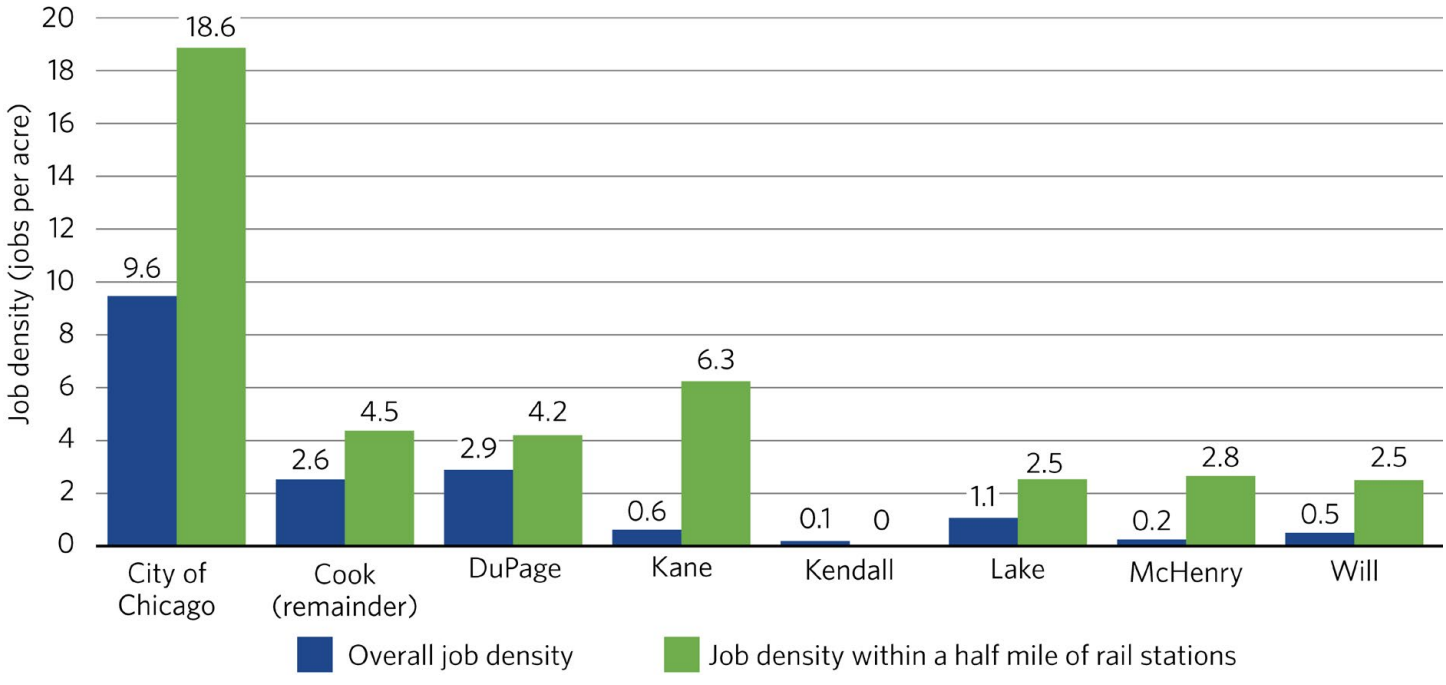
Land use and development patterns also affect regional emissions. Residents' travel options are shaped by the built environment where they live, work, and spend time. Less dense areas tend to have destinations spaced farther apart and fewer multimodal transportation options. As a result, residents in these areas often take longer trips and rely more heavily on personal vehicles, resulting in higher transportation-related GHG emissions per capita. By contrast, denser, transit-oriented development supports shorter trips and greater access to transit, walking, and rolling. Enabling more multimodal travel is critical to the region's ability to meet its emission-reduction goals.

Figure 11: Per capita transportation emissions vary by county due to land use and development patterns



Source: CMAP 2019 GHG inventory

Figure 12: Job density is higher near transit

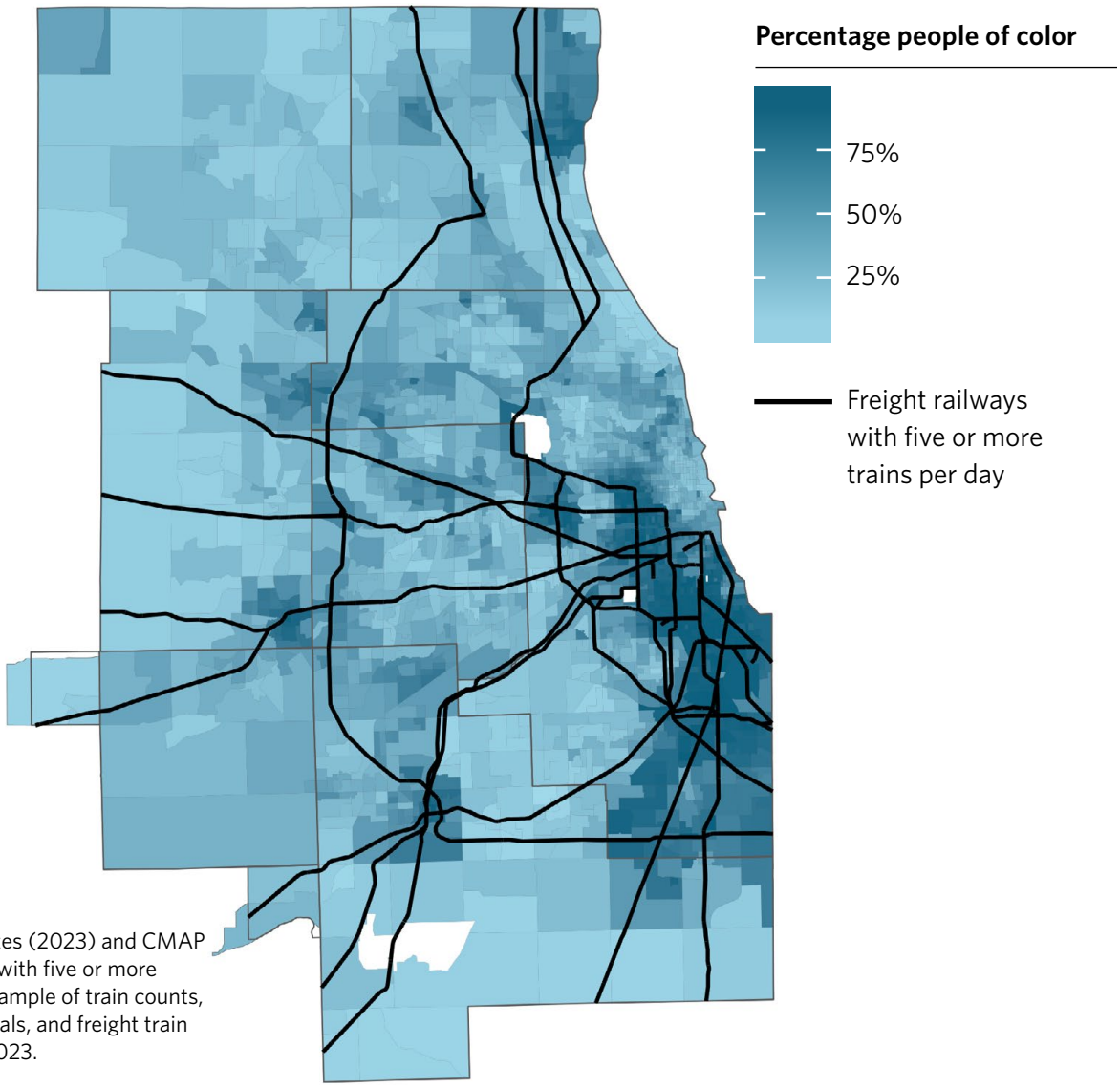


Air pollution from transportation negatively affects public health

In addition to GHGs, transportation emits pollutants that degrade air quality. Ozone, fine particulate matter, and nitrogen oxides have harmful effects on respiratory health. Despite progress, the region still fails to meet federal ozone standards established through the Clean Air Act, meaning that pollution levels continue to exceed health-based targets. Nitrogen oxides have declined because of cleaner fuels and more efficient engines, but not enough to consistently prevent unhealthy air quality days. Prolonged exposure to these pollutants can cause serious long-term health effects, including heart disease, some cancers, cognitive impairment, and premature death.[12]

Some communities experience higher exposure to transportation-related air pollution because of their proximity to highways, intermodal yards, rail corridors, ports, and airports. These communities often have high proportions of low-income residents and people of color. For example, census tracts where more than 80 percent of residents are people of color are, on average, about one mile from the nearest freight rail line (Figure 13). By contrast, census tracts where 20 percent or fewer residents are people of color are, on average, 4.25 miles from the nearest freight line.[13] These disparities reflect the legacy of historic policies and practices that reinforced segregation by race and income — pushing marginalized groups toward more environmentally hazardous areas. Looking ahead, planning efforts should prioritize communities that are disproportionately burdened by transportation-related pollution.

Figure 13: More polluting freight railways are found in communities with higher levels of residents of color



Source: ACS 5-year estimates (2023) and CMAP analysis of freight railways with five or more trains per day, based on a sample of train counts, activity at yards and terminals, and freight train flows through the region, 2023.

Extreme weather threatens regional mobility

While northeastern Illinois' transportation system contributes to air pollution, it is also increasingly affected by a changing climate. The region's main climate-related transportation challenges are more frequent and severe flooding and more days of extreme heat — hazards that disrupt operations and threaten residents' ability to travel safely and reliably.

Extreme heat is expected to become more common in northeastern Illinois. The number of days above 95 degrees Fahrenheit is projected to rise from an average of 2 to approximately 45 days per year by the turn of the century.[14] While all residents will experience these high temperatures, some populations will face disproportionate burdens, including bicyclists, pedestrians, and transit riders. Most bus stops in the region are unsheltered — including 79 percent of CTA bus stops and 92 percent of Pace bus stops — leaving riders exposed to the elements.[15] Other groups, including older adults, young children, and some people with disabilities, are especially vulnerable to the health risks of extreme heat. As dangerously hot days become more common, providing shade, shelter, and other cooling measures will be increasingly important.

The region's transportation system is also vulnerable to flooding, which disrupts operations, blocks emergency vehicles, damages infrastructure, and makes travel more dangerous and less reliable. In northeastern Illinois, 34 percent of non-local roads and 8 percent of bridges face high or very high flood risk. In the future, an even greater share of infrastructure will be vulnerable as storms become more intense and frequent.[16]

When flooding happens, everyone is affected. Many transit stops in northeastern Illinois are outside and at ground level. When these locations are inundated with water, people who rely on transit face mobility challenges. Drivers also get stuck on flooded roads, creating dangerous and time-consuming conditions. As vehicles reroute to seek alternative roads, local congestion increases, causing delays for commuters, emergency responders, and freight movement.

In addition to disrupting travel, recurring flooding damages roads, bridges, rail lines, and other transportation assets. The region already faces significant needs related to aging infrastructure, and more frequent flooding will compound those challenges and further strain the system's long-term financial outlook. Solutions that mitigate flooding and reduce and manage stormwater are essential to protect the reliability of northeastern Illinois' transportation infrastructure.



34%
of non-local roads roads have high or very high flood risk



36%
of CTA stations and 31% of Metra stations are exposed to flooding



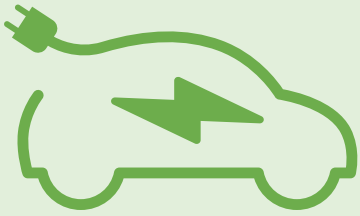
64%
of CTA bus stops and 47% of Pace bus stops are exposed to flooding



61%
of regional trails have high or very high flood risk

Reducing pollution and improving resiliency is critical

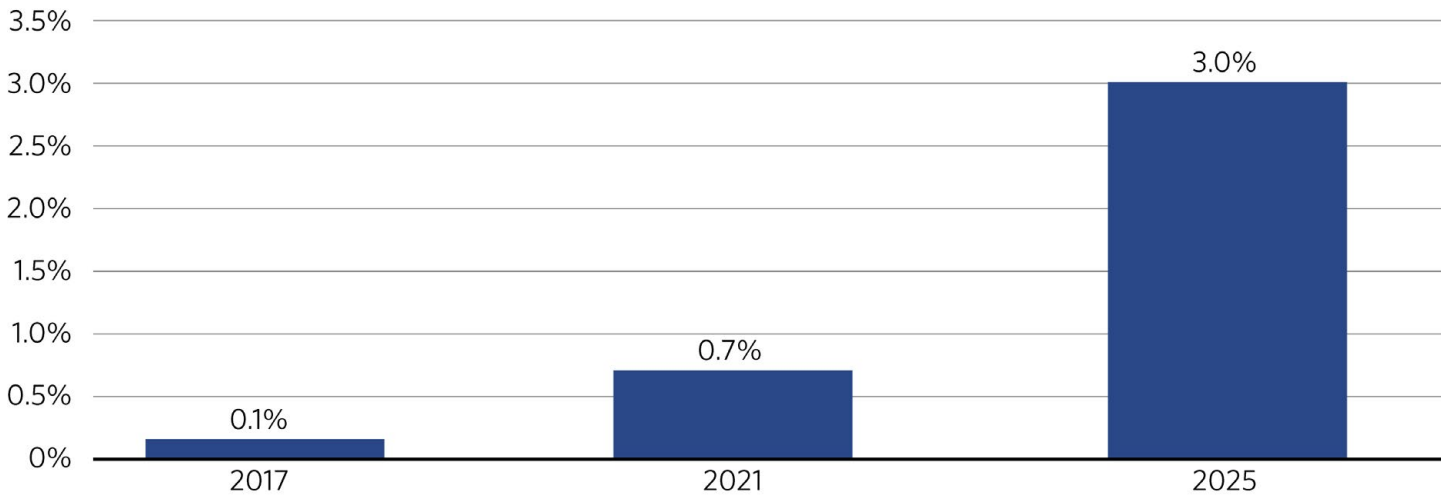
To protect northeastern Illinois' environment, communities, and transportation infrastructure, the region should reduce emissions and improve resilience. Cutting emissions from the transportation sector improves air quality and public health outcomes. Because on-road travel is the largest contributor to transportation emissions, reducing VMT and shifting more trips to lower-carbon modes like transit and active transportation supports the region in meeting its emission-reduction targets. While recent increases in electric vehicle adoption are promising, accelerating the transition to electric vehicles is essential to achieving the region's climate goals.



106,000+

new electric vehicles registrations between 2017-2025

Figure 14: Electric vehicles are becoming a larger share of the region's passenger fleet



Source: Illinois Secretary of State.

How can green infrastructure be integrated into the transportation system?

Green infrastructure incorporates natural features to help manage stormwater. Solutions like bioswales, rain gardens, and permeable pavements can prevent local streets from becoming flooded. Trees and vegetation can offer additional climate benefits, such as providing shade that protects people from extreme heat.

The region should also invest in transportation infrastructure that is resilient to flooding and extreme heat. Considering climate projections in transportation project design, maintenance, and operations can improve the system's resilience under extreme weather conditions. For example, recent studies have found that incorporating climate-resilient features can decrease maintenance frequency by 20 percent and extend pavement life by up to 15 years.[17] Resilient infrastructure includes elevated bridges and roadways, naturalized detention basins, upgraded drainage systems, and other improvements. Additionally, strategic project siting and the use of nature-based solutions further reduce flood risk and provide shade, helping protect residents from extreme heat.

Looking ahead, the region has potential to leverage the transportation system to advance the climate goals established in ON TO 2050 and the Comprehensive Climate Action Plan. Through targeted investment and strategic planning, northeastern Illinois can become a national example of resilient transportation infrastructure that reduces pollution, supports mobility, and protects public health.

Strategies to mitigate pollution and invest in resilient infrastructure

Objective: Reduce emissions and improve public health

Accelerate the shift toward electric passenger vehicles and trucks

The region should accelerate the adoption of electric passenger and freight vehicles to reduce emissions from on-road travel. Local and state agencies should use a mix of requirements and financial incentives for both residents and the trucking industry to achieve a fully electrified vehicle fleet that aligns with regional climate goals.

Build out charging infrastructure to support vehicle electrification

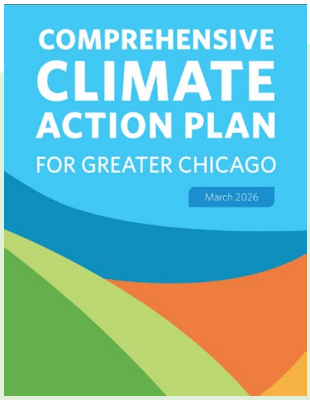
The region should expand the electric vehicle charging network for both passenger and freight travel to support rapid vehicle electrification. Transportation partners should invest in chargers along expressways and major routes, new and existing developments and multifamily housing, commercial and industrial freight hubs, and curbside locations. Agencies should collaborate with utilities to ensure sufficient power supply through the expansion of distributed energy resources.

Modernize transit rolling stock to reduce emissions and improve system performance

The region should replace aging transit vehicles to reduce GHGs per passenger mile, improve air quality, and support safety and reliability across the network. While full transit fleet electrification remains a long-term goal, current operational constraints — including shared freight rail infrastructure, existing track agreements, and limited availability of electric vehicles and locomotives — require a flexible approach.

Reduce VMT through mode shift

The region should reduce emissions by improving the efficiency of both passenger and freight movement. Because on-road travel produces most transportation emissions, the region should prioritize investments that shift trips from driving to lower-emission forms of travel, such as transit, walking, and rolling. Complementary efforts to manage congestion more effectively can further reduce VMT and related emissions.



The Comprehensive Climate Action Plan for Greater Chicago identifies 14 strategies to reduce transportation emissions. These strategies focus on electrifying vehicles across all modes, expanding the use of low-carbon fuels, and reducing vehicle miles traveled through compact land use, accessible transit, and active transportation options. Together, these actions reduce emissions while improving public health, increasing access to opportunity, and strengthening the economy.

Reduce pollution from transportation activity where harm and risk are greatest

The region should target investments in projects and programs that reduce particulate matter, ozone, and nitrogen. These investments should be prioritized in areas with the highest concentrations of pollutants to improve air quality and public health.

Use low carbon materials

Transportation partners should increase the use of concrete, steel, and other materials from low-to-zero emission production methods. "Buy clean" procurement policies and increased use of low-carbon materials in transportation projects reduce lifecycle emissions and support regional climate goals.

Objective: Increase the resilience of infrastructure vulnerable to extreme weather

Use best available data in project design

Transportation agencies should design and build transportation assets to withstand more frequent and severe storms. The region should rely on the best available data on climate vulnerability and future projections when planning constructing infrastructure.

Incorporate resilience into transportation planning and programming

The region should integrate resilience into long-range planning, management, and investment prioritization. When programming transportation funds, agencies should incorporate resilience criteria project evaluations and scoring.

Incorporate green infrastructure into stormwater management projects

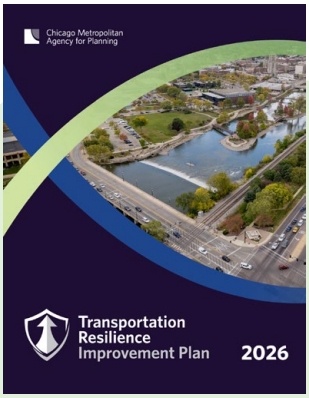
The region should invest in constructing and maintaining bioswales, stormwater detention facilities, permeable pavement, and other forms of green infrastructure. Combining these approaches with conventional stormwater systems, such as drains and sewers, reduces heat impacts while improving air and water quality, habitat, and quality of life.

Invest in infrastructure at transit stops and stations that protect riders from extreme weather

The region should expand bus shelters, tree canopy, and other protective features to reduce exposure to extreme weather and support safe, reliable transit. Investments that improve transit rider comfort and safety during extreme temperatures and severe storms are important for health, safety, and accessibility.

Improve communication tools for disruptions and preparedness

The region should assess and strengthen communication tools to respond to extreme weather, such as rerouting traffic and transit during flooding. Effective communication among agencies, operators, residents, emergency responders, and neighboring communities is critical to minimize disruptions and improve safety.



In partnership with regional stakeholders, CMAP developed the **Transportation Resilience Improvement Plan (TRIP)** to identify vulnerabilities in the regional transportation system and make it more resilient to extreme weather. TRIP will be adopted by reference through the 2026 RTP's adoption process

TRIP provides a roadmap to inform transportation planning and decision-making throughout the region. It meets the Federal Highway Administration's Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation Program requirements for a resilience improvement plan — and will help position northeastern Illinois to compete for program funds as well as other resilience funds.

Objective: Protect and enhance natural resources

Design and maintain assets to reduce stormwater runoff and improve water quality

The region should minimize runoff that pollutes the region's lakes, rivers, and wetlands by incorporating green infrastructure and other stormwater best practices into transportation projects. Operations and maintenance should also follow best practices for snow and ice control to reduce water pollution from road salt.

Minimize infrastructure expansion impacts on natural assets

Transportation and land use planners should work together to assess and reduce the effects of infrastructure expansion on wetlands, natural habitat, and open space. Conservation strategies applied during planning and design prevent encroachment, fragmentation, and further degradation of high-quality natural areas, which provide benefits like recreation, flood mitigation, groundwater recharge, and biodiversity.

The investments in this chapter are not only environmental imperatives — they are also economic ones. A transportation system that floods regularly fails to serve riders reliably and carries growing resilience-related costs. Coordinating those investments across agencies, watersheds, and jurisdictions is what makes them effective. The next chapter examines how transportation investment and economic opportunity are intertwined, and what it means when the system's benefits are not distributed equally across the region.

RTP indicators to track climate goals	Today's trendline	Desired trendline
Transportation GHG emissions GHG emissions produced by activity in the transportation sector	↘	↘
Ozone exceedance days Average number of days each year when ozone levels exceed U.S. Environmental Protection Agency standards	Remaining the same	↘
EV charging stations The number of charging stations for electric vehicles	↗	↗
EV registrations The number of fully electric vehicles registered in the region	↗	↗





Support economic prosperity and inclusive growth

The region's economy depends on a reliable transportation system, which influences where employers locate, how easily workers can reach jobs, how efficiently goods move through supply chains, and how well the region connects to other metropolitan areas. As a result, the transportation network is both a reflection of the region's economic health and a powerful tool for strengthening it. The decisions made today will play a critical role in supporting long-term economic prosperity and ensuring that growth is shared across communities.

Northeastern Illinois benefits from a strong economic foundation. The region's legacy transportation assets — including an extensive network of roadways, rail lines, and waterways — do far more than move people. They knit together neighborhoods, connect businesses with customers and suppliers, and position the region as a global economic center. Together, these assets anchor a diverse regional economy that produces nearly $780 billion in goods and services each year and have the potential to support future growth.[18]

Inclusive growth, however, is not guaranteed. While transportation can unlock opportunity, its benefits and burdens are not distributed evenly. Mismatches between where people live and where jobs are located create barriers for some residents, limiting access to employment and education. Transit access varies widely across neighborhoods, with some communities facing long commutes and few alternatives to driving. Congested freight corridors also affect nearby communities by increasing exposure to air pollution, noise, and unreliable travel times. Addressing these disparities is essential for ensuring that the transportation system works for everyone.

This chapter examines the relationship between the transportation system and the broader economy across three areas: how the system connects workers to jobs; how the region maintains its role as an intercity and global freight hub; and how the benefits of that system can reach more people and communities. By aligning transportation investments, land use decisions, and affordability strategies across jurisdictions, northeastern Illinois can expand access to opportunities, lower household costs, and support long-term, inclusive economic growth.

Connecting the region's workforce to economic opportunity

The transportation network supports economic activity by connecting residents to jobs. More than half of the region's jobs are located within a mile of an interstate highway and 48 percent are within walking distance of high-frequency transit service.[19] Job density is highest in Chicago, where more than 1.1 million jobs are accessible by rail transit. Across the region, job density is higher near transit than countywide average — underscoring the role of transportation in supporting economic activity.[20]



Access to public transit, however, remains uneven. While Chicago and many inner-ring suburbs benefit from a dense transit network, some suburban areas have limited service, leaving residents with few alternatives to driving. Approximately 47 percent of households and 45 percent of jobs are in areas with partial or no access to bus or rail transit.[21] These gaps limit access to job opportunities for workers and reduce the available labor pool for employers, affecting the region's overall competitiveness.

Figure 15: Number of jobs accessible in a 30-minute drive, by travel zone

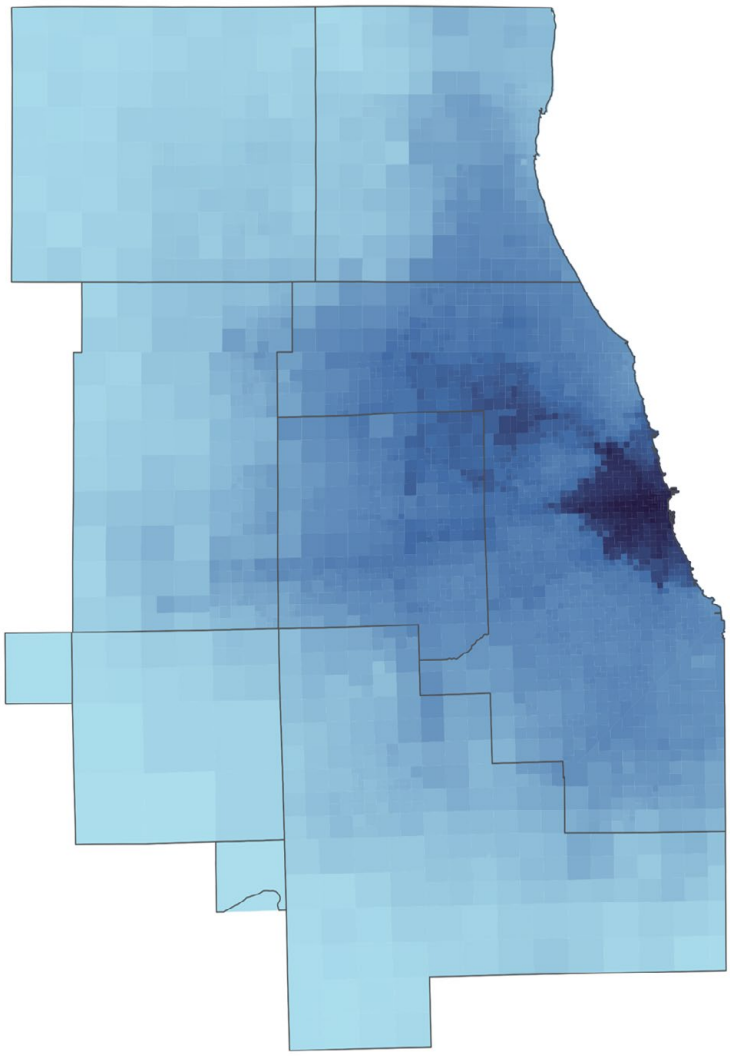
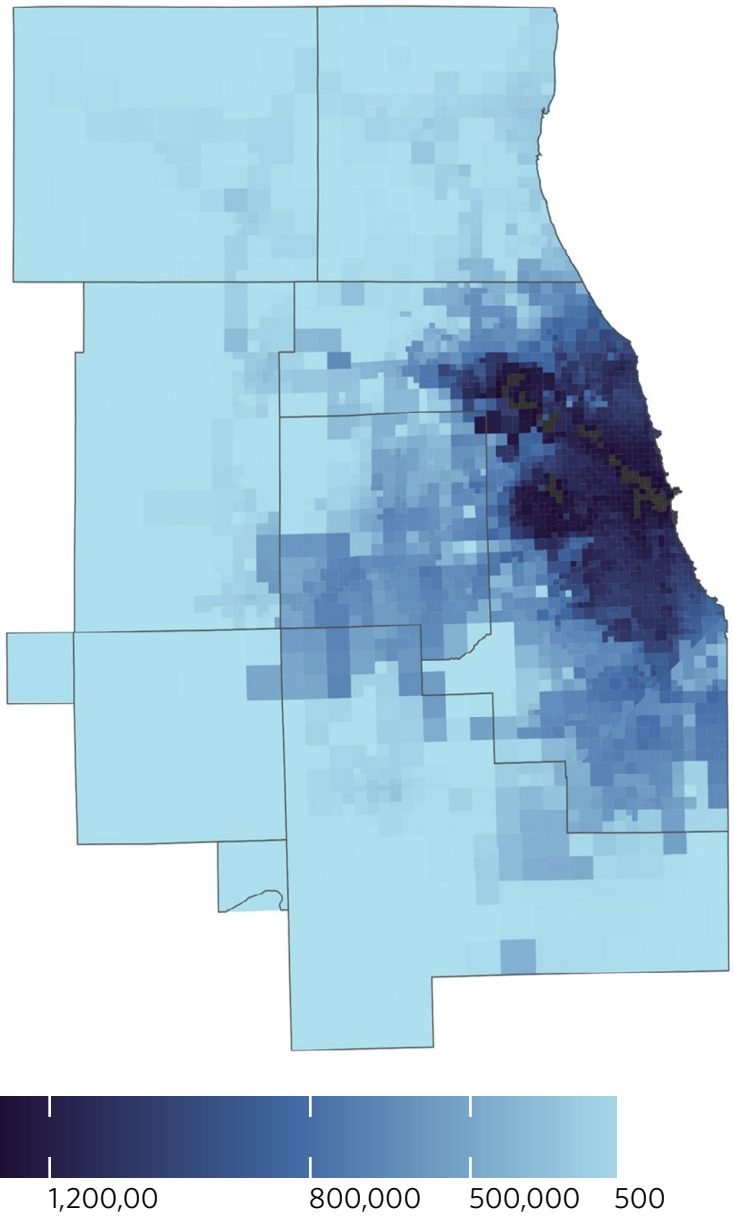


Figure 16: Number of jobs accessible in a 60-minute transit ride, by travel zone



Source: Travel demand model, CMAP.

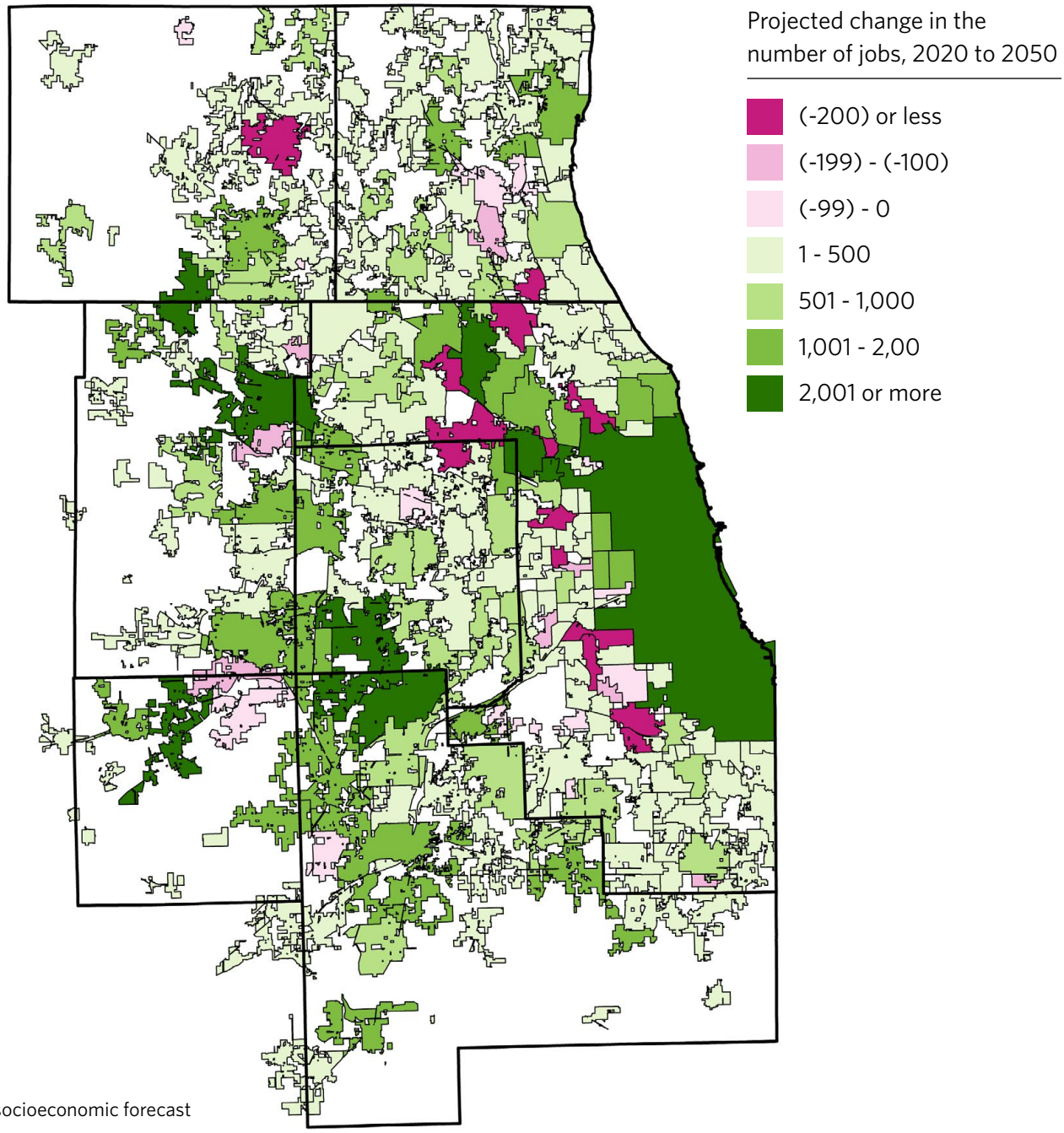
Recent development patterns have compounded these challenges. Over the past several decades, growth has occurred disproportionately in areas without existing transit access. Between 2010 and 2024, new housing development was disproportionately concentrated in lower-density areas that are difficult to serve frequently with transit, leading to longer trips and increased reliance on personal vehicles.[22]

In contrast, investing in areas with existing infrastructure can expand multimodal options for more people at a lower cost. Concentrating development in areas already served by transportation infrastructure is not only a mobility and economic strategy — it is also a fiscal one. Extending infrastructure into new areas creates long-term maintenance obligations that may exceed the revenues generated by that growth. Infill development — building on vacant or underutilized land in already developed areas — supports higher transit ridership, shorter trips, and more walkable and bikeable communities, helping to create more vibrant neighborhood centers that attract people and businesses.[23] `

Transportation infrastructure also shapes development patterns. Where and how the region invests in transportation influences where employers choose to locate and how neighborhoods develop. These dynamics reinforce themselves: transportation investments shape land use patterns, and land use decisions determine how productive transportation investments can be.

Greater economic activity is possible when development is concentrated near transit and multimodal corridors. Workers can reach more jobs without a car, reducing household transportation costs that are often the largest expenses people face. Employers gain access to a broader labor pool, making it easier to find and retain workers. Neighborhoods attract residents and businesses, generate stronger tax bases, and create vibrant community centers. Dense, transit-oriented development also reduces the net cost of long-term maintenance obligations that strain public budgets.[24]

Figure 17: By 2050, jobs are projected to grow in different parts of the region



Source: CMAP socioeconomic forecast

The reverse is also true. When growth occurs primarily in areas without transit access, households become more car-dependent, commutes grow longer, and the economic benefits of regional transportation investment are harder to reach for people without reliable access to a vehicle.[25] Infrastructure is extended further to serve dispersed growth, creating obligations that outlast the revenues they generate.

By working together, municipalities, transit agencies, and regional partners can build a shared framework to prioritize transportation investments for greater economic growth. Rather than each community navigating development considerations in silos, a collaborative approach can share regional resources, elevate best practices, and build consensus around regional economic strategy.

Many large metropolitan regions — including Denver, Minneapolis-St. Paul, Portland, Seattle, and Washington D.C. — have seized these opportunities through a centers and corridors framework, which aligns transportation investments with land use planning and provides multimodal connections to key destinations. Northeastern Illinois' transit network, economic centers, and rail corridors provide a foundation to do the same. In areas where transportation or economic conditions could be strengthened, a shared framework can guide development to be more compact, diverse, and connected to multimodal options — helping local economies reach more people at a lower long-term cost.



The 2025 passage of the Northern Illinois Transit Authority Act changed the rules for development near transit. The Act's "people over parking" provision limits minimum parking requirements for new developments near rail stations and high frequency bus routes. Implementation of these rules will look different in every community; collaborative implementation will support positive outcomes both locally and regionally.



Connecting the region to other metropolitan areas

Northeastern Illinois' connections to other Midwest population centers — and national and global destinations — are a major economic asset. The region's two international airports, O'Hare and Midway, rank among the busiest in the world.[26] Aviation in the region supports tens of thousands of jobs,[27] anchors a robust air cargo industry,[28] and brings millions of travelers to the region each year.[29]

These regional gateways are complemented by a strong intercity bus and rail network. Amtrak service links the region to 33 states and the District of Columbia, with Chicago's Union Station serving as the busiest rail terminal outside the Northeast Corridor.[30] Intercity bus service further expands connectivity by providing flexible and affordable travel options, including "last mile" connections to major destinations such as O'Hare and Midway. Chicago's Greyhound terminal, which serves multiple bus operators, supports roughly 80 daily arrivals and departures during peak season.[31]

Intercity bus services are particularly important for travelers with limited transportation options. Approximately two-thirds of intercity bus passengers make less than $40,000 annually, and a third make less than $20,000.[32] A quarter of intercity bus passengers have no other travel options.[33] Students, seniors, people with disabilities,

and individuals seeking medical or social services disproportionately rely on these services.[34] By enabling affordable long-distance travel, intercity transit strengthens the region's connectivity and economic competitiveness.

Northeastern Illinois is well positioned to benefit from future investment in intercity transit. Its location at the center of the national rail network creates opportunities tied to potential Amtrak expansions across the Midwest. Planned improvements to Chicago's intercity bus facilities will also enhance service in the region. Integrating intercity bus and rail into regional transportation planning efforts will strengthen northeastern Illinois' role as a national and global transportation and economic hub.

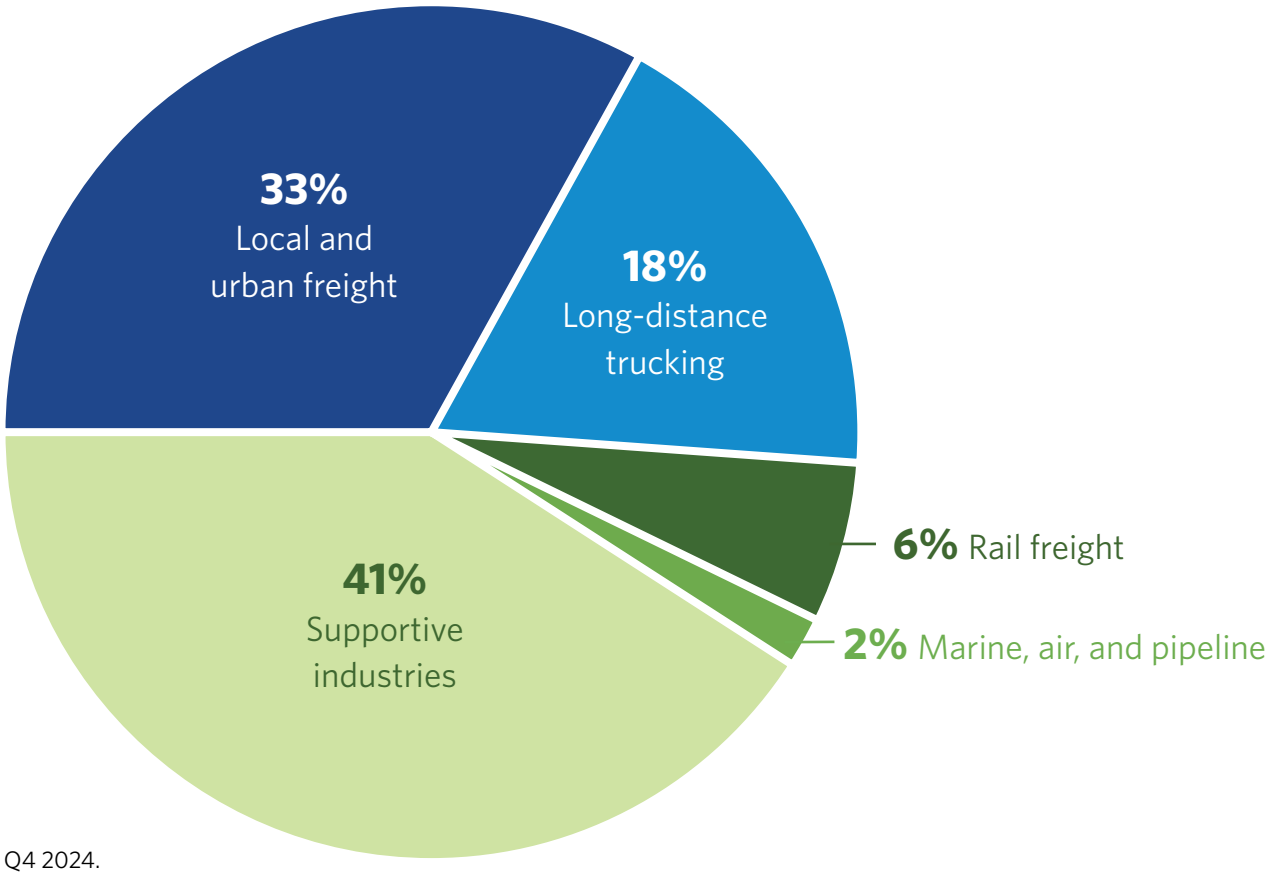
Maintaining our competitive edge as a global freight hub

Northeastern Illinois is a critical hub for freight movement. The region transports nearly 700 million tons of goods valued at more than $1 trillion each year,[35] and nearly 1 in 3 rail cars in the U.S. originates, terminates, or passes through Illinois.[36] Freight supports more than 210,000 jobs, particularly in trucking, warehousing, and logistics.[37] Between 2015 to 2024, employment in transportation and logistics grew by 14 percent — outpacing average job gains across the regional economy.[38] The region also has a 50 percent higher concentration of workers employed in the transportation and logistics sector than the U.S. overall — reflecting its specialized role as a global transportation hub.[39]



Regional Freight System Assessment
Explore data and insights on the freight industry in CMAP's Regional Freight Landscape, the first report in a series on the trends and policies shaping the movement of goods in northeastern Illinois.

Figure 18: The freight sector supports job opportunities across multiple types of goods movement

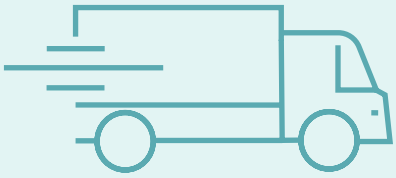


Source: Lightcast, Q4 2024.

The freight system's performance has major economic implications. Congestion on the region's railways and truck routes creates delays that increase costs for businesses and consumers. According to the Texas A&M Transportation Institute, truck congestion in northeastern Illinois costs an estimated $1.9 billion in lost time and wasted fuel.[40] Truck travel times are least reliable near major industrial areas, including the South and West sides of Chicago, the areas surrounding O'Hare, south suburban Cook County, and Will County.[41] In these areas, bottlenecked roads cause major delays for both goods and people.

Freight activity has become increasingly concentrated in Will County. Between 2005 to 2024, the number of intermodal terminal lifts in Will County more than tripled, and the county is now home to two of the region's four busiest terminals.[42] This growth is likely to continue: all three new terminals that are planned or proposed for the region are in Will County or neighboring Grundy County.

This concentration brings both economic opportunity and local challenges. Increased truck volumes strain roadways, contribute to congestion, and raise safety concerns at key intersections. Communities near freight facilities are also more exposed to noise and air pollution.[43] Improving freight efficiency in Will County and across the region is essential to reducing these impacts while supporting continued economic growth.

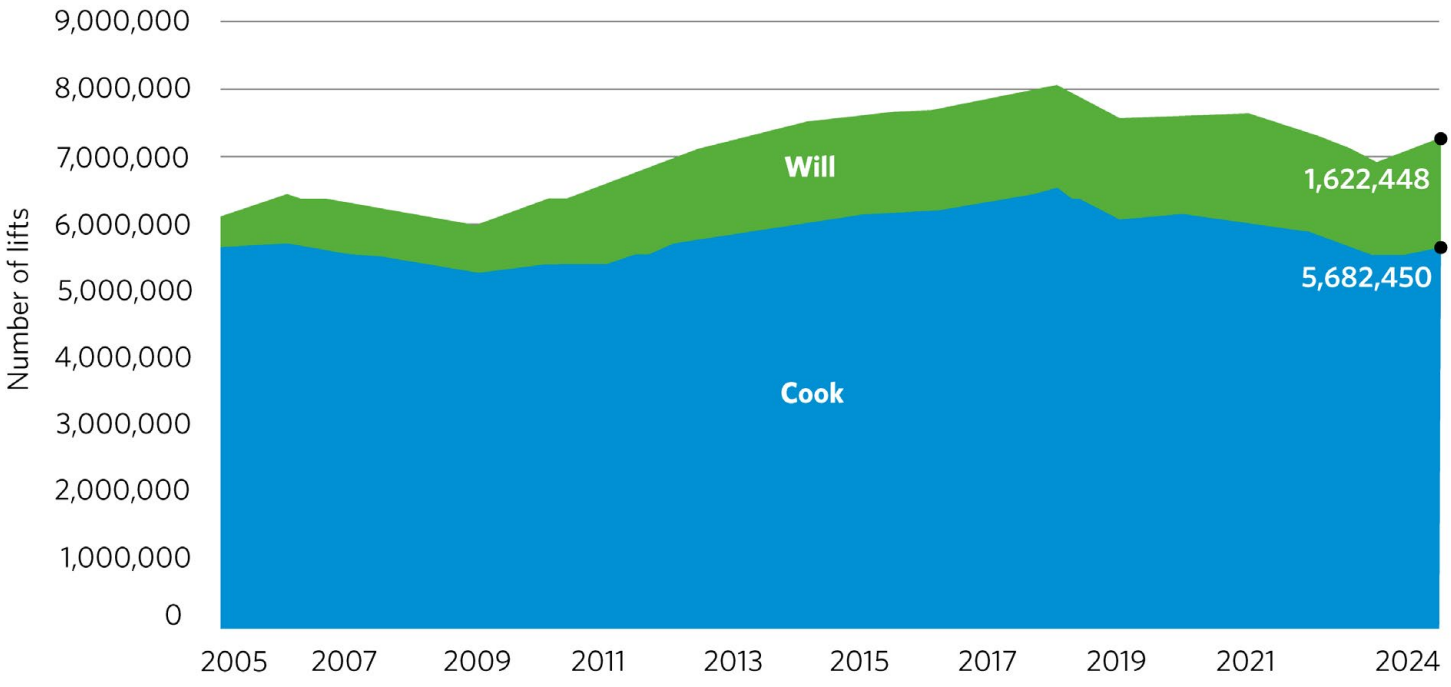


Anticipated growth in demand for goods and services is expected to increase freight volumes across the network.

Trucks stuck in congestion delay deliveries, increase emissions, and reduce economic productivity.

Without strategic improvements to roadway capacity, interchange efficiency, and multimodal freight connections, these additional volumes are likely to exacerbate congestion and extend truck travel times, particularly on corridors that already serve as primary links between suburban job centers, industrial hubs, and the urban core.

Figure 19: Intermodal freight activity in Will County more than tripled over the past two decades



Source: CMAP, railroad companies

Erik Varela

Executive Director, Illinois International Port District

Erik Varela sees the Port of Chicago as an economic engine that quietly powers everyday life across northeastern Illinois. Spanning more than 2,000 acres, the port connects the Great Lakes, inland waterways, railroads, and highways to move goods efficiently throughout the region and nation. Under Erik's leadership, the port supports jobs, business growth, and critical supply chains — handling materials like steel for bridges, cement for roads, lumber for homes, and food ingredients found on store shelves. The port is a community partner, with environmental restoration efforts and new trail connections planned for nearby neighborhoods. Erik's story reflects how transportation infrastructure can strengthen prosperity, create opportunity, and reinforce the region's position as a global hub.

"The steel for bridges, the cement for roads — it all comes through here."

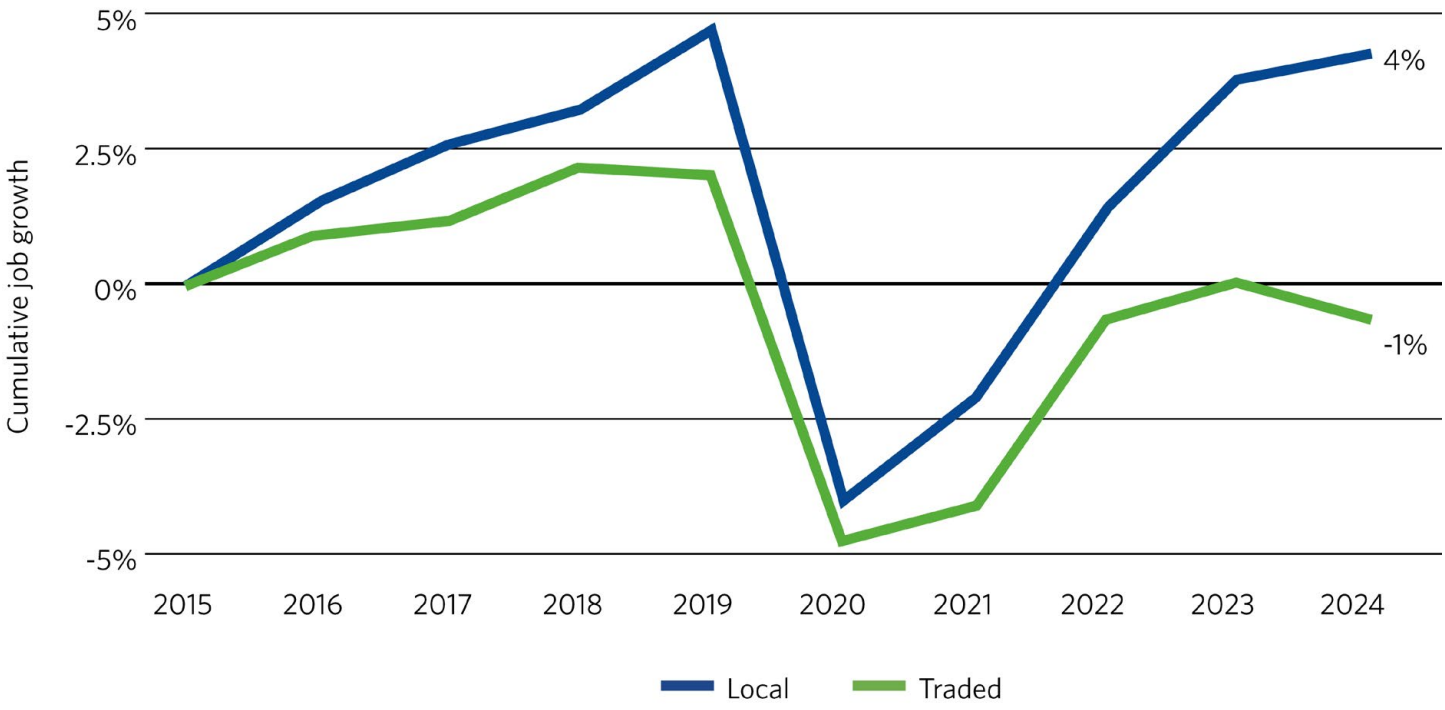


Investing in inclusive growth is critical for the region's success

Inclusive growth means that the benefits of investment are broadly shared. A more reliable transportation system can shorten commutes, improve access to jobs and services, and reduce transportation costs. Workers spend less time and money commuting, employers gain access to a larger workforce, and communities become more attractive for investment. Efficient freight movement reduces truck gridlock on local streets, improves air quality, and supports timely delivery of goods. Together, these outcomes enhance quality of life across the region.

However, several trends limit the region's ability to achieve inclusive growth. Over the past two decades, economic growth in northeastern Illinois has lagged behind some peer regions and the nation overall. Recent job growth has been concentrated in local-serving industries, rather than traded clusters that export goods or services beyond the region and contribute more to growing the regional economy. Between 2015 and 2024, the region lost approximately 10,000 jobs in traded sectors while gaining nearly 100,000 local ones — meaning that for every job lost in traded clusters, the region gained ten in local clusters.[44]

Figure 20: Traded clusters have struggled to rebound after recent economic disruptions



While recent job gains are mostly concentrated in sectors that contribute less to the region's economic competitiveness, industries that rely on transportation infrastructure are among the region's strongest. Many of these jobs provide opportunities for workers without a college degree. From 2010 to 2024, the region added 5,500 living wage jobs in distribution management, creating opportunities for early career workers in warehousing, supply chain, and logistics.[45] Strategic investment in the transportation sector expands access to these opportunities and supports long-term, sustainable economic growth.



Fostering inclusive economic prosperity also includes managing the essential costs that residents face. Transportation is one of the largest expenses that most households have, with car ownership costing approximately $10,000 per year.[46] Expanding access to lower-cost modes — such as transit, walking, and biking — can reduce these costs. Targeted programs can further support affordability for students, seniors, or low-income residents.

Achieving inclusive growth requires coordinated action across jurisdictions and agencies. By aligning transportation investments with economic goals, northeastern Illinois can create a transportation system that supports both businesses and residents and ensures that everyone shares in the success.

Strategies to support economic prosperity and inclusive growth

Objective: Strengthen northeastern Illinois' role as a global economic hub and gateway to the Midwest

Integrate intercity bus and passenger rail into the regional planning process

Intercity bus and rail services play a crucial role in connecting northeastern Illinois to other population centers. These travel modes should be included in transportation planning efforts at state, regional, and local levels. Through collaborative processes, transportation implementers can inform service locations and frequency, support first- and last-mile access, advance related infrastructure projects, and identify funding and partnership opportunities.

Improve multimodal access to connect the region's urban core to its international airports

Transportation partners should strengthen multimodal connections between Downtown Chicago and O'Hare and Midway. Frequent, reliable transit service can reduce congestion, improve travel time reliability, and support passenger travel.

Objective: Use transportation investment to strengthen economic centers, expand access, and reduce household costs

Promote development in centers and along corridors

Regional partners should identify centers and corridors where coordinated transportation investment and local planning decisions can deliver the greatest benefit. This includes urban neighborhoods, suburban downtowns, and growing exurban areas. These investments should maximize the impact of limited public resources and support progress across safety, mobility, climate, and economic goals.

Support transportation affordability

With transportation costs among the largest household expenses, regional partners should implement policies, programs, and planning approaches that provide affordable travel options. Actions should include supporting transit oriented land use, reforming transportation fees and fines, and maintaining programs that address resource disparities — such as reduced transit fares for students, seniors, and low-income households — to expand access to jobs, education, and essential services.

Objective: Promote the efficiency and reliability of the regional freight network

Invest in projects that mitigate freight congestion and improve operations

Northeastern Illinois should continue supporting the Chicago Region Environmental and Transportation Efficiency (CREATE) Program and sustain recent progress on implementing its priority projects. The region should also advance efforts that reduce truck bottlenecks, improve freight rail travel times, and expedite intermodal transfers, with a focus on high-impact locations that most benefit regional economic productivity. Improvements that reduce impacts to emergency vehicles, residents, and businesses, such as highway-rail grade separations, should be prioritized.

Foster safe travel for truck drivers

Transportation implementers should support safer conditions for truck drivers through infrastructure improvements, better routing information, and expanded access to rest areas and parking. Reducing congestion at key bottlenecks can also improve safety and reliability.

Support the transition to electric freight vehicles

The region should provide sufficient charging infrastructure to support the private sector in reducing air pollution and remaining competitive as vehicle technologies evolve. Transportation agencies should identify incentives and reliable funding opportunities to expedite the industry's transition to alternative and renewable fuels, in coordination with utilities and private-sector stakeholders.

Improve urban freight operations and last-mile delivery

Local agencies should implement policies to improve safety and reduce congestion, such as designated freight zones and off-peak delivery incentives. Local implementers could enact dedicated freight zones or schedules, incentivize deliveries outside of peak traffic hours, and more. Regional partners should support guidance, pilots, and best practices to assist local implementation.

Strengthen goods movement by water

Public and private stakeholders should improve the safety and efficiency of maritime freight: maintaining infrastructure, dredging waterways used by commercial vessels, and improving port access, while facilitating strong environmental stewardship and limiting the threat of invasive species.

The economic case for northeastern Illinois' transportation system is ultimately the case for investing in it. A system that connects workers to jobs, goods to markets, and businesses to customers generates returns that far exceed the cost of maintaining it. Realizing those returns, however, requires both a well-functioning system and coordinated decisions about where to focus investment and development, so that the system's benefits are expanded rather than diluted. The next chapter examines the financial foundation that makes this possible — where the revenues come from, the challenges they face, and what a more sustainable path forward requires.

RTP indicators to track economic outcomes	Today's trendline	Desired trendline
Jobs near high frequency transit Percent of regional jobs within one half mile of high frequency transit		
Chicago freight terminal carload transit time The average number of hours freight trains spend within the Chicago rail terminal district		
Truck Travel Time Reliability A ratio that compares the worst freight travel times to normal travel times		
Motorist delay at rail crossings The estimated average daily delays in hours for motorists for at-grade highway-rail crossings		



Strategically govern, fund, and preserve the system

Every chapter in this plan describes something the region needs its transportation system to do better: move people more reliably, keep them safer, adapt to a changing climate, and support a growing economy. Achieving each of those goals requires its own strategies — and many come with a price tag. This chapter examines the financial foundation that underlies them across three areas: the condition of aging infrastructure and what it will cost to bring the system to a state of good repair; the revenue landscape that funds it and why that landscape is increasingly unstable; and the regional coordination necessary to ensure that available resources are directed where they will deliver the greatest long-term benefit.

Maintaining, operating, and improving the regional transportation system requires sustained investment and coordination. The region's transportation assets are vast and diverse, including highways, local roads, bridges, trains, buses, stations, and bicycle and pedestrian infrastructure. Significant portions of this system — many of which are more than a century old — require varying levels of improvement and modernization. To achieve the region's transportation goals, it will be critical to preserve this infrastructure while improving safety, reliability, and fiscal responsibility.

In recent years, regional and state leaders have secured more reliable revenue sources that support and strengthen the transportation system. In 2019, Rebuild Illinois was enacted as the largest and most far-reaching capital program in state history. The program also made valuable policy changes to address motor fuel tax (MFT) underperformance by doubling the rate and indexing it to inflation. Rebuild Illinois nearly doubled the funding provided by previous capital programs and has helped bring more transportation assets into a state of good repair.[47]

A similar transformational investment, the 2025 Northern Illinois Transit Authority (NITA) Act, reformed regional transit governance and funding. The legislation identified new revenue sources and shifted others to secure sustained annual funding to stabilize transit operations and prevent future service cuts. It also established NITA to replace the Regional Transportation Authority and to oversee and coordinate the region's transit service boards, consolidating planning, funding allocation, and performance standards under one agency. These funding solutions avert a significant budget shortfall, while the policy changes advance long-term goals for integrated fares, improved accessibility, coordinated capital planning, and frequent, reliable service.[48]

While Rebuild Illinois and the NITA Act make progress toward securing robust, long-term transportation revenues, funding challenges persist. Because the state lacks a permanent capital fund program, lawmakers must pass a new capital bill before 2030 — Rebuild Illinois' final year — to ensure continued support. Existing transportation revenue sources also remain unstable amid a changing landscape. Given the scale of investment the region's transportation system requires, action is needed to identify more durable funding sources that keep pace with system costs and do not depend on periodic reauthorization.



The ability of the region and state to make and sustain necessary transportation investments is hindered by the fact that associated costs have outpaced current revenue streams. High construction costs, project delivery challenges, and fragmented regional investment decisions make it difficult to keep the transportation system in good condition while also making progress on other forward-looking goals.

As the region's transportation assets continue to age, decisive action is needed. Decision makers must reinvest in legacy infrastructure and address years of deferred maintenance in addition to prioritizing improvements that support regional goals related to mobility, safety, climate resilience, and economic competitiveness. Success will not come easily; it will require significant investment at a time when costs already outpace funding. Crucially, establishing new funding sources is essential to make these investments possible.

Legacy infrastructure needs and cost growth require significant capital investment

While northeastern Illinois benefits greatly from its legacy transportation assets, much of the network is aging and requires significant reinvestment. Sustained construction cost inflation and project delivery challenges strain the region's ability to preserve the system.

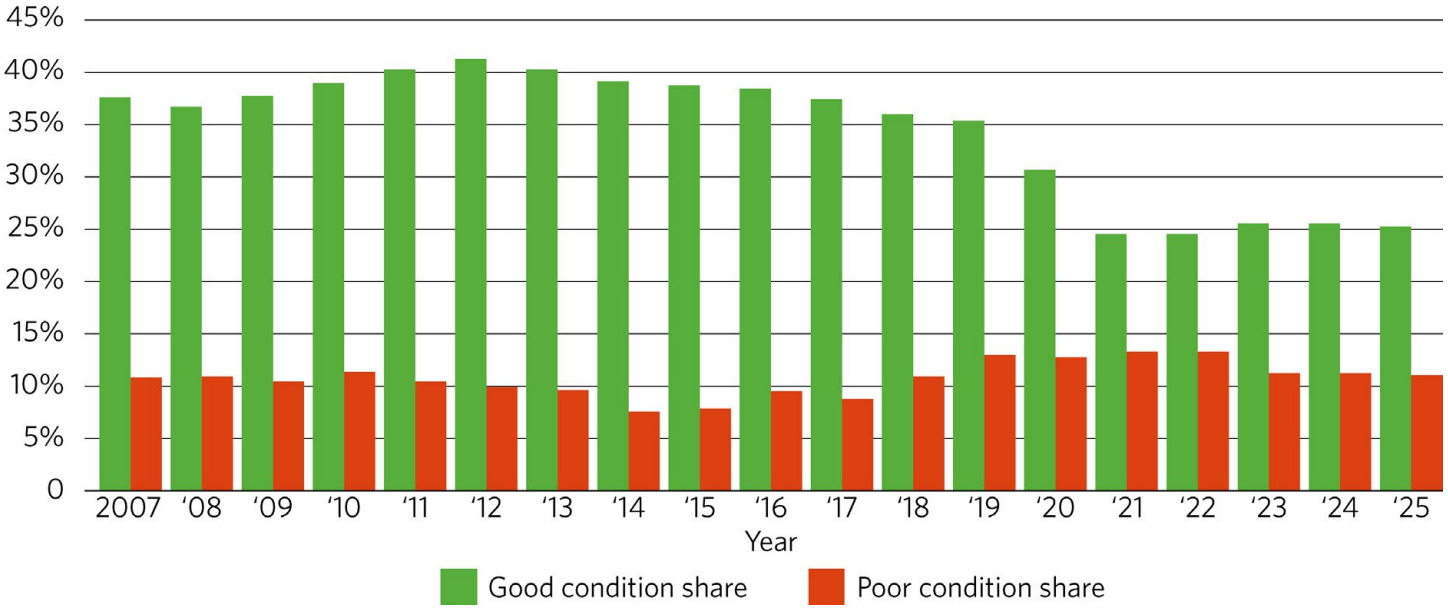
Aging infrastructure and deferred asset maintenance

Decades of irregular funding patterns have left the regional transportation system deteriorating faster than it is being repaired. Underinvestment erodes system performance in multiple ways. For transit, it drives up operating costs and degrades service. For roadways, it creates safety hazards, including potholes and cracking, and forces agencies to rely on frequent resurfacing cycles in place of more durable reconstructions. Maintaining assets is not only about avoiding costly repairs; it also ensures the system delivers on safety, resilience, and reliability goals. With limited funding and aging assets, the region routinely settles for maintaining the status quo rather than pursuing transformational change.

One long-term consequence of underinvestment is declining roadway asset condition. For example, bridges on the region's National Highway System (NHS) have significantly worsened over the past decade (Figure 21). Since 2016, the share of bridges in poor condition has fluctuated around the federal guideline threshold of 10 percent, while the share of bridges in good condition has declined or stagnated.[49] Limited resources have been redirected toward preventing bridges in fair condition from slipping into poor condition rather than maintaining those in good condition. Even with this shift, the region struggles to meet federal bridge standards.

NHS pavement conditions have also declined over this period. In comparison to the Illinois Tollway, which can rely on a steady stream of toll revenue to regularly replace and reconstruct aging infrastructure, the broader expressway network depends on varied and less predictable funding sources. While the Tollway has maintained relatively strong asset condition and low average age, other transportation implementers cannot maintain their assets at the same pace. Prolonged funding constraints have forced system leaders to prioritize stopgap maintenance measures instead of long-term rehabilitation, weakening the system's overall resilience.

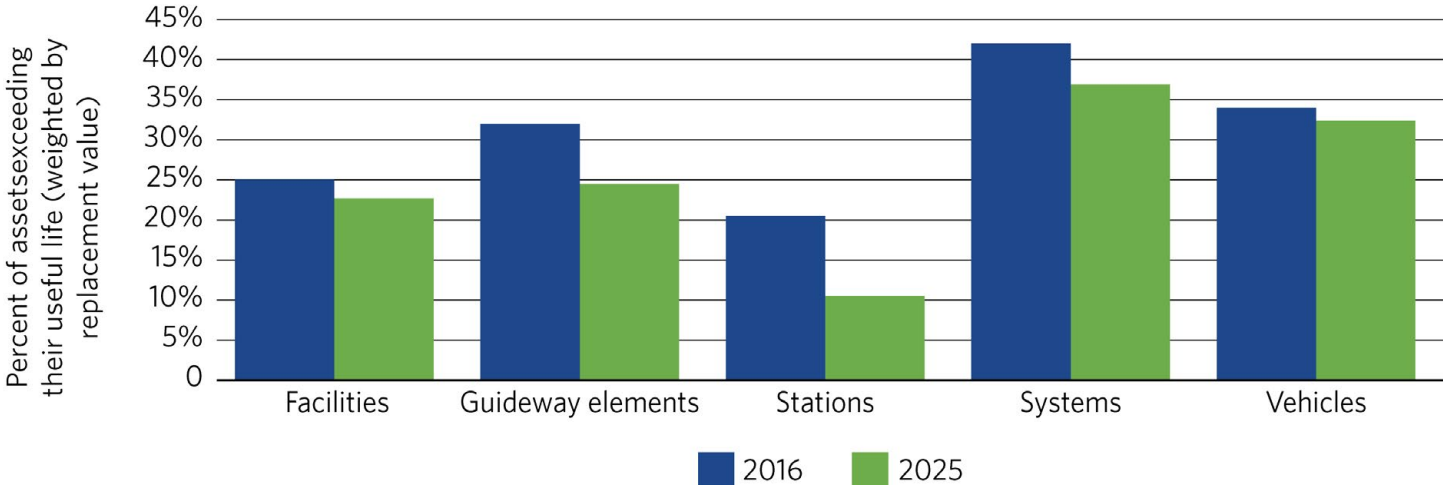
Figure 21: Bridge conditions on the region's National Highway System have worsened over the past decade



Source: FHWA National Bridge Inventory, 2025

The region's commuter rail infrastructure faces a parallel challenge that existing funding programs are not designed to address. Metra trains cross 926 bridges every weekday. Of the bridges Metra owns directly, half are more than a century old, and another 30 percent are more than 75 years old — the functional life of a steel bridge. These structures are currently safe for travel, but they have exceeded their designed lifespan and are becoming more expensive to maintain with each passing year. Unlike highway bridges, which benefit from dedicated federal funding programs, railroad bridges used for passenger rail service have no dedicated funding source at the federal or state level. This gap places the burden squarely on transit agencies and their capital programs, which are already strained by broader state-of-good-repair needs.

Figure 22: Despite improvements, transit assets exceeding their useful life continue to make up a large share of the system



Note: The systems category includes communications, train control, traction power, and fare collection systems.
Source: Regional Transit Authority, 2025

The region's transit investment backlog similarly underscores the mismatch between current conditions and system goals. While transit asset conditions have moderately improved in the last decade, 25 percent of the regional transit assets are still beyond their useful life. Today, the regional transit system faces a $30 billion capital price tag to replace and repair its backlog.[50] Guideway elements, such as grade separations and track improvements, are foundational to to efficient service and represent nearly half of this need. Across other transit categories, aging assets pose operational risk: vehicles that exceed their useful life require more frequent maintenance and tend to be less reliable. Even with recent funding increases in the NITA Act, including an annual allocation for transit capital projects, total need far exceeds available funding.

The deferred maintenance that strains the system today is, in large part, the product of investment decisions made decades ago — what to build, where to build it, and what revenue structures would sustain it. The decisions the region makes now will shape the maintenance obligations its successors inherit.

Rising construction cost growth

Project delivery costs make up a significant share of transportation system expenses, and construction costs have grown faster than available revenues for decades. The sharp inflation that followed the COVID-19 pandemic widened this gap, deepening longstanding funding shortfalls for system maintenance and modernization.

Since 2003, the National Highway Construction Cost Index (NHCCI), which tracks construction labor and material costs, has risen steadily and has consistently outpaced growth in transportation capital revenues. Between 2020 and 2023, the NHCCI rose by 66 percent, reflecting unprecedented short-term growth.[51] Because the NHCCI is based on state highway contract data, this increase also signals reduced purchasing power for federal construction dollars. Other indicators show similar trends. The Producer Price Index for construction materials climbed 32 percent over the same period, nearly twice the rate of overall consumer inflation.[52]

Sustained inflation creates compounding fiscal challenges. Even if construction cost growth returns to historic norms, the elevated baseline ensures that costs will remain high relative to revenues, weakening the system's ability to meet state of good repair needs and exacerbating fiscal uncertainty. Project delays also carry steeper consequences, as each deferral results in greater cost escalation.

Project delivery challenges

Capital projects experience delays for many reasons, including permitting, property acquisition, and coordination across multiple agencies and public utilities. Because these projects typically depend on tight sequencing, schedule setbacks can have cascading timeline effects on other projects and can lead to additional inflation, compounding costs, and disrupted funding strategies. For example, a study of project delays in Texas between 2012 and 2014 found that for a freeway reconstruction in a large metropolitan area, a three-month delay produced an additional cost of $4 million, or $1.3 million per month.[53] In today's high inflation construction environment, even brief delays on major projects can have significant cost implications. Over time, this exacerbates deferred maintenance and undermines efficient project delivery.

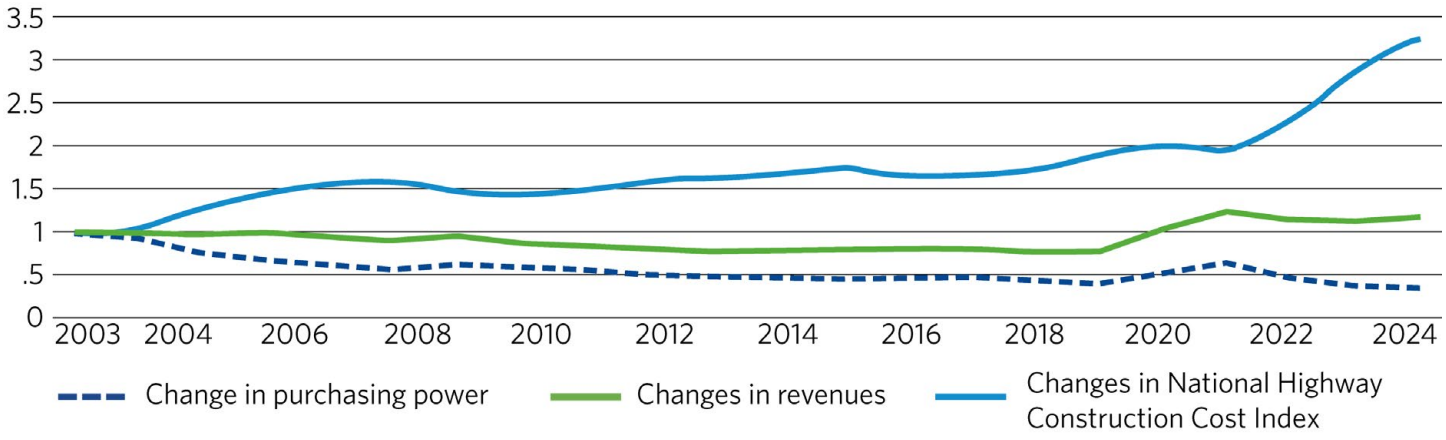
The high costs of maintaining an expansive legacy network — combined with aging assets, sustained cost growth, and project delivery challenges — underscore the importance of securing sufficient and durable funding sources. Strategic investment is essential not only to maintain today's system, but also to preserve it as efficiently and cost-effectively as possible for the future.

The transportation system relies on revenue sources that are vulnerable to risk

Regional transportation funding consists of a mix of federal, state, local, and system-generated revenues. While recent legislative developments have stabilized some funding streams, several revenue sources are not keeping pace with rising costs. The purchasing power of transportation capital revenue — measured by comparing key revenue sources like motor fuel taxes and vehicle registration fees with construction costs — has steadily declined since 2008, with sharp drops following the pandemic. Although costs have begun to stabilize, they remain elevated and continue to outpace revenue growth, meaning available funds buy less than they once did.

This imbalance creates significant challenges. Capital projects face rising costs due to high inflation, while system-generated revenues have become less effective, with federal and state allocations remaining modest. As a result, the region's current funding streams are insufficient to meet critical infrastructure needs.

Figure 23: As total transportation revenues decreased and construction cost growth spiked, transportation purchasing power declined in recent years



Note: Select capital revenues include state motor fuel tax receipts and state motor vehicle registration receipts.
Source: CMAP analysis of Illinois Office of the Comptroller data and National Highway Construction Cost Index, 2025.

Key transportation revenue sources have weakened over time

The MFT has long been a critical revenue source for the transportation system. However, greater vehicle efficiency, improved technology, and changing travel patterns have reduced fuel consumption, weakening the MFT's long-term stability. Despite being indexed to inflation, MFT rates no longer capture the true cost of driving or differences in mileage among drivers, resulting in weaker revenues. Since 2020, the MFT rate has increased by an average of just 1.9 percent per year, far below the average 10 percent annual increase in construction costs.[54] The region can no longer rely on the MFT to keep pace with rising construction costs and infrastructure needs.

State-imposed motor vehicle registration (MVR) fees are another major source of revenue for regional capital transportation investments. Unlike MFT, MVR fees are flat fees and not indexed to inflation, limiting their long-term sustainability.

Illinois' sales tax is another source of transportation funding that requires structural change to keep pace with the broader economy. The state primarily taxes the sale of goods rather than services. As a result, increasingly service-driven consumer spending is not captured in this revenue source, contributing to diminished returns. Modernizing the sales tax to include a wider range of services would increase state and regional sales tax revenues that are critical for transit operations.[55]





In 2025, a coalition of Illinois policy and civic leaders released **Modernizing Illinois' Sales Tax: A pathway for a sustainable future**, which outlines the potential impacts of updating the state's sales tax system. Building off recommendations in the **Plan of Action for Regional Transit**, the report details how specific reforms could apply sales tax to more consumer services, address revenue shortfalls, and ensure sustainable funding for essential public services like transit.

The report concludes that reform could generate nearly $2 billion annually in new state revenue and provide much-needed financial stability.

Jeanette Chavarria-Torres
President, DCH Construction and Hauling

Jeanette Chavarria-Torres believes that maintaining and modernizing the region's infrastructure is essential to a dependable transportation system and a strong economy. As president of DCH Construction and Hauling, a 100% woman owned business, she leads a key partner in major roadway projects across northeastern Illinois, including reconstruction work on I-294.

Her entrepreneurial path began early. As a child, she helped her father with bookkeeping tasks — from writing checks to processing payroll — and by high school she was already dreaming of running her own trucking company. Her father agreed to mentor her, but only after she committed to earning a business degree.

While still in college, Jeanette incorporated DCH and began building the company into a trusted hauler for large contractors. Today, DCH not only helps keep critical materials moving efficiently from point A to point B, but also creates opportunities for smaller trucking firms, many of them owned by women and rooted in working class communities. Her story shows how investment in infrastructure supports both economic growth and the people who make it possible.

"Maintaining and modernizing infrastructure is essential for a healthy economy, and high quality of life."



Transportation revenues across local, state, and federal funding streams are vulnerable to risk

The region's transportation revenues face four distinct categories of risk: uncertainty in federal funding levels, constraints on local match capacity, instability in the state's allocation formula, and demographic trends that are reducing demand-based revenue streams.

Federal funding uncertainty: The region's transportation system relies on federal highway and transit funding allocated through the state. Growth in federal highway and transit funding to Illinois remained modest between 2000 and 2023, with compound annual growth rates of 0.8 percent and 2.1 percent, respectively. Given the persistent high-cost environment, this growth has been insufficient to meet the region's needs. The Infrastructure Investment and Jobs Act (IIJA) represented a historic federal investment in infrastructure, providing Illinois with substantial road, bridge, and transit funding through fiscal years 2022 to 2026.[56] With that program set to expire in 2026, advocates are calling for IIJA funding levels to serve as the baseline of future infrastructure packages and for stronger formula funding in place of discretionary grants. However, uncertainty remains. Reductions in current federal funding levels would have significant and negative impacts on the region's capital funding outlook.

Local match constraints: Local match funding is essential for leveraging federal dollars, especially for competitive grants. For example, the CTA's Red Purple Modernization program — a multibillion-dollar, multiphase project that includes bypass and station reconstructions and signal improvements — is supported by $1.1 billion in local match funds.[57] However, recent administrative actions have restricted competitive transportation funding, potentially increasing local match requirements. Even at current levels, securing local match funding is difficult, especially in historically disinvested communities with limited fiscal capacity. When local matches are insufficient or delayed, the region loses the ability to pursue federal and state funding opportunities that advance transportation projects.

State allocation instability: Historically, the state has allocated transportation funding to subregions through informal geographic agreements rather than performance-based criteria. Although northeastern Illinois' share has been relatively stable in recent years, these arrangements leave the region without statutory protection and with funding levels that do not reflect its share of VMT, transit ridership, or economic activity. A durable, transparent framework directs transportation dollars where infrastructure is most used, where needs are greatest, and where investment will generate the broadest benefits for both the region and the state. In the absence of any such framework, the region remains exposed to risk, especially as fiscal pressures and competing priorities grow.



Demographic and demand shifts: Lower-than-expected population growth reduces economic activity, VMT, and transit ridership. In addition to stagnant MFT growth, these trends affect revenues such as sales taxes, tolls, and transit fares. CMAP's current socioeconomic forecast projects only modest growth through 2050, reflecting a long-term plateau with broad implications for transportation revenues.[58] Demographic shifts, including declining household size and migration patterns, are also driving uneven demand across travel modes. These changes affect formula-based federal and state funding as well, meaning the region must prepare for potential reductions in revenue allocations.

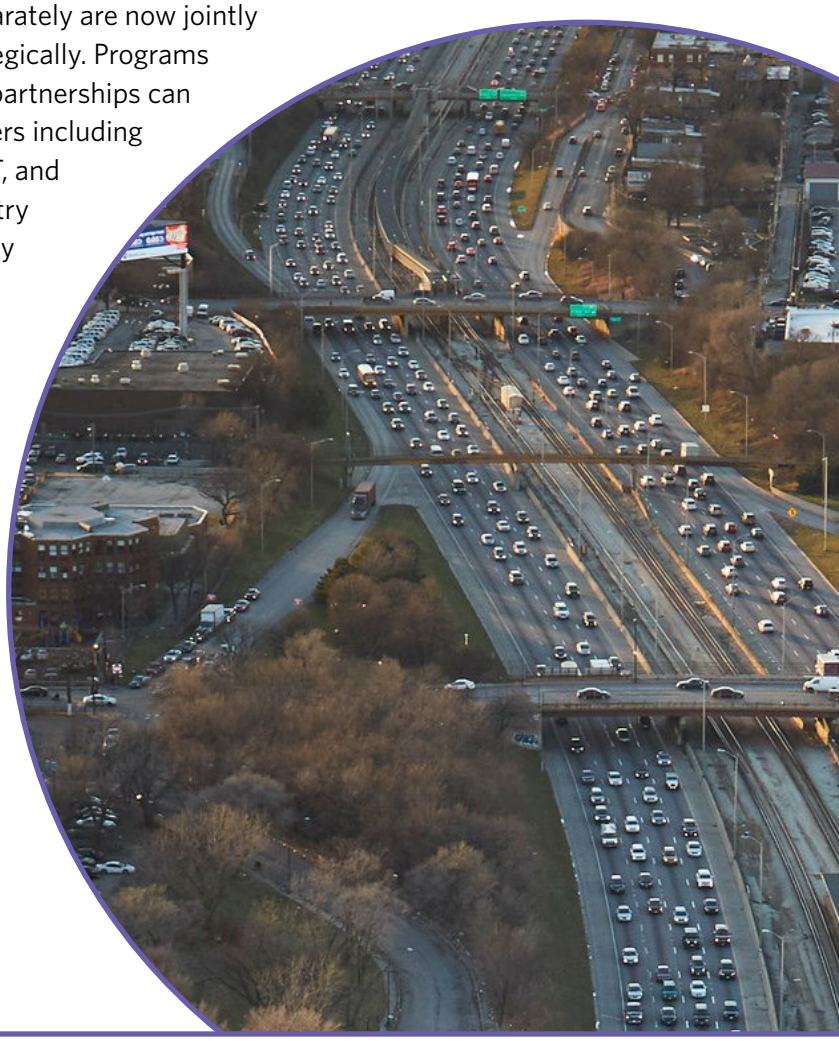
As transportation costs continue to outpace historical levels, the region's revenues remain insufficient to support long-term system needs. This fiscal constraint limits the projects the region can advance, forcing programming decisions with multigenerational consequences. Without predictable funding that aligns with maintenance and improvement needs, the region risks falling further behind on its transportation goals. New funding sources — including regional surcharges that do not depend on state distributions — are urgently needed to support capital and operating investments in Illinois' transportation system.

Regional collaboration is necessary to make improvements that optimize transportation operations and funding outlook

In addition to ongoing infrastructure maintenance, achieving a state of good repair requires modernization and enhancement. Bold, strategic investment in climate, accessibility, and safety is essential for the region to remain competitive for federal funding and provide residents with high-quality multimodal transportation options. However, insufficient and fragmented investment can limit progress.

Regional transportation stakeholders have repeatedly come together to address demands for a stronger transportation future. Through decades of coordination, agencies and partners have aligned strategies to strengthen the regional economy, improve efficiency, and expand accessibility. Leaders have identified projects to advance these strategies and successfully implemented critical improvements.

Coordination is not just a governance preference — it is a strategy for stretching limited revenues further. Coordinated planning improves competitiveness: in recent years, collaboratively led projects have secured millions in federal and state funding that would have been more difficult to secure independently. These initiatives have led to real progress. Agencies that once worked separately are now jointly planning, sharing resources, and collaborating more strategically. Programs like CREATE demonstrate what long-term, cross-agency partnerships can accomplish. Since the program began in 2003, stakeholders including the Chicago Department of Transportation (CDOT), IDOT, and Metra have leveraged state, federal, and private rail industry funding to construct more than 70 critical rail and roadway improvements.[59] These upgrades have improved safety, added capacity, and helped accommodate growth in both freight and passenger traffic.



Other recent efforts reinforce the strength of regional collaboration. The I-290 Blue Line Corridor partnership between IDOT and the CTA is leveraging state transportation dollars and securing competitive IIJA funding to modernize stations, expand accessibility, and mitigate flooding on roadways and in nearby communities.[60] Similarly, Pace and Metra are partnering on the Harvey Intermodal Transportation Center to improve transfers between the two transit networks, expand accessibility, and increase paratransit options.[61] By recognizing shared goals, agencies are coordinating to implement large-scale efforts while also reducing costs that would have been greater if pursued independently.

Despite recent achievements, a lack of robust and dependable revenues is slowing the region's progress on its shared priorities. While agencies have established initiatives to bring transit stations into ADA compliance, several projects are unfunded and behind schedule. Most of the region's priority grade separation projects — some identified decades ago as key to improving safety and mitigating congestion — remain in early phases. As of 2023, only 43 percent of the 2009 Regional Greenways and Trails Plan had been completed or programmed, and full implementation of secure, safe, sufficient bikeways and sidewalks near transit will likely take decades.

Strategic regional coordination and decision-making are especially important to advance transportation priorities, especially during times of rapid change. For example, given the speed at which technology is advancing, northeastern Illinois will need to consider how to integrate new technologies into the transportation system. These decisions will have long-lasting implications for agency operations and for how people and goods move throughout the region. In this changing landscape, it is crucial that decision-makers take a coordinated and collaborative approach to protect transportation operations, improve the region's fiscal outlook, and enhance residents' quality of life.

Strategies to govern, fund, and preserve the system

Objective: Plan for system modernization and make progress towards a state of good repair

Invest in the region's capacity to implement preservation, modernization, and reconstruction projects

Transportation implementers should invest in proactive asset lifecycle planning to meet the region's growing needs. Targeted action should include the bolstering of available revenues, interagency coordination, and staff capacity and expertise. Additionally, adopting emerging technologies to assist with infrastructure monitoring and maintenance should be explored strategically.

Improve data for better asset management decision-making

With limited resources, data-driven decision-making is crucial for effective asset management. Regional partners should work together to improve the quality and availability of asset condition data. Through interagency coordination and data-sharing partnerships, the region should provide regular reporting on the condition of the system's infrastructure, including roads, bridges, tracks, and more.

Strengthen regional coordination around aging infrastructure

Northeastern Illinois should engage in regional collaboration to monitor state of good repair needs and ensure the region's funding is sufficient to maintain and modernize transportation infrastructure. In particular, stakeholders should coordinate regularly on the performance-based allocation of funding, as well as decisions regarding current or future sources of infrastructure funding.

Objective: Maintain and expand revenue sources

Explore implementing a road usage charge (RUC)

The region should explore shifting revenue reliance away from the MFT toward a user fee that charges motorists based on the number of miles they drive. Recognizing that implementation questions remain, transportation stakeholders should conduct a RUC feasibility study that develops recommendations, informs future pilot programs, and raises implementation considerations.

Expand tolling on more transportation facilities

Northeastern Illinois should establish more tolling on facilities throughout the regional transportation system. As a substantial and reliable funding source, the region should prioritize tolling to offset the costs of necessary road

reconstructions and other forms of maintenance that are critical to preserve and modernize northeastern Illinois' aging infrastructure.

Pursue durable revenues that grow with the economy and align with travel behavior

The region should continue to monitor its funding landscape and impacts from changes in the vehicle fleet, travel patterns, consumer preferences, revenue durability, and more. When existing revenues underperform or lose buying power, state and regional leaders should add new or different revenues to ensure the system has sufficient and durable funding sources. Notably, the sales tax should be expanded to include services to better capture changes in the regional economy.

Establish a regional revenue source

Northeastern Illinois should pursue a dedicated source of regional funding to provide stable and consistent revenue for future infrastructure investments. Given the region's unique and significant investment needs, partners should pursue distinct revenue sources that can help match federal funds, implement regional transportation priorities, and advance modernization initiatives.

Objective: Enhance government collaboration to optimize the system's operations, performance, and fiscal capacity

Use collaborative performance-and data-driven practices to guide investment decisions

With aging assets and increasingly expensive maintenance costs, regional partners should work together to manage limited resources efficiently. Transportation planning and programming decisions should be based on data and performance measures to maximize benefits.

Streamline project delivery

Project implementation delays can disrupt transportation operations and impose substantial costs over time. Northeastern Illinois should improve the efficiency of project delivery through strategies such as increasing public sector capacity, reassessing project scopes in the face of rising costs, and addressing context-specific sources of delay.

Monitor and strategically prepare for emerging technologies

Transportation stakeholders should jointly monitor technological innovations related to electric vehicles, unmanned aircraft systems, intelligent transportation systems, autonomous vehicles, and artificial and predictive analysis to assess the potential benefits and risks to the region's transportation system. As emerging technologies rise to the forefront, the region should guide their deployment in ways that prioritize efficiency, fiscal sustainability, and a high quality of life for residents.



CMAP's **Advancing a road usage charge in Illinois** explores how a per-mile road usage charge could provide a more sustainable, flexible way to fund transportation by better aligning revenues with how people use the road system. The paper outlines why Illinois should advance a road usage charge feasibility study and identifies key considerations for designing a program that supports regional priorities around mobility, safety, economic prosperity, and greenhouse gas reduction.

BLUE RIBBON COMMISSION on Transportation Infrastructure Funding and Policy

To coalesce around a unified vision for the future of transportation, the Illinois General Assembly established the Blue Ribbon Commission on Transportation Infrastructure and Funding. The **commission's final report** recommends accelerating project delivery, expanding workforce capacity, maximizing investments, driving sustainable outcomes, and securing adequate funding sources.

Anticipate necessary provisions when considering the introduction of automated vehicles

When considering potential proposals to integrate unmanned automated vehicles (UAVs) into the regional transportation system, agencies should prevent outcomes that impair operations, weaken revenue sources, or threaten residents' well-being. The region should establish agreements that provide consistent access to data collected by UAV companies. Transportation agencies should also consider improvements to ensure the safe and efficient operation of UAVs, such as highly visible signs, signals, and road markings. Given the fast pace of technological innovation and market competition, conditions and agreements should be regularly reassessed to determine if adjustments are necessary.

Protect the transportation system's cybersecurity

Transportation implementers should make provisions to prevent ransomware attacks, data breaches, infrastructure attacks, and other forms of infiltration into online systems. The region should also protect residents from phishing, spam, or other fraudulent attempts to access their payment information for transportation-related fees, fines, and fares.

The strategies in this chapter are necessary but not sufficient on their own. New revenues are a prerequisite for solving the problem; they are not, by themselves, the solution. Revenue decisions and investment decisions are two sides of the same coin, and the region cannot address one while ignoring the other. The financial constraints documented in this chapter are precisely why the investment decisions that follow are critical. With needs far outpacing available revenues, every dollar directed toward a transportation project is a dollar not available for another. The next section identifies the specific projects and programs that the region has determined, through a rigorous performance-based process, are the strongest candidates for that investment.

RTP indicators to track system condition and solvency	Today's trendline	Desired trendline
Interstate and non-interstate pavement in poor condition The percentage of roadways on the NHS determined to be in poor condition		
Buses past useful life Percent of buses in the region's fleet that have surpassed their determined useful life		
Rail vehicles past useful life Percent of rail vehicles in the region's fleet that have surpassed their determined useful life		
Transportation capital revenue purchasing power index An index that compares the change in state capital revenue sources, such as the MFT and motor vehicle registration fees, to transportation costs		
Bridges in poor condition the percentage of bridges determined to be in poor condition		



Priority investments

Maximizing regionwide benefit under financial constraint

Planning for the region's transportation future requires confronting a fundamental challenge: transportation needs far outpace available revenues. Aging infrastructure, climate risks, safety concerns, and shifting travel patterns are increasingly straining the transportation assets on which the region relies. While there is no shortage of transformative ideas for meeting these challenges, limited resources require disciplined, strategic decisions on the investments that will provide the greatest benefit to northeastern Illinois.

In the context of this plan, the value of specific transportation investments depends on how effectively they advance the RTP's goals to:

- Strengthen connections between people and places
- Prioritize safety and public health
- Mitigate pollution and invest in resilient infrastructure
- Support economic prosperity and inclusive growth
- Strategically govern, fund, and preserve the system

A strategic and forward-looking process that assesses projects using a consistent set of evaluation criteria — a performance-based evaluation framework — is the region's primary tool for collaboratively and transparently translating these goals into investment decisions.

As noted in greater detail in this chapter, the RTP identifies a list of priority investments — a focused set of regional capital projects (RCPs) and programs that most substantially advance regional goals. This set of priority projects and programs is the culmination of a rigorous process of analytical evaluation, stakeholder engagement and consensus-building that sought to identify the investments that are best positioned to deliver broad, transformative impacts for northeastern Illinois as a whole.

Evaluation of project benefits: By applying uniform criteria across all projects, the evaluation process illustrated the relative value of each proposed investment and its effects on a range of performance areas, including safety, mobility, emissions reduction, and system preservation.

Engagement: Through robust stakeholder engagement — such as community events, a public questionnaire, and resource group meetings — residents and partners contributed insights about local context and lived experience that data alone could not provide.

Assessment of trade-offs: Investments with greater regional benefits often come with higher financial costs, and investments that perform well in some of the RTP's goal areas may underperform in others. Prioritization therefore required weighing trade-offs to determine the most broadly beneficial path forward.

Building momentum behind transformative investments

The RTP's priority investment list elevates a focused set of programs and projects that most substantially advance regional goals. The list is not a ranking or a prescribed sequence of steps; it is a strategic platform for building momentum behind investments capable of delivering broad, transformative impacts across northeastern Illinois. All fiscally constrained RCPs, including those not on the priority list, deliver meaningful benefits to the communities and corridors they serve and remain eligible for federal funding and approvals. Among them, the priority investments are the ones the region is prepared to champion most actively — the investments where the region's collective ambition and resources are best aligned to deliver lasting, regionwide change.



Priority projects represent a refined subset of capital projects that are particularly impactful and illustrative of the regional vision. These projects deliver measurable progress toward core outcomes in specific locations across the region, demonstrating how RTP strategies translate into tangible, on-the-ground transportation improvements.



Priority programs, by contrast, are categories of recurring investments that establish long-term strategic direction while preserving flexibility in implementation. These programs promote coordination across jurisdictions and agencies and enable the bundling of smaller, related investments — recognizing that certain strategies are most effective when deployed across the region, not just in one location.

Together, the 15 priority investments elevated through the planning process form a balanced, performance-driven strategy for actualizing the region's goals. They are designed to deliver meaningful, regionwide benefits by enhancing safety, mobility, and reliability across the transportation system. By combining location-specific projects with systemwide programmatic investments, the list represents a roadmap for turning the regional vision into concrete action while maintaining flexibility to adapt as priorities, conditions and opportunities evolve over time. Listed in alphabetical order, these priority investments are not ranked and do not imply any order of relative importance.

- Advancing regional rail
- Chicago Hub Improvement Program
- Connect 290 Blue
- Connected sidewalks, bikeways, and micromobility infrastructure
- CREATE 75th Street Corridor Improvement Project
- Faster, more reliable buses
- I-55 improvements
- I-90/I-94 reconstruction (Hubbard Street to 31st Street)
- North DuSable Lake Shore Drive improvements
- Randall Road improvements
- Red and Purple Modernization next phases
- Regional Intelligent Transportation Systems (ITS)/transportation management center
- Transit station accessibility
- Transportation decarbonization
- US 45 – Rollins Road to IL 120

Advancing regional rail

Advancing regional rail requires strategic investments that remove operational constraints and modernize aging rail assets, creating a faster, more reliable, and better-connected transit network. By addressing foundational infrastructure needs, these projects enable a shift to a regional rail model that aligns with today's travel patterns — offering frequent, all-day, regionally integrated rail service. Key projects include:



Photo: Joseph Cermak

A2 Crossing Modernization:
Reconstruction of the busiest railroad intersection in the Midwest, where more than 300 trains pass through each weekday. Components of the A2 Interlocking and Tower A2 are more than a century old and need to be replaced to maintain Metra's reliable regional rail service.



Rock Island improvements project:
Infrastructure upgrades on the Metra Rock Island District Line that would increase operating capacity, improve safety, and improve service reliability, helping enhance coordination between freight traffic and Metra trains.



O'Hare express service:
Improvements on the North Central Service Line that would allow future express train service between O'Hare Airport and downtown Chicago, capable of moving thousands of travelers in as little as 25 minutes.

Chicago Hub Improvement Program

The Chicago Hub Improvement Program (CHIP) is a transformative investment in the future of passenger rail in the Midwest and beyond. CHIP is made up of two components: Chicago Union Station projects and hub infrastructure projects.

Chicago Union Station projects include the concourse, platforms, and the trainshed. The projects are designed to expand capacity, improve passenger flow, upgrade safety, increase accessibility, and modernize the overall station experience for all Amtrak and Metra riders.

Hub infrastructure projects will modernize bridges, add network connections, and expand yard maintenance and storage capacity — all of which lead streamline operations, create more efficient train movements, and reduce delays.

As the nation's rail crossroads, Chicago plays a vital role in both intercity and regional passenger service. However, aging infrastructure has not kept pace with rising demand, leading to congestion, delays, and safety concerns. CHIP is designed to address these challenges. Through targeted investments in essential infrastructure, the program will strengthen reliability, enhance safety, and generate economic growth through job creation and business investment. CHIP prepares the region's rail network to meet the needs of future generations.

Chicago Union Station impacts

- **3rd busiest** passenger railroad terminal in the U.S.
- **3.3 million** Amtrak riders annually
- **15.1 million** Metra riders annually
- **400+** train movements each day
- **17** Amtrak intercity routes
- **6** Metra commuter rail lines

Figure 24: Chicago Union Station is a hub for passenger rail routes across the Midwest

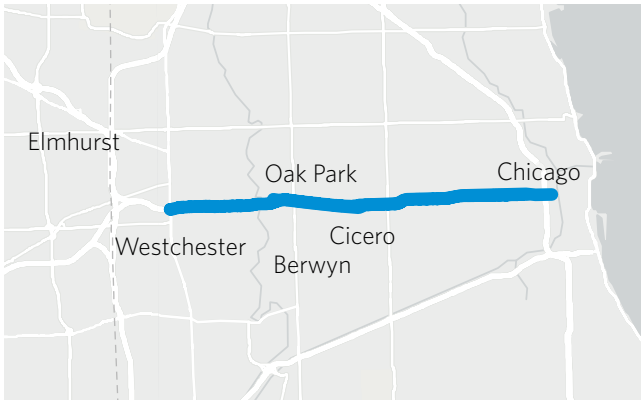


Connect 290 Blue

Connect 290 Blue is a first-of-its-kind, multimodal initiative that includes improvements to both the I-290 Eisenhower Expressway and the CTA Blue Line Forest Park Branch. The corridor plays a critical role in regional mobility across all travel modes, and investment in its core infrastructure will deliver significant economic, safety, resilience, and community benefits. Given its importance, IDOT, the CTA, and CMAP established a joint governance structure to advance a unified corridor vision and coordinated program of projects.

The I-290 corridor is among the most congested expressways in the nation and urgently needs modernization to repair aging infrastructure. The Forest Park Branch of the Blue Line — last rebuilt in 1958 — now operates under slow-zone restrictions for more than 70 percent of its length, requiring trains to operate at reduced speeds for safety. Rail stations along the branch also need significant upgrades: only four of the eleven stations are accessible, making them more difficult to use for families and those with mobility challenges.

This investment will reduce congestion, improve traffic flow and transit speeds, and make stations fully accessible. Improvements will also help advance economic growth, job access, and inclusion in areas that have been historically disconnected from economic opportunity — in part because the expressway itself is a physical barrier. In addition, the program will strengthen corridor resilience by mitigating flood risks and reducing emissions associated with congestion.

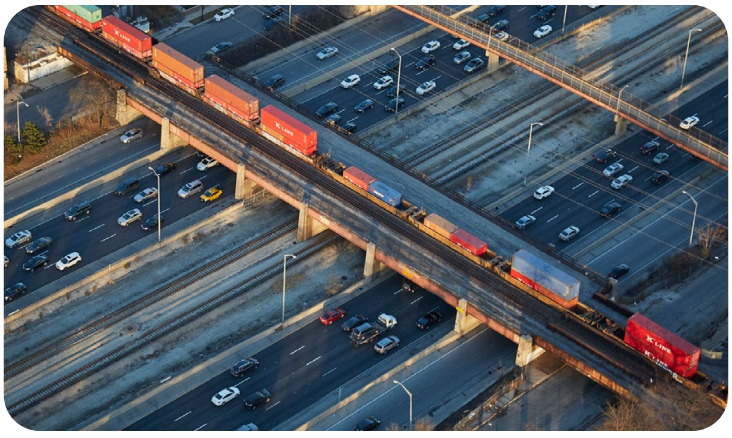


Connect 290 Blue — RCPs 13114, 22185.

I-290 Blue Line modernization impacts

- **$2.7 billion** in travel time savings
- **$68 million** increase in economic activity
- **6% reduction** in vehicle crashes
- **90% reduction** of slow zones on the CTA's Blue Line

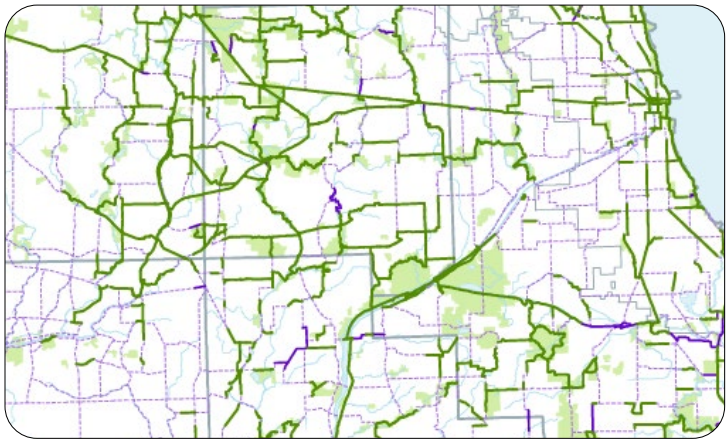




Connected sidewalks, bikeways, and micromobility infrastructure

Safe, connected, and accessible pedestrian and micromobility networks are essential components of the region's transportation system. This priority focuses on targeted investments that close gaps in the regional trail and bikeway network, strengthen first- and last-mile connections to transit, and improve routes for people traveling outside of vehicles. These investments strengthen safety, expand access, and create a more seamless multimodal system.

The region's transportation agencies are aligning their efforts to deliver active transportation improvements across northeastern Illinois:

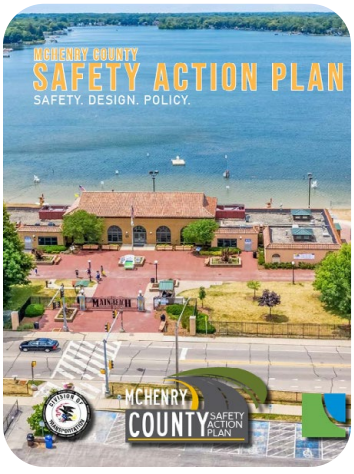


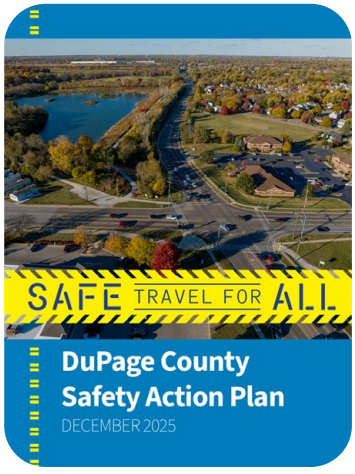
CMAP's Regional Greenways and Trails Plan outlines a network of continuous greenway and trail corridors that link communities across the region and provide scenic beauty, natural habitat, and recreational opportunities.

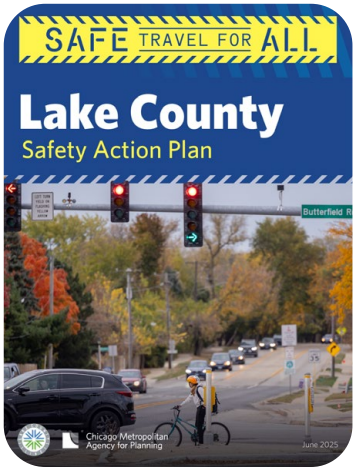


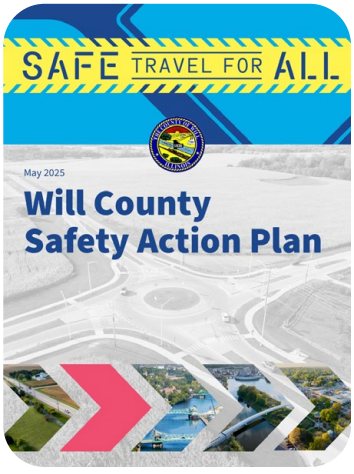


Cook, DuPage, Kane, Lake, McHenry, and Will counties have each adopted countywide safety action plans that provide data-driven road maps to reduce fatalities and serious injuries, with a strong emphasis on protecting people walking and biking.









CREATE 75th Street Corridor Improvement Project

The 75th Street Corridor Improvement Project (CIP) is the largest initiative in the CREATE program, a public-private partnership dedicated to enhancing the efficiency of the region's rail network. By modernizing critical rail infrastructure, the project will deliver significant economic, environmental, and mobility benefits.

The 75th Street CIP is designed to alleviate congestion at the Belt Junction — the most congested chokepoint in the Chicago freight terminal. Six major railroads — two passenger and four freight — converge at the 75th Street corridor on Chicago's South Side, where several at-grade crossings cause major delays for both trains and roadway traffic. Improvements include two rail-to-rail grade separations, as well as a flyover to reroute the Metra SouthWest Service to the less congested LaSalle Street Station.

The next critical phase of the 75th Street CIP is the P2 Flyover. This project will provide significant benefits to the region and beyond by:

- Faster travel times and expanded service for passengers on the Metra SouthWest Service line and Amtrak's Cardinal service
- Greater capacity for the freight rail system, leading to reduced freight rail delay and avoiding diverting up to 8% of the region's freight traffic onto trucks
- Significantly increased operational and maintenance efficiency from combining Metra's SouthWest Service and Rock Island lines north of 75th Street, removing the need to maintain 44 single-track bridges that are over a century old
- Eliminating over 48,000 hours of combined delay for freight and passenger trains in the Chicago network over the next 30 years

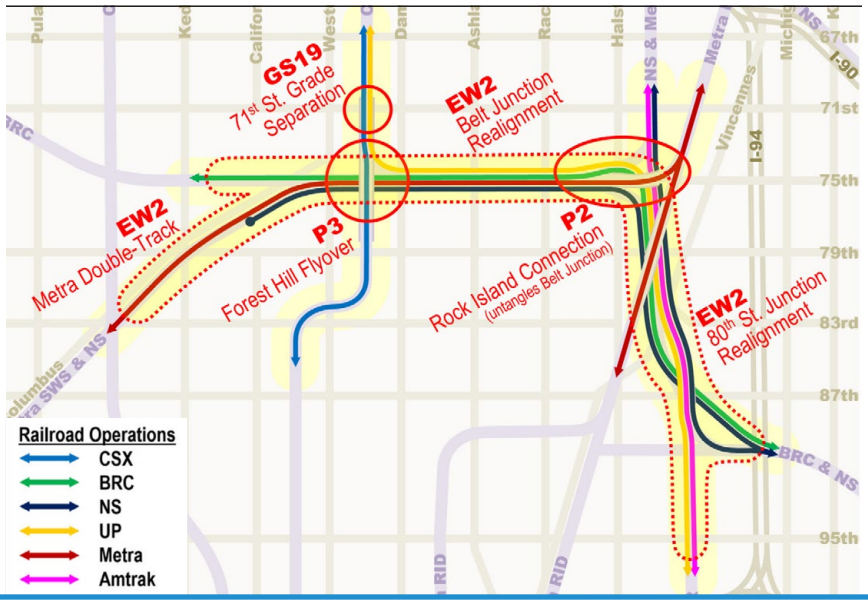
CREATE Program impacts

Modernizes a rail network that sees **500 freight trains** and **800 passenger and commuter trains** pass through every day

The national rail network depends on northeastern Illinois: **1 out of every 4 U.S. freight trains** pass through Chicago

Generates **$31.5 billion** in economic benefits over 30 years

Figure 25: The 75th Street Corridor Improvement Project's footprint







Faster, more reliable buses

Slow bus speeds make buses less reliable for riders and more expensive for transit agencies to operate, ultimately reducing the competitiveness of the region's transit system as well as economic access for residents. Bus priority projects provide a cost-effective way to provide faster service on key corridors. Proven strategies — including bus lanes, queue jump signals, and upgraded passenger stations — offer improved reliability, comfort, and faster travel times.[62]

The region's transportation agencies are working together to provide faster, more reliable bus service:



Photo: CTA/CDOT

CDOT and CTA are working to implement the Better Streets for Buses Plan with two major projects:

- The **Bus Priority Zone program** addresses pinch points along major bus routes that experience traffic congestion, insufficient space for bus boarding, or bottlenecked intersections through the addition of bus priority infrastructure.
- The **Bus Priority Corridor Study** will develop concepts for continuous bus priority improvements along five key transit corridors: 55th St and Garfield Avenue; Cottage Grove Avenue; Fullerton Avenue; Pulaski Road; and Western Avenue.

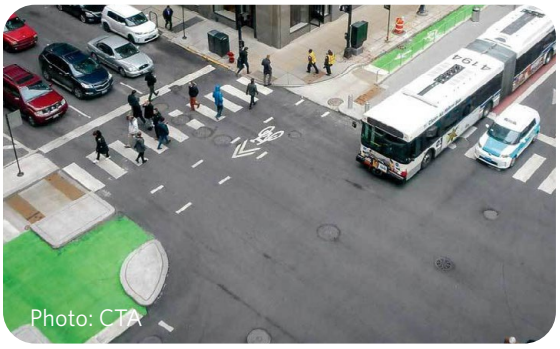

Photo: CTA



Photo: Pace

Pace's Pulse program is expanding on the success of the Milwaukee Line and Dempster Line to provide arterial bus rapid transit service in heavily traveled corridors.



Photo: Pace

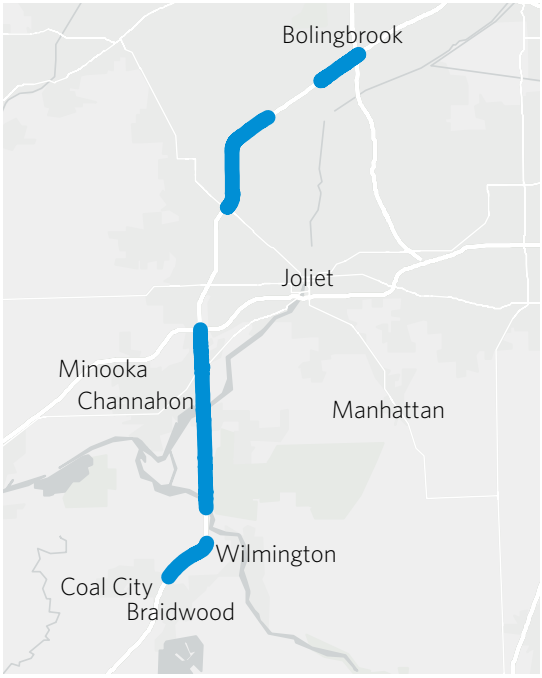
Pace's Bus-on-Shoulder program improves reliability and supports congestion relief by allowing buses to bypass traffic on routes that travel on heavily congested I-55, I-94, and I-90.

The growing emphasis on bus reliability reflects its effectiveness in attracting and retaining riders. It also highlights a broader regional focus on targeted operational investments that enhance rider experience without requiring major system expansions.

I-55 improvements

Improvements along the I-55 corridor from I-355 to Coal City Road address critical state of good repair needs and enhance reliability along a major freight corridor in Will County. Railroads handle approximately 1.6 million containers and trailers annually at terminals in Will County.[63] The I-55 corridor is the backbone of that system, serving large logistics parks, intermodal rail terminals, and distribution centers. By modernizing I-55 in an area of concentrated industrial development, these investments ensure that infrastructure upgrades keep pace with the growth of freight traffic.

The projects are expected to reduce bottlenecks and support a more efficient flow of goods while mitigating the impacts of heavy truck traffic on nearby communities. These investments directly advance priorities identified through a collaborative planning process with Will County, the Federal Highway Administration, IDOT, and CMAP — known as the *Will County Community Friendly Freight Mobility Plan* — which named I-55, IL-53, and Weber Road as key truck bottleneck locations in need of improvement.[64] Key projects include:



I-55 improvements — RCPs 13111, 13106, 14109.



I-55 from I-355 to IL 53 (Bolingbrook Drive): Reconstructing and adding lanes to a 2.6-mile section of I-55 in northern Will County, the project will expand the interstate from three to four lanes in each direction. This segment connects to IL-53 (Bolingbrook Drive), identified in the Will County freight mobility plan as a significant truck bottleneck location serving logistics and distribution activity.



I-55 from I-80 to Coal City Road: This investment modernizes and adds lanes to a 9.8-mile section of I-55 in west Will County to bring the corridor into a state of good repair while accommodating growing traffic volumes. This segment directly serves three large logistics parks and two intermodal rail terminals, making it one of the most freight-intensive stretches of expressway in the region.

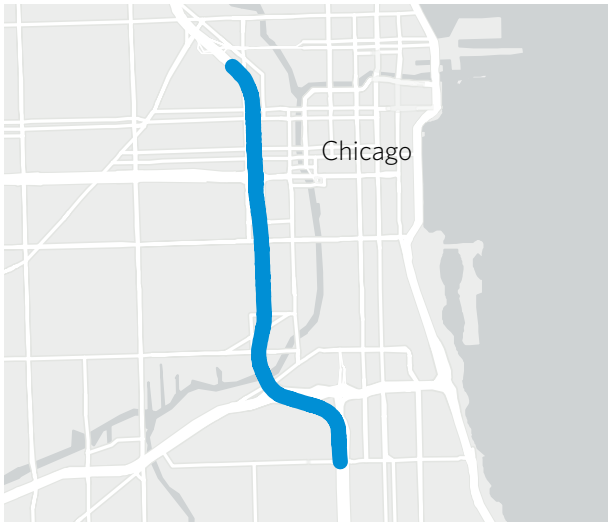


I-55 from Weber Road to US 30, at Airport/Lockport Road and at IL 126: To improve access to I-55 in northeast Will County, the project will construct a new full interchange at Airport Road and expand the interchange at IL 126 to improve access to I-55 in northwest Will County. Weber Road was identified in the Will County freight mobility plan as a significant truck bottleneck location, and new interchange access at Airport/Lockport Road will improve connections to industrial and logistics activity in the corridor.

I-90/I-94 reconstruction (Hubbard Street to 31st Street)

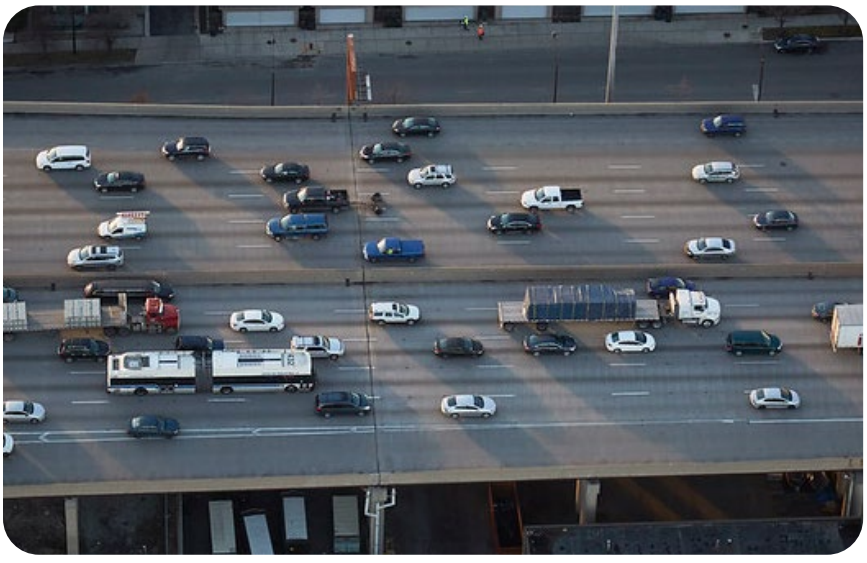
The I-90/I-94 Kennedy and Dan Ryan Expressway reconstruction addresses significant structural and operational deficiencies along a four-mile stretch on both sides of the Jane Byrne Interchange. The proposed reconstruction project preserves critical infrastructure and improves safety for more than 275,000 motorists who use the expressway each day.

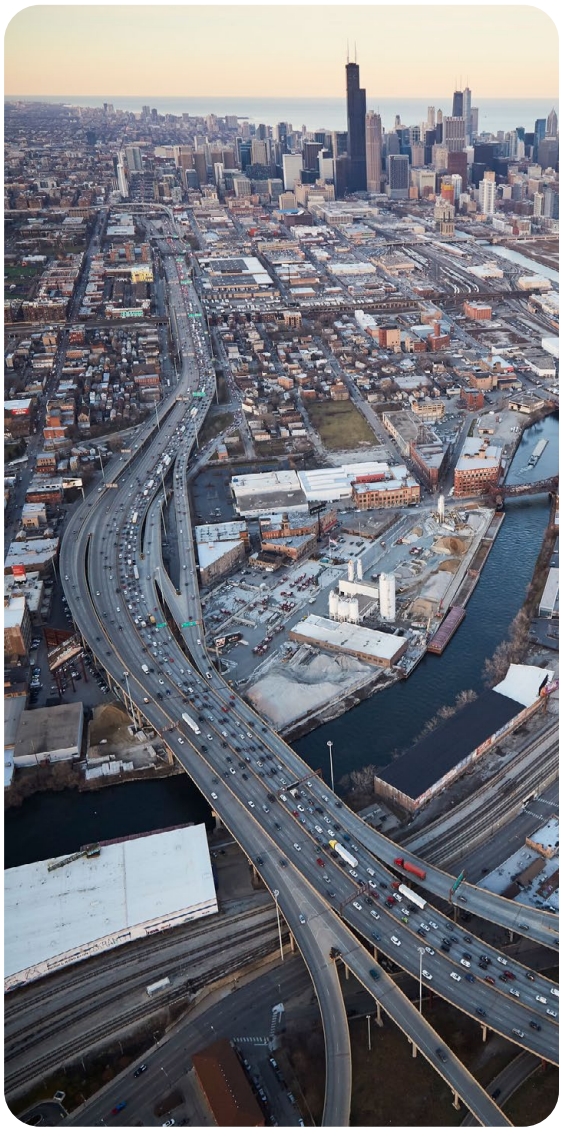
This investment builds on the success of IDOT's I-90/I-94 rehabilitation project, which revitalized the Kennedy Expressway from the Edens Expressway junction to Ohio Street. Completed in 2025, the project included rehabilitating 36 bridges and the Reversible Lane Access Control System, installing new signage and LED lights, pavement patching, and structural painting. Together, the projects ensure long-term reliability on one of the region's most heavily traveled expressway segments.



I-90/I-94 reconstruction (Hubbard street to 31st street) — RCP 11175.





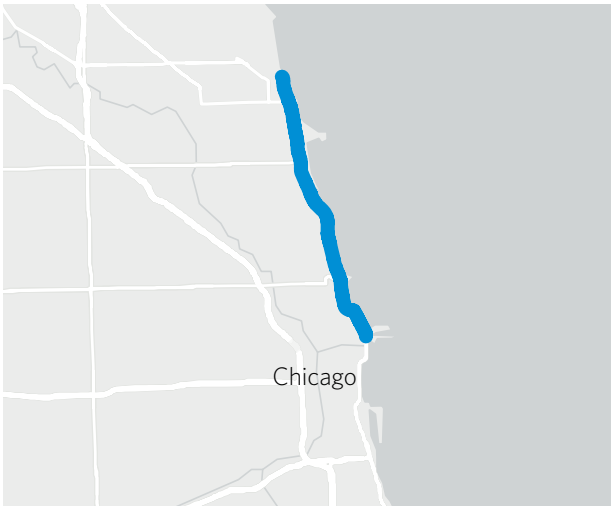


North DuSable Lake Shore Drive improvements

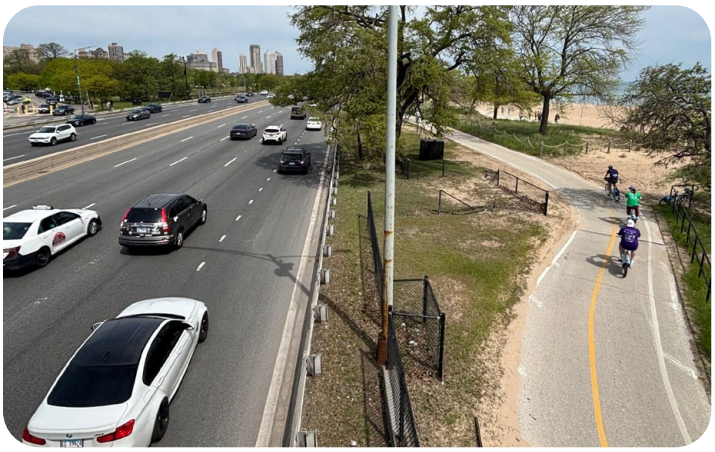
The North DuSable Lake Shore Drive (NDLSD) improvements project reconstructs and modernizes aging infrastructure between Grand Avenue at Navy Pier and Hollywood Avenue in Edgewater. The project improves safety, reliability, accessibility, and multimodal connectivity on a highly traveled corridor that has significant implications for how residents and visitors access Lake Michigan and the surrounding recreational spaces.

Originally constructed in the 1930s through the Works Progress Administration, the NDLSD is now overdue for complete reconstruction or major rehabilitation. Increased use of both the NDLSD and the park spaces alongside it — including Lincoln Park, the Lakefront Trail, and nearby beaches — has overburdened the original design, leading to safety concerns, congestion, and constrained access to the lakefront.

REDEFINE THE DRIVE
NORTH DuSABLE LAKE SHORE DRIVE



North DuSable Lake Shore Drive improvements — RCP 12120.





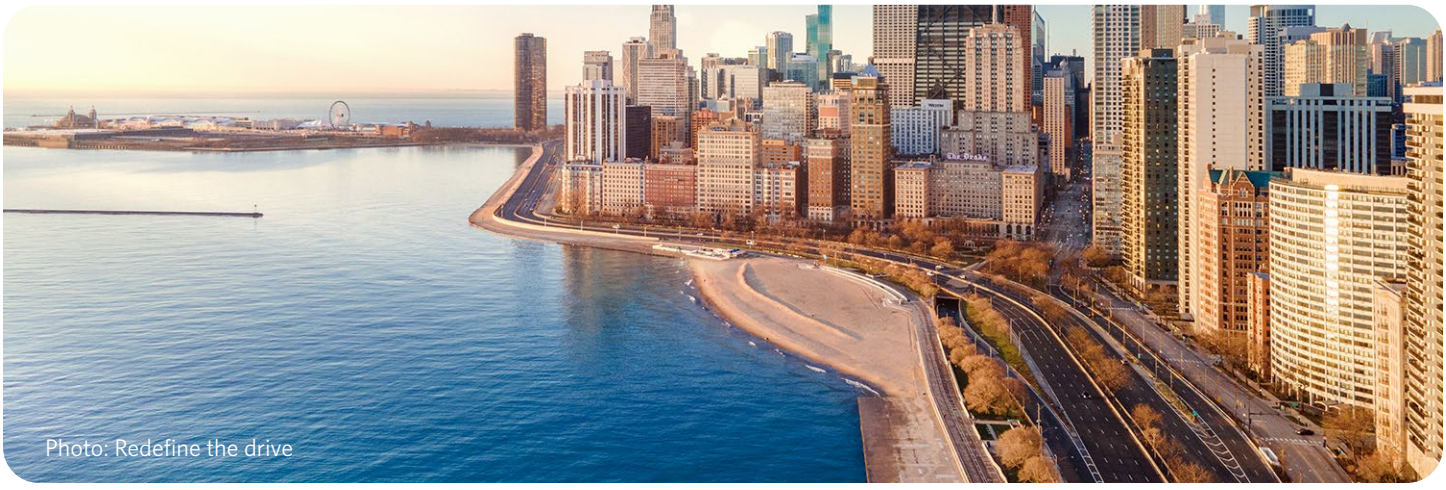
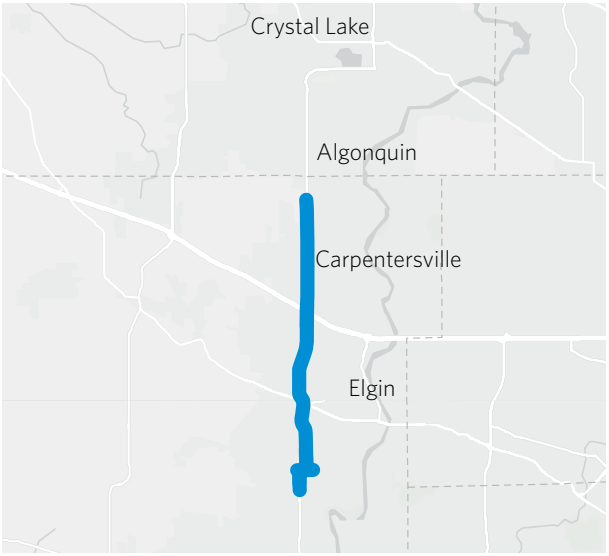


Photo: Redefine the drive

Randall Road improvements

Randall Road improvements include a coordinated set of projects along a 10-mile stretch of the corridor in Kane County. The projects address state of good repair, reliability, and traffic safety on a key north-south connection between west suburban communities.



Randall Road improvements — RCPs 43211, 43208, 94338.



Randall Road at I-90: The project will reconfigure the Randall Road interchange at I-90 by adding a new ramp to improve connectivity. It will also widen a half mile section of Randall Road between Point Boulevard and Alft Lane and add bicycle and pedestrian infrastructure.



Randall Road from north of Stearns Road to south of Longmeadow Parkway: This investment completes ongoing add-lane work along a 10-mile section of Randall Road in northeast Kane County, increasing the cross-section of this major arterial from two to three lanes in each direction to address capacity constraints.



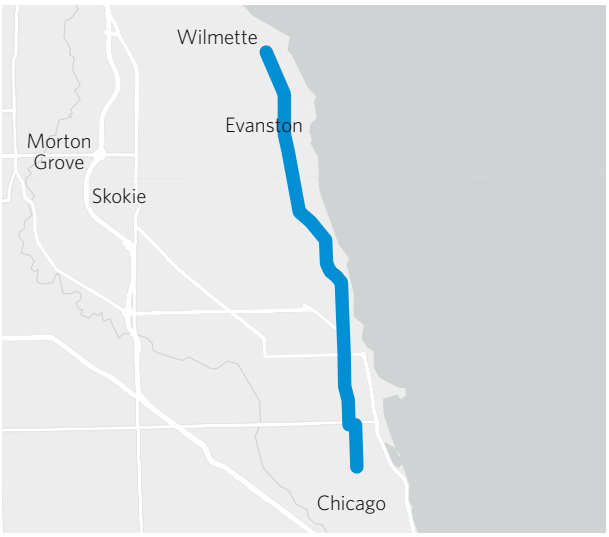
Photos: KDOT

Randall Road grade separation and intersection safety improvements at Hopps Road: The project realigns Randall Road's intersection with Hopps Road, increases the cross-section from two to three lanes in each direction, and constructs a grade separation over the Canadian National Railroad to eliminate conflicts, enhance safety, and accommodate future traffic growth. The project also incorporates drainage improvements to strengthen resilience and includes a multiuse path to close a key gap in the bicycle and pedestrian network.

Red and Purple Modernization next phases

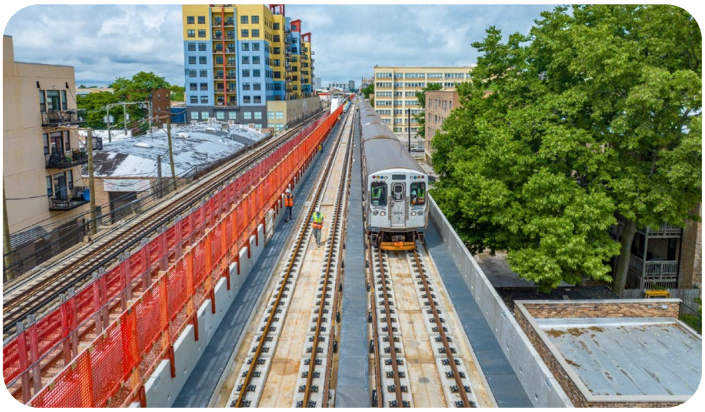
Building on the success of phase one, the next phases of the CTA's **Red and Purple Modernization (RPM)** program will replace aging infrastructure and completely rebuild the 9.6-mile Red and Purple Line corridor between Belmont and Linden, the busiest transit corridor in the Midwest. The RPM program is necessary for the CTA to increase train capacity, enhance accessibility, improve rider experience, and support local and regional growth.

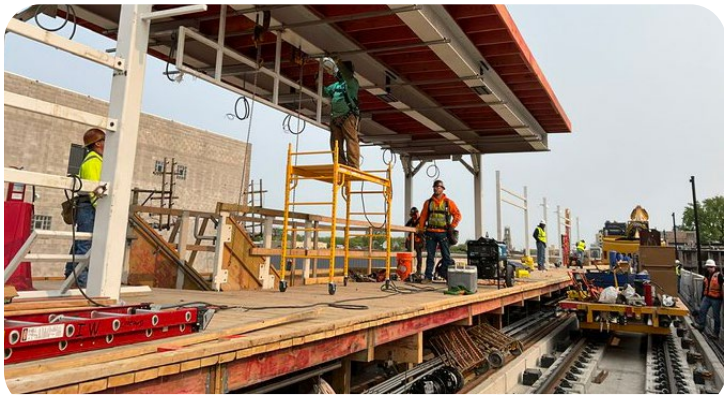
Much of the elevated structure, embankment, track, equipment, and stations on the shared Red and Purple Line corridor were originally built in the early 1900s and is at the end of its useful life. The infrastructure requires frequent maintenance and the enforcement of slow zones, which reduce the transit system's performance and require riders to navigate constrained stations with access limitations. Rebuilding stations, tracks, and infrastructure will restore the corridor to a state of good repair, increase operating speeds, improve efficiency, and expand access for people with disabilities.



Red and Purple Modernization next phases — RCP 23188.

The project will also include safety enhancements such as upgraded lighting, wider platforms and staircases, and better maintenance access. By reinvesting in this core transit infrastructure, the RPM program positions CTA to meet current and future ridership demand and ensures that the corridor can continue serving as an anchor for connectivity and economic activity for another century.

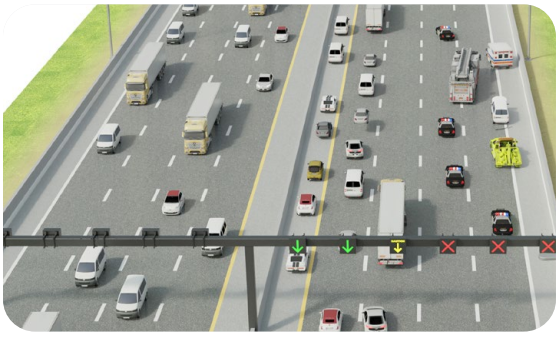




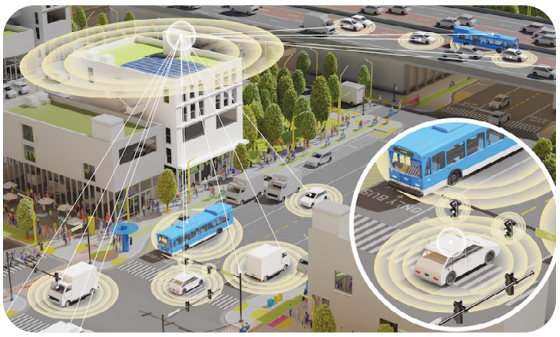

Photos: CTA

Regional Intelligent Transportation Systems (ITS)/transportation management center

Unpredictable congestion causes delays for people and goods traveling on key corridors across northeastern Illinois. This priority advances a coordinated set of system management investments that optimize traffic flow and make travel times more consistent without expanding roadway capacity:

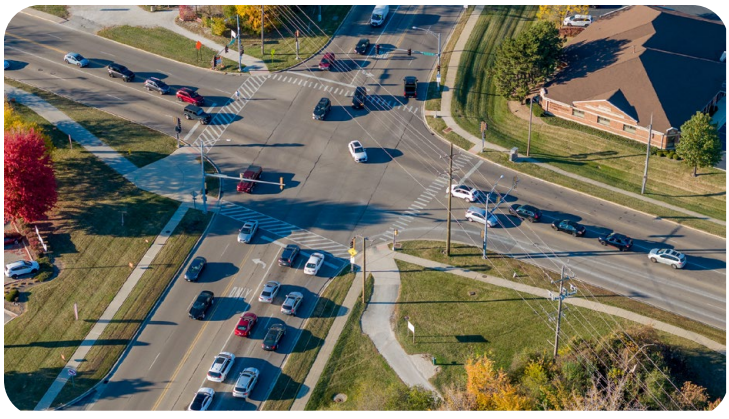


Regional Traffic Management Center (TMC): IDOT, in partnership with county agencies, is advancing a regional TMC to serve as a centralized hub for real-time traffic monitoring and coordinated response. By integrating data and operations across jurisdictions, the TMC will help enhance traffic operations, improve incident response and clearance times, and enable more effective use of existing infrastructure.



Intelligent Transportation Systems (ITS): Investments in ITS — including coordinated traffic signals, digital highway signs, and automatic incident detection — provide tools to actively manage congestion and respond to roadway disruptions as they occur. These technologies offer a cost-effective strategy to improve safety, reliability, and overall system performance.







Photos: IL Tollway

Transit station accessibility

Despite recent progress, the region's public transportation infrastructure is not fully accessible to all residents. Investing in transit station accessibility means improving existing infrastructure and adding critical accessibility features — such as elevators, ramps, and visual and auditory wayfinding communications — so that transit is a strong travel option for people of all abilities. Expanding accessibility strengthens network connectivity, broadens access to jobs and services, increases ridership potential, and improves overall system performance.

This priority supports the continued implementation of rail station accessibility initiatives at the CTA and Metra:



The CTA's **All Stations Accessibility Plan** establishes a long-term road map to achieve 100 percent station accessibility by 2038. In addition to delivering step-free access, the program includes the rehabilitation or replacement of all 160-plus existing station elevators, as well as enhancements to rail system signage.



Metra's strategic plan, **My Metra, Our Future**, identifies system accessibility as a top priority. The plan outlines the agency's goals for station modernization. Metra is currently drafting a more detailed "Access for All" framework to describe how Metra will meet its accessibility needs at stations, including upgrading stations and funding the necessary improvements.



Photo: CTA


Photo: Metra



Photo: CTA

Transportation decarbonization

The transportation sector is a leading contributor of greenhouse gas emissions in northeastern Illinois, making transportation decarbonization essential to the region's emission reduction goals.[65] This priority includes investments that reduce emissions, expand electric vehicle charging, modernize transit fleets, and support the transition to cleaner technologies. Together, these efforts improve air quality, strengthen energy resilience, and position the region to lead in the transition to zero-emission technologies.

The region's transportation agencies are already advancing key decarbonization initiatives:

- **IDOT's National Electric Vehicle Infrastructure Program** deploys funding to build a comprehensive public charging network that is convenient, accessible, reliable, and equitable, supporting electric vehicle adoption across Illinois

- The **CTA's Charging Forward Plan** and **Pace's Zero-Emission Bus Transition Plan** detail how each agency will transition to a fully electrified bus fleet by 2040, reducing emissions while improving rider experience

- **Metra's Next-Gen Regional Rail Fleet Initiative** includes several low-or-no emission locomotives, including acquiring first-in-the-nation Battery-Electric Multi-Unit trainsets, zero-emission alternative fuel locomotives and switcher locomotives, and cleaner remanufactured locomotives.

Achieving the region's decarbonization goals will require multiple pathways. Where electrification is operationally feasible, it remains the preferred long-term direction. Where it is not — due to shared infrastructure, freight agreements, network configuration, or capital funding availability — investment in modern, lower-emission rolling stock still deliver meaningful emissions reductions, air quality improvements, and reliability gains that advance the same goals. Reducing vehicle miles traveled through expanded transit access and non-motorized travel options is another essential pathway, complementing vehicle-level improvements by reducing the total number of trips made by car. Recognizing that transit represents a small proportion of transportation emissions, agencies will continue to prioritize high-quality, frequent service while advancing fleet electrification as funding and technology improve.





Photo: Pace



Photo: CTA



Photo: Metra



Photo: Metra

US 45 – Rollins Road to IL 120

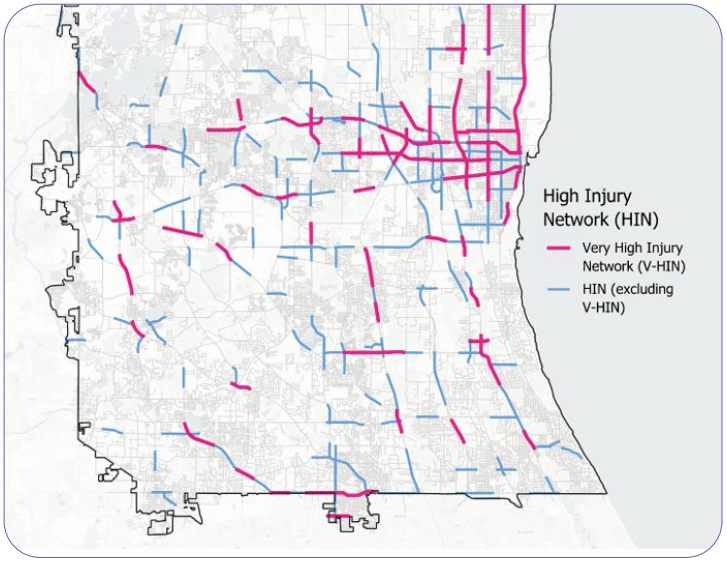
Proposed improvements on US 45 (Lake Avenue) from Rollins Road to IL 120 address traffic safety and reliability issues on a key corridor in central Lake County. The project would widen a 1.6-mile segment of US 45 from one lane to two lanes in each direction, increasing capacity and improving traffic flow on this major arterial. With this segment having been identified as a High and Very High Injury Network in Lake County's Safety Action Plan, the project will also include intersection improvements at Rollins Road and IL 132.

This investment will help alleviate longstanding north-south mobility challenges in Lake County and address a bottleneck on a route with significant truck traffic. Improvements will enhance key routes between the Villages of Gurnee and Grayslake, improving access to commercial, educational, and recreational destinations. By enhancing operational efficiency and corridor capacity, the project improves regional connectivity, reduces recurring delays, and delivers more reliable travel times for all users.



US 45 from Rollins Road to IL 120 — RCP 13135.







Regional capital projects

Priority investments do not represent the entire universe of important transportation projects. The RCP process surfaces a broader set of investments that meet specific eligibility criteria to receive federal funding and obtain certain federal approvals.

Regional capital projects are classified into two distinct categories:

Fiscally constrained projects: eligible for federal funds
Fiscally constrained projects include the priority investments as well as a larger set of projects that are strong candidates for investment based on performance across evaluation criteria, estimated cost, and alignment with current regional priorities. Committed projects — those already fully funded — are automatically constrained because their full costs have already been covered by existing funding sources.

Fiscally unconstrained projects: not eligible for federal funds
Projects that are unconstrained either require further study or cannot currently be completed within the limits of the region's forecasted revenues. Visionary or illustrative projects are automatically unconstrained because they are in an early, exploratory stage and require further detail before they can be included in the regional planning process.

The region's fiscally constrained projects are diverse across geography, mode, and project type. The total cost of completing 101 constrained projects is an estimated $65.8 billion in 2025 dollars. Of these costs, 55 percent are for maintaining and modernizing the existing transportation system, reflecting the substantial state of good repair needs across the region's transit and roadway networks.

More information about the regional capital projects process can be found in the **RCP Benefits Report**. A full list of constrained and unconstrained projects can be found in the **Financial Plan for Transportation**.

Looking ahead

Priority investments and fiscally constrained projects should be understood as strategic commitments, not guarantees. A project's inclusion as a fiscally constrained RCP reflects regional judgment that it is a strong candidate for funding at a particular point in time. However, it does not guarantee funding or project delivery. Given funding constraints, it is imperative that the region evaluate new projects as they are proposed and revisit the list of constrained RCPs. Doing so ensures that investment decisions continue to demonstrate value as conditions, funding availability, and regional needs evolve.

The region has a strong track record of translating RTP goals into tangible investments across northeastern Illinois. Projects identified in previous plans have progressed from planning to implementation in communities throughout the region, demonstrating how long-term priorities shape funding decisions over time. Since 2010, more than $6.1 billion has been invested in completed RCPs, with an additional $14.4 billion underway to be completed by 2030, supporting safer streets, more reliable transit service, and improved access to economic opportunity.

This track record reinforces the RTP's role as a framework for long-term regional decision-making, rather than a static list of projects. While individual projects may evolve as they move through design, engineering, and funding processes, the plan provides a consistent structure for continuously evaluating priorities and aligning investments with regional goals. As a result, the RTP serves as a living, performance-driven guide for directing limited resources toward the investments that best serve northeastern Illinois. The performance framework evaluates not only the near-term benefits of each investment but also its long-term contribution to the region's fiscal outlook.



Conclusion

The work begins here

A plan is a promise. The 2026 Regional Transportation Plan commits northeastern Illinois to a clear direction: protect what works, repair what is failing, and unlock the untapped potential of a system that, when it operates as designed, is second to none. But a plan is only a promise, and a promise requires follow-through.

The conductors threading freight trains through the region's rail yards experience the transportation system that this plan is about — not as a document, but as a dynamic network with real challenges. The early-shift worker taking transit to work three transfers away feels the gaps this plan is trying to close. The bridge carrying 50,000 vehicles a day is not made safer by the words on these pages. What does make a difference — what determines whether northeastern Illinois is better positioned in 2050 than it is today — is the concrete action that occurs after the plan is adopted.

That work is long, nonlinear, and requires sustained participation from residents, local governments, transportation agencies, and elected officials at every level. Stakeholder participation in planning and programming is critical to informed decision-making. Yet the process itself can appear complex and confusing. The plan therefore ends with a guide to that participation: when decisions are made, how the public can influence them, and why engagement at every stage of the process matters.

How transportation projects are built

The 2026 RTP is the first step in a multistage process that turns regional goals into physical realities. Understanding where this plan fits within that process — and where other decisions are made — is essential for anyone who wants to shape the transportation system we leave to the next generation.

Step 1
Long-range planning (you are here)

The RTP establishes the region's goals, identifies challenges and opportunities, and sets priorities for investment over a 20-year horizon. Federal law requires CMAP to update the RTP at least every four years. At this stage, the region decides what it values, where it wants to go, and what kinds of investments it is willing to make. Regional priorities identified here shape every decision that follows.

Step 2
Short-range programming

The Transportation Improvement Program (TIP) is the RTP's near-term counterpart. Where the RTP identifies long-horizon priorities, the TIP commits federal funding to specific projects within a four-year window. Projects must be consistent with the RTP to receive federal transportation funds, meaning that what the region decides now, in this plan, determines what is eligible for funding in the years ahead. CMAP updates the TIP regularly, sometimes as often as eight times a year, and each amendment is an opportunity for public input at either CMAP's Transportation Committee or MPO Policy Committee. Depending how far a project is in its planning process, the TIP describes an increasing amount of detail.

Step 3
Project-level planning and environmental review

Before a major transportation project can be built, it must first be studied. Project sponsors conduct corridor studies, alternatives analyses, and environmental reviews to assess impacts and identify the preferred approach. For federally funded projects, this process is governed by the National Environmental Policy Act and produces either an Environmental Impact Statement or an Environmental Assessment. These studies must include public involvement, and their formal comment periods are among the most consequential opportunities for community members to shape specific projects.

Step 4
Design and right-of-way

Once a project clears environmental review, it moves into engineering and design, which establishes exact alignments, station locations, land configurations, bicycle infrastructure, stormwater features, and access points.

Step 5
Construction

Construction is the most visible stage, but by the time equipment arrives on-site, most of the major decisions have already been made.

Step 6
Operations, maintenance, and performance monitoring

The transportation investment cycle does not end when construction is complete. Infrastructure must be operated, maintained, and periodically reconstructed — the same cycle of investment previous generations carried out and the current generation must sustain. CMAP monitors the regional transportation system's performance and reports on progress toward the targets established in this plan. That performance data shapes future RTP updates, TIP decisions, and funding priorities. The cycle is continuous.

How to stay engaged



Connect with CMAP directly
CMAP holds public meetings on the RTP, the TIP, and major planning studies. Governing body meetings — including the Transportation Committee, the MPO Policy Committee, and the CMAP Board — are open to the public. Sign up for updates, review proposed TIP amendments, and submit public comments at cmap.illinois.gov.



Explore the CMAP Data Hub
The Data Hub provides public access to the transportation performance metrics, socioeconomic trends, and project information that inform the decisions in this plan. Use it to track progress, identify gaps, and make the case for investment in specific communities or corridors. Visit datahub.cmap.illinois.gov.



Participate in project-level processes
When a corridor study, environmental review, or design process opens in your community or along a corridor you use, continue to advocate for the regional transportation goals highlighted in this plan. The region's goals are only as strong as the projects that carry them forward.



Engage your local government

Decisions about zoning, local road maintenance, sidewalk construction, and transit-supportive development are often made at the municipal level. Local comprehensive plans and capital improvement programs compound over time into the regional system this plan seeks to improve.



Hold the region accountable

CMAP regularly publishes updates on the state of the region's transportation system. When the region makes progress, celebrate it. When safety trends move in the wrong direction, when transit assets age without reinvestment, or when access gaps persist, that information belongs in public debate.

Two sides of the ledger

The challenges documented in this plan are real and require substantial resources. New revenue is not optional — it is a prerequisite for making the region's vision a reality. The tools are within reach. Expanding tolling on facilities that currently have none, shifting from a motor fuel tax toward a road usage charge, establishing a dedicated regional revenue source, and modernizing the sales tax to reflect how today's economy generates wealth — these are the specific mechanisms this plan identifies, and the region should pursue them with urgency.

But revenue is only one side of the ledger.

Think of the regional transportation system as a ledger with two columns. On one side are the assets — not the physical infrastructure itself, but the mobility, economic activity, and quality of life it makes possible. The expressways, rail lines, bridges, and transit network built over more than a century are the means; what they enable is the value. On the other side is the obligation to maintain every mile of that system, indefinitely, at whatever cost the market requires. For decades, northeastern Illinois has added to the asset side of that balance sheet — new roads, extensions, and facilities — while the obligation side has grown faster than revenues can keep pace with. The result is the deferred maintenance backlog that this plan documents.

More revenue will help close that gap. But if the region takes on obligations faster than revenues can offset, the gap will persist regardless of what new funding sources are secured. That is the case when new development occurs in places where the long-term cost of extending and maintaining transportation infrastructure exceeds the economic activity it generates. The challenge is not only revenue levels, but the commitments the region makes — what it builds, where it builds, and how it structures long term stewardship.

New revenues are necessary, but they are not a substitute for more coordinated decision-making. Every dollar raised from users and taxpayers carries a responsibility that the agencies and governments entrusted with those resources direct them as effectively as possible. That means making investment decisions that reflect long-term stewardship rather than short-term convenience, coordinating across jurisdictions to avoid duplication and inefficiency, and making the difficult tradeoffs that performance-based planning requires. The region cannot ask more of its taxpayers and users without also asking more of its transportation agencies and local governments — more transparency, more coordination, and more accountability for how public resources are used.

These are not easy conversations. They involve multiple levels of government, hundreds of municipalities, and deeply rooted patterns of development and investment. But they are the conversations this region must have — because the alternative is a balance sheet that grows harder to manage with every deferred decision.

This generation's choice

The introduction to this plan opened with a scene that repeats itself every morning: freight trains sorting cargo, trucks keeping supply chains moving, and early-shift workers making their way to platforms and bus stops. That system did not build itself. It was built — project by project, generation by generation — by people who decided that the region's future was worth investing in.

The question this plan poses is whether we will make the same choice.

Northeastern Illinois has the infrastructure, the talent, and the institutional capacity to be the thriving transportation hub that its residents deserve — one that is safe, reliable, accessible, and built to last. Getting there requires more than a plan. It requires sustained engagement from residents who know their communities, advocates who press for accountability, local leaders who align their decisions with regional goals, and transportation agencies that earn public trust through impactful investments.

The 2026 RTP is one step. The next step belongs to all of us.



Glossary

Americans with Disabilities Act (ADA)
Federal civil rights law that prohibits discrimination based on disability and requires accessible public facilities, services, and transportation.

ADA transition plan
A plan that identifies barriers to accessibility in public infrastructure and outlines how and when they will be removed.

Air quality conformity
A federal requirement ensuring that transportation plans and programs do not worsen air quality or delay attainment of national air quality standards.

Amtrak
The federally supported national passenger rail service that connects Chicago and northeastern Illinois to destinations across the U.S. Amtrak services are centered at its hub in Chicago's Union Station, serving additional stations throughout the region.

Arterial road
A major roadway intended to carry high volumes of traffic over relatively long distances, often connecting communities, employment centers, and expressways.

Asset lifecycle management
A planning approach that manages infrastructure from construction through maintenance, rehabilitation, replacement, and eventual retirement to maximize performance and value over time.

Bus rapid transit
A bus-based transit service designed to operate more quickly and reliably than standard bus service, often using features such as dedicated lanes, transit signal priority, and enhanced stations.

Capital program
A funding program or package used to support long-term investments in transportation infrastructure, such as reconstruction, modernization, or expansion projects.

The Century Plan
The long-term regional vision for northeastern Illinois that will guide future planning efforts.

Chicago Metropolitan Agency for Planning (CMAP)
The federally designated metropolitan planning organization and the state-designated regional planning agency for northeastern Illinois.

Chicago Region Environmental and Transportation Efficiency (CREATE) Program
A public-private partnership that advances rail and roadway projects to improve the efficiency, safety, and reliability of the Chicago region's freight and passenger rail network.

Chicago Transit Authority (CTA)
Operates one of the nation's largest public transportation systems, covering the City of Chicago and 35 surrounding suburbs. CTA service is provided by bus (127 routes) and rail (8 lines).

Complete Streets
A transportation approach that plans, designs, and operates streets to safely serve all users, including people walking, biking, taking transit, and driving.

Congestion pricing
A strategy that charges drivers a fee to use a roadway during peak travel periods to reduce congestion and improve travel time reliability.

Corridor planning
A coordinated planning process focused on improving transportation performance, safety, and access along a specific roadway, transit line, or travel corridor.

Decarbonization
The process of reducing greenhouse gas emissions, particularly from transportation and other major sectors.

Deferred maintenance
Needed maintenance or repair work that has been postponed, often resulting in worsening asset conditions and higher long-term costs.

Demand management
Strategies intended to reduce or shift travel demand, especially during peak periods, by encouraging changes in travel time, route, destination, or mode.

Dial-a-Ride
A demand-response transit service that provides flexible routing and scheduling, typically serving older adults and people with disabilities.

Electric vehicle (EV)
A vehicle powered fully or partially by electricity rather than gasoline or diesel.

Environmental Assessment
A federal environmental review document prepared under the National Environmental Policy Act to determine whether a project is likely to have significant environmental impacts.

Environmental Impact Statement
A detailed federal environmental review document prepared under the National Environmental Policy Act for projects expected to have significant environmental impacts.

Fine particulate matter
Very small air pollution particles that can enter the lungs and bloodstream and harm human health.

First- and last-mile
The first and final segments of a trip that connect a traveler to or from a main transportation service, such as transit.

Fiscal constraint
A federal requirement that long-range transportation plans and programs demonstrate that sufficient funding is reasonably expected to be available to implement proposed projects.

Grade separation
An infrastructure improvement that separates different travel movements, like a road and rail traffic, at different elevations to improve safety and reduce delay.

Greenhouse gas (GHG)
A gas, such as carbon dioxide or methane, that traps heat in the atmosphere and contributes to climate change.

High-frequency transit
Transit service that operates often enough to minimize wait times and provide convenient, reliable travel.

Illinois Department of Transportation (IDOT)
The agency that plans, constructs, operates, and maintains Illinois' extensive transportation network, including highways, bridges, airports, public transit, and rail.

Infill development
Development on vacant, abandoned, or underused land within already developed areas, often where infrastructure already exists.

Infrastructure Investment and Jobs Act (IIJA)
The federal infrastructure law enacted in 2021 that provides funding for roads, bridges, transit, rail, and other infrastructure programs.

Intelligent Transportation Systems (ITS)
Technology-based tools used to improve transportation operations, such as coordinated traffic signals and real-time traffic monitoring systems.

Intercity bus
Bus service that connects cities or metropolitan areas and provides longer-distance travel beyond local transit service

Intermodal
Relating to the movement of people or goods using more than one transportation mode.

Local cluster
Industries that primarily serve local markets, such as retail or personal services, and support day-to-day economic activity within region.

Metra
The primary commuter rail system in northeast Illinois, connecting Downtown Chicago to the surrounding six-county region with 11 lines and 243 stations.

Metropolitan planning organization (MPO)
The federally required regional body responsible for transportation planning and programming in urbanized areas.

Micromobility
Small-scale transportation options, such as bicycles and scooters, used for short trips and connections to other modes.

Motor fuel tax (MFT)
A tax on gasoline and diesel fuel that helps fund transportation infrastructure.`

Multimodal
Involving multiple forms of transportation, such as walking, biking, transit, driving, freight, and aviation.

National Environmental Policy Act
The federal law requiring environmental review and public involvement for certain transportation and infrastructure projects.

National Highway System (NHS)
A federally designated network of major roads important to the nation's economy, defense, and mobility.

Nitrogen oxides
Air pollutants produced largely by combustion engines that contribute to smog, poor air quality, and respiratory health problems.

Nonattainment
A designation for an area that does not meet federal air quality standards for a particular pollutant.

Northern Illinois Transit Authority (NITA)
The regional transit oversight agency established by state law to replace the Regional Transportation Authority and coordinate transit planning, funding, and performance.

ON TO 2050
The current comprehensive regional plan, which continues to provide a policy foundation for the 2026 Regional Transportation Plan.

Pace Bus
The premier suburban transit provider, safely and efficiently moving people to via 134 fixed routes to work, school, and other regional destinations. Pace also provides paratransit, vanpools, and on-demand services for northeastern Illinois.

Priority investment
A project or program identified in the Regional Transportation Plan as especially important for advancing regional goals and delivering broad public benefit.

Regional capital project (RCP)
A transportation project evaluated through a regional process for its benefits, eligibility, and consistency with regional goals and fiscal constraints.

Regional rail
A service model that provides more frequent, all-day rail service across a metropolitan region and supports a wider range of trip types than traditional commuter rail.

Resilience
The ability of transportation infrastructure and systems to withstand, adapt to, and recover from disruptions such as flooding, extreme heat, or other stresses.

Road diet
A roadway reconfiguration that reduces the number or width of travel lanes to improve safety, support multimodal use, and calm traffic.

Road usage charge (RUC)
A transportation funding mechanism that charges motorists based on the number of miles they drive rather than fuel consumption.

Regional Transportation Authority
The former regional transit oversight agency for northeastern Illinois, replaced by NITA. It was the unit of local government created to oversee finances, secure funding, and to conduct transit planning regionwide in close coordination with the CTA, Pace, and Metra.

Safe System Approach (SSA)
A framework for traffic safety that acknowledges human mistakes and vulnerability and emphasizes shared responsibility and layered protections to prevent fatal and serious injuries.

Slow zone
A section of rail infrastructure where trains must operate at reduced speeds due to asset condition or safety concerns.

State of good repair
A condition in which transportation infrastructure is functioning as intended and does not require significant backlog repair or replacement.

Stormwater runoff
Rainwater or melted snow that flows over hard surfaces instead of soaking into the ground, often carrying pollutants and contributing to flooding.

Tolling
Charging users a fee to travel on a roadway or facility, often as a source of transportation revenue.

Traded cluster
Industries that export goods or services beyond the region, contributing to economic growth and competitiveness.

Transit-oriented development
Development located near transit that supports walking, transit use, and a mix of housing, jobs, and services.

Transportation Improvement Program (TIP)
The short-range program that identifies federally funded transportation projects expected to be implemented over a four-year period.

Travel time reliability
A measure of how consistent travel times is from trip to trip, especially compared to worst-case delays.

Useful life
The expected service life of a transportation asset before major rehabilitation or replacement is needed.

Vehicle miles traveled (VMT)
The total miles driven by vehicles within a given area and time period.

Appendices

A. Administrative Policies and Procedures

B. Air Quality Conformity Documentation

C. Financial Plan for Transportation

D. Public and Stakeholder Engagement

E. Regional Capital Projects Benefits Report

F. Socioeconomic Forecast

G. System Performance Report

H. Transportation System Inventory

I. Travel Demand Model Documentation

Endnotes

1 City of Chicago Office of the Mayor, "Chicago Takes Flight: O'Hare Crowned America's Busiest Airfield," January 2026, accessed April 3, 2026, https://www.chicago.gov/city/en/depts/mayor/press_room/press_releases/2026/january/ohare-busiest-airport.html.

2 CMAP, "Congestion Management Strategy Guidebook," accessed January 26, 2026, https://cmap.illinois.gov/wp-content/uploads/dlm_uploads/Congestion-Management-Strategy-Guidebook.pdf.

3 CMAP, "Congestion Management Strategy Guidebook," accessed January 26, 2026, https://cmap.illinois.gov/wp-content/uploads/dlm_uploads/Congestion-Management-Strategy-Guidebook.pdf.

4 CMAP, "State of the Region," February 2026, accessed April 23, 2026, https://cmap.illinois.gov/wp-content/uploads/State-of-the-Region-Report.pdf.

5 CMAP, "Mobility Recovery," January 2023, accessed April 3, 2026, https://storymaps.arcgis.com/stories/88db4e4032674cdd893908446329f229.

6 U.S. Department of Transportation, "What Is a Safe System Approach?," 2025, accessed March 27, 2026, https://www.transportation.gov/safe-system-approach.

7 CMAP, "Speed Management Report," 2024, accessed March 27, 2026, https://cmap.illinois.gov/wp-content/uploads/dlm_uploads/Speed-Management-Report_CMAP_2024.pdf.

8 Collaborative Sciences Center for Road Safety, "Implementing Safe Systems in the United States: Guiding Principles and Lessons from International Practice," June 4, 2019, accessed March 7, 2026, https://www.roadsafety.unc.edu/wp-content/uploads/2019/07/CSCRS_R3_Final-Report.pdf.

9 CMAP, "Transportation Safety," accessed April 3, 2026, https://cmap.illinois.gov/focus-areas/transportation/safety/.

10 CMAP, Regional greenhouse gas emissions inventory, 2019, accessed March 19, 2026, https://datahub.cmap.illinois.gov/documents/4cb7e97bb5c848b495f0c446153483dc/about.

11 Ibid.

12 National Institute of Environmental Health Sciences, "Air Pollution and Your Health," accessed October 17, 2025, https://www.niehs.nih.gov/health/topics/agents/air-pollution.

13 ACS 5-year estimates (2023) and CMAP analysis of freight railways with five or more trains per day, based on a sample of train counts, activity at yards and terminals, and freight train flows through the region (2023).

14 CMAP, "Transportation Resilience Improvement Plan," 2026, accessed April 3, 2026, https://cmap.illinois.gov/wp-content/uploads/dlm_uploads/Transportation-Resilience-Improvement-Plan-2026.pdf.

15 Ibid.

16 Ibid.

17 Shehadeh Alshboul, "Sustainability-Focused Pavement Management under Climate Variability," Journal of Construction Engineering and Management, 2025, accessed April 24, 2026.

18 Lightcast, "Industry Table," 2025, accessed March 1, 2026.

19 CMAP defines walking distance to high-frequency transit as any location within one-half mile of a rail station or a bus route with rush hour headways of 15 minutes or less, based on 2025 General Transit Feed Specification data. See Chicago Transit Agency, "General Transit Feed Specification," October 8, 2025, accessed December 3, 2025, https://www.transitchicago.com/developers/gtfs. Pace Suburban Bus, "General Transit Feed Specification," October 8, 2025, accessed December 3, 2025, https://www.pacebus.com/route-timetable-data-services.

20 All job density data sourced from U.S. Census Bureau. See U.S. Census Bureau, "Longitudinal Employer-Household Dynamics," 2022, accessed December 15, 2025.

21 CMAP, "Transit Availability Index," 2019, accessed September 29, 2023, https://datahub.cmap.illinois.gov/datasets/CMAPGIS::transit-availability-index-2019/explore.

22 U.S. Census Bureau, "County Housing Unit Totals," 2010-2024, accessed March 2, 2026.

23 CMAP, "Infill and TOD: Exploring Regional Development," 2025, accessed February 16, 2026, https://www.cmap.illinois.gov/documents/10180/760362/Infill+and+TOD+Snapshot+Report.pdf/d2c66127- fa43-5dc0-f84d-e78fe6a2c9b1.

24 Helen F. Ladd, "Population Growth, Density and the Costs of Providing Public Services," 1992, Urban Studies, Urban Studies Journal Limited, vol. 29(2), 273-295, accessed April 8, 2026, https://www.jstor.org/stable/43083539.

25 Todd Litman, "Analysis of Public Policies that Unintentionally Encourage and Subsidize Urban Sprawl," 2015, The Global Commission on the Economy and Climate, accessed April 8, 2026, https://www.lse.ac.uk/Cities/Assets/Documents/Research-Reports/NCE-Cities-Sprawl-Subsidy-Report.pdf.

26 City of Chicago, "Chicago Takes Flight: O'Hare Crowned America's Busiest Airfield," January 20, 2026, accessed February 16, 2026, https://www.chicago.gov/city/en/depts/mayor/press_room/press_releases/2026/january/ohare-busiest-airport.html.

27 Lightcast, "industry Table," 2024, accessed December 15, 2025.

28 CMAP, "The Freight Landscape," October 2025, 44, accessed January 15, 2025, https://cmap.illinois.gov/wp-content/uploads/dlm_uploads/CMAP_FreightLandscapeSummary.pdf.

29 City of Chicago, "Chicago Takes Flight: O'Hare Crowned America's Busiest Airfield," January 20, 2026, accessed February 16, 2026, https://www.chicago.gov/city/en/depts/mayor/press_room/press_releases/2026/january/ohare-busiest-airport.html.

30 Amtrak, "Amtrak in Illinois," 2024, accessed December 15, 2025, https://www.amtrak.com/content/dam/projects/dotcom/english/public/documents/corporate/statefactsheets/ILLINOIS24.pdf.

31 Joseph P. Schwieterman and Nathale Nicoletti, "Reimagining the Chicago Intercity Bus Terminal," February 5, 2026, Chaddick Institute for Metropolitan Development, 1, accessed February 16, 2026, https://www.researchgate.net/publication/400493687_Reimagining_Chicago's_Intercity_Bus_Station_Enhancing_a_Critical_Asset.

32 Joseph P. Schwieterman, Carrie Craig, and Angelia Millsap, "Bus station on the Brink: City Action is Needed to Prevent the Loss of Chicago's Greyhound Terminal," April 19, 2023, Chaddick Institute for Metropolitan Development, 6, accessed December 15, 2025, https://las.depaul.edu/academics/centers-and-institutes/chaddick-institute-for-metropolitan-development/research-and-publications/intercity-bus-research.

33 Ibid, pp 6-7.

34 Ibid, pp 7.

35 "The Freight Landscape," October 2025, 6, accessed January 15, 2025, https://cmap.illinois.gov/wp-content/uploads/dlm_uploads/CMAP_FreightLandscapeSummary.pdf.

36 Ibid, pp 28.

37 Ibid, pp 63.

38 Lightcast, "Industry Table," 2015-2024, accessed December 15, 2025.

39 Ibid.

40 The Texas A&M Transportation Institute, "Urban Mobility Report," August 2025, 65, accessed December 15, 2025, https://mobility.tamu.edu/umr/report/.

41 CMAP, "Truck Bottlenecks," 2023, accessed December 15, 2025, https://datahub.cmap.illinois.gov/datasets/CMAPGIS::truck-bottlenecks-1/explore?location=41.903513%2C-88.059045%2C9.

42 Intermodal lift counts are based on a CMAP analysis of data from the railroads and the Intermodal Association of North America. See CMAP, "Intermodal Facility Lift Counts and Regional TEU Estimate," 2005-2024, accessed August 15, 2025.

43 Michael Rizzo, Jesse McGrath, Chad McEvoy, Marta Fuoco, "Cicero Rail Yard Study Final Report," February 2014, U.S. Environmental Protection Agency, accessed March 1, 2026, https://nepis.epa.gov/Adobe/PDF/P100IVT3.pdf.

44 Lightcast, "Industry Table," 2015-2024, accessed December 15, 2025.

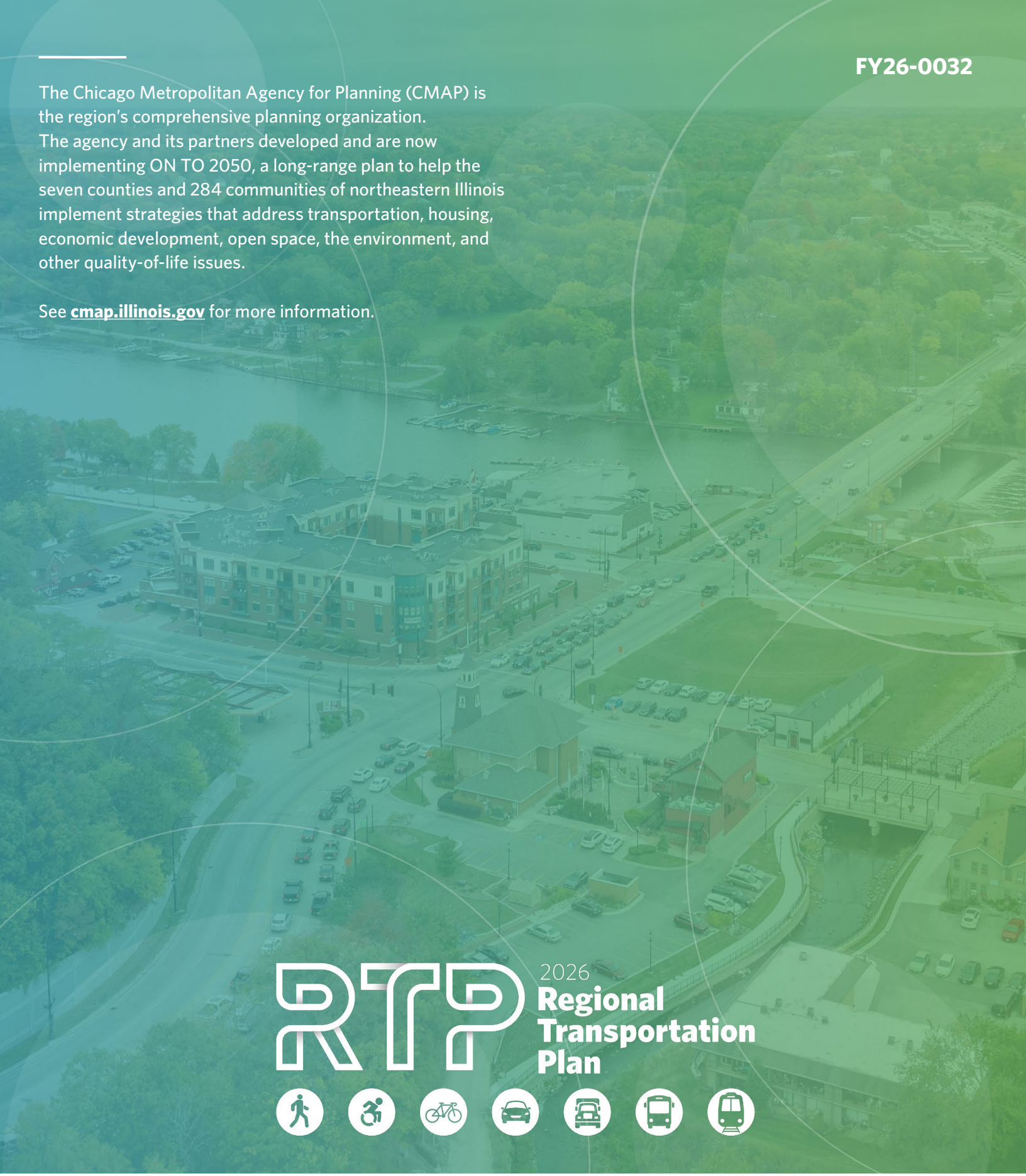
45 Lightcast, "Occupation Report," 2010-2024, accessed December 15, 2025. Data on living wages is sourced from Massachusetts Institute of Technology. See Massachusetts Institute of Technology, Living Wage Calculator, 2025, accessed December 15, 2025, https://livingwage.mit.edu/.

46 U.S. Bureau of Labor Statistics, "Consumer Expenditures in the Chicago Metropolitan Area," 2024, accessed December 15, 2025, https://www.bls.gov/regions/midwest/news-release/consumerexpenditures_chicago.htm.
47 Illinois Department of Transportation, Rebuild Illinois Capital Program, 2019, accessed March 3, 2026, https://idot.illinois.gov/programs-and-projects/multimodal-transportation/rebuild-illinois-capital-program.html.
48 CMAP, "Historic transit legislation realizes CMAP's vision for a stronger, more integrated system," 2025, accessed March 3, 2026, https://cmap.illinois.gov/news-updates/historic-transit-legislation-realizes-cmaps-vision-for-a-stronger-more-integrated-system/.
49 CMAP, Federal Performance Measure Dashboards, 2025, accessed March 3, 2026, https://experience.arcgis.com/experience/4415ff2ee63a4d1ebc5baa0f13ea0f23/page/Highway-assets?views=Bridge-condition.
50 Regional Transit Authority, 2025 Capital Asset Condition – Summary Report, 2025, accessed March 3, 2026, https://www.rtachicago.org/blog/2025/05/20/rta-releases-2025-report-showing-gains-in-transit-capital-funding-but-significant-new-investment-still-needed.
51 Eno Center for Transportation, "Rising Construction Costs: Analyzing the Contributors to Cost Escalations and the Impact on Federal Transportation Infrastructure Investments," 2025, accessed March 3, 2026, https://enotrans.org/wp-content/uploads/2025/08/Rising-Construction-Costs-White-Paper_Final.pdf.
52 Ibid.
53 United States Department of Transportation National Transportation Library, "Assessing the costs attributed to project delay during project pre-construction stages," 2016, accessed March 3, 2026, https://rosap.ntl.bts.gov/view/dot/30876.
54 CMAP, "Advancing a road usage charge in Illinois," 2025, accessed March 3, 2026, https://cmap.illinois.gov/wp-content/uploads/dlm_uploads/RoadUsageCharge_202512.pdf.
55 CMAP, "Modernizing Illinois' sales tax: A pathway to a sustainable future," 2025, accessed March 3, 2026, https://cmap.illinois.gov/wp-content/uploads/dlm_uploads/modernizing-Illinois-tax-report.pdf.
56 Illinois Economic Policy Institute, Infrastructure Investment and Jobs Act Transportation Funding Summary for Illinois, 2022, accessed March 3, 2026, https://illinoisupdate.com/wp-content/uploads/2022/03/iija-transpo-funding-for-illinois.pdf#:~:text=As%20a%20result%20of%20the%20IIJA%2C%20Illinois,totaling%20$.
57 Chicago Transit Authority, Red & Purple modernization, accessed March 3, 2026, https://www.transitchicago.com/rpm/.
58 CMAP, ON TO 2050 Socioeconomic Forecast Data 2022 and 2018 Series, accessed March 3, 2026, https://datahub.cmap.illinois.gov/datasets/01b2e734f2dd48009fe85e6d907b33a6/about.
59 CREATE Program summary, 2025, accessed March 3, 2026, https://create-program-wp-assets.s3.us-east-2.amazonaws.com/wp-content/uploads/status_map.pdf.
60 CMAP, I-290 Eisenhower Expressway/Blue Line Corridor project gets boost, 2024, accessed March 3, 2026, https://cmap.illinois.gov/news-updates/i-290-eisenhower-expressway-blue-line-corridor/.
61 CMAP, Northeastern Illinois Priority Investments, 2025, accessed March 3, 2026, https://cmap.illinois.gov/wp-content/uploads/dlm_uploads/PriorityInvestmentsBooklet_2025-2026_FinalWeb.pdf.
62 CMAP, "Bus Speed and Reliability," October 4, 2023, accessed April 8, 2026, https://cmap.illinois.gov/wp-content/uploads/PART_recommendations-b5-better-buses.pdf.
63 CMAP, Chicago Intermodal Facility Lift Counts and Regional TEU Estimate (through 2024), June, 2025, accessed May 20, 2026, https://engage.cmap.illinois.gov/28148/widgets/97089/documents/71095.
64 Will County Center for Economic Development, "Community Friendly Freight Mobility Plan," 2017, 156-169, accessed April 8, 2026, https://www.willcountyfreight.org/.
65 CMAP, "Comprehensive Climate Action Plan for Greater Chicago," March 2026, 6, accessed April 8, 2026, https://cmap.illinois.gov/wp-content/uploads/2026-climate-action-plan.pdf.

FY26-0032

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.



RTP 2026 Regional Transportation Plan

Chicago Metropolitan Agency for Planning

433 West Van Buren Street, Suite 450, Chicago, IL 60607
312-454-0400

APPENDIX A - DRAFT

Administrative Policies and Procedures









RTP

2026 Regional Transportation Plan

Chicago Metropolitan Agency for Planning

Table of contents

Introduction **1**

Federal and state requirements fulfilled through the RTP **1**

- **General** 1
- **Consultation and cooperation** 2
- **Modal** 4
- **Programming and operations** 4
- **Financial** 5
- **Title VI and non-discrimination** 5
- **Environmental** 6
- **State, local, and regional transportation plans integrated into the RTP development process** 6

RTP amendment process **7**

- **RTP amendment types** 8
  - Financial constraint impact thresholds 8
  - Scope change thresholds 9
- **RTP amendment request and protocols** **10**
  - Required data and information 10
  - Timeline 10
- **Variance from standard procedures** **11**

Supplement: Major and minor RTP amendment project examples **12**

Introduction

The purpose of this appendix is to centralize and summarize administrative policies and procedures related to the Regional Transportation Plan (RTP), which is scheduled for adoption on October 14, 2026, and is due for its next required update in 2030. The appendix is divided into two sections:

- Federal and state requirements: This section details the RTP's compliance with relevant federal and state regulations, citing specific page ranges or appendices as appropriate.
- Regional capital projects (RCP) amendment process: This section documents the RCP amendment process for eligible projects that emerge as priorities or undergo significant changes to their scope or cost outside of the standard RTP evaluation timeline.

Federal and state requirements fulfilled through the RTP

The development of the RTP is guided by federal and state law. Federal requirements are detailed in Title 23 of the Code of Federal Regulations, Subpart C, which is dedicated to metropolitan transportation planning and programming. State requirements are specified in the Regional Planning Act (70 Illinois Compiled Statutes (ILCS) 1707). The 2026 RTP's compliance with these regulations is summarized below.

General

Requirement	Core plan page number(s) or appendix
Does the RTP address no less than a 20-year planning horizon? (23 CFR 450.324(a)) and (Regional Planning Act (RPA) 94-510, eff. 8-9-05; 95-677, eff. 10-11-07)	Pages 4-7
Does the RTP identify its adoption date and expiration year clearly?	Administrative Policies and Procedures Appendix
Does the RTP include both long-range and short-range strategies/actions? (23 CFR 450.324(b))	19-21; 28-29; 37-38; 49-50; 60-62
Does the RTP contain official forecasts for overall growth and an evaluation of alternative scenarios for the future of the region including transportation? (RPA, eff. 8-9-05; 95-677, eff. 10-11-07)	Socioeconomic Forecast appendix
Does the RTP contain land use and transportation policies that reflect the relationship of transportation to land use? (RPA, eff. 8-9-05; 95-677, eff. 10-11-07)	Pages 33, 38, 42-43, and 49
Does the RTP contain a System Performance Report (SPR)? (23 CFR 450.324 (f))	System Performance Report appendix
Does the SPR show the progress achieved in meeting performance targets in comparison with the performance in previous reports? (23 CFR 450.324 (f))	System Performance Report appendix
Does the SPR include an evaluation of how the preferred scenario has improved conditions and performance, where applicable? (23 CFR 450.324 (f))	System Performance Report appendix

Requirement	Core plan page number(s) or appendix
Does the SPR include an evaluation of how local policies and investments have impacted costs necessary to achieve identified performance targets, where applicable? (23 CFR 450.324 (f))	System Performance Report appendix; Financial Plan appendix
Does the RTP contain a list of proposed public investment priorities in transportation? (RPA, eff. 8-9-05; 95-677, eff. 10-11-07). The list must include: • Project description • Responsible agency • Timeframe for construction and installation • Cost estimate • Source of revenue to cover costs • Mode and improvement type	Pages 66-80; Regional Capital Projects Benefits Report; Financial Plan appendix
Does the RTP address the following planning factors (23 CFR 450.306): • Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency; • Increase the safety of the transportation system for motorized and non-motorized users; • Increase the security of the transportation system for motorized and non-motorized users; • Increase accessibility and mobility of people and freight; • Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and state and local planned growth and economic development patterns; • Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight; • Promote efficient system management and operation; • Emphasize the preservation of the existing transportation system; • Improve the resiliency and reliability of the transportation system and reduce or mitigate stormwater impacts of surface transportation; and • Enhance travel and tourism	Pages 4-62

Consultation and cooperation

Requirement	Core plan page number(s) or appendix
Does the RTP contain a public involvement program that meets the requirements of Title 23, CFR 450.316(a): • Providing adequate public notice of public participation activities and time for public review and comment at key decision points, including a reasonable opportunity to comment on the proposed plan and Transportation Improvement Program (TIP); • Providing timely notice and reasonable access to information about transportation issues and processes; • Employing visualization techniques to describe the plan and TIPs; • Making public information available in electronically accessible formats and means; • Holding any public meetings at convenient and accessible locations and times;	The Public and Stakeholder Engagement appendix summarizes the public involvement program

Requirement	Core plan page number(s) or appendix
• Demonstrating explicit consideration and response to public input received during the development of the plan and TIP; • Seeking and considering the needs of those traditionally underserved by existing transportation systems, such as low-income and minority households, who may face challenges accessing employment and other services; • Providing an additional opportunity for public comment, if the final plan or TIP differs significantly from the version that was made available for public comment by the metropolitan planning organization (MPO) and raises new material issues that interested parties could not reasonably have foreseen from the public involvement efforts; and • Periodically reviewing the effectiveness of the procedures and strategies contained in the participation plan to ensure a full and open participation process?	The Public and Stakeholder Engagement appendix summarizes the public involvement program
Does the RTP contain a summary, analysis, and report on the disposition of significant written and oral comments received on the draft metropolitan transportation plan as part of the final metropolitan transportation plan and TIP that meets the requirements of 23 CFR 450.316(a)(2), as applicable?	To be included after public comment
Did the MPO consult with the appropriate state and local representatives including representatives from environmental and economic communities; airport; transit; and freight during the preparation of the RTP? (23 CFR 450.316(b))	Public and Stakeholder Engagement appendix
Where does the RTP specify that the appropriate state and local agencies responsible for land use, natural resources, environmental protection, conservation and historic preservation were consulted? (23 CFR 450.324(g))	Public and Stakeholder Engagement appendix
Did the RTP include a component on protecting and enhancing the environment for the purpose of improving environmental health, quality of life, and community well-being? (RPA, eff. 8-9-05; 95-677, eff. 10-11-07)	Pages 31-36
Does the RTP address how the public and various specified groups were given a reasonable opportunity to comment on the plan using the participation plan developed under 23 CFR part 450.316(a)? (23 CFR 450.316(a)(i))	To be included after public comment
Does the RTP contain a discussion describing the private sector involvement efforts that were used during the development of the plan? (23 CFR 450.316(a))	Public and Stakeholder Engagement appendix
Does the RTP contain a discussion describing the coordination efforts with regional air quality planning authorities? (23 CFR 450.316(a)(2))	Air Quality Conformity Documentation appendix
Is the RTP coordinated and consistent with the Public Transit-Human Services Transportation Plan? (23 CFR 450.306(h))	Pages 16-18
Were the draft and adopted RTP posted on the internet? (23 CFR 450.324(k))	To be included after public comment
Did the board post a public notice in a newspaper having general circulation in the Chicago region at least 30 days prior to the hearing? (RPA, eff. 8-9-05)	To be included after public comment

Requirement	Core plan page number(s) or appendix
Did the board hold a public hearing in connection with its review and development of a regional plan? (RPA, eff. 8-9-05)	To be included after public comment
Did the MPO Policy Committee approve the federally mandated RTP? (RPA, eff. 1-1-25)	To be included post-adoption

Modal

Requirement	Core plan page number(s) or appendix
Does the RTP discuss intermodal and connectivity issues? (CFR 450.324(f))	Pages 45-46
Does the RTP include a discussion of highways? (CFR 450.324(f))	Pages 8, 11-13, 34-35, 46, 53; Transportation System Inventory appendix
Does the RTP include a discussion of mass transportation? (CFR 450.324(f))	Pages 9, 15-17, 33, 35, 41-43, 54; Transportation System Inventory appendix
Does the RTP include a discussion of the regional airport system? (CFR 450.324(f))	Pages 8, 44-45; Transportation System Inventory appendix
Does the RTP include a discussion of regional pedestrian needs? (CFR 450.324(f))	Pages 16, 25-26; Transportation System Inventory appendix
Does the RTP include a discussion of regional bicycle needs? (CFR 450.324(f))	Pages 16, 25-26; Transportation System Inventory appendix
Does the RTP include a discussion of rail transportation? (CFR 450.324(f))	Pages 9, 16-7, 41-45; Transportation System Inventory appendix
Does the RTP include a discussion of maritime transportation (if appropriate)? (CFR 450.324(f))	Pages 9, 45, 47; Transportation System Inventory appendix
Does the RTP contain a regional freight component, the purpose of which is to create an efficient system of moving goods that supports economic growth? (RPA, eff. 8-9-05; 95-677, eff. 10-11-07)	Pages 8, 45-46; Transportation System Inventory appendix

Programming and operations

Requirement	Core plan page number(s) or appendix
Is the RTP consistent (to the maximum extent practicable) with the development of the regional intelligent transportation systems architecture? (23 CFR 450.306(g))	Page 77, 20
Does the RTP identify the objective criteria used for measuring the performance of the transportation system? (23 CFR 450.306(d))	System Performance Report appendix
Does the RTP contain a list of unconstrained projects? (23 CFR 450.314)	Financial Plan appendix

Financial

Requirement	Core plan page number(s) or appendix
Does the RTP include a financial plan that meets the requirements identified in 23 CFR part 450.324(f)(11) and RPA, eff. 8-9-05; 95-677, eff. 10-11-07?	Financial Plan appendix
Do the projected revenues in the RTP reflect fiscal constraint? (23 CFR part 450.324(f)(11)(ii))	Financial Plan appendix
Do the cost estimates for implementing the projects identified in the RTP reflect year of expenditure dollars to reflect inflation rates? (23 CFR part 450.324(f)(11)(iv))	Financial Plan appendix
Does the RTP contain estimates of costs and revenue sources that are reasonably expected to be available to operate and maintain the freeways, highways and transit within the region? (23 CFR 450.324(f)(11)(i)) and (RPA, eff. 8-9-05; 95-677, eff. 10-11-07)	Financial Plan appendix
Does the RTP address the specific financial strategies required to ensure the identified transportation control measures (TCMs) from the State Implementation Plan (SIP) can be implemented? (23 CFR part 450.324(f)(11)(vi)	N/A, there are no TCMs in any approved ozone SIP for the nonattainment area, nor have any been suggested for incorporation into the ozone SIP at this time.
Does the RTP include measures to best coordinate programs of local governments and transportation agencies to promote goals of policies of the RTP? (RPA, eff. 8-9-05; 95-677, eff. 10-11-07)	Pages 60-62
Does the RTP contain criteria and procedures for evaluating, ranking and allocating transportation funds? (RPA, eff. 8-9-05; 95-677, eff. 10-11-07)	Regional Capital Projects Benefits Report appendix; Transportation Improvement Program

Title VI and non-discrimination

Requirement	Core plan page number(s) or appendix
Does the public participation plan describe how the MPO will seek out and consider the needs of those traditionally underserved by existing transportation system, such as low-income and minority households, who may face challenges accessing employment and other services? (23 CFR 450.316 (a)(1)(vii))	Public and Stakeholder Engagement appendix
Has the MPO conducted a Title VI analysis that meets the legal requirements described in Section 4.2? (FTA Title VI Circular 4702.1B)	RTP summary memorandum
Has the MPO conducted an Environmental Justice analysis that meets the legal requirements described in Section 4.2? (FTA Title VI Circular 4702.1B)	RTP summary memorandum

Requirement	Core plan page number(s) or appendix
Does the RTP describe actions taken to prohibit discrimination against individuals with disabilities and ensure transportation facilities and services are accessible to all users? (Americans with Disabilities Act of 1990)	Pages 16-18, 20
Does the RTP describe actions taken to prohibit discrimination on the basis of age in programs and activities receiving federal financial assistance (Age Discrimination Act of 1975)	Page 49; Public and Stakeholder Engagement appendix

Environmental

Requirement	Core plan page number(s) or appendix
Does the RTP contain a list of projects specifically identified as TCMs, if applicable? (23 CFR 450.326(g))	N/A
Does the RTP contain a discussion of State Implementation Plan conformity, if applicable? (40 CFR 93(A))	Air Quality Conformity Documentation appendix
Does the RTP specify mitigation activities? (23 CFR 450.324(f))	Pages 37-38; the Transportation Resilience Improvement Program
Does the RTP contain a detailed conformity determination for the RTP, the TIP, and applicable amendments before their respective adoption? (40 CFR 93.104. Section 93.104(b))	Air Quality Conformity Determination memorandum
Does the RTP include projections of future emissions from on-road sources and ensure that these projections do not exceed the SIP's emission budgets for pollutants? (23 CFR 450.218(b))	Air Quality Conformity Determination memorandum

State, local, and regional transportation plans integrated into the RTP development process

The 2026 RTP integrates state, local, and regional transportation plans either directly or by reference, consistent with 23 CFR 450.306(d)(4) and 23 CFR 450.306(g). The following plans and processes are incorporated as required under those provisions:

- **State asset management plan for the National Highway System (NHS).** The Illinois Department of Transportation (IDOT) maintains this plan under 23 U.S.C. 119(e) to manage and preserve the condition and performance of the NHS.
- **Transit Asset Management (TAM) Plan.** Developed by regional transit providers under 49 U.S.C. 5326, the TAM Plan establishes targets for maintaining transit assets in a state of good repair.
- **Highway Safety Improvement Program (HSIP), including the Strategic Highway Safety Plan (SHSP).** IDOT's SHSP establishes statewide safety goals and performance targets under 23 U.S.C. 148; applicable portions inform the RTP's safety planning and investment priorities.
- **Public Transportation Agency Safety Plan (PTASP).** Required under 49 U.S.C. 5329(d), the PTASP establishes safety management processes and performance targets for regional transit providers.

- **Congestion Mitigation and Air Quality Improvement (CMAQ) program performance plan.** As required under 23 U.S.C. 149(l), this plan addresses transportation-related air quality performance applicable to the Chicago nonattainment area.

- **State Freight Plan.** Appropriate metropolitan portions of IDOT's state freight plan, developed under MAP-21 section 1118, are incorporated to ensure consistency with statewide freight goals and investment priorities.

- **Congestion management process (CMP).** As defined in 23 CFR 450.322, the CMP informs strategies for managing congestion across the metropolitan transportation system.

- **Regional intelligent transportation systems (ITS) architecture.** Consistent with 23 CFR 450.306(g) and 23 CFR part 940, the RTP is developed in coordination with the applicable regional ITS architecture for northeastern Illinois.

In addition, the Transportation Resilience Improvement Plan (TRIP) is incorporated into the RTP by reference. TRIP was developed by CMAP to identify where the regional transportation system is vulnerable to extreme weather and to prioritize those assets for resilience investments. TRIP meets the minimum requirements for a Resilience Improvement Plan under the Federal Highway Administration's Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation Program.

Other plans and studies prepared by CMAP, IDOT, the Regional Transportation Authority, and other local partners are reviewed and incorporated as applicable.

RTP amendment process

The RTP includes a set of fiscally constrained RCPs. All project sponsors were encouraged to submit projects during development of the regional plan. However, changes to the fiscally constrained RCP list may be required between RTP cycles due to scope adjustments that occur over the course of the project development process, the identification of new projects or project components that require expediency, and/or the availability of new revenues. This section outlines the amendment process for proposed changes to the RTP's fiscally constrained RCP list, including the evaluation of new projects or reevaluation of existing projects.

A plan amendment is not required for every change to a project. RTP amendments are required only when a project sponsor is actively seeking federal funding or federal action — such as engineering, design, or construction permits — and the proposed improvements are not already in the fiscally constrained RTP. Inclusion in the RTP fiscal constraint is not required to receive funding or approval for planning activities, such as an alternatives analysis. For example, illustrative projects that are in the early stages of planning and alternatives analysis may wait until the next four-year RTP update to submit the project for inclusion in the fiscally constrained RTP, or to submit updates to project cost and scope.

RTP amendment types

Amendments to the RTP's fiscal constraint may include the addition or removal of an RCP, a shift from the unconstrained to the constrained list or vice versa, or a substantial change to an RCP already listed in the plan. TIP changes that result in a project meeting the definition of an RCP will also require an RTP amendment. The RCP definition is provided in the RCP Benefits Report.

There are two types of RCP amendments, as outlined in Table 1 below: **a minor RTP amendment** or a **major RTP amendment**.

All other changes will be deferred to the TIP amendment process, as needed. The following sections provide additional details on the types of changes proposed as minor or major RTP amendments. The Supplement provides several project specific examples.

Financial constraint impact thresholds

The cost threshold for minor or major RTP amendments depend on the project type — whether it is a capacity project or a financially significant (and therefore a non-capacity impacting) project. If a project includes any elements that meet the capacity impacting definition identified in the RCP Benefits Report, it is considered a capacity impacting project for RCP purposes. Figures 1 and 2 below show cost thresholds for capacity and non-capacity impacting projects, respectively.

Thresholds are based on the total estimated 2025 project cost in the adopted RTP, rather than the fiscally constrained year-of-expenditure amount. Cost changes that are less than 20 percent of the total project cost, up to a maximum of $500 million, will follow the TIP amendment process.

Examples of other projects with cost changes that would require an amendment include:

- A total project cost under $100 million requires an RTP amendment only if the cost increases by 90 percent or more of the total project cost.
- A total project cost of $500 million or more would require an RTP amendment for any change of 20 percent or higher of the total project cost.

Table 1: RTP amendment types and requirements

Amendment type	TIP amendment[1]	Minor RTP amendment	Major RTP amendment
Description	A minor change to an existing RCP that does not significantly impact air quality conformity or fiscal constraint	A minor change to the estimated cost or scope of an existing RCP, or the addition or removal of a non-capacity RCP	Addition or removal of a capacity-impacting RCP, or a significant change in the scope or cost of an existing RCP
Amendment	These changes will follow the TIP amendment process and may be administrative or formal TIP changes	CMAP staff review	CMAP staff review and presentation to select CMAP committees
		7-day public review period	30-day public review period
		Presentation to Transportation Committee for approval	Presentation to MPO Policy Committee for approval
Amendment timeline[2]	TIP amendment schedule	Submit at least 3 months before Transportation Committee meeting	Submit at least 6 months before MPO Policy Committee meeting
	8 times per year at Transportation Committee meetings	8 times per year at Transportation Committee meetings	4 times per year at MPO Policy Committee meetings

1 Referred to as an administrative modification under federal regulations.

2 These timelines do not account for air quality conformity requirements. A new not exempt project or not exempt project with scope changes will need to meet air quality conformity requirements before project RTP amendments can be presented to CMAP committees for approval.

Figure 1: Proposed cost thresholds for capacity impacting RCPs

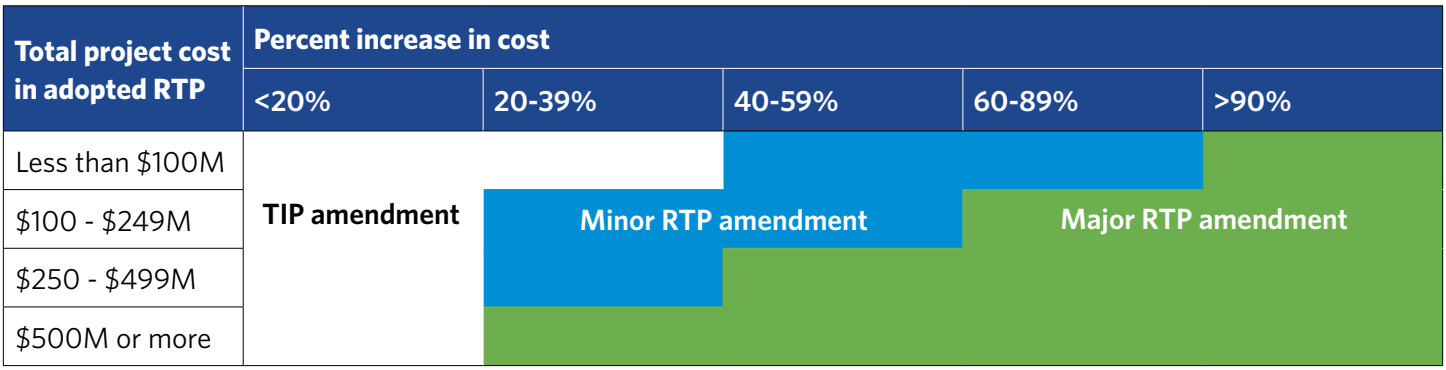
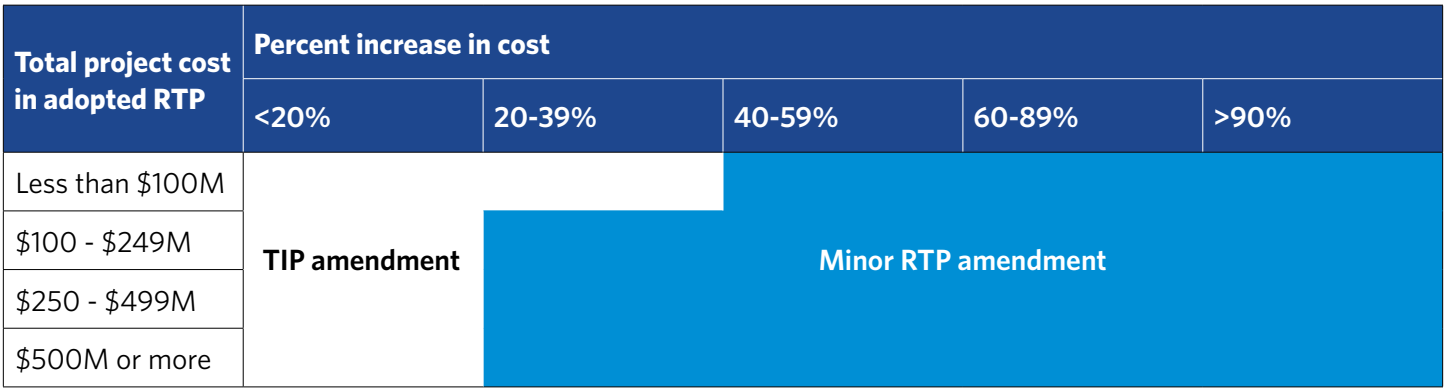


Figure 2: Proposed cost thresholds for non-capacity impacting RCPs



Scope change thresholds

Constrained RCPs that experience a significant scope change may also require an RTP amendment, if not already required because of changes in cost. Table 2 presents the scope change thresholds that would require a minor or major RTP amendment.

Table 2: Scope change thresholds for existing RCPs

Project type	TIP amendment	Minor RTP amendment	Major RTP amendment
Non-capacity projects			
All types	-	Expansion changing termini or adding a roadway section	-
Capacity impacting projects			
Roadway project with through lane addition	Changing centerline mile distance of add lanes by less than 1 mile	Changing centerline mile distance of add lanes by more than a mile, up to 50%	Changing centerline mile distance of add lanes by more than 50%
Bus rapid transit (BRT)	A change in the BRT or dedicated bus lane distance of less than 1 mile	A change in the BRT or dedicated bus lane distance of more than a mile, up to 50%	A change in the BRT or dedicated bus lane distance of more than 50%
Rail line extension	-	New infill station	Extending to 1 or more additional stops/stations
Rail line increase	Expanding capacity increase by 50% or less	50-100% increase	Doubling capacity increase (or more)

RTP amendment request and protocols

The RTP amendment process begins when a project sponsor provides a written notification to CMAP's executive director requesting an RTP amendment, or when CMAP staff provides a written notification to a project sponsor that a requested TIP change meets the RCP threshold. The request should include an assessment of how the proposed project and/or the project amendment support the RTP's goals and implementation.

CMAP will assess amendment requests for consistency with RTP principles, recommendations, and priorities. After staff confirm that an amendment is required and in alignment with the plan, the project evaluation process will follow the RCP evaluation methods used during RTP development in 2025. As necessary, a financial plan analysis will also be conducted to confirm the project changes can be fiscally constrained. CMAP staff will report the project evaluation results (including model-based measures, if applicable) and fiscal constraint findings in a plan amendment memorandum.

While CMAP will strive to mirror the methods used in the RTP development process, the availability of more recent data across project evaluation measures and the universe of transportation revenues and expenditures could shape its findings. Direct comparison between the projects in a plan amendment and the RTP project set could be limited.

To facilitate the process, both CMAP and the project sponsor will identify point-of-contact managers for each requested RTP amendment. These managers will arrange a technical consultation meeting, develop a detailed timeline of interim deadlines, and ensure timely information transmittals. The CMAP point-of-contact manager will maintain complete records of all correspondence.

Required data and information

The sponsor should provide relevant project data and information to CMAP in support of the agency's evaluation of the proposal. CMAP will consider this information in its evaluation, but may also analyze additional independent resources. Necessary data and information transmittals include but are not limited to:

- Project location and scope, including expected effects on travel times and system capacity.
- Anticipated project cost, funding sources, and timing.
- Asset condition information (only for transit projects involving state of good repair or modernization work).

Timeline

RTP amendment timelines will vary depending on the amendment type, the nature and scope of the changes, the availability of required information, the time of the request, and staff availability. If the timeline overlaps substantially with the development of the next RTP, CMAP may ask sponsors to defer.

Table 3 outlines amendment process steps and estimated time requirements. Specific deadlines for data and information transmittals and evaluation deliverables will be established at the initial technical consultation meeting between the point-of-contact managers. The general timeline includes the following requirements:

- Major RTP amendments should be submitted at least six months before the desired MPO Policy Committee meeting.
- If air quality conformity is required, CMAP must receive all project information at least three months before the next conformity cycle (typically March or October).
- Minor RTP amendments should be submitted at least three months before the desired Transportation Committee (TC) meeting. Minor amendments may be approved at any of the eight annual TC meetings.

Table 3: RCP amendment process steps

Amendment step		Description	Minimum required time or timing	
			Minor	Major
1	Notification and consultation	Formal notification for RTP amendment by project sponsor. RCP consultation with sponsor to establish schedule, protocols, and information needs.	2 weeks	
2a	Information gathering	Data collection and verification	1-2 weeks	6-8 weeks
2b	Presentation to committees	Sponsor presentation to CMAP staff and other recommended committees	n/a	
3	Project evaluation and benefits memorandum	Evaluation of project benefit in alignment with plan goals and objectives including financial plan implications. Project evaluation and fiscal constraint findings will be included in the plan amendment memorandum.	1-2 weeks	4-6 weeks
4	Air quality conformity	If project in question is non-exempt and not already conformed, it must also follow separate air quality conformity procedures. Conformity results will be included in the plan amendment memorandum.	n/a	Typically, twice a year in March and October
5a	Public comment period	Plan amendment memorandum out for public comment. CMAP and sponsor coordinate formal responses to any comments received.	7 days	30 days
5b	Transportation Committee	For minor amendments, TC review and approval. For major amendments, TC review and recommendations one month before MPO Policy Committee.	Any of 8 annual meetings	One of 4 TC meetings prior to MPO Policy Committee meeting
5c	Board and MPO Policy Committee	CMAP Board and MPO Policy Committee vote on proposed RTP amendment	n/a	Any of 4 annual meetings

Variance from standard procedures

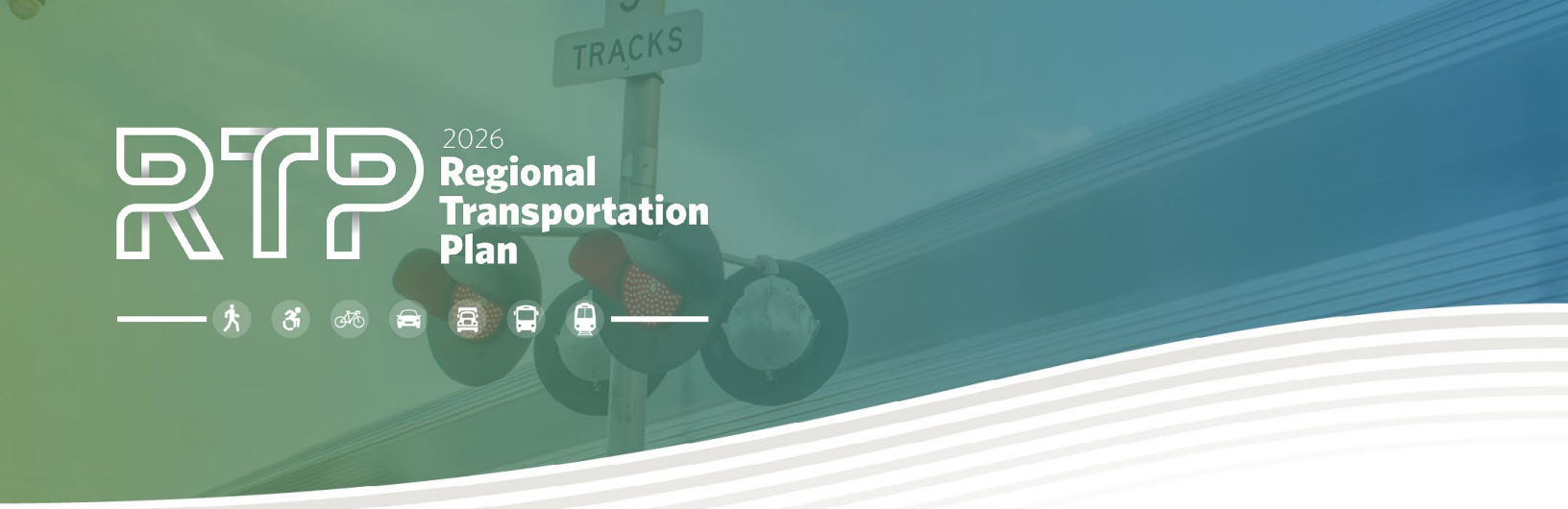
In special or unforeseen circumstances, the CMAP executive director may authorize a deviation from the adopted regional transportation plan amendment procedures. This authority may be used only when adhering to the standard process would create significant administrative, operational, or timing challenges for CMAP or its partners, and when an alternative approach is necessary to support effective decision-making.

Any use of this discretionary authority must be documented in writing. The documentation should describe the circumstances that required the deviation, the alternative steps that were taken, and how the modified approach continued to support transparency, public involvement, and consistency with federal planning requirements.

This provision does not replace the standard amendment procedures. It is intended to provide limited flexibility when needed to address urgent, unique, or time-sensitive situations while maintaining the integrity of the metropolitan transportation planning process.

Supplement: Major and minor RTP amendment project examples

Example RCP change	Minor RTP amendment	Major RTP amendment
Reconstruction or grade separation project with any cost increase that results in a total cost of $250 million	X	
Reconstruction or grade separation project with a total cost increase from $1 billion to $1.3 billion	X	
Arterial add lane project with a total cost increase from $100 million to $140 million	X	
A non-capacity impacting reconstruction project move from the unconstrained list to the constrained list	X	
An arterial add lanes project move from the unconstrained list to the constrained list		X
A bus priority corridor project removal from the constrained list		X
Transit rail service expansion project with a total cost increase from $300 million to $450 million		X
An add lane project (on an arterial or interstate) with a scope change lengthening the add lane distance from 1 centerline mile to 2 centerline miles		X
A transit service expansion project with a scope change, increasing proposed capacity change by 50% or more		X
Any project type with a scope change that removes or adds tolling		X



RTP 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.

Chicago Metropolitan Agency for Planning

433 West Van Buren Street
Suite 450
Chicago, IL 60607

cmap.illinois.gov
312-454-0400

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 3
Ozone nonattainment 3
Transportation conformity process 6
Interagency consultation process 7
Public participation 8
Procedures for determining regional transportation demand 8
Latest planning assumptions 13
Latest modeling inputs 14
Motor vehicle emissions budgets and emissions model scenario years 21
Off-network calculations 21
Modeled projects 22
Transportation conformity results 22
Conclusion 23

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

---

[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

---

[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.

---

[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,

---

[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

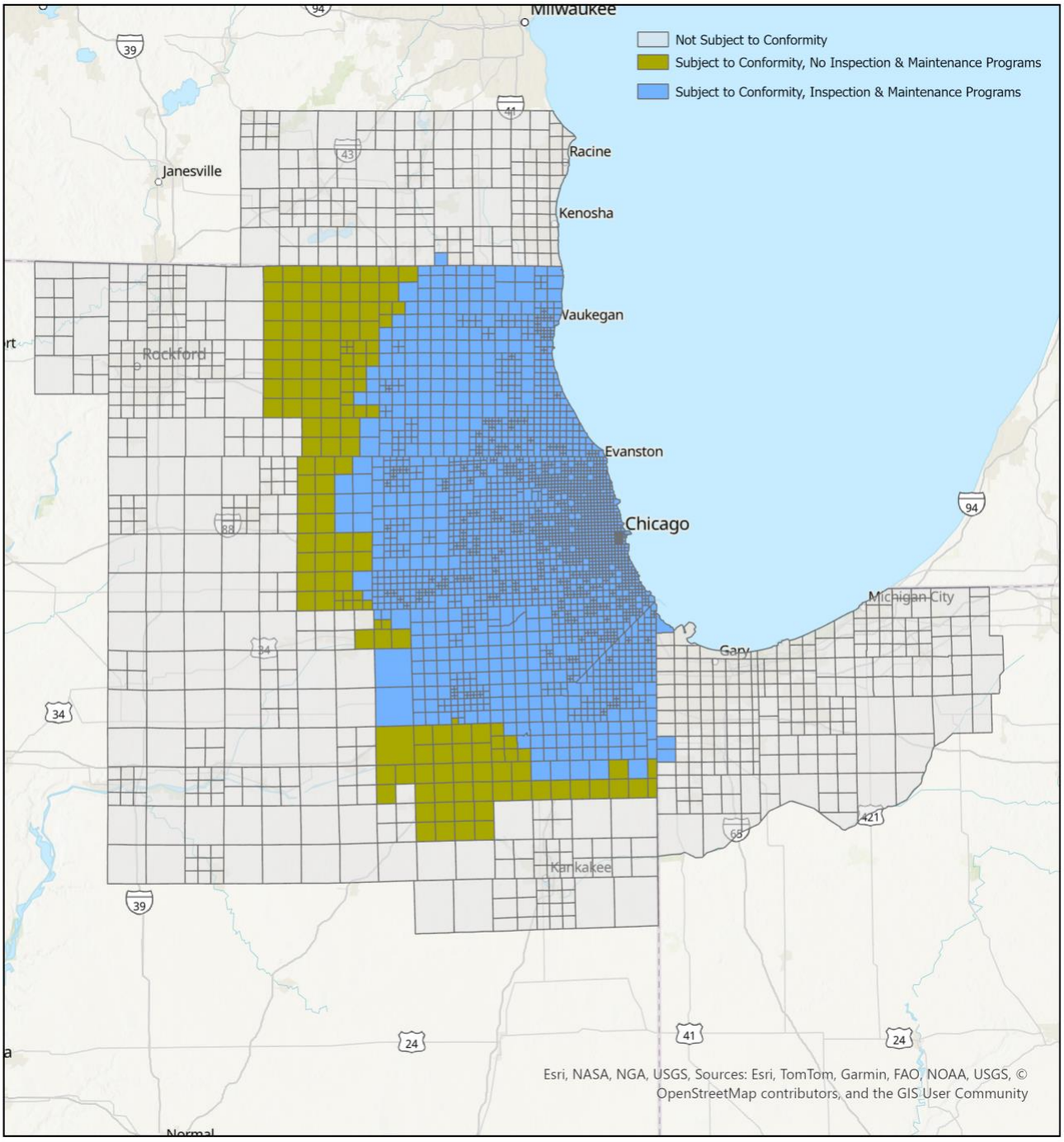
Local temperature and humidity data are required inputs for SIP and regional conformity analysis using MOVES. Ambient air temperature is a key factor in estimating vehicle emission rates because it significantly affects many pollutant processes. MOVES requires hourly input of temperature, in degrees 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.

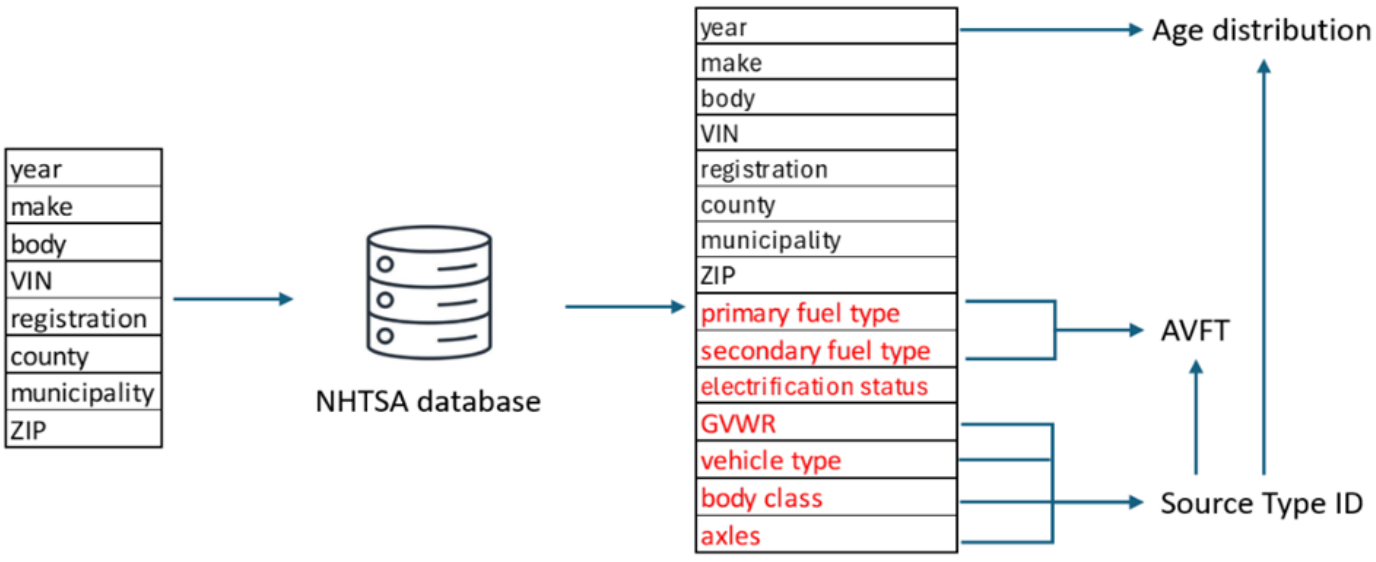
It is important to note that CMAP's TBM models an average weekday; therefore, model outputs are only used as weekday inputs for MOVES4 when both weekday and weekend data are required, except for VMT, which is addressed above. Default weekend data is used for the average speed distribution and hour VMT 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.

433 West Van Buren Street
Suite 450

Chicago, IL 60607
cmap.illinois.gov
312-454-0400

Chicago Metropolitan Agency for Planning

APPENDIX C - DRAFT

Financial plan for transportation









RTP

2026
Regional Transportation Plan

Chicago Metropolitan Agency for Planning

Table of contents

Introduction **1**
Revenues **4**
Baseline revenues **4**
State programmed federal highway revenue 5
Locally programmed federal revenue 5
Federal transit revenue 6
Federal revenue from competitive programs 6
State motor fuel tax 6
Sales tax on motor fuel 8
State motor vehicle registration and other state fees 8
Interest on the Road Fund and State Construction Account 9
State capital program 9
Tollway revenue 9
Regional Transportation Authority sales tax 10
Chicago real estate transfer tax 11
State Public Transportation Fund 11
Other state transit 11
Transit passenger fares and other transit operating revenue 11
Other local revenues 12
Reasonably expected revenues **13**
Replace the state motor fuel tax with a road usage charge 14
Expand the sales tax base to additional services 14
Implement a freight delivery fee 14
Levy regional transportation surcharges 15
Toll major highway reconstructions and new highway capacity 15
Expenditures **16**
Operations and administration **17**
Roadway operating expenditures 17
Transit operating expenditures 17
Capital maintenance to maintain current asset conditions **18**
Roadway capital expenditures 18
Transit capital expenditures 20
Improve system condition **21**
System enhancements **21**
System expansion **22**
Risk assessment **23**
Supplement: Regional Capital Projects **24**
Acknowledgments **34**

Introduction

Federal law requires metropolitan planning organizations to demonstrate fiscal constraint by showing that sufficient funding resources are expected to be available to support the transportation system recommended in the long-range transportation plan. Specifically, federal regulations require that, for transportation system operations and maintenance, the financial plan include system-level estimates of costs and revenue sources that are reasonably expected to be available to adequately operate and maintain Federal-aid highways and public transportation (23 CFR § 450.324(f)(11)).

To meet these requirements, the Chicago Metropolitan Agency for Planning (CMAP) must assess the anticipated expenditures and revenue sources needed to support the operation, maintenance, improvement, enhancement, and expansion of the region's surface transportation system over the planning period of 2027 to 2050. Long-range financial forecasting requires establishing a base set of assumptions for revenue and expenditure trends; understanding the long-term implications of current policies; and developing a robust, accurate, and straightforward methodology that is appropriate for a planning-level forecast. This appendix to the 2026 Regional Transportation Plan (RTP) describes the methodology used to develop the transportation financial forecast. Table 1 and Figure 1 summarize forecast revenues and the allocations of those funds to planned investments.

The forecast shows that baseline revenues projected to be available over the planning period are insufficient to meet the full needs of the existing regional transportation system, including operations, maintenance, and improvement. Baseline revenues are also insufficient to support the region's priorities for system enhancement and expansion. To advance these investments while meeting asset condition targets, the region will need to adopt new revenue sources and modernize existing ones as major policy priorities. The RTP's Government and Funding chapter describes how these revenue sources would help address funding challenges that affect the region's ability to maintain existing assets and deliver enhancements.

Adding six reasonably expected revenue sources to the forecast would make $572.7 billion available in total funding over the planning period. Of that total, 88.8 percent (or $506.2 billion) is needed to operate, administer, maintain, and improve the system in its current condition. The remaining 11.2 percent (or $63.9 billion) would enhance and expand the system over the 2027-2050 planning period.

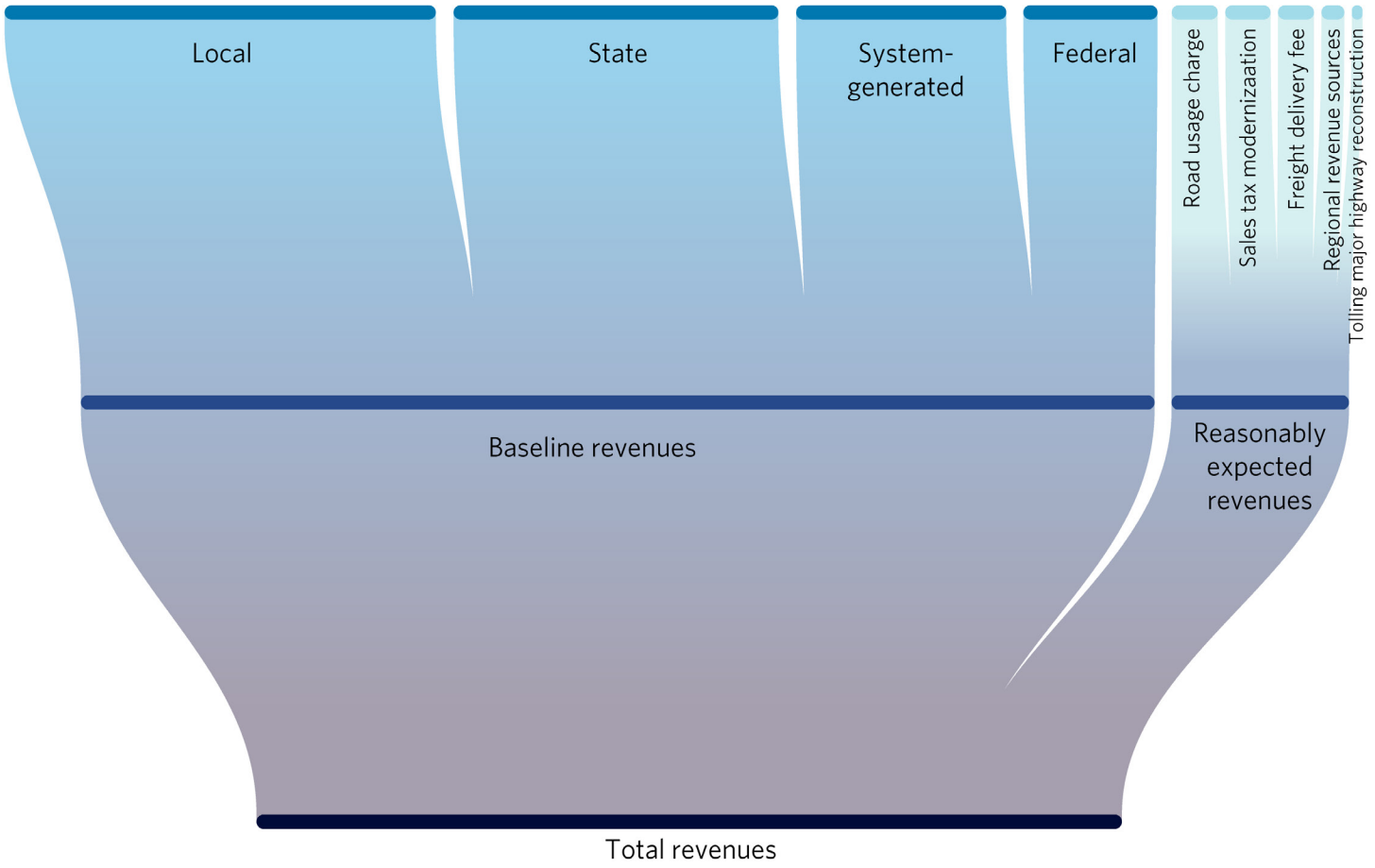
As required by federal regulations, revenues and expenditures are forecast in year-of-expenditure dollars rather than real or constant dollars, meaning the forecasts incorporate inflation.

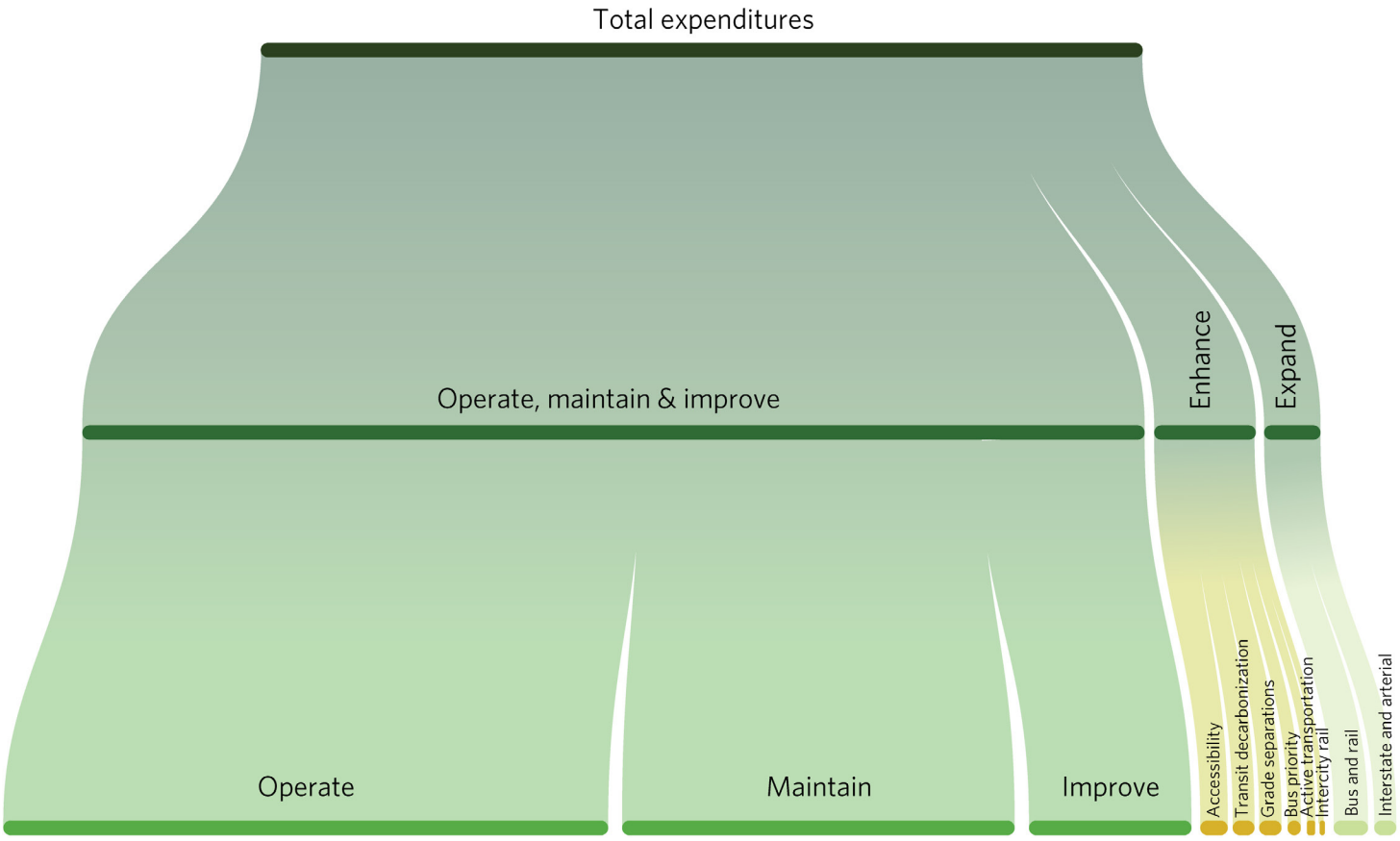
Table 1: Forecasted transportation revenues and expenditure allocations, 2027-2050 (year-of-expenditure dollars)

Revenues	
Federal revenues	$65.7B
State revenues	$146.9B
Local revenues	$193.6B
System-generated revenues	$96.3B
Subtotal baseline revenues	**$502.5B**
Replace state motor fuel tax with a road usage charge	$20.1B
Expand the sales tax base to additional services	$19.8B
Institute a freight delivery fee	$15.7B
Implement regional revenue sources	$10.0B
Toll major highway reconstructions and new highway capacity	$4.6B
Subtotal reasonably expected revenues	**$70.2B**
Total revenues	**$572.7B**

Expenditures	
Operate and administer roadway system	$102.5B
Operate and administer transit system	$161.3B
Subtotal cost to administer and operate the system	**$263.9B**
Maintain current roadway condition	$82.0B
Maintain current transit asset condition	$90.5B
Subtotal cost to maintain current system condition	**$172.6B**
Improve roadway system condition	$32.4B
Improve transit system condition	$41.0B
Subtotal cost to improve system condition	**$73.4B**
Enhance active transportation system	$3.5B
Improve transit accessibility	$11.8B
Decarbonize transit fleet	$9.3B
Enhance bus priority	$5.6B
Enhance intercity rail	$0.2B
Enhance grade separations	$8.3B
Subtotal cost to enhance the system	**$38.6B**
Expand interstate & arterial capacity	$9.4B
New operating & maintenance costs associated with new roadway capacity	$0.1B
Expand bus & rail capacity	$18.9B
Offsetting revenues from value capture associated with new transit capacity	-$4.1B
Subtotal cost to expand the system	**$24.3B**
Total expenditures	**$572.7B**

Figure 1: Fiscal constraint, 2027-2050 (year-of-expenditure dollars)





Revenues

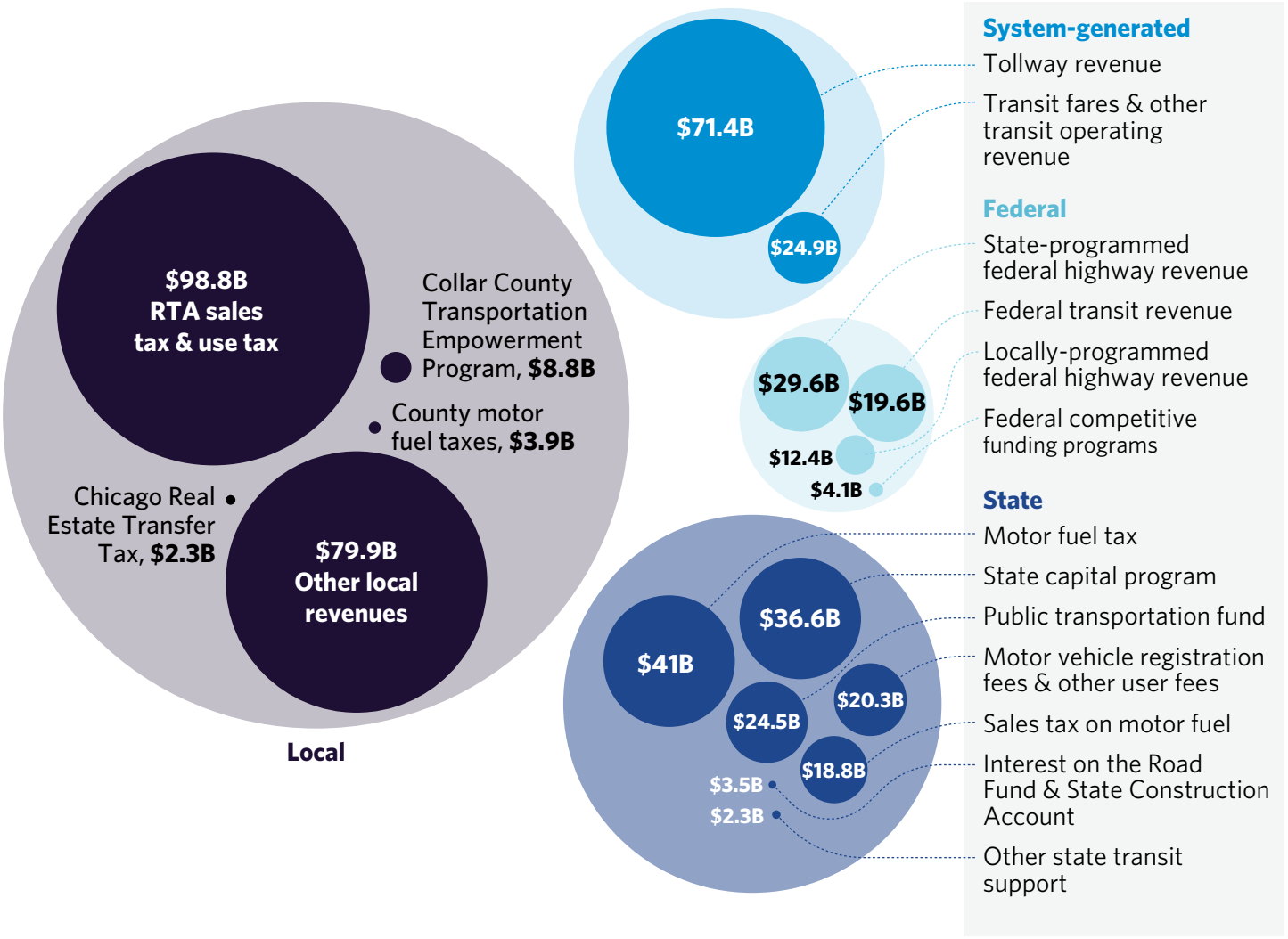
Revenue forecasts account for all funding resources expected to be available to administer, operate, maintain, improve, enhance, and expand the transportation system. For purposes of fiscal constraint, all revenue sources are aggregated before allocation to expenditure categories. Unlike the Transportation Improvement Program — which identifies and confirms funding availability for an approved list of projects over the next four years — this approach supports a long-range planning process focused on determining regional investment priorities.

Baseline revenues

The baseline revenue forecast totals $502.5 billion over the 24-year planning period. Baseline revenues include all existing revenue sources available to the region for transportation purposes and do not include any new sources. The forecasts assume that northeastern Illinois will continue to receive revenues from federal, state, and local sources to construct, operate, administer, and maintain the existing roadway and transit system.

This forecast also assumes periodic increases in transit fares and toll rates over the planning period, which will be necessary to maintain sufficient funding to support these systems. Figure 2 provides forecasts for revenue sources, followed by a description of the methodology and assumptions used to develop the projections.

Figure 2: Baseline revenue forecast by category, 2027-50 (year-of-expenditure dollars)



State programmed federal highway revenue: $29.6 billion

The Illinois Department of Transportation (IDOT) programs funding from the state's annual federal highway apportionment across nine highway districts. These federal sources include the National Highway Performance Program, Surface Transportation Program, National Highway Freight Program, Highway Safety Improvement Program, Transportation Alternatives Program, Recreational Trails, the Bridge Investment Program, National Electric Vehicle Formula Program, and the PROTECT program.

Between 2027 and 2050, the federal highway apportionment for Illinois is forecast to grow 1.4 percent annually, based on a trend analysis of apportionments programmed after the passage of the Infrastructure Investment and Jobs Act (IIJA) and expected funding from the State/Regional Resources Table for Federal Fiscal Years (FFYs) 2026-2030. Throughout the planning period, a portion of these funds will be programmed by IDOT for projects in northeastern Illinois through District 1 (which covers Cook, DuPage, Kane, Lake, McHenry, and Will counties) and District 3 (which includes Kendall County).

CMAP estimated a performance-based, long-term share of state funding that could reasonably be allocated to the region by averaging the region's share of capital obligations, capital apportionments, lane miles, pavement and bridge condition, vehicle miles traveled (VMT), and operating expenditures relative to statewide totals. These calculations result in a regional share of 38.25 percent (see Table 2).

Table 2: Northeastern Illinois's regional share of transportation system factors used to calculate regional share of state apportionments

Transportation system factors	Regional total	Statewide total	Regional share
IDOT Fiscal Year (FY) 2024 capital obligations	$0.8 billion	$1.8 billion	45.1%
IDOT Multi-Year Program FY2025-2030 capital apportionments	$12.3 billion	$41.4 billion	29.7%
2023 mileage statistics (lane miles)	30,015	147,105	20.4%
2023 pavement in poor or fair condition (lane miles)	6,286	14,725	42.7%
2023 bridges in poor or fair condition (square feet)	25.4 million	58.5 million	43.4%
2022 vehicle miles traveled	57.4 billion	103.1 billion	55.7%
Historic IDOT operating expenditures (2007-2016)	$1.9 billion	$6.1 billion	30.5%
Average regional share			**38.25%**

Source: CMAP analysis of data from the FHWA's National Bridge Inventory, IDOT, and the Illinois State Comptroller.

In the near-term, the State/Regional Resources Table assumes the region will receive approximately 75 percent of the state apportionment through 2030 based on current programming. Over the long term, to represent funding levels that could reasonably be anticipated under current state procedures, the forecast applies a long-term normalization that gradually reduces the region's share from 75 percent to 38.25 percent by 2050.

This approach results in $29.6 billion allocated to northeastern Illinois over the planning period, or an annual average of $1.2 billion.

Locally programmed federal revenue: $12.4 billion

Annual federal funding apportioned by the U.S. Department of Transportation (USDOT) to the Chicago metropolitan region include funding for the Congestion Mitigation and Air Quality Improvement Program, Transportation Alternatives Program-Local, Carbon Reduction Program, Surface Transportation Program-Local, Surface Transportation Program-Counties, and Surface Transportation Program-Shared Fund.

Although these revenues grew 1.3 percent annually between 2013 and 2021, the IIJA increased funding levels to the region beginning in 2022.

To forecast this revenue, CMAP conducted a trend analysis based on IIJA funding levels and estimates of expected funding between 2026 and 2030 from the FFY2026-2030 State/Regional Resources Table, producing a forecast with an annual growth rate of 1.7 percent between 2027 and 2050.

Federal transit revenue: $19.6 billion

The Federal Transit Administration (FTA) distributes federal transit formula funds through programs such as the Urbanized Area Formula Grants and State of Good Repair Program, among others.

The forecast is based on a trend analysis of funding received after the implementation of the IIJA and CMAP estimates of expected funding between 2026 and 2030 from the FFY2026-2030 State/Regional Resources Table.

Between 2027 and 2050, federal transit formula funds are expected to average 0.7 percent growth annually.

Federal revenue from competitive programs: $4.1 billion

USDOT also allocates federal funding through competitive grant programs that support a broad range of transportation investments. Competitive grant awards can vary over time depending on USDOT priorities.

Because these funding levels are uncertain and are not guaranteed, this forecast represents a conservative planning-level estimate.

CMAP staff created annual average funding amounts based on pre- and post-IIJA trends for the following programs: FTA Section 5309, FTA Section 5337, FTA Section 5339, FHWA MEGA, FHWA INFRA, and BUILD (formerly RAISE).

Based on these trends, CMAP estimates that the region could receive a total of approximately $4.1 billion from federal competitive programs during the planning period.

State motor fuel tax: $41.0 billion

In 2019, the Rebuild Illinois capital program doubled the state motor fuel tax (MFT) to 38 cents per gallon and indexed the rate to inflation. As of July 2025, the composite state MFT rate was 48.3 cents per gallon for gasoline and 55.8 cents per gallon for diesel.

CMAP forecasts that inflation trends will increase the rate by 2.5 percent annually in 2027 and 2028, reflecting a near-term inflationary environment. Beginning in 2029, the rate is assumed to increase 2.25 percent annually, consistent with long-term inflation trends.

To estimate revenues, CMAP used forecasts of annual vehicle miles traveled (AVMT) and average miles per gallon. For AVMT, CMAP adapted IDOT forecasts developed for 2045 which are based on estimates from CMAP's regional travel demand model and regional population forecasts. These projections were then extended to 2050. Between 2027 and 2050, statewide AVMT is projected to grow annually by 0.71 percent for passenger vehicles and 0.66 percent for other vehicles.

Passenger vehicle fuel economy projections were based on historical rules from the National Highway Traffic Safety Administration (NHTSA) for Corporate Average Fuel Economy (CAFE) standards. The most recent rule used in the analysis, issued in June 2024, establishes standards for passenger vehicles and light trucks through the 2031 model year. CMAP also used vehicle fleet data from the FHWA's 2022 National Household Travel Survey.[1]

Based on these inputs, CMAP estimates that passenger vehicle fuel economy statewide will reach a fleet average of

1 Federal Highway Administration, "National Household Travel Survey 2022," https://nhts.ornl.gov/.

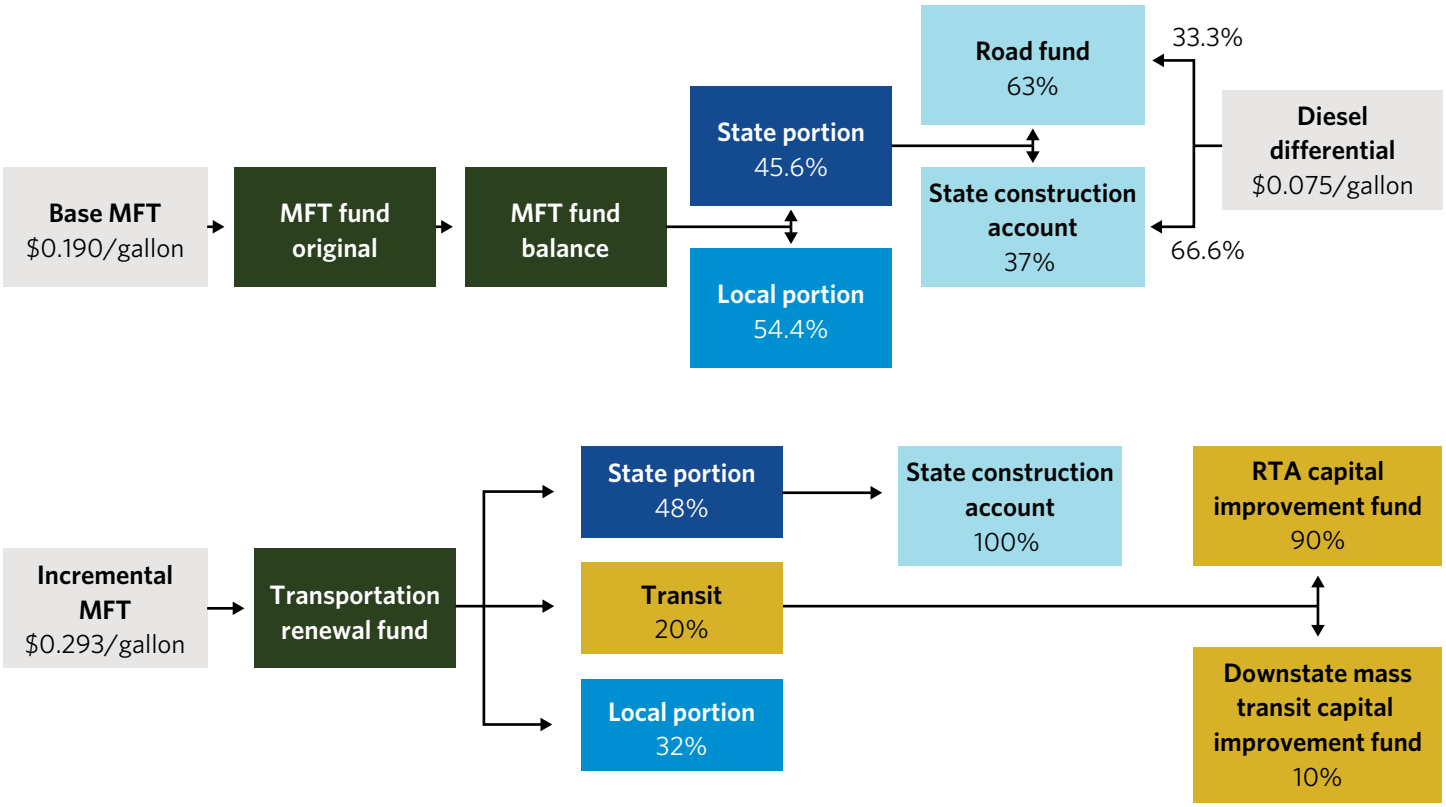
31.9 miles per gallon by 2050. Since the analysis, regulatory decisions reduced fuel economy standards and eliminated penalties for noncompliance. While CAFE standards and compliance may evolve, overall fleet fuel economy is expected to improve over time as older vehicles are replaced with newer and more fuel-efficient models, including electric vehicles.

Fuel economy for non-passenger vehicles was assumed to improve according to NHTSA fuel-efficiency standards for medium- and heavy-duty vehicles.

Using projected AVMT and fuel economy, CMAP estimated statewide fuel consumption and calculated gross statewide MFT receipts by multiplying the forecasted gallonage by projected MFT rates.

After estimating statewide receipts, CMAP allocated revenues using current statutory distribution formulas to estimate the annual funding for northeastern Illinois (Figure 3).

Figure 3: Statutory state motor fuel tax distribution formula, 2025



As a result, the forecast distributes state MFT revenue in three primary ways:

- **State:** MFT receipts are distributed to the Road Fund and State Construction Account for IDOT projects across the state. CMAP assumed that northeastern Illinois receives 38.25 percent of these funds (see Table 2), which totals $15.0 billion over the planning period.

- **Local:** Jurisdictions at the local level also receive distributions from the state MFT. The forecast is based on applying a historical share of funding that counties, townships, and municipalities in northeastern Illinois have received relative to statewide distributions to local jurisdictions. The forecast estimates $16.2 billion to local jurisdictions in northeastern Illinois over the planning period.

- **Transit:** Rebuild Illinois included an annual statutory distribution from the incremental portion of the state MFT to fund transit capital investments. The Regional Transportation Authority (RTA) receives 90 percent of this funding, and the forecast is $9.8 billion over the planning period.

Sales tax on motor fuel: $18.8 billion

Beginning in July 2026, Public Act 104-0457 — the Northern Illinois Transit Authority (NITA) Act — dedicates the state's portion of the retailer's occupation tax generated from the sale of motor fuel to transit operations. Previously, these revenues were deposited into the Road Fund under the Rebuild Illinois program. Northeastern Illinois receives 85 percent of these revenues, which are calculated annually during the state budget cycle by the Illinois Commission on Government Forecasting and Accountability (COGFA) using statewide fuel price data and fuel consumption statistics.

CMAP's forecast uses average Midwest gasoline and diesel prices reported by the U.S. Energy Information Administration[2] between July 2024 and June 2025: $3.13 per gallon for gasoline and $3.56 per gallon for diesel.

Throughout the planning period, gasoline prices are assumed to grow 2.4 percent annually, while diesel prices are assumed to grow 3.1 percent annually.

CMAP then estimated the average sales tax paid per gallon of fuel relative to fuel prices based on historical data from 2017 to 2022 and analysis published by the COGFA.[3] This ratio was applied to forecast fuel consumption and projected fuel prices to estimate total revenues from the sales tax on motor fuel. This forecast relies on the same fuel consumption projections used in the state motor fuel tax forecast.

State motor vehicle registration and other state fees: $20.3 billion

Transportation user fees — including motor vehicle registrations, certificate of title fees, operator's licenses fees, permit fees, and transfer of registration fees — represent another primary source of state transportation funding.

The Rebuild Illinois program added a new $100 electric vehicle surcharge, intended to offset lost motor fuel tax revenue, and increased several existing user fees in 2019, including:

- Passenger vehicle registration fees, which increased by $50 to $151
- Commercial truck registration fees, which increased by $100 across all weight classes
- Standard certificate of title fees, which increased by $55 to $150

The forecasts for motor vehicle registration and other state fees do not assume additional fee increases during the planning period. Like with Rebuild Illinois, fee increases have historically been used to support state capital programs, and potential future increases are therefore reflected separately in the forecast of future capital programs below.

Even without additional increases, revenues from existing user fees are expected to grow modestly based on population growth assumptions and historical revenue trends.

The forecast assumes that motor vehicle registration revenues grow 0.2 percent on average annually, reflecting the region's population forecast, and other state fee revenues grow 1.2 percent on average annually based on historical revenue trends.

To estimate the portion of statewide revenues that would accrue to northeastern Illinois, CMAP applied the 38.25 percent regional share calculated in Table 2.

2 United States Energy Information Administration, "Weekly Retail Gasoline and Diesel Prices," https://www.eia.gov/dnav/pet/pet_pri_gnd_dcus_r20_m.htm.

3 Commission on Government Forecasting and Accountability, "Monthly Briefing for the Month Ended: October 2022," October 2022, accessed March 30, 2026, https://cgfa.ilga.gov/Upload/1022.pdf.

Interest on the Road Fund and State Construction Account: $3.5 billion

Beginning in 2026, the NITA Act dedicates interest earned on the Road Fund and State Construction Account to transit agencies for capital improvements. Northeastern Illinois receives 90 percent of these revenues.

Interest revenues were estimated using forecasted balances of both funds and projected interest rates.

Interest rates were estimated using historical trends in the federal funds rate, which is closely related to yields on U.S. Treasury securities, where Illinois invests state funds. The forecast assumes a long-term average interest rate of 1.76 percent, based on historical trends from 2003 to 2025.

Fund balances are projected using historical revenue growth trends. The Road Fund balance was assumed to grow 5.1 percent annually. The State Construction Account balance was assumed to grow by 1.3 percent annually.

Interest revenue was estimated by applying the projected federal funds rate to forecast fund balances. Together, the Road Fund and State Construction Account are projected to generate $3.5 billion in interest revenues over the planning period.

State capital program: $36.6 billion

Rebuild Illinois, enacted in 2019, authorized $33.2 billion for transportation capital projects statewide. As discussed above, state capital programs have historically been funded in part through increases in transportation user fees, such as higher vehicle registration fees and certificates of title fees.

The forecast assumes the state will continue to spend the remaining funds from Rebuild Illinois through 2029 and will enact two additional statewide capital programs during the planning period. The first program, assumed to begin in 2030, is forecast to grow 3.4 percent annually relative to baseline Rebuild Illinois levels. This higher growth rate reflects the elevated construction cost environment experienced in recent years.

The second program, assumed to begin in 2040, is forecast to grow 2.25 percent annually relative to the first program, reflecting a return to long-term inflation trends.

Tollway revenue: $71.4 billion

The Illinois State Toll Highway Authority (Illinois Tollway) collects toll revenues and generates other operating revenues that support its transportation investments. Toll revenue projections were derived from estimates published in the Illinois Tollway's Senior Revenue Bonds Series 2024A Official Statement.[4]

Using the toll rate structure reflected in that document, passenger vehicle toll rates remain fixed. Commercial vehicle toll rates increase 2.0 percent annually, because commercial tolls are indexed to inflation.

Other operational revenues, including concessions and miscellaneous income, were forecast to grow at 0.9 percent annually, based on historical trends.

The Tollway revenue forecast does not incorporate the financial impacts of the NITA Act, which increased passenger and commercial tolls and indexed passenger tolls to inflation.

While the forecast does include two passenger toll rate adjustments during the planning period, the full long-term effects of the NITA Act remain uncertain because the Illinois Tollway has not yet adopted a corresponding long-term capital program to offset these revenues in the long-term forecast.

4 Illinois State Toll Highway Authority, "Toll Highway Senior Revenue Bonds, 2024 Series A (Refunding) Official Statement," December 14, 2023, accessed January 15, 2025, https://agency.illinoistollway.com/documents/20184/1420801/ISTHA%20Series%202024A%20Official%20Statement.pdf.

Regional Transportation Authority sales tax: $107.6 billion

The RTA sales tax is the primary public funding source for transit operations in northeastern Illinois. The composite RTA sales tax rate is currently 1.5 percent in Cook County and 1 percent in the collar counties (DuPage, Kane, Lake, McHenry, and Will) (Figure 4).

- **RTA sales tax I**: In 1979, the RTA sales tax was established at 0.75 percent in Cook County and 0.25 percent in the collar counties.

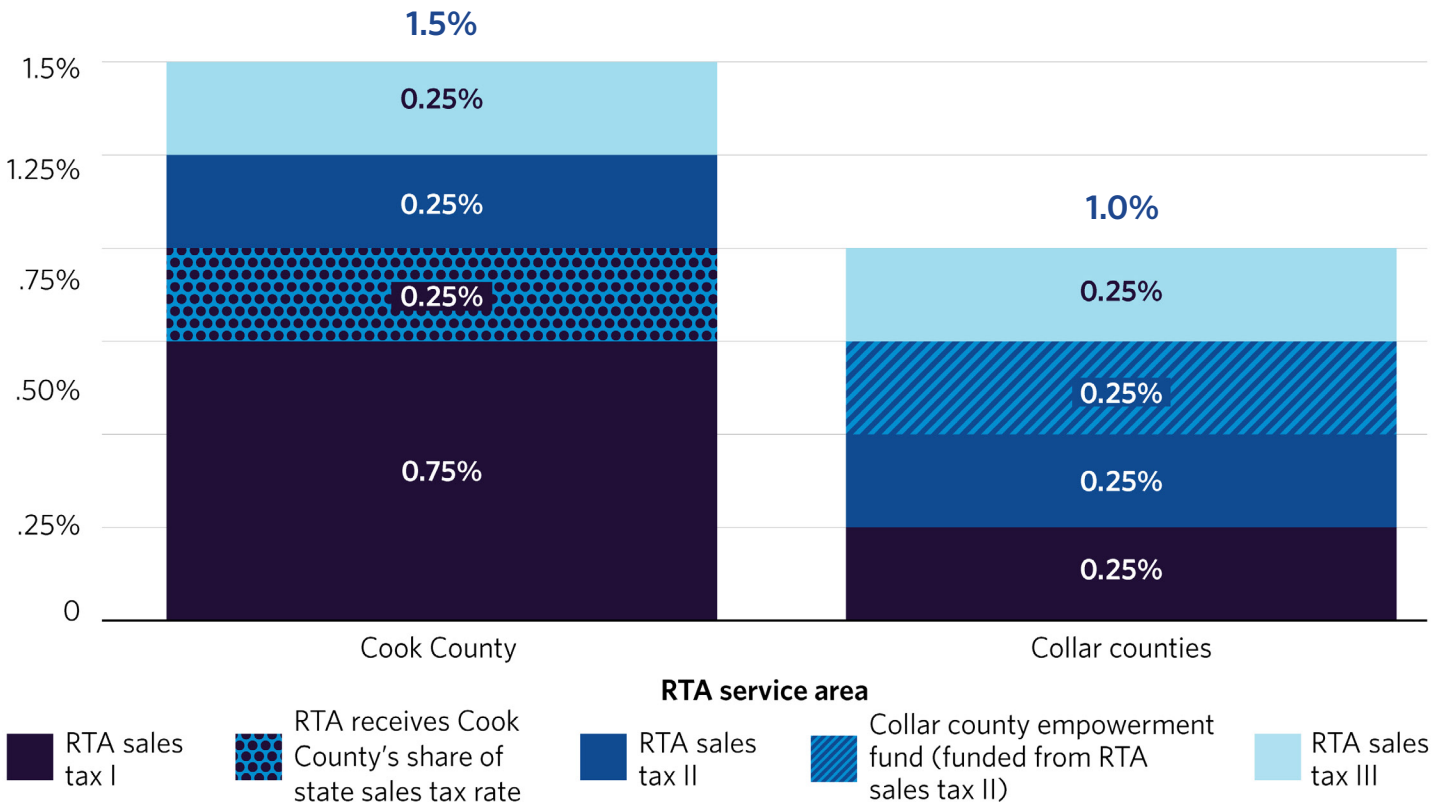
  In addition, the RTA receives 0.25 percent of the state's 6.25 percent sales tax in Cook County. Together, these revenues are referred to as RTA sales tax I (ST I).

- **RTA sales tax II:** In 2008, legislation created RTA sales tax II (ST II), which added 0.25 percent in Cook County and 0.50 percent in the collar counties.

  Half of the ST II revenue collected in the collar counties (0.25 percent) is returned to those counties rather than distributed to the RTA. These funds are deposited into the Collar County Transportation Empowerment Fund to support local transportation and public safety projects.

- **RTA sales tax III:** In 2025, the NITA Act authorized an additional 0.25 percent regional sales tax increase (RTA sales tax III, or ST III), which CMAP anticipates the RTA Board will adopt in June 2026.

Figure 4: RTA composite sales tax by components and geography



Sales tax revenues dedicated to the RTA were forecast by projecting sales tax growth in each county, producing a regional average annual growth rate of 3.6 percent. The RTA also receives revenue from the state use tax, which is forecast to grow 4.9 percent annually.

Consistent with statutory requirements, the forecast assumes that 0.25 percent of the RTA sales tax revenue

DRAFT

generated in DuPage, Kane, Lake, McHenry, and Will counties is returned to those counties through the Collar County Transportation Empowerment Fund. Over the planning period, revenues returned to the collar counties are estimated to total $8.8 billion, growing 3.6 percent annually.

Chicago real estate transfer tax: $2.3 billion

The City of Chicago imposes a real estate transfer tax (RETT) on property transfers at a total rate of $5.25 per $500 of the transfer price. A portion of this tax — $1.50 per $500 of transfer price — is dedicated to the Chicago Transit Authority (CTA).

RETT revenues were forecast to grow at an average annual rate of 1.9 percent, based on historical revenue trends.

State Public Transportation Fund: $24.5 billion

The RTA and service boards receive a state match equal to 30 percent of certain transit-related revenues. Specifically, the match applies to:

- RTA sales tax I and II revenues dedicated to the RTA
- The state use tax disbursed to the RTA
- Chicago real estate transfer tax revenues dedicated CTA

These state matching funds are deposited into the Public Transportation Fund (PTF).

Over the planning period, 97.2 percent of PTF revenues ($23.8 billion) are generated by the match on state use tax and RTA sales tax revenues. The remaining 2.8 percent ($685 million) results from the match on Chicago RETT revenues.

Other state transit: $2.3 billion

The RTA and service boards also receive additional state support beyond the Public Transportation Fund.

First, the state contributes funding for Regional Transportation Authority debt service, which is estimated to total $1.3 billion during the plan period.

Second, the state has provided an annual appropriation since 2010 to support Pace's Americans with Disabilities Act (ADA) paratransit service. This appropriation is assumed to grow 1.0 percent annually through 2050.

Finally, the state reimburses service boards for some lost fare revenue due to free and reduced fare mandates. These reimbursements are assumed to grow at 2.2 percent annually.

Transit passenger fares and other transit operating revenue: $24.9 billion

Passenger fares for the CTA, Metra, Pace, and Pace ADA services represent the primary system-generated revenue source for transit operations in northeastern Illinois.

The transit agencies, including the RTA, also generate other system-generated revenue from sources such as advertising and concessions, investment income, and miscellaneous operating sources.

Passenger fare revenues for the CTA, Metra, and Pace were forecast to grow 2.9 percent annually on average during the planning period, based on projected service levels and ridership trends. Average fares are assumed to increase periodically throughout the planning period, consistent with long-term trends.

Passenger fare revenue for Pace ADA services was forecast separately and is projected to grow at an annual average rate of 3.8 percent, based on historical relationships between fares and ridership.

Other system-generated revenues for the CTA, Metra, and Pace were forecast by extending historical revenue trends over the planning period. Annual average growth rates are 1.0 percent for the CTA, 1.9 percent for Metra, and 1.7 percent for Pace.

Given revenue trends for Pace ADA and the RTA differ from those of the service boards, forecasts for these agencies assume constant annual revenues based on recent budget averages.

Overall, system-generated revenues for the CTA, Metra, Pace, Pace ADA, and the RTA are projected to grow 1.4 percent annually on average between 2027 and 2050.

Other local revenues: $83.7 billion

Counties, townships, and municipalities depend on a variety of revenue sources to fund local transportation infrastructure.

County revenue estimates were based on recent county budget documents. Municipal and township revenues were estimated using 2022 U.S. Census of Governments data, adjusted to the current year based on inflation and population growth.

Future revenues were forecasted through 2050 using composite growth rates that incorporate both the regional population forecasts and long-term inflation assumptions.

The forecast assumes inflation rates of 2.5 percent from 2027 to 2028 and 2.25 percent from 2029 to 2050.

Together, these assumptions produce an average annual growth rate of 2.3 percent for local transportation revenues. The Rebuild Illinois legislation authorized non-home rule counties to adopt new local MFT or increase existing rates to support local transportation investments.

Under the legislation, newly adopted or increased county MFT rates could not exceed 8 cents per gallon initially, and are indexed to inflation thereafter.

County motor fuel taxes in DuPage, Kane, Lake, McHenry, and Will counties were forecast individually using the same methodology used for the state motor fuel tax.

Baseline rates for 2027, the base year of the financial plan, are shown in Table 3. These rates are assumed to grow 2.5 percent annually in 2027 and 2028, followed by 2.25 percent annually beginning in 2029.

The Cook County MFT is assumed to remain at 6 cents per gallon throughout the planning period, reflecting the fact that the rate has remained unchanged since 1989. Fuel economy assumptions were developed for each county, and growth in the AVMT was estimated using modeled VMT outputs from regional air quality conformity analysis. County MFT revenues are projected to total $3.9 billion over the planning period.

Table 3: County motor fuel tax rates assumed for 2027

County	MFT rate per gallon
Cook	$0.060
DuPage	$0.099
Kane	$0.052
Lake	$0.050
McHenry	$0.088
Will	$0.052

Reasonably expected revenues

Taken together, baseline revenues are sufficient to operate and maintain the transportation system in its current condition, but they are insufficient to improve asset conditions or support new regional investments. New and modernized revenue sources are needed to fully fund regional transportation priorities.

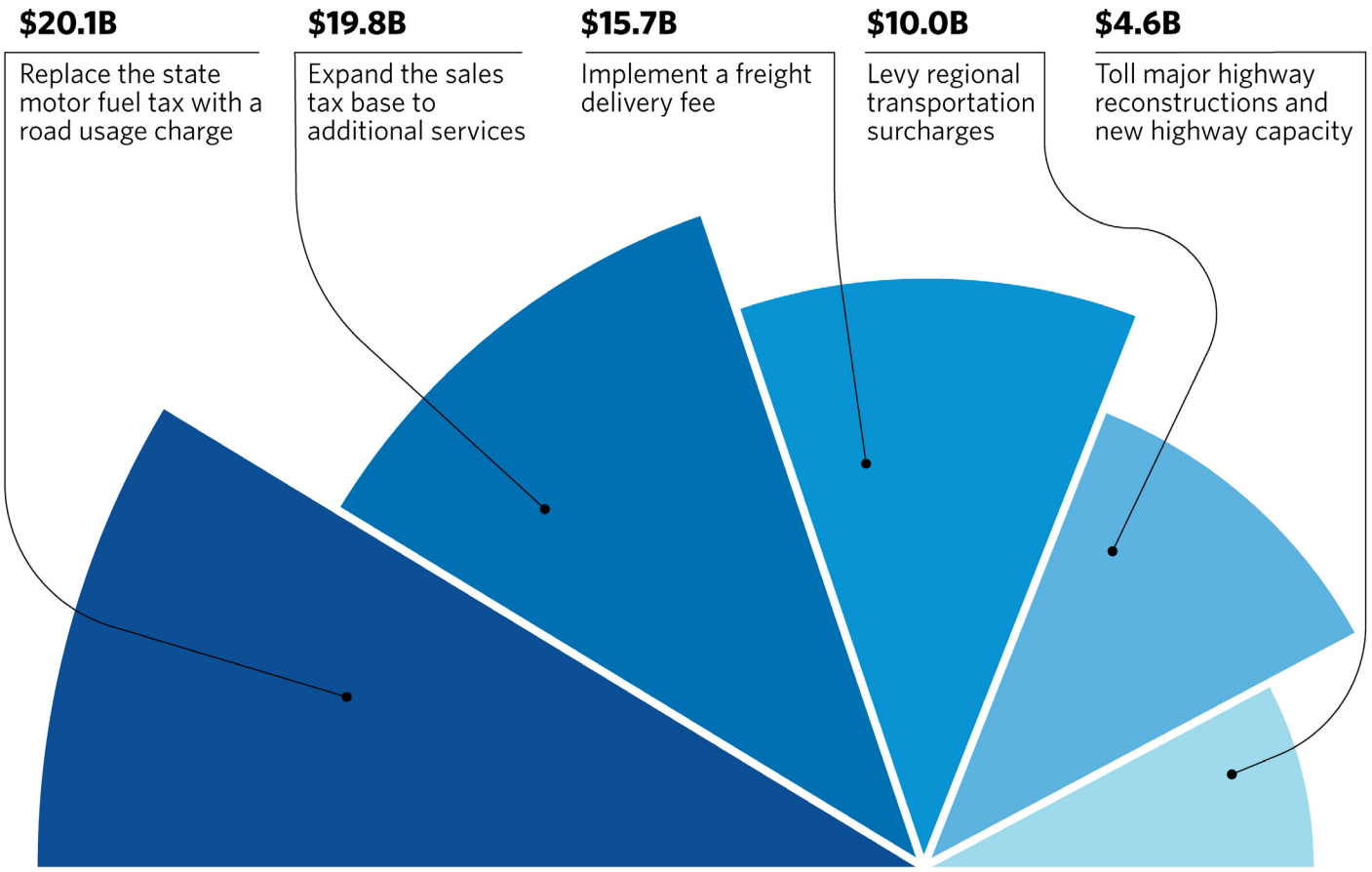
Federal guidance permits the inclusion of revenue sources that are reasonably expected to become available during the planning period to support the transportation plan.

Accordingly, the financial plan includes $70.2 billion in reasonably expected revenues across five categories (Figure 5).

Each category represents a policy change that would require action at the state and local levels. However, precedent within the region and across the country indicates that these types of revenues could reasonably be implemented during the planning horizon.

The Government and Funding chapter of the RTP provides additional discussion of these policy recommendations. The following sections describe the methodologies used to estimate revenues from each category. The methodologies are intended to be consistent with CMAP policy recommendations, although the assumptions used in the forecasts should not be interpreted as detailed implementation proposals.

Figure 5: Reasonably expected revenue forecast by category, 2027-2050 (year-of-expenditure dollars)



Replace the state motor fuel tax with a road usage charge: $20.1 billion

As the vehicle fleet becomes more fuel-efficient, revenues based on fuel consumption are expected to become less reliable over time. Replacing the state MFT with a road usage charge (RUC) would provide a more durable revenue source for transportation funding.

This forecast assumes that a statewide RUC would be implemented in 2035 at a rate of 4 cents per mile traveled, with an additional 1 cent per mile surcharge for diesel-powered vehicles. Similar to the current state MFT, the RUC rate is assumed to be indexed to inflation. For purposes of this forecast, the rate is assumed to increase 2.5 percent annually. The forecast also assumes that RUC revenues would be distributed to northeastern Illinois using the same statutory formulas currently used to distribute state motor fuel tax revenues.

Actual RUC revenues could vary depending on program design, implementation considerations, tax rates, and future travel behavior. Additional information on RUC policy considerations is available in *Advancing a road usage charge in Illinois*.

Expand the sales tax base to additional services: $19.8 billion

Illinois' sales tax system was originally designed in the 1930s and continues to apply primarily to goods rather than services. Because services now represent a large share of the modern economy, expanding the sales tax base to include additional services could provide a significant source for transportation funding.

Expanding the sales tax base would increase the RTA's sales tax revenues and also increase the state sales tax match deposited into the Public Transportation Fund.

The forecast assumes that additional consumer services would be added to the sales tax base beginning in 2030. Between 2030 and 2032, revenues are assumed to grow 3.8 percent annually, based on analysis of Bureau of Economic Analysis (BEA) data measuring growth in personal consumption expenditures for transportation, recreation, financial and insurance services, and other services between 1997 and 2023.

For the remainder of the planning period, the forecast assumes a 4.0 percent growth rate, based on a weighted average of long-term historical growth rates from the same data source.

This forecast includes additional Public Transportation Fund revenues resulting from the state match applied to increased RTA sales tax revenues. However, it does not include revenues that would accrue to the state or other local governments as a result of expanding the sales tax base.

More information on this policy option is available in *Modernizing Illinois' sales tax: A pathway to sustainable funding*.

Implement a freight delivery fee: $15.7 billion

Growth in e-commerce activity has increased the frequency and weight of freight deliveries occurring throughout the region, placing additional demands on transportation infrastructure. A freight delivery fee would help offset these impacts and provide funding for transportation system maintenance and reconstruction.

Freight delivery fees apply when a sale transaction results in a delivery of goods, accounting for the impacts of freight and last-mile delivery activity on congestion and roadway infrastructure.

The forecast assumes that a freight delivery fee would be implemented in 2035 and applied to online transactions resulting in the delivery of goods.

The fee is assumed to be $0.90 per delivery, indexed to inflation over time.

Additional information on freight deliver fee policy options is available in *Transportation funding strategies: Revenue options for consideration*.

Levy regional transportation surcharges: $10.0 billion

Because northeastern Illinois faces unique transportation investment needs, regional revenue sources could help support regional transportation priorities, match federal funds, and advance system modernization initiatives.

This forecast assumes the implementation of two regional revenue sources:

- A transportation network company (TNC) trip surcharge
- A regional motor vehicle registration surcharge

The forecast assumes a 10 percent surcharge on TNC trips, implemented in 2030. This surcharge is projected to generate approximately $5.3 billion between 2030 and 2050.

The forecast also assumes implementation of a regional motor vehicle registration surcharge beginning in 2030. The surcharge is structured as an annual fee indexed to inflation, with fee levels determined by vehicle type to approximate a weight-based fee (Table 4).

Additional vehicle classes would be assigned comparable fees.

Between 2030 and 2050, the regional motor vehicle registration surcharge is projected to generate approximately $4.7 billion.

Table 4: Base fee levels by vehicle type assumed for 2030

Vehicle type	Fee surcharge amount
Passenger cars	$20
Passenger trucks	$25
Short- and long-haul combination trucks	$40

Toll major highway reconstructions and new highway capacity: $4.6 billion

Much of the region's expressway system will require major reconstruction during the planning period. Implementing tolling on currently untolled facilities as part of their planned reconstruction could help finance these investments and free other revenue sources for additional transportation priorities.

There are multiple approaches to implementing tolling and road pricing strategies, depending on policy goals and implementation design. Additional information on these options is available in *Tolling and pricing strategies: Revenue options for consideration*.

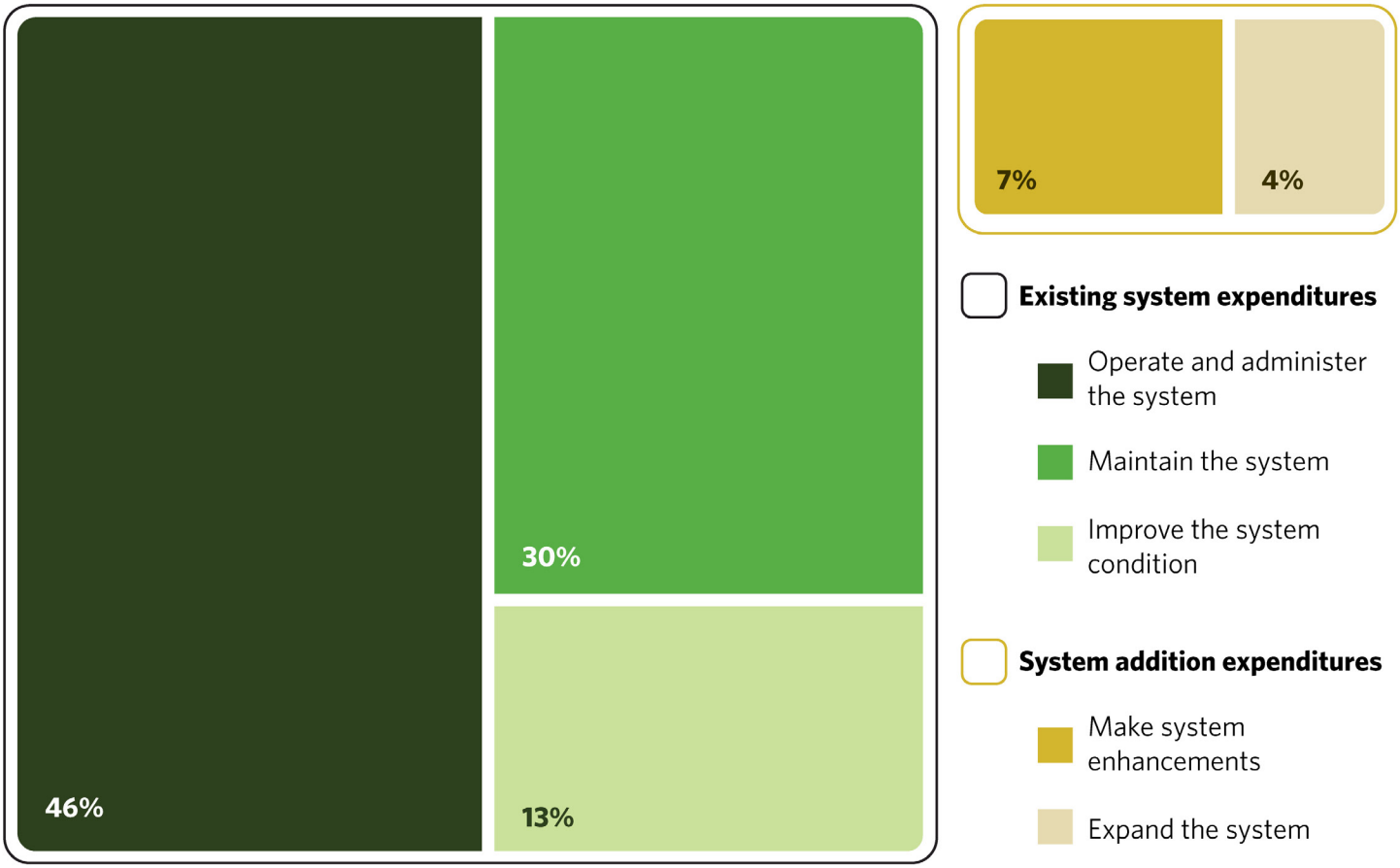
The forecast assumes that project-specific toll revenues would grow at a rate of 0.7 percent annually following the year of construction. This rate reflects the compound annual growth rate for toll revenues between 2019 and 2050 estimated through CMAP's regional capital project evaluation modeling.

Expenditures

The financial plan for transportation allocates forecast revenue across categories of expenditures needed to administer, operate, maintain, improve, enhance, and expand northeastern Illinois' transportation system during the planning period.

These expenditure categories reflect the range of investments required to sustain and improve the region's transportation infrastructure.

Figure 6: Expenditure forecast by category, 2027-50 (year-of-expenditure dollars)



Regional capital projects

Some expenditures included in the financial plan are derived from regional capital projects (RCPs). RCPs are large transportation investments that have regional impacts and therefore warrant additional analysis through the regional planning process.

To identify potential RCPs, CMAP solicited project proposals from partner agencies and conducted a comprehensive evaluation of project benefits. Results of that evaluation are documented in the RCP Benefits Report.

Costs associated with constrained RCPs are incorporated into multiple expenditure categories, depending on the purpose of each investment. Portions of RCP costs may contribute to maintaining existing assets, improving asset conditions, and expanding system capacity.

Additional information about constrained and unconstrained RCPs is provided in the Supplement.

Operations and administration

Administering, operating, and servicing debt for the region's extensive roadway and transit system represents a substantial portion of total transportation expenditures in the financial plan.

This expenditure category assumes continued operation of the existing transportation system without operational enhancements. Costs in this category include employee compensation, facility costs such as rent and utilities, routine noncapital repairs, fuel and energy costs, debt service, and other administrative costs required to support daily transportation system operations.

Roadway operating expenditures: $102.5 billion

Roadway operating expenditures include the operational and administrative costs incurred by IDOT District 1, Illinois Tollway, and local governments. These costs also include Illinois Tollway debt service and state debt service on general obligation bonds supported by the Road Fund.

IDOT District 1 expenditures were estimated to represent 31.5 percent of statewide IDOT operating expenditures, based on historical averages. Operating and administrative expenditures for District 1 are forecast to grow 2.3 percent annually, consistent with historical trends.

IDOT District 1 debt service was forecast based on historical transfers from the Road Fund to the General Obligation Bond Retirement and Interest Fund. The forecast assumes annual growth of 2.3 percent, with 31.5 percent of statewide costs attributed to northeastern Illinois.

Illinois Tollway operating expenditures were forecast using historical expense trends reported by the Illinois Office of the Comptroller for 2017 to 2025, as well as state budget data for FY2026.[5] These expenditures are projected to grow 2.5 percent annually.

Illinois Tollway debt service reflects the official debt service schedule provided in the Tollway's Series 2024A Official Statement, covering 2027 to 2046.[6]

County roadway expenditures were derived from recent county budget documents. Municipal and township expenditures were estimated using data reported to the U.S. Census of Governments in 2022, adjusted to the current dollars using inflation and population growth.[7] County, township, and municipal expenditures are assumed to grow 2.3 percent on average annually, reflecting regional population forecasts and long-term inflation assumptions.

Transit operating expenditures: $161.3 billion

Transit operating expenditures include operating, administration, and debt service costs for the RTA, CTA, Metra, Pace, and Pace ADA. Transit operating and administrative expenses are assumed to equal forecast operating revenues. This assumption reflects the requirement that transit operating budgets remain balanced.

Transit operating and administrative expenditures are forecast to grow 3.3 percent annually on average during the planning period, based on expected growth in operating revenues and service levels.

The interest portion of transit debt service is forecast to grow on average 0.7 percent annually on average.

5 Illinois Office of Comptroller, "Detailed Annual Report of Revenues and Expenditures," https://illinoiscomptroller.gov/financial-reports-data/find-a-report/comprehensive-reporting/detailed-annual-report-of-revenues-and-expenditures.
6 Illinois State Toll Highway Authority, "Toll Highway Senior Revenue Bonds, 2024 Series A (Refunding) Official Statement."
7 United States Census Bureau, "Census of Governments 2022," https://www.census.gov/programs-surveys/cog.html.

Capital maintenance to maintain current asset conditions

The financial plan includes capital maintenance costs needed to maintain the current condition of roadway and transit assets throughout the planning period. These costs represent the level of funding required to prevent the backlog of assets in fair or poor condition from increasing.

Additionally, the forecasts include capital maintenance expenditures completed in tandem with regional capital projects but do not include any costs that would address a need for increased capacity on the transportation system. To develop these forecasts, CMAP coordinated closely with transportation agencies to review asset condition data, cost assumptions, and long-term maintenance needs during the planning period.

Different methodologies were applied for roadway and transit assets to reflect differences in asset inventories and cost trends.

For roadway assets, CMAP relied on the National Highway Construction Cost Index to estimate construction cost growth. For transit assets, CMAP used a composite construction cost index derived from BEA data, which better reflects the cost trends of transit infrastructure.

Roadway capital expenditures: $82.0 billion

Roadway capital maintenance includes investments required to maintain the region's expressways, arterial roads, collector streets, local roads, bridges, and traffic signal infrastructure. The forecasts assume that existing roadway asset conditions are maintained throughout the planning period.

Transportation agencies provided data and technical input regarding unit costs, asset lifecycles, and current asset condition.

A primary source for these estimates was dTIMS, IDOT's enterprise asset management system used for managing pavements and bridge conditions.

dTIMS follows a "preservation first" approach, which prioritizes preventative maintenance treatments that extend the useful life of roadways and bridge assets. This approach seeks to maintain assets in acceptable condition before they deteriorate significantly, thereby reducing long-term lifecycle costs.

The system uses pavement condition data derived from the Condition Rating Survey to determine appropriate maintenance treatments.

Planned pavement improvement projects included in IDOT's FY2026–2031 Multi-Year Program were incorporated into the forecast.[8]

To estimate long-term costs, maintenance expenditures were inflated using trends observed in the National Highway Construction Cost Index.

The forecast assumes the following cost growth rates:

- 7 percent annually from 2027 to 2029, reflecting recent elevated construction cost trends
- 5.5 percent annually from 2030 to 2034, representing a transition period
- 4.15 percent annually from 2035 to 2050, reflecting long-term historical cost trends

8 Illinois Department of Transportation, "FY2026-2031 Proposed Highway and Multimodal Improvement Program," October 2025, https://public.powerdms.com/IDOT/documents/3193195.

Pavement

Roadways pavement assets are divided into three categories: interstates, non-interstate roads on the National Highway System (NHS), and non-NHS roadways. Using dTIMS, IDOT provided cost estimates for interstates and non-interstate roads on the NHS through 2035. For years beyond 2035, CMAP projected costs based on annual average expenditures generated by optimizing scenarios designed to maintain the existing share of pavement in poor condition (as opposed to the share of pavement in good condition). Existing NHS pavement conditions used in the forecast are shown in Table 5.

Maintenance expenditures for non-NHS roads were estimated by extrapolating dTIMS estimates using a ratio of the condition and square footage of non-NHS roads relative to NHS roads. County pavement condition data were obtained from county transportation departments, and roadway inventory data were obtained from the Illinois Roadway Information System.

Table 5. Existing NHS pavement conditions, 2024

Pavement type	Interstate	Non-interstate
Percent in *good* condition	55.6%	19.9%
Percent in *poor* condition	0.9%	12.3%

Bridge

Bridge maintenance costs were also estimated using dTIMS outputs, which optimize maintenance investments based on bridge condition. These estimates were supplemented with condition data from the National Bridge Inventory. For years after 2035, annual bridge maintenance costs were projected based on average costs estimated by dTIMS for NHS bridges. Existing NHS bridge conditions used in the analysis are in Table 6.

Maintenance costs for non-NHS bridges were estimated using a ratio based on the relative bridge area and condition of non-NHS bridges compared with NHS bridges.

Table 6: Existing bridge conditions, 2024

Bridge type	NHS	Non-NHS
Percent in *good* condition	24.6%	26.8%
Percent in *poor* condition	11.2%	20.3%

RCP maintenance costs

Although IDOT's preservation-first strategy used by dTIMS is widely considered best practice, the treatments included in dTIMS do not capture all types of maintenance activities, particularly full asset reconstructions that may occur at the end of an asset's lifecycle.

To account for these additional costs, CMAP estimated the portion of regional capital project costs attributable to asset maintenance. Using treatment cost data from IDOT's Transportation Asset Management Plan (TAMP), CMAP calculated maintenance cost ratios for different project types (Table 7).[9] These ratios were applied to the non-capacity portion of regional capital project costs to estimate maintenance-related expenditures.

Maintenance costs will occur regardless of whether the associated regional capital project is fiscally constrained. Therefore, maintenance costs associated with both constrained and unconstrained roadway and bridge projects are included in the financial plan.

9 Illinois Department of Transportation, "Transportation Asset Management Plan," https://idot.illinois.gov/content/dam/soi/en/web/idot/documents/transportation-system/reports/opp/transit/idot-2022-tamp-fhwa-certified-01-24-23.pdf.

Table 7: Share of RCP non-capacity costs included as maintenance costs in fiscal constraint

Project type	Share of project cost attributed to maintenance
Bridge reconstruction	7.75%
Intersection improvement, corridor improvement, interstate reconstruction, interchange improvement	0.9%

Signals

Maintenance costs for traffic signal infrastructure were estimated using assumptions about typical signal replacement cycles. These assumptions were applied to a regional inventory of traffic signal assets to estimate long-term maintenance needs.

Transit capital expenditures: $90.5 billion

Transit capital maintenance includes investments required to maintain a wide range of assets owned by regional transit agencies, including vehicles (buses and railcars), maintenance and storage facilities, rail tracks and right-of-way infrastructure, and maintenance equipment and support vehicles.

These assets are maintained by the CTA, Metra, Pace, and Pace ADA Paratransit. The forecast assumes current asset conditions will be maintained during the planning period. Transit agencies provided data and feedback on modeling assumptions, unit costs, and state of good repair.

The analysis relied heavily on the RTA's Capital Optimization Support Tool (COST), which is designed to estimate future asset condition and investment needs over time. COST outputs for the 2027-2050 time horizon were adjusted for inflation using a composite construction cost index developed from data published by the BEA.

The BEA index combines several indicators, including the Producer Price Index for highways and streets, Employment Cost Index, and Bureau of Reclamation construction cost index.

Based on these indicators, transit construction costs are assumed to grow:

- 3.7 percent annually from 2027 to 2034
- 3.1 percent annually from 2035 to 2050

Current transit asset conditions are summarized in Table 8.

Table 8: Transit asset condition in northeastern Illinois by federal performance measure category, 2024

Category	Percent
Buses beyond useful life	21.5%
Rail vehicles beyond useful life	31.1%
Non-fixed route vehicles beyond useful life	67.9%
Track with performance restrictions	3.6%
Facilities in marginal or fair condition	7.4%
Non-revenue vehicles beyond useful life	30.9%
Rail equipment beyond useful life	59.8%

Source: National Transit Database.

Improve system condition: $73.4 billion

In addition to maintaining assets in their current condition, investments are required to improve asset condition across the existing roadway and transit system.

Federal transportation law requires that metropolitan transportation plans incorporate performance measures for infrastructure condition, among other factors. These estimates were developed using the same general methodology as the capital maintenance expenditures — relying on dTIMS and COST outputs for roadway and transit expenditures, respectively — but they rely on target condition scenarios for improving asset conditions.

CMAP developed and set asset condition targets in consultation with the region's transportation agencies. As with maintenance expenditure estimates, the analysis reflects scenarios that optimize the share of pavement and bridges in poor condition.

Following the approach for capturing maintenance costs unaccounted for in dTIMS outputs, roadway and bridge improvement expenditures include additional costs based on the share of RCP non-capacity costs attributable to system improvement. CMAP identified improvement ratios using TAMP unit cost data and applied the ratios to applicable constrained RCP project types (Table 9).

Table 10 provides an overview of how the financial plan allocates funds towards system improvement.

Table 9: Share of RCP non-capacity costs included as improvement costs in fiscal constraint

Project type	Share of project cost attributed to improvement
Bridge reconstruction	79.50%
Intersection improvement, corridor improvement, interstate reconstruction, interchange improvement	72.75%

Table 10: Allocation towards system improvement, 2027-2050 (year-of-expenditure dollars)

System improvement allocation	Cost
Bring transit assets in good repair	$41.0B
Reduce roadways in poor condition	$6.3B
Reduce bridges in poor condition	$3.1B
Subtotal allocation for meeting asset condition goals	$50.4B
RCP non-capacity improvement	$23.0B
Total allocation for improving system condition	**$73.4B**

System enhancements: $38.6 billion

System enhancements represent the costs of capital investments not constrained or captured in other categories of the financial plan.

These investments were identified as regional priorities through engagement with transportation agencies and regional stakeholders. They support regional goals related to mobility, accessibility, and safety.

Estimated investments across system enhancement categories total $38.6 billion.

Table 11: Allocation toward system enhancements by category, 2027-2050 (year-of-expenditure dollars)

System enhancement categories	Cost
Active transportation	$3.5B
Transit decarbonization	$9.3B
Grade separations	$8.3B
Transit station accessibility	$11.8B
Bus priority	$5.6B
Intercity rail	$0.2B
Total	**$38.6B**

Cost estimate methodologies vary across system enhancement categories.

- **Active transportation** investments include construction of regional bicycle and pedestrian infrastructure. Cost estimates were developed using planned facilities identified in the Northeastern Illinois Greenways and Trails Plan — including bike paths and shared street lanes — and sidewalks near transit stations, supplemented by project costs from county bike plans.

- **Transit decarbonization** investments reflect efforts by regional transit agencies to replace fossil fuel-powered vehicles with electric alternatives. Cost estimates are based on bus replacement costs derived from the COST model and asset data from the CTA, Metra, and Pace.

- **Grade separations** investments were estimated based on the historical number of projects per year and a sample of programmed projects included in the Transportation Improvement Program. Estimates include several priority grade crossing projects identified by regional stakeholders to improve safety and reduce congestion.

- **Transit station accessibility** investments reflect the cost of bringing transit stations into full compliance with the ADA. Cost estimates were based on accessibility improvement programs developed by Metra and the CTA.

- **Bus priority** investments include infrastructure improvements designed to enhance bus service reliability, such as bus rapid transit development, transit signal priority systems, and dedicated bus lanes. Systemwide costs are derived from project estimates provided by the CTA.

- **Intercity rail** investments support improvements to travel reliability, accessibility, and safety for rail service connections to Chicago. Cost estimates were based on project data provided by IDOT.

System expansion: $24.3 billion

The system expansion category includes investments that increase transportation system capacity, including new infrastructure and major capacity expansions associated with RCPs. Capacity related expenditures for constrained RCPs total $27.9 billion, including:

- $28.3 billion in capital construction costs

- $90 million in incremental operating costs associated with added capacity

Consistent with federal requirements, project cost estimates were converted to year-of-expenditure dollars using data provided by project implementers.

A detailed list of constrained RCPs is provided in the Supplement.

Some transit projects can generate revenue that can be used to offset their costs. Transit Facility Improvement Areas (TFIA), which is a form of value capture, can be used to fund capital investments for eligible transit projects. The financial plan assumes that TFIA financing could generate $4.1 billion in bond proceeds to support eligible transit capital projects.

CMAP estimated potential value capture by examining existing TFIA bond issuances and calculating the average share of project costs supported by value capture financing. Based on this analysis, value capture is assumed to offset approximately one-third of eligible transit project costs.

Risk assessment

Long-range financial planning requires reasonable assumptions that can account for and balance several financial conditions. Over a planning horizon of more than 20 years, both revenue and expenditure forecasts are subject to economic, policy, and implementation uncertainties.

To assess the robustness of the financial plan, CMAP conducted a risk assessment examining potential risks that could affect fiscal constraint. CMAP also convened internal workshops with subject matter experts and consulted with the Financial Plan Resource Group, which includes regional transportation implementers and stakeholders involved in the development of the financial plan, to identify and prioritize the most relevant risks.

The analysis included research on historical trends and future uncertainties, sensitivity testing of key financial assumptions, and scenario analysis examining multiple risks occurring simultaneously

In total, sixteen risks were evaluated across both revenue and expenditures forecasts (Table 12).

Sensitivity tests examined how changes in key assumptions would affect fiscal constraint. Examples include scenarios in which vehicle miles traveled grow more slowly than projected, federal funding levels decline relative to current levels, and RCPs experience implementation delays.

Results indicate that revenue-related risks could reduce baseline revenues by 0.4 percent to 4.5 percent over the planning period. Expenditure-related risks could increase total costs by 0.2 percent to 7.4 percent.

Table 12: List of identified risks

Revenue	Expenditures
Decreased federal funding	Increased material and labor costs
Decreased state funding	Increased financing costs
Increased fuel efficiency	Project delays
Lower VMT growth	Lack of coordination
Reduced population forecast	Operating inefficiencies
Economic downturns	Disruptive technological changes
Reduced transit fare revenue	Escalated weather-related impacts
Inadequate public subsidy of transit	Increased roadway wear

Supplement: Regional Capital Projects

Table 13: Costs of fiscally constrained regional capital projects

Project information						Capital cost, 2027-2050 (*YOE$ in billions*)	
Map	Project	RCP ID	Project sponsor	Percent of cost for new capacity	Total cost, (2025 $ in billions)	Total constrained cost	New capacity cost
Interstate							
A	I-90 / I-94 Kennedy and Dan Ryan Expressway Reconstruction (Hubbard Street to 31st Street)	11175	IDOT	0%	$3.72	$6.37	$-
B	I-290/IL-53 Reconstruction (Lake Cook Road to I-88)	11180	IDOT	0%	$5.85	$12.79	$-
C	I-355 at I-290 Interchange project - bridge replacements	11182	IDOT	0%	$0.60	$1.31	$-
D	I-190 O'Hare Access Roads from Bessie Coleman Drive to Cumberland Avenue (I-190 Access Improvements)	13104	IDOT	20%	$1.01	$0.84	$0.17
E	I-55 from I-80 to Coal City Road	13106	IDOT	66%	$1.00	$2.19	$1.44
F	I-55 from I-80 to US 52 (Jefferson Street); US 52 from River Road to Houbolt Road[b]	13110	IDOT	66%	$0.22	$0.13	$0.09
G	I-55 from I-355 to IL 53 (Bolingbrook Drive)	13111	IDOT	66%	$0.04	$0.05	$0.03
H	I-290 Eisenhower Expressway from US 12/45/20 Mannheim Road to Racine Avenue	13114	IDOT	20%	$3.66	$5.94	$1.19
I	I-55 from Weber Road to US 30, at Airport/Lockport Road and at IL 126	14109	IDOT	100%	$0.22	$0.34	$0.34
J	I-57 - At Eagle Lake Rd	14138	IDOT	100%	$0.21	$0.34	$0.34
K	South Tristate (I-294/80) Bridging Investment	51172	Tollway	0%	$0.39	$0.52	$-
L	I-290/IL 53/I-90 Interchange Improvement	52212	CMAP	25%	$2.00	$4.94	$1.23
M	I-88 York Road Interchange Expansion	54105	Tollway	100%	$0.02	$0.03	$0.03
N	I-80 Reconstruction from Ridge Road to US 30 Lincoln Highway[b]	91312	IDOT	100%	$1.63	$0.20	$0.20

Project information						Capital cost, 2027-2050 (*YOE$ in billions*)	
Map	Project	RCP ID	Project sponsor	Percent of cost for new capacity	Total cost, (2025 $ in billions)	Total constrained cost	New capacity cost
O	I-80 from I-294 (Tri-State Tollway) to State Line (Flex Road - ITS)[b]	91336	IDOT	90%	$0.04	$0.00	$0.00
P	I-55 at IL 129, IL 129 to Lorenzo Road, I-55 Frontage Roads: Kavanaugh Road to Lorenzo Road and at Lorenzo Road[b]	91337	IDOT	20%	$0.21	$0.25	$0.05
Q	I-294 Central Tri-State Mobility Improvements[b]	95313	Tollway	100%	$3.64	$0.02	$0.02
R	I-290/I-88/I-294 Interchange Improvement[b]	95314	Tollway	0%	$0.56	$0.01	$-
S	Elgin O'Hare Western Access (I-490)[b]	95315	Tollway	100%	$4.81	$0.29	$0.29
Arterial							
T	North DuSable Lake Shore Drive Improvements	12120	IDOT	10%	$2.40	$4.09	$0.41
U	IL 60/IL 83 from IL 176 to IL 60(Townline Road)	13115	IDOT	100%	$0.35	$0.45	$0.45
V	IL 173 Rosecrans Rd from I-94 to US 41[a]	13116A	IDOT	100%	$0.12	$0.20	$0.20
W	IL 62 (Algonquin Road), IL 25 (JF Kennedy Memorial Drive) to IL 68 (Dundee Road)	13118	IDOT	100%	$0.16	$0.28	$0.28
X	US 6 from I-55 to US 52	13122	IDOT	100%	$0.19	$0.37	$0.37
Y	US 30 from IL 47 to Albright Road	13123	IDOT	100%	$0.11	$0.19	$0.19
Z	IL 7/143rd from Will-Cook Road to IL7/Southwest Highway	13124	IDOT	100%	$0.17	$0.38	$0.38
AA	Willow Rd from east of Des Plaines River to Waterview Drive/ Protection Parkway	13129	IDOT	90%	$0.04	$0.05	$0.04
AB	IL 53 from south of IL 56 (Butterfield Road) to Park Boulevard	13130	IDOT	66%	$0.05	$0.08	$0.05
AC	IL 22 (Lake Zurich Road) from Quentin Road to west of IL 83[b]	13131	IDOT	66%	$0.13	$0.13	$0.09
AD	US 41 (Skokie Highway) from Quassey Avenue to south of IL 176[b]	13132	IDOT	50%	$0.14	$0.13	$0.07
AE	IL 137 (Buckley Road) from IL 83 to Petersen Road	13133	IDOT	100%	$0.08	$0.13	$0.13

Project information						Capital cost, 2027-2050 (*YOE$ in billions*)	
Map	Project	RCP ID	Project sponsor	Percent of cost for new capacity	Total cost, (2025 $ in billions)	Total constrained cost	New capacity cost
AF	IL 120 (Belvidere Road) from Ashford Lane to US 45	13134	IDOT	66%	$0.03	$0.04	$0.03
AG	US 45 (Lake Avenue) from Rollins Road to Washington St and US 45 from Washington St to north of IL 120	13135	IDOT	100%	$0.04	$0.06	$0.06
AH	US 20 (Lake Street) from Randall Road to Shales Parkway[b]	13160	IDOT	5%	$0.21	$0.05	$0.00
AI	IL 131 (Green Bay Road) from Sunset Avenue to Wadsworth Road	13167	IDOT	66%	$0.09	$0.10	$0.06
AJ	IL 47 from Conley Road to Ballard Road[b]	13183A	IDOT	50%	$0.06	$0.09	$0.05
AK	Willow Road from east of I-294 to east of IL 43	13184	IDOT	90%	$0.14	$0.14	$0.12
AL	IL 83 (Barron Boulevard), IL 120 (Belvidere Road) to IL 137 and at Atkinson Road	14136	IDOT	100%	$0.10	$0.09	$0.09
AM	Wilmington-Peotone Road from US 45 to Center Road[a]	43158A	IDOT	0%	$0.03	$0.05	$-
AN	Laraway Road (CH 74) from US 45 to IL 43 (Harlem Avenue)	43159	IDOT	100%	$0.01	$0.01	$0.01
AO	Randall Road from north of Stearns Road to south of Longmeadow Parkway	43208	IDOT	100%	$0.13	$0.29	$0.29
AP	Randall Road at I-90	43211	IDOT	100%	$0.10	$0.12	$0.12
AQ	IL 390 Interchange at County Farm Road	54103	Tollway	100%	$0.08	$0.09	$0.09
AR	Elston-Armitage-Ashland-Cortland Intersection Improvement	62141	CDOT	0%	$0.33	$0.55	$-
AS	Devon-Caldwell-Central-Lehigh Intersection Improvements	62142	CDOT	0%	$0.35	$0.65	$-
AT	79th/Stony Island/South Chicago Intersection Improvements	62211	CDOT	0%	$0.35	$0.71	$-
AU	143rd Street from Wolf Road to US 45 (La Grange Road)	83209	Orland Park	100%	$0.07	$0.08	$0.08
AV	143rd Street from Will-Cook Road to IL 7 (Wolf Road)	83210	Orland Park	100%	$0.02	$0.02	$0.02
AW	Randall Road from Ackman Road to Polaris Drive/Acorn Lane[b]	91317	McHenry	100%	$-	$-	$-

Project information						Capital cost, 2027-2050 (*YOE$ in billions*)	
Map	Project	RCP ID	Project sponsor	Percent of cost for new capacity	Total cost, (2025 $ in billions)	Total constrained cost	New capacity cost
AX	Barrington Road from IL 62 to Central Road[b]	91318	IDOT	100%	$0.04	$0.04	$0.04
AY	IL 56 (Butterfield Road) from IL 53 to I-355[b]	91319	IDOT	100%	$0.07	$-	$-
AZ	IL 47 from IL 71 (Stagecoach Trail) to Caton Farm Road (CH 23)[b]	91321	IDOT	100%	$0.05	$0.05	$0.05
BA	IL 31 Front Street from IL 120 Belvidere Road to IL 176 (Terra Cotta Ave)[b]	91322	IDOT	100%	$0.32	$0.02	$0.02
BB	IL 47 from IL 120 to US 14[b]	91329	IDOT	100%	$0.11	$-	$-
BC	IL 47 from IL 176 to IL 176[b]	91330	IDOT	100%	$0.09	$-	$-
BD	IL 47 from Cross Street to Kennedy Road (FAU 3793)[b]	91331	IDOT	100%	$0.24	$-	$-
BE	Weber Road (CH 88) from 135th Street (Romeo Road) to Airport Road (Lockport Road)[b]	94320	Will	100%	$0.05	$0.05	$0.05
BF	Laraway Road (CH 74) from US 52 to US 45[b]	94323	Will	100%	$0.08	$0.06	$0.06
BG	143rd Street (CH37) from State Street (Lemont Road) to Bell Road (CH 16)[b]	94325	Will	100%	$0.00	$0.01	$0.01
BH	Gougar Road: Laraway Road to Francis Road[b]	94327	Will	100%	$0.14	$0.17	$0.17
BI	Bell Road Corridor from 159th Street to Glengary Drive[b]	94333	Will	100%	$0.05	$0.01	$0.01
BJ	Randall Road Grade Separation and Intersection Safety Improvements at Hopps Road[b]	94338	Kane	50%	$0.13	$0.00	$0.00
BK	Calumet River Bridges[b]	96111	CDOT	0%	$0.50	$0.27	$-
CTA "L" rail							
BL	"Better Brown": Brown Line Modernization Program	21189	CTA	0%	$0.85	$1.33	$-
BM	"Greater Green": Green Line Modernization Program	21190	CTA	0%	$1.96	$3.06	$-
BN	Blue Line Forest Park Branch Track and Station Reconstruction[c]	22185	CTA	33%	$2.92	$2.03	$0.67
BO	Red and Purple Modernization (RPM) Next Phases[c]	23188	CTA	10%	$4.28	$3.43	$0.34

Project information						Capital cost, 2027-2050 (*YOE$ in billions*)	
Map	Project	RCP ID	Project sponsor	Percent of cost for new capacity	Total cost, (2025 $ in billions)	Total constrained cost	New capacity cost
BP	New Madison Station — CTA Pink Line	64144	CDOT	100%	$0.10	$0.12	$0.12
BQ	New Division Station — CTA Brown/Purple Line	64145	CDOT	100%	$0.10	$0.13	$0.13
BR	Red Line Extension (US 12/20/95th Street to 130th Street)[b, c]	92416	CTA	100%	$5.41	$2.30	$2.30
BS	State/Lake Station - Loop El[b]	96132	CDOT	0%	$0.48	$-	$-
Commuter/freight rail							
BT	75th Street Corridor Improvement Project (CIP)	12139	IDOT	25%	$1.37	$1.13	$0.28
BU	Metra Electric Line Improvements	33146	Metra	75%	$1.14	$2.08	$1.56
BV	Rock Island Improvements	33147	Metra	25%	$0.81	$1.44	$0.36
BW	Southwest Service Line Improvements	33148	Metra	25%	$0.78	$1.29	$0.32
BX	Burlington Northern Santa Fe Line Improvements	33150	Metra	25%	$0.33	$0.60	$0.15
BY	Milwaukee District West Line Improvements	33152	Metra	25%	$0.77	$1.40	$0.35
BZ	Union Pacific Northwest Line Improvements and Extension	33153	Metra	50%	$0.86	$1.56	$0.78
CA	O'Hare Express and North Central Service Line Improvements	33155	Metra	75%	$1.25	$2.28	$1.71
CB	Union Pacific North Line Improvements	33156	Metra	25%	$1.17	$2.14	$0.53
CC	A2 Crossing Modernization	33157	Metra	25%	$1.10	$2.33	$0.58
CD	Milwaukee District West Extension to Huntley and Marengo	44218	Metra	100%	$0.50	$1.12	$1.12
CE	Ashland-Ogden-Kinzie (AOK) New Metra Station	64143	CDOT	100%	$0.30	$0.43	$0.43
CF	Auburn Park New Station[b]	93310	Metra	100%	$0.08	$0.04	$0.04
Bus							
CG	Ashland Bus Rapid Transit (BRT)	22201	CTA	100%	$0.17	$0.28	$0.28
CH	Bus Priority Corridor: Western Avenue	22202	CTA	100%	$0.34	$0.56	$0.56
CI	Bus Priority Corridor: Pulaski Road	22203	CTA	100%	$0.32	$0.54	$0.54

Project information						Capital cost, 2027-2050 (*YOE$ in billions*)	
Map	Project	RCP ID	Project sponsor	Percent of cost for new capacity	Total cost, (2025 $ in billions)	Total constrained cost	New capacity cost
CJ	Bus Priority Corridor: Garfield Boulevard	22204	CTA	100%	$0.15	$0.25	$0.25
CK	Bus Priority Corridor: Fullerton Avenue	22205	CTA	100%	$0.15	$0.24	$0.24
CL	Bus Priority Corridor: Cottage Grove Avenue	22206	CTA	100%	$0.18	$0.30	$0.30
CM	South Lakefront Busway	62140	CDOT	100%	$0.20	$0.26	$0.26
CN	IL 58/Golf Road from Meacham Road to Davis Street Pulse Golf Line	74161	Pace	100%	$0.06	$0.09	$0.09
CO	Pulse Harlem Avenue	74163	Pace	100%	$0.05	$0.06	$0.06
CP	Pulse Cermak Road	74164	Pace	100%	$0.04	$0.05	$0.05
CQ	I-294 Tri-State Express Bus Stations	74166	Pace	100%	$0.13	$0.19	$0.19
CR	Pulse Touhy Avenue	74213	Pace	100%	$0.03	$0.04	$0.04
CS	Pulse North Avenue	74214	Pace	100%	$0.02	$0.04	$0.04
CT	Pulse Western Avenue	74215	Pace	100%	$0.03	$0.04	$0.04
CU	Pulse South Halsted Street Extension	74216	Pace	100%	$0.03	$0.04	$0.04
CV	Pulse Halsted Street[b]	97434	Pace	100%	$0.03	$-	$-
CW	Pulse 95th Street[b]	97435	Pace	100%	$0.02	$0.00	$0.00

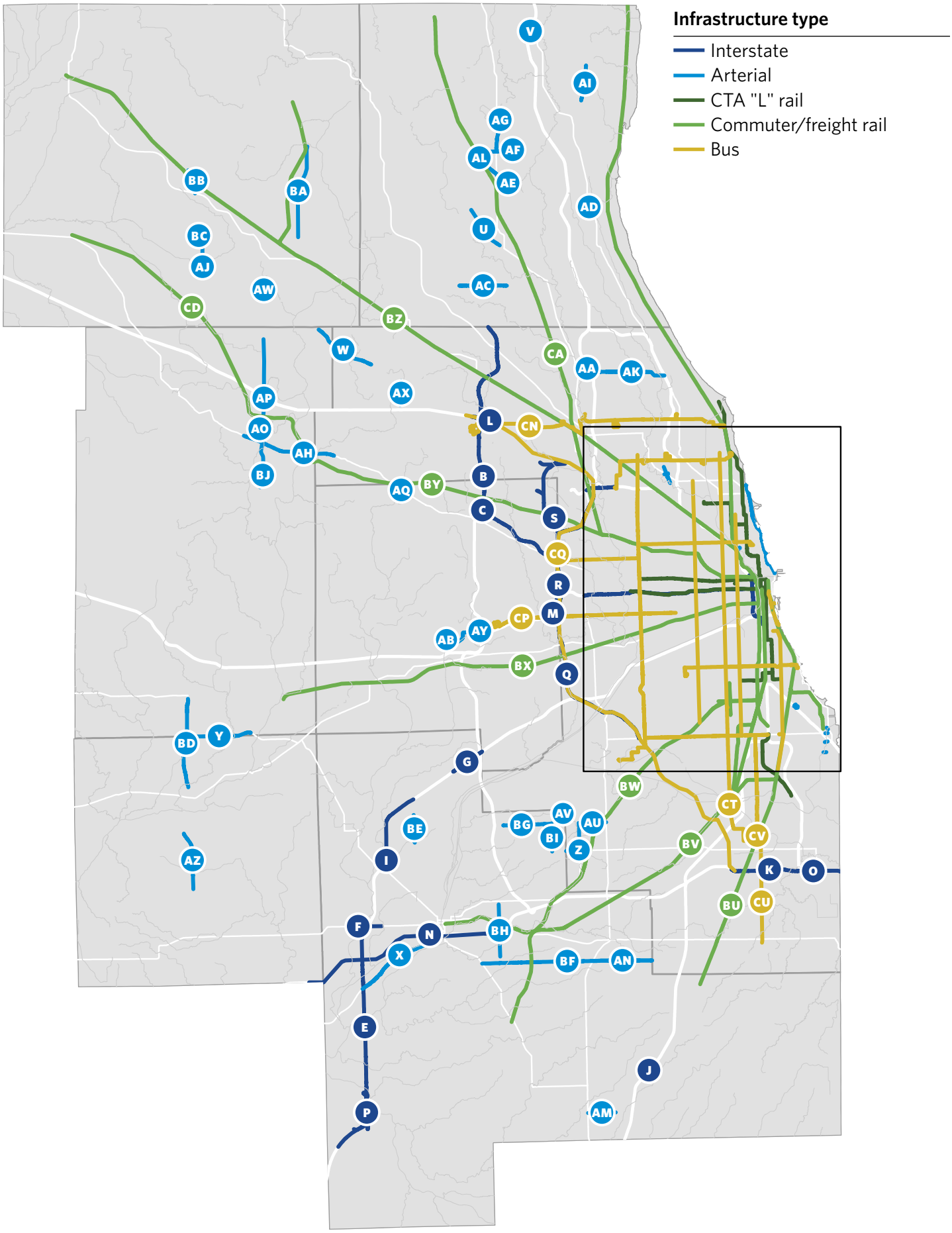
Notes:

a. Partially constrained RCP: One or more project components have been included in the fiscally constrained list, and the project has been split into one or more sub-RCPs. Other project components are unconstrained.

b. Committed RCP: Project met RCP criteria but already has committed funding and thus is included in the fiscally constrained list without evaluation. Year of expenditure costs beginning in 2027 may be less than total project costs in 2025 dollars.

c. Value capture reductions have been incorporated into RCP final cost.

Figure 7: Fiscally constrained regional capital projects



DRAFT

Figure 8: Fiscally constrained regional capital projects — inset

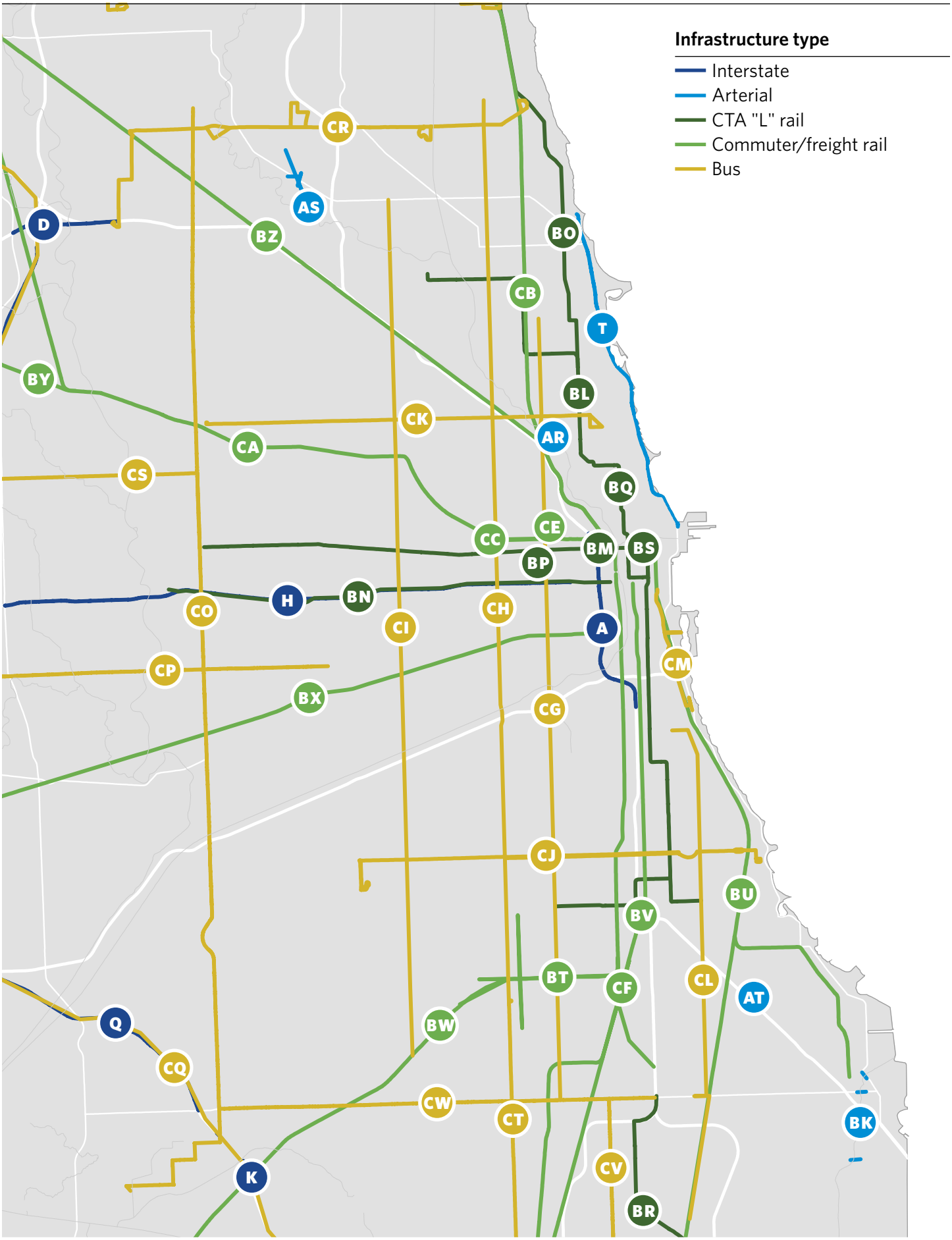


Table 14: Costs of fiscally unconstrained regional capital projects

Project	RCP ID	Project sponsor	Percent of cost for new capacity	Total cost, 2025 $
I-94 Bishop Ford Expressway Reconstruction	11174	IDOT	0%	$0.99
I-55 Stevenson/Barack Obama Presidential Expressway Reconstruction (US 41/South DuSable Lake Shore Drive to I-80)	11176	IDOT	0%	$5.17
I-90 Kennedy Expressway	11177	IDOT	0%	$2.34
I-94 Edens Expressway Reconstruction	11178	IDOT	0%	$2.44
I-90/I-94 Kennedy Expressway Reconstruction (Edens Junction to Hubbard Street)	11179	IDOT	0%	$2.70
I-57 Reconstruction (I-94 to I-80, I-80 to Will/Kankakee border)	11181	IDOT	0%	$3.76
I-55 Managed Lane from I-355 to I-94/I-90	13108	IDOT	80%	$1.89
I-80 from US 30 to I-294	13113	IDOT	80%	$2.25
IL 173 Rosecrans Rd from IL 59 to I-94	13116B	IDOT	100%	$0.21
US 45 (McHenry Road) from IL 173 to IL 132	13117	IDOT	100%	$0.05
IL 83 (Milwaukee Avenue) from Petite Lake Road to IL 120	13119	IDOT	100%	$0.21
IL 83 Kingery Highway from 31st Street to 55th St and 63rd St to Central Avenue	13121	IDOT	100%	$0.09
IL 47 from south of I-90 to south of Plank Road	13125	IDOT	100%	$0.14
IL 56 from IL 25 to IL 59	13126	IDOT	100%	$0.13
IL 60 from IL 120 to IL 176	13127	IDOT	100%	$0.19
US 45/IL 83 (Old Half Day Road) from IL 60 Townline Road to IL 22 (Half Day Road)	13128	IDOT	100%	$0.10
IL 131 (Green Bay Road) from Wadsworth Road to Russell Road	13168	IDOT	66%	$0.13
IL 47 from Conley to Reed Road and US 14 to IL 176	13183B	IDOT	50%	$0.18
IL 47 from Charles Rd to IL 120	13183C	IDOT	50%	$0.14
IL 120 from Wilson Road to US 41 (IL 120 Bypass)	14137	IDOT	100%	$1.00
Blue Line Core Capacity	23186	CTA	50%	$2.54
Brown Line Core Capacity	23187	CTA	50%	$1.78
Circle Line - visionary	24191	CTA	100%	Not available[a]
Mid-City Transitway - visionary	24192	CTA	100%	Not available[a]
Blue Line Extension to Mannheim - visionary	24193	CTA	100%	Not available[a]
Green Line Extension to Jackson Park - visionary	24194	CTA	100%	Not available[a]
Orange Line Extension to Ford City - visionary	24195	CTA	100%	$0.45
Yellow Line Extension to Old Orchard - visionary	24196	CTA	100%	$0.26
West Loop Subway (Red Line) - visionary	24197	CTA	100%	Not available[a]
Green Line Extension to Midway - visionary	24198	CTA	100%	Not available[a]

Project	RCP ID	Project sponsor	Percent of cost for new capacity	Total cost, 2025 $
Brown Line Extension to Jefferson Park - visionary	24199	CTA	100%	Not available[a]
Clinton Street Subway - visionary	24200	CTA	100%	$0.61
Heritage Corridor Line Improvements	33149	Metra	25%	$0.33
Union Pacific West Line Improvements	33151	Metra	25%	$0.47
Milwaukee District North Line Improvements	33154	Metra	25%	$0.83
Wilmington-Peotone Road from IL 53 to Drecksler Road	43158B	Will	30%	$0.25
Northern McHenry Bypass	44101	McHenry	100%	$0.20
Northern Algonquin Bypass	44102	McHenry	100%	$0.15
Milwaukee District North Line Extension to Spring Grove and Richmond	44217	Metra	100%	$0.48
I-294 (Tri-State Tollway) at Irving Park Road Interchange Improvement	pending	Tollway	0%	$-
I-88 and I-355 System Interchange Reconstruction	pending	Tollway	0%	$-
I-355 from Roosevelt Road to North Avenue add lane	pending	Tollway	0%	$-
Burlington Northern Santa Fe Line Extension to Kendall County	pending	Metra	0%	$-
Burlington Northern Santa Fe Line Extension to Sugar Grove	pending	Metra	0%	$-
Heritage Corridor Line Extension to Wilmington	pending	Metra	0%	$-
Milwaukee District North Line Extension to Wadsworth	pending	Metra	0%	$-
Milwaukee District West Line Extension to Hampshire	pending	Metra	0%	$-
Metra Electric Line Extension to South Suburban Airport	pending	Metra	0%	$-
Rock Island Extension to Minooka	pending	Metra	0%	$-

Notes:
a. Cost estimates are not available for some visionary projects

Acknowledgments

Financial Plan Resource Group
Representatives from twenty partner organizations and agencies participated in the Financial Plan Resource Group, providing feedback and guidance throughout the development of the financial plan for the 2026 Regional Transportation Plan.

- **Cara Bader**, Vice President of Strategy and Innovation, Chicago Transit Authority
- **Daniel Begert**, Senior Traffic and Revenue Forecasting Lead, CDM Smith
- **Holly Bieneman**, Director of Planning and Programming, Office of Planning and Programming, Illinois Department of Transportation
- **Christina Burns**, County Administrator, Kendall County
- **Kevin Carrier**, Assistant County Engineer, Lake County Division of Transportation
- **Melanie Castle**, Department Manager, Budget Planning & Analysis, Pace Suburban Bus
- **Lynette Ciavarella**, Senior Division Director, Strategic Planning & Performance, Metra
- **Mary Crain**, Director of Finance and Administration, Lake County Division of Transportation
- **Jon Paul Diipla**, Metropolitan Planning Specialist, Federal Highway Administration
- **Kim Doglio**, Account Manager, Will County Division of Transportation
- **Patrick Doyle**, City Planner, Division of Project Implementation, Chicago Department of Transportation
- **Peter Fahrenwald**, Manager, Regional Planning, Regional Transportation Authority
- **Heidi Files**, Chief of Planning and Programming, Kane/Kendall Council of Mayors
- **Henry Guerriero**, Traffic and Revenue Analyst, Illinois Tollway
- **Scott Hennings**, Assistant Director of Transportation, McHenry County Division of Transportation
- **Mark Kane**, Community Planner, Federal Transit Administration
- **Mike Klemens**, Manager of Transportation Planning, Lake County Division of Transportation
- **David Kralik**, Director of Planning and Programming, Metra
- **Evan Laugen**, Strategic Analyst, Regional Transportation Authority
- **John Loper**, Chief Transportation Planner, DuPage County Division of Transportation
- **Laura McFadden**, Deputy Programming Manager, Cook County Department of Transportation and Highways
- **Tara Orbon**, Assistant Superintendent, Cook County Department of Transportation and Highways
- **Jeffrey Overcash**, Vice President of Budget and Capital Finance, Chicago Transit Authority
- **Liam Purkey**, Strategic Planner, Chicago Transit Authority
- **Sarah Rubino**, Financial Analyst, Regional Transportation Authority
- **Joe Schwieterman**, Director of the Chaddick Institute for Metropolitan Development, DePaul University
- **Kris Skogsbakken**, Department Manager Capital Grants and Transit Asset Management, Pace Suburban Bus
- **Margaret Smith**, Senior Fiscal Analyst, Office of Planning and Programming, Illinois Department of Transportation
- **P.S. Sriraj**, Director of the Urban Transportation Center, University of Illinois at Chicago
- **Mary Tyler**, Transportation Director, Illinois Economic Policy Institute
- **Michael Vanderhoof**, Planning Bureau Chief, Illinois Department of Transportation
- **Ashley Young**, Chief Financial Officer, Kane County Division of Transportation



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.

Chicago Metropolitan Agency for Planning

433 West Van Buren Street
Suite 450
Chicago, IL 60607

cmap.illinois.gov
312-454-0400

APPENDIX D - DRAFT

Public and Stakeholder Engagement









RTP

2026
Regional Transportation Plan

Chicago Metropolitan Agency for Planning

Table of contents

Introduction **1**
- Why public engagement matters 1
- Federal requirements at a glance 1

Overview of public engagement activities **2**
- Who's participating? 2

Public engagement strategies, tools, and tactics **3**
- Information sharing 3
- Community engagement events 3

Faces of the RTP: Elevating community voices **5**

RTP questionnaire **6**

Public feedback shapes the RTP **7**

Public comment and hearing (to be added October 2026) **7**

Conclusion **7**

Questionnaire results **8**

Introduction

Public engagement is a cornerstone of the Chicago Metropolitan Agency for Planning's (CMAP) mission to develop a shared vision for a thriving, inclusive, and connected region. For the 2026 Regional Transportation Plan (RTP), CMAP's engagement activities ensure that the voices of residents, community leaders, transportation agencies, advocacy organizations, and other stakeholders shape the plan's priorities and strategies. Guided by CMAP's federally required Public Participation Plan, these efforts combine broad engagement with targeted strategies to involve traditionally underrepresented voices, ensuring that engagement met both regulatory standards and regional values.

RTP engagement fulfills both CMAP's commitment to collaborative planning and the federal metropolitan transportation planning requirement to "provide citizens, affected public agencies, representatives of public transportation employees, freight shippers, providers of freight transportation services, private providers of transportation, representatives of users of public transportation, and other interested parties with a reasonable opportunity to comment" (23 CFR 450.316).

2026 RTP engagement at a glance

A regionwide effort to hear from residents, partners,and stakeholders

19 events
In communities across the region

100+ meetings
with transportation partners and agencies

3 resource working groups
convened across key topic areas

Hundreds of students
engaged through school events and Future Leaders in Planning (FLIP) program

40,000+ people reached
through social media

30,000+ subscribers
reached through newsletters

6 faces of the RTP
showcasing the various ways people get around the region

Why public engagement matters

Engagement is not just a regulatory requirement — it is fundamental to creating a transportation plan that reflects the diverse needs, priorities, and lived experiences of the people who live and work in northeastern Illinois:

- Effective engagement is grounded in two-way education and trust building
- Effective engagement requires openness and transparency
- Effective engagement is not one-size-fits-all
- Effective engagement demands accountability

As highlighted in the Public Participation Plan, CMAP's vision for public participation is rooted in the agency's mission to advance fairness in northeastern Illinois by investing resources in engagement strategies that lift the voices of those who have been historically left out of the decision-making process, and working to ensure systemically excluded communities can meaningfully influence decision-making.

Federal requirements at a glance

Under 23 CFR 450.316, metropolitan planning organizations like CMAP must:

- Involve the public early and continuously in plan development
- Provide reasonable opportunities for comment on the draft plan
- Seek out and consider the needs of those traditionally underserved by transportation
- Document engagement efforts and responses to public input

This appendix documents the progress towards meeting these requirements.

Overview of public engagement activities

Engagement for the 2026 RTP relied on a mix of methods to meet people where they are, both in person and online.

- **Resource groups:** Engaged subject matter experts and community leaders on transportation priorities and tradeoffs. Resource groups were convened for subject areas including congestion management strategy, financial planning, regional capital project planning, and regional freight system assessment.
- **RTP questionnaire:** Captured regional priorities and transportation experiences from a broad cross-section of residents.
- **Community engagement events:** Hosted pop-up booths, open houses, and workshops across all seven counties.
- **Student engagement:** Engaged with students from Crystal Lake High School District 155, as well as CMAP's Future Leaders in Planning summer cohort.
- **Digital outreach:** Distributed RTP information and questionnaire opportunities via email newsletters, website blogs, and social media campaigns to inform and invite input.
- **Board and committee presentations:** Provided updates and feedback sessions, including with CMAP Board, MPO Policy Committee, and Transportation Committee.



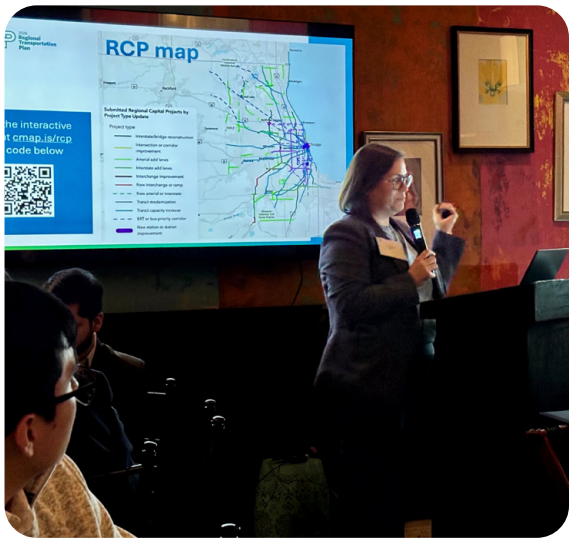


CMAP staff members presenting elements of the RTP to elected officials and members of the public.

Who participated?

Engagement activities reached a wide range of voices, including:

- Residents from all seven counties in the CMAP region
- Municipal and county leaders
- State and regional transportation agencies
- Public transit riders and operators
- Freight and logistics industry representatives
- Active transportation and accessibility advocates
- High school and college students
- Community-based organizations



CMAP Executive Director Erin Aleman presenting the RTP to the Illinois section of the Institute of Transportation Engineers.

Public engagement strategies, tools, and tactics

To keep the public and stakeholders informed and engaged throughout the development of the 2026 RTP, CMAP prioritized regular, timely updates on both the plan itself and its supporting components. As major milestones were reached — such as the release of the Emerging Priorities Report and the Existing Conditions Report — CMAP shared accessible summaries, key findings, and opportunities for feedback. Select materials were also translated into Spanish to broaden access and ensure that residents could fully engage with the process.

This approach maintained transparency, sustained momentum between engagement events, and helped participants see how their input connected to ongoing technical work.

Information sharing

Key plan information was shared through:

- **Online engagement platform:** RTP hub with plan documents, introductory video, event information, and feedback tools
- **Printed materials:** RTP one-pager, flyer, palm card, and stickers shared at in-person events
- **Newsletters**: More than 20 RTP-related articles sent to over 30,000 subscribers
- **Social media:** More than 35 posts on Facebook, LinkedIn, and Instagram, reaching over 40,500 individuals

Community engagement events

In summer 2025, CMAP hosted or participated in 19 events across the region, from farmers markets to block parties, collecting feedback through interactive displays, the RTP questionnaire, and direct conversations with residents.

At these events, CMAP staff members led activities to better understand how residents travel and the barriers they face. Three interactive posters asked:

- How did you travel here today?
- What transportation barriers do you face?
- How would you have liked to get here today?

The first question functioned as a voting exercise, with participants placing a sticker to indicate their travel mode. The remaining questions were open-ended, with participants using sticky notes to share experiences and preferences.

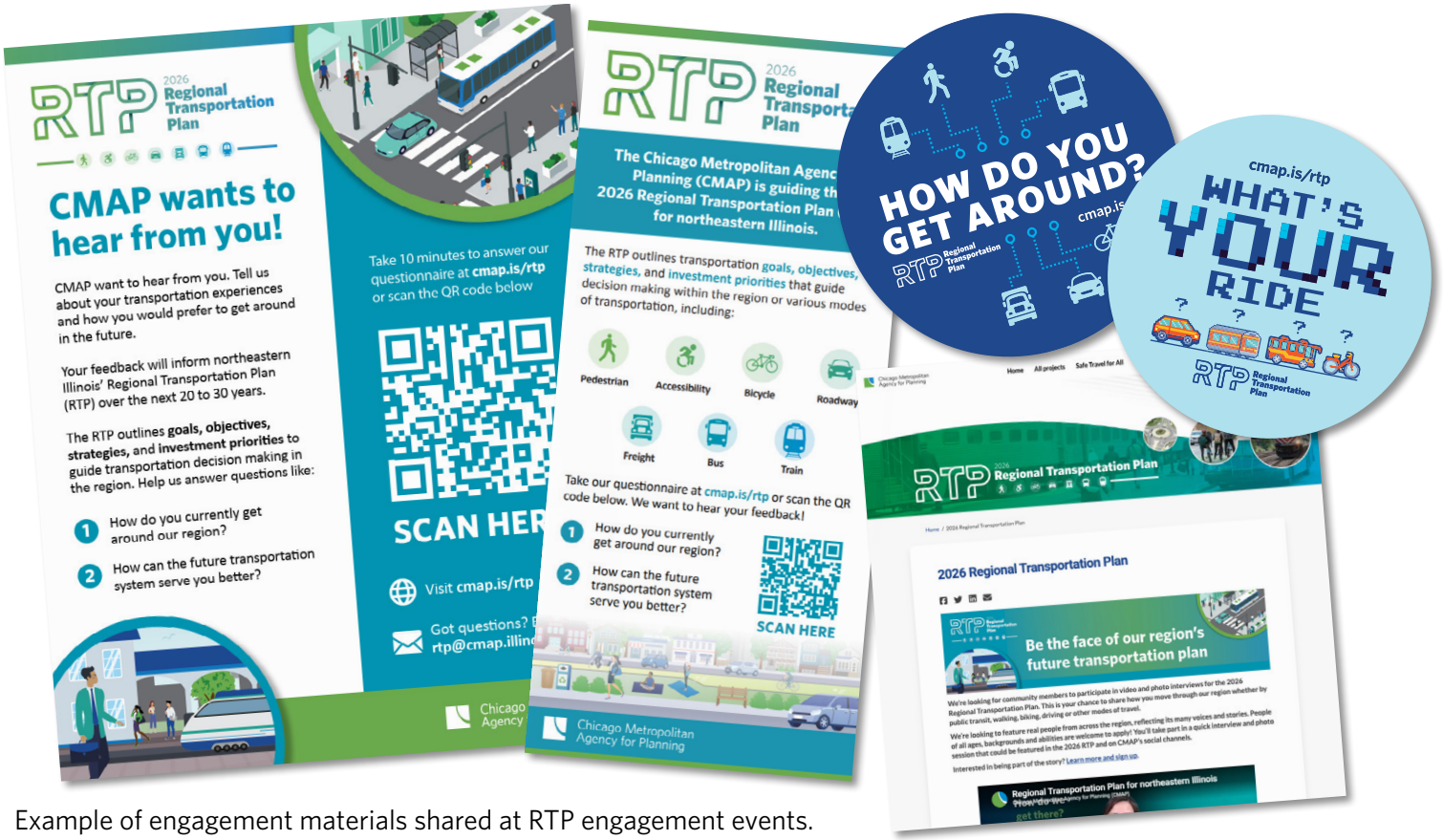
At the majority of events, participants reported traveling by personal vehicle. Exceptions included the Lombard Farmers Market and the Green Jobs Fair. Across events, participants expressed interest in using more transportation options, with barriers varying based on infrastructure, logistics, and weather.



CMAP staff members engaging with residents at events across northeastern Illinois.

Summer 2025 community engagement events

Event	Location
Chicago Architecture Center's Engineering Fest	Chicago, the Loop
Coffee with Mayor Sean R. McDermott	Countryside, west Cook County
Green Sustainable Job/Resource Fair	Chicago, the Loop
Presentation to McHenry School District students	McHenry County
Touch a Truck	Woodstock , McHenry County
Park Party	Romeoville, Will County
Presentation to University of Illinois and Clerk College students	Chicago, the Loop
Aurora Farmer's Market	Aurora, Kane County
Oswego Country Market	Oswego, Kane County
Taco & Art Fest	West Chicago, DuPage County
North Chicago Community Days	North Chicago, Lake County
Flossmoor Back to School Bash	Flossmoor, south Cook County
Diamond Fall Fun Fest	Diamond, Will County
Fall Nature Fest (LaBagh Woods)	Chicago, Albany Park
Transportation Equity Network Meeting	Chicago, the Loop
La Grange farmers market	La Grange, west Cook County
Lombard farmer's market	Lombard, DuPage County
CMAP FLIP presentation	Chicago, the Loop
Presentation to DePaul University students	Chicago, the Loop



Example of engagement materials shared at RTP engagement events.

Faces of the RTP: Elevating community voices

To complement its broader engagement efforts, CMAP launched *Faces of the RTP*, a storytelling initiative that highlights how transportation shapes daily life across northeastern Illinois. While surveys, meetings, and data analysis provide critical insights, this effort brings a human dimension to transportation planning by elevating the lived experiences of residents, workers, and business owners who rely on the transportation system every day. Through short videos, interviews, and photography, participants share how they travel, the challenges they face, and what improvements would make it easier, safer, and more reliable to get where they need to go.

CMAP worked with community-based organizations and through its digital network of newsletter and social media outlets to invite volunteers that represent a broad cross-section of geographies, travel modes, and perspectives — as well as those from communities historically underrepresented in planning processes. These stories are shared across CMAP's website, social media, and public materials, and are incorporated into presentations and plan content to illustrate key themes and strategies.

By pairing personal experiences with technical analysis, *Faces of the RTP* helps ensure the plan reflects not only system-level needs, but also the people and communities it serves.



Terry is a bicycle advocate from Bartlett



Erik is executive director of the Illinois International Port District.



LaShawn is an owner of an urban farm and gets around the city by public transit.



Bailey is a reverse commuter who bikes from Metra's Libertyville station to her office

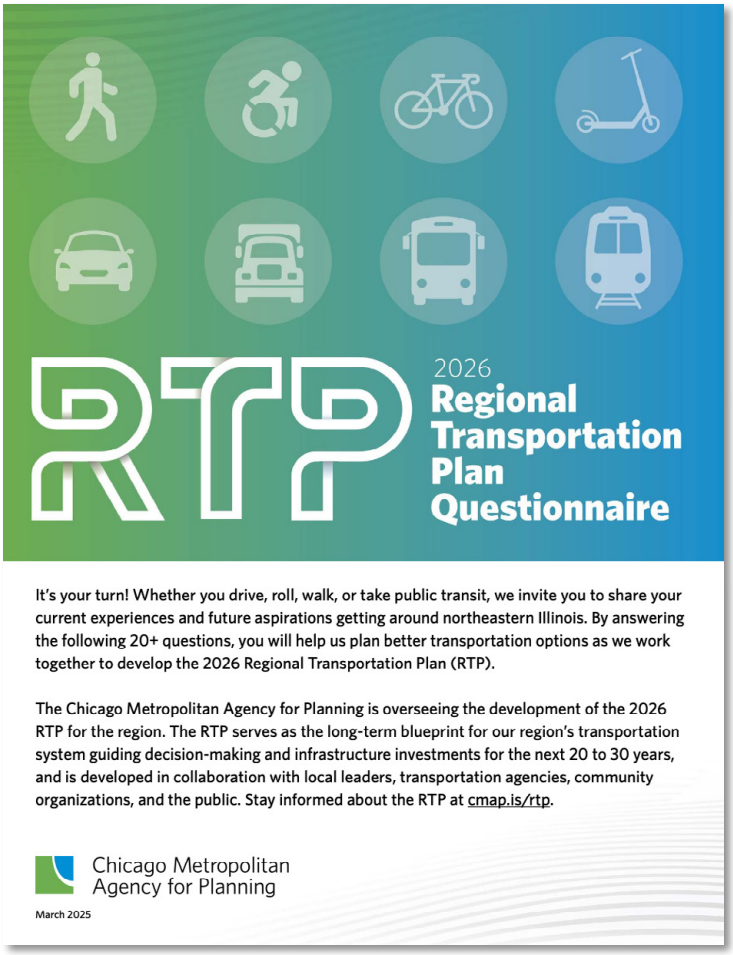
RTP questionnaire

The RTP questionnaire was an effective tool for gathering input on regional transportation priorities. CMAP promoted the questionnaire from February through December 2025, available in English and Spanish, both online and in print.

CMAP distributed the questionnaire through all communication channels and shared it with all municipalities through the Local Government Network (CMAP's communication platform connecting each community with a dedicated staff member). A communications toolkit supported local engagement via newsletters, websites, and social media. A second targeted effort in late August focused on communities without responses.

The questionnaire reached an estimated 36,000 people and collected more than 1,700 responses, exceeding the goal of 1,000 responses.

While results are not statistically representative, they provide valuable insight into regional priorities.



Participation snapshot

- **Responses received:** 1,771
- **Geographic reach:** Responses from all 7 counties, with 67 percent from suburban communities and 33 percent from Chicago
- **Demographic diversity:** 15 percent of respondents identified as people of color; 9 percent were from households earning $50,000 or below, annually; 31 percent were aged 18 to 34

Race/ethnicity	Percentage
White	75%
Latino or Hispanic	6%
Asian	5%
Black	2%
Other	2%
Prefer not to say	10%

Average annual household income	Percentage
Less than $25,000	3%
$25,000 - $50,000	6%
$51,000 - $100,000	22%
$101,000 - $200,000	34%
More than $201,000	19%
Prefer not to say	16%

Public feedback shapes the RTP

Feedback from the questionnaire helped shape the direction of the RTP. As plan development progressed and entered the strategy development phase, input from members of the public revealed alignment in some key areas pertaining to transportation policies and investments:

- Residents' experiences on roadways would be improved by prioritizing safety and mitigating congestion
- When investing in new projects, residents are most interested in more infrastructure for non-driving modes, such as transit, biking, and walking
- Many residents value the role transportation plays in improving climate resilience, and would like to have options to make environmentally sustainable transportation choices
- Residents commonly make travel decisions based on safety, reliability, and — especially for transit — frequency of service

Combined with research, data analysis, and input from transportation stakeholders, these areas of consensus from the questionnaire helped inform the RTP's final strategies.

Public comment and hearing (to be added October 2026)

A summary of the federally required public comment period and hearing will be included here after summer 2026.

Conclusion

Public engagement for the 2026 RTP plays a central role in shaping a vision that reflects the needs and priorities of northeastern Illinois. By combining broad engagement with targeted strategies to involve traditionally underrepresented communities, CMAP ensures the plan is grounded in real-world experiences and regional values.

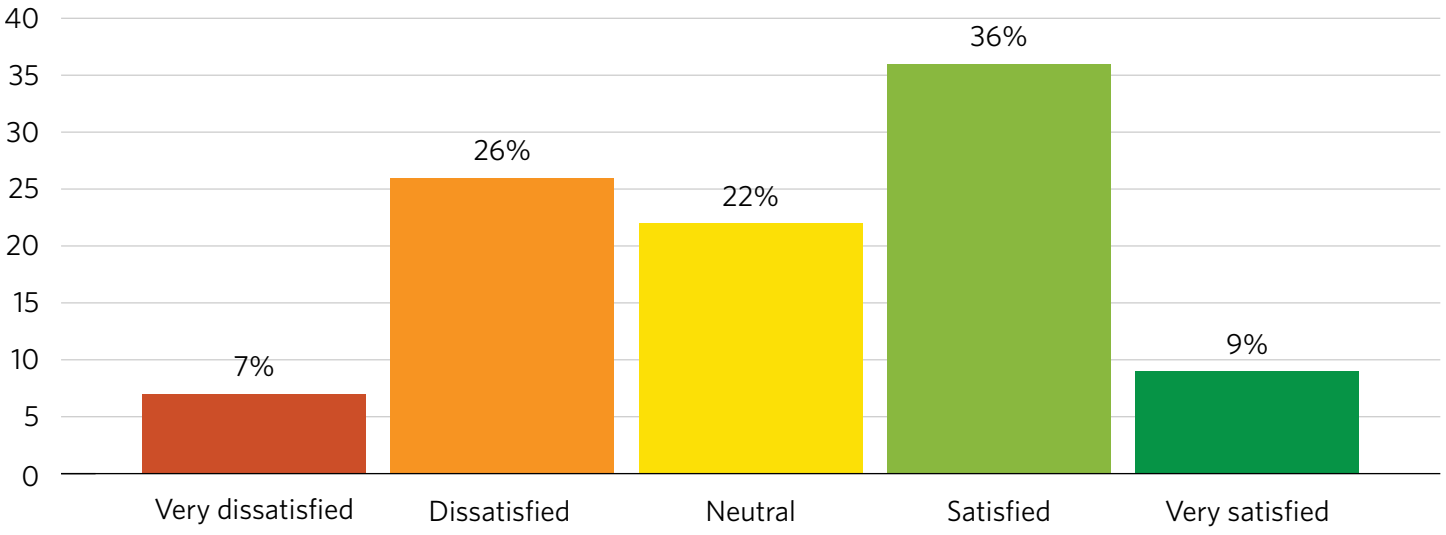
Feedback gathered through events, the RTP questionnaire, public comment opportunities, and ongoing stakeholder dialogue has helped ensure both technically sound and publicly supported priorities and recommendations. This collaborative approach strengthens the RTP as a shared blueprint for transportation investment and policy, guiding the region toward a more equitable, sustainable, and connected future.



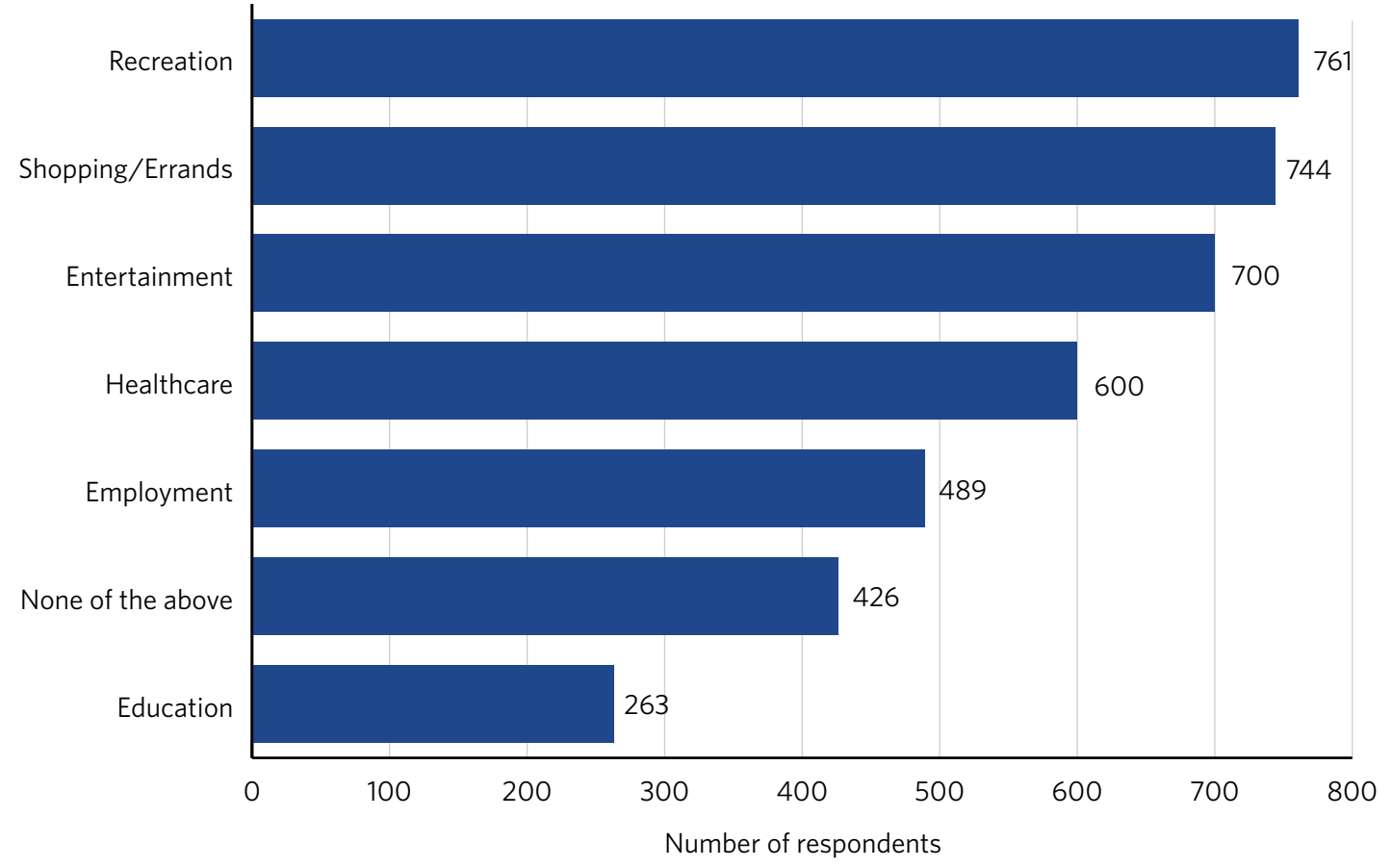
CMAP staff presenting the RTP, and specifically the history of regional transportation planning, to an audience in La Grange, IL

Questionnaire results

How satisfied are you with your transportation choices in the community you live in?



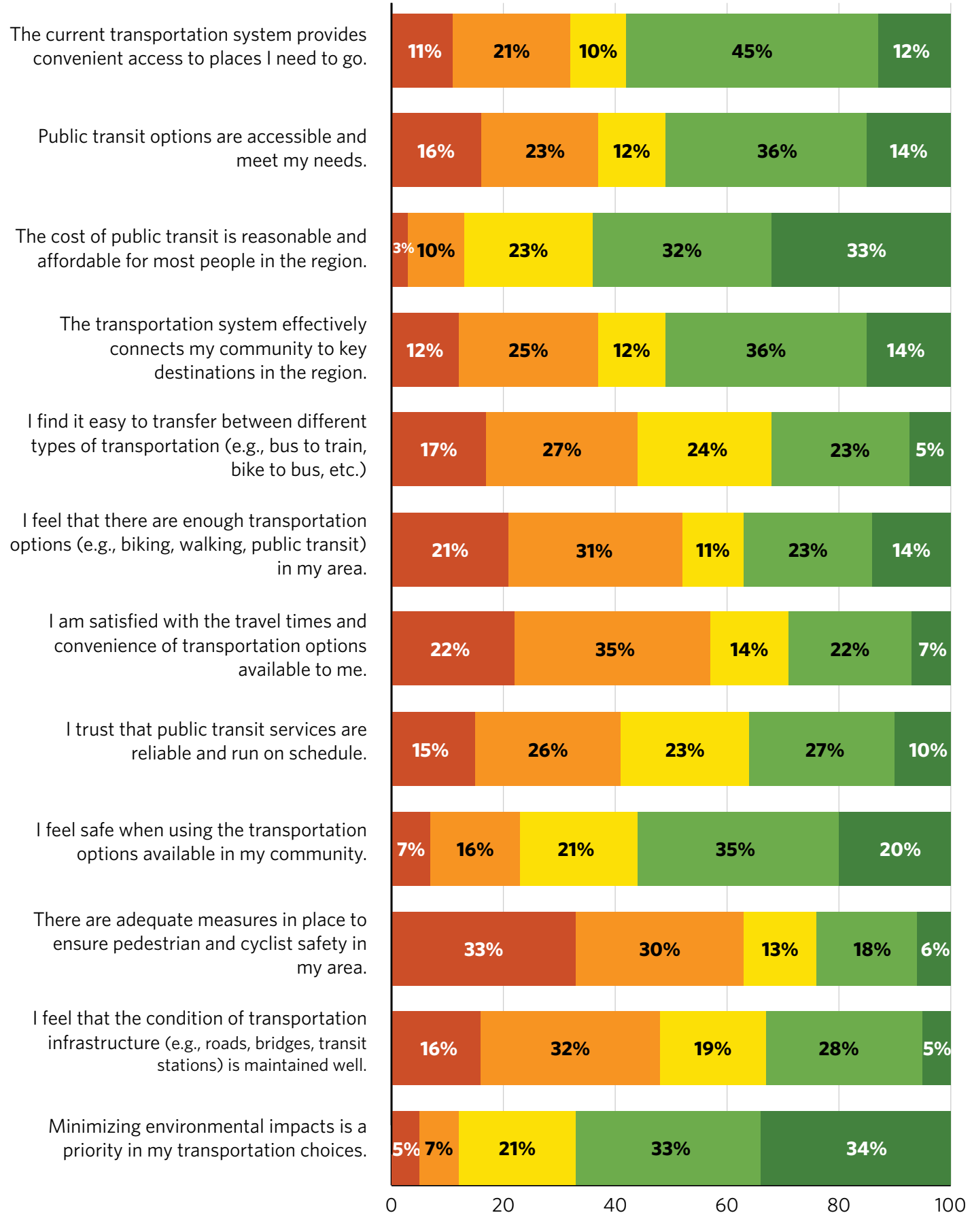
Are there any destinations difficult for you to travel to? Please select all that apply.[1]



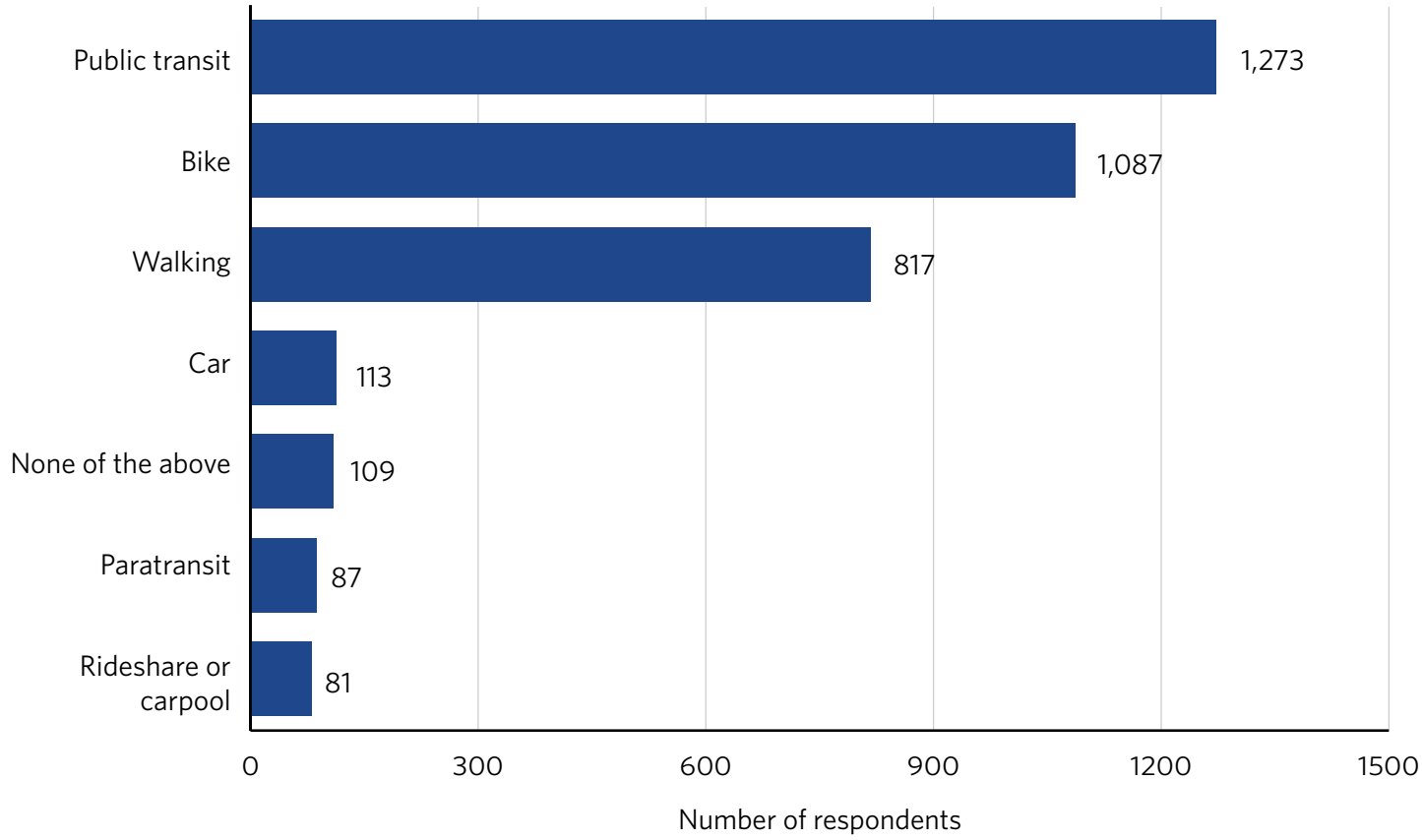
1 Questions stating, "Please select all that apply" represent multiple selections by each respondent.

DRAFT

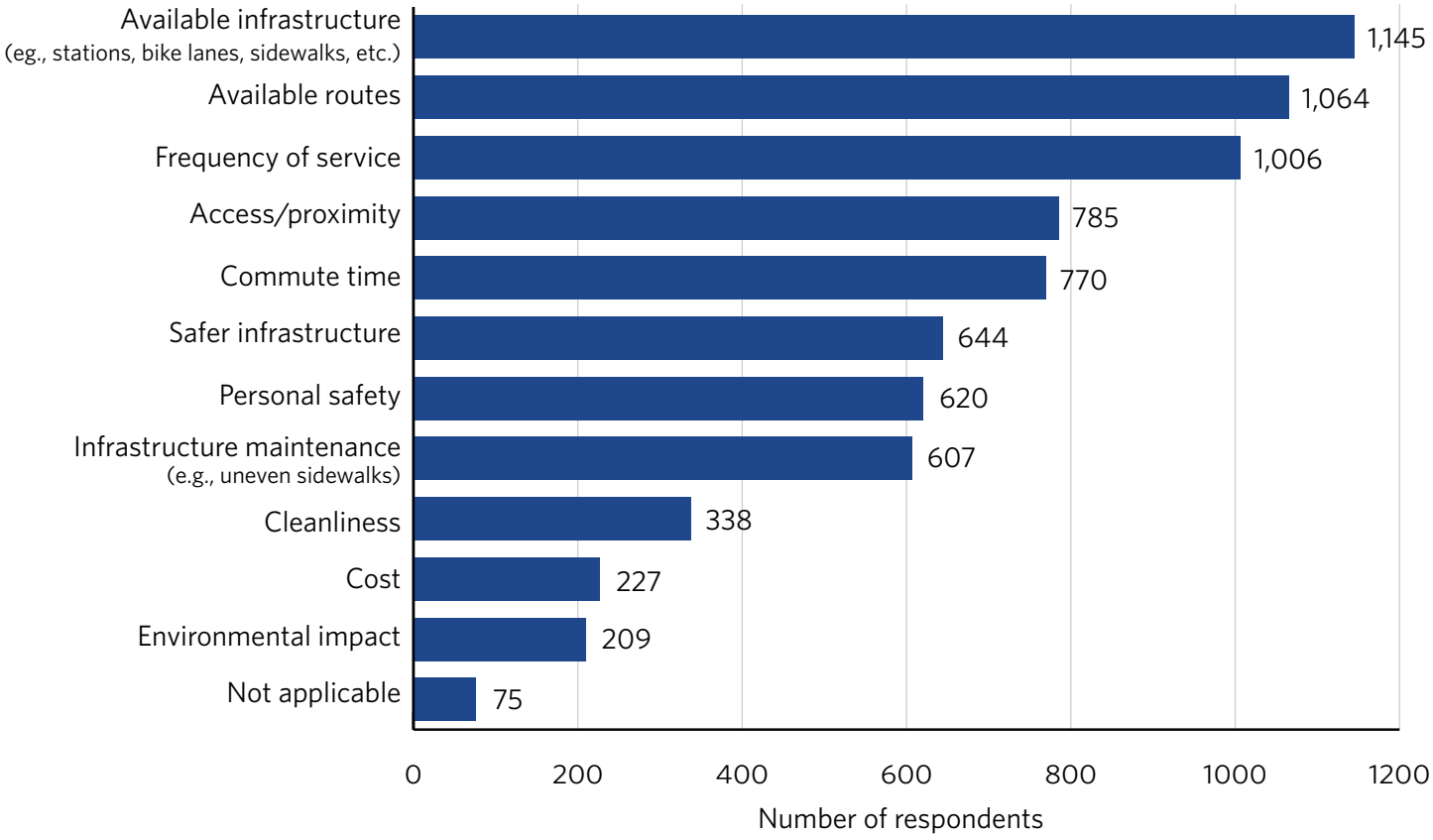
Please rate your travel experiences based on the following statements.



Are there transportation options you would like to use more often? Select all that apply.

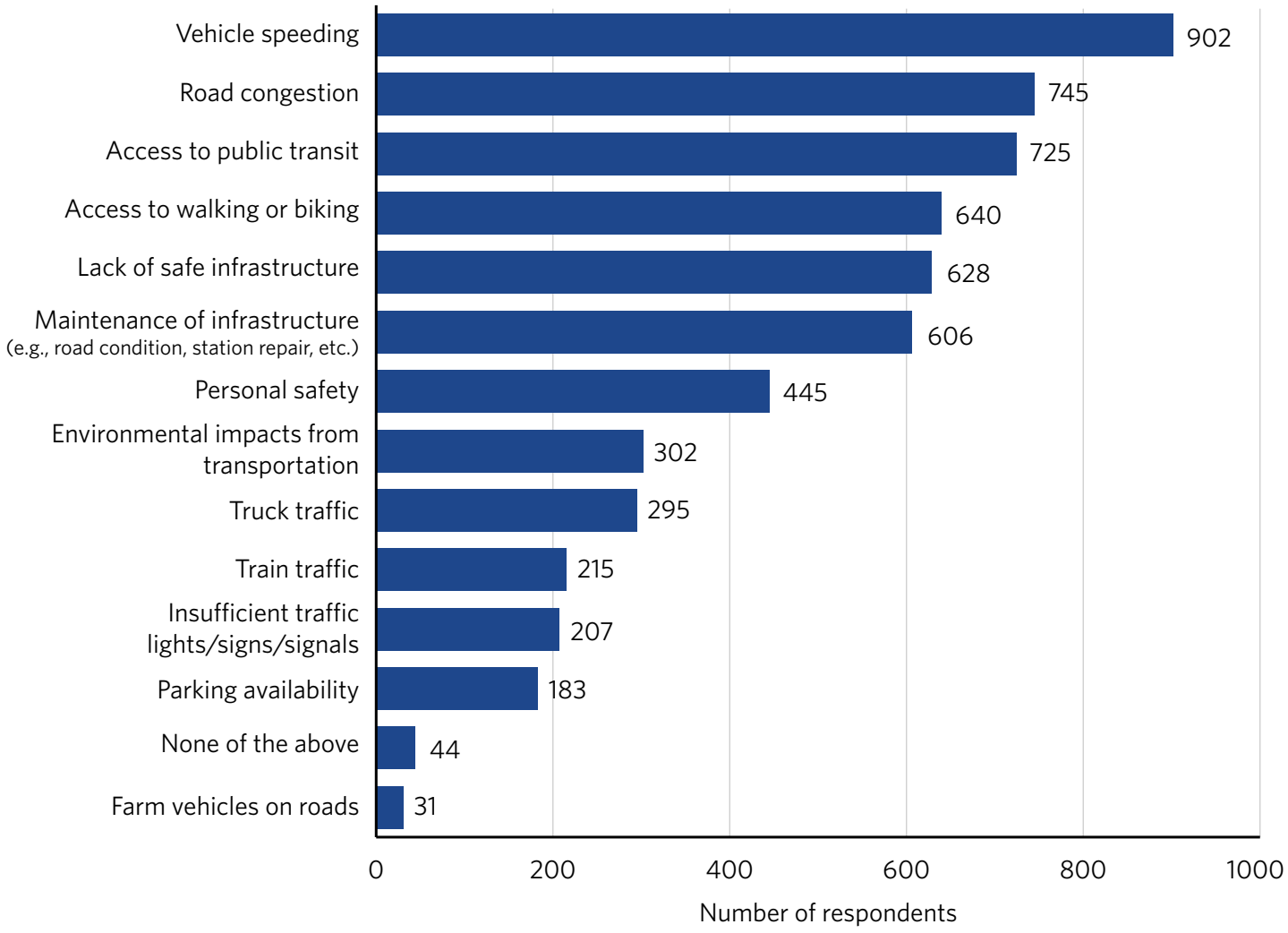


If so, what would allow you to use your preferred mode of travel more often? Select all that apply.

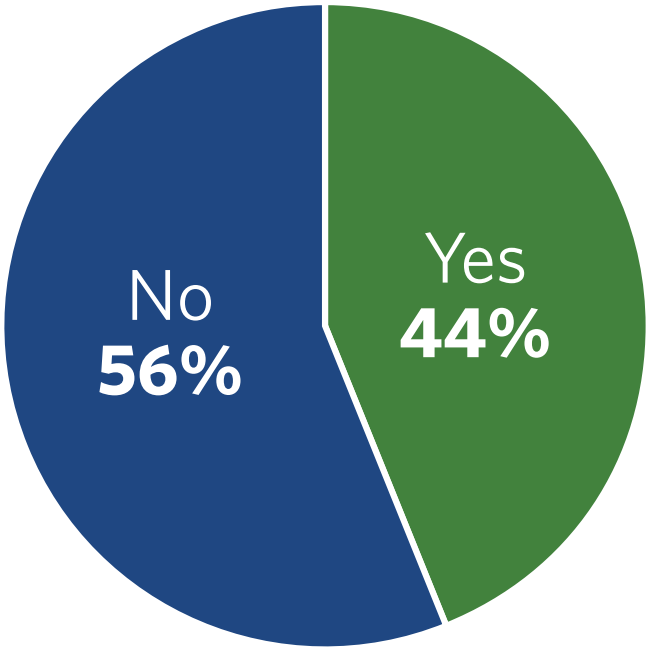


DRAFT

What are the biggest transportation challenges in the community you live in? Select all that apply.

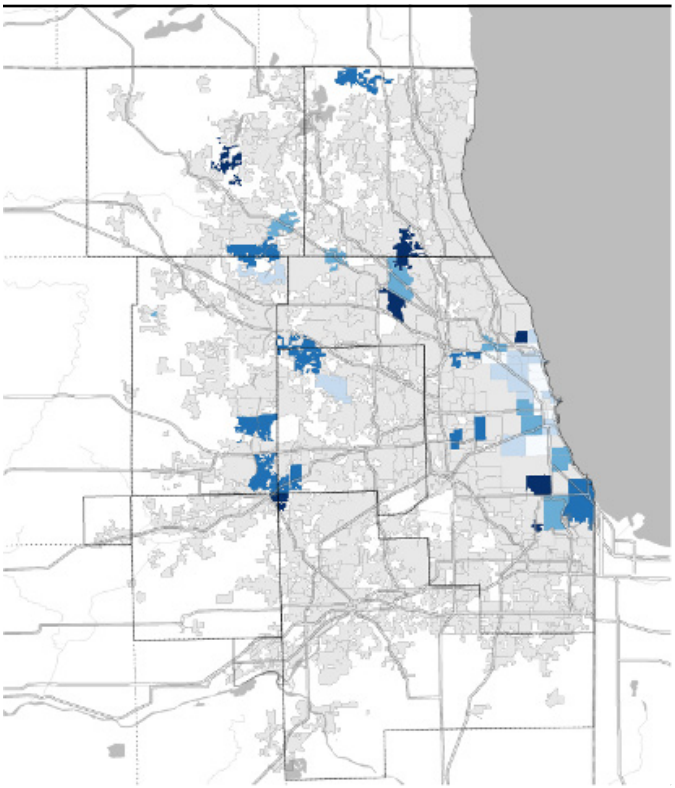


Are there specific areas in your community that you feel are underserved by current transportation options?

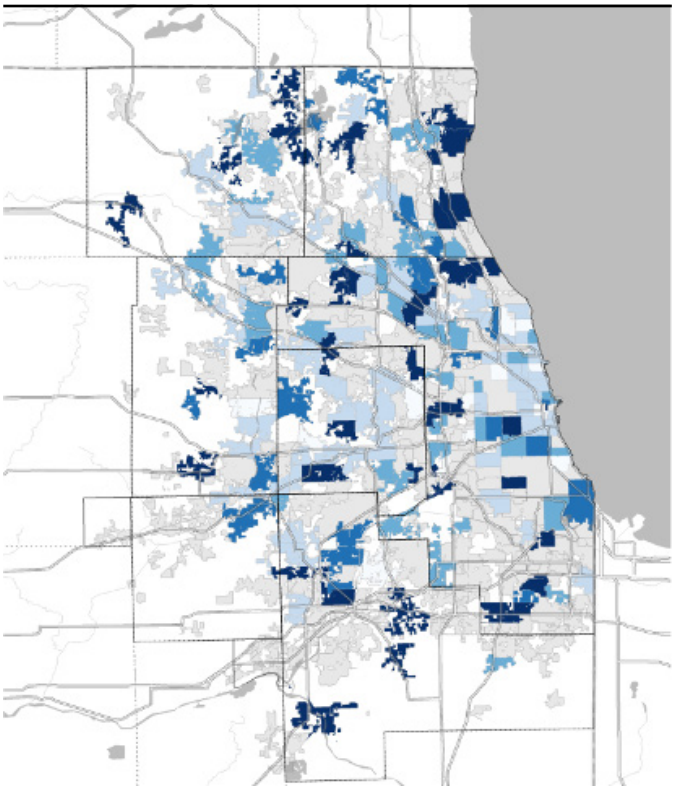


Geographic distribution of responses

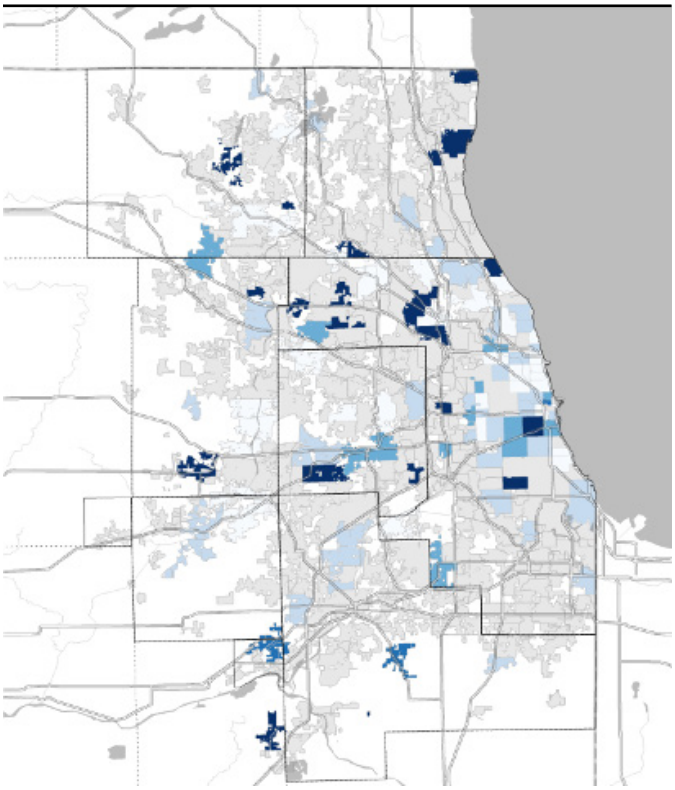
Access to public transit



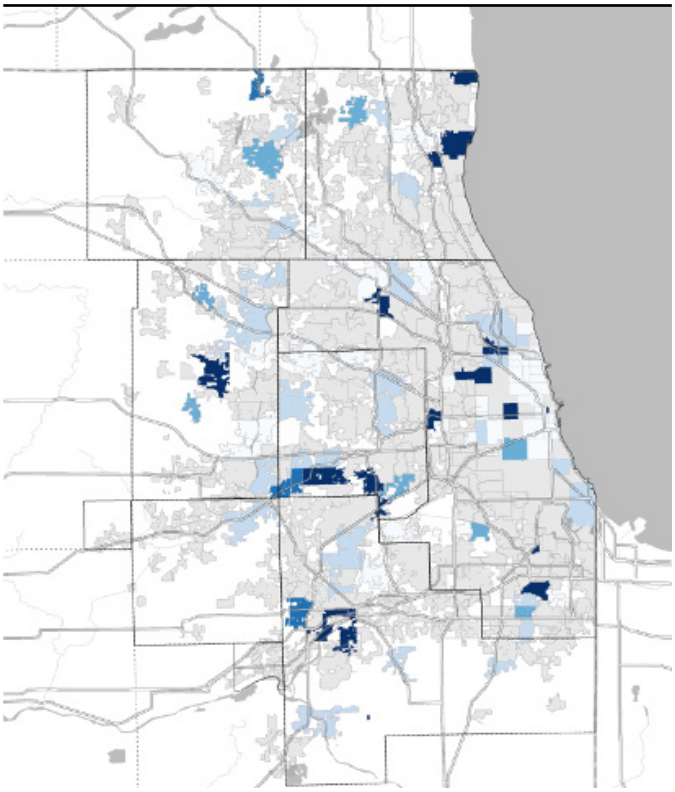
Access to walking or biking



Environmental impacts from transportation

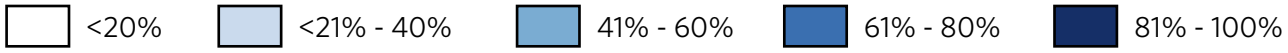


Insufficient lights/signs/signals



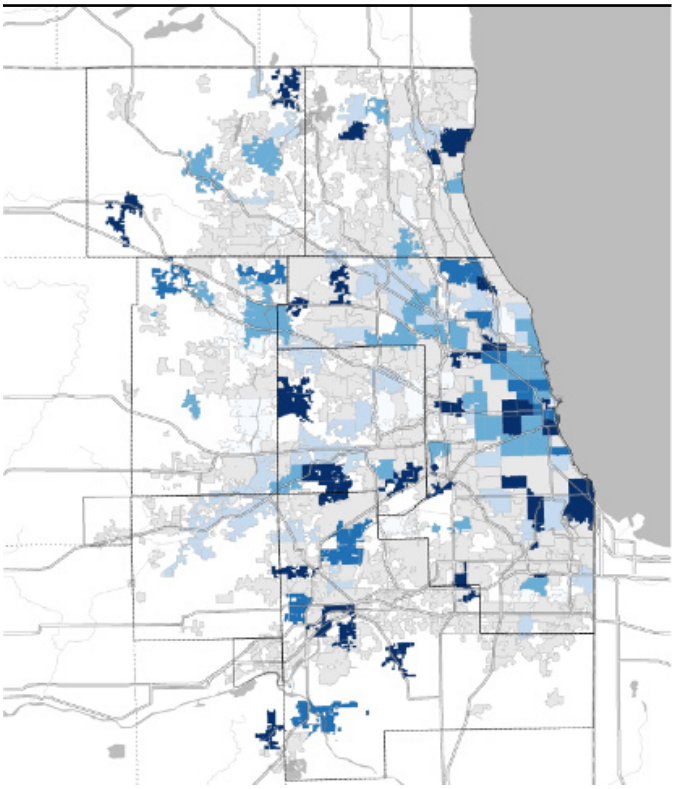
Legend

Percentage of respondents who said the indicator was an issue

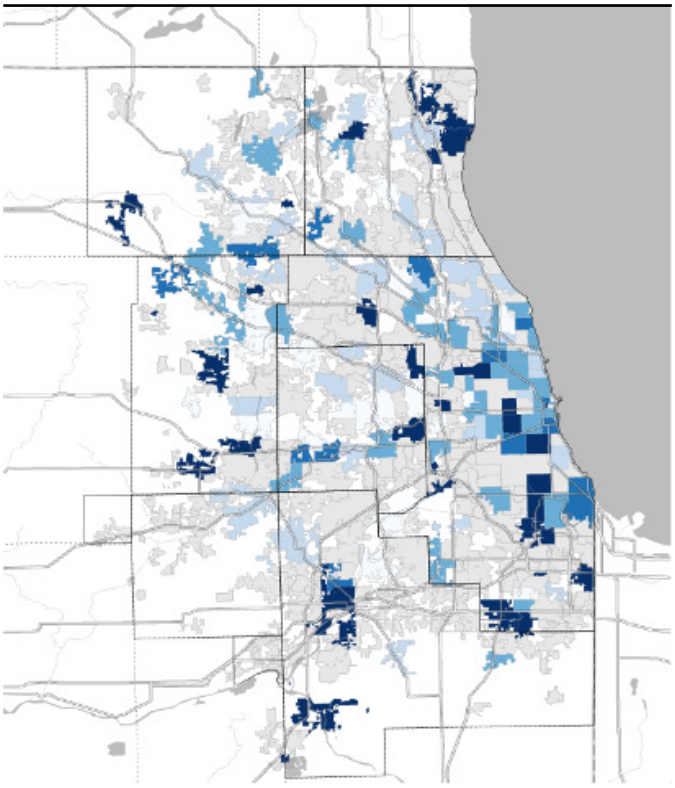


Note: Map excludes geographies with fewer than five responses

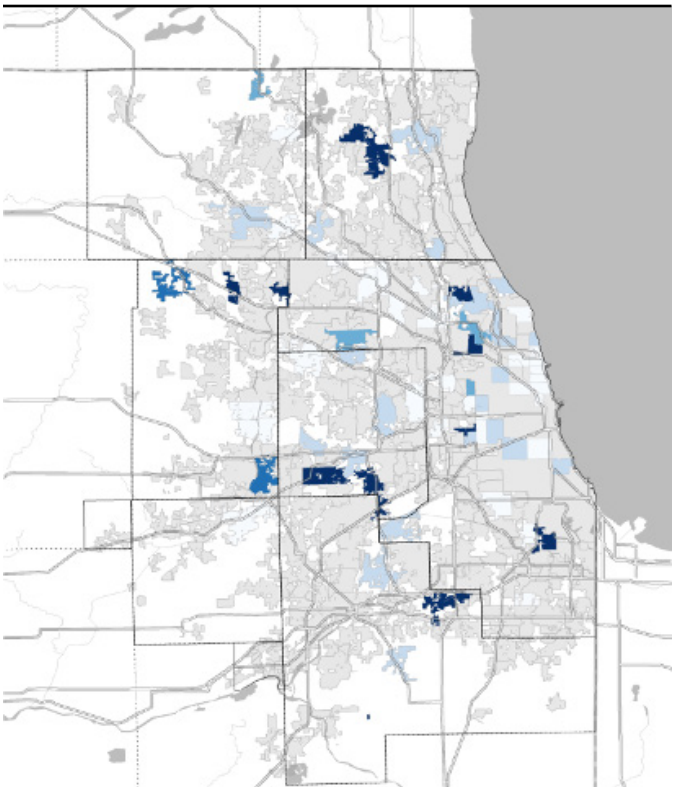
Lack of safe infrastructure



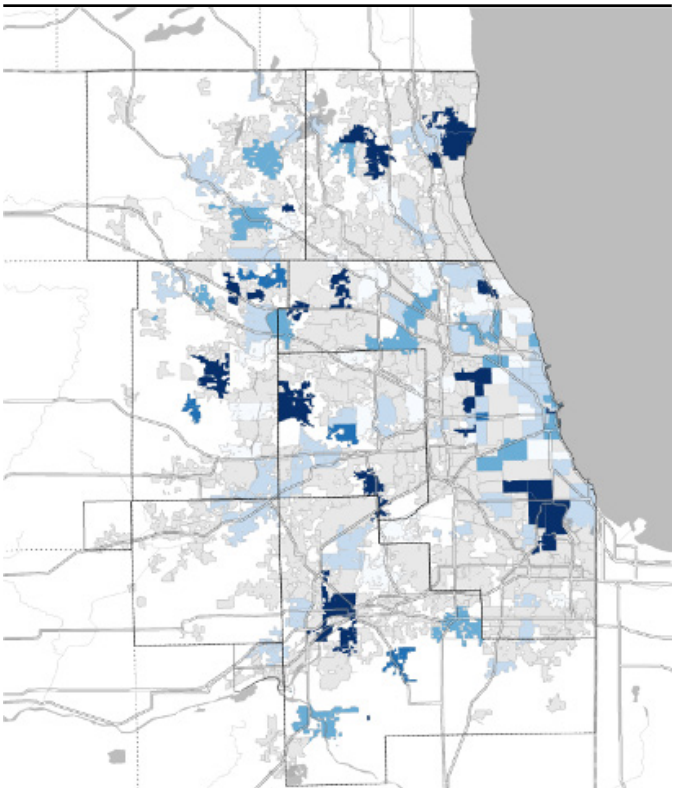
Maintenance of infrastructure



Parking availability



Personal safety



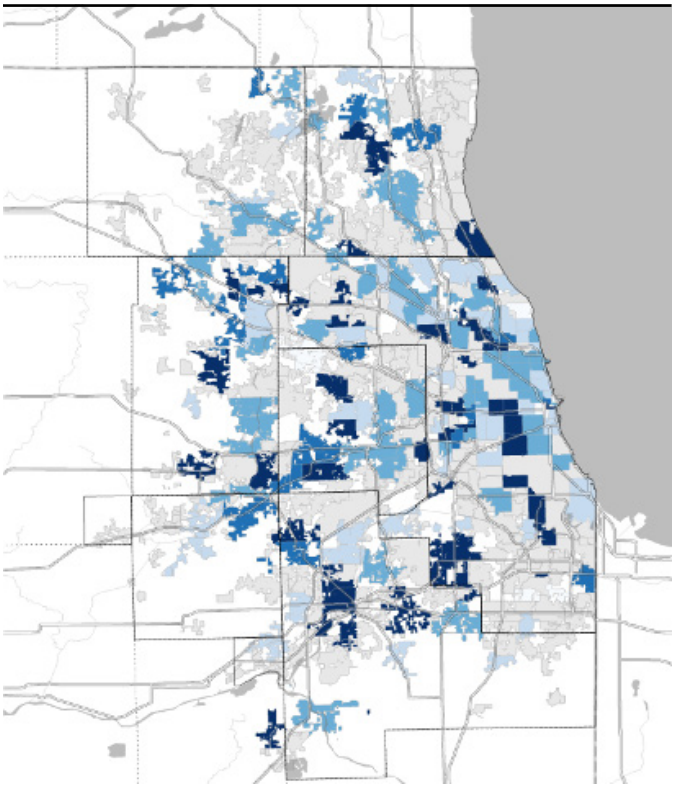
Legend

Percentage of respondents who said the indicator was an issue

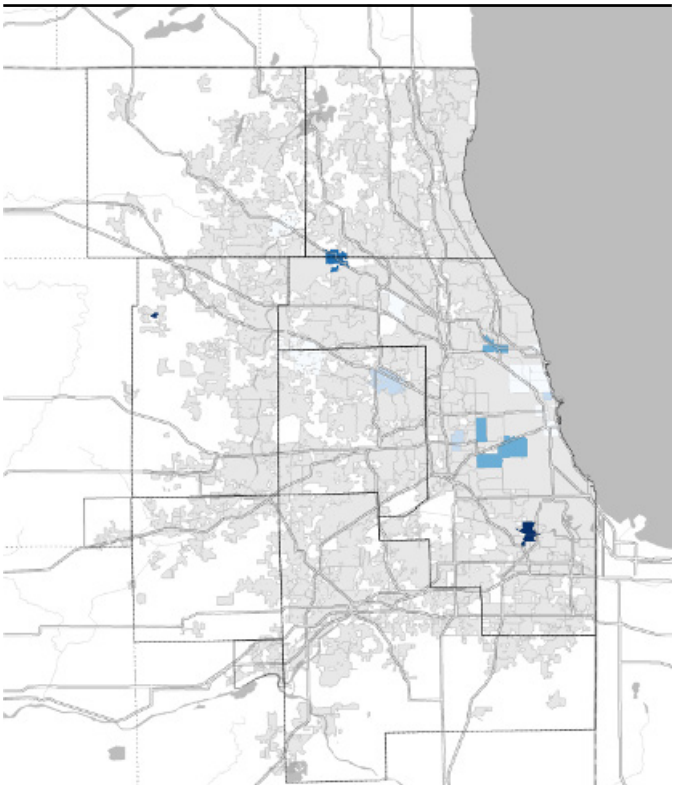
<20% | <21% - 40% | 41% - 60% | 61% - 80% | 81% - 100%

Note: Map excludes geographies with fewer than five responses

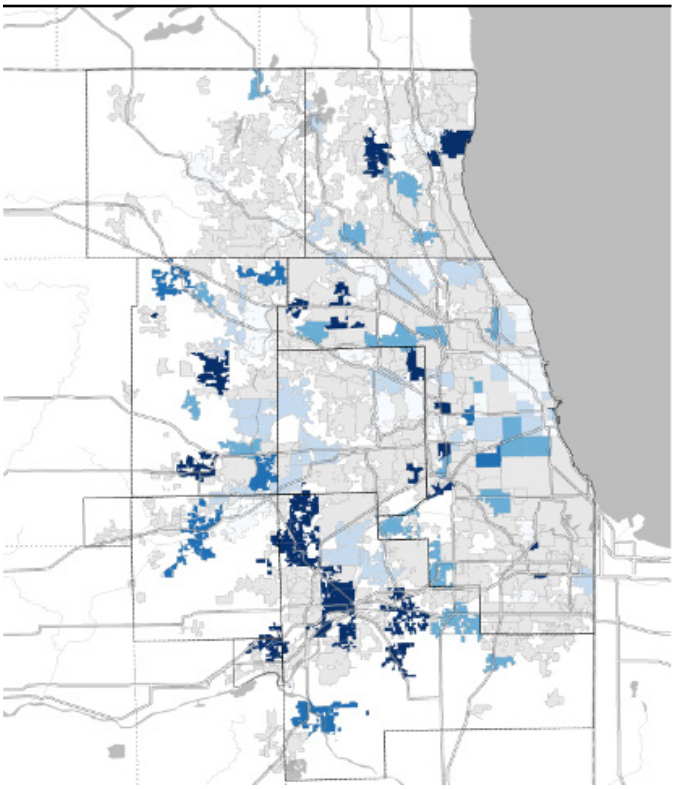
Road congestion



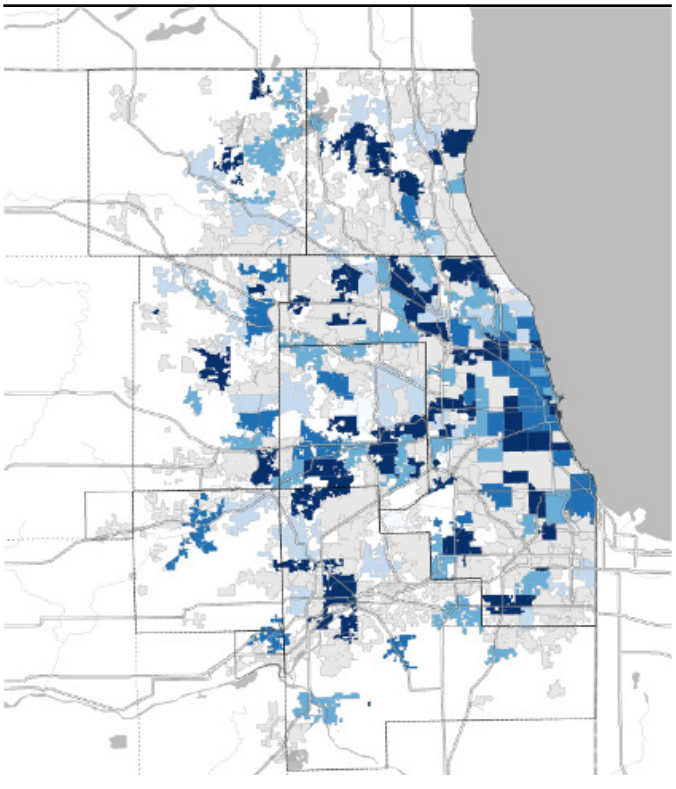
Train traffic



Truck traffic



Vehicle speeding



Legend

Percentage of respondents who said the indicator was an issue

<20% | <21% - 40% | 41% - 60% | 61% - 80% | 81% - 100%

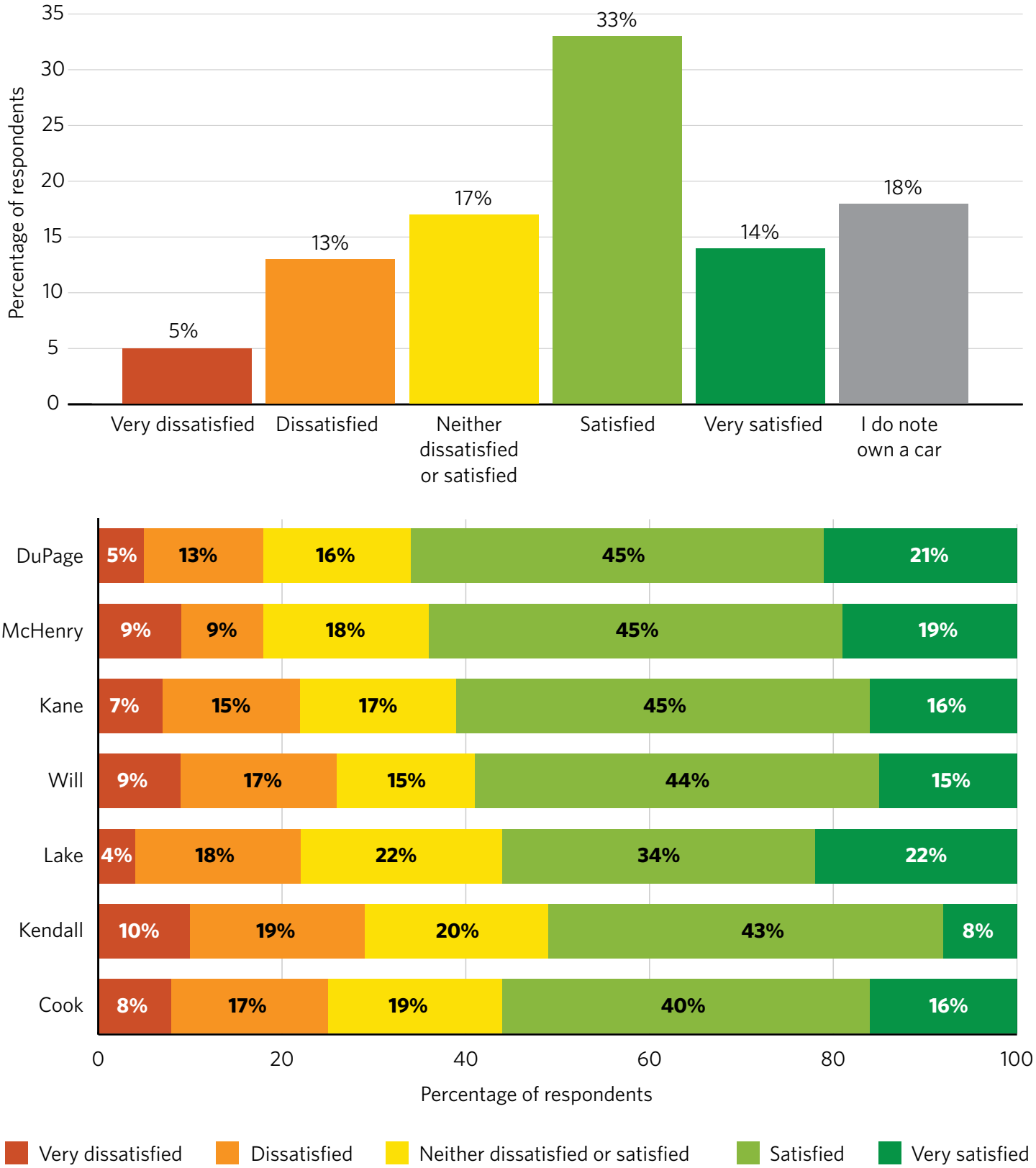
Note: Map excludes geographies with fewer than five responses

DRAFT

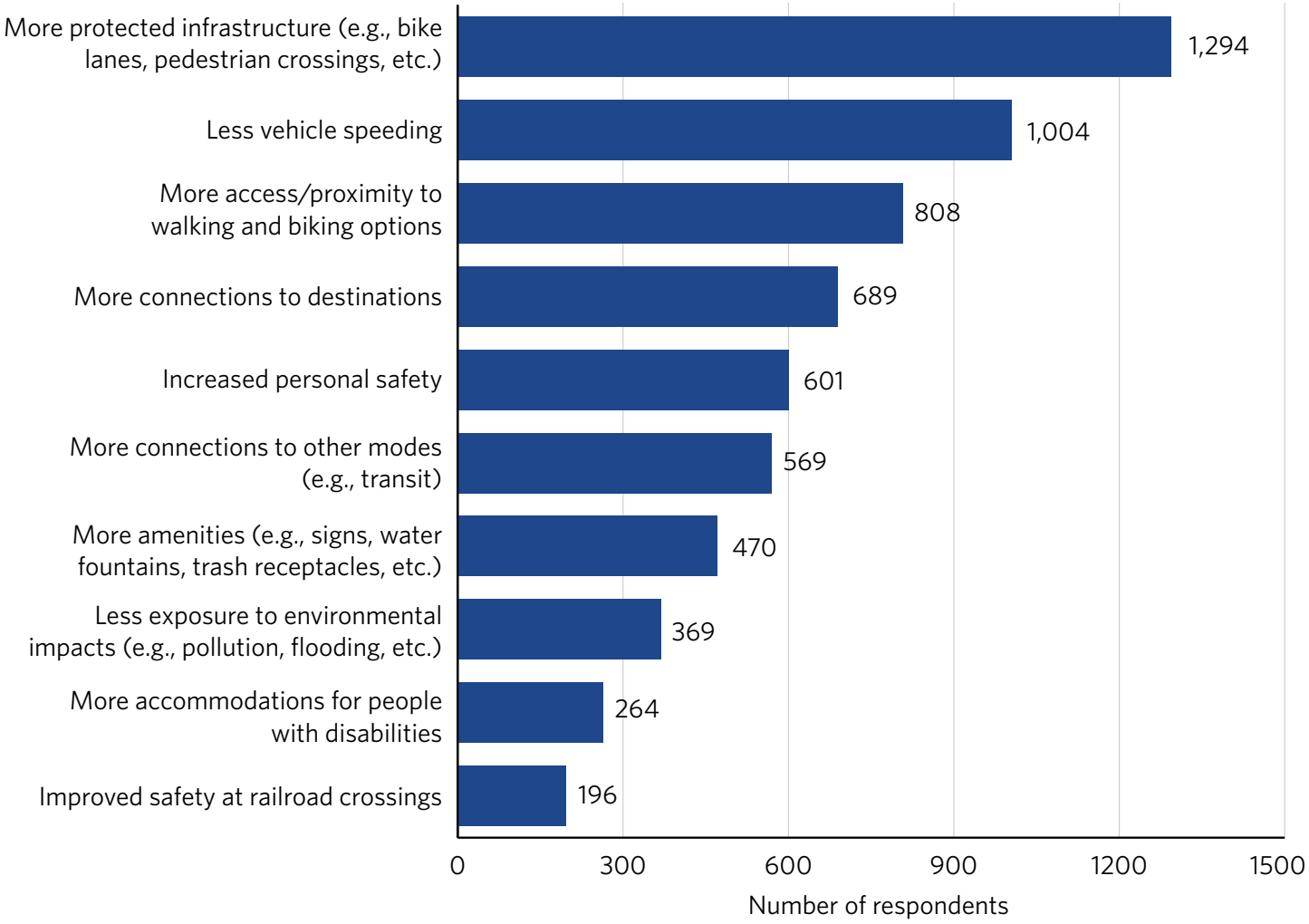
Are there any barriers to accessibility you face when using transportation (e.g., accommodation for mobility devices, audio/visual aids, physical barriers, or other accessibility features)?

View the full list of responses received.

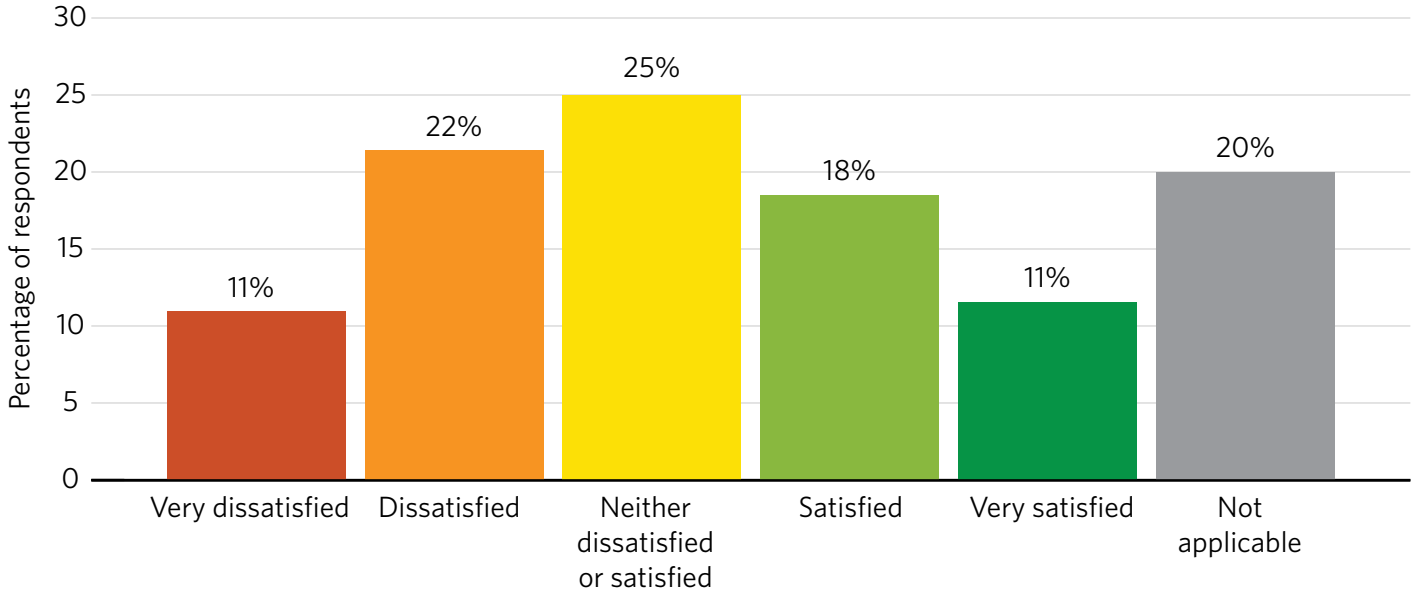
How satisfied are you with getting to destinations using your personal vehicle?



What would make your walking or biking experiences better, or more likely? Select all that apply.



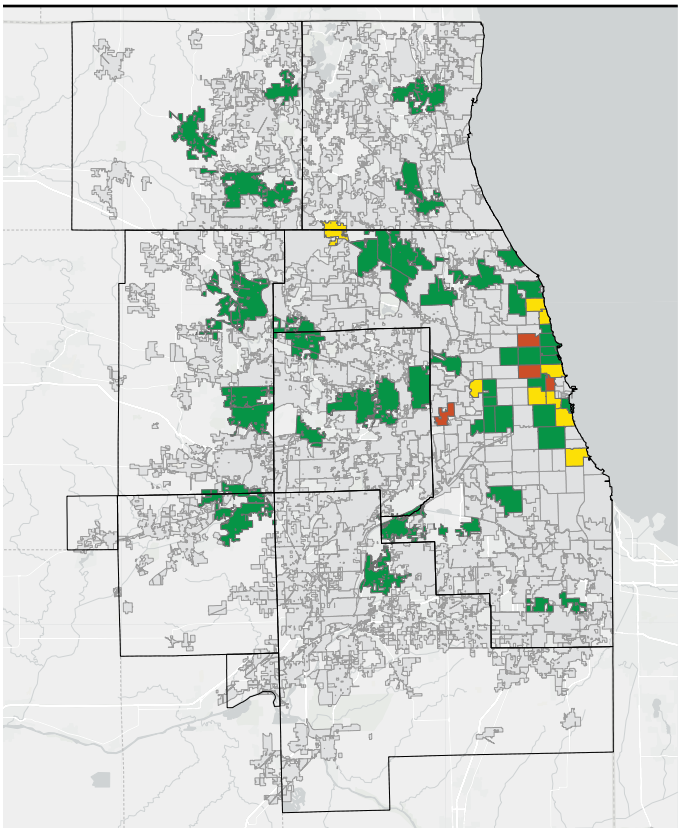
How satisfied are you with options to travel outside of the region via bus or train (e.g., via Greyhound or Amtrak)?



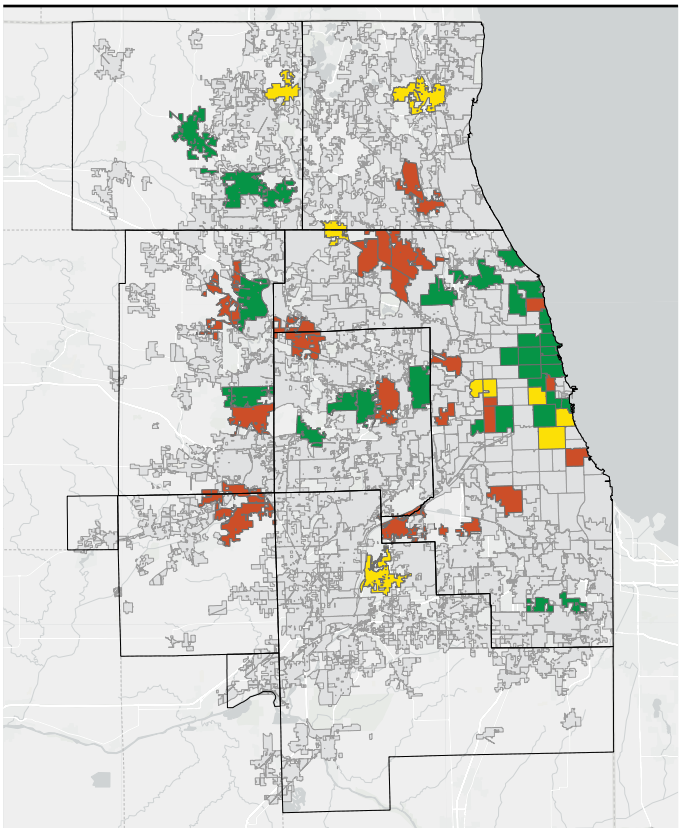
DRAFT

Geographic distribution of satisfaction levels across modes of transport

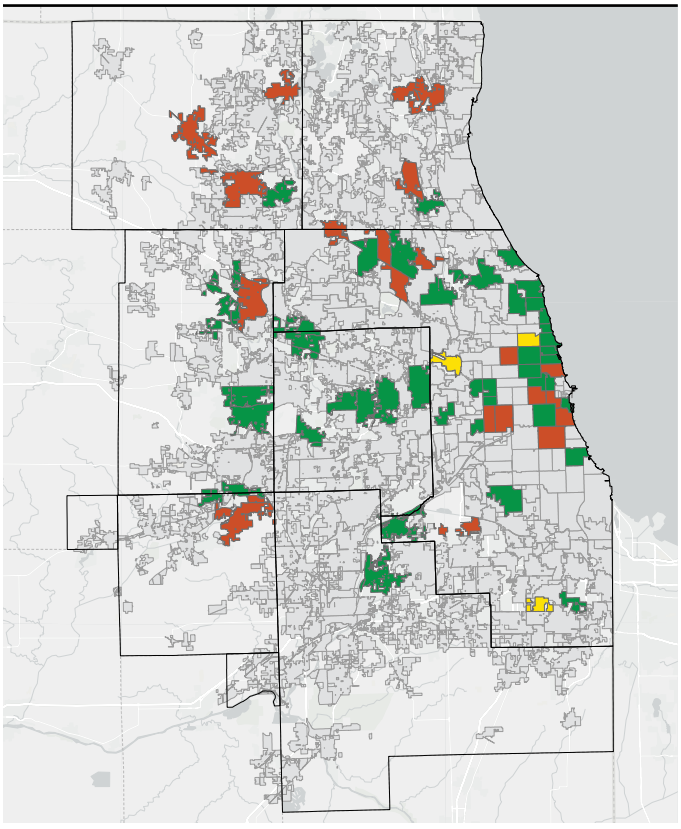
How satisfied are you with getting to destinations using your personal vehicle?



How satisfied are you with getting to destinations using public transit?



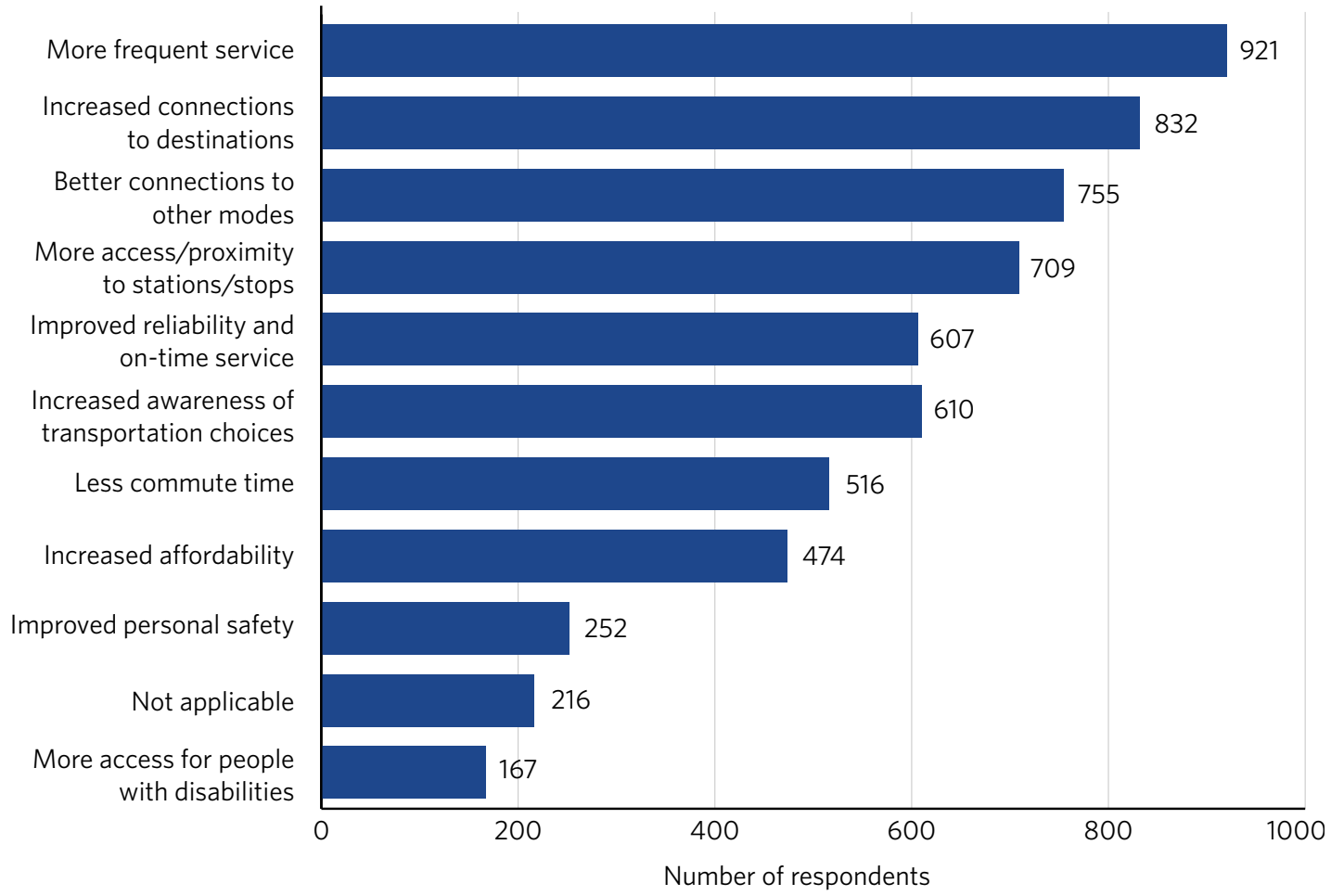
How satisfied are you with walking and biking options in your community?



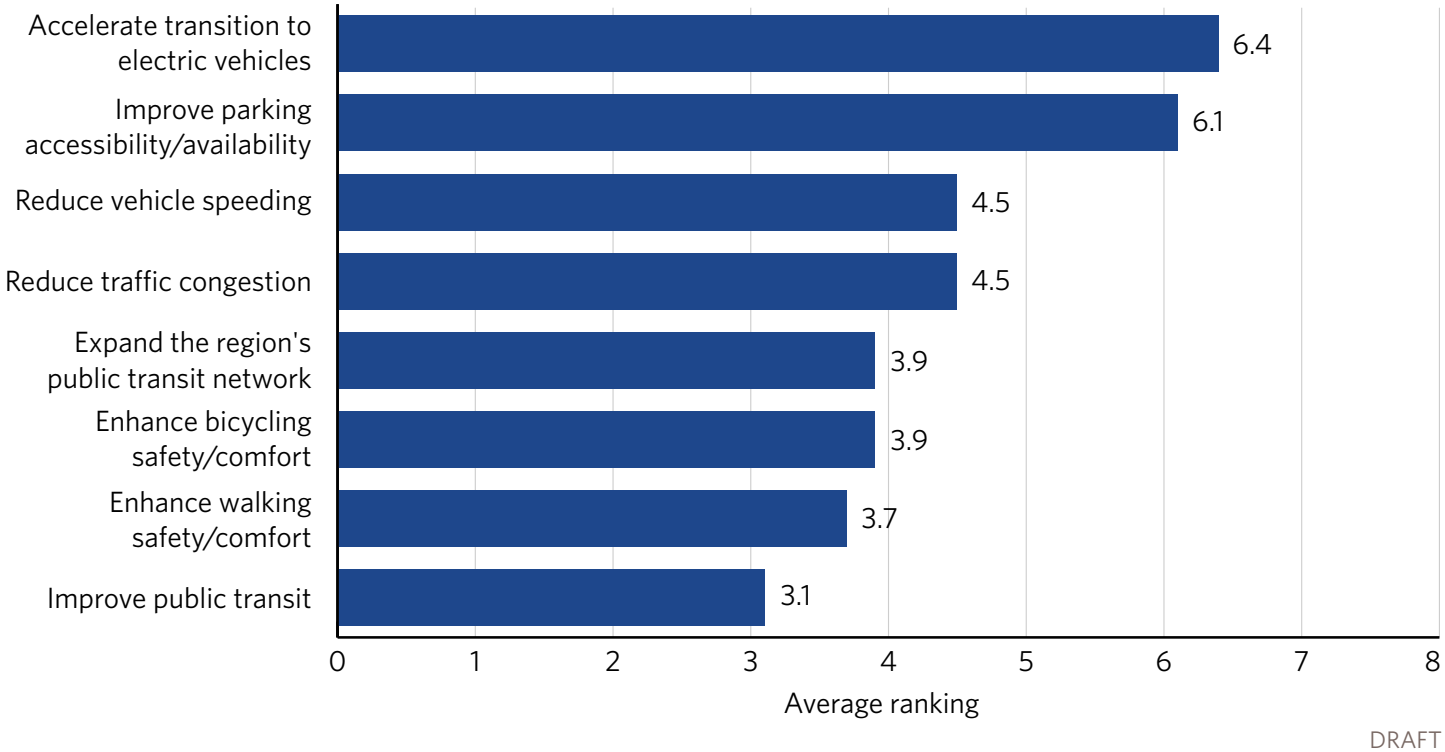
Legend

- Predominantly satisfied or very satisfied
- Predominantly neutral
- Predominantly dissatisfied or very dissatisfied

What would make your walking or biking experiences better, or more likely? Select all that apply.



Rank the following transportation strategies in order of importance to you, with 1 being most important:

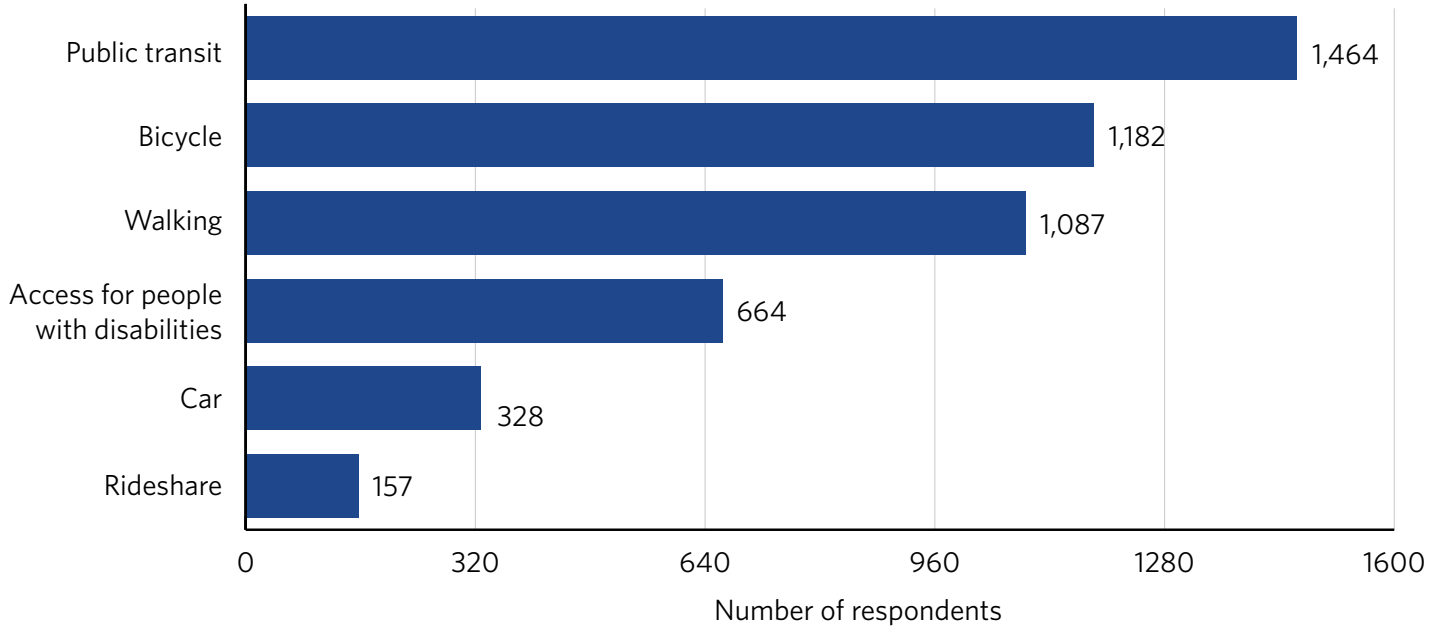


DRAFT

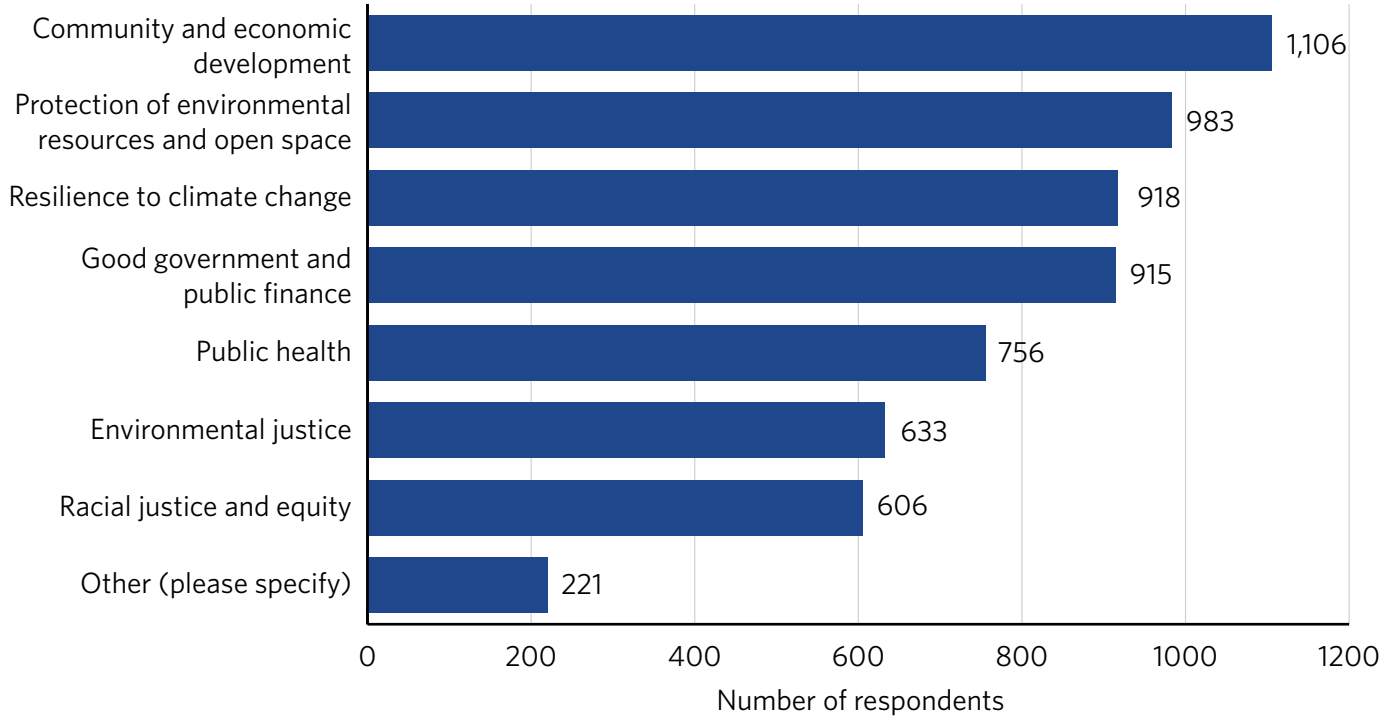
Describe your ideal transportation system in 1-5 words.

View the full list of responses received.

Which transportation modes do you think the region should increase investment in? Select all that apply.



What other topic areas would you like to see the transportation system address? Please select all that apply.



Do you have any additional comments regarding the long-term planning for our regional transportation system?

View the full list of responses received.



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.

Chicago Metropolitan Agency for Planning

433 West Van Buren Street
Suite 450
Chicago, IL 60607

cmap.illinois.gov
312-454-0400

APPENDIX E - DRAFT

Regional Capital Projects Benefits Report









RTP

2026
Regional Transportation Plan

Chicago Metropolitan Agency for Planning

Table of contents

Introduction **1**
RCP identification process **2**
RCP definition **2**
A. Capacity projects 2
B. Financially significant projects 3
C. Sponsor nominated 3
Identified RCP candidates **3**
RCPs with committed funding 3
RCP candidates subject to evaluation 3
Pending visionary RCP candidates, not ready for evaluation 3
Project evaluation process **4**
Process overview **4**
Evaluation approach **6**
Existing needs **6**
Asset condition 6
Safety 7
Travel reliability 9
Economically disconnected area 10
Freight mobility 10
Future impacts **11**
Roadway mobility 11
Transit mobility 11
Emissions 11
Infill support 12
Project cost **12**
Evaluation metrics **13**
Existing need metrics **14**
Future impact metrics **24**
Project financial costs **34**
Transit: Rail **38**
Transit: Bus **47**
Roadway: Arterials **52**
Roadways: Interstates **61**
Supplement A: Term definitions **66**
Supplement B: Metric definitions and ranges **67**
Supplement C: RCPs with committed funding (not subject to evaluation) **69**
Supplement D: Pending visionary RCPs (not ready for evaluation) **70**
Acknowledgments **71**
RCP Resource Group **71**

Introduction

As northeastern Illinois' metropolitan planning organization (MPO), the Chicago Metropolitan Agency for Planning (CMAP) is required by federal law to develop a list of major transportation projects every four years. The list identifies capital investments through 2050 that hold the potential to change the way people live, work, travel, and conduct business within northeastern Illinois either through capacity changes, traffic management strategies, or significant investment in maintaining the facilities that already serve the region's transportation needs. The list is meant to encompass projects that are large enough to warrant additional disucssion through the regional planning process. In past efforts, these projects have been referred to as Regionally Significant Projects (RSPs). In this report they will be referred to as Regional Capital Projects (RCPs).

Identifying and prioritizing RCPs is an important step to recognize the region's major funding needs over the planning horizon and determine whether existing funding streams can support those anticipated needs. In addition, CMAP is required by federal law to fiscally constrain these projects within the long-range plan — the 2026 Regional Transportation Plan (RTP), showing sufficient revenues as reasonably available to implement these projects within the plan horizon year, 2050. In coordination with partner agencies, CMAP identified 136 potential RCPs, representing more than $80 billion in project costs in 2025 dollars.

Only constrained projects are eligible to receive federal transportation funds and obtain certain federal approvals. Projects that are categorized as *unconstrained* require further action, such as additional study, or a determination they cannot be completed within the limits of the region's forecasted revenues. Because the region has limited funds for expansions or improvements, the RCP evaluation process generates a list of prioritized projects that help the region meet its goals. This document describes the RCPs and the process CMAP used to identify, evaluate, and prioritize them for fiscal constraint. The fiscally constrained project list is included in the Financial Plan for Transportation appendix.

Northeastern Illinois does not meet national ambient air quality standards for ozone and is classified as a nonattainment area, which means that CMAP must demonstrate that the projects included in its long- and short-term transportation investment plans — including the RTP and the Transportation Improvement Program (TIP) — conform to the State Implementation Plan. While this document reports changes in air pollution emissions associated with each project individually, the official conformity analysis will ultimately be based on all the projects that are fiscally constrained in the plan and the TIP.

RCP identification process

RCP definition

Because it is not practical to itemize all projects expected over a multi-decade planning horizon, MPOs typically list only projects of a certain size or type. In ON TO 2050 — the region's comprehensive long-range plan — CMAP included projects that:

- Changed capacity on the regional transportation network and at least $100 million, or
- Improved state of good repair for a particular facility and cost at least $250 million.[1]

In response to feedback from regional and federal partners, CMAP expanded the definition of an RCP for the 2026 RTP. With this expanded definition, a larger volume and range of project types will be included in CMAP's long-range plan, allowing for the 2026 RTP to take a broader look at the types of transportation projects that are planned for the region over the next 25 years, as well as the combined cost of those anticipated investments.

This new definition has three parts (each is described in sections A, B, and C below) with projects that meet any one of the listed criteria being identified as an RCP.

A. Capacity projects

Capacity projects are transportation projects that change capacity of a facility serving regional transportation needs, including, at a minimum, all principal arterial highways on the National Highway System (NHS) and all fixed guideway transit facilities. In the context of the 2026 RTP, a project will be considered a capacity RCP if it meets one or more of the following conditions:

1. Extends or adds lanes to the regional transportation system[2] (must meet the 1-mile minimum length requirements noted in Supplement A: Term definitions);[3]
2. Extends or adds lanes to an existing roadway intended to become a part of the regional transportation system (must meet the 1-mile minimum length requirements);
3. Adds a new roadway intended to become a part of the regional transportation system (must meet the 1-mile minimum length requirements);
4. Reduces or removes lanes on a portion of the regional transportation system with an average daily traffic volume of 25,000 or more (must meet the 1-mile minimum length requirements);
5. Adds a new direct connection or adds lanes to an existing connection within the regional transportation system (e.g., new interchange or adding lanes to flyovers on an existing interchange);
6. Adds new or extended fixed guideway transit infrastructure (bus rapid transit projects must meet the 1-mile minimum length requirements);

1 Chicago Metropolitan Agency for Planning, "ON TO 2050 Plan Update: Regionally significant projects benefits report appendix," 4, accessed April 2, 2026, ON-TO-2050-Update-Regionally-Significant-Projects-Benefit-Report-Appendix.pdf.

2 For the purposes of the 2026 Regional Transportation Plan, the regional transportation system includes both the NHS and the fixed guideway transit system. The NHS includes roadways classified as interstate, freeway, or expressway, and other principal arterials. It also includes roads important to national defense, plus intermodal connectors.

3 All capacity projects, whether on the regional transportation system or less than the required length remain subject to air quality conformity analysis to be included in CMAP's TIP.

7. Adds new fixed guideway transit stations, such as infill stations; or,

8. Adds multiple signals along a corridor on the regional transportation system and costs at least $20 million (2025 dollars).

B. Financially significant projects

Financially significant projects are transportation projects not classified as capacity projects whose total estimated cost in 2025 dollars exceeds $250 million. The entire project cost, not just the cost of the added capacity, is used to determine whether the project is an RCP. This threshold ensures the 2026 RTP development process identifies and evaluates costly projects to facilitate regional consensus around investment priorities. The financially significant threshold also ensures that CMAP meets its fiscal constraint requirements as established in 23 CFR 450.324.

C. Sponsor nominated

Under this category, either an implementing agency or CMAP can nominate a transportation project for potential inclusion in the RTP (other than capacity projects or financially significant projects as defined above).

Identified RCP candidates

To identify candidate RCPs, CMAP solicited projects from partner agencies in spring 2025. Regional transportation implementors submitted both unconstructed RSPs previously identified in ON TO 2050 and new projects that were considered for the first time. Additionally, CMAP staff reviewed projects currently included in the active TIP and worked with lead agencies to add any projects that met the RCP definition to the list of submitted projects.

A total of 136 projects were identified as RCPs to be included in the RTP. Just over half (73) of these projects were included as RSPs in the previous plan, 2022's ON TO 2050 update.

RCPs with committed funding

Twenty-six of the identified projects already have committed funding, meaning that specific funding sources that will cover the full cost of the project have been programmed for each of these projects in the five-year TIP. Because these projects already have committed funding, they will be fiscally constrained within the RTP without the need for evaluation. Consistent with all RCPs, once the 2026 RTP has been adopted these projects will still be subject to RTP amendment requirements, which may include evaluation should the status, scope, or cost of the project change significantly. The RCPs with committed funding that are not subject to evaluation are listed in Supplement C: RCPs with committed funding.

RCP candidates subject to evaluation

The remaining 110 projects are subject to evaluation and fiscal constraint determination. As presented in the next section, these projects were evaluated across 11 performance categories. The evaluation metrics, along with other project information, inform recommendations to CMAP's Transportation Committee and MPO Policy Committee, identifying which projects qualify as RCPs to be included in the RTP. Moreover, this information informs prioritization and fiscal constraint recommendations to the CMAP Board and MPO Policy Committee. The full list of RCPs subject to evaluation is included with project cost estimates in Table 3.11 in the evaluation metrics section.

The RCP candidates subject to evaluation and prioritization are summarized by project type in Table 1. As shown, most of the projects subject to evaluation are capacity projects, more than one-third (39) are additions to the network, and almost half (49) include changes to capacity on the existing network. The remaining 22 are financially significant state of good repair or network modernization projects.

Pending visionary RCP candidates, not ready for evaluation

Several project sponsors provided information for projects that are in the early, exploratory planning stages. While an improvement or enhancement has been identified as needed in or around the proposed project location, the type of improvement needed has not yet been identified. When more information on the project plans becomes available these projects will be evaluated and incorporated into the RTP. These projects are listed in Supplement D: Pending visionary RCPs.

Table 1: RCP candidates subject to evaluation, by project type

Project type	Total projects
Capacity projects - Network additions	**39**
Bus rapid transit (BRT) or bus priority corridor	15
New transit line or extension	13
New arterial	4
New station	3
New interchange or ramp	4
Capacity projects - Capacity increases to existing infrastructure	**49**
Arterial add lanes	30
Transit capacity increase	13
Interstate add lanes	6
Financially significant - State of good repair or modernization	**22**
Interstate reconstruction	8
Interchange, intersection, or corridor improvement	8
Bridge reconstruction	2
Transit line or station modernization	4
Total	**110**

Project evaluation process

Process overview

The RCP evaluation process measures how well each of the proposed projects helps the region meet its transportation goals. The evaluation framework applied to the 2026 RTP is similar to the framework applied in ON TO 2050. However, several important updates were implemented:

- **Reduced set of measures:** While the overall evaluation categories remain similar to the previous effort, each category's score is developed using fewer measures, creating a more transparent and comprehensible process for transportation stakeholders. Additional objectives for reducing the number of measures included:
    - Reducing repetition, or measures that reflect similar project impacts.
    - Focusing on measures with the most reliable data sources at this scale of analysis and with limited dependence on assumptions. For example, data and evaluation metrics are limited at this level of analysis in areas such as Americans with Disabilities Act (ADA) or resiliency improvements.
- **Updated travel demand model:** CMAP's trip-based travel demand model is one of the primary tools used for the RCP evaluations. Additionally, other procedural improvements, such as updating the roadway and transit networks, were implemented prior to the RCP evaluations.
- **Revised socioeconomic forecast:** The travel demand model was also updated to reflect the latest population and employment forecasts, which make use of more recent Census and regional economic performance data. This update includes refinements to the land-use model (UrbanSim) which helps develop the spatial distribution of households, population, and jobs in 2050.

- **Updated data inputs:** Data input files used to conduct the evaluations were updated in instances where more recent data were available. In addition to the population and employment data, this includes revised information on bridge and pavement conditions, transit asset conditions, travel safety and reliability, and freight traffic volumes.

The RCPs were evaluated for prioritization based on their anticipated benefits across eleven evaluation categories (Table 2) which fall into three types:

- **Existing needs:** Measures that rate projects based on the existing need for improvements within the proposed project location. These measures use existing data sets and facility ratings.

- **Future impacts:** Measures that rate projects based on their anticipated impact on the future 2050 network. These measures rely on outputs from the 2050 regional travel demand model and focus on performance indicators related to mobility, emissions, and land use.

- **Financial cost:** Measures that consider a project's estimated construction, operation, and maintenance costs over ten years in constant 2025 dollars for all projects. In contrast, the financial plan relies on nominal, year-of-expenditure dollars.

The next section presents the metrics that make up the benefits ratings within each category and how each project scored under each metric.

Table 2: RCP evaluation categories

Type	Performance category	Description
Existing needs	Asset condition	Measures the level of need for state-of-good repair or modernization upgrades on facility.
	Safety concerns	Identifies if the project is in an area with an identified safety concern, such as a high crash rate.
	Travel reliability	Identifies if the project is in an area with a low level of travel time reliability.
	Freight mobility	Measures the volume and proportion of freight use on the facility.
	Economically disconnected area (EDA) mobility	Measures the volume and proportion of EDA use on the facility.
Future impacts	Roadway network mobility	Passenger vehicle travel delays – the change in travel delays for passenger vehicles.
	Transit network mobility	EDA travel delays – the change in travel delays for trips to and from EDAs.
	Emissions impact	Freight travel delays – the change in travel delays for truck trips.
	Infill development support	Change in transit ridership.
Financial cost	Capital cost	The estimated cost of construction in 2025 dollars.
	Annual maintenance and operation cost	Average annual cost to operate and maintain in 2025 dollars.

Evaluation approach

As described in the previous section, RCP candidates were rated based on their anticipated benefits within the 11 evaluation categories presented in Table 2. This section describes the metrics used to measure performance within each evaluation category.

Existing needs

The metrics in this section focus on elevating needed improvements on the existing network. The existing needs ratings value projects located in areas identified as having a specific need at a localized project level. While CMAP acknowledges that some of the measured variables, such as reliability and safety, may show a need for improvement tied to factors beyond the area directly included in the proposed projects (such as capacity constraints on connecting and parallel roadways or impacts resulting from behavioral or environmental factors), it is not practical to account for all of these factors at this level of early planning analysis. Rather, this analysis focuses on flagging the measurable and comparable information that is most directly relevant to the proposed project with the expectation that additional review and analysis will occur when the projects reach more detailed planning and design stages. The ratings also consider agency staff knowledge and the description of improvements (presented in the project descriptions section).

The following seven subsections describe the evaluation metrics that were included in the scoring considerations under each existing need category and present the ratings for each project for which that evaluation category is relevant.

Asset condition

A project's asset condition benefit rating was based on the existing level of need for state of good repair (SOGR) and/or modernization improvements for the assets and facilities proposed for improvements. Need for SOGR improvements was measured using the documented and reported asset conditions provided by the sponsor agencies.

The overall asset condition benefit ratings were based on the most significant level of need within the proposed project area rather than an average condition rating of the facilities included in the project. This approach was selected for the following reasons:

- Project timing decisions tend to be driven by the facilities of most immediate need along a project and, in most cases, it is most efficient to implement the full planned improvements for a corridor or connection rather than address only the area of most need and return to complete other improvements later.
- The benefit of improving an asset in poor condition is not lessened by additional project scope. Furthermore, the cost of the additional scope beyond the asset in poor or fair condition is accounted for in the project cost rating.

Transit asset condition metrics

For transit projects, the need for asset condition improvements was rated using a measurement scale similar to the scale presented in the Regional Transportation Authority's (RTA) 2025 Capital Program Metrics.[4] Projects are assigned one of four ratings based on a combination of the anticipated project impact and the level of need for that type of improvement at the proposed location. The ratings are:

- A: Facilities addressed in the proposed project are currently in poor condition
- B: Facilities addressed in the project are currently in fair condition

4 Regional Transportation Authority, "Adopted 2025 Operating Budget, Two-Year Financial Plan, and Five-Year Capital Program," accessed April 2, 2026, https://www.rtachicago.org/uploads/files/general/Transit-Funding/2025Budget/2025_RegionalBudgetAdopted.pdf.

- C: Facilities addressed in the project are currently in good condition
- N/A: Facilities do not have an asset rating

Roadway asset condition metrics

For roadway projects, the need for asset condition improvements was rated based on the current condition of the facilities included in the project, using the data available in the Illinois Department of Transportation's (IDOT) Condition Rating Survey (CRS) and the National Bridge Inventory.[5] For each project, CMAP identified the length/area and proportion of the project facilities that are either poor or fair condition. Projects that have either a large area and/or proportion of bridges in poor condition are considered the highest in terms of asset condition need, with bridges in fair condition representing the second tier, and pavement in poor or fair condition representing the third tier.

For bridges, a poor condition rating indicates advanced section loss, deterioration, spalling (cracking, breaking, or chipping of joint edges), or scour (erosion of soil or rock around the base of structure) have seriously affected primary structural components. A fair condition rating indicates that all primary structural elements are sound but may have minor section loss, cracking, spalling, or scouring.

The CRS scale for pavement conditions ranges from 1 to 9, where 1 indicates completely failed pavement and 9 represents the best condition. A rating of 1 to 4.5 is considered poor and in need of improvement, while a rating of 4.6 to 6 is considered fair with a likely need for improvement in the short term.

Safety

The safety benefit ratings focus on capturing the potential for a project to result in improved safety on the network based on the location of the project and the existing level of safety concern, such as crash rate, at that location. In addition, where relevant, the level of safety impact that might be expected from this type of project. This evaluation is limited to project potential because most of these projects are in the early stages of planning and design, and it is not possible to assess whether the project will address any specific safety issues that may exist at the project location.

Transit safety metrics

For transit projects, the need for safety improvements was rated using a measurement scale similar to the scale presented in the RTA's 2025 Capital Program Metrics. Projects were assigned one of four ratings based on a combination of the anticipated project impact and the level of need for that type of improvement at the proposed location. For example, a project that widens train platforms in an area with platforms below average width might be expected to decrease the risk of injury to riders by reducing platform crowding and increasing space between the standing area and rail tracks. The ratings are:

- A: Directly provides a safety benefit/improvement
- B: Indirectly provides a safety benefit/improvement
- C: Maintains current safety levels
- N/A: No impact on safety

5 Illinois Department of Transportation, "Transportation Asset Management Plan," January 2023, 24-25, accessed April 2, 2026, https://idot.illinois.gov/content/dam/soi/en/web/idot/documents/transportation-system/reports/opp/transit/idot-2022-tamp-fhwa-certified-01-24-23.pdf.

Roadway safety metrics

For roadway projects, the safety benefits rating considered the existing level of safety concerns within the project area based on IDOT's reported safety tier and vulnerable road user scores. As noted above, because most candidate RCPs are in the early stages of planning and design, it is not possible to assess whether the project will address the specific type of safety issues or crash types that have occurred at that location. Thus, this analysis was focused on capturing the potential for each project to provide a safety benefit based on the location of the project and the existing level of safety concern at that location.

Two data sets were included in these safety metrics:

- **IDOT's safety tiers:** The safety tiers identify roadway segments and intersections with an overrepresentation of crashes that may be potential locations for improvement. The scores present the amount of crash rate variation between the evaluated project location and the average for that type of facility, up to a maximum of 5.[6] A score of 3 or more is considered high, identifying an area with high need for safety improvement. The safety tier ratings are calculated for peer groups using a crash weighting system that accounts for the severity of crashes and typical injury outcomes by crash type. For the RCP metrics, CMAP used the full weighted value converted into a safety score.

- **Illinois Vulnerable Road User Safety Assessment (VRUSA):** VRUSA was conducted by IDOT in 2023 to identify safety trends, policies, rules, and procedures pertinent to safe travel by vulnerable road users (VRUs) and identify steps to improve them. Similar to the safety tiers, the VRU ratings identify roadway segments with an overrepresentation of crashes that may be potential locations for improvement. However, this assessment focuses only on bicycle and pedestrian crashes. In addition to measures of observed safety, this analysis accounted for perceived safety on the transportation network. The perceived safety measure includes information entered on a web map that was available for public comment during the study. The information collected through the map was normalized by equity-adjusted population, vehicular exposure, and VRU exposure. [7]The scores present the amount of crash rate variation between the evaluated project location and the average for that type of facility. Presented scores range between 1 and 9.[8] A score of 3 or more is considered high, identifying an area with high need for safety improvement.

Similar to roadway asset condition benefit ratings, the assigned safety benefits ratings are based on the most significant level of need within the proposed project area rather than an average condition rating of the facilities included in the project area. This approach was selected because the benefit of improving safety on part of a project is not lessened by the fact that there are also other portions of the project with little need for safety improvements. In addition, the cost of the additional scope beyond addressing the area with a safety issue is accounted for in the project cost rating.

The roadway safety metrics presented for each project include:

- The highest safety tier score assigned to a roadway segment included in the project location
- The portion of roadway length included in the project location with a high safety tier rating (3 or above)
- The highest safety tier score assigned to an intersection included in the project location
- The highest VRU score assigned to a roadway segment included in the project location

6 The scores present how many standard deviations away a location is compared to the average for that type of facility, up to a maximum of 5 (5 represents standard deviations of 5 and higher).

7 Illinois Department of Transportation, "High-Injury Network (HIN) - Corridors | Illinois Vulnerable Road Users," accessed April 2, 2026, https://experience.arcgis.com/experience/aae015c0f183478b86bd2522b767ddb4/page/High-Injury-Network-(HIN)---Corridors.

8 The scores present how many standard deviations away a location is compared to the average for that type of facility.

Travel reliability

The reliability benefit ratings focus on capturing the potential for a project to result in improved consistency in travel times on the network. Due to differences in how travel times and delays are tracked on the roadway and transit networks, the approach applied for rating the RCP reliability benefits depended on the type of facility being improved.

Transit reliability metrics

For transit projects, the reliability benefits rating was based on the travel time and reliability improvements that are anticipated based on the types of improvements proposed for the facilities and feedback from the project sponsor. The need for reliability improvements was rated using a measurement scale similar to the scale presented in the RTA's 2025 Capital Program Metrics. The ratings are:

- A: Significantly improves speed/reliability
- B: Moderately improves speed/reliability
- C: Maintains current speed/reliability
- N/A: No impact on service

Roadway reliability metrics

For roadway projects, the need for travel reliability improvements is based on the current variability in travel times occurring in the evening and morning peak travel periods on the roadway segments included in the project location. The peak travel periods were selected for this analysis as they tend to be the periods with the largest volume of traffic entering and exiting the roadway network and can be one of the most unpredictable in terms of travel times. To capture the range of travel times that occur throughout the year on a typical weekday — including the seasonal impacts of weather and the school year — travel times were included for all Tuesdays, Wednesdays, and Thursdays in 2024. Mondays and Fridays were excluded as they are more likely to be work-from-home days with a lower volume of traffic. The travel time information was extracted from the Regional Integrated Transportation Information System (RITIS) database maintained by CATT Lab.

For interstates, travel time variability was measured by comparing the slow end travel times captured in the period (defined as the 90th percentile travel time) with the average travel time. For arterials, time variability was measured by comparing the slow travel times captured in the period (defined as the 90th percentile travel time) with the typical mid-range travel time (defined as 50th percentile travel time). The 50th percentile travel time was used instead of an average for arterials to minimize the impact of low end outliers on the average, an issue that did not occur with interstate travel times.

Four travel time variability metrics are presented for each project location:

- Morning peak period (7:00 - 9:00 a.m.) in eastbound/northbound direction
- Morning peak period (7:00 - 9:00 a.m.) in westbound/southbound direction
- Evening peak period (4:00 – 6:00 p.m.) in eastbound/northbound direction
- Evening peak period (4:00 – 6:00 p.m.) in westbound/southbound direction

A score of 1.0 indicates strong consistency in travel times on the facility in the presented period, with the mid-range and slow end travel times either being equal or very close to equal. A score between 1.4 and 1.8 indicates a moderate reliability issue with slow end travel times approximately 40 to 80 percent longer than the mid-range travel time. A score of 1.8 or higher indicates a high reliability issue with slow end travel times at least 80 percent longer than the mid-range travel time.

Economically disconnected area

The EDA benefit of each project was rated based on the volume of trips using the facility proposed for improvements that are coming to or from an EDA. EDAs in the CMAP region were identified in an analysis conducted in support of ON TO 2050.[9] To evaluate the potential EDA benefit of improvements on the transportation network, CMAP matched the EDAs with the corresponding transportation analysis zones in the regional travel demand model. This allowed the pairing of trips that are headed to and from EDA zones with the transportation facilities most likely to be used for those trips.

EDA use was measured in two ways:

- The volume of EDA-based passenger vehicle or transit trips using the facility on an average weekday, and
- EDA-based passenger vehicle or transit trips as a proportion of total passenger trips on the facility on an average weekday.

The average weekday EDA-based trip volume for candidate RCP facilities is 10,000, with 20 projects including an estimated volume that is at or above 10,000. The average proportion of EDA-based trips on a candidate RCP facility is 29 percent. 30 of the projects have an estimated EDA use proportion of 29 percent or higher.

Freight mobility

The freight benefit of each project was rated based on the existing level of freight use of the facility proposed for improvements.

For transit projects that are anticipated to impact freight rail movements, ratings were assigned based on the volume of freight that moves on the impacted rail lines and the overall anticipated impact on train delays on that line. The need for freight improvements was rated using a measurement scale like the one presented in the RTA's 2025 Capital Program Metrics. Projects were assigned one of four ratings based on a combination of the anticipated project impact and the level of need for that type of improvement at the proposed location. The ratings are as follows:

- A: High volume of freight rail traffic served by project that will directly improve reliability or travel times for freight traffic
- B: Moderate volume of freight rail traffic served by project that will directly improve reliability or travel times for freight traffic
- C: Maintains current freight service levels
- N/A: No impact on freight service

For roadway projects, freight use was measured in two ways:

- The highest average annual daily truck (single and multi-unit) volume identified on the facilities proposed for improvements, and
- Truck trips as a proportion of total trips on the facility.

Truck volume data was collected from the best available source for each location. Referenced sources included 2017-2023 IDOT counts, 2025 CMAP counts, Miovision and Inrix trip analytics data from RITIS, and one Cook County count. The average daily truck trip volume on candidate RCP facilities is 7,000 with 17 projects including an estimated volume that is at or above 7,000. The average proportion of truck trips on a candidate facility is 10 percent. Twenty-two of the projects have an estimated truck use proportion of 10 percent or higher.

9 Chicago Metropolitan Agency for Planning, "Local Strategy Maps - Economically disconnected and divested areas," accessed April 2, 2026, https://cmap.illinois.gov/regional-plan/resources/maps/economically-disconnected-and-divested-areas/.

Future impacts

The metrics in this section focus on capturing the anticipated impacts of each project on future travel conditions for an average weekday in the CMAP region. Data for future impacts was collected from CMAP's regional travel demand model, by comparing travel patterns with and without each proposed project included in the model network in model year 2050. Note that the metrics presented in this section are not in-depth forecasts, but rather, sketch level planning estimates intended to provide a general comparison of the proposed projects.

The following six subsections describe the evaluation metrics that were included in the scoring considerations under each future impact category.

Roadway mobility

To measure the benefits of a project on roadway mobility, CMAP measured impact on travel delay on the roadway network throughout the region. For the purposes of this measure, travel delays were defined as the difference between free flow travel times and congested travel times on all major roadway links included in the model network, summarized for all periods of the day.

The metrics show the total change in hours spent in congestion (driving below free flow speed) regionwide on an average weekday for three vehicle types: passenger vehicles, trucks, and vehicles coming to or from an EDA.

Most of the proposed projects result in a reduction in travel delays for vehicle traffic, with decreases ranging from 100 to 9,500 hours on an average weekday. A decrease of 9,500 hours represents a 1.6 percent decrease in weekday travel delays regionwide. Some of the proposed projects resulted in a small increase in travel delays of 100 to 200 hours, a change of less than 0.1 percent. This slight increase may be due to various factors, including new discretionary trips occurring because of reduced travel times for those specific trips and/or a shifting of traffic to other congested portions of the network that connect with the improved facility.

Transit mobility

To measure the benefits of a project on transit mobility, CMAP measured each project's impact on transit ridership and average transit travel speed regionwide. The volumes presented show the total change in transit trips regionwide on an average weekday. Note that this is not a measure of transit boardings — a single transit trip may include multiple transit boardings or transfers. Change in travel speed is shown as the total change in miles traveled per hour of travel on transit.

The proposed transit projects result in a range of impacts on transit ridership and travel speeds across the region. Increases in transit ridership range from a flat or minimal impact of 0 to a high of 22,700 additional transit trips on an average weekday, representing a 1.2 percent increase in transit trips regionwide. As noted above, these numbers do not represent a forecast of ridership on the new or improved facilities. These are regionwide numbers that include both increases in ridership on improved and connecting facilities and decreases due to diversion from alternate travel options and should be viewed as a sketch-level comparison of RCP candidates.

Several of the projects are expected to result in shorter travel times on transit in addition to increased frequency and capacity. Improvements in travel times regionwide range between 0.1 and 1.0 percent increases in miles travelled per hour of travel for individual projects.

Emissions

For the impact on emissions, CMAP calculated the impact of each project on four pollutants based on the measured change in vehicle travel volumes and speeds resulting from each project. The measured pollutants included:

- Greenhouse Gases (GHG)
- Nitrogen Oxides (NOx)

- Volatile Organic Compounds (VOCs)
- Particulate matter (PM 2.5)

Note that the CMAP region is currently a non-attainment area for the 8-hour ozone national ambient air quality standards. Ozone pollutants include NOx and VOCs.

The emissions impact of each project is presented as the percent change in each pollutant type across the modeled region on an average weekday. The impact of any one project on regional emissions is small, with the largest calculated impact being a 0.4 percent decrease in PM 2.5 emissions. The largest impact on ozone emissions is a 0.1 percent increase in emissions regionwide. Although the individual project impacts are small, multiple combined projects could potentially result in a substantial impact on the region's overall emissions. These combined impacts will be assessed for air quality conformity in spring 2026.

Infill support

In this category, projects were rated based on the degree to which they are anticipated to support growth in areas that are appropriate for infill development. Projects that are anticipated to carry a high proportion of trips headed to and from areas highly supportive of infill development receive the highest ratings, while projects that serve the lowest proportion of these trips receive the lowest ratings.

The infill supportive index, which was created in 2015 in support of ON TO 2050, highlights the parts of the region that are best able to support new, infill types of development. The index captures four major indicators of existing development and infrastructure: developed area, road infrastructure, housing density, and employment density. The index was also modified to exclude conservation areas. The index identifies each Census track in the region as being either highly supportive, partially supportive, or minimally supportive of infill development.[10]

The infill supportiveness metric is presented as a proportion of trips that use the facilities proposed for improvement that are headed to or from an infill supportive zone. The infill supportive trip metrics range from 23 to 99 percent infill supportive for the evaluated projects, with an average supportiveness of 69 percent.

Project cost

The last two evaluation categories looked at the cost to construct each project (capital cost) and the average annual cost to operate and maintain the project. For the purposes of comparison, all project costs are evaluated in 2025 dollars.[11]

Operation and maintenance costs are presented as the change in cost compared to conditions before the project is implemented. SOGR projects that do not change the volume of lane miles or transit infrastructure that will need to be maintained over the plan horizon have an annual operation and maintenance cost of zero dollars.

Several RCP candidates do not have a capital or annual operation and maintenance cost listed because they are in a conceptual stage and do not yet have a cost estimate available. These projects can neither be fully evaluated nor fiscally constrained until such information is available.

10 Chicago Metropolitan Agency for Planning, "ON TO 2050 Snapshot - Infill and TOD," 8, accessed April 2, 2026, https://cmap.illinois.gov/wp-content/uploads/dlm_uploads/Infill-and-TOD-Snapshot-Report.pdf.

11 Project costs are inflated to the anticipated expenditure year dollars as required for the purposes of the financial plan and fiscal constraint within the RTP.

Evaluation metrics

This section presents the metrics identified or calculated for each candidate RCP that is subject to evaluation. The metrics are presented in three sections:

1. Existing need metrics

    a. Roadway asset condition - Table 3.1

    b. Roadway safety tier ratings – Table 3.2

    c. Roadway reliability – Table 3.3

    d. Roadway freight use – Table 3.4

    e. Transit benefit scores for asset condition, safety, reliability, and freight – Table 3.5

    f. Economically disconnected area use – Table 3.6

2. Future impact metrics

    a. Change in average weekday travel delay – Tables 3.7

    b. Change in average weekday transit ridership and travel time – Table 3.8

    c. Emissions – Table 3.9

    d. Support for infill development – Table 3.10

3. Project cost metrics – Table 3.11

Additional information on the metrics included in the tables can be found in Supplement B.

Existing need metrics

Table 3.1: Roadway asset condition ratings

RCP ID	Project name	Bridge condition				Pavement condition			
		Poor condition		Fair condition		Poor condition		Fair condition	
		Area (sq ft)	%	Area (sq ft)	%	Length (mi)	%	Length (mi)	%
11174	I-94 Bishop Ford Reconstruction	140,900	37%	218,000	57%	-	-	9.4	57%
11175	I-90/I-94 Reconstruction from Hubbard to 31st	75,800	4%	1,619,400	93%	-	-	0.8	6%
11176	I-55 Reconstruction	57,500	3%	1,282,700	71%	0.1	<0.1%	14.2	21%
11177	I-90 Reconstruction	32,100	26%	47,200	38%	-	-	0.6	6%
11178	I-94 Reconstruction	23,800	9%	226,700	84%	0.1	<0.1%	0.5	2%
11179	I-90/I-94 Hubbard-Edens Reconstruction	40,400	3%	1,186,200	98%	0.3	2%	0.3	3%
11180	I-290/IL 53 Reconstruction	221,400	25%	580,400	66%	-	-	10.6	25%
11181	I-57 Reconstruction	206,500	22%	619,300	65%	0.1	<0.1%	0.5	1%
11182	I-355 at I-290 Bridge Replacement	-	-	-	-	-	-	-	0%
12120	North DuSable LSD Improvements	-	-	12,700	100%	-	-	0.2	5%
13104	I-190 O'Hare Access Improvements	57,400	55%	46,100	45%	-	-	0.1	1%
13106	I-55 from I-80 to Coal City Rd	-	-	-	-	-	-	0.1	1%
13108	I-55 Managed Lane from I-355 to I-90/I-94	57,500	4%	1,201,800	79%	-	-	13.6	34%
13110	I-55 from I-80 to US 52	-	-	-	-	-	-	0.2	5%
13111	I-55 from I-355 to IL 53	-	-	15,200	100%	-	-	0.5	9%
13113	I-80 from U.S. 30 to I-294	36,500	23%	122,200	77%	-	-	1.6	5%
13114	I-290 from Mannheim Rd to Racine Ave	192,400	49%	201,100	51%	0.2	1%	2.5	11%
13115	IL 60 from IL 176 to Townline Rd	-	-	-	-	-	-	0.1	<1%
13116	IL 173 from IL 59 to US 41	-	-	32,200	93%	-	-	4.6	40%
13117	McHenry Rd from IL 173 to IL 132	-	-	-	-	-	-	0.1	2%
13118	Algonquin Rd from IL 25 to IL 68	-	-	1,200	100%	-	-	3.6	62%
13119	Milwaukee Ave from Petite Lake Rd to IL 120	-	-	-	-	-	-	-	-
13121	IL 83 from 31st to 55th and 63rd to Central	-	-	-	-	-	-	0.2	6%
13122	US 6 from I-55 to US 52	-	-	-	-	-	-	2.5	31%
13123	US 30 from IL 47 to Albright Rd	-	-	5,300	100%	0.6	7%	3.2	40%
13124	IL 7/143rd from Will-Cook Rd to IL 7	-	-	-	-	-	-	1.1	18%

RCP ID	Project name	Bridge condition				Pavement condition			
		Poor condition		Fair condition		Poor condition		Fair condition	
		Area (sq ft)	%	Area (sq ft)	%	Length (mi)	%	Length (mi)	%
13125	IL 47 from I-90 to Plank Rd	-	-	-	-	-	-	0.1	1%
13126	IL 56 from IL 25 to IL 59	-	-	1,300	100%	-	-	1.0	15%
13127	IL 60 from IL 120 to IL 176	-	-	-	-	0.2	2%	0.1	2%
13128	US 45 from IL 60 to IL 22	-	-	-	-	-	-	0.3	4%
13129	Willow Rd from Des Plaines River to Waterview Dr	-	-	24,400	100%	0.4	27%	-	-
13130	IL 53 from IL 56 to Park Blvd	-	-	-	-	-	-	0.1	8%
13131	IL 22 from Quentin Rd to IL 83	-	-	-	-	-	-	0.5	11%
13132	US 41 from Quassey Ave to IL 176	-	-	4,400	100%	-	-	0.2	9%
13133	IL 137 from IL 83 to Petersen Rd	-	-	11,400	44%	0.2	5%	-	-
13134	IL 120 from Ashford Ln to US 45	-	-	-	-	-	-	1.2	24%
13135	US 45 from Rollins Rd to IL 120	-	-	-	-	-	-	-	-
13160	US 20 from Randall Rd to Shales Pkwy	64,300	37%	49,100	28%	-	-	1.9	20%
13167	IL 131 from Sunset Ave to Wadsworth Rd	-	-	-	-	-	-	0.2	5%
13168	IL 131 from Wadsworth Rd to Russell Rd	-	-	-	-	-	-	2.3	26%
13183	IL 47 from Charles Rd to Reed Rd	-	-	-	-	0.1	<0.1%	9.3	57%
13184	Willow Rd from I-294 to IL 43	-	-	18,800	100%	-	-	1.4	41%
43158	Wilmington-Peotone	-	-	-	-	0.4	5%	-	-
43159	Laraway from US 45 to Harlem	-	-	-	-	-	-	-	-
43208	Randall Rd from Sterns to Longmeadow	-	-	110,000	100%	-	-	0.1	1%
43211	Randall Rd at I-90	-	-	-	-	-	-	-	-
51172	South Tri-State Bridging Investment	-	-	78,200	75%	-	-	-	-
52212	I-290/IL 53/I-90 Interchange Improvement	-	-	156,000	100%	-	-	1.6	50%
62141	EAAC Intersection Improvements	-	-	-	-	-	-	0.1	10%
62142	DCCL Intersection Improvements	-	-	-	-	-	-	0.4	53%
62211	79th/Stony Island Intersection Improvements	-	-	42,400	100%	-	-	0.4	30%
83209	143rd from Wolf to US 45	-	-	-	-	-	-	0.1	4%
83210	143rd from Will-Cook Rd to Wolf	-	-	-	-	-	-	0.1	8%

Table 3.2: Roadway safety tier ratings

RCP ID	Project name	Roadway segments		Intersections	Vulnerable road users
		Highest rating	Proportion high rating	Highest rating	Highest rating
11174	I-94 Bishop Ford Reconstruction	4.0	2.8%		3.2
11175	I-90/I-94 Reconstruction from Hubbard to 31st	3.8	23.8%	3.3	5.3
11176	I-55 Reconstruction	5.0	1.9%		8.6
11177	I-90 Reconstruction	2.7			2.3
11178	I-94 Reconstruction	2.7			3.7
11179	I-90/I-94 Hubbard-Edens Reconstruction	5.0	2.4%		5.3
11180	I-290/IL 53 Reconstruction	2.3			1.3
11181	I-57 Reconstruction	4.8	12.6%		5.8
11182	I-355 at I-290 Bridge Replacement	1.5			
12120	North DuSable LSD Improvements	2.9			2.8
13104	I-190 O'Hare Access Improvements	0.6			1.0
13106	I-55 from I-80 to Coal City Rd	3.1	4.6%		0.1
13108	I-55 Managed Lane from I-355 to I-90/I-94	5.0	3.5%		3.3
13110	I-55 from I-80 to US 52	2.7		3.2	0.4
13111	I-55 from I-355 to IL 53	1.6			0.2
13113	I-80 from U.S. 30 to I-294	4.5	0.4%		1.6
13114	I-290 from Mannheim Rd to Racine Ave	5.0	30.3%		7.8
13115	IL 60 from IL 176 to Townline Rd	0.5		2.6	0.3
13116	IL 173 from IL 59 to US 41	1.0		1.5	0.6
13117	McHenry Rd from IL 173 to IL 132	0.8		0.1	0.2
13118	Algonquin Rd from IL 25 to IL 68	0.2		2.3	0.6
13119	Milwaukee Ave from Petite Lake Rd to IL 120	1.4		1.6	0.8
13121	IL 83 from 31st to 55th and 63rd to Central	0.9		0.1	0.9
13122	US 6 from I-55 to US 52	3.6	5.2%	2.1	1.0
13123	US 30 from IL 47 to Albright Rd	1.2		2.7	0.7
13124	IL 7/143rd from Will-Cook Rd to IL 7	0.7		0.9	0.6
13125	IL 47 from I-90 to Plank Rd	1.9		3.4	0.2
13126	IL 56 from IL 25 to IL 59	1.0		3.3	0.9
13127	IL 60 from IL 120 to IL 176	0.8		2.9	0.4
13128	US 45 from IL 60 to IL 22	0.6		1.9	0.6
13129	Willow Rd from Des Plaines River to Waterview Dr	0.6			0.4
13130	IL 53 from IL 56 to Park Blvd	0.5		1.2	0.3
13131	IL 22 from Quentin Rd to IL 83	0.3		1.1	
13132	US 41 from Quassey Ave to IL 176	0.9			0.4
13133	IL 137 from IL 83 to Petersen Rd	0.6		0.5	0.4

RCP ID	Project name	Roadway segments		Intersections	Vulnerable road users
		Highest rating	Proportion high rating	Highest rating	Highest rating
13134	IL 120 from Ashford Ln to US 45	1.4		0.9	0.4
13135	US 45 from Rollins Rd to IL 120	1.6		0.7	
13160	US 20 from Randall Rd to Shales Pkwy	2.0		2.2	1.2
13167	IL 131 from Sunset Ave to Wadsworth Rd	2.1		2.0	0.6
13168	IL 131 from Wadsworth Rd to Russell Rd	2.1		3.9	0.4
13183	IL 47 from Charles Rd to Reed Rd	1.4		3.9	1.6
13184	Willow Rd from I-294 to IL 43	1.9		0.2	1.0
43158	Wilmington-Peotone	2.7		2.0	0.3
43159	Laraway from US 45 to Harlem	1.4		2.3	
43208	Randall Rd from Sterns to Longmeadow	3.6	10.7%	1.9	0.3
43211	Randall Rd at I-90	2.2		1.0	0.4
51172	South Tri-State Bridging Investment				
52212	I-290/IL 53/I-90 Interchange Improvement	1.8			
62141	EAAC Intersection Improvements	3.2	24%	0.4	4.6
62142	DCCL Intersection Improvements	2.7		1.0	2.3
62211	79th/Stony Island Intersection Improvement	5.0	100%	5.0	3.3
83209	143rd from Wolf to US 45	1.4			0.7
83210	143rd from Will-Cook Rd to Wolf				0.6

Table 3.3: Roadway level of travel time reliability, peak morning and evening periods

RCP ID	Project name	Peak morning period		Peak evening period	
		East/ northbound	West/ southbound	East/ northbound	West/ southbound
12120	North DuSable LSD Improvements	1.54	1.84	2.22	1.34
13104	I-190 O'Hare Access Improvements	1.66	1.14	1.83	2.43
13106	I-55 from I-80 to Coal City Rd	1.21	1.10	1.24	1.12
13108	I-55 Managed Lane from I-355 to I-90/I-94	1.53	1.92	1.63	2.58
13110	I-55 from I-80 to US 52	1.07	1.05	1.07	1.30
13111	I-55 from I-355 to IL 53	1.97	1.07	1.57	1.51
13113	I-80 from U.S. 30 to I-294	1.24	1.13	1.20	1.64
13114	I-290 from Mannheim Rd to Racine Ave	1.73	1.00	1.54	1.00
13115	IL 60 from IL 176 to Townline Rd	1.37	1.65	1.51	1.64
13116	IL 173 from IL 59 to US 41	1.23	1.11	1.11	1.28
13117	McHenry Rd from IL 173 to IL 132	1.12	1.23	1.12	1.14
13118	Algonquin Rd from IL 25 to IL 68	1.62	1.50	1.15	2.07
13119	Milwaukee Ave from Petite Lake Rd to IL 120	1.47	1.36	1.37	1.53

RCP ID	Project name	Peak morning period		Peak evening period	
		East/ northbound	West/ southbound	East/ northbound	West/ southbound
13121	IL 83 from 31st to 55th and 63rd to Central	1.82	1.31	1.19	1.29
13122	US 6 from I-55 to US 52	1.68	1.20	1.66	1.22
13123	US 30 from IL 47 to Albright Rd	1.63	1.11	1.13	1.50
13124	IL 7/143rd from Will-Cook Rd to IL 7	-	1.09	-	1.13
13125	IL 47 from I-90 to Plank Rd	1.30	1.12	1.16	1.39
13126	IL 56 from IL 25 to IL 59	1.35	1.15	1.13	1.28
13127	IL 60 from IL 120 to IL 176	1.74	1.32	1.33	1.41
13128	US 45 from IL 60 to IL 22	1.51	1.24	1.38	1.29
13129	Willow Rd from Des Plaines River to Waterview Dr	2.35	1.22	1.99	1.17
13130	IL 53 from IL 56 to Park Blvd	1.22	1.13	1.22	1.20
13131	IL 22 from Quentin Rd to IL 83	1.74	1.12	1.11	1.55
13132	US 41 from Quassey Ave to IL 176	1.06	1.10	1.08	1.08
13133	IL 137 from IL 83 to Petersen Rd	1.34	1.23	1.23	1.24
13134	IL 120 from Ashford Ln to US 45	1.52	1.50	1.31	1.52
13135	US 45 from Rollins Rd to IL 120	1.12	1.11	1.40	1.08
13160	US 20 from Randall Rd to Shales Pkwy	1.48	1.38	1.29	1.46
13167	IL 131 from Sunset Ave to Wadsworth Rd	1.21	1.28	1.16	1.27
13168	IL 131 from Wadsworth Rd to Russell Rd	1.18	1.17	1.23	1.15
13183	IL 47 from Charles Rd to Reed Rd	1.14	1.15	1.25	1.19
13184	Willow Rd from I-294 to IL 43	1.20	1.18	1.10	1.15
43158	Wilmington-Peotone	1.09	1.12	1.09	1.21
43159	Laraway from US 45 to Harlem	1.12	1.14	1.10	1.29
43208	Randall Rd from Sterns to Longmeadow	2.30	1.84	1.98	1.97
43211	Randall Rd at I-90	1.60	1.43	1.46	1.57
52212	I-290/IL 53/I-90 Interchange Improvements	1.06	1.81	2.58	1.81
62141	EAAC Intersection Improvements	1.85	1.80	1.85	1.63
62142	DCCL Intersection Improvements	2.02	1.72	1.87	1.82
62211	79th/Stony Island Intersection Improvements	1.75	-	1.74	-
83209	143rd - Wolf to US 45	1.17	1.18	1.08	1.27
83210	143rd - Will-Cook Rd to Wolf	1.11	1.17	1.17	1.22

Table 3.4: Average annual daily roadway freight use

RCP ID	Project name	Average annual daily truck volume	Truck % of average daily traffic
11174	I-94 Bishop Ford Reconstruction	13,900	6%
11175	I-90/I-94 Reconstruction from Hubbard to 31st	21,500	8%
11176	I-55 Reconstruction	20,600	9%
11177	I-90 Reconstruction	6,300	3%
11178	I-94 Reconstruction	8,200	6%
11179	I-90/I-94 Hubbard-Edens Reconstruction	16,300	7%
11180	I-290/IL 53 Reconstruction	21,000	18%
11181	I-57 Reconstruction	12,500	13%
11182	I-355 at I-290 Bridge Replacement	19,400	22%
12120	North DuSable LSD Improvements	n/a	n/a
13104	I-190 O'Hare Access Improvements	3,800	3%
13106	I-55 from I-80 to Coal City Rd	17,100	24%
13108	I-55 Managed Lane from I-355 to I-90/I-94	20,600	15%
13110	I-55 from I-80 to US 52	16,000	21%
13111	I-55 from I-355 to IL 53	19,200	15%
13113	I-80 from U.S. 30 to I-294	22,800	18%
13114	I-290 from Mannheim Rd to Racine Ave	11,600	8%
13115	IL 60 from IL 176 to Townline Rd	1,000	7%
13116	IL 173 from IL 59 to US 41	1,300	8%
13117	McHenry Rd from IL 173 to IL 132	1,500	9%
13118	Algonquin Rd from IL 25 to IL 68	1,300	6%
13119	Milwaukee Ave from Petite Lake Rd to IL 120	1,700	9%
13121	IL 83 from 31st to 55th and 63rd to Central	4,500	11%
13122	US 6 from I-55 to US 52	2,200	21%
13123	US 30 from IL 47 to Albright Rd	1,800	9%
13124	IL 7/143rd from Will-Cook Rd to IL 7	700	4%
13125	IL 47 from I-90 to Plank Rd	1,200	6%
13126	IL 56 from IL 25 to IL 59	1,700	11%
13127	IL 60 from IL 120 to IL 176	1,600	12%
13128	US 45 from IL 60 to IL 22	800	3%
13129	Willow Rd from Des Plaines River to Waterview Dr	4,000	22%
13130	IL 53 from IL 56 to Park Blvd	500	2%
13131	IL 22 from Quentin Rd to IL 83	900	6%
13132	US 41 from Quassey Ave to IL 176	3,800	11%
13133	IL 137 from IL 83 to Petersen Rd	1,200	21%
13134	IL 120 from Ashford Ln to US 45	1,200	7%
13135	US 45 from Rollins Rd to IL 120	1,000	5%

RCP ID	Project name	Average annual daily truck volume	Truck % of average daily traffic
13160	US 20 from Randall Rd to Shales Pkwy	5,000	11%
13167	IL 131 from Sunset Ave to Wadsworth Rd	1,300	7%
13168	IL 131 from Wadsworth Rd to Russell Rd	1,000	7%
13183	IL 47 from Charles Rd to Reed Rd	1,400	7%
13184	Willow Rd from I-294 to IL 43	4,900	15%
43158	Wilmington-Peotone	1,900	30%
43159	Laraway from US 45 to Harlem	800	6%
43208	Randall Rd from Sterns to Longmeadow	2,700	8%
43211	Randall Rd at I-90	13,900	14%
51172	South Tri-State Bridging Investment	35,000	19%
52212	I-290/IL 53/I-90 Interchange Improvements	15,300	13%
62141	EAAC Intersection Improvements	2,100	11%
62142	DCCL Intersection Improvements	800	4%
62211	79th/Stony Island Intersection Improvements	500	5%
83209	143rd from Wolf to US 45	500	1%
83210	143rd from Will-Cook Rd to Wolf	300	2%

Table 3.5: Transit benefit scores for safety, asset condition, reliability, and freight

RCP ID	Project name	Asset condition rating	Safety	Reliability	Freight
12139	75th Street Corridor Improvement Project	B	B	A	A
21189	Brown Line Modernization	B	A	A	n/a
21190	Green Line Modernization	B	A	A	n/a
22185	Forest Park Reconstruction	A	A	A	n/a
22201	Ashland BRT	n/a	A	A	n/a
22202	Western Ave Bus Priority	n/a	A	A	n/a
22203	Pulaski Rd Bus Priority	n/a	A	A	n/a
22204	Garfield Blvd Bus Priority	n/a	A	A	n/a
22205	Fullerton Ave Bus Priority	n/a	A	A	n/a
22206	Cottage Grove Ave Bus Priority	n/a	A	A	n/a
23186	Blue Line Core Capacity	A	B	A	n/a
23187	Brown Line Core Capacity	A	B	A	n/a
23188	RPM Next Phases	A	B	A	n/a
33146	ME Line Improvement	A	A	B	C
33147	RI Line Improvement	B	A	B	B
33148	SWS Line Improvement	B	C	A	B
33149	HC Line Improvement	C	C	A	A
33150	BNSF Line Improvement	C	C	B	A

RCP ID	Project name	Asset condition rating	Safety	Reliability	Freight
33151	UPW Improvement	C	C	B	A
33152	MDW Line Improvement	C	C	B	A
33153	UPNW Improve and Extend	B	B	C	B
33154	MDN Line Improvement	C	C	B	A
33155	O'Hare Express Line and NCS Line Improvements	A	C	B	A
33156	UPN Line Improvement	B	C	B	C
33157	A2 Crossing	A	B	A	C
62140	South Lakefront Busway	n/a	A	A	n/a
74161	Pulse Golf Rd	n/a	A	A	n/a
74163	Pulse Harlem Ave	n/a	A	A	n/a
74164	Pulse Cermak Rd	n/a	A	A	n/a
74166	I-294 Express Bus Stations	n/a	A	A	n/a
74213	Pulse Touhy Ave	n/a	A	A	n/a
74214	Pulse North Ave	n/a	A	A	n/a
74215	Pulse Western Ave	n/a	A	A	n/a
74216	Pulse South Halsted Extension	n/a	A	A	n/a

Table 3.6: Average weekday economically disconnected area (EDA) trip use

RCP ID	Project name	Average weekday EDA volume	EDA % of average weekday passenger traffic
11174	I-94 Bishop Ford Reconstruction	19,900	40%
11175	I-90/I-94 Reconstruction from Hubbard to 31st	28,900	20%
11176	I-55 Reconstruction	44,700	19%
11177	I-90 Reconstruction	13,000	12%
11178	I-94 Reconstruction	5,000	10%
11179	I-90/I-94 Hubbard-Edens Reconstruction	19,700	19%
11180	I-290/IL 53 Reconstruction	16,300	17%
11181	I-57 Reconstruction	24,900	19%
11182	I-355 at I-290 Bridge Replacement	10,600	18%
12120	North DuSable LSD Improvements	17,000	21%
13104	I-190 O'Hare Access Improvements	10,000	7%
13106	I-55 from I-80 to Coal City Rd	400	<1%
13108	I-55 Managed Lane from I-355 to I-90/I-94	35,600	19%
13110	I-55 from I-80 to US 52	5,000	6%
13111	I-55 from I-355 to IL 53	5,100	9%
13113	I-80 from U.S. 30 to I-294	9,300	12%
13114	I-290 from Mannheim Rd to Racine Ave	52,600	34%
13115	IL 60 from IL 176 to Townline Rd	1,300	9%

RCP ID	Project name	Average weekday EDA volume	EDA % of average weekday passenger traffic
13116	IL 173 from IL 59 to US 41	2,200	5%
13117	McHenry Rd from IL 173 to IL 132	1,000	5%
13118	Algonquin Rd from IL 25 to IL 68	4,800	17%
13119	Milwaukee Ave from Petite Lake Rd to IL 120	7,800	14%
13121	IL 83 from 31st to 55th and 63rd to Central	11,900	8%
13122	US 6 from I-55 to US 52	10,300	13%
13123	US 30 from IL 47 to Albright Rd	2,300	7%
13124	IL 7/143rd from Will-Cook Rd to IL 7	1,400	7%
13125	IL 47 from I-90 to Plank Rd	800	4%
13126	IL 56 from IL 25 to IL 59	5,300	16%
13127	IL 60 from IL 120 to IL 176	2,800	14%
13128	US 45 from IL 60 to IL 22	4,000	9%
13129	Willow Rd from Des Plaines River to Waterview Dr	6,300	20%
13130	IL 53 from IL 56 to Park Blvd	3,300	10%
13131	IL 22 from Quentin Rd to IL 83	2,100	7%
13132	US 41 from Quassey Ave to IL 176	4,700	12%
13133	IL 137 from IL 83 to Petersen Rd	1,900	14%
13134	IL 120 from Ashford Ln to US 45	4,400	16%
13135	US 45 from Rollins Rd to IL 120	3,000	12%
13160	US 20 from Randall Rd to Shales Pkwy	10,500	16%
13167	IL 131 from Sunset Ave to Wadsworth Rd	3,300	22%
13168	IL 131 from Wadsworth Rd to Russell Rd	1,300	8%
13183	IL 47 from Charles Rd to Reed Rd	800	3%
13184	Willow Rd from I-294 to IL 43	6,800	8%
21189	Brown Line Modernization	30,700	15%
21190	Green Line Modernization	64,000	33%
22185	Forest Park Reconstruction	77,600	19%
22201	Ashland BRT	27,700	48%
22202	Western Ave Bus Priority	50,600	48%
22203	Pulaski Rd Bus Priority	67,000	66%
22204	Garfield Blvd Bus Priority	26,900	56%
22205	Fullerton Ave Bus Priority	20,500	45%
22206	Cottage Grove Ave Bus Priority	15,000	53%
23186	Blue Line Core Capacity	81,900	19%
23187	Brown Line Core Capacity	30,700	15%
23188	RPM Next Phases	7,700	12%
33146	ME Line Improvement	30,400	38%
33147	RI Line Improvement	30,000	26%

RCP ID	Project name	Average weekday EDA volume	EDA % of average weekday passenger traffic
33148	SWS Line Improvement	5,200	14%
33149	HC Line Improvement	1,200	15%
33150	BNSF Line Improvement	20,700	20%
33151	UPW Improvement	12,900	22%
33152	MDW Line Improvement	11,800	21%
33154	MDN Line Improvement	11,400	22%
33155	O'Hare Express Line and NCS Line Improvements	3,700	12%
33156	UPN Line Improvement	14,100	11%
33157	A2 Crossing	36,200	21%
43158	Wilmington-Peotone	100	4%
43159	Laraway from US 45 to Harlem	700	13%
43208	Randall Rd from Sterns to Longmeadow	8,100	13%
43211	Randall Rd at I-90	6,800	23%
52212	I-290/IL 53/I-90 Interchange Improvement	100,900	25%
62140	South Lakefront Busway	20,900	25%
62141	EAAC Intersection Improvements	4,500	17%
62142	DCCL Intersection Improvements	4,100	19%
62211	79th/Stony Island Intersection Improvements	6,800	63%
74161	Pulse Golf Rd	4,300	28%
74163	Pulse Harlem Ave	2,800	42%
74164	Pulse Cermak Rd	1,700	15%
74166	I-294 Express Bus Stations	4,600	46%
74213	Pulse Touhy Ave	700	14%
74214	Pulse North Ave	1,500	31%
74215	Pulse Western Ave	2,900	48%
74216	Pulse South Halsted Extension	3,500	40%
83209	143rd from Wolf to US 45	3,000	8%
83210	143rd from Will-Cook Rd to Wolf	1,100	7%

Future impact metrics

Table 3.7: Change in average weekday travel delays by vehicle type, regionwide

RCP ID	Project name[12]	Change in regional travel delay (hours)[13]			% change in regional travel delay		
		Passenger vehicle trips	Truck trips	EDA trips	Passenger vehicle trips	Truck trips	EDA trips
12120	North DuSable LSD Improvements	(3,100)	(500)	(200)	-0.5%	-0.3%	-0.2%
13104	I-190 O'Hare Access Improvements	(7,900)	(1,000)	(300)	-1.4%	-0.5%	-0.3%
13106	I-55 from I-80 to Coal City Rd	(1,600)	(500)	(200)	-0.3%	-0.3%	-0.2%
13108	I-55 Managed Lane from I-355 to I-90/I-94	(9,500)	(1,800)	(2,400)	-1.6%	-0.9%	-2.4%
13110	I-55 from I-80 to US 52	(500)	-	-	-0.1%	-	-
13111	I-55 from I-355 to IL 53	(600)	(200)	(200)	-0.1%	-0.1%	-0.2%
13113	I-80 from U.S. 30 to I-294	(1,500)	(400)	(300)	-0.3%	-0.2%	-0.3%
13114	I-290 from Mannheim Rd to Racine Ave	(4,800)	(1,300)	(1,100)	-0.8%	-0.7%	-1.1%
13115	IL 60 from IL 176 to Townline Rd	(600)	(100)	(100)	-0.1%	-0.1%	-0.1%
13116	IL 173 from IL 59 to US 41	-	100	-	-	0.1%	-
13117	McHenry Rd from IL 173 to IL 132	(500)	(100)	-	-0.1%	-0.1%	-
13118	Algonquin Rd from IL 25 to IL 68	(1,100)	(300)	(200)	-0.2%	-0.2%	-0.2%
13119	Milwaukee Ave from Petite Lake Rd to IL 120	(800)	(100)	(200)	-0.1%	-0.1%	-0.2%
13121	IL 83 from 31st to 55th and 63rd to Central	(300)	(200)	(100)	-0.1%	-0.1%	-0.1%
13122	US 6 from I-55 to US 52	(300)	-	(100)	-0.1%	-	-0.1%
13123	US 30 from IL 47 to Albright Rd	(200)	-	(200)	<0.1%	-	-0.2%
13124	IL 7/143rd from Will-Cook Rd to IL 7	(300)	-	-	-0.1%	-	-
13125	IL 47 from I-90 to Plank Rd	(600)	(200)	(100)	-0.1%	-0.1%	-0.1%
13126	IL 56 from IL 25 to IL 59	(1,200)	(300)	(100)	-0.2%	-0.2%	-0.1%
13127	IL 60 from IL 120 to IL 176	(200)	-	(100)	<0.1%	-	-0.1%
13128	US 45 from IL 60 to IL 22	(400)	(100)	(200)	-0.1%	-0.1%	-0.2%
13129	Willow Rd from Des Plaines River to Waterview Dr	(300)	(100)	-	-0.1%	-0.1%	-
13130	IL 53 from IL 56 to Park Blvd	100	100	(100)	<0.1%	0.1%	-0.1%
13131	IL 22 from Quentin Rd to IL 83	(500)	(100)	(100)	-0.1%	-0.1%	-0.1%
13132	US 41 from Quassey Ave to IL 176	(300)	-	(100)	-0.1%	-	-0.1%
13133	IL 137 from IL 83 to Petersen Rd	(700)	(100)	(100)	-0.1%	-0.1%	-0.1%
13134	IL 120 from Ashford Ln to US 45	(400)	(100)	-	-0.1%	-0.1%	-

12 Projects noted as visionary are projects that are in the early planning stages and thus, still conceptual in nature with pending analysis of alternatives.

13 Numbers in parentheses represent a decrease in travel delays on the regional roadway network.

RCP ID	Project name	Change in regional travel delay (hours)			% change in regional travel delay		
		Passenger vehicle trips	Truck trips	EDA trips	Passenger vehicle trips	Truck trips	EDA trips
13135	US 45 from Rollins Rd to IL 120	(700)	(200)	(100)	-0.1%	-0.1%	-0.1%
13160	US 20 from Randall Rd to Shales Pkwy	(300)	-	(100)	-0.1%	-	-0.1%
13167	IL 131 from Sunset Ave to Wadsworth Rd	(300)	-	(100)	-0.1%	-	-0.1%
13168	IL 131 from Wadsworth Rd to Russell Rd	(700)	(100)	(100)	-0.1%	-0.1%	-0.1%
13183	IL 47 from Charles Rd to Reed Rd	100	(100)	100	<0.1%	-0.1%	0.1%
13184	Willow Rd from I-294 to IL 43	200	100	100	<0.1%	0.1%	0.1%
14109	I-55 from Weber Rd to US 30	(700)	(100)	(100)	-0.1%	-0.1%	-0.1%
14136	IL 83 from IL 120 to IL 137 and at Atkinson	(400)	-	(100)	-0.1%	-	-0.1%
14137	IL 120 Bypass	(2,500)	(500)	(400)	-0.4%	-0.3%	-0.4%
14138	I-57 at Eagle Lake Rd	(300)	-	(200)	-0.1%	-	-0.2%
21189	Brown Line Modernization	-	-	-	-	-	-
21190	Green Line Modernization	-	-	-	-	-	-
22185	Forest Park Reconstruction	(400)	-	(100)	-0.1%	-	-0.1%
22201	Ashland BRT	(2,500)	(300)	(500)	-0.4%	-0.2%	-0.5%
22202	Western Ave Bus Priority	(2,000)	(200)	(600)	-0.3%	-0.1%	-0.6%
22203	Pulaski Rd Bus Priority	(2,600)	(400)	(600)	-0.4%	-0.2%	-0.6%
22204	Garfield Blvd Bus Priority	(400)	-	-	-0.1%	-	-
22205	Fullerton Ave Bus Priority	(600)	(100)	(200)	-0.1%	-0.1%	-0.2%
22206	Cottage Grove Ave Bus Priority	(500)	(100)	(200)	-0.1%	-0.1%	-0.2%
23186	Blue Line Core Capacity	(900)	(100)	(200)	-0.2%	-0.1%	-0.2%
23187	Brown Line Core Capacity	(2,500)	(400)	(500)	-0.4%	-0.2%	-0.5%
23188	RPM Next Phases	(400)	-	-	-0.1%	-	-
24191	Circle Line - visionary	(1,700)	(200)	(200)	-0.3%	-0.1%	-0.2%
24192	Mid-City Transitway - visionary	(2,000)	(300)	(400)	-0.3%	-0.1%	-0.2%
24193	Blue Line Extension - visionary	(300)	(100)	(200)	-0.1%	-0.1%	-0.2%
24194	Green Line Extension to Jackson Park - visionary	(400)	-	(100)	-0.1%	-	-0.1%
24195	Orange Line Extension - visionary	(600)	(100)	(300)	-0.1%	-0.1%	-0.3%
24196	Yellow Line Extension - visionary	100	-	-	<0.1%	-	-
24197	West Loop Subway (Red Line)- visionary	(2,400)	(200)	-	-0.4%	-0.1%	-
24198	Green Line Extension to Midway - visionary	(2,200)	(200)	(100)	-0.4%	-0.1%	-
24199	Brown Line Extension - visionary	(2,700)	(300)	(200)	-0.4%	-0.1%	-
24200	Clinton Street Subway - visionary	(1,500)	(200)	(100)	-0.3%	-0.1%	-0.1%
33146	ME Line Improvement	(1,400)	(100)	(100)	-0.2%	-0.1%	-0.1%
33147	RI Line Improvement	(3,000)	(300)	(300)	-0.5%	-0.2%	-0.3%

RCP ID	Project name	Change in regional travel delay (hours)			% change in regional travel delay		
		Passenger vehicle trips	Truck trips	EDA trips	Passenger vehicle trips	Truck trips	EDA trips
33148	SWS Line Improvement	(300)	-	-	-0.1%	-	-
33149	HC Line Improvement	(200)	-	-	<0.1%	-	-
33150	BNSF Line Improvement	(2,900)	(300)	(200)	-0.5%	-0.2%	-0.2%
33151	UPW Improvement	(1,500)	(100)	(200)	-0.3%	-0.1%	-0.2%
33152	MDW Line Improvement	(800)	(100)	-	-0.1%	-0.1%	-
33153	UPNW Improve and Extend	(1,600)	(200)	(100)	-0.3%	-0.1%	-0.1%
33154	MDN Line Improvement	(600)	(100)	(200)	-0.1%	-0.1%	-0.2%
33155	O'Hare Express and NCS Line Improvements	100	-	-	<0.1%	-	-
33156	UPN Line Improvement	(1,500)	(100)	(200)	-0.3%	-0.1%	-0.2%
33157	A2 Crossing	(2,700)	(400)	(500)	-0.5%	-0.2%	-0.5%
43158	Wilmington-Peotone	(1,800)	(100)	(100)	-0.3%	-0.1%	-0.1%
43159	Laraway from US 45 to Harlem	(400)	(300)	(100)	-0.1%	-0.2%	-0.1%
43208	Randall Rd from Sterns to Longmeadow	(1,000)	(300)	(200)	-0.2%	-0.2%	-0.2%
43211	Randall Rd at I-90	(1,100)	(100)	(100)	-0.2%	-0.1%	-0.1%
44101	Northern McHenry Bypass	(300)	-	-	-0.1%	-	-
44102	Northern Algonquin Bypass	100	-	(100)	<0.1%	-	-0.1%
44217	MDN Extension	(300)	-	(100)	-0.1%	-	-0.1%
44218	MDW Extension	(300)	-	(100)	-0.1%	-	-0.1%
52212	I-290/IL 53/I-90 Interchange Improvements	(1,500)	-	(100)	-0.3%	-	-0.1%
54103	IL 390 Interchange to County Farm Rd	(800)	(100)	(300)	-0.1%	-0.1%	-0.3%
54105	I-88 York Rd Interchange Expansion	(200)	(200)	100	<0.1%	-0.1%	0.1%
62140	South Lakefront Busway	(1,900)	(100)	(100)	-0.3%	-0.1%	-0.1%
62141	EAAC Intersection Improvements	(500)	(100)	(200)	-0.1%	-0.1%	-0.2%
62142	DCCL Intersection Improvements	-	-	-	-	-	-
62211	79th/Stony Island Intersection Improvements	-	-	-	-	-	-
64143	AOK Station Metra	200	100	100	<0.1%	0.1%	0.1%
64144	Madison Station - Pink Line	(700)	(100)	(200)	-0.1%	-0.1%	-0.2%
64145	Division Station - Brown Line	-	-	-	-	-	-
74161	Pulse Golf Rd	(400)	-	(100)	-0.1%	-	-0.1%
74163	Pulse Harlem Ave	-	-	100	-	-	0.1%
74164	Pulse Cermak Rd	(300)	-	(100)	-0.1%	-	-0.1%
74166	I-294 Express Bus Stations	(3,200)	(200)	(200)	-0.5%	-0.1%	-0.2%
74213	Pulse Touhy Ave	-	-	(100)	-	-	-0.1%

RCP ID	Project name	Change in regional travel delay (hours)			% change in regional travel delay		
		Passenger vehicle trips	Truck trips	EDA trips	Passenger vehicle trips	Truck trips	EDA trips
74214	Pulse North Ave	(500)	(100)	(200)	-0.1%	-0.1%	-0.2%
74215	Pulse Western Ave	200	100	-	<0.1%	0.1%	-
74216	Pulse South Halsted Extension	-	-	-	-	-	-
83209	143rd from Wolf to US 45	(100)	-	-	<0.1%	-	-
83210	143rd from Will-Cook Rd to Wolf	(600)	-	(100)	-0.1%	-	-0.1%

Table 3.8: Change in average weekday transit trips and change in transit travel speed, regionwide

RCP ID	Project name[14]	Change in transit trips	% change in transit trips, regionwide	% change in transit travel speed
21189	Brown Line Modernization	-	-	-
21190	Green Line Modernization	-	-	-
22185	Forest Park Reconstruction	1,900	0.1%	0.1%
22201	Ashland BRT	13,600	0.7%	0.4%
22202	Western Ave Bus Priority	22,700	1.2%	0.7%
22203	Pulaski Rd Bus Priority	17,700	0.9%	0.7%
22204	Garfield Blvd Bus Priority	3,200	0.2%	0.2%
22205	Fullerton Ave Bus Priority	4,600	0.2%	0.2%
22206	Cottage Grove Ave Bus Priority	2,600	0.1%	0.1%
23186	Blue Line Core Capacity	6,500	0.3%	1.0%
23187	Brown Line Core Capacity	1,600	0.1%	0.3%
23188	RPM Next Phases	-	-	-
24191	Circle Line - visionary	8,800	0.5%	0.1%
24192	Mid-City Transitway - visionary	11,000	0.6%	0.6%
24193	Blue Line Extension - visionary	700	<0.1%	-0.1%
24194	Green Line Extension to Jackson Park- visionary	3,400	0.2%	-
24195	Orange Line Extension - visionary	700	<0.1%	0.1%
24196	Yellow Line Extension - visionary	2,300	0.1%	-
24197	West Loop Subway (Red Line)- visionary	6,500	0.3%	0.4%
24198	Green Line Extension to Midway - visionary	4,900	0.3%	-0.1%
24199	Brown Line Extension - visionary	4,700	0.2%	-0.1%
24200	Clinton Street Subway - visionary	7,300	0.4%	<0.1%
33146	ME Line Improvement	7,000	0.4%	0.3%
33147	RI Line Improvement	8,500	0.4%	0.4%

14 Projects noted as visionary are projects that are in the early planning stages and thus, still conceptual in nature with pending analysis of alternatives.

RCP ID	Project name	Change in transit trips	% change in transit trips, regionwide	% change in transit travel speed
33148	SWS Line Improvement	2,900	0.2%	0.0%
33149	HC Line Improvement	-	-	-
33150	BNSF Line Improvement	9,000	0.5%	0.2%
33151	UPW Improvement	7,500	0.4%	0.3%
33152	MDW Line Improvement	5,100	0.3%	0.1%
33153	UPNW Improve and Extend	9,600	0.5%	0.5%
33154	MDN Line Improvement	2,100	0.1%	0.1%
33155	O'Hare Express Line and NCS Line Improvements	800	<0.1%	0.1%
33156	UPN Line Improvement	7,400	0.4%	0.4%
33157	A2 Crossing	7,900	0.4%	0.4%
44217	MDN Extension	2,200	0.1%	-
44218	MDW Extension	2,200	0.1%	-
62140	South Lakefront Busway	1,200	0.1%	0.4%
64143	AOK Station Metra	1,600	0.1%	-0.2%
64144	Madison Station - Pink Line	1,500	0.1%	-
64145	Division Station - Brown Line	300	<0.1%	-0.5%
74161	Pulse Golf Rd	1,700	0.1%	0.0%
74163	Pulse Harlem Ave	-	-	-0.1%
74164	Pulse Cermak Rd	2,000	0.1%	-0.1%
74166	I-294 Express Bus Stations	7,300	0.4%	0.2%
74213	Pulse Touhy Ave	1,400	0.1%	-0.1%
74214	Pulse North Ave	1,300	0.1%	-0.1%
74215	Pulse Western Ave	2,000	0.1%	0.0%
74216	Pulse South Halsted Extension	500	<0.1%	0.0%

Table 3.9: Average weekday change in emissions, regionwide

RCP ID	Project name[15]	% change in emissions[16]			
		GHG	NOx	VOC	PM 2.5
12120	North DuSable LSD Improvements	-	-	-0.1%	-0.1%
13104	I-190 O'Hare Access Improvements	-	-	-0.1%	-0.1%
13106	I-55 from I-80 to Coal City Rd	-	-	-	-0.1%
13108	I-55 Managed Lane from I-355 to I-90/I-94	0.1%	-	-0.1%	-0.4%
13110	I-55 from I-80 to US 52	-	-	-	-
13111	I-55 from I-355 to IL 53	-	-	-	-

15 Projects noted as visionary are projects that are in the early planning stages and thus, still conceptual in nature with pending analysis of alternatives.

16 Impacts of less than 0.1 percent are indicated as "-".

RCP ID	Project name	% change in emissions[16]			
		GHG	NOx	VOC	PM 2.5
13113	I-80 from U.S. 30 to I-294	-0.1%	-0.1%	-0.1%	-0.1%
13114	I-290 from Mannheim Rd to Racine Ave	0.1%	-	-	- 0.1%
13115	IL 60 from IL 176 to Townline Rd	-	-	-	-
13116	IL 173 from IL 59 to US 41	-	-	-	-
13117	McHenry Rd from IL 173 to IL 132	-	-0.1%	-	-
13118	Algonquin Rd from IL 25 to IL 68	-	-	-	-
13119	Milwaukee Ave from Petite Lake Rd to IL 120	-	-0.1%	-	-
13121	IL 83 from 31st to 55th and 63rd to Central	-	0.1%	-	-
13122	US 6 from I-55 to US 52	-	-	-	-
13123	US 30 from IL 47 to Albright Rd	-	-	-	-
13124	IL 7/143rd from Will-Cook Rd to IL 7	-	-	-	-
13125	IL 47 from I-90 to Plank Rd	-	-	-	-
13126	IL 56 from IL 25 to IL 59	-	-	-	-
13127	IL 60 from IL 120 to IL 176	-	-	-	-
13128	US 45 from IL 60 to IL 22	-	-	-	-
13129	Willow Rd from Des Plaines River to Waterview Dr	-	-	-	-
13130	IL 53 from IL 56 to Park Blvd	-	-	-	
13131	IL 22 from Quentin Rd to IL 83	-	-	-	-
13132	US 41 from Quassey Ave to IL 176	-	-	-	-
13133	IL 137 from IL 83 to Petersen Rd	-	-	-	-
13134	IL 120 from Ashford Ln to US 45	-	-	-	-
13135	US 45 from Rollins Rd to IL 120	-	-	-	-
13160	US 20 from Randall Rd to Shales Pkwy	-	-	-	-
13167	IL 131 from Sunset Ave to Wadsworth Rd	-	-	-	-
13168	IL 131 from Wadsworth Rd to Russell Rd	-	-0.1%	-	-
13183	IL 47 from Charles Rd to Reed Rd	-	-	-	-
13184	Willow Rd from I-294 to IL 43	-	-	-	-
14109	I-55 from Weber Rd to US 30	-	-	-	-
14136	IL 83 from IL 120 to IL 137 and at Atkinson	-	-0.1%	-	-
14137	IL 120 Bypass	0.1%	0.1%	-	-0.1%
14138	I-57 at Eagle Lake Rd	-	-	-	-
21189	Brown Line Modernization	-	-	-	-
21190	Green Line Modernization	-	-	-	-
22185	Forest Park Reconstruction	-	-	-	-
22201	Ashland BRT	-0.1%	-0.1%	-0.1%	-0.1%
22202	Western Ave Bus Priority	-0.1%	-0.1%	-0.1%	-0.1%
22203	Pulaski Rd Bus Priority	-0.1%	-0.1%	-0.1%	-0.1%
22204	Garfield Blvd Bus Priority	-	-0.1%	-	-

RCP ID	Project name	% change in emissions			
		GHG	NOx	VOC	PM 2.5
22205	Fullerton Ave Bus Priority	-	-	-	-
22206	Cottage Grove Bus Priority	-	-	-	-
23186	Blue Line Core Capacity	-0.1%	-0.1%	-	-
23187	Brown Line Core Capacity	-0.1%	-0.1%	-0.1%	-0.1%
23188	RPM Next Phases	-	-	-	-
24191	Circle Line - visionary	-0.1%	-0.1%	-0.1%	-0.1%
24192	Mid-City Transitway - visionary	-0.1%	-0.1%	-0.1%	-0.1%
24193	Blue Line Extension - visionary	-	-	-	-
24194	Green Line Extension to Jackson Park - visionary	-	-	-	-
24195	Orange Line Extension - visionary	-	-	-	-
24196	Yellow Line Extension - visionary	-	-	-	-
24197	West Loop Subway (Red Line) - visionary	-0.1%	-0.1%	-0.1%	-0.1%
24198	Green Line Extension to Midway- visionary	-	-	-	-0.1%
24199	Brown Line Extension - visionary	-	-0.1%	-0.1%	-0.1%
24200	Clinton Street Subway - visionary	-	-	-	-
33146	ME Line Improvement	-	-	-	-
33147	RI Line Improvement	-0.1%	-0.1%	-0.1%	-0.1%
33148	SWS Line Improvement	-	-	-	-
33149	HC Line Improvement	-	-	-	-
33150	BNSF Line Improvement	-0.1%	-0.1%	-0.1%	-0.1%
33151	UPW Improvement	-	-	-	-0.1%
33152	MDW Line Improvement	-	-0.1%	-	-0.1%
33153	UPNW Improve and Extend	-	-	-	-
33154	MDN Line Improvement	-	-	-	-
33155	O'Hare Express Line and NCS Line Improvements	-	-	-	-
33156	UPN Line Improvement	-	-	-	-
33157	A2 Crossing	-0.1%	-0.1%	-0.1%	-0.1%
43158	Wilmington-Peotone	-	-	-	-
43159	Laraway from US 45 to Harlem	-	-	-	-
43208	Randall Rd from Sterns to Longmeadow	-	-	-	-
43211	Randall Rd at I-90	-	-	-	-
44101	Northern McHenry Bypass	-	-	-	-
44102	Northern Algonquin Bypass	-	-	-	-
44217	MDN Extension	-	-	-	-
44218	MDW Extension	-	-	-	-
52212	I-290/IL 53/I-90 Interchange Improvements	-	-	-	-
54103	IL 390 Interchange to County Farm Rd	-	-0.1%	-	-
54105	I-88 York Rd Interchange Expansion	-	-	-	-

RCP ID	Project name	% change in emissions			
		GHG	NOx	VOC	PM 2.5
62140	South Lakefront Busway	-	-0.1%	-0.1%	-0.1%
62141	EAAC Intersection Improvements	-	-	-	-
62142	DCCL Intersection Improvements	-	-	-	-
62211	79th/Stony Island Intersection Improvements	-	-	-	-
64143	AOK Station Metra	-	-	-	-
64144	Madison Station - Pink Line	-	-	-	-
64145	Division Station - Brown Line	-	-	-	-
74161	Pulse Golf Rd	-	-	-	-
74163	Pulse Harlem Ave	-	-	-	-
74164	Pulse Cermak Rd	-	-	-	-
74166	I-294 Express Bus Stations	-0.1%	-0.1%	-0.1%	-0.1%
74213	Pulse Touhy Ave	-	-	-	-
74214	Pulse North Ave	-	-	-	-
74215	Pulse Western Ave	-	-	-	-
74216	Pulse South Halsted Extension		-	-	-
83209	143rd from Wolf to US 45	-	-	-	-
83210	143rd from Will-Cook Rd to Wolf	-	-	-	-

Table 3.10: Proportion of trips from infill supportive areas

RCP ID	Project name[17]	% infill supportive trip
12120	North DuSable LSD Improvements	96%
13104	I-190 O'Hare Access Improvements	75%
13106	I-55 from I-80 to Coal City Rd	47%
13108	I-55 Managed Lane from I-355 to I-90/I-94	75%
13110	I-55 from I-80 to US 52	30%
13111	I-55 from I-355 to IL 53	60%
13113	I-80 from U.S. 30 to I-294	71%
13114	I-290 from Mannheim Rd to Racine Ave	91%
13115	IL 60 from IL 176 to Townline Rd	50%
13116	IL 173 from IL 59 to US 41	41%
13117	McHenry Rd from IL 173 to IL 132	50%
13118	Algonquin Rd from IL 25 to IL 68	58%
13119	Milwaukee Ave from Petite Lake Rd to IL 120	52%
13121	IL 83 from 31st to 55th and 63rd to Central	74%
13122	US 6 from I-55 to US 52	23%
13123	US 30 from IL 47 to Albright Rd	31%

17 Projects noted as visionary are projects that are in the early planning stages and thus, still conceptual in nature with pending analysis of alternatives.

RCP ID	Project name	% infill supportive trip
13124	IL 7/143rd from Will-Cook Rd to IL 7	56%
13125	IL 47 from I-90 to Plank Rd	33%
13126	IL 56 from IL 25 to IL 59	56%
13127	IL 60 from IL 120 to IL 176	37%
13128	US 45 from IL 60 to IL 22	57%
13129	Willow Rd from Des Plaines River to Waterview Dr	76%
13130	IL 53 from IL 56 to Park Blvd	77%
13131	IL 22 from Quentin Rd to IL 83	55%
13132	US 41 from Quassey Ave to IL 176	58%
13133	IL 137 from IL 83 to Petersen Rd	53%
13134	IL 120 from Ashford Ln to US 45	53%
13135	US 45 from Rollins Rd to IL 120	54%
13160	US 20 from Randall Rd to Shales Pkwy	54%
13167	IL 131 from Sunset Ave to Wadsworth Rd	61%
13168	IL 131 from Wadsworth Rd to Russell Rd	71%
13183	IL 47 from Charles Rd to Reed Rd	35%
13184	Willow Rd from I-294 to IL 43	71%
14109	I-55 from Weber Rd to US 30	53%
14136	IL 83 from IL 120 to IL 137 and at Atkinson	51%
14137	IL 120 Bypass	60%
14138	I-57 at Eagle Lake Rd	74%
21189	Brown Line Modernization	99%
21190	Green Line Modernization	93%
22185	Forest Park Reconstruction	93%
22201	Ashland BRT	97%
22202	Western Ave Bus Priority	97%
22203	Pulaski Rd Bus Priority	96%
22204	Garfield Blvd Bus Priority	94%
22205	Fullerton Ave Bus Priority	99%
22206	Cottage Grove Ave Bus Priority	95%
23186	Blue Line Core Capacity	93%
23187	Brown Line Core Capacity	99%
23188	RPM Next Phases	96%
24191	Circle Line - visionary	97%
24192	Mid-City Transitway - visionary	91%
24193	Blue Line Extension - visionary	93%
24194	Green Line Extension to Jackson Park - visionary	98%
24195	Orange Line Extension - visionary	93%
24196	Yellow Line Extension - visionary	96%

RCP ID	Project name	% infill supportive trip
24197	West Loop Subway (Red Line)- visionary	95%
24198	Green Line Extension to Midway - visionary	98%
24199	Brown Line Extension - visionary	99%
24200	Clinton Street Subway - visionary	86%
33146	ME Line Improvement	93%
33147	RI Line Improvement	90%
33148	SWS Line Improvement	90%
33149	HC Line Improvement	77%
33150	BNSF Line Improvement	91%
33151	UPW Improvement	92%
33152	MDW Line Improvement	90%
33153	UPNW Improve and Extend	95%
33154	MDN Line Improvement	91%
33155	O'Hare Express Line and NCS Line Improvements	86%
33156	UPN Line Improvement	94%
33157	A2 Crossing	90%
43158	Wilmington-Peotone	49%
43159	Laraway from US 45 to Harlem	36%
43208	Randall Rd from Sterns to Longmeadow	44%
43211	Randall Rd at I-90	46%
44101	Northern McHenry Bypass	40%
44102	Northern Algonquin Bypass	52%
44217	MDN Extension	90%
44218	MDW Extension	89%
52212	I-290/IL 53/I-90 Interchange Improvements	97%
54103	IL 390 Interchange to County Farm Rd	66%
54105	I-88 York Rd Interchange Expansion	84%
62140	South Lakefront Busway	96%
62141	EAAC Intersection Improvements	98%
62142	DCCL Intersection Improvements	87%
62211	79th/Stony Island Intersection Improvements	87%
64143	AOK Station Metra	90%
64144	Madison Station - Pink Line	98%
64145	Division Station - Brown Line	99%
74161	Pulse Golf Rd	91%
74163	Pulse Harlem Ave	90%
74164	Pulse Cermak Rd	88%
74166	I-294 Express Bus Stations	79%
74213	Pulse Touhy Ave	96%

RCP ID	Project name	% infill supportive trip
74214	Pulse North Ave	91%
74215	Pulse Western Ave	85%
74216	Pulse South Halsted Extension	83%
83209	143rd from Wolf to US 45	64%
83210	143rd from Will-Cook Rd to Wolf	54%

Project financial costs

Table 3.11: Estimated construction cost and annual operation and maintenance (O&M) cost, in 2025 dollars

RCP ID	Project name[18]	Construction costs (millions)	% cost for new capacity	Annual O&M cost (millions)
11174	I-94 Bishop Ford Reconstruction	$990	-	-
11175	I-90/I-94 Reconstruction from Hubbard to 31st	$3,720	-	-
11176	I-55 Reconstruction	$5,170	-	-
11177	I-90 Reconstruction	$2,340	-	-
11178	I-94 Reconstruction	$2,440	-	-
11179	I-90/I-94 Hubbard-Edens Reconstruction	$2,700	-	-
11180	I-290/IL 53 Reconstruction	$5,850	-	-
11181	I-57 Reconstruction	$3,760	-	-
11182	I-355 at I-290 Bridge Replacement	$600	-	-
12120	North DuSable LSD Improvements	$2,400	10%	$0.02
12139	75th Street Corridor Improvement Project	$1,607	25%	-
13104	I-190 O'Hare Access Improvements	$896	20%	$0.02
13106	I-55 from I-80 to Coal City Rd	$914	66%	$0.18
13108	I-55 Managed Lane from I-355 to I-90/I-94	$1,888	80%	$0.69
13110	I-55 from I-80 to US 52	$199	66%	$0.01
13111	I-55 from I-355 to IL 53	$36	66%	$0.05
13113	I-80 from U.S. 30 to I-294	$2,250	80%	$0.37
13114	I-290 from Mannheim Rd to Racine Ave	$3,384	20%	$0.10
13115	IL 60 from IL 176 to Townline Rd	$298	100%	$0.07
13116	IL 173 from IL 59 to US 41	$275	100%	$0.16
13117	McHenry Rd from IL 173 to IL 132	$54	100%	$0.05
13118	Algonquin Rd from IL 25 to IL 68	$163	100%	$0.09
13119	Milwaukee Ave from Petite Lake Rd to IL 120	$214	100%	$0.15
13121	IL 83 from 31st to 55th and 63rd to Central	$88	100%	$0.11
13122	US 6 from I-55 to US 52	$176	100%	$0.11
13123	US 30 from IL 47 to Albright Rd	$109	100%	$0.09

18 Projects noted as visionary are projects that are in the early planning stages and thus, still conceptual in nature with pending analysis of alternatives.

RCP ID	Project name	Construction costs (millions)	% cost for new capacity	Annual O&M cost (millions)
13124	IL 7/143rd from Will-Cook Rd to IL 7	$167	100%	$0.08
13125	IL 47 from I-90 to Plank Rd	$137	100%	$0.10
13126	IL 56 from IL 25 to IL 59	$134	100%	$0.11
13127	IL 60 from IL 120 to IL 176	$192	100%	$0.13
13128	US 45 from IL 60 to IL 22	$97	100%	$0.08
13129	Willow Rd from Des Plaines River to Waterview Dr	$29	90%	$0.01
13130	IL 53 from IL 56 to Park Blvd	$41	66%	$0.02
13131	IL 22 from Quentin Rd to IL 83	$134	66%	$0.07
13132	US 41 from Quassey Ave to IL 176	$128	50%	$0.01
13133	IL 137 from IL 83 to Petersen Rd	$76	100%	$0.07
13134	IL 120 from Ashford Ln to US 45	$30	66%	$0.06
13135	US 45 from Rollins Rd to IL 120	$41	100%	$0.03
13160	US 20 from Randall Rd to Shales Pkwy	$213	5%	$0.02
13167	IL 131 from Sunset Ave to Wadsworth Rd	$68	66%	$0.05
13168	IL 131 from Wadsworth Rd to Russell Rd	$129	66%	$0.09
13183	IL 47 from Charles Rd to Reed Rd	$337	50%	$0.04
13184	Willow Rd from I-294 to IL 43	$97	90%	$0.07
14109	I-55 from Weber Rd to US 30	$218	100%	$0.02
14136	IL 83 from IL 120 to IL 137 and at Atkinson	$111	100%	$0.03
14137	IL 120 Bypass	$1,000	100%	$0.37
14138	I-57 at Eagle Lake Rd	$206	100%	$0.01
21189	Brown Line Modernization	$847	-	-
21190	Green Line Modernization	$1,956	-	-
22185	Forest Park Reconstruction	$2,922	33%	($0.97)
22201	Ashland BRT	$166	100%	$1.89
22202	Western Ave Bus Priority	$339	100%	$6.13
22203	Pulaski Rd Bus Priority	$323	100%	$8.97
22204	Garfield Blvd Bus Priority	$150	100%	$3.84
22205	Fullerton Ave Bus Priority	$145	100%	$7.26
22206	Cottage Grove Ave Bus Priority	$181	100%	$4.90
23186	Blue Line Core Capacity	$2,537	50%	($3.24)
23187	Brown Line Core Capacity	$1,780	50%	($0.71)
23188	RPM Next Phases	$4,280	-	($0.51)
24191	Circle Line - visionary	Conceptual - no cost available		$6.95
24192	Mid-City Transitway - visionary	Conceptual - no cost available		$21.9
24193	Blue Line Extension - visionary	Conceptual - no cost available		$2.68
24194	Green Line Extension to Jackson Park - visionary	Conceptual - no cost available		$0.11
24195	Orange Line Extension - visionary	$445	100%	$2.27

RCP ID	Project name	Construction costs (millions)	% cost for new capacity	Annual O&M cost (millions)
24196	Yellow Line Extension - visionary	$263	100%	$0.77
24197	West Loop Subway (Red Line)- visionary	Conceptual - no cost available		$2.70
24198	Green Line Extension to Midway - visionary	Conceptual - no cost available		$4.46
24199	Brown Line Extension - visionary	Conceptual - no cost available		$3.61
24200	Clinton Street Subway - visionary	$612	100%	$0.90
33146	ME Line Improvement	$1,140	75%	$7.42
33147	RI Line Improvement	$810	25%	$10.07
33148	SWS Line Improvement	$776	25%	$3.79
33149	HC Line Improvement	$331	25%	$0.82
33150	BNSF Line Improvement	$328	25%	$3.90
33151	UPW Improvement	$471	25%	($0.21)
33152	MDW Line Improvement	$769	25%	$3.34
33153	UPNW Improve and Extend	$859	50%	$5.07
33154	MDN Line Improvement	$832	25%	$0.61
33155	O'Hare Express Line and NCS Line Improvements	$1,250	75%	$5.05
33156	UPN Line Improvement	$1,174	25%	$2.18
33157	A2 Crossing	$1,100	25%	($1.30)
43158	Wilmington-Peotone	$277	30%	$0.01
43159	Laraway from US 45 to Harlem	$5	100%	$0.08
43208	Randall Rd from Sterns to Longmeadow	$133	100%	$0.18
43211	Randall Rd at I-90	$97	100%	$0.01
44101	Northern McHenry Bypass	$200	100%	$0.03
44102	Northern Algonquin Bypass	$150	100%	$0.05
44217	MDN Extension	$480	100%	$2.95
44218	MDW Extension	$500	100%	$6.15
51172	South Tri-State Bridging Investment	$393	0%	-
52212	I-290/IL 53/I-90 Interchange Improvements	$2,000	25%	$0.01
54103	IL 390 Interchange to County Farm Rd	$73	100%	$0.01
54105	I-88 York Rd Interchange Expansion	$25	100%	<$0.01
62140	South Lakefront Busway	$200	100%	($14.72)
62141	EAAC Intersection Improvements	$332	0%	-
62142	DCCL Intersection Improvements	$350	0%	-
62211	79th/Stony Island Intersection Improvements	$350	0%	-
64143	AOK Station Metra	$300	100%	$0.28
64144	Madison Station - Pink Line	$100	100%	<$0.01
64145	Division Station - Brown Line	$100	100%	<$0.01
74161	Pulse Golf Rd	$60	100%	$4.16
74163	Pulse Harlem Ave	$45	100%	$4.36

RCP ID	Project name	Construction costs (millions)	% cost for new capacity	Annual O&M cost (millions)
74164	Pulse Cermak Rd	$42	100%	$5.75
74166	I-294 Express Bus Stations	$133	100%	$16.61
74213	Pulse Touhy Ave	$24	100%	$6.10
74214	Pulse North Ave	$24	100%	$3.60
74215	Pulse Western Ave	$27	100%	$4.61
74216	Pulse South Halsted Extension	$25	100%	$7.48
83209	143rd from Wolf to US 45	$71	100%	$0.38
83210	143rd from Will-Cook Rd to Wolf	$15	100%	$0.19

Project descriptions

Transit: Rail

75th Street Corridor Improvement Project (CIP)
IDOT OIPI
RCP 12139
Associated TIP ID: 01-07-0001

This project, which is part of the East-West corridor CREATE program, would alleviate congestion at the most congested chokepoint in the Chicago terminal, the Belt Junction. Six major railroads — two passenger and four freight — pass through the 75th Street corridor on Chicago's South Side, with several at-grade crossings contributing to significant train and road traffic back-ups. In addition, the current track layout routes Metra's Southwest Service to the congested Union Station. The proposed improvements include two rail-to-rail grade separations, including a flyover to reroute the Metra Southwest Service to the less congested LaSalle Street Station. This, combined with additional Southwest Service track and less freight interference, will facilitate additional trains and other service improvements for the Southwest Service. While some elements of the 75th Street CIP are under construction, others are still in development and await final design. It has strong potential as a public-private project among the State of Illinois, City of Chicago, Cook County, Metra, and private railroads.

As of 2025, parts of the Forest Hill Flyover have been completed.[19]

Better Brown Modernization Program
CTA
RCP 21189

The Brown Line is one of the oldest CTA branches, with several aging assets in need of upgrades. While many SOGR projects of various magnitude are completed and pursued regularly across the Brown Line, this project recognizes the broader long-term investment needed to modernize one of the busiest lines on the elevated system.

Better Brown features multiple types of track improvements designed to minimize slow zones and signal failures so trains can arrive consistently as scheduled. Without these SOGR infrastructure improvements, the Brown Line will not be able to operate safely, leading to unpredictable service and the potential for shutdown.

The project will also improve safety for riders and CTA employees through modernizations such as lighting upgrades, wider platforms and staircases, and safer maintenance access.

Greater Green Modernization Program
CTA
RCP 21190

The Green Line is a key link in the CTA elevated network, connecting South and West Side neighborhoods with the Loop and other CTA lines. While many SOGR projects of various magnitude are completed and pursued regularly, this project recognizes the broader long-term investment needed to modernize this link in the overall elevated system.

Greater Green includes multiple types of track improvements designed to minimize slow zones and signal failures so

19 CMAP, 75th Street Corridor Improvement Project, https://www.cmap.illinois.gov/wp-content/uploads/dlm_uploads/Infill-and-TOD-Snapshot-Report.pdf.

that trains can arrive consistently as scheduled. It also features substation upgrades to reduce the likelihood of power outages and system failures. Without these SOGR infrastructure improvements, the Green Line will not be able to operate safely, leading to unpredictable service and the potential for shutdown.

The project would also improve safety for riders and CTA employees through modernizations such as lighting upgrades, wider platforms and staircases, and safer maintenance access.

Blue Line Forest Park Branch Track and Station Reconstruction
CTA
RCP 22185
Associated TIP ID: 16-19-0039

The Congress Branch of the CTA Blue Line, between Forest Park and the Loop, is nearly 60 years old with aging infrastructure assets that are nearing or beyond the end of their useful life. As a result, speed and service reliability has declined, with 72 percent of the branch categorized as restricted slow zones, requiring trains to operate at drastically reduced speeds for safety. The rail stations along this line are also in need of significant upgrades. Only four of the eleven rail stations along the branch are vertically accessible to people who use mobility devices. This project was developed based on a joint planning study with IDOT to improve mobility along the I-290 corridor and reflects a targeted capital program to enhance accessibility and make significant SOGR improvements.

The project would replace the entire track bed and drainage system along the branch, make all Forest Park Branch stations accessible by adding elevator access, conduct advanced electric utility work, and build a new substation and traction power equipment upgrades at the Hermitage station. This includes building a new substation over the right-of-way at Morgan Street and beginning accessibility improvements of these stations with a rebuild of the Racine station.

As of July 2025, Phase 1 of this project is complete, with nearly three miles of track rebuilt between the LaSalle and Illinois Medical District stations.[20]

Blue Line Core Capacity
CTA
RCP 23186
Associated TIP ID: 16-18-0003[21]

The Blue Line is an integral part of the Chicago metropolitan area's transportation infrastructure and requires investment to continue to provide effective and affordable transit service to the region. Despite increasing weekday ridership demand, the amount of peak-hour service the CTA can add has been limited by several constraints on capacity including limited middle track turnback operations, structural and operational dwell time bottlenecks, and traction power limitations.

This project would increase core capacity, reduce travel times, and improve travel reliability though infrastructure improvements, including an upgrade to the traction power system between the O'Hare and Clinton stations, and line-wide modifications to accommodate long-term expansion to ten-car train operation. Capacity increases would focus on the sections with the highest passenger demand, reducing both dwell times and dwell time variability along these segments.

This project would also address significant SOGR needs. The equipment and building components at most Blue Line substations are beyond their useful life, ranging from 30 to 65 years old. Without the proposed SOGR infrastructure improvements, the Blue Line will not be able to operate safely, leading to slow and unpredictable service.

20 CTA, "Forest Park Branch Rebuild," https://www.transitchicago.com/fprebuild/.
21 Pre-construction phase TIP ID.

Brown Line Core Capacity
CTA
RCP 23187
Associated TIP database ID: 16-22-0004[22]

The Brown Line is the busiest of the five lines that serve the Loop on the CTA's elevated structure and the third busiest line in the CTA rail system behind the Red and Blue Lines. Brown Line trains are at capacity during the morning and evening peak periods and the CTA cannot improve service without capital improvements to the line.

This project would alleviate key capacity constraints such as terminal and yard capacity limitations, at-grade crossings, and shared track and junctions by reconstructing a rail yard and shop, reconfiguring and optimizing the Kimball terminal, constructing a new turnback track west of the Western Brown Line station, reconstructing tight curves, and upgrading the signal system and power. Without these SOGR infrastructure improvements, the Brown Line will not be able to operate safely, leading to unpredictable service and the potential for shutdown.

The project will also improve safety for riders and CTA employees through modernizations such as lighting upgrades, wider platforms and staircases, and safer maintenance access.

Red and Purple Modernization (RPM) Next Phases
CTA
RCP 23188
Associated TIP ID: 16-18-0004

Much of the elevated structure, embankments, and stations on the shared Red and Purple Line corridor was originally built in the early 1900s. This aging infrastructure requires frequent maintenance and regular need to enforce slow zones. Rebuilding and modernizing stations, tracks, and infrastructure will allow the CTA to increase capacity, improve operational efficiency, and expand access for people with disabilities.

The project will improve safety for riders and CTA employees through modernizations such as lighting upgrades, wider platforms and staircases, and safer maintenance access. These reconstruction and modernization efforts will also address issues related to water infiltration and limited vertical access points.

Phase one of the project is currently underway in the area just north of Belmont station and between Lawrence and Bryn Mawr stations.

Circle Line
CTA
RCP 24191

This conceptual project would expand transit access and increase CTA ridership by building a new north-south line approximately one-mile west of the Loop, along Ashland Avenue. The proposed line would connect the North/Clybourn Red Line station in Old Town with the Ashland Orange Line station in Bridgeport, substantially improving connectivity with the Illinois Medical District, West Town, West Loop, and Pilsen areas. This project is in the early planning stages and does not yet have an estimated cost.

22 Pre-construction phase TIP ID.

DRAFT

Mid-City Transitway
CTA
RCP 24192

This conceptual project would expand transit access with a new north-south transit corridor running through central Cook County in the vicinity of Cicero Avenue. The proposed transitway would connect the Jefferson Park Blue Line station with Midway Airport and the 87th Street Red Line station, running along the Cicero Avenue and 79th Street corridors. This project is in the early planning stages and does not yet have an estimated cost.

Blue Line Extension to Mannheim Road
CTA
RCP 24193

This conceptual project would expand transit access to the western suburbs by extending the Forest Park Blue Line branch three and a half miles from Forest Park west to Mannheim Road via I-290. This project would expand the reach of CTA rail service, connecting riders with new job opportunities. This project is in the early planning stages and does not yet have an estimated cost.

Green Line Extension to Jackson Park
CTA
RCP 24194

This conceptual project would expand transit access on the South Side of Chicago by extending the Cottage Grove Green Line branch one mile east from Cottage Grove Avenue to its historic terminus at Stony Island Avenue/Jackson Park via 63rd Street. This project would restore 'L' access in the Woodlawn neighborhood and the new Obama Presidential Center in Jackson Park, offering improved access to this upcoming amenity. This project is in the early planning stages and does not yet have an estimated cost.

Orange Line Extension to Ford City
CTA
RCP 24195
Associated TIP database ID: 16-08-0011

This conceptual project would expand transit access to the southwest suburbs by extending the Orange Line two miles south from the Midway station to the Ford City shopping area at approximately 76th Street. This project would expand CTA access for those commuting from the southwest suburbs, ease Midway bus terminal congestion, and better connect current and future uses of the Ford City area. This project is in the early planning stages and considered a visionary concept project.

Yellow Line Extension to Old Orchard
CTA
RCP 24196

This conceptual project would expand transit access to the north suburbs by extending the Yellow Line one mile north from the Dempster-Skokie station to Old Orchard Road and the Westfield Old Orchard shopping area. This project is in the early planning stages and considered a visionary concept project.

West Loop Subway (Red Line)
CTA
RCP 24197

Chicago is one of a few U.S. cities with a bustling commuter and intercity rail terminal that does not have a direct rail rapid transit connection. This project would connect the two CTA systems with a new north-south subway line running from the Cermak station in Chinatown to the North/Clybourn station in Old Town via Clinton Street with stops at both Union Station and Ogilvie Transportation Center. In addition to improving north-south connectivity with the West Loop and Fulton Market District, this project will complement other regional transit service plans including Metra's service expansion plans and Amtrak's intercity service expansion. This project is in the early planning stages and does not yet have an estimated cost.

Green Line Extension to Midway
CTA
RCP 24198

This conceptual project would expand transit access in Chicago's Southwest Side neighborhoods by extending the Ashland Green Line branch five miles west to Midway Airport connecting the Ashland/63rd Street station with the Midway Orange Line station. This project would expand rail access to communities along the 63rd corridor and directly connect more neighborhoods with job opportunities at Midway Airport. This project is in the early planning stages and does not yet have an estimated cost.

Brown Line Extension to Jefferson Park
CTA
RCP 24199

This conceptual project would expand transit access in Chicago's Northwest Side neighborhoods by extending the Brown Line by two and a half miles from its current terminus at Kimball Avenue west along Lawrence Avenue to the Blue Line station in Jefferson Park. This project would improve crosstown connectivity, provide better links to Albany Park and Mayfair, and offer a new direct connection from the North Side to O'Hare Airport. This project is in the early planning stages and does not yet have an estimated cost.

Clinton Street Subway
CDOT/CTA
RCP 24200

The Clinton Street Subway is envisioned as a new transportation hub that would support the Central Area, including Chicago Union Station and Ogilvie Transportation Center, and ultimately lead to greatly improved connections between rapid transit, bus, commuter rail, and intercity rail services. This new transit hub would be located under Clinton Street, roughly between Lake Street and Jackson Boulevard, providing the West Loop office district with the same convenient, high-volume transit service that supported the growth of the Central Loop. This project was identified in previous updates to the Central Area Plan.

Metra Electric (ME) Line Improvements
Metra
RCP 33146

This project would increase operating capacity and support ridership growth through various infrastructure improvements, including a bi-directional signaling project, electrical substation renewals, additional mainline track and crossovers, and expanded trainset storage. These improvements would allow for increased service on the ME line, including 30-minute headways on both the main line and south Chicago branch.

Many of the components to be replaced date back to the 1950s and are well past their useful life, including substations, transformers, and switchgears. In addition, the project would upgrade the ME signal systems, which currently have an average condition rating of 2.6. These upgrades — along with upgrades to passenger stations and grade crossings — would provide significant safety benefits for Metra riders and employees.

Rock Island (RI) Improvements
Metra
RCP 33147
Associated TIP ID: 01-02-9018

This project would reduce rail congestion, improve access and service reliability, increase operating capacity, improve safety, and enhance coordination between freight traffic and Metra trains. Proposed infrastructure improvements include the expansion of the 47th Street Yard facility, the addition of a third main line track on RI District Line from 16th Street to Gresham Junction, additional train storage tracks at existing rail yards, station platform and board area reconfigurations, and improved maintenance facilities.

Benefits include passenger station updates and grade crossing upgrades, such as new safety and security features with Smart Gates technology. This includes expanding and improving the LaSalle Street station terminal in downtown Chicago, which is nearing its useful life with a condition rating of 2.7.

Southwest Service (SWS) Line Improvements
Metra
RCP 33148
Associated TIP ID: 01-07-0001

This project is part of and dependent on the improvements proposed in the 75th Street CIP, RCP 12139. The infrastructure improvements and grade separations included in the 75th Street CIP would allow for increased service and reduced travel delays on the SWS Line, including more frequent train service on weekdays and weekends. This project would also reroute the SWS service line from several Norfolk Southern bridges that are in poor condition to Metra track lines that connect with the LaSalle Street station.

Heritage Corridor (HC) Line Improvements
Metra
RCP 33149

This project would increase operating capacity, improve service reliability, and improve freight movement. It would do so through infrastructure, service upgrades, and rolling stock improvements. The service improvements would include upgrading service to all day, hourly service.

Infrastructure upgrades include new rail-to-rail grade separations at Brighton Park and Canal crossings, a new overnight storage yard at Joliet, and 595 new parking spaces. The rolling stock improvement includes the addition of two new trainsets.

Burlington Northern Santa Fe (BNSF) Line Improvements
Metra
RCP 33150
Associated TIP database ID: 18-18-0008

This project would improve core operational capacity, support ridership growth, and improve service reliability. It would do so through infrastructure improvements, service upgrades, and additional rolling stock. Four new trainsets would be added to increase the rolling stock. Infrastructure improvements would include a high-speed crossover between Eola and West Naperville, the expansion of Hill Yard in Aurora, a new station at Eola, and 2,150 new parking spaces.

Service improvements would include a new express pattern for inbound and outbound midday trips and a peak direction Aurora-Naperville zone split to alleviate crowding.

Metra Union Pacific West (UP-W) Line Improvements
Metra
RCP 33151

This project would increase service and reduce rail congestion through service improvements, infrastructure upgrades, and additional rolling stock. Six new train sets would be added to increase rolling stock. Express trips would be added for peak direction service.

Infrastructure upgrades would include a third mainline track added for the entire route, including the Des Plaines and Fox River bridges; new crossovers at Elmhurst and West Chicago; the build-out of Elburn Yard and the re-opening of West Chicago layover yard to accommodate the new trainsets; the expansion of the California Avenue coach yard; and the addition of 1,500 new parking spaces.

Metra Milwaukee District West (MD-W) Line Improvements
Metra
RCP 33152
Associated TIP database ID: 18-18-0009

This project would improve core operational capacity, support ridership growth, and improve service reliability through service improvements, infrastructure upgrades, and additional rolling stock. Four new trainsets would be added to increase rolling stock. Two new reverse commute trips and a new express pattern for peak-direction service would also be added.

Infrastructure upgrades would include adding a fourth track from A-5 to Randolph Street, adding a new overnight storage yard west of Big Timber, and expanding the Western Avenue maintenance and storage facility.

Union Pacific Northwest (UP-NW) Line Improvements and Extension
Metra
RCP 33153

The UP-NW is one of Metra's most capacity-constrained lines, with inadequate yard space resulting in the storage of trains on sidings along the route. This project would increase operating capacity and improve service reliability through infrastructure and service upgrades, including three new crossovers and the addition of rail coach yards near Woodstock and Johnsburg. The new Woodstock Yard would also provide safety benefits to Metra employees by reducing congestion and crowding at existing, over capacity railyards.

The proposed project also includes the expansion of access and services with new infill stations and the extension of the UP-NW line 1.6 miles north to Johnsburg. This line extension would enable three new stations in east Woodstock, Prairie Grove, and Johnsburg. Infill stations will be evaluated pending available funding.

Milwaukee District North (MD-N) Line Improvements
Metra
RCP 33154

Metra MD-N Line improvements would increase operating capacity and improve service reliability with service expansion, infrastructure upgrades, and rolling stock improvements. Infrastructure improvements would include new and lengthened Fox Lake Branch sidings, adding a fourth track between A-5 and Randolph Street, and expanding storage yard and maintenance facilities.

The service improvements would include adding three reverse commute trips and three midday trips extended to Fox Lake, adding express patterns for peak period/direction service, and improving peak service spacing.

O'Hare Express and North Central Service (NCS) Line Improvements
Metra
RCP 33155

Metra envisions a future express train service between O'Hare Airport and Downtown Chicago, capable of moving thousands of travelers in as little as 25 minutes. This improved service to O'Hare is a key component of Metra's regional rail vision, expanding trips beyond the 9-to-5 commute. The proposed Metra O'Hare Express would build on the success of the temporary pilot service provided in August 2024. This project is in the early stages of planning and cannot be achieved without the improvements proposed at the A2 Crossing.

In addition, this project would include improvements to interlockings and bridges in fair to poor condition and the expansion of midday and peak period trains on the NCS Line between Union Station and Mundelein, which includes a stop at O'Hare.

Union Pacific North (UP-N) Line Improvements
Metra
RCP 33156
Associate TIP database ID: 18-10-9001

The UP-N Line, which runs between Ogilvie Transportation Center and Kenosha, has the highest percentage of trains over capacity on the Metra system and has major SOGR needs. The UP-N Line improvements will replace 125-year-old bridges, improve the capacity and reliability of the line through installation of crossovers and track improvements, and add an outlying coach yard that will allow for more efficient servicing of equipment, accommodating expanded services.

Proposed service improvements include adding reverse commute trips, upgrading midday service to 30-minute frequency, and establishing two express zones for peak period/ direction service. Infrastructure buildouts would include a new crossover in Highland Park, an additional 11.7 miles of third track in three segments south of Glencoe, a new storage yard in Waukegan, and the expansion of the California Avenue coach yard.

A2 Crossing Modernization
Metra
RCP 33157
Associated TIP database ID: 18-18-0010

This project would reconstruct the A2 Interlocking at Tower A2, which is the busiest railroad intersection in the Midwest and among the busiest in the nation with more than 300 trains passing through on weekdays. Elements of the A2 Interlocking and Tower A2 are more than a century old and need to be replaced to maintain Metra's reliable regional rail service and Amtrak's intercity service. Located in Chicago between Western Avenue and Kinzie Street, the rebuild will help reduce conflicts between MD-N, MD-W, NCS, and UP-W trains. The project would have a high economic impact and potentially enable additional stations, tracks, and scheduled service. Alternatives under evaluation include moving the crossing to a new location one mile east and constructing a flyover near the current crossing.

Milwaukee District North (MD-N) Line Extension to Spring Grove and Richmond
Metra
RCP 44217

This project would expand transit access and support ridership growth by extending the MD-N service by ten miles from Fox Lake to Richmond. The proposed expansion would add two new stations to the MD-N Line at Spring Grove and Richmond, and add an overnight storage yard west of the Richmond station for the rolling stock assigned to the new service. The existing Wisconsin and Southern Railroad freight lines single track would also be replaced with passing siding for the length of the extension.

The project proposes dedicating eight trains to this service extension with four morning inbound and four afternoon and evening outbound trains.

Milwaukee District West (MD-W) Line Extension to Huntley and Marengo
Metra
RCP 44218

This project would expand transit access and support ridership growth by extending the MD-W service 28 miles from Big Timber to Marengo. The proposed project would include five new stations at Gilberts, Kreutzer Road in Huntley, Coyne Station Road in Huntley, Union, and Marengo, and an overnight storage yard west of the Marengo station for the rolling stock assigned to the new service. In addition, the Western Avenue maintenance facility would be expanded with rolling stock increased by two locomotives and ten coach cars, including spares. The existing single track Union Pacific Railroad (UPRR) would be replaced with the addition of two passing sidings for the length of the extension. A new connection to the UPRR would be required at Almora.

The project proposes dedicating eight trains to this service extension with four morning inbound and four afternoon and evening outbound trains.

Ashland-Ogden-Kinzie (AOK) New Metra Station
CDOT
RCP 64143
Associated TIP database ID: 01-22-0023

This project would bring commuter passenger rail service to the rapidly growing Fulton Market district west of Downtown Chicago, with a new Metra station along the West Loop rail corridor that serves four Metra lines — UP-W, MD-N, MD-W, and NCS — and three Amtrak intercity rail routes. This new station, with platforms proposed between Ashland and Ogden avenues, would improve regional access to nearby jobs and expand urban access to regional destinations. This project is proposed for implementation between 2033 and 2035.

The proposed station would also be located along the proposed Ashland BRT route (RCP 22201) and the Circle Line (RCP 24191). This project is dependent on the improvements proposed with RCP 33157, A2 Crossing Modernization.

New Madison Station — CTA Pink Line
CDOT
RCP 64144

This project would expand transit access to the rapidly growing West Side of Chicago, including a planned major mixed-use redevelopment and the United Center, with a new station along the CTA Pink Line. This project is proposed for implementation in 2031.

The proposed station would also be located one block west of the proposed Ashland BRT route (RCP 22201) and the Circle Line (RCP 24191).

New Division Station — CTA Brown/Purple Line
CDOT
RCP 64145

This project would expand transit access to the growing Near North and Old Town neighborhoods of Chicago, including a historically underserved public housing community, with a new station along the CTA Brown and Purple Lines. This project is proposed for implementation in 2029.

Transit: Bus

Ashland Bus Rapid Transit
CTA
RCP 22201

The Ashland BRT project would address congestion and a lack of competitive travel options for those seeking a fast north-south transit alternative through the West Side of Chicago. Many transit-dependent CTA customers are faced with slow bus speeds, frequent stops, and unreliable travel times that inhibit seamless travel in this transit corridor. Additionally, current street design issues no longer meet corridor needs or land use policy objectives.

This project would implement an approximately 16-mile BRT service along Ashland Avenue, between Irving Park Road and 95th Street, improving speed and reliability and enhancing the pedestrian environment along the route. The proposed route would connect with 7 CTA 'L' stations, 2 Metra stations, and 37 bus routes.[23] This route is an important bus corridor in the region and is consistently among the five highest ridership corridors in the CTA bus system.

The project would also improve safety for riders and CTA employees by removing these buses from general traffic lanes, thereby reducing the risk of bus contact with cars, reducing collisions, side swipes, and other behaviors that could put riders at risk.

Bus Priority Corridor: Western Avenue
CTA
RCP 22202

This project is a part of the CTA Better Streets for Buses Plan, which focuses on dramatically improving bus speed and reliability on key corridors by implementing robust bus priority treatments. Treatments could include, but are not limited to, dedicated bus lanes, boarding islands, near-level boarding, transit signal priority, queue jumps, and bus shelter improvements.[24] These treatments would improve safety for riders and CTA employees by reducing the number of pedestrian and vehicle conflicts, making bus users more visible to oncoming traffic and offering visual cues to drivers to slow down.

The Western Avenue priority corridor extends approximately 18.5 miles from Howard Street to 79th Street, reducing travel times and improving travel reliability for bus routes 49, 49B, and X49. This corridor provides important regional connections with several transfers between CTA bus routes and Metra lines, particularly at the station near Hubbard Street. It is an important bus corridor in the region and is among the five highest ridership corridors in the CTA bus system.

The project would also improve safety for riders and CTA employees by removing these buses from general traffic lanes thereby reducing the risk of bus contact with cars, reducing collisions, side swipes, and other behaviors that could put riders at risk.

23 CTA, "Better Streets for Buses Plan," https://www.transitchicago.com/assets/1/6/Better_Streets_for_Buses_Plan.pdf.
24 Ibid

Bus Priority Corridor: Pulaski Road
CTA
RCP 22203

This project is a part of the CTA Better Streets for Buses Plan, which focuses on dramatically improving bus speed and reliability on key corridors by implementing robust bus priority treatments. Treatments could include, but are not limited to, dedicated bus lanes, boarding islands, near-level boarding, transit signal priority, queue jumps, and bus shelter improvements.[25]

The Pulaski Road priority corridor extends approximately 17.6 miles from Peterson Avenue to 87th Street, reducing travel times and improving travel reliability for bus routes 53 and 53A. This priority corridor is an important bus corridor in the region, serving as an alternative to rail for the West Side of Chicago and serving an average of 13,800 riders per weekday in 2024.

The project would also improve safety for riders and CTA employees by removing these buses from general traffic lanes thereby reducing the risk of bus contact with cars, reducing collisions, side swipes, and other behaviors that could put riders at risk.

Bus Priority Corridor: Garfield Boulevard
CTA
RCP 22204

This project is a part of the CTA Better Streets for Buses Plan, which focuses on dramatically improving bus speed and reliability on key corridors by implementing robust bus priority treatments. Treatments could include, but are not limited to, dedicated bus lanes, boarding islands, near-level boarding, transit signal priority, queue jumps, and bus shelter improvements.[26]

The Garfield Boulevard priority corridor extends approximately 8.2 miles from Cicero Avenue to South Hyde Park Boulevard, reducing travel times and improving travel reliability for bus route 55. This is an important bus corridor in the region, connecting community areas that lack direct rail service with two major employment centers, the University of Chicago and Midway Airport, as well as the CTA Red and Green Lines and Metra's Electric Line. The corridor served an average of 6,600 riders per weekday in 2024, a 20 percent increase compared to 2023.

The project will also improve safety for riders and CTA employees by removing these buses from general traffic lanes thereby reducing the risk of bus contact with cars, reducing collisions, side swipes, and other behaviors that could put riders at risk.

Bus Priority Corridor: Fullerton Avenue
CTA
RCP 22205

This project is a part of the CTA Better Streets for Buses Plan, which focuses on dramatically improving bus speed and reliability on key corridors by implementing robust bus priority treatments. Treatments could include, but are not limited to, dedicated bus lanes, boarding islands, near-level boarding, transit signal priority, queue jumps, and bus shelter improvements.[27]

The Fullerton Avenue priority corridor extends approximately 7.9 miles from Grand and Nordica avenues to Halsted Street, reducing travel times and improving travel reliability for bus route 74. This is an important bus corridor in the

25 Ibid.
26 Ibid.
27 Ibid.

region, providing riders with connections to the CTA Red, Brown and Purple Lines and Metra's MD-N Line. The corridor served an average of 8,700 riders per weekday in 2024.

The project would also improve safety for riders and CTA employees by removing these buses from general traffic lanes thereby reducing the risk of bus contact with cars, reducing collisions, side swipes, and other behaviors that could put riders at risk.

Bus Priority Corridor: Cottage Grove Avenue
CTA
RCP 22206

This project is a part of the CTA Better Streets for Buses Plan, which focuses on dramatically improving bus speed and reliability on key corridors by implementing robust bus priority treatments. Treatments could include, but are not limited to, dedicated bus lanes, boarding islands, near-level boarding, transit signal priority, queue jumps, and bus shelter improvements.[28]

The Cottage Grove Avenue priority corridor extends approximately 9.9 miles from 35th Street to 115th Street, reducing travel times and improving travel reliability for bus routes 4, 4X, and 115. This is an important bus corridor in the region, connecting several far South Side neighborhoods with the Metra Electric Line and high-density employment centers in Hyde Park and Downtown Chicago.

The project would also improve safety for riders and CTA employees by removing these buses from general traffic lanes thereby reducing the risk of bus contact with cars, reducing collisions, side swipes, and other behaviors that could put riders at risk.

South Lakefront Busway
CDOT
RCP 62140
Associated TIP database ID: 01-18-0011

The South Lakefront Busway would improve transit service reliability and reduce travel times for South Loop bus routes that run between Soldier Field, the Museum Campus, McCormick Place, Wintrust Arena, Chinatown, Pilsen, and the CTA Green and Red Lines. The busway would also improve access to adjacent neighborhoods, jobs, and cultural attractions, including Bronzeville Lakefront redevelopment.

The project would achieve its objectives with enhancements to the McCormick Place Busway that runs along the Metra Electric rail lines, allowing additional CTA buses to use this route, thus bypassing traffic congestion south of Grant Park. Enhancements would include new links to the Busway at Balbo Drive, Cermak Road, and Waldron Drive; new bus stations at 18th Street and 11th Street; and improved configuration of the South DuSable Lake Shore Drive access ramps at 31st Street.

IL 58/Golf Road from Meacham Road to Davis Street Pulse Golf Line
Pace
RCP 74161
Associated TIP database ID: 17-06-0008

This project would expand transit access in the north suburbs with a new limited-stop bus priority corridor service along Golf Road. The 20-mile bus priority corridor would run between Woodfield Mall in Schaumburg and Davis Street in downtown Evanston, with a stop at the Des Plaines Metra Station in between. The corridor would include transit

28 Ibid.

priority treatments such as dedicated bus lanes through congested areas and transit signal priority. In addition to faster service with more reliable travel times, this new bus service would offer improved ADA accessibility, amenities such as on bus wi-fi, and improved boarding technology.

Pulse Harlem Avenue
Pace
RCP 74163
Associated TIP database ID: 17-18-0004

This project would expand transit access through central Cook County with a new limited-stop bus priority corridor service along Harlem Avenue. The 14.9-mile bus priority corridor would most likely align with existing route 307, running between between North Avenue and 103rd Street. The corridor would include transit priority treatments such as dedicated bus lanes through congested areas and transit signal priority. In addition to faster service with more reliable travel times, this new bus service would offer improved ADA accessibility, amenities such as on bus wi-fi, and improved boarding technology. [29]

Pulse Cermak Road
Pace
RCP 74164
Associated TIP database ID: 17-18-0005

This project would expand transit access and connections between Chicago and the western suburbs with a new limited-stop bus priority corridor service along Cermak Road. The 13.1-mile bus priority corridor would most likely align with existing route 322, running between the CTA Pink Line 54th/Cermak station and Yorktown Center shopping mall with 17 stops in between. This project would also improve connections to other transit services, giving residents in the area better access to the rest of the region. The corridor would include transit priority treatments such as dedicated bus lanes through congested areas and transit signal priority. In addition to faster service with more reliable travel times, this new bus service would offer improved ADA accessibility, amenities such as on bus wi-fi, and improved boarding technology.[30]

I-294 Tri-State Express Bus Stations
Pace
RCP 74166
Associated TIP database ID: 17-22-0002

This project would expand transit access in the western suburbs with a new limited-stop bus priority corridor service along the central Tri-State (I-294). The 34-mile bus priority corridor would run from Meacham Avenue at I-90 in Schaumburg, east around O'Hare Airport, and south along I-294 to Hazel Crest. This project is in the early planning and design stages and stop locations along the route have not yet been determined. The intent is for stations along the interstate to create transfer opportunities between local Pace fixed route services and the new expressway service on I-294. In addition to faster service with more reliable travel times, this new bus service would offer improved ADA accessibility, amenities such as on bus wi-fi, and improved boarding technology.[31]

29 Pace Suburban Bus, "Pace Central Harlem Avenue Corridor Study: Transportation and Land Use Improvement Plan," https://www.pacebus.com/sites/default/files/2020-06/Central%20Harlem%20Ave%20Corridor%20Study%20%28Final-Report_Small%29.pdf and "Pulse: Pace's Rapid Transit Service," https://www.pacebus.com/pulse.
30 Pace Suburban Bus, "Pulse Cermak Line," https://www.pacebus.com/pulse-cermak.
31 Pace Suburban Bus, "I-294 Tri-State Market & Facilities Feasibility Study," https://www.pacebus.com/pulse-cermak.

Pulse Touhy Avenue
Pace
RCP 74213

This project would expand transit access in the north suburbs with a new limited-stop bus priority corridor service along Touhy Avenue. The 8-mile bus priority corridor would most likely align with existing route 290, running between the CTA Howard Street and Cumberland stations, with stops at Lincolnwood Town Center, Bunker Hill Forest Preserve, and Park Ridge Metra station. The corridor would include transit priority treatments such as dedicated bus lanes through congested areas and transit signal priority. In addition to faster service with more reliable travel times, this new bus service would offer improved ADA accessibility, amenities such as on bus wi-fi, and improved boarding technology.[32]

Pulse North Avenue
Pace
RCP 74214

This project would expand transit access in the western suburbs with a new limited-stop bus priority corridor service along North Avenue. The 8-mile bus priority corridor would most likely align with existing route 318, running between Northlake and the CTA Harlem-Lake Green Line station in Oak Park. The corridor would include transit priority treatments such as dedicated bus lanes through congested areas and transit signal priority. In addition to faster service with more reliable travel times, this new bus service would offer improved ADA accessibility, amenities such as on bus wi-fi, and improved boarding technology.[33]

Pulse Western Avenue
Pace
RCP 74215

This project would expand transit access and connections between southwest Chicago neighborhoods and suburbs with a new limited-stop bus priority corridor service along Western Avenue. The 9-mile bus priority corridor would most likely align with existing route 349, running between 79th Street and the Harvey Transportation Center. The corridor would include transit priority treatments such as dedicated bus lanes through congested areas and transit signal priority. In addition to faster service with more reliable travel times, this new bus service would offer improved ADA accessibility, amenities such as on bus wi-fi, and improved boarding technology.

Pulse South Halsted Street Extension
Pace
RCP 74216

This project would expand transit access in the south suburbs with a new limited-stop bus priority corridor service along Halsted Street. The 8.3-mile bus priority corridor would most likely align with existing route 352, running from the south end of the Pulse Halsted Line (committed RCP 97434) at the Harvey Transportation Center to 16th Street, just south of the Lincoln Highway. This project would also improve connections to other transit services, giving residents in the area better access to the rest of the region. The corridor would include transit priority treatments such as dedicated bus lanes through congested areas and transit signal priority. In addition to faster service with more reliable travel times, this new bus service would offer improved ADA accessibility, amenities such as on bus wi-fi, and improved boarding technology.[34]

32 Pace Suburban Bus, "Pulse: Pace's Rapid Transit Service," https://www.pacebus.com/pulse.
33 Ibid
34 Pace Suburban Bus, "Far South Halsted Corridor Study," https://www.pacebus.com/project/far-south-halsted-study.

Roadway: Arterials

North DuSable Lake Shore Drive Improvements
IDOT District 1
RCP 12120
Associated TIP ID: 01-18-0012[35]

North DuSable Lake Shore Drive (NDLSD), which runs from Grand Avenue at Navy Pier north to Hollywood Avenue in Edgewater, was completed during the 1930s under the Works Progress Administration and most of it is now overdue for complete reconstruction or major rehabilitation. In addition, increased use of both the Drive and the park spaces along it — which include Lincoln Park, beaches at Ohio Street, Oak Street, North Avenue, and Montrose Avenue, and seven miles of the Lakefront Trail — has overburdened the original design.

The current preferred multi-modal alternative for NDLSD includes full reconstruction of the roadway; a new outer drive underpass removing the traffic signal at Chicago Avenue; redesign of the tight curve at Oak Street to improve safety and reduce delays; expanded lake front access with five new east-west ADA-compliant pedestrian access routes; transit mobility improvements with bus only lanes on ramps; and enhanced shoreline protection to prevent flooding on surrounding park spaces and the Drive.[36]

IL 60/IL 83 from IL 176 to IL 60 (Townline Road)
IDOT District 1
RCP 13115
Associated TIP ID: 10-07-0001

This project would add lanes to a 3.8-mile section of IL 60 in Lake County, between IL 176 and Townline Road, increasing the cross-section of this major arterial from one to two lanes in each direction and raising the speed limit from 30 to 45 mph. This project also includes a grade separation between IL 60 and the CN railroad tracks, which would reduce travel delays and prevent train-to-vehicle collisions. This project is planned for implementation in 2030. This project is located between and directly connects with RCPs 13127 and 13128, which are located on IL 60 and US 45. Combined, these three project sections — which connect Volo in west Lake County with Lincolnshire to the southeast — increase the cross-section of 15 miles of IL 60 and US 45 from one to two lanes in each direction.

IL 173 (Rosecrans Road) from IL 59 to US 41 (Skokie Highway)
IDOT District 1
RCP 13116
Associated TIP ID: 10-09-0149

This project would add lanes to an 8.3-mile section of east-west route IL 173 (Rosecrans Road) in north Lake County, between IL 59 and US 41 (Skokie Highway), increasing the cross-section of this rural arterial from one to two lanes in each direction. This project is planned for implementation in 2035.

The center of this project directly connects with improvements proposed for north-south route US 45 (RCP 13117).

35 Pre-construction phase TIP ID.
36 NDLSD, https://northdusablelsd.org/.

DRAFT

US 45 (McHenry Road) from IL 173 to IL 132
IDOT District 1
RCP 13117
Associated TIP ID: 10-09-0146

This project would reconstruct and add lanes to a 2.5-mile section of north-south route US 45 in north Lake County, between IL 132 (Milburn Bypass) and IL 173, increasing the cross-section of this rural arterial from one to two lanes in each direction. This project is planned for implementation in 2045.

The north end of this project directly connects with improvements proposed for east-west route IL 173 (RCP 13116).

IL 62 (Algonquin Road), IL 25 (JF Kennedy Memorial Drive) to IL 68 (Dundee Road)
IDOT District 1
RCP 13118
Associated TIP ID: 11-16-0008[37]

This project would add lanes to a 4.8-mile section of IL 62 (Algonquin Road) that runs between IL 25 (J.F. Kennedy Memorial Drive) in northeast Kane County and IL 68 (Dundee Road) in northwest Cook County, increasing the cross-section of this rural arterial from one to two lanes in each direction. This project is planned for implementation in 2035.

IL 83 (Milwaukee Avenue) from Petite Lake Road to IL 120
IDOT District 1
RCP 13119
Associated TIP ID: 10-09-0147

This project would add lanes to an 8-mile section of north-south route IL 83 (Milwaukee Avenue/Barron Boulevard) in north Lake County, between Petite Lake Road and IL 120 (Belvidere Road). This suburban arterial is currently one lane in each direction for most of its length with several sections including a median turn lane. This project would add a second lane in each direction, where there is currently only one. This project is planned for implementation in 2035. This project connects with proposed improvements to IL 120 at its south end (RCPs 13134 and 14137).

IL 83 (Kingery Highway) from 31st Street to 55th Street and 63rd Street to Central Avenue
IDOT District 1
RCP 13121
Associated TIP database ID: 08-95-0024

This project would add lanes to 5.7 miles of north-south route IL 83 (Kingery Highway) in southeast DuPage County, between 31st and Central Avenue, increasing the cross-section of this limited access highway from two to three lanes in each direction. A one-mile section of this roadway, between 63rd Street and 55th Street, already has three lanes in each direction and would not be changed. This project is planned for implementation in 2036.

The south end of this project connects to I-55, which also has a proposed add lanes project (RCP 13108).

37 Pre-construction phase TIP ID.

US 6 from I-55 to US 52
IDOT District 1
RCP 13122
Associated TIP database IDs: 12-22-0034 and12-24-0028[38]

This project would add lanes to a 5.8-mile section of US 6 in western Will County, just southwest of Joliet, between I-55 and Brandon Road, increasing the cross-section of this major arterial from two to three lanes in each direction. This would complete a four-lane cross section on this heavily used truck route from I-55 to where it merges with US 52/McDonough Street in Joliet. This project is planned for implementation in 2035.

The south end of this project connects with an add lanes project on I-55 (RCP 13106).

US 30 from IL 47 to Albright Road
IDOT District 1
RCP 13123
Associated TIP ID: 09-09-0099[39]

This project would reconstruct and add lanes to a 4.9-mile section of US 30 that runs east-west along the border of Kane and Kendall counties, between IL 47 and Albright Road (just west of IL 31), increasing the cross-section of this major arterial from one to two lanes in each direction. The bridge over Blackberry Creek would also be replaced. This project is planned for implementation in 2035.

IL 7/143rd from Will-Cook Road to IL 7/Southwest Highway
IDOT District 1
RCP 13124
Associated TIP database ID: 06-22-0022

This project would reconstruct and add lanes to a 4.5-mile section of IL 7 in southwest Cook County, increasing the cross section of this suburban arterial from one to two lanes in each direction. The one-mile section at the south end of this project already has two lanes in each direction; this section, which runs east-west from Will Cook Road to where IL 7 turns north at US 6, would be reconstructed without adding lanes. The other 3.5-mile section, which runs north-south from US 6 to 143rd Street, would be both widened and reconstructed. This project is planned for implementation in 2035.

The north end of this project connects with an Orland Park lead, add lanes project proposed for 143rd Street, RCPs 83209 and 83210, between Will Cook Road and La Grange Road.

IL 47 from south of I-90 to south of Plank Road
IDOT District 1
RCP 13125
Associated TIP database ID: 09-22-0063

This project would reconstruct and add lanes to a 5.1-mile section of IL 47 in north Kane County, between I-90 and Plank Road, increasing the cross section of this arterial from one to two lanes in each direction. This project is planned for implementation in 2041.

38 Pre-construction phase TIP ID.
39 Pre-construction phase TIP ID.

IL 56 from IL 25 to IL 59
IDOT District 1
RCP 13126
Associated TIP database ID: 08-22-0046

This project would reconstruct and add lanes to a 6-mile section of east-west route IL 56 (Butterfield Road) that runs between IL 25 in Kane County and IL 59 (Joliet Road) in DuPage County, increasing the cross section of this arterial from one to two lanes in each direction. This project is planned for implementation in 2045.

IL 60 from IL 120 to IL 176
IDOT District 1
RCP 13127
Associated TIP database ID: 10-22-0010

This project would reconstruct and add lanes to a 6.9-mile section of IL 60 in Lake County, between IL 120 (Belvidere Road) and IL 176 (Maple Ave), increasing the cross-section of this major arterial from one to two lanes in each direction and raising the speed limit from 40 to 55 mph. This project is planned for implementation in 2045.

This project directly connects with RCPs 13115 and 13128, which are located on IL 60 and US 45 to the south of this project. Combined, these three project sections — which connect Volo in west Lake County with Lincolnshire to the southeast — would increase the cross-section of 15 miles of IL 60 and US 45 from one to two lanes in each direction.

US 45/IL 83 (Old Half Day Road) from IL 60 (Townline Road) to IL 22 (Half Day Road)
IDOT District 1
RCP 13128
Associated TIP ID: 10-02-0013[40]

This project would add lanes to a 4.4-mile section of US 45/Old Half Day Road in Lake County, between IL 60 (Town Line Road) and IL 22 (Half Day Road), increasing the cross-section of this major arterial from one to two lanes in each direction. This project is planned for implementation in 2040.

This project directly connects with RCPs 13115 and 13127, which are located on IL 60 to the north of this project. Combined, these three project sections — which connect Volo in west Lake County with Lincolnshire to the southeast — increase the cross-section of 15 miles of IL 60 and US 45 from one to two lanes in each direction.

Willow Road from east of the Des Plaines River to Waterview Drive/Protection Parkway
IDOT District 1
RCP 13129
Associated TIP ID: 02-94-0001

This project in northeast Cook County would include an intersection improvement at Saunders Road, bridge repair, new bridge deck, noise barriers, lighting, reconstruction, and add lane work on Willow Road just west of the Tri-State Tollway (I-294). The project would add a third lane in each direction on a 0.5-mile section of Willow Road between the Des Plaines River and Saunders Road. This project is planned for implementation in 2032.

40 Pre-construction phase TIP ID.

IL 53 from south of IL 56 (Butterfield Road) to Park Boulevard
IDOT District 1
RCP 13130
Associated TIP ID: 08-00-0009

This project would reconstruct and add lanes to a 1.3-mile section on IL 53 in central DuPage County, between IL 56 (Butterfield Road) and Park Boulevard, increasing the cross section of this roadway from one to two lanes in each direction. This project is planned for implementation in 2035.

IL 22 (Lake Zurich Road) from Quentin Road to west of IL 83
IDOT District 1
RCP 13131
Associated TIP ID: 10-01-0022

This project would reconstruct and add lanes to a 3.5-mile section of east-west route IL 22 (Lake Zurich Road) in south Lake County, between Quentin Road and IL 83, increasing the cross section of this roadway from one to two lanes in each direction. The project would also include culvert replacement, tree removal, and a retaining wall. This project is planned for implementation in 2032.

US 41 (Skokie Highway) from Quassey Avenue to south of IL 176
IDOT District 1
RCP 13132
Associated TIP ID: 10-09-0037

This project would reconstruct and improve the US 41 interchange at IL 176 in eastern Lake County. Improvements would include drainage-pump station #37, new storm sewers, grading, and the addition of auxiliary lanes on both US 41 and IL 176. This project is planned for implementation in 2032.

IL 137 (Buckley Road) from IL 83 to Petersen Road
IDOT District 1
RCP 13133
Associated TIP ID: 10-09-0148[41]

This project would add lanes to a 3.5-mile section of IL 137 (Buckley Road) in central Lake County, between IL 83/ Ivanhoe Road and Peterson Road, increasing the cross-section of this major arterial from one to two lanes in each direction and the speed limit from 40 to 50 mph. This project is planned for implementation in 2035.

The north end of this project directly connects with improvements proposed for IL 83 and Ivanhoe Road, RCP 14136.

IL 120 (Belvidere Road) from Ashford Lane to US 45
IDOT District 1
RCP 13134
Associated TIP ID: 10-20-0004

This project would reconstruct and add lanes to a three-mile section of IL 120 (Belvidere Road) in central Lake County, between Ashford Lane and US 45, increasing the cross-section of this major arterial from one to two lanes in each direction. This project is planned for implementation in 2032.

The west end of this project directly connects with improvements proposed for IL 83 and Ivanhoe Road, RCPs 14136 and 13119. In addition, the center of this project connects with improvements proposed for US 45, RCP 13135. This project also overlaps with improvements proposed for IL 120, RCP 14137.

41 Pre-construction phase TIP ID.

US 45 (Lake Avenue) from Rollins Road to Washington Street and US 45 from Washington Street to north of IL 120
IDOT District 1
RCP 13135
Associated TIP ID: 10-94-0007

This project would add lanes to a 1.6-mile section of US 45 (Lake Avenue) in central Lake County, between Rollins Road and IL 120, increasing the cross-section of this major arterial from one to two lanes in each direction. This project is planned for implementation in 2032.

The south end of this project directly connects with improvements proposed on IL 120, RCP 14137. In addition, this project is located just south of another add lanes project on US 45, RCP 13117.

US 20 (Lake Street) from Randall Road to Shales Parkway
IDOT District 1
RCP 13160
Associated TIP ID: 09-10-0030

This project would reconstruct 6.8 miles of US 20 (Lake Street) in east Kane County and northwest Cook County, between Nesler Road and Shales Parkway. The project would also add lanes to the US 20 bridge over the Fox River, a one-mile section between IL 25 and IL 31, increasing the cross-section of the bridge from one to two lanes in each direction. This project is planned for implementation in 2027.

This project intersects with improvements proposed for Randall Road, RCP 43208.

IL 131 (Green Bay Road) from Sunset Avenue to Wadsworth Road
IDOT District 1
RCP 13167
Associated TIP ID: 10-09-0024

This project would add lanes to a 2.5-mile section of IL 131 (Green Bay Road) in north Lake County, between Sunset Avenue and Wadsworth Road, increasing the cross-section of this major arterial from one to two lanes in each direction. This project is planned for implementation in 2030.

The north end of this project directly connects with another add lanes project on IL 131, RCP 13168.

IL 131 (Green Bay Road) from Wadsworth Road to Russell Road
IDOT District 1
RCP 13168
Associated TIP ID: 10-09-0024

This project would add lanes to a 4.6-mile section of IL 131 (Green Bay Road) in north Lake County, between Wadsworth Road and Russell Road at the Illinois-Wisconsin State border, increasing the cross-section of this major arterial from one to two lanes in each direction. This project is planned for implementation in 2050.

The south end of this project directly connects with another add lanes project on IL 131, RCP 13167.

IL 47 from Charles Road to US 14, and IL 47 (Eastwood Drive) from US 14 (Northwest Highway) to Reed Road
IDOT District 1
RCP 13183
Associated TIP ID(s): 11-06-0018; 11-07-0014

This project would complete reconstruction and add lane work on a 13-mile section of IL 47 in central McHenry County, between Charles Road and Reed Road, increasing the cross-section of this major arterial from one to two lanes in each direction. Reconstruction and widening work was recently completed on two sections of this roadway, the two-mile section between US 14 and IL 120 and the one-mile section that overlaps with IL 176. Another 1.5-mile section between Conley Road and Ballard Road is planned for completion in 2035. The remaining pieces, totaling 8.5 miles, are planned for completion in phases through 2050.

Willow Road from east of I-294 to east of IL 43
IDOT District 1
RCP 13184
Associated TIP ID: 02-09-0003

This project would resurface and add lanes to a 3.4-mile section of Willow Road in central Lake County, between I-294 and IL 43, increasing the cross-section of this major arterial from two to three lanes in each direction. The project would also include lighting, bridge replacement, and intersection improvements. This project is planned for implementation in 2032.

The east end of this project directly connects with I-94, which is proposed for reconstruction, RCP 11178.

IL 83 (Barron Boulevard), IL 120 (Belvidere Road) to IL 137 and at Atkinson Road
IDOT District 1
RCP 14136
Associated TIP ID: 10-17-0027

This project in central Lake County is currently in progress. The intersection of IL 83 (Barron Boulevard) and IL 137 (Buckley Road)/Atkinson Road has been reconfigured with two separate T-intersections between IL 137 and Atkinson Road and IL 137 and IL 83, now realigned to meet at one four-way intersection. The next phase of this project would add lanes to a 0.5-mile section of IL 83 (Barron Boulevard) just north of the reconfigured intersection, between IL 120 (Belvidere Road) and IL 137, increasing the cross-section of this major arterial from one to two lanes in each direction. This project is planned for implementation in 2035.

The south end of this project directly connects with additional add lanes work proposed for IL 137, RCP 13133. The north end of this project connects with improvements proposed on IL 120, RCP 13134, and RCP 14137.

IL 120 from Wilson Road to US 41 (IL 120 Bypass)
IDOT District 1
RCP 14137
Associated TIP database ID: 10-94-0047

This project would create a new limited access four lane highway (two lanes in each direction) along the IL 120 corridor in central Lake County, between Wilson Road and just east of Mill Road. The new bypass would run south of existing IL 120, with existing IL 120 remaining in place. Additionally, IL 120 between Wilson Road and US 12 would be widened from one to two lanes in each direction. This project is planned for implementation in 2050.

The center of this project directly connects with add lanes projects proposed on US 45, RCP 13135, and IL 137/IL 83, RCP 14136. In addition, this project overlaps with improvements proposed on IL 120, RCP 13134.

Wilmington-Peotone Road from IL 53 to Drecksler Road
Will County
RCP 43158
Associated TIP database ID: 12-18-0021

This project is in the early planning stages and alternatives are being evaluated with a Planning and Environmental Linkages study. Proposed improvements include improved shoulders, passing lanes between Old Chicago Road and US 45/52, a realignment of the west end of Wilmington to connect directly with River Road, and intersection improvements. Implementation of the selected alternative is planned for 2040.

Laraway Road (CH 74) from US 45 to IL 43 (Harlem Avenue)
Will County
RCP 43159
Associated TIP ID: 12-13-0004

This project would add lanes to a 4.3-mile section of Laraway Road in east Will County, between US 45 and IL 43, increasing the cross-section of this major arterial from one to two lanes in each direction. The west end of this project would directly connect with the widening work that is currently underway on Laraway Road between US 52 and US 45. This project is planned for implementation in 2025.

Randall Road from north of Stearns Road to south of Longmeadow Parkway
Kane County
RCP 43208

This project would complete ongoing add-lane work on a 10-mile section of Randall Road in northeast Kane County, between Stearns Road and Longmeadow Parkway, increasing the cross-section of this major arterial from two to three lanes in each direction. Several pieces of this larger project are in progress or have committed funding, including Randall Road at Hopps (TIP ID 09-21-0007); at Big Timber (TIP ID 09-21-0005 and TIP ID 09-21-0007); at IL 71 (TIP ID 09-21-0019); and at I-90 (RCP 43211 and TIP ID 09-21-0007). The remaining pieces of this project would likely be implemented in phases between 2027 and 2050.

Randall Road at I-90
Kane County
RCP 43211

This project would reconfigure the Randall Road intersection at I-90, improving traffic flow between the two roadways, and add lanes to a 0.5-mile section of Randall Road between Point Boulevard and Alft Lane, increasing the cross-section from two to three lanes in each direction. This project is planned for implementation in 2027.

Northern McHenry Bypass
McHenry County
RCP 44101

This project would build a new, 1.6-mile toll bridge over the Fox River in northeast McHenry between IL 31 and Chapel Hill Road to alleviate congestion in downtown McHenry. Upgrading Chapel Hill Road between the new bridge and IL 120 would also be necessary to accommodate the shift in traffic flows in the area. This project is planned for implementation in 2040.

Northern Algonquin Bypass
McHenry County
RCP 44102

This project would build a new, 2.8-mile arterial running over the Fox River and through northeast Algonquin between Klasen Road and Spring Creek Road to alleviate congestion in downtown Algonquin. This new arterial would provide an alternate route for traffic headed between IL 31 and IL 26. This project is planned for implementation in 2040.

Elston-Armitage-Ashland-Cortland Intersection Improvement
CDOT
RCP 62141
Associated TIP ID: 01-22-0022

This project would address safety and capacity constraints in an industrial urban area where four major arterials and two freight and commuter served rail lines intersect. The four arterials weave together, intersecting at four separate, signalized intersections within a 0.2 square mile area located just east of where the UP-N and UP-NW rail lines cross over the east-west roads — creating challenging terrain for vehicles, pedestrians, and bicycles to navigate. The Clybourn Metra station is also located just west of the intersections proposed for improvement. This project would reconfigure the intersections to improve multi-modal traffic flow, while addressing SOGR needs.

Improvements would include a realignment of Elston Avenue to overlap with the Mendell Street corridor east of the current alignment and accommodations for a future eastward extension of Armitage over the North Branch of the Chicago River. SOGR elements would include reconstruction of the UP-N and UP-NW structures over Elston and Armitage and traffic signal upgrades. This project is planned for implementation in 2035.

Devon-Caldwell-Central-Lehigh Intersection Improvement
CDOT
RCP 62142

This project would address safety and capacity constraints at the intersection of four arterials and the Metra MD-N Line at the north end of Chicago. The small, 0.2 square mile area where these roadways come together includes 7 signalized intersections and 3 at-grade road-rail crossings. The project would grade separate the rail traffic and nearby Metra station, reducing travel delays and the potential for collisions. The project would also reconfigure the Edgebrook bus turnaround, to provide riders with direct access to Metra station platforms, and the intersection geometry to improve safety for people bicycling and walking through the area. This project is planned for implementation in 2036.

79th Street/Stony Island/South Chicago Intersection Improvement
CDOT
RCP 62211

This project would address safety and capacity constraints at the intersection of three major arterials located just east of I-90 in south Chicago. This project is in the early planning stages and recently received funding for a Planning and Environmental Linkages study.

143rd Street from Wolf Road to US 45 (La Grange Road)
Orland Park
RCP 83209
Associated TIP ID: 06-00-0042

This project would add lanes to a two-mile section of 143rd Street in Orland Park (southwest Cook County), increasing the cross section of this arterial from one to two lanes in each direction. This project is in the final design stage and the Village of Orland Park is working on establishing a source of funds for construction.

The west end of this project directly connects with other add lanes projects on IL 7 and 143rd Street, RCPs 83210 and 13124.

143rd Street from Will-Cook Road to IL 7 (Wolf Road)
Orland Park
RCP 83210
Associated TIP ID: 06-03-0005

This project would add lanes to a one-mile section of 143rd Street in Orland Park (southwest Cook County), increasing the cross section of this arterial from one to two lanes in each direction. This project is currently on hold in final design pending the need to establish funds for construction.

The east end of this project directly connects with other add lanes projects on IL 7 and 143rd Street, RCPs 83209 and 13124.

Roadways: Interstates

I-94 Bishop Ford Expressway Reconstruction
IDOT District 1
RCP 11174
Associated TIP database ID: 13-19-0016

Improve condition and reduce long-term maintenance needs on the Bishop Ford Expressway (I-94) by reconstructing 9.9 miles of the expressway between the Dan Ryan Expressway (I-57) and US 6 (159th Street), including bridge repairs. This project is planned for implementation in 2045.

I-90/I-94 Kennedy and Dan Ryan Expressway Reconstruction (Hubbard Street to 31st Street)
IDOT District 1
RCP 11175
Associated TIP database ID: 01-19-0024

Improve condition and reduce long-term maintenance needs on the Kennedy and Dan Ryan Expressways (I-90/I-94) by reconstructing four miles of the Kennedy and Dan Ryan Expressways between Hubbard Street and 31st Street, including bridge repairs. This project is planned for implementation in 2035.

I-55 Stevenson/Barack Obama Presidential Expressway Reconstruction (US 41/South DuSable Lake Shore Drive to I-80)
IDOT District 1
RCP 11176
Associated TIP database ID: 06-19-0011

Improve condition and reduce long-term maintenance needs on the Stevenson/Barack Obama Presidential Expressway (I-55) by reconstructing 43.5 miles of the expressway between US 41/South DuSable Lake Shore Drive and I-80, including bridge repairs. This project is planned for implementation in 2045.

I-90 Kennedy Expressway Reconstruction
IDOT District 1
RCP 11177
Associated TIP database ID: 01-19-0025

Improve condition and reduce long-term maintenance needs on the Kennedy Expressway (I-90) by reconstructing 5.8 miles of the expressway between Montrose Avenue and East River Road, including bridge repairs. This project is planned for implementation in 2045.

I-94 Edens Expressway Reconstruction
IDOT District 1
RCP 11178
Associated TIP database ID: 01-19-0026

Improve condition and reduce long-term maintenance needs on the Edens Expressway (I-94) by reconstructing 13.2 miles of the expressway between Lawrence Avenue and the Edens Spur, including bridge repairs. This project is planned for implementation in 2045.

I-90/I-94 Kennedy Expressway Reconstruction (Edens Junction to Hubbard Street)
IDOT District 1
RCP 11179
Associated TIP database ID:01-19-0027

Improve condition and reduce long-term maintenance needs on the Kennedy Expressway (I-90/I-94) by reconstructing seven miles of the expressway between the Edens Junction and Hubbard Street, including bridge repairs. This project is planned for implementation in 2045.

I-290/IL 53 Reconstruction (Lake Cook Road to I-88)
IDOT District 1
RCP 11180
Associated TIP database ID: 08-19-0040

Improve condition and reduce long-term maintenance needs on I-290/IL 53 by reconstructing 23.6 miles of the interstate between Lake Cook Road and I-88, including bridge repairs. This project is planned for implementation in 2040.

I-57 Reconstruction (I-94 to I-80, I-80 to Will/Kankakee county border)
IDOT District 1
RCP 11181
Associated TIP database ID:13-19-0017

Improve condition and reduce long-term maintenance needs on I-57 by reconstructing 19.7 miles of the interstate between I-94 and the Will and Kankakee county border, including bridge repairs. This project is planned for implementation in 2045.

I-355 at I-290 Interchange Project – Bridge Replacements
IDOT District 1
RCP 11182

This project would reconstruct all bridges at the I-355 interchange with I-290. The project is planned for implementation in 2040.

I-190 O'Hare Access Roads from Bessie Coleman Drive to Cumberland Avenue (I-190 Access Improvements)
IDOT District 1
RCP 13104
Associated TIP ID: 01-98-0114

This project would improve general access to O'Hare Airport with capacity and configuration improvements. The project would add lanes to one mile of I-190 between Bessie Coleman Drive and River Road, increasing the cross-section of this expressway from three to four lanes in each direction. Additionally, the project would reconfigure access points along the roadway to reduce conflicts between merging and diverging traffic, reducing the risk of collisions and improving the flow of traffic. This project is currently underway and planned for completion in 2030.

I-55 from I-80 to Coal City Road
IDOT District 1
RCP 13106
Associated TIP database ID: 12-02-9034

This project would add lanes to a 9.8-mile section of I-55 in west Will County, between I-80 and Coal City Road, increasing the cross-section of this interstate from two to three lanes in each direction. The project would also include SOGR and modernization work including resurfacing, bridge replacement, and interchange improvements. This project is planned for implementation in 2040.

I-55 Managed Lane from I-355 to I-94/I-90
IDOT District 1
RCP 13108
Associated TIP ID: 12-10-9001[42]

This project would add managed lanes to a 22-mile section of I-55, between I-90/I-94 in Chicago and I-355 at the DuPage and Cook County border. The 14-mile section between I-90/I-94 and I-294 would include two managed lanes, and the 8-mile section between I-294 and I-355 would include one managed lane. As proposed, the managed lanes would be tolled and restricted to passenger vehicle use only. This project is planned for implementation in 2040.

I-55 from I-80 to US 52 (Jefferson Street); US 52 from River Road to Houbolt Road
IDOT District 1
RCP 13110
Associated TIP ID: 12-18-0019

This project would improve access to I-55 and the flow of traffic along I-55 in west Will County between US 52 and I-80. The first portion of the project is completed: this included the addition of a one mile auxiliary lane on I-55 between US 52 and IL 59, a reconfiguration of the I-55 interchange at IL 59, and the replacement of bridges on this section of I-55. The next phase of the project would include the widening of ramps at the US 52 interchange and the addition of a second lane in both directions for one mile on US 52 between River Road and Houbolt Road. This project is planned for completion in 2035.

I-55 from I-355 to IL 53 (Bolingbrook Drive)
IDOT District 1
RCP 13111
Associated TIP ID: 08-19-0042

This project would reconstruct and add lanes to a 2.6-mile section of I-55 in north Will County, between I-355 and IL 53 (Bolingbrook Drive), increasing the cross-section of this interstate from three to four lanes in each direction. This project is planned for completion in 2032.

42 Pre-construction phase TIP ID.

I-80 from US 30 to I-294
IDOT District 1
RCP 13113
Associated TIP database ID 12-12-0037

This project would add a tolled lane to 20 miles of I-80 in between US 30 in northeast Will County and I-294 in south Cook County, increasing the cross-section of this interstate from three to four lanes in each direction. This project is planned for implementation in 2050.

I-290 Eisenhower Expressway from US 12/45/20 Mannheim Road to Racine Avenue
IDOT District 1
RCP 13114
Associated TIP ID 04-00-0023

This project would improve travel conditions on I-290 in Cook County by reconstructing the 12-mile section between Mannheim Road and Racine Avenue, converting one lane to a tolled express lane in each direction on the 6 miles between Austin Boulevard and Racine Avenue, and add a new, tolled express lane in each direction to the 6-mile section between Mannheim Road and Austin Boulevard. I-290 currently has 3 lanes in each direction between Mannheim Road and Austin Boulevard and 4 lanes in each direction between Austin Boulevard and Racine Avenue. The proposed project would result in 4 lanes in each direction,3 general purpose lanes and 1 tolled express lane, for the full length of the project. This project is planned for implementation in 2035.

I-55 from Weber Road to US 30, at Airport/Lockport Road and at IL 126
IDOT District 1
RCP 14109
Associated TIP ID: 12-06-0041

This project would improve access to I-55 in northwest Will County with a new, full interchange at Airport Road and the expansion of the interchange at IL 126 from a partial to full, including the addition of a 0.4-mile auxiliary lane. This project is currently underway and planned for completion in 2035.

I-57 at Eagle Lake Road
IDOT District 1
RCP 14138
Associated TIP ID 12-22-0005

This project would improve access to I-57 in southeast Will County with a new full interchange at Eagle Lake Road. This project is planned for implementation in 2029.

South Tri-State (I-294/I-80) Bridging Investment
IL Tollway
RCP 51172
Associated TIP database ID 13-25-0009

This project would include maintenance to address SOGR needs on bridges along 18 miles of the south Tri-State corridor, including enhancements of local facilities and railroad bridges. This project is planned for completion in 2031.

I-290/IL 53/I-90 Interchange Improvement
CMAP
RCP 52212
Associated TIP database ID 03-18-0017

This project would improve traffic flow and reduce congestion at the I-290/IL 53 interchange with the Jane Addams Tollway (I-90) in northwest Cook County by converting the existing four one-lane clover leaf ramps to two lane flyovers. Additionally, this project would include reconstruction of 3.1 miles of I-290/IL 53 between Higgins Road and Kirchoff Road and reconstruction of the service interchanges at Woodfield Road and Algonquin Road. This project is planned for implementation in 2032.

IL 390 Interchange at County Farm Road
Illinois Tollway
RCP 54103
Associated TIP ID 08-25-0022

This project would improve access to IL 390 in northwest Cook and DuPage counties with a new interchange at County Farm Road, located just west of the current terminus of IL 390 at US 20 (Lake Street). This project includes the construction of a new signalized intersection on County Farm Road one half mile south of US 20 and the conversion of the existing interchange at US 20 to a diverging diamond. This project is planned for implementation in 2031.

I-88 York Road Interchange Expansion
Illinois Tollway
RCP 54105
Associated TIP ID: 08-25-0019

This project would improve access to southbound I-294 in east DuPage County with a new ramp running from York Road in Oak Brook to the existing interstate ramp that connects traffic on eastbound I-88 with southbound I-294. This project is proposed for implementation in 2031.

Supplement A: Term definitions

Bus rapid transit (BRT), as defined by the Federal Transit Administration, is a high-quality bus-based transit system that delivers fast and efficient service that may include dedicated lanes, busways, traffic signal priority, off-board fare collection, elevated platforms, and enhanced stations/stops.[43] Typically, BRT projects will also include major service improvements or expansions to vehicle fleet.

Exempt project is a transportation project exempt from regional transportation air quality conformity analysis pursuant to CFR 40 §93.126, and/or a transportation project with documented categorical exclusions from National Environmental Policy Act approvals typically required by the Federal Highway Administration or the Federal Transit Administration pursuant to CFR 23 §771.117.

Fixed guideway transit infrastructure is a public transportation facility or vehicle which uses exclusive rights-of-way or partially exclusive rights-of-way where transit has priority over other modes of travel. This includes rapid rail transit, light rail, commuter rail, bus rapid transit, busways, and automated people movers.

One mile length requirement is a minimum length requirement that applies to most portions of the capacity-based part of the RCP evaluation. For projects that are changing capacity on the network, the portion of the capacity change must be greater than or equal to one centerline mile of roadway. The total length of an improvement for projects that are planned or constructed in segments should be used to determine whether that improvement meets the minimum project length. Total project length should only include segments that are planned to be built within the 2050 plan horizon. This includes:

- New or converted managed lanes of a mile or more in length
- Auxiliary lanes that connect ramps located at least one mile away

This does not include:

- Turning lanes
- Acceleration or deceleration lanes

Programmatic investment is a transportation project or a collection of transportation projects that do not meet the eligibility criteria and thresholds of regional capital projects but are included in the TIP.

State-of-good-repair is a condition sufficient for the capital asset to operate at a full level of performance, meeting the following objective standards pursuant to CFR 49 § 625.41: (a) the asset is able to perform it's designed function; (b) the use of the asset in its current condition does not pose an identified unacceptable safety risk; and (c) the life-cycle investment needs of the asset have been met or recovered, including all scheduled maintenance, rehabilitation, and replacements.

Regional transportation system includes both the National Highway System and the fixed guideway transit system. The NHS includes roadways classified as interstate, freeway or expressway, and other principal arterials. It also includes roads important to national defense, plus intermodal connectors.

Year of expenditure (YOE) is the year when an expense, capital or operational, is anticipated to occur. YOE accounts for inflation in project costs over the plan horizon.

43 Federal Transit Administration, "Bus Rapid Transit," https://www.transit.dot.gov/research-innovation/bus-rapid-transit.

Supplement B: Metric definitions and ranges

Table 3.1, Roadway asset condition needs

Bridge condition ratings: Bridge condition data was collected from the National Bridge Inventory. A poor condition rating indicates advanced section loss, deterioration, spalling, or scour have seriously affected primary structural components. A fair condition rating indicates that all primary structural elements are sound but may have minor section loss, cracking, spalling, or scouring.

Pavement condition: Pavement condition data was collected from IDOT's Condition Rating Survey (CRS). The CRS scale ranges from 1 to 9, where 1 indicates completely failed pavement and 9 represents the best condition. A rating of 1 to 4.5 is considered poor and in need of improvement and a rating of 4.6 to 6 is considered fair with a likely need for improvement in the short term.

Table 3.2, Roadway safety needs

IDOT safety tier rating: The safety tiers identify roadway segments and intersections with an overrepresentation of crashes that may be potential locations for improvement. The scores present how many standard deviations away a location is compared to the average for that type of facility, up to a maximum of 5 (5 represents standard deviations of 5 and higher). A score of 3 or above is considered high, identifying an area with high need for safety improvement. The safety tier ratings are calculated for peer groups using a crash weighting system that accounts for the severity of crashes and typical injury outcomes by crash type. For the RCP metrics, CMAP used the full weighted value converted into a safety score.

Illinois Vulnerable Road User (VRU) safety assessment rating: Similar to the safety tiers the VRU ratings identify roadway segments with an overrepresentation of crashes that may be potential locations for improvement; however this assessment focuses only on bicycle and pedestrian crashes. In addition to measures of observed safety this analysis accounted for perceived safety on the transportation network. The perceived safety measure includes locations entered into the VRU Safety Web Map normalized by equity-adjusted population, vehicular exposure, and VRU exposure. VRU exposure is estimated by land use.

Table 3.3, Roadway reliability needs

Level of Travel Time Reliability: The roadway travel reliability measures focus on capturing the difference between the average travel time that occurred on each roadway segment during the peak travel periods in 2024 with the high-end travel time that occurred for approximately one out of every ten trips. The travel time data for all Tuesdays, Wednesdays, and Thursdays in 2024 was extracted from the Regional Integrated Transportation Information System database maintained by CATT Lab.

- **Interstates:** Travel time variability was measured by comparing high end travel times (defined as the 90th percentile travel time) with the average travel time.
- **Arterials:** Travel time variability was measured by comparing high end travel times (defined as the 90th percentile travel time) with the 50th percentile travel time. The 50th percentile travel time was used instead of the average travel time for arterials to reduce the impact of traffic coming to a full stop at traffic lights on the mid-range travel time measure.

Table 3.4, Roadway freight use

Average daily truck volume: Truck volume data was collected from the best available source for each location. Referenced sources included 2017-2023 IDOT counts, 2025 CMAP counts, Miovision and Inrix trip analytics data from RITIS, and one Cook County count. The presented values represent the highest average annual daily truck (single and multi-unit) volume identified on the facilities proposed for improvements.

Truck percentage - the proportion of total average annual daily traffic that is included in the truck count (single and multi-unit vehicles) at the location where the truck volume is highest.

Table 3.5, Transit asset condition, safety, reliability, and freight needs

RTA Capital Program Metrics: For transit projects the need for asset condition, safety, and reliability improvements is rated on a measurement scale similar to the one used in the RTA's 2025 Capital Program Metrics. Projects are assigned one of four metrics ratings based on a combination of the anticipated project impact and the level of need for that type of improvement at the proposed location. The ratings are as follows:

- **A:** Significantly improves speed/reliability; directly provides a safety benefit or improvement; facilities addressed in project are currently in poor condition; high volume of freight rail traffic served by project that will directly improve reliability or travel times for freight traffic.
- **B:** Moderately improves speed/reliability; indirectly provides a safety benefit or improvement; facilities addressed in project are currently in fair condition; moderate volume of freight rail traffic served by project that will directly improve reliability or travel times for freight traffic.
- **C:** Maintains current speed/reliability, safety, and freight service levels; facilities addressed in project are currently in good condition.
- **N/A:** No impact on service or safety; does not have an asset rating.

Table 3.6, EDA trip use

EDA volume and proportion of use: The volume of passenger vehicle trips coming to or from an EDA and using the infrastructure included in the proposed project was estimated using the regional travel demand model. The proportion is presented as a portion of total passenger vehicle trips on the facility on an average weekday.

Table 3.7, Roadway mobility

Change in travel delays: the impact of each project on the time drivers spend in congestion was estimated using the regional travel demand model. The values presented show the total change in hours spent in congestion (driving below free flow speed) regionwide on an average weekday for three vehicle types: passenger vehicles, trucks, and vehicles coming to or from an EDA.

Table 3.8, Transit mobility

Change in transit trips: The impact of each project on the volume of trips that use the transit system is estimated using the travel demand model. The volumes presented show the total change in transit trips on an average weekday. A trip may include multiple transit boardings, or transfers.

Change in transit travel speeds: The impact of each project on the change in miles and hours traveled on transit is estimated using the travel demand model. The volumes presented show the total change in miles traveled on transit over the change in hours.

Table 3.9, Emissions

Change in vehicle emissions: For the impact on emissions, CMAP calculated the anticipated impact of the project on four pollutants resulting from changes in vehicle travel volumes and speeds using the travel demand model. The measured pollutants include:

- Greenhouse Gases (GHG)
- Nitrogen Oxides (NOx)
- Volatile Organic Compounds (VOCs)
- Particulate matter (PM 2.5)

Table 3.10, Infill support

Infill supportive trip use: The impact of a project on future infill development is measured using the travel demand model. The volumes presented show the proportion of trips using the project facilities that are coming to or from and infill supportive area. Infill supportive areas were defined using the Infill Supportive Index, which was created in 2015 in support of ON TO 2050, highlights the parts of the region that are best able to support new, infill types of development.

Supplement C: RCPs with committed funding (not subject to evaluation)

RCP ID	Lead agency	Project name	Project type
91312	IDOT – District 1	I-80 Reconstruction from Ridge Road to US 30 Lincoln Highway	Interstate add lanes
91317	McHenry County	Randall Road from Ackman Road to Polaris Drive/Acorn Lane	Arterial add lanes
91318	IDOT – District 1	Barrington Road from IL 62 to Central Road	Arterial add lanes
91319	IDOT – District 1	IL 56 (Butterfield Road) from IL 53 to I-355	Arterial add lanes
91321	IDOT – District 3	IL 47 from IL 71 (Stagecoach Trail) to Caton Farm Road (CH 23)	Arterial add lanes
91322	IDOT – District 1	IL 31 Front Street from IL 120 Belvidere Road to IL 176 (Terra Cotta Ave)	Arterial add lanes
91329	IDOT – District 1	IL 47 from IL 120 to US 14	Arterial add lanes
91330	IDOT – District 1	IL 47 from IL 176 to IL 176	Arterial add lanes
91331	IDOT – District 1	IL 47 from Cross Street to Kennedy Road (FAU 3793)	Arterial add lanes
91336	IDOT – District 1	I-80 from I-294 (Tri-State Tollway) to State Line (Flex Road - ITS)	Interstate add lanes
91337	IDOT – District 1	I-55 at IL 129, IL 129 to Lorenzo Road, I-55 Frontage Roads: Kavanaugh Road to Lorenzo Road and at Lorenzo Road	Interchange improvement
92416	CTA	Red Line Extension (US 12/20/95th Street to 130th Street)	Transit new line or extension
93310	Metra	Auburn Park New Station	New station
94320	Will County	Weber Road (CH 88) from 135th Street (Romeo Road) to Airport Road (Lockport Road)	Arterial add lanes
94323	Will County	Laraway Road (CH 74) from US 52 to US 45	Arterial add lanes
94325	Will County	143rd Street (CH37) from State Street (Lemont Road) to Bell Road (CH 16)	Arterial add lanes
94327	Will County	Gougar Road: Laraway Road to Francis Road	Arterial add lanes
94333	Will County	Bell Road Corridor from 159th Street to Glengary Drive	Arterial add lanes
94338	Kane County	Randall Road Grade Separation and Intersection Safety Improvements at Hopps Road	Intersection improvement
95313	Illinois Tollway	I-294 Central Tri-State Mobility Improvements	Interstate add lanes
95314	Illinois Tollway	I-290/I-88/I-294 Interchange Improvement	Interchange improvement
95315	Illinois Tollway	Elgin O'Hare Western Access (I-490)	New interstate

RCP ID	Lead agency	Project name	Project type
96111	CDOT	Calumet River Bridges	Bridge reconstruction
96132	CDOT	State/Lake Station - Loop El	Station improvement
97434	Pace	Pulse Halsted Street	BRT or bus priority corridor
97435	Pace	Pulse 95th Street	BRT or bus priority corridor

Supplement D: Pending visionary RCPs (not ready for evaluation)

Lead agency	Project name
IL Tollway	I-294 (Tri-State Tollway) at Irving Park Road interchange improvement
IL Tollway	I-88 and I-355 system interchange reconstruction
IL Tollway	I-355 from Roosevelt Road to North Avenue add lane
Metra	BNSF line extension to Kendall County
Metra	BNSF line extension to Sugar Grove
Metra	HC line extension to Wilmington
Metra	MDN line extension to Wadsworth
Metra	MDW line extension to Hampshire
Metra	Metra Electric line extension to South Suburban Airport
Metra	Rock Island extension to Minooka

Acknowledgments

RCP Resource Group

Representatives from thirteen partner organizations and agencies participated in an RCP Resource Group, providing feedback and guidance throughout the development and implementation of the RCP process for the 2026 Regional Transportation Plan.

- **Kevin Carrier**, PE, Assistant County Engineer, Lake County Division of Transportation
- **Lynnette H. Ciavarella**, Senior Division Director, Strategic Capital Planning, Metra
- **Hugo Coronado**, Manager, Metropolitan Planning Council
- **Grant Davis**, Director of Grants Management, Chicago Department of Transportation
- **Peter Fahrenwald**, Senior Advisor, Planning and Capital Programming, Regional Transportation Authority
- **Heidi Files**, Chief of Planning and Programming, Kane/Kendall Council of Mayors
- **Jacqueline Forbes**, Chief of Planning and Programming, Kane County Division of Transportation, and Deputy Chief of Planning Division, Illinois Tollway
- **Lindsey Frey**, Coordinating Planner, Chicago Department of Transportation
- **Brandon Geber**, Metropolitan Program Planning Section Chief, Illinois Department of Transportation
- **Henry Guerriero II**, Traffic and Revenue Analyst, Illinois Tollway
- **Scott Hennings**, Assistant Director of Transportation, McHenry County Division of Transportation
- **Jennifer Henry**, Director, Strategic Planning and Policy, Chicago Transit Authority
- **Katherine Herdus**, Area Programmer, Illinois Department of Transportation District 1
- **Pamela Jones**, Policy Transportation Associate, Center for Neighborhood Technology
- **Quinn Kasal**, Senior Manager, Strategic Planning - Rail, Chicago Transit Authority
- **Michael Klemens**, Manager of Transportation Planning, Lake County Division of Transportation
- **David Kralik**, Director, Planning and Programming, Metra
- **Cristina Kupkowski**, PE, Planning and Programming Manager, Will County Department of Transportation
- **Evan Laugen**, Strategic Analyst for Strategic Planning, Regional Transportation Authority
- **Heidi Lichtenberger**, Council Director, Kane Kendall Council of Mayors
- **Erik Llewellyn**, Chief Planning Office, Pace Suburban Bus
- **John Loper**, Chief Transportation Planner, DuPage County Division of Transportation
- **Tara Orbon**, Assistant Superintendent, Cook County Department of Transportation
- **Alexandra Rosander**, Strategic Planner, Chicago Transit Authority
- **Steven Schilke**, Bureau Chief, Programming, Illinois Department of Transportation District 1
- **Joseph L. Schofer**, Professor Emeritus of Civil and Environmental Engineering, Northwestern University
- **Kristian Skogsbakken**, Deputy Manager, Capital Grants, Pace Suburban Bus
- **Jeff Sriver**, Director of Transportation Planning, Chicago Department of Transportation
- **Joseph Surdam**, Principal Planner, Lake County Division of Transportation
- **Megan Swanson**, Senior Metropolitan Planning Manager, Illinois Department of Transportation
- **Sonali Tandon**, Senior Project Consultant, Chicago Transit Authority
- **Maulik Vaishnav**, Senior Deputy Executive Director, Planning and Capital Programming, Regional Transportation Authority
- **Michael Vanderhoof**, Planning Bureau Chief, Illinois Department of Transportation
- **Audrey Wennink**, Senior Director, Metropolitan Planning Council
- **Kyle Whitehead**, Principal, Government Affairs, Regional Transportation Authority



FY26-0029

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.

Chicago Metropolitan Agency for Planning

433 West Van Buren Street
Suite 450
Chicago, IL 60607

cmap.illinois.gov
312-454-0400

APPENDIX F - DRAFT

Socioeconomic Forecast









RTP

2026
Regional Transportation Plan

Chicago Metropolitan Agency for Planning

Table of contents

Introduction 1
Part 1: 2026 Regional Transportation Plan socioeconomic forecast 2
Regional forecast introduction 2
Demographic model: data, methods, and assumptions 2
Births and fertility 2
Deaths and mortality 3
Migration 3
Group quarters populations 3
Economic forecast: data, methods, and assumptions 4
Benchmarking historical employment 4
Forecasting employment 4
Integration of demographic and economic models 5
Socioeconomic forecast: regional results 5
Regional population forecast 5
Regional employment forecast 6
Comparison to the ON TO 2050 update regional forecast 7
Part 2: 2050 Local forecast update 8
Local forecast introduction 8
Forecast motivation and modeling approach 8
The UrbanSim land use model 9
UrbanSim overview 9
Model specification 10
Household location choice model specification 10
Employment location choice model specification 10
UrbanSim model estimation and calibration 13
Travel model integration 13
Model data: custom inputs 14
Building footprints and attributes 14
Establishment-level employment 14
Regional forecast of households and employment 14
Constraints to development 14
Known development activity 17
Manual adjustments 18
Socioeconomic forecast: local forecast results 19
Evaluating the local forecast 23
Conclusion 23
Acknowledgments 24

Introduction

This document provides an overview of the Chicago Metropolitan Agency for Planning's (CMAP) socioeconomic forecasting process in support of the 2026 Regional Transportation Plan (RTP). It presents high-level results, with a more comprehensive set of data tables available on the CMAP Data Hub.[1]

Socioeconomic forecasts are a required component of a metropolitan planning organization's long-range transportation plan, which must include a horizon year of at least 20 years beyond the plan's adoption.[2] These results serve dual purposes: they inform an understanding of projected population and employment trends to help shape plan recommendations, and they provide inputs to CMAP travel models used for air quality conformity analyses and traffic projections.

The forecast has two major components:

1. A regional socioeconomic forecast

2. A local forecast that distributes regional totals to the local level

These two components use different approaches. The regional forecast focuses on demographics and macroeconomics, while the local forecast is a spatially oriented exercise that places greater emphasis on local constraints to growth, transportation accessibility, real estate supply, and other relevant factors. The following two sections describe these processes in greater detail.

While the forecast is driven by transportation planning needs, these projections are also used by CMAP staff members, partner agencies, local communities, economic development organizations, and watershed planners. In acknowledgement of these diverse needs, CMAP is committed to providing results with more demographic and temporal detail beyond basic travel model requirements alone. While much of this detail stems from regional totals, it also provides an overview of broad demographic trends in northeastern Illinois over the coming decades.

Like most forecasting efforts, many of the underlying assumptions are trend based and do not account for unanticipated behavioral changes. As such, forecasts should be understood as defensible estimates based on reasonable assumptions, not precise predictions. For example, the CMAP forecast adopted in 2018 could not anticipate changes in development patterns related to the COVID-19 pandemic.

1 Note that the data hub page will only become public after the forecast is officially adopted in October 2026.

2 U.S. Government Publishing Office, "Subpart C—Metropolitan Transportation Planning and Programming," Code of Federal Regulations, March 17, 2026, accessed March 20, 2026, https://www.ecfr.gov/current/title-23/chapter-I/subchapter-E/part-450/subpart-C.

Part 1: 2026 Regional Transportation Plan socioeconomic forecast

Regional forecast introduction

The technical approach for the regional socioeconomic forecast mirrors that of the original ON TO 2050 forecast (2018) and ON TO 2050 plan update forecast (2022). The economic forecast process also largely mirrors the plan update forecast, which was initially developed by the firm EBP. The economic forecast relies on an employment forecast produced by Moody's Analytics, with modifications to account for differences in employment sector definitions and to adjust for the treatment of temporary workers.

Much of the data used to inform the population and employment models are derived from state- and county-level sources. As a regional planning agency, CMAP recognizes the importance of intercounty dependencies and that it is unreasonable to expect counties to grow in isolation from one another. Because this is a regional forecasting exercise, all county-level inputs from the demographic and employment models were totaled for the regional forecast. Sub-regional output totals by county, township, travel model zone were generated through the local forecast process described in Part 2 of this document.

Part 1 discusses the methods, data, and assumptions behind the demographic and economic models, followed by the steps taken to reconcile the results of the two models. Regional population, household, and employment projections are presented at the end of this section.

Demographic model: data, methods, and assumptions

CMAP's population projections from 2025 to 2050 are based on an established demographic technique called the cohort component method. This method analyzes the historical patterns of the primary elements of population change — fertility, mortality, and migration — and extends them into the future either by projecting these past indicators forward or by aligning them with projections at a larger geographic scale, such as a state or the nation.

Due to the unprecedented nature of the COVID-19 pandemic, historical data is generally cut off in 2019 — for example, mortality rates during the pandemic are not necessarily reflective of mortality rates moving forward. The model uses U.S. Census projections of national fertility and mortality rates and adjusts them based on historic differences between the CMAP region and the nation.[3] If the mortality rate for a group has historically been 3 percent lower than the United States, the national Census projection for that group is adjusted downward by 3 percent.

In addition to the cohort component process, CMAP applies a labor force model to supplement net migration assumptions. This model incorporates employment projections from Moody's Analytics to reconcile the working-age population (labor supply) with anticipated labor force demand.

The major elements of the demographic model are described below. Additional details are available on the CMAP Data Hub.

Births and fertility

Data on births and deaths were obtained from the Illinois Department of Public Health to calculate historical fertility rates and mortality rates. Data on births were used to calculate age-specific fertility rates (ASFRs) for 2010 through 2018, grouped into 6 age cohorts (in 5-year ranges from ages 15 to 19, up to 40 to 44). Historic rates showed two distinct trends: fertility rates for cohorts younger than age 30 showed a marked decrease, while rates for all cohorts age 30 and older showed moderate increases.

3 United States Census Bureau,"2023 National Population Projections Tables: Main Series," Census.gov, February 12, 2025, accessed March 20, 2026, https://www.census.gov/data/tables/2023/demo/popproj/2023-summary-tables.html.

The U.S. Census Bureau released national fertility rate projections in 2023.[4] CMAP converted these projections into ratios based on the baseline period of 2010 through 2018. For example, women between 30 and 34 are projected to have a fertility rate in 2050 that is 5 percent higher than the base year. That projected 5 percent increase is then applied to the baseline fertility rate for women ages 30 to 34 to produce the 2050 ASFR. CMAP used this method rather than directly applying the Census projections because of regional variation. During the baseline period, women in the CMAP region younger than 30 had lower birth rates than the national average, while women older than 30 had higher birth rates than the national average.

Deaths and mortality

Mortality rates are calculated in a similar manner to fertility rates. The population is divided into 5-year age groups and divided by sex (for example, males ages 15 to 19). The age-standardized mortality rate (ASMR) is a person's likelihood of surviving a specified time interval, in this case five years (for example, 2030 to 2035). For example, if the ASMR for males ages 40 to 44 over a 5-year period is 99 percent, and there are 1,000 men at the start of the period, one would expect 990 men ages 45 to 49 five years later (1,000 x 0.99).

The mortality rate projections follow the same methodology as the fertility rate projections. CMAP calculated the mortality rates for the pre-COVID base-period (2014 to 2018) and adjusted them based on Census projections at the national level. Notably, newborns also face mortality risk, and so not all the births in the region in a five-year interval survive to the end of the interval.

Migration

Migration is best understood as a net process: people migrate into an area over a period, while others move out of that same area. The net gain or loss due to migration is the result of the inflows minus the outflows. Unlike births and deaths, which are recorded as official vital events, in- and out-migration are difficult to measure directly.

Migration consists of two streams: domestic migration, which occurs within the United States, and international migration. Like gross in- and out-migration, accurate records or estimates of these domestic and international components are difficult to obtain. For these projections, only total net migration values are calculated. The region's net migration has varied substantially over the past three decades. After a decade of positive net migration in the 1990s, the region experienced net out-migration during the 2000s and 2010s. In the 2020s, the region has had positive international migration and negative domestic migration, while total net migration has varied by year.

The level of migration is determined in conjunction with the economic model, and that process is described in more detail in the next section. A core assumption in the forecast model is that employment is the primary driver of migration into the region. CMAP used data from the 2017 to 2021 American Community Survey Public Use Microdata Sample to identify the demographic characteristics of households that migrated to the region and had at least one household member in the labor force. CMAP measures migration at the household level because people migrating for employment may bring household members who are not in the labor force, such as children or spouses.

Group quarters populations

All demographic modeling described up to this point addresses only the household population. To develop a total population estimate, projections must also account for group quarters populations, both institutionalized (nursing homes, prisons, etc.) and non-institutionalized (college dormitories, military quarters, etc.). To estimate the change in group quarters populations, 2010 Census data were used to calculate the proportions of people in group quarters arrangements relative to the 2010 total population.[5] These proportions were applied, with the exception of the military quarters populations, located exclusively in North Chicago at Naval Station Great Lakes, which held constant.

4 United States Census Bureau, "2023 National Population Projections."

5 2010 ratios were considered more representative of future conditions than 2020 due to the COVID-19 pandemic. The 2020 Census was conducted on April 1, 2020.

Economic forecast: data, methods, and assumptions

The economic forecast used for the 2026 Regional Transportation Plan followed the methodology developed for the ON TO 2050 plan update. In August 2020, CMAP selected the firm EBP to develop the economic portion of the regional socioeconomic forecast. Scope requirements were to:

- Report by the North American Industry Classification System (NAICS) two-digit sector using Bureau of Labor Statistics definitions
- Reallocate employment totals from the NAICS sector 561320 (Temporary Help Services) into the sectors that temp workers actually work in; provide totals for reallocated and un-reallocated
- Report total employment (including self-employed), as well as wage and salary only
- Develop a baseline/likely scenario along with low/pessimistic and high/optimistic scenarios reflecting the uncertainty that typically surrounds employment forecasts

An overview of EBP's approach to the employment forecast is presented below. For a more detailed explanation of the methodology, see Chicago Region Employment Forecast: 2021 Update, available in the 2022 forecast documentation on the CMAP Data Hub's Socioeconomic Forecast Data 2022 and 2018 Series page.

Benchmarking historical employment

Unlike a census of population, in which every individual is counted as one person, employment counts are subject to a variety of definitional challenges regarding part-time jobs, self-employed workers, domestic workers, and multiple-job holders. For the purposes of this report, employment is based primarily on average annual employment by sector as reported by the Bureau of Labor Statistics' Quarterly Census of Employment and Wages (QCEW), which collects employment and wage data from employers covered under state unemployment insurance programs. To round out employment estimates, two other sources were used: the Railroad Retirement Board, to account for railroad workers not counted in the QCEW, and the American Community Survey, for a count of self-employed workers. Excluded from these estimates are active-duty military personnel, private household workers, and elected officials.

The reallocation of workers counted under Temporary Help Services (colloquially referred to as temp workers) was informed by the Contingent Worker Supplement to the Census Bureau's Current Population Survey. For land use and travel demand modeling purposes, identifying temp workers by the industries in which they work improves results. Four separate benchmark series of historical employment by NAICS two-digit sector were developed for 2010 through 2020 to suit different agency purposes:

- Total employment without temp worker reallocation
- Total employment with temp worker reallocation (the series used for reporting in this section)
- Wage and salary employment without temp worker reallocation
- Wage and salary employment with temp worker reallocation (the series used for travel and land use modeling, used in Part 2 of this report)

Forecasting employment

Forecast employment totals for each series are based on March 2025 vintage forecasts produced by Moody's Analytics. The projections that serve as the official regional forecast are Moody's baseline, in which there is an equal probability (50 percent) that the economy will perform better or worse over the forecast period. Moody's Analytics was selected for this forecast because the service accounts for a variety of long-term trends, including climate migration, artificial intelligence, and macroeconomic cycles.

Integration of demographic and economic models

The employment model and the initial run of the demographic model described above operate independent of one another. An additional step is necessary to reconcile labor demand (employment) with labor supply (workers, a subset of the total population). If the rate of employment growth outpaces the number of workers available to fill those positions through natural increase and baseline net migration, migration rates are adjusted to address the increased demand for labor. This process primarily affects projections for the working-age population, but because many of these workers are of parenting age, it also contributes to an increase in the youth population.

For each five-year forecast period, the number of resident workers in the region is estimated by applying a series of modifying factors to the household population: Congressional Budget Office projections of labor force participation and unemployment rates, adjustments for workers with multiple jobs, and an out-of-region worker correction factor.[6] Baseline net migration estimated by the demographic model is then modified until the number of estimated resident workers roughly matches the number of primary jobs. This estimate of economic migrants is allocated based on historic demographic characteristics of people moving to the region for work, as described in the migration section above.

Socioeconomic forecast: regional results

All results below are for the aggregate seven-county CMAP region. For sub-regional results, refer to Part 2: Local forecast update. Microsoft Excel versions of all tables are available on the CMAP Data Hub.

Regional population forecast

Forecasts are reported in ten-year intervals for space considerations. A five-year interval version is available on the CMAP Data Hub.

Table 1: Age distribution, 2020 and 2050 (projected)

Age group	2020 (Census)*	2020 share of total	2050	2050 share of total
0-19	2,111,344	24.6%	1,921,841	21.6%
20-39	1,776,738	20.7%	1,630,426	18.4%
40-59	1,687,348	19.7%	1,827,283	20.6%
60+	3,002,305	35.0%	3,504,947	39.4%
Total	**8,577,735**	**100.0%**	**8,884,496**	**100.0%**

Table 2: Household and group quarters projections

Household population	2020 (Census)	2030	2040	2050
Total household population	8,447,265	8,702,458	8,807,112	8,713,459
Total households	3,266,741	3,494,097	3,660,505	3,756,015
Average household size	2.59	2.49	2.41	2.32

Group quarters population	2020 (Census)	2030	2040	2050
Total group quarters	130,470	159,264	160,325	171,037

Total population	2020 (Census)	2030	2040	2050
Total population (household population + group quarters population)	8,577,735	8,861,722	8,967,437	8,884,496

6 Congressional Budget Office, "The Long-Term Budget Outlook: 2025 to 2055," cbo.gov, March 27, 2025, accessed March 20, 2026, https://www.cbo.gov/publication/61187.

Regional employment forecast

Table 3: Total employment by NAICS sector, 2020 to 2050

Sector	NAICS	2020	2030	2040	2050
Agriculture, forestry, fishing and hunting	11	11,728	11,784	11,269	10,906
Mining	21	1,736	1,720	1,590	1,385
Utilities	22	13,633	12,956	10,905	9,304
Construction	23	208,142	215,704	199,589	185,988
Manufacturing	31-33	368,875	381,379	355,827	330,779
Wholesale trade	42	210,681	221,950	212,087	198,987
Retail trade	44-45	401,154	413,073	391,290	363,152
Transportation and warehousing	48-49	285,639	326,107	327,029	321,916
Information	51	80,785	82,847	81,567	79,291
Finance and insurance	52	230,039	230,290	226,034	219,070
Real estate and rental and leasing	53	85,593	86,024	84,695	82,294
Professional, scientific and technical services	54	378,907	409,010	434,410	443,859
Management of companies and enterprises	55	65,155	70,367	74,780	76,414
Administrative/waste services	56	235,324	254,909	271,727	278,491
Educational services	61	379,376	426,727	422,725	411,534
Health care and social assistance	62	560,873	628,394	619,372	600,155
Arts, entertainment, and recreation	71	89,062	117,500	121,542	127,015
Accommodation and food services	72	284,780	376,171	389,607	407,780
Other services (except public administration)	81	181,481	205,010	204,860	204,436
Public administration	92	133,263	138,172	134,449	131,120
Total employment		**4,206,227**	**4,596,590**	**4,562,495**	**4,471,585**

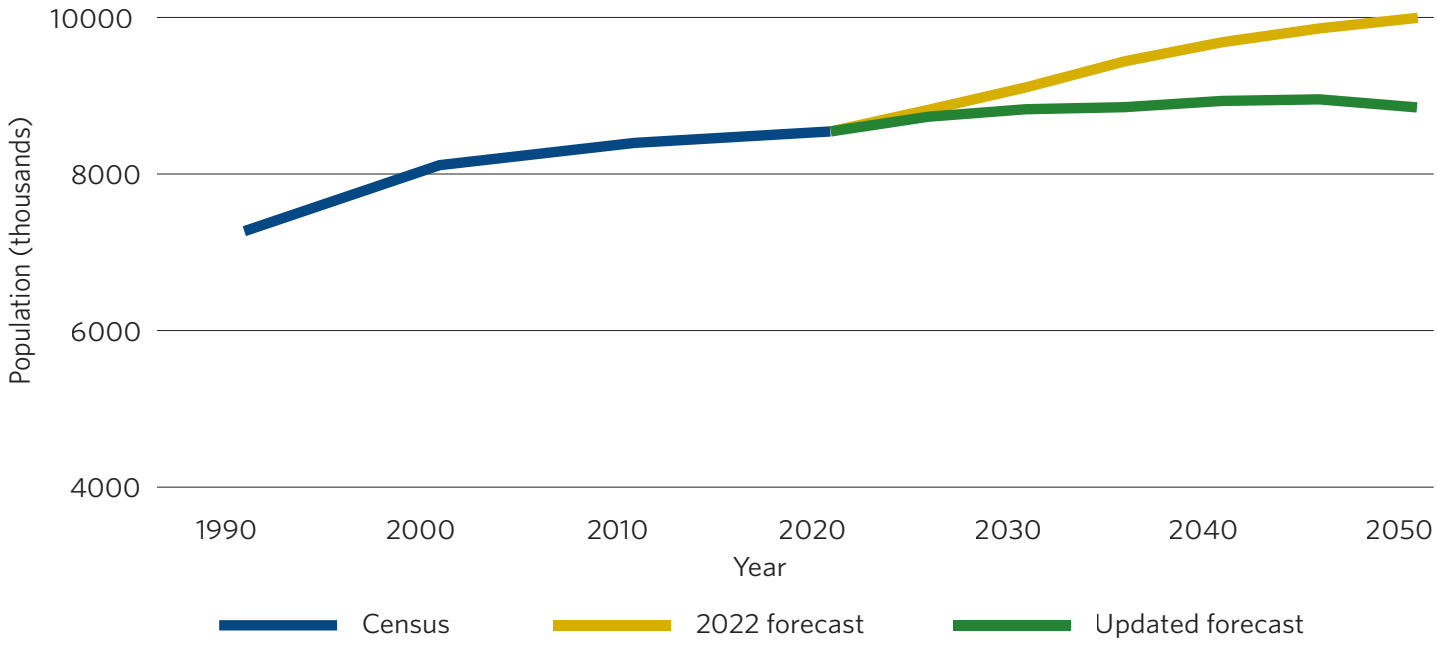
DRAFT

Comparison to the ON TO 2050 update regional forecast

The new forecast totals for both population and employment are lower than the ON TO 2050 update forecast published in 2022.

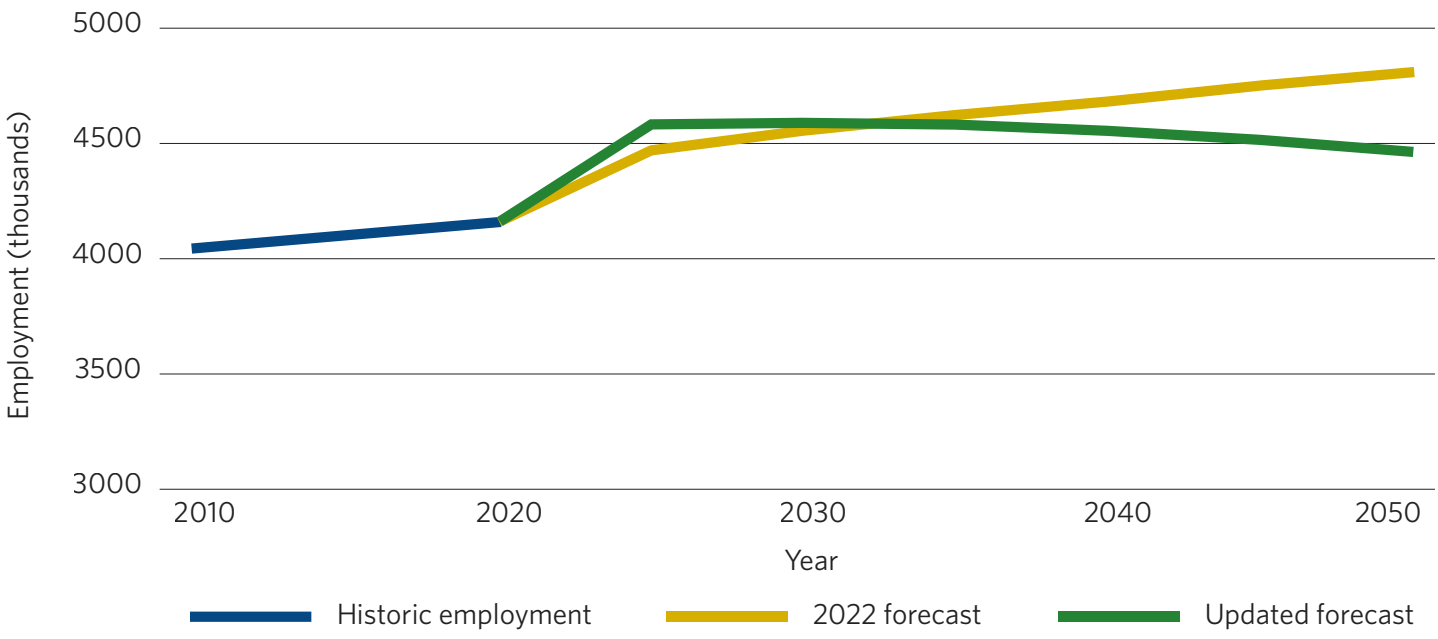
The current population projection of just under 9 million people by 2050 represents a decrease of over 1,000,000 from the ON TO 2050 update forecast. Figure 1 shows the region's population growth since 1990 and the divergence of the two forecasts beginning in 2020, the base year for the previous forecast.

Figure 1: ON TO 2050 plan update and 2026 Regional Transportation Plan population forecasts compared



Similarly, the employment forecast is lower by roughly 325,000 jobs by 2050 compared to the ON TO 2050 update forecast of more than 4.8 million. These differences are shown in Figure 2.

Figure 2: ON TO 2050 plan update and 2026 Regional Transportation Plan employment forecasts compared



Two major contributors to this lower forecast are sluggish population growth in the previous decade and the domestic out-migration that occurred during the COVID-19 pandemic. The region experienced substantial out-migration between the time the previous forecast was produced and the present, and that decline has downstream effects on the number of projected births. These trends are reflected in the updated Moody's employment forecast for the region, which projects lower 2050 employment than in the previous cycle, resulting in lower projected migration rates. Overall, the updated forecast shows the region growing slowly between now and 2050, adding about the equivalent of the population of the city of Orlando to the region between 2020 and 2050.

Part 2: 2050 Local forecast update

Local forecast introduction

The local socioeconomic forecast estimates population, households, residential units, and employment from a 2020 base year to a 2050 horizon year. The local forecast supports regional planning and decision making by providing a consistent view of how growth may be distributed under a defined set of assumptions. The forecast is implemented using UrbanSim, an integrated land use modeling framework composed of multiple interacting submodels. For each forecast year, UrbanSim simulates the location decisions of new and relocating households and jobs across the region at the census block level. These block-level results are then aggregated to the municipality and county levels and made available for download through CMAP's Data Hub.

The forecast provides a long-range view of how housing and employment may be distributed across the region, reflecting modeled location choice preferences, known development activity, and projected regional growth. Housing costs adjust over time in response to local market conditions, allowing household location choice decisions to reflect the influence of price. Residential development is simulated by introducing new housing in locations where market demand and zoning capacity support growth, allowing household location decisions to respond to changes in available supply.

The forecast is not a prediction, but a modeled scenario of how the region could develop under current zoning policies, market conditions, and demographic trends. It reflects a consistent set of assumptions about regional growth, development activity, and land use capacity, and is intended to support planning and policy implementation rather than anticipate precise outcomes for individual locations. Changes to these underlying assumptions — including land use policies, market conditions, or development activity — could lead to different outcomes.

Part 2 describes the UrbanSim land use model in greater detail, including forecast motivation, the overall modelling approach, model structure, and data requirements. The section concludes with local projections of population, households, and employment, followed by a discussion of the criteria used to compare and select forecast runs.

Forecast motivation and modeling approach

Unlike the ON TO 2050 local forecast released in 2022 — which incorporated explicit policy levers to align outcomes with adopted plan goals — the 2026 forecast adopts a fully data-driven, predictive approach.

The 2022 forecast incorporated a set of policy-forward levers designed to reflect the long-range goals of the ON TO 2050 plan. These levers were intentionally constructed to emphasize reinvestment in existing communities, support infill development, and encourage renewed growth in disinvested and economically disconnected areas. These outcomes extend beyond what would be expected under a purely trend-based or market-driven forecast.

With the 2050 horizon now within 24 years, CMAP shifted toward a predictive rather than prescriptive forecasting approach. Predictive forecasting emphasizes observed demographic and economic trends, market behavior, and existing constraints, including zoning, to estimate the most likely distribution of future growth. In contrast to policy-based forecasts, which embed goal-oriented assumptions about coordinated regional action, a predictive forecast reduces reliance on policy implementation and establishes a baseline for evaluating future conditions.

A baseline forecast grounded in existing conditions and observed household and employment location preferences provides a foundation for evaluating policy impacts through targeted scenario analysis rather than embedded assumptions. This approach improves transparency, supports clear policy discussions, and allows specific interventions to be assessed as responses to the baseline local forecast.

The UrbanSim land use model

UrbanSim is an integrated land use modeling platform originally developed at the University of California, Berkeley, in the late 1990s. Supported by organizations including the National Science Foundation, U.S. Environmental Protection Agency, and Federal Highway Administration, the model is widely used by metropolitan planning agencies such as the Metropolitan Transportation Commission, Puget Sound Regional Council, Southeast Michigan Council of Governments, and the Metropolitan Council.

CMAP maintains its own implementation of UrbanSim to produce the local socioeconomic forecast, with technical support from UrbanSim, Inc. The model operates within a cloud-hosted environment and is configured using CMAP-specific data inputs, assumptions, and enhancements tailored to regional conditions. UrbanSim consists of multiple interacting sub-models that simulate the location decisions of households, jobs, and real estate development over time.

This section provides an overview of the model structure, including key sub-models, as well as the calibration and estimation processes used to ensure the model reflects observed development patterns and market behavior across the region.[7]

UrbanSim overview

Integration of regional and local forecasts

The regional forecast establishes total population in households, total households, and total employment by two-digit NAICS sector for each forecast year from 2020 through 2050, called control totals. The local forecast then takes these control totals and allocates them to individual census blocks across the region. For every forecast year, the sum of block-level population, household, and sector-specific employment estimates should closely align with the corresponding regional totals. In this way, the regional forecast serves as a control framework, ensuring that locally distributed growth remains consistent with overall regional projections. Rounding and model logic can introduce small discrepancies, though local totals stay within about one percent of regional totals.

UrbanSim model structure and sub-models

UrbanSim consists of several sub-models that represent the actions of developers, households, and employers. These models operate in each forecast year from 2021 to 2050. They include:

- **Real estate price model:** estimates block-level prices for owner-occupied and rental housing units
- **Residential development model:** identifies census blocks where new residential construction is supported by market demand, considering zoning capacity and forecasted growth
- **Employment and household relocation models:** predict households and employees that relocate within the region in each model year
- **Employment and household transition models:** establish incoming and relocating households and jobs in the region based on regional forecast control totals, which specify the number of households by type and employees by industry sector and the relocation models that determine which households and jobs relocate
- **Household tenure choice model:** predicts whether incoming and relocating households rent or own the housing unit they occupy
- **Employment and household location choice models:** allocate households and jobs to available residential and nonresidential space based on modeled location preferences

7 Additional information on UrbanSim is available at urbansim.com.

Model specification

When households, employers, and residential developers choose locations, they evaluate a range of characteristics that influence their decisions. Model specification establishes the characteristics to simulate what households, employers, and residential developers evaluate when making location decisions. These variables define the behavioral framework of the model by representing the economic conditions, accessibility patterns, market dynamics, and neighborhood attributes that influence location choice.

Household location choice model specification

The UrbanSim household location choice model simulates the residential location decisions of households for each forecast year from 2021 through 2050. The model represents both newly formed households and existing households that relocate, allocating them to census blocks based on estimated location preferences.

Because households differ in their housing needs and preferences, the model segments households into 18 distinct groups. Segmentation is based on tenure (owner or renter), income (low, middle, high), householder age (under 65 or 65 and older), and the presence of children. This structure allows the model to reflect how housing choices vary across household types. For example, an older, high-income homeowner without children is likely to prioritize different neighborhood characteristics than a middle-income renter household with children.

The model includes a consistent set of explanatory variables representing housing costs, supply, accessibility, and neighborhood characteristics. These variables are combined to calculate the likelihood that a household in each segment selects a given census block. While the same general variables are included across segments, the magnitude and direction of their effects vary by household type, reflecting differences in housing preferences.

Key variables used by the household location choice model include:

- Median home value and gross rent
- Housing unit supply
- Accessibility to employment within a 45-minute single-occupancy vehicle or transit commute
- Accessibility to retail and accommodation and food services employment
- Accessibility to health care and social assistance employment
- Neighborhood income composition
- Recent population growth (2010 to 2024)

Employment location choice model specification

The UrbanSim employment location choice model (ELCM) simulates the location decisions of jobs across industry sectors for each forecast year from 2021 through 2050. The model represents both employment entering the region and existing jobs that relocate, allocating them to census blocks based on estimated location preferences.

Because industries differ in their operational needs, the ELCM segments employment into 20 two-digit NAICS sectors (Table 4). This structure allows the model to capture how location priorities vary across industries. For example, manufacturing and transportation sectors may prioritize highway access and larger sites, while professional services firms may place greater emphasis on proximity to complementary businesses and workforce accessibility.

The model includes a consistent set of explanatory variables representing site characteristics, agglomeration patterns, accessibility, and proximity to infrastructure. These variables are combined to determine the probability that a job in

a given sector is located within a specific census block. While several core variables are included across sectors, their relative importance differs to reflect industry-specific location patterns observed during the calibration period.

Key variables used by the employment location choice model include:

- Site acreage
- Existing employment concentration
- Accessibility to regional employment within a 45-minute single-occupancy vehicle or transit commute
- Accessibility to jobs within the same sector (15-minute single-occupancy vehicle travel time)
- Accessibility to complementary industry sectors (15-minute single-occupancy vehicle travel time)
- Proximity to interstate interchanges (select sectors)
- Accessibility to nearby households (select sectors)

Employment location choice model simulates the location decisions for jobs in each of the sectors in the table below.

Table 4: NAICS codes used for employment model segmentation

NAICS	Sector
11	Agriculture, forestry, fishing and hunting
21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale trade
44-45	Retail trade
48-49	Transportation and warehousing
51	Information
52	Finance and insurance
53	Real estate and rental and leasing
54	Professional, scientific and technical services
55	Management of companies and enterprises
56	Administrative/waste services
61	Educational services
62	Health care and social assistance
71	Arts, entertainment, and recreation
72	Accommodation and food services
81	Other services (except public administration)
92	Public administration

Residential development location choice model specification

The UrbanSim residential development location choice model simulates where new housing units are added across the region for each forecast year from 2021 to 2050. The model represents residential developers' decisions by identifying locations where additional housing is most likely to occur based on market conditions, accessibility, neighborhood characteristics, and recent growth patterns.

Development potential is evaluated at the census block level, with new housing units allocated to blocks that demonstrate conditions supportive of residential growth. By linking new construction to forecasted housing demand and zoning capacity, the model ensures that residential development occurs in locations where growth is both permitted and supported by market conditions.

Because housing markets differ for ownership and rental products, the model segments development into two categories: owner-occupied and renter-occupied housing. This structure allows the model to capture differences in the types of locations that tend to attract each form of residential development.

The model includes a consistent set of explanatory variables representing site characteristics, housing market conditions, accessibility, and neighborhood composition. These variables are combined to determine the probability that new housing units are added to a given census block. While several core variables are included across both development types, their relative importance differs between owner-occupied and renter-occupied housing, reflecting distinct development patterns observed during the calibration period.

Key variables used by the residential development location choice model include:

- Site acreage
- Housing prices (owned or rented, depending on development type)
- Accessibility to employment within a 15-minute single-occupancy vehicle commute
- Accessibility to regional employment within a 45-minute single-occupancy vehicle commute
- Accessibility to employment within a 45-minute transit commute
- Existing housing supply
- Recent population growth (2010 to 2024)
- Neighborhood income composition

In addition to modeled development, the forecast incorporates known projects that are expected to occur during the forecast period. These developments are introduced directly into the housing inventory and complement the modeled supply generated through the residential development location choice model. Known development activity is described in greater detail in the following section.

UrbanSim model estimation and calibration

The previous section described the variables included in the household and employment location choice models when evaluating where households and jobs are located within the region. Model estimation measures how strongly each of these variables influences location choices for households and jobs that are either new to the region or relocating within it. These relationships are determined through the model calibration process.

The goal of calibration is to ensure the model can reliably reproduce observed development patterns before being used to forecast future growth. The household location choice and residential development models were calibrated to observed patterns from 2010 to 2020. However, because employment levels in 2020 were significantly affected by the COVID-19 pandemic, the calibration period for the employment location choice model was extended through 2022. This approach better reflects stabilized labor market conditions and strengthens the model's ability to represent typical employment location behavior over the long term. Because the distribution of households, jobs, and housing units during these periods is known, the calibration process adjusts the model so that simulated outcomes closely match observed conditions.

During calibration, the model is run from 2010 to 2020 using an initial set of assumptions about how households, employers, and developers make location decisions. After each simulation, the modeled results are compared to actual 2020 development patterns, and the model is automatically adjusted to improve its accuracy. This process uses machine-learning techniques to refine how much influence each variable has on location decisions across model segments.

The model is repeated many times, typically between 200 and 500 iterations, until improvements in accuracy become minimal. The final set of relationships reflects the location preferences that shaped regional growth during the calibration period and provides the foundation for forecasting future household and employment patterns.

Through the calibration process, the household, employment, and residential development location preferences that shaped regional growth between 2010 and 2020 are captured and translated into model relationships. Grounding the model in observed development patterns increases confidence that it can realistically represent how growth occurs within the region. These relationships are then used to forecast future conditions from 2021 to 2050, allowing households, jobs, and developers to respond to zoning capacity, evolving market conditions, demographic trends, and regionwide growth projected in the socioeconomic forecast.

Travel model integration

After specification, estimation, and calibration, the UrbanSim land use model is coupled with CMAP's regional travel demand model to ensure consistency between forecasted development patterns and transportation conditions. UrbanSim produces annual forecasts of population, households, residential units, and employment at the census block level for each year from 2020 to 2050. For selected milestone years — 2020, 2026, 2030, 2032, 2035, 2040, 2045, and 2050 — these outputs are provided to the travel model team to update regional travel demand.

Beginning with the 2026 forecast year, the travel demand model uses updated land use inputs to generate revised zone-to-zone travel times, commonly referred to as travel model skims. These skims reflect forecasted changes in congestion, network performance, and transportation system conditions.

The updated travel times are then incorporated back into UrbanSim through accessibility measures used across multiple sub-models. Accessibility variables, such as employment reachable within a specified travel time by single-occupancy vehicle or transit, are recalculated using the new skims. These updated accessibility measures influence household and employment location decisions, residential development patterns, and real estate pricing in subsequent forecast years.

This iterative exchange between land use and transportation modeling occurs at five-year intervals beginning in 2026, ensuring that development patterns and travel conditions evolve consistently over time.

Model data: custom inputs

UrbanSim, Inc. provides default sources for all data inputs needed for the model, but also allows users to provide their own data instead. This section provides a brief overview of the datasets that were collected or created by CMAP staff as part of the model development process.

Building footprints and attributes

To develop some of the required data inputs, an inventory of all buildings in the region as of the 2020 base year was created. The building geometry comes from computer vision generated footprints from Ecopia.[8] Each footprint is assigned a land use and building type based on the Land Use Inventory. Other sources — including county and township assessor data, CoStar, and LIDAR data — are then used to assign other attributes including building size, age, and value.

Establishment-level employment

Base-year employment data is provided at the establishment level and then aggregated to blocks. First local area control totals for municipalities and Chicago community areas are created based on Moody's Analytics and Census Longitudinal Employment-Household Dynamics data, which is used to scale establishment level employment data from Dun & Bradstreet.[9] The establishments are then assigned to buildings and redistributed to meet reasonable building capacity based on the building size and building type from the building inventory.

Regional forecast of households and employment

CMAP's regional forecast, described in Part 1 of this report, is the source of the annual households and employment totals used as controls throughout the forecast period. As part of the interaction with the agency's four-step travel demand model, household counts need to be broken out by several attributes. Previously, this process was done internally by CMAP, but due to recent model improvements, these attributes were generated by UrbanSim. Employment control totals rely on the regional employment forecast described in Part 1.

Constraints to development

Zoning

The second significant constraint on development is local zoning, which limits the type and intensity of development that can occur within each jurisdiction. The zoning data is assumed to remain constant throughout the model period.

From 2023 to 2025, CMAP staff members undertook a major effort to collect and create zoning boundary GIS files, and to research local zoning ordinances to identify per-district allowed uses, along with maximum allowable floor area ratio (FAR) and dwelling units per acre (DUA). These data translated directly into the types of residential units and employment that could be allowed on a given parcel, with DUA limiting the number of housing units that could be built on the parcel after subtracting for undevelopable acreage. FAR is used in combination with the smallest square foot per job value from the allowed building types to calculate the maximum number of jobs per acre. These parcel capacities are then aggregated to the block level to create the maximum capacity of residential units and employment for each block in the model. All 284 municipalities in the CMAP region are represented, as well as the unincorporated areas of the seven counties (see Figures 3 and 4 below).

These data have limitations. Special overlay areas, such as historical districts, are not represented. Many ordinances did not explicitly state FAR or DUA values required by the model, so those values were calculated using other reported restrictions, such as minimum lot size, or sampled based on information from the building inventory.

8 Custom geospatial dataset delivered to CMAP by Ecopia AI, 2023.
9 Proprietary dataset delivered to CMAP by Dun & Bradstreet, 2021.

Figure 3: Dwelling units per acre maximum in northeastern Illinois

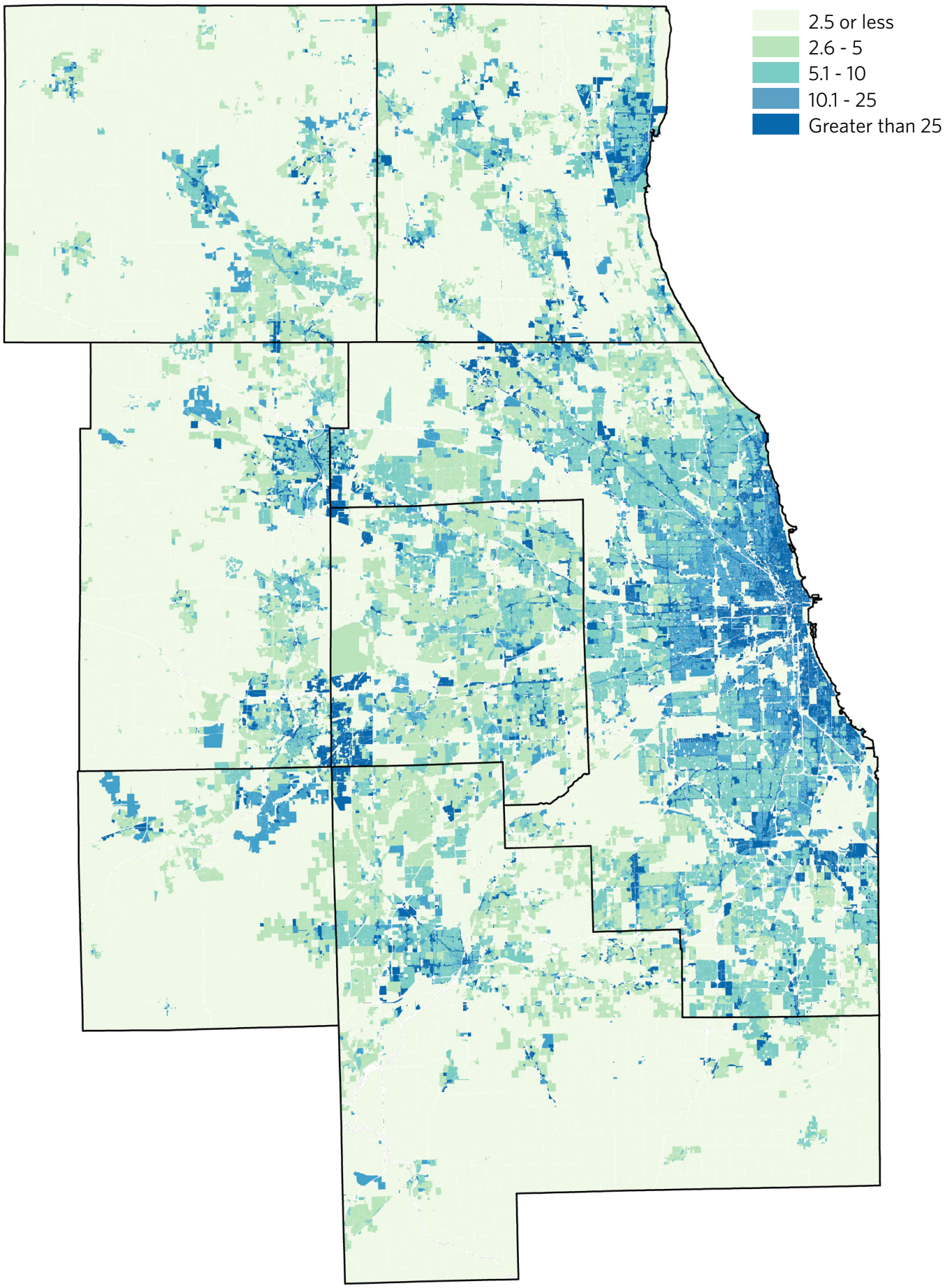
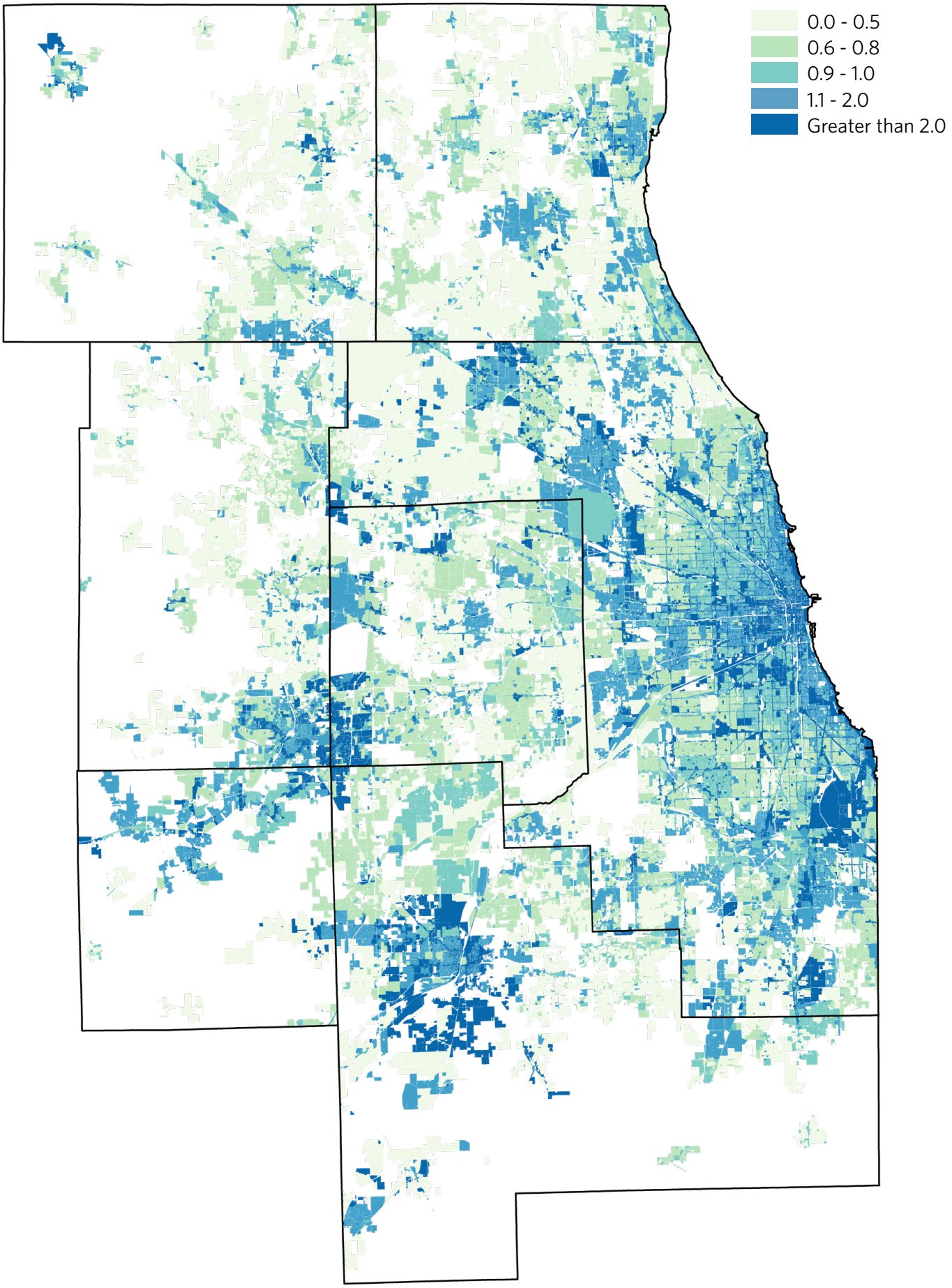


Figure 4. Floor area ratio maximum in northeastern Illinois



Undevelopable land

Certain land within census blocks was classified as undevelopable and excluded from the UrbanSim developer model to reflect physical constraints, public ownership, and long-term land use commitments that limit redevelopment. Using CMAP's 2020 Land Use Inventory, supplemented by national datasets including the Protected Areas Database of the United States (2022) and the U.S. Geological Survey National Hydrography Dataset for water areas (2022), these lands include transportation rights-of-way, utility corridors and facilities, water bodies, protected open space, military lands, and institutional uses such as cemeteries and correctional facilities. Common areas within residential developments were also excluded, as they are not intended to accommodate additional structures.

Agricultural easement policies in Kane and McHenry counties were also incorporated to limit development in areas intended for long-term agricultural preservation. To reflect these policies and ensure realistic growth patterns, a half-mile buffer was applied around incorporated municipalities in Kane County and a one-mile buffer in McHenry County. Land outside these buffers was designated as undevelopable, representing areas where development is constrained by local policy and where large-scale residential expansion is unlikely under current conditions. This approach helps prevent the over-allocation of future housing in unincorporated areas and better aligns modeled outcomes with observed development trends and county land preservation objectives.

Removing these lands from development capacity ensures that modeled growth is directed toward parcels with realistic redevelopment potential and supports more accurate estimates of future housing and employment patterns.

Utility infrastructure

The model does not explicitly represent the availability of water, wastewater, or other utility infrastructure at the parcel level. As a result, areas lacking access to public utilities are not automatically excluded from development unless constrained by zoning, preservation policy, or other designated undevelopable classifications. While many locations without utilities are indirectly limited by low allowable densities or agricultural preservation policies, the model does not independently evaluate infrastructure extension feasibility or cost.

Known development activity

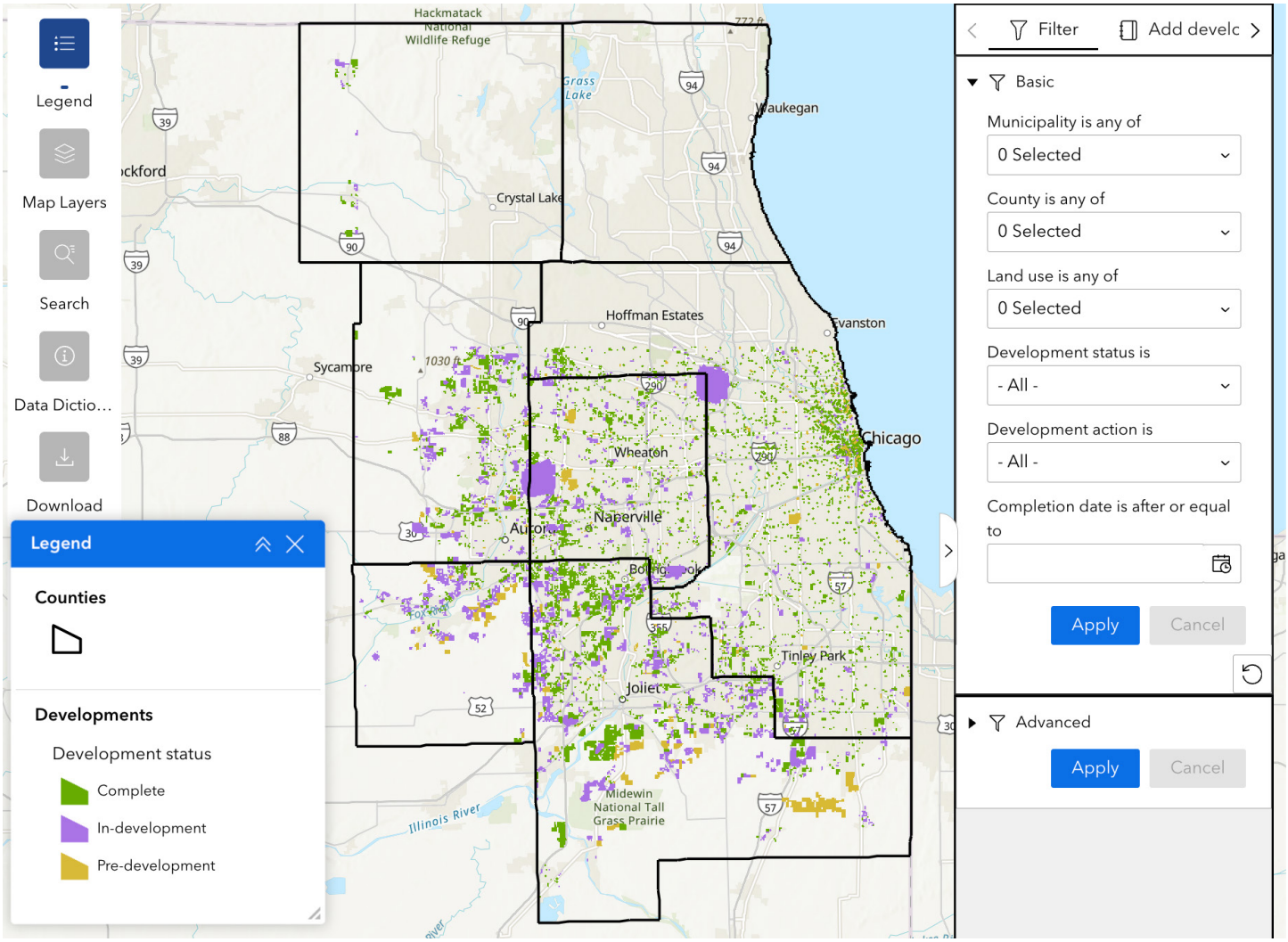
CMAP's Northeastern Illinois Development Database (NDD) informs the forecast by incorporating development activity that extends beyond the base year and is not captured solely through modeled location preferences. The NDD tracks significant residential and nonresidential projects across the seven-county region. Established in 1987, the database documents projects meeting defined criteria, including land consumption, housing units, nonresidential square footage, and land use type. Projects are monitored from proposal through completion, providing a comprehensive record of development activity used to support CMAP's planning and forecasting efforts.

Within the local forecast, NDD records are translated into residential units and employment and integrated directly into UrbanSim. By explicitly accounting for anticipated development, these inputs help anchor the forecast in observed market activity and improve the realism of projected housing and job distribution across the region.

For example, consider a residential development scheduled to begin construction in 2028 and complete in 2029 with a total of 100 housing units. The forecast allocates these units across the expected construction timeline, adding 50 units in 2028 and 50 units in 2029. As new units enter the housing inventory, the household location choice model evaluates the census blocks containing this additional capacity and assigns households accordingly.

To proactively identify known development activity across the region, CMAP developed the NDD web map. The application enables users to view, filter, edit, and export development records. Users can submit information on new development projects through an integrated survey. Submitted entries are reviewed and verified by CMAP staff members before being incorporated into the database and reflected in the local forecast. More than 1,800 developments are entered into the local forecast through the NDD for the 2020 to 2050 period.

Figure 5: The NDD web map allows users to submit new development information for the local forecast



Manual adjustments

UrbanSim allows for the manual adjustment of predefined areas based on expert opinion and knowledge of the region. This feature is useful for larger institutional settings, which do not conform to behaviors represented in the developer and location choice models. A set of adjustments was identified for O'Hare and Midway airports, colleges and universities, Fermilab, Argonne National Laboratory, Great Lakes Naval Station, and the proposed South Suburban Airport. Employment totals were forecast throughout the model period using the per-sector projected regional employment growth as a guide.

Adjustments for airport and university areas were developed in collaboration with CMAP's travel model team, to address unique trip generators. The proposed South Suburban Airport near Peotone is included in this list, with size and function assumptions based on recent presentations by the Chicago Southland Economic Development Corporation focused on a cargo airport; the parcel footprint was based on the inaugural configuration in the 2012 Airport Plans Report.[10] The region's two national laboratories, Argonne and Fermilab, as well as Naval Station Great Lakes, were added to this list by the land use team.

10 Ted Slowik, "Column: Amazon growth is driving demand for a third Chicago airport near Peotone, officials say," Chicago Tribune, April 30, 2021, accessed March 20, 2026, https://www.chicagotribune.com/2021/04/30/column-amazon-growth-is-driving-demand-for-a-third-chicago-airport-near-peotone-officials-say; AECOM, "South Suburban Airport Master Plan – Draft Airport Plans Report," South Suburban Airport Website, September 27, 2012, accessed March 20, 2026, https://www.southsuburbanairport.com/MasterPlan/reports/ALP/DRAFT_AirportPlansReport-September27-2012.pdf.

Socioeconomic forecast: local forecast results

This section presents summarized results and maps from the 2026 socioeconomic forecast. Additional data will be available on the CMAP Data Hub. Population and housing counts for the 2020 base year are derived from the Census. Employment estimates for 2020 are sourced from Moody's Analytics, with Chicago employment calculated as an aggregate of scaled and cleaned block-level Longitudinal Employer-Household Dynamics data.

Table 5: Current and projected total population by county and Chicago

County	2020(Census)	2030	2040	2050	2020 share	2050 share
Cook	5,275,541	5,429,260	5,379,951	5,276,909	61.5%	59.5%
DuPage	932,877	941,707	955,981	954,690	10.9%	10.8%
Kane	516,522	527,364	566,596	581,203	6.0%	6.6%
Kendall	131,869	136,973	170,336	186,537	1.5%	2.1%
Lake	714,342	726,279	737,539	738,353	8.3%	8.3%
McHenry	310,229	319,387	354,116	366,804	3.6%	4.1%
Will	696,355	710,639	755,089	766,576	8.1%	8.6%
Total	**8,577,735**	**8,791,609**	**8,919,607**	**8,871,073**	**100%**	**100%**
Chicago	*2,746,388*	*2,867,180*	*2,840,913*	*2,781,496*	*32.0%*	*31.4%*
Suburban Cook	*2,529,153*	*2,562,080*	*2,539,038*	*2,495,413*	*29.5%*	*28.1%*

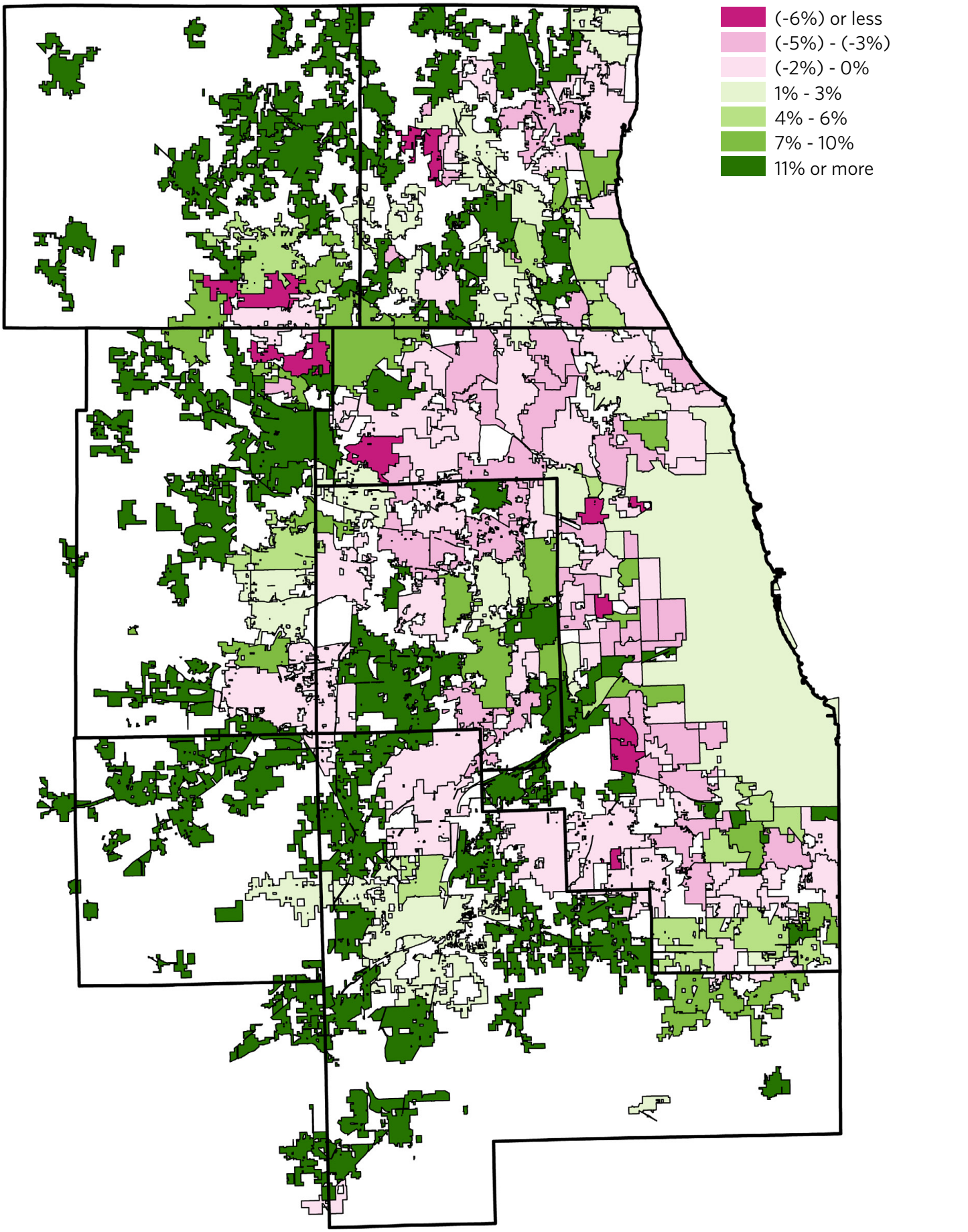
Table 6: Current and projected households by county and Chicago

County	2020 (Census)	2030	2040	2050	2020 share	2050 share
Cook	2,086,940	2,189,753	2,244,779	2,275,666	63.9%	62.0%
DuPage	348,216	358,470	376,003	388,084	10.7%	10.6%
Kane	180,374	187,891	208,731	221,771	5.5%	6.0%
Kendall	43,534	46,275	59,371	67,053	1.3%	1.8%
Lake	253,386	262,385	275,418	285,137	7.8%	7.8%
McHenry	114,282	119,974	136,745	146,444	3.5%	4.0%
Will	240,009	248,909	273,336	287,380	7.3%	7.8%
Total	**3,266,741**	**3,413,657**	**3,574,383**	**3,671,535**	**100.0%**	**100.0%**
Chicago	*1,142,725*	*1,215,537*	*1,247,753*	*1,263,277*	*35.0%*	*34.4%*
Suburban Cook	*944,215*	*974,216*	*997,027*	*1,012,389*	*28.9%*	*27.6%*

Table 7: Current and projected employment by county and Chicago

County	2020 (Census)	2030	2040	2050	2020 share	2050 share
Cook	2,629,867	2,868,076	2,834,416	2,775,618	62.4%	61.9%
DuPage	617,672	669,581	661,564	645,050	14.7%	14.4%
Kane	213,487	233,898	232,637	226,958	5.1%	5.1%
Kendall	33,012	47,014	54,710	58,654	0.8%	1.3%
Lake	346,580	375,516	373,353	364,947	8.2%	8.1%
McHenry	104,710	117,004	118,331	117,110	2.5%	2.6%
Will	267,427	299,030	300,253	295,726	6.3%	6.6%
Total	**4,212,755**	**4,610,118**	**4,575,264**	**4,484,063**	**100%**	**100%**
Chicago	*1,382,532*	*1,531,063*	*1,520,471*	*1,496,792*	*32.8%*	*33.4%*
Suburban Cook	*1,247,335*	*1,337,013*	*1,313,945*	*1,278,826*	*29.6%*	*28.5%*

Figure 6: Percentage change in total population by municipality in northeastern Illinois, 2020 to 2050



DRAFT

Figure 7: Percentage change in households by municipality in northeastern Illinois, 2020 to 2050

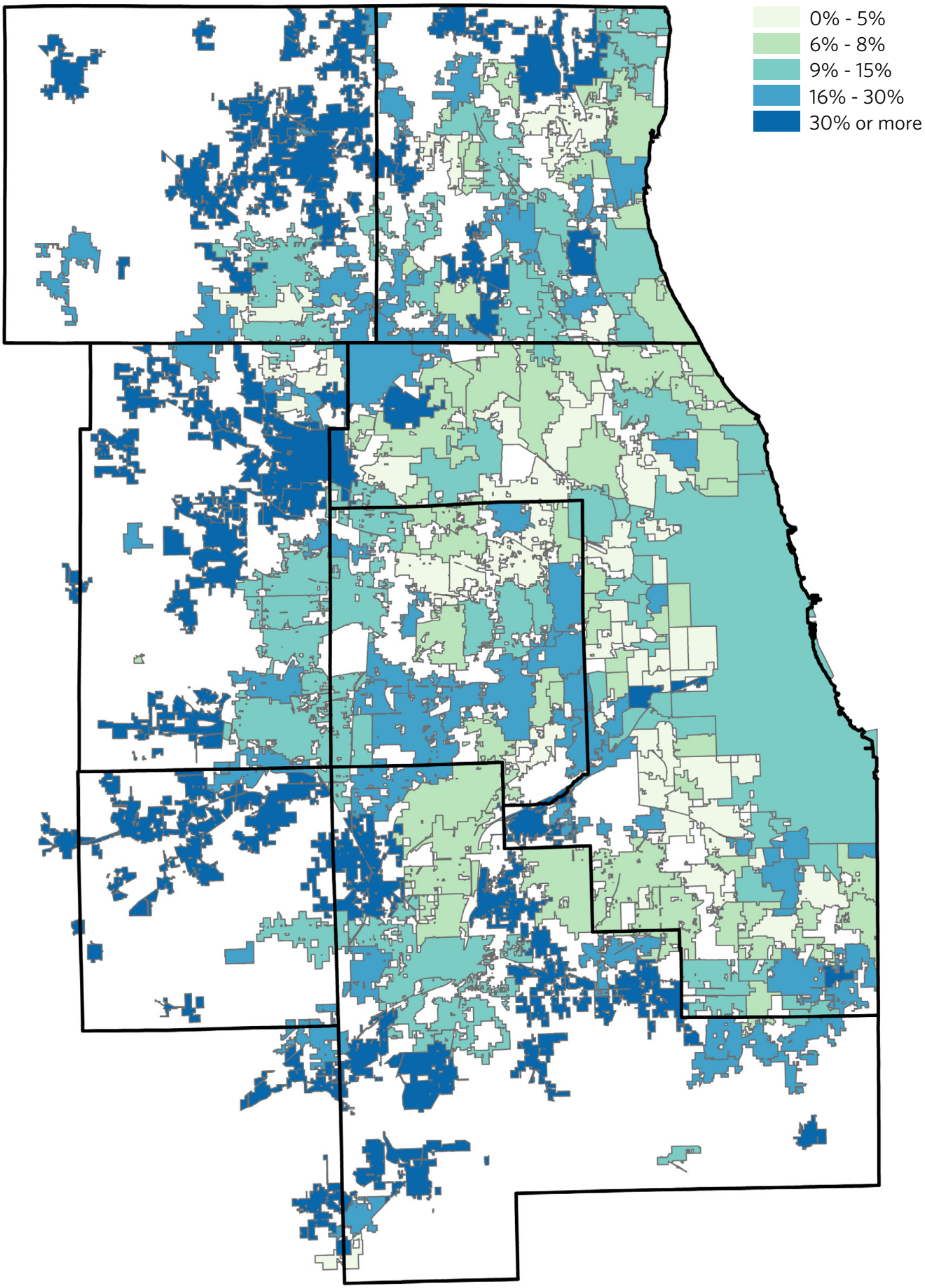
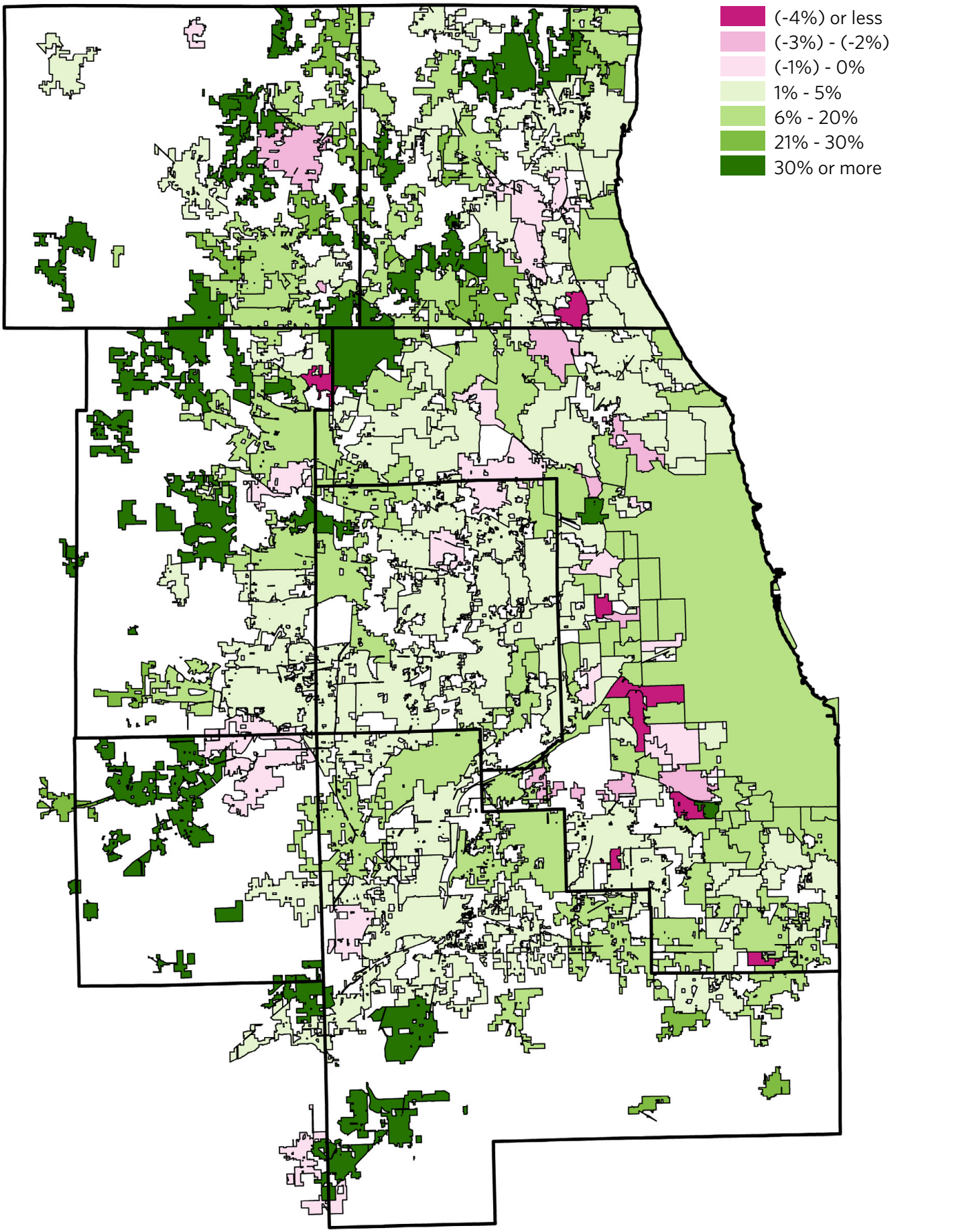


Figure 8: Percentage change in employment by municipality in northeastern Illinois, 2020 to 2050



DRAFT

Evaluating the local forecast

A model run represents a specific configuration of explanatory variables across the sub-models, along with defined input datasets such as development records from the NDD. Different local forecast model runs produce different results. CMAP evaluates model runs to determine which one best represents regional trends at the local level and produces reasonable changes between 2020 and 2050. The following four-step process was used to evaluate the local forecast:

- **Technical validity:** *Does this forecast have any obvious mistakes?*
  The data used in the forecast model is complete and accurate. The model follows zoning rules and geographic limitations when predicting where people will locate and how many units will be built. Job counts by sector sum to total employment.

- **Trend comparison:** *Does this forecast align with trends from the recent past?*
  One evaluation compares how well the forecasted growth from 2020 to 2050 aligns with the relative pattern of growth observed from 2010 to 2020 using Spearman correlation. Model population estimates for 2020 to 2024 are checked for alignment with Census population counts over the same period.

- **External forecasts:** *Does this forecast align with what others are predicting for the region?*
  External forecasts are used to benchmark alignment with the 2020 to 2050 local forecast. This comparison focuses on whether Moody's Analytics, a leading economic research firm, and CMAP project a similar number of jobs in 2050, and whether the Illinois Department of Public Health and CMAP project similar population totals in 2035, the horizon year of the IDPH forecast.

- **Subject matter expert review:** *Do CMAP's local experts think this forecast is reasonable?*
  CMAP policy and urban planning experts assess whether the forecast is reasonable based on their knowledge of the region.

The final forecast ranked higher than the other model runs across these steps.

Conclusion

The CMAP region is forecast to grow by over 300,000 people — roughly the population of the city of Orlando — between 2020 and 2050. While the region is still projected to grow, that growth is slower than previous forecasts due to recent population trends, lower employment projections, and declining birth rates. At the county level, Cook and DuPage counties are projected to grow more slowly than the rest of the region and make up a smaller share of the region's population in 2050. The remaining counties are projected either to maintain their share of regional population or to increase their share over time. Overall, the region is expected to continue gaining residents, but at lower levels than previously projected, with a larger share of that growth occurring in the outer counties.

Acknowledgments

CMAP staff organized two advisory groups to help with the forecast process. The technical advisory group includes demographic and forecasting experts to review forecast methodology, provide feedback on questions, and suggest improvements. The local advisory group helped CMAP staff incorporate local knowledge into the forecast and to help review model results. Members of each advisory group are listed below.

Socioeconomic forecast technical advisory group

- **Sheng Chen**, Section Chief, Travel Demand Modeling and Forecasting, Illinois Department of Transportation
- **David Egan-Robertson**, Demographer, Applied Population Lab, University of Wisconsin–Madison
- **Craig Heither**, Principal, Chicago Metropolitan Agency for Planning
- **Lewis Hopkins,** Emeritus Professor, University of Illinois Urbana-Champaign
- **Zach Kennedy**, Center Lead, Illinois State Census Data Center
- **Mohammed Shahidullah**, State Demographer, Illinois Department of Public Health
- **Nebiyou Tilahun**, Associate Professor and Director of Graduate Studies, University of Illinois Chicago

Socioeconomic forecast local advisory group

- **Scott Anderson**, Village Manager, Barrington
- **Ben Benson**, City Administrator, Lockport
- **Jim Bernahl**, Director of Engineering, Winnetka
- **Rithvika Dara**, Senior Transportation Planner, Lake County
- **Michael Fricano**, Planning Coordinator – Central Council of Mayors, West Central Municipal Conference
- **Heidi Files**, Executive Director, Kane Kendall Council of Mayors
- **George Kandathlil**, Regional Planning Liaison, Kane Kendall Council of Mayors
- **David Kovarik**, Planning Liaison, McHenry County
- **Lesli Melendy**, Executive Director, Metro West Council of Government
- **Bart Olson**, City Administrator, Yorkville
- **Kurtis Pozsgay**, Community Development Director, Itasca
- **Jennifer Tennant**, Director of Development Services, Barrington
- **Chris Toth**, Planner, Kane County Development & Community Services Department
- **Sarah Waks**, Director of Planning & Technical Assistance, South Suburban Mayors and Managers Association
- **Nicole Woods**, Director of Community Development, Buffalo Grove

RTP 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.

Chicago Metropolitan Agency for Planning

433 West Van Buren Street
Suite 450
Chicago, IL 60607

cmap.illinois.gov
312-454-0400

APPENDIX G - DRAFT

System Performance Report









RTP

2026
Regional Transportation Plan

Chicago Metropolitan Agency for Planning

Table of contents

Introduction **1**
Summary of target progress by area **2**
Roadway safety **3**
Current conditions **4**
Traffic fatalities 4
Serious injuries 5
Non-motorized fatalities and serious injuries 6
Progress in achieving targets **8**
Highway asset condition **9**
Current conditions **9**
Pavement condition 9
Bridge condition 10
Progress in achieving targets **11**
System performance **12**
Current conditions **13**
Trips to work via non-SOV modes 13
Travel time reliability 14
Peak hour excessive delay 16
Truck travel time reliability 17
Progress in achieving targets **17**
Transit asset management **18**
Current conditions **19**
Transit revenue vehicles 20
Transit infrastructure 22
Transit facilities 23
Progress in achieving targets **24**
Transit safety **25**
Current conditions **26**
Transit fatalities 26
Transit injuries 28
Transit worker assaults 30
Transit major events 31
Transit collisions 32
Transit system reliability 33
Progress in achieving targets **34**
Conclusion **36**

Introduction

In 2012, the Moving Ahead for Progress in the 21st Century Act (MAP-21) established a national performance measurement system for the highway and transit programs. Subsequent federal legislation has maintained and expanded these performance measurement requirements. The purpose of this report is to support data-driven decision-making by setting regional targets and documenting progress for northeastern Illinois' federally-supported transportation system.

As the metropolitan planning organization (MPO) for northeastern Illinois, the Chicago Metropolitan Agency for Planning (CMAP) is responsible for establishing or supporting regional targets for these federal performance measures and for reporting on the region's progress. CMAP published previous system performance reports in 2018[1] and 2022[2] as part of ON TO 2050 and its update. The 2018 report provided the region's first comprehensive response to new federal performance measurement requirements. The 2022 report maintained that direction while incorporating improved datasets, though many measures reflected pandemic-era travel patterns.

This 2026 System Performance Report presents clearer post-pandemic trends and highlights both progress and challenges. While the region has seen meaningful improvements in system reliability and non-SOV travel, roadway safety, and asset condition remain significant areas of concern. Transit outcomes are mixed, with some measures improving and others showing continued strain.

The regional targets identified in this report support the goals and objectives of the 2026 Regional Transportation Plan (RTP). CMAP links targets to the RTP's Financial Plan for Transportation where possible. CMAP and its partner agencies collaborate closely during target setting. To establish highway asset condition targets, CMAP worked with the Illinois Department of Transportation (IDOT) and its enterprise asset management tool to develop scenarios for bridge and pavement conditions. CMAP and the transit agencies used the Capital Optimization Support Tool (COST) to model different potential transit investment levels. Safety targets are set in consultation with IDOT's Bureau of Safety Programs and transit agency safety staff.

CMAP and its partners use the data in this report to identify needs and guide investments. Performance-based planning initiatives, such as the Congestion Management Process, safety action plans, and asset management plans identify policies and investments needed to support progress towards system goals and targets. The data collected as part of the target-setting process is also used to inform programming of funds in the Transportation Improvement Program (TIP).

Transportation partners across the region play a critical role in supporting progress towards the targets in this report. Programming processes, managed by several different implementing agencies, facilitate investments in projects to improve reliability, safety, and asset condition in alignment with targets. In the eTIP[3], implementers certify when projects impact performance measures, corresponding to seven performance target groups: safety, transit asset condition, pavement condition, bridge condition, travel reliability/congestion, non-single occupancy vehicle (SOV) travel, and emissions reduction. CMAP uses these tags to better understand which projects are directly advancing each goal. A summary of programming data is included in the Transportation Improvement Program document.

Each section of this report describes the relevant measures, current conditions, progress toward targets, and connections to CMAP's planning and programming responsibilities. While the MPO Policy Committee adopts targets with the RTP every four years, certain measures — such as roadway safety — require more frequent updates, which are documented in committee meeting materials. CMAP also maintains an online dashboard that provides updates as new datasets become available.[4]

1 Chicago Metropolitan Agency for Planning, "2018 System Performance Report Appendix," 2018, https://www.cmap.illinois.gov/wp-content/uploads/dlm_uploads/FINAL-2018-System-Performance-Report-Appendix.pdf.

2 Chicago Metropolitan Agency for Planning, "2022 System Performance Report Appendix," 2022, https://cmap.illinois.gov/wp-content/uploads/ON-TO-2050-Update-System-Performance-Report-Appendix.pdf.

3 Chicago Metropolitan Agency for Planning, "Transportation Improvement Program (eTIP)," accessed March 2026, https://cmap.ecointeractive.com.

4 Chicago Metropolitan Agency for Planning, "Performance Dashboard," accessed March 2026, https://cmap.illinois.gov/data/transportation/performance-measures/.

Summary of target progress by area

Target area	Performance measures	On track	Mixed / unclear	Not on track
Roadway safety	X Number of fatalities	0	0	5
	X Rate of fatalities per 100M VMT			
	X Number of serious injuries			
	X Rate of serious injuries per 100M VMT			
	X Non-motorized fatalities & serious			
Highway asset condition	X Interstate pavement in good condition	0	0	6
	X Interstate pavement in poor condition			
	X Non-interstate pavement in good			
	X Non-interstate pavement in poor condition			
	X NHS bridges in good condition			
	X NHS bridges in poor condition			
System performance	✓ Non-SOV work trips	5	0	0
	✓ Interstate highway reliability/LOTTR			
	✓Non-interstate highway reliability/LOTTR			
	✓ Peak hour excessive delay per capita			
	✓Truck Travel Time Reliability Index			
Transit asset management	X Buses past useful life	3	0	3
	X Rail vehicles past useful life			
	✓ Non-revenue vehicles past useful life			
	X Equipment past useful life			
	✓ Track with performance restrictions			
	✓ Facilities in marginal/poor condition			
Transit safety	X Number of fatalities	0	6	2
	X Fatality rate per revenue mile			
	~ Transit worker fatality rate (new)			
	~ Number of injuries (definition change)			
	~ Injury rate (definition change)			
	~ Transit worker injury rate (new)			
	~ Transit worker assaults (new)			
	~ Transit worker assaults rate (new)			
	~ Number of safety events (definition change)			
Transit safety	~ Safety event rate (definition change)		4	
	~ Collisions per mile (new)			
	~ Pedestrian collisions per mile (new)			
	~ Mean distance between mechanical failures (mixed)			
Total	**41 measures across all five target areas**	**8**	**11**	**16**

✓On track ~Mixed or unclear XNot on track VMT = vehicle miles traveled; LOTTR = Level of Travel Time Reliability

Roadway safety

There are five federally required roadway safety performance measures, which were established by the Federal Highway Administration (FHWA) Safety Performance Management Final Rule, effective April 2016. The FHWA designed these performance measures to assess progress towards roadway safety goals.

Federal guidelines give MPOs two options for safety target-setting: they may support state identified targets or they may choose to identify regionally specific targets for some or all of the five federal performance measures. When MPOs opt to support state targets, they also make a commitment to align planning and programming activities to reach the identified state targets. FHWA does not impose a penalty for failing to achieve MPO set targets. CMAP has supported the targets identified by IDOT since the federal rule was established in 2018 and will continue to do so for the near future.

Lead agency	Project name
Number of fatalities	The five-year rolling average of the number of vehicle-related fatalities in the CMAP region on all public roads
Rate of fatalities per 100 million vehicle miles traveled (VMT)	The five-year rolling average of the rate of vehicle-related fatalities in the CMAP region on all public roads
Number of serious injuries	The five-year rolling average of the number of serious injuries resulting from traffic crashes in the CMAP region on all public roads
Rate of serious injuries per 100 million VMT	The five-year rolling average of the rate of serious injuries resulting from traffic crashes in the CMAP region on all public roads
Number of non-motorized fatalities and non-motorized serious injuries	The five-year rolling average of the number of non-motorist (pedestrian or cyclist) fatalities and serious injuries resulting from traffic crashes

Northeastern Illinois plays a unique and significant role in statewide roadway safety. The region accounts for more than half of statewide traffic fatalities and serious injuries, and more than 75 percent of statewide non-motorized traffic fatalities and serious injuries, making regional safety efforts critically important. Northeastern Illinois is the state's population center, with diverse development patterns and a complex multimodal transportation system, which requires new and different approaches to planning and programming that support safe mobility for a range of modes, including walking and bicycling.

Assessment of roadway safety performance is driven by measuring fatalities and serious injuries. Because those numbers can fluctuate year to year, agencies are required to report traffic safety outcomes as a five-year rolling average, which better indicates longer-term trends. CMAP and its partners are continually working to improve safety through research, analysis, programming, better design guidance, and policy changes. While these efforts aim to improve outcomes, the results often take time to appear. Therefore, it is important to showcase the progress made and the anticipated benefits, even if only in qualitative terms.

Regional traffic fatalities have followed an upward statewide trend and regularly account for more than half of all fatalities in Illinois. In 2024, the region's 5-year rolling average was 50 percent and 58 percent of the state's fatalities and serious injuries, respectively. The rate of fatalities per 100 million vehicle miles traveled in the region is slightly lower than the state, likely indicating the slower and lower risk nature of travel in the region's denser urban environment, and improved emergency response times due to more available services and care facilities. The rate of serious injuries in the region is higher than the state's numbers, which should be understood in the context of the reduced fatality rate, indicating that the region still sees a higher number of injuries that are severe instead of fatal, for the same reasons mentioned above. Finally, the region continues to experience a vast majority of the state's non-motorized fatalities and serious injuries, regularly representing 75 to 80 percent over the total over the last 5 years. Roadway safety for non-motorized modes is a critical issue and opportunity for northeastern Illinois and other urbanized regions in the state.

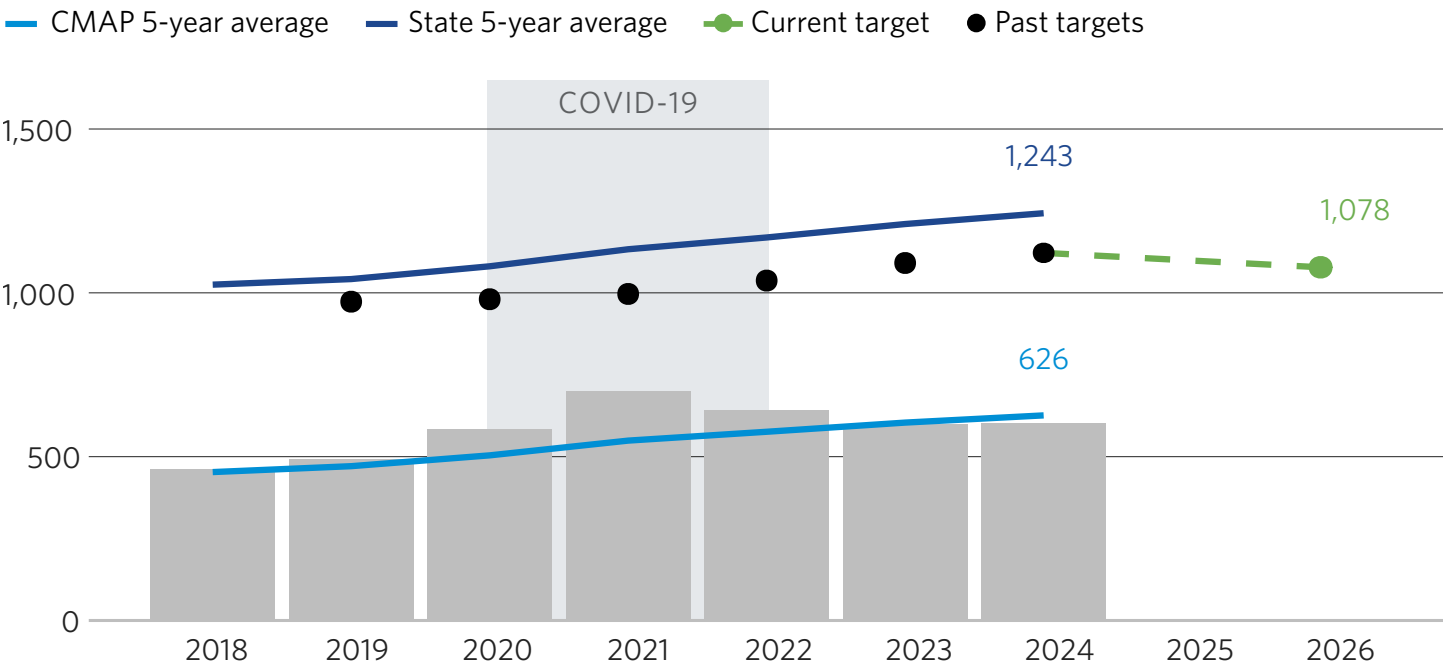
Current conditions

Traffic fatalities

Traffic fatalities in the state and region have been trending upward since 2014, based on the five-year rolling average. Exacerbating this already-alarming trend, the COVID-19 public health emergency that began in 2020 was associated with a dramatic spike in traffic fatalities, challenging traditional assumptions about the correlation between the amount of travel and the number of traffic fatalities. Even with a decline in overall travel due to stay-at-home orders and remote work, traffic fatalities increased, demonstrating that risks increased on the region's transportation network, and those risks persist. Traffic fatalities in 2024 remained higher than in pre-pandemic years.

When trends are worsening, IDOT sets a policy-based target, indicating a commitment to reversing the trend. The state set a target of 1,078 for 2026, which is a 2 percent policy-based reduction from the 5-year rolling average of the last year for which data was available at the time the target was set. The state has not met the safety performance targets for traffic fatalities since the requirement of PM01 in 2019.

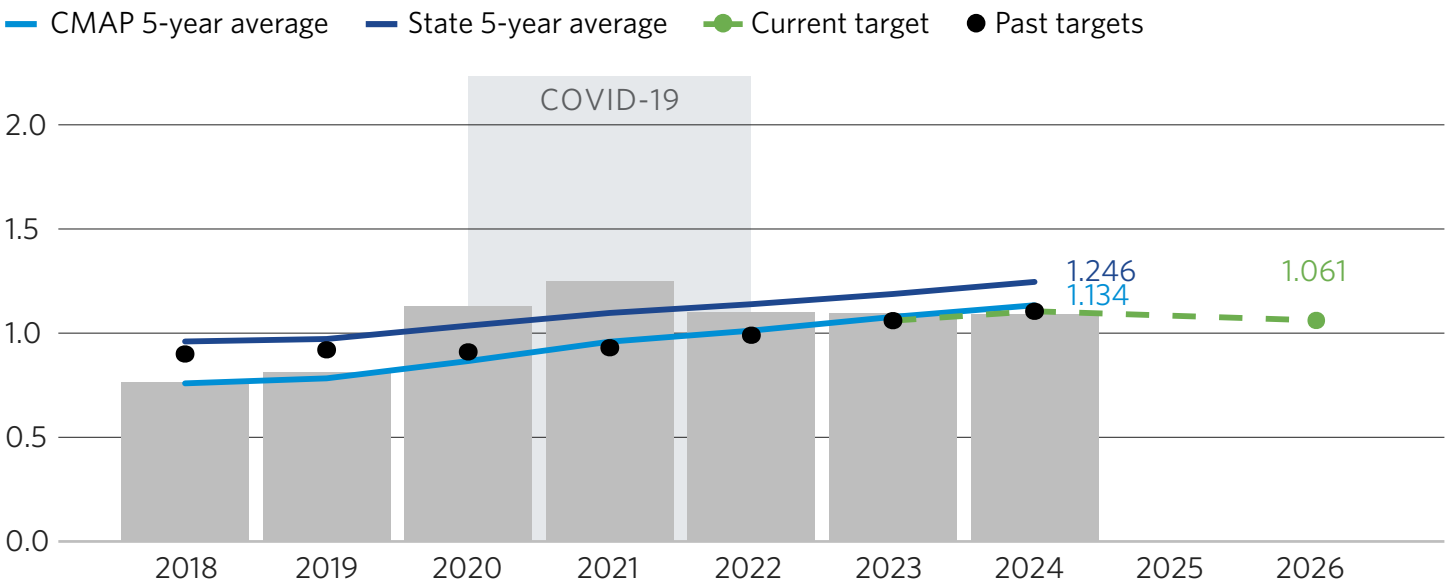
Traffic fatalities (Illinois and CMAP region)



The rate of traffic fatalities per 100 million vehicle miles of travel has increased in recent years, in correlation with total fatalities. While the region has a lower rate than the state, which may be explained by a generally reduced risk associated with travel in the region, the state and regional averages are both trending upward at very similar rates, indicating an increase in systemwide risk.

Because the 5-year rolling average is trending upward, indicating a worsening trend, IDOT uses a 2 percent policy-based reduction to set the target for rate of fatalities per 100 million miles of vehicular travel. This target demonstrates the agency's commitment to reversing the trend of increasing fatalities. The target identified for 2026 is 1.061, which is a 2 percent reduction from the previous year's target of 1.083. The state has not met past targets for the rate of fatalities, since the PM01 final rule was enacted.

Traffic fatalities per 100 million vehicle miles traveled (Illinois and CMAP region)

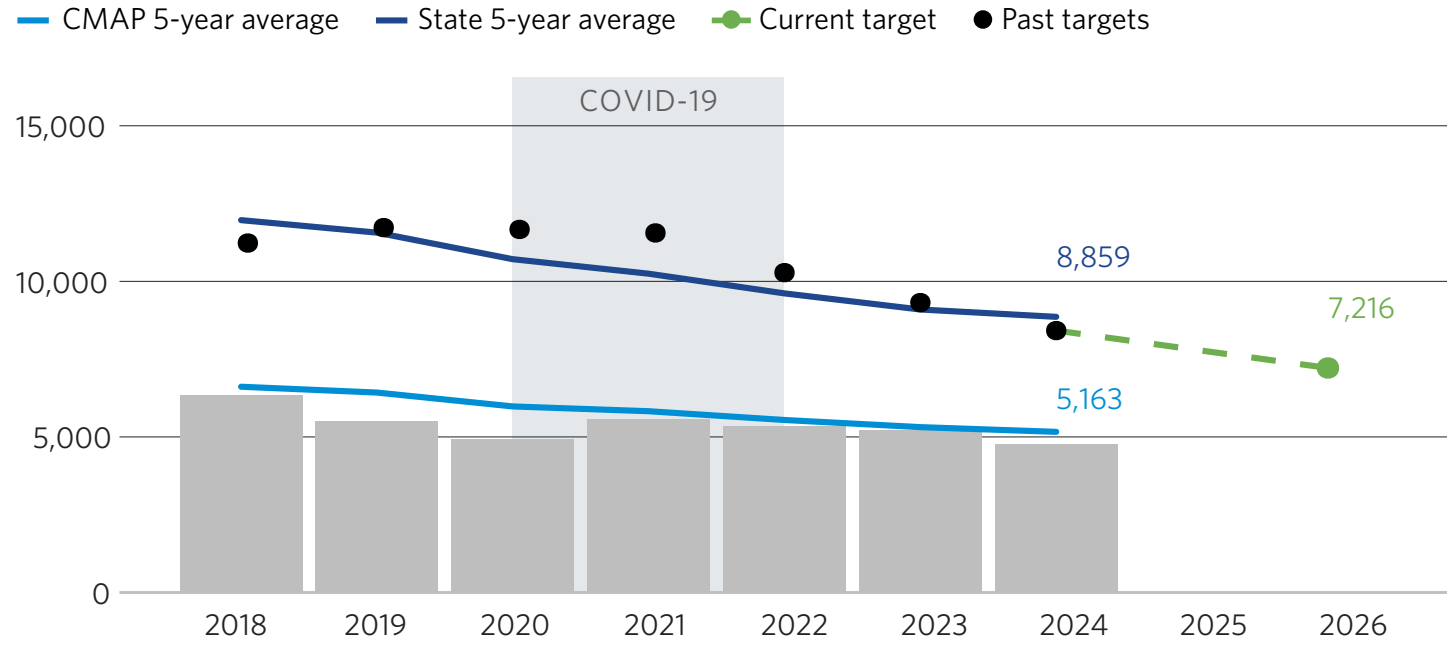


Serious injuries

Serious injuries, in contrast to traffic fatalities, continue to decline both statewide and within the region, though the rate of decline at the regional scale is slower than that of the state, with a 24 percent decline since 2018 at the regional level and a 35 percent decline at the state level during the same period. The 2024 five-year average number of serious injuries in the region was 5,163, representing 56 percent of the state. While a reduction in serious injuries is an improving condition, it must be considered in context with the increasing number of traffic fatalities, which indicates that crashes are increasing in severity.

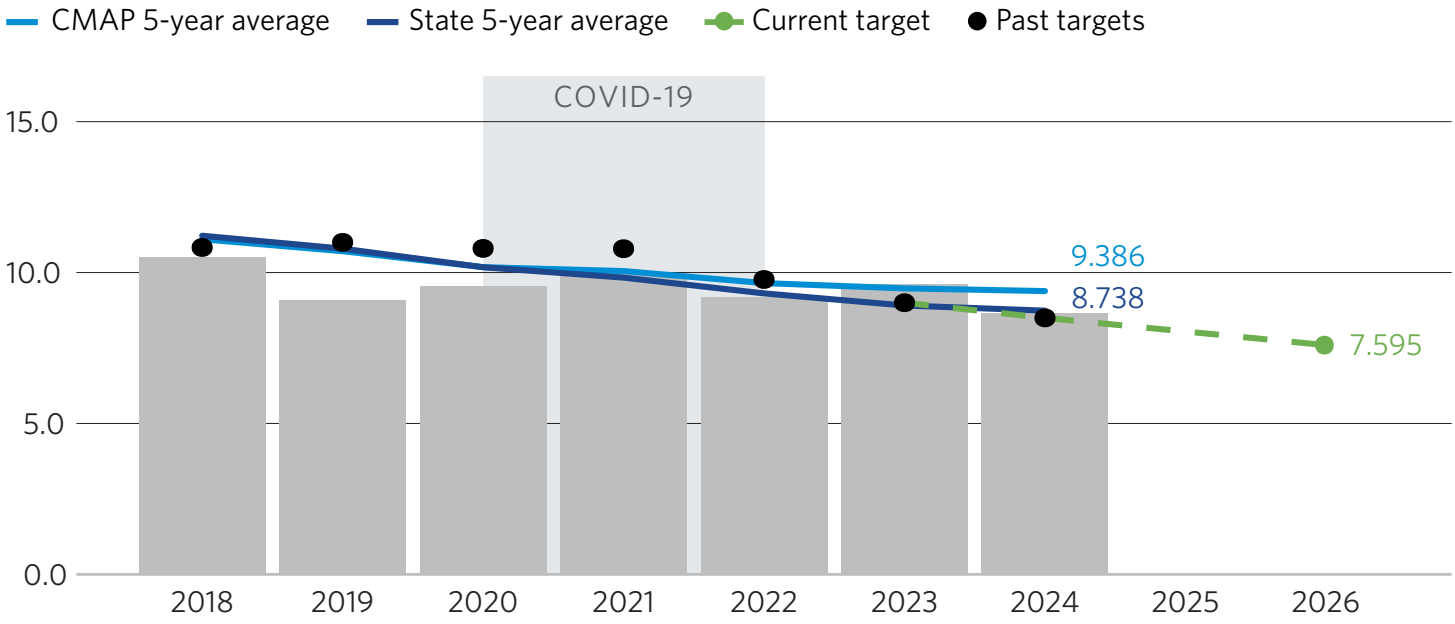
Because serious injuries are trending in the desired direction, IDOT uses a least-squares trendline method to establish the performance target, indicating both the likelihood and desire for the trend to continue. The target for the number of serious injuries in Illinois for 2026 is 7,216, which is an 8 percent reduction from the 2025 target. The state met its target for serious injuries in years 2019 through 2023 but did not meet the target in 2024, when the number of serious injuries statewide (8,524) exceeded the target by 106.

Traffic-related serious injuries per 100 million vehicle miles traveled (Illinois and CMAP region)



Similar to the number of serious injuries, the rate of serious injuries per 100 million miles of vehicular travel is trending downward at both the state and regional levels. The rate of decline at the state level exceeds that of the region. In 2024, the 5-year rolling average of the serious injury rate was higher at the regional level (9,386), than at the state level (8,738).

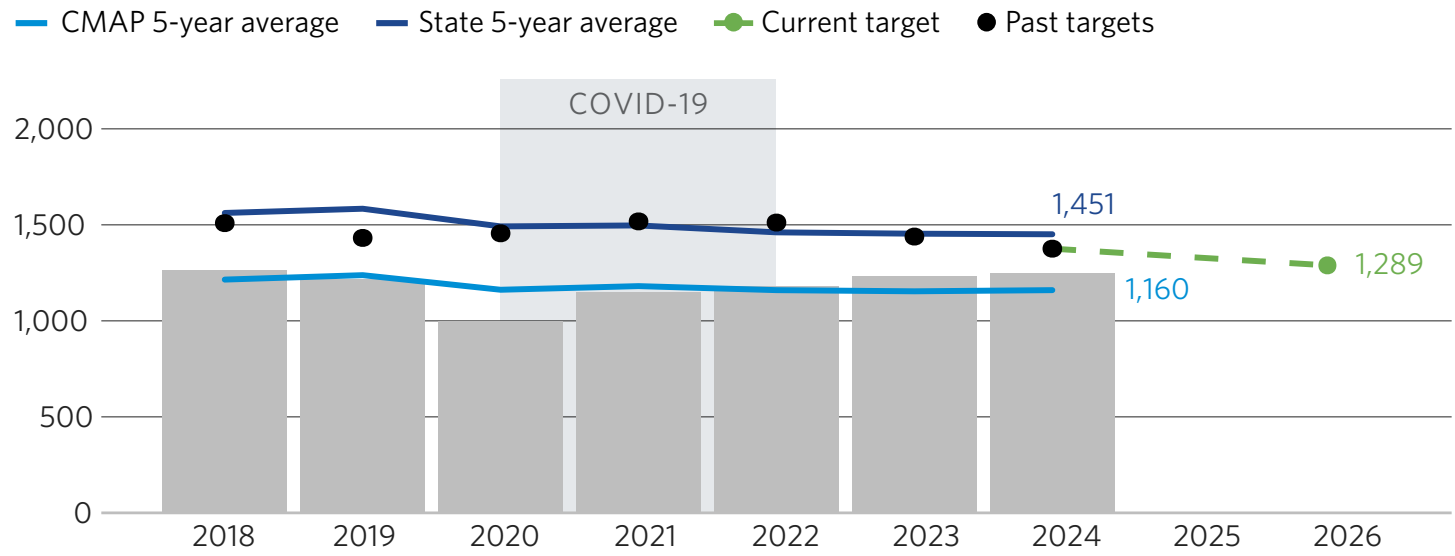
Traffic-related serious injuries (Illinois and CMAP region)



Non-motorized fatalities and serious injuries

The number of non-motorized traffic fatalities and serious injuries combines four separate indicators to understand broad safety performance for people walking and biking. Figures below represent fatalities and serious injuries for non-motorized modes when involved in a motor vehicle crash. Non-motorized modes include people walking, people bicycling, and people using other mobility devices that are not registered motor vehicles. Compared to motorized fatalities and serious injuries, the rolling average of non-motorized fatalities and serious injuries has stayed relatively constant, with small increases and decreases from 2018 to 2024. The state's rolling average in 2024 was 1,451 which is a 4 percent decrease from the 2018 rolling average of 1,508. At the regional level, the rolling average in 2024 was 4.7 percent below 2018, but it is important to note that there are discrete and concerning trends embedded within this combined metric.

Non-motorized traffic fatalities and serious injuries (Illinois and CMAP region)

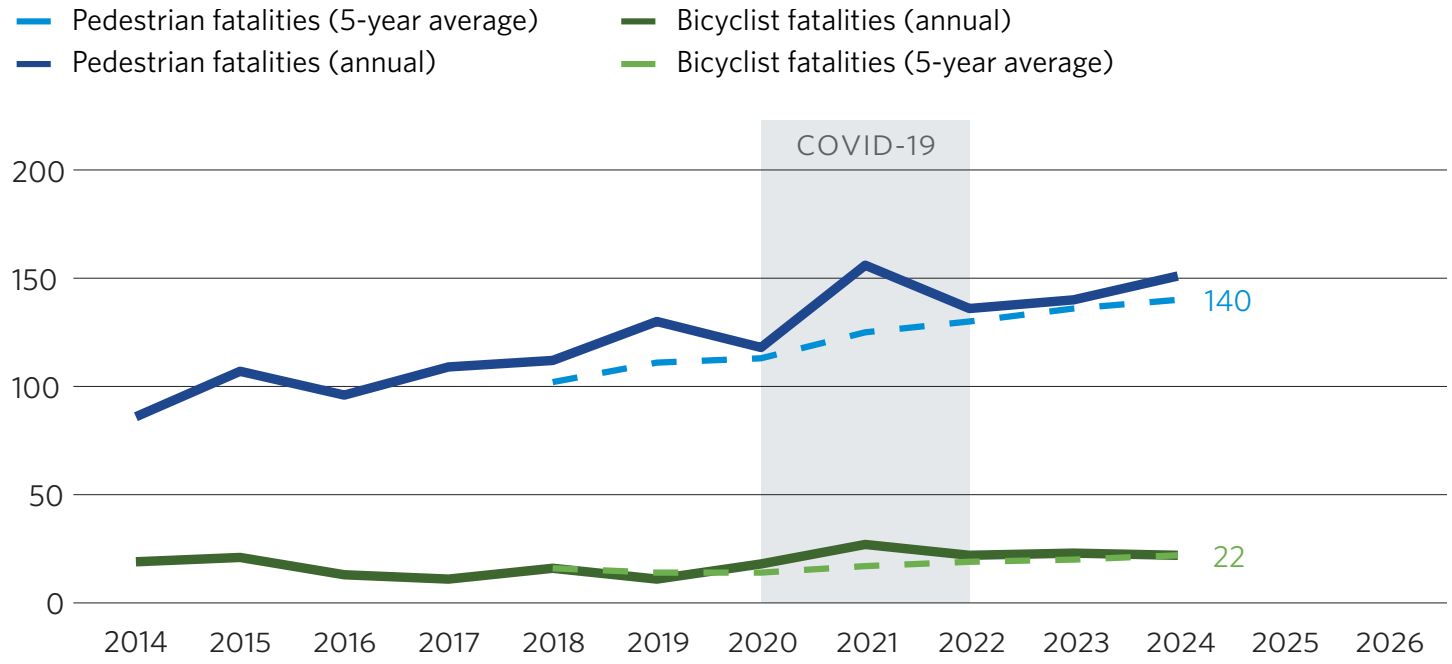


DRAFT

At the regional scale, fatalities among pedestrians and bicyclists have been trending upward. Pedestrian fatalities increased over 27 percent from 2018 to 2024, using the rolling average. For bicyclist fatalities, the increase was similar, close to 28 percent. These are low numbers relative to total fatalities among all modes, but the trend is clear and warrants both concern and action.

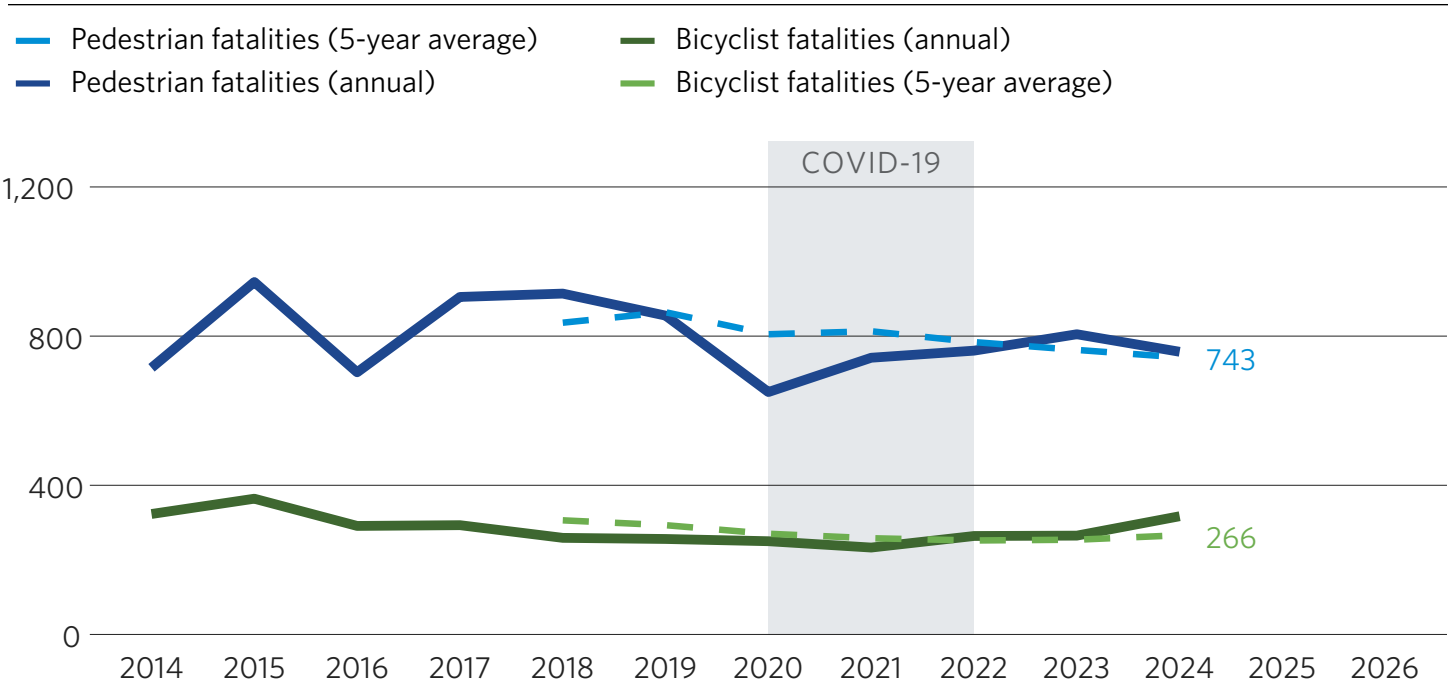
The charts below disaggregate non-motorized fatalities and non-motorized serious injuries for the CMAP region, illustrating the divergent trends within this combined federal measure.

Bicyclist and pedestrian traffic fatalities (CMAP region)



Serious injuries among non-motorized modes are trending downward, at rates of almost 13 percent for pedestrians and 15 percent for bicyclists. However, the significant increase in fatalities negates progress in reducing serious injuries.

Bicyclist and pedestrian traffic-related serious injuries (CMAP region)



Progress in achieving targets

Reducing traffic fatalities and serious injuries is a high priority for the region and state, but current trends underscore the need for continued investment in roadway safety initiatives. CMAP's recent work has built a foundation of data, research, and partnerships aimed at identifying and addressing systemic safety risks. Future safety work will include advancing policy, expanding guidance and local technical assistance, strengthening collaboration, and improving performance monitoring.

CMAP's role in the traffic safety space has grown significantly in recent years. ON TO 2050, northeastern Illinois' comprehensive plan adopted in 2018, identified a goal of improving safety for all travelers in the region. That same year, CMAP established federal performance targets for the first time. When those first safety targets were not met, the agency's Transportation Committee urged action, expressing deep concern about the rise in traffic fatalities in the region.

In response to committee feedback, the agency convened a regional traffic safety resource group in 2021 and 2022 to establish a program to address regional traffic safety needs. The program's multi-pronged approach has included technical assistance for local partners, an improved traffic safety data program, and a speed management report with recommendations to reduce the frequency and severity of speed-related crashes in the region.[5] In 2022, the agency was awarded a Safe Streets and Roads for All planning grant to develop a regional safety action plan. This led to the development of six countywide safety action plans, charting a course for safer travel across the region.[6]

Additionally, the agency established a Safe Systems program, focused on advancing policies that address the systemic risks on roadways. The Safe Systems Approach is a comprehensive framework for reducing crash risk and severity, including safe speeds, roads, road users, vehicles, and improved post-crash care. The Safe Systems program will focus on improving design guidance, advancing traffic calming efforts, model speed limit policies, and educational opportunities to foster a traffic safety culture.

The Safe Systems program will focus on improving programming criteria and evaluation methodologies to better advance safety in a systemic way. New research on safety performance indicates that broad-reaching safety improvements — such as reduced speed limits, protected infrastructure for bicyclists, and self-explaining roadways with features that support speed limit compliance — are very effective at improving traffic safety outcomes. However, these improvements do not always perform well using traditional project evaluation methods. The work is expected to address necessary policy and programmatic changes to improve transportation safety.

Local partners have strong interest in safety action planning. In addition to the six countywide safety action plans through the Safe Streets and Roads for All program, the agency has completed several local safety action plans with communities throughout northeastern Illinois. The agency will continue to incorporate safety analysis into all local planning projects to ensure comprehensive consideration of safety with mobility.

Finally, CMAP works closely with IDOT on research through the Illinois Center for Transportation and through various efforts related to improving traffic safety. CMAP contributed to the state's Vulnerable Road User Safety Assessment and Active Transportation Plan.

5 Chicago Metropolitan Agency for Planning, "Speed Management Report," 2024, https://cmap.illinois.gov/wp-content/uploads/dlm_uploads/Speed-Management-Report_CMAP_2024.pdf.

6 Chicago Metropolitan Agency for Planning, "Safe Travel for All," accessed March 2026, https://engage.cmap.illinois.gov/hub-page/safetravelforall.

Performance measure	Target (2024)	Actual (2024)	Achieved (2024)	Target (2026)
Base years for rolling average	2020-2024	2020-2024	2020-2024	2022-2026
Number of fatalities	Less than 1,122	1,243	No	Less than 1,078
Rate of fatalities per 100 million vehicle miles traveled (VMT)	Less than 1,105	1.246	No	Less than 1.061
Number of serious injuries	Less than 8,418	8,859	No	Less than 7,216
Rate of serious injuries per 100 million VMT	Less than 8.498	8.738	No	Less than 7.595
Number of non-motorized fatalities and non-motorized serious injuries	Less than 1,376	1,451	No	Less than 1,289

Highway asset condition

The condition of roadway infrastructure in the region is evaluated using federally required performance measures for bridge condition and pavement condition on both interstate and non-interstate National Highway System (NHS) facilities. These measures assess whether critical assets are being maintained in a state of good repair and help determine long term investment needs.

Performance measure	Target (2024)
Percent of pavement in good condition (interstate)	The percent of interstate NHS lane miles in the region in good condition as measured by the level of cracking, rutting and faulting
Percent of pavement in poor condition (interstate)	The percent of interstate NHS lane miles in the region in poor condition as measured by the level of cracking, rutting and faulting
Percent of pavement in good condition (non-interstate NHS)	The percent of non-interstate NHS lane miles in the region in good condition as measured by the level of cracking, rutting and faulting
Percent of pavement in poor condition (non-interstate NHS)	The percent of non-interstate NHS lane miles in the region in poor condition as measured by the level of cracking, rutting and faulting
Percent of bridges in good condition	The percent of bridge deck area of NHS in good condition as measured by a National Bridge Inventory rating greater than or equal to 7
Percent of bridges in poor condition	The percent of bridge deck area of NHS in poor condition as measured by a National Bridge Inventory rating less than or equal to 4

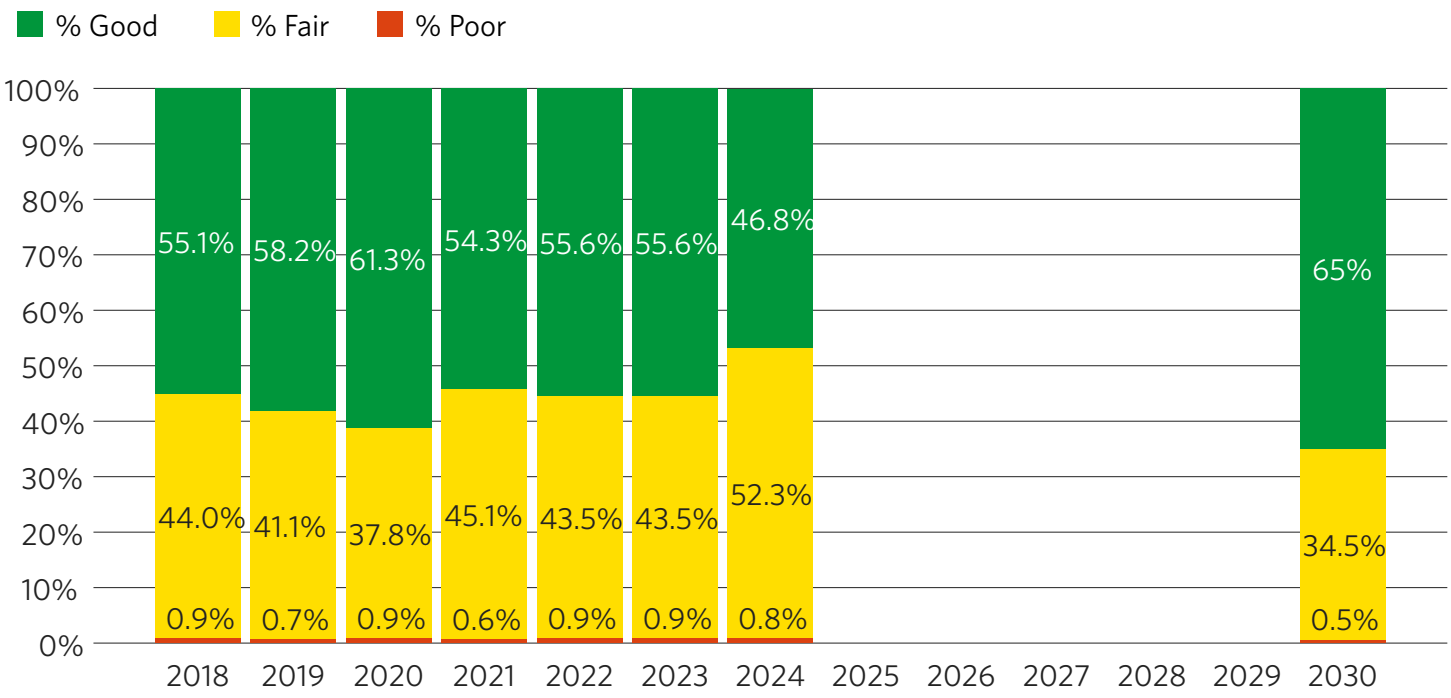
Current conditions

The condition of pavement and bridges on the National Highway System continues to reflect the region's long-standing challenge of maintaining an aging transportation system.

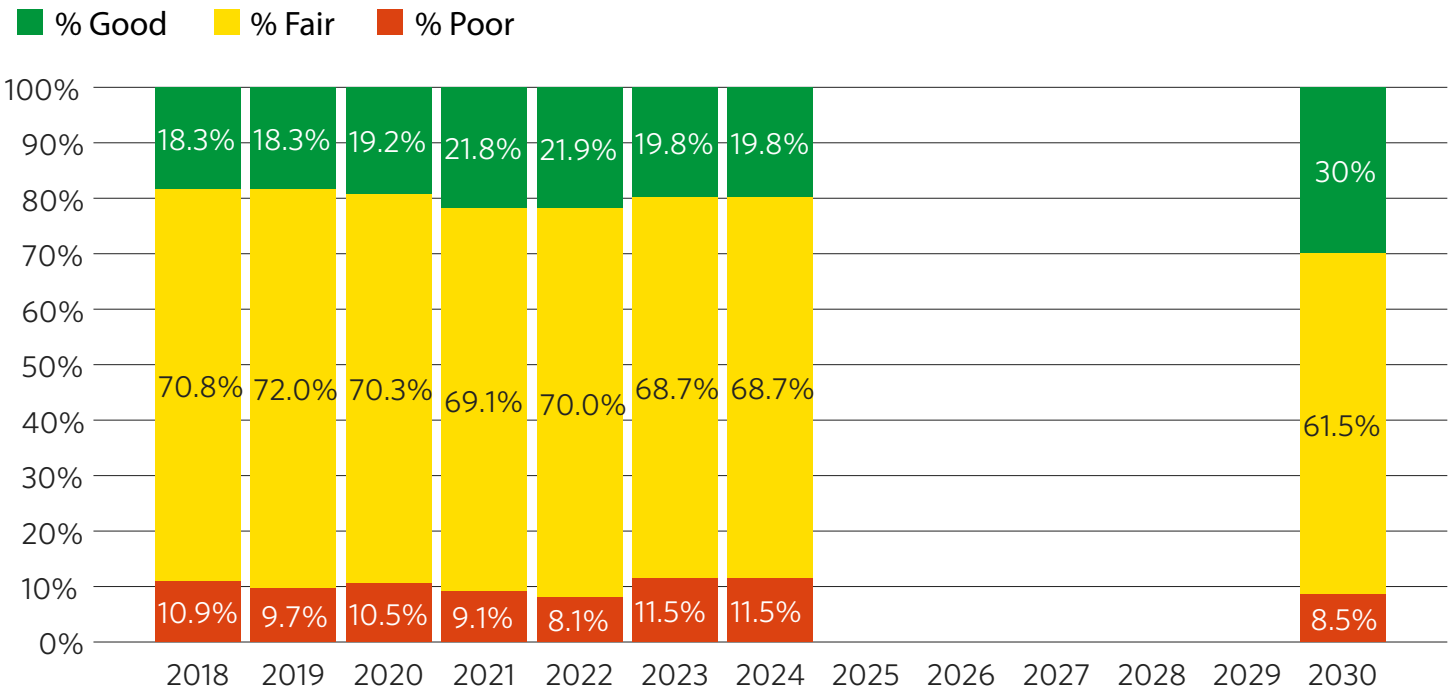
Pavement condition

Interstate pavement condition has improved modestly in recent years, supported in part by the Rebuild Illinois capital program. However, the region continues to trail statewide averages. Non-interstate NHS pavement remains more volatile, with a higher share of lane miles in poor condition and greater year to year sensitivity to funding fluctuations. These conditions reflect both the age of the system and the scale of needed full-depth reconstruction, particularly on heavily traveled arterials.

Interstate NHS pavement condition with (2030) target



Non-interstate NHS pavement condition with (2030) target

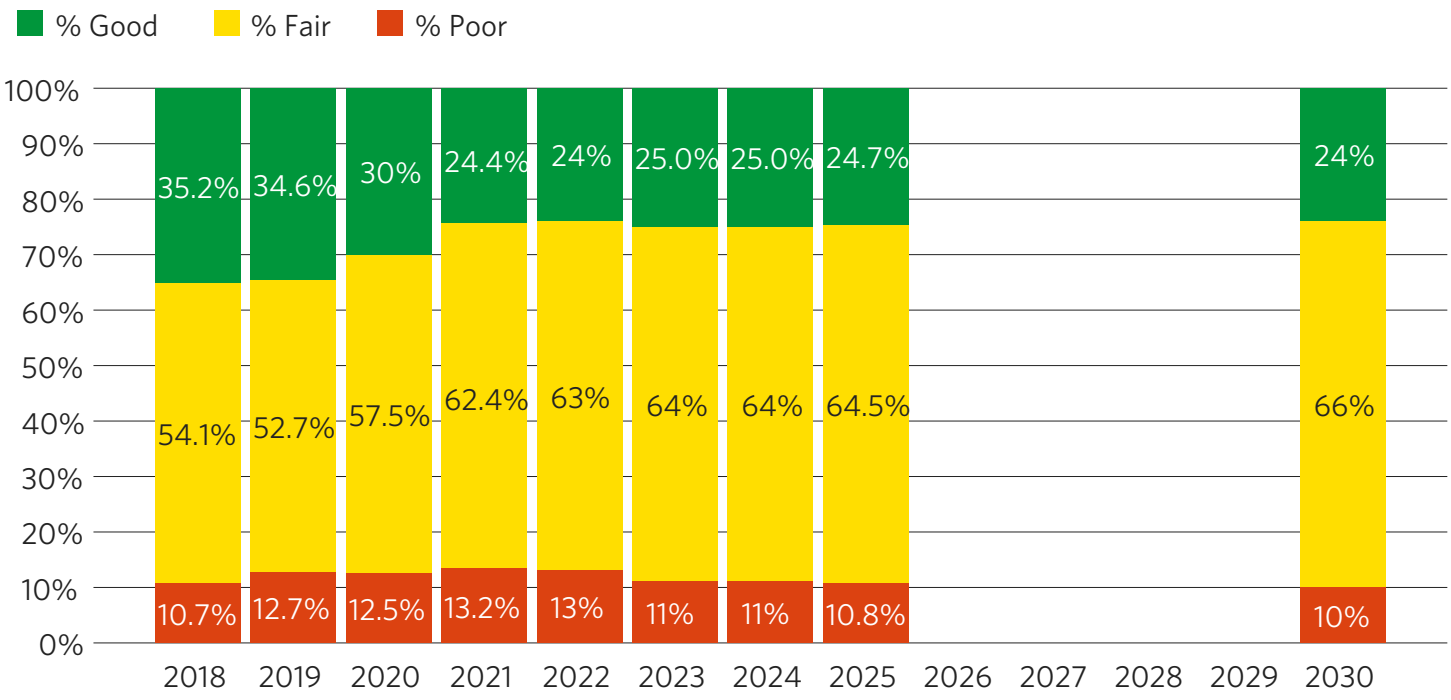


Bridge condition

Bridge condition highlights the aging nature of the regional network. Many NHS structures were originally built between the 1940s and 1960s and are approaching the end of their useful life. While IDOT has focused on reducing the share of bridges in poor condition, resulting in slight improvements — the share in good condition continues to decline. Without sustained investment, bridge condition is projected to worsen over time.

DRAFT

NHS bridge condition with (2030) target



Progress in achieving targets

CMAP sets regional highway condition targets in coordination with IDOT, balancing federal requirements, fiscal constraints, asset management modeling, and regional priorities.

IDOT's asset management tool (dTIMS) is used to model future pavement and bridge conditions under various funding scenarios. Modeling consistently shows that:

- **Maintaining current conditions** requires substantial investment
- **Improving conditions** — particularly increasing the share of assets rated good — requires investment levels beyond reasonably expected revenues

As a result, regional targets focus on realistic improvements, particularly reductions in the share of poor condition assets, where modeling suggests progress is most feasible.

Bridge condition targets adopt a slightly more aggressive stance on reducing poor condition than the state target, with the region aiming to meet the federal threshold of no more than 10 percent of NHS bridge deck area in poor condition by 2030. While current conditions sit slightly above that threshold, modeling indicates that reducing poor condition levels is achievable with targeted investment. Increasing the share of bridges in good condition is more challenging due to the age, scale, and funding requirements of major reconstructions.

CMAP continues to support state targets for pavement. In general, the region's pavement condition is worse than the state average. This means that an increase in funding is required to bring the system up to the targeted condition. Like bridges, modeling scenarios indicate that reducing the share of pavement in poor condition is more feasible than increasing the share of pavement in good condition. Increasing the share of pavement in good condition and sustainably maintaining it in that condition is difficult with many underlying foundations built 75 years ago or more. While much of the Tollway has been reconstructed, increasing the share of pavement in good condition would require significantly more reconstructions on the IDOT system than are currently planned.

Performance measure	Target (2024	Actual (2024)	Achieved (2024)	Target (2026)	Target (2030)
Pavement data years*	2022-23	2022-23	2022-23	2026-27	2028-29
Percent of pavement in good condition (interstate)	At least 70.0%	46.8%	No	At least 65.0%	At least 65.0%
Percent of pavement in poor condition (interstate)	Less than 0.5%	0.8%	No	Less than 0.5%	Less than 0.5%
Percent of pavement in good condition (non-interstate NHS)	At least 25.0%	19.8%	No	At least 30%	At least 30%
Percent of pavement in poor condition (non-interstate NHS)	Less than 5.0%	11.5%	No	Less than 8.5%	Less than 8.5%
Percent of bridges in good condition	At least 37.0%	25.0%	No	At least 24.0%	At least 24.0%
Percent of bridges in poor condition	Less than 8.1%	11.0%	No	Less than 10.0%	Less than 10.0%

* Pavement reporting years represent data collected in prior two years. Bridge data is reported here in alignment with the National Bridge Inventory – representing the year it was collected.

System performance

The FHWA has established six performance measures to assess system performance, focusing on passenger movement reliability, freight movement reliability, and congestion reduction. These measures are required for regions receiving CMAQ funding, in accordance with MAP-21.

Performance measure	Definition
Percent of trips to work via non-SOV modes (Chicago IL-IN UZA[7])	The share of trips to work by non-single occupancy vehicle (non-SOV) modes which includes carpooling, public transit, walking, other means, and working from home
Highway reliability (interstate)	The percentage of person-miles traveled on the interstate NHS in the region considered reliable, as defined by a level of travel time reliability (LOTTR) less than 1.5
Highway reliability (non-interstate NHS)	The percentage of person-miles traveled on the non-interstate NHS in the region that are considered reliable, as defined by a LOTTR less than 1.5
Annual hours of peak hour excessive delay per capita (Chicago IL-IN UZA)	Peak Hour Excessive Delay (PHED) is the extra amount of time people spend in congested conditions in their urban area during peak periods using the travel time of 20 mph or 60 percent of the speed limit on the NHS in the urbanized area.

7 U.S. Department of Transportation, "Urbanized Areas (UZA) Map Viewer," accessed March 2026, https://usdot.maps.arcgis.com/apps/mapviewer/index.html?webmap=5287ba87422448c7a97e5d60cc5e4f7b.

Performance measure	Definition
Truck Travel Time Reliability (TTTR) Index	The ratio of the longer travel times (95th percentile) to a normal travel time (50th percentile) for a given segment on the interstate system, with higher values indicating more unpredictable travel for local and national freight companies.
Total emissions reduction of on-road mobile source emissions	The emissions reduced by transportation projects funded through the CMAQ program, broken down by the following non-attainment criteria pollutants: Nitrogen Oxides (NOX), Volatile Organic Compounds (VOC), particulate matter 2.5 microns (PM2.5), and particulate matter 10 microns (PM10)

Current conditions

Mode share, travel time reliability, and congestion all play critical roles in the performance of the regional transportation system. The region benefits from multimodal transportation options where people can get around in many ways — driving, taking transit, biking, walking, and more. In 2024, almost 38 percent of trips to work were taken by non-SOV modes, underscoring the diversity of transportation choices in the region.

However, the region faces significant challenges. Northeastern Illinois is one of the most congested regions in the country, reflecting the scale of the regional economy and high demand for transportation. The region's congestion challenges are multi-faceted, with regular, peak-period delays, as well as frequent non-recurring congestion, where travelers face unexpected slowdowns due to crashes, weather, and more. Effectively managing congestion and achieving increased travel time reliability will require enhanced partnerships across agencies and a regionally cohesive approach.

The system performance targets established in this section reflect a commitment to improving mobility and access to destinations for all. Mode share targets aim to increase the percentage of trips to work via non-SOV modes, which will reduce congestion and increase reliability, while making it easier for people to get around by non-driving modes. The travel time reliability targets for interstate travel, non-interstate travel, and truck travel are focused on reducing unpredictable delays, so people and goods can reach their destinations dependably and on time. The peak hour excessive delay targets are focused on reducing time spent in congestion, boosting productivity and economic competitiveness.

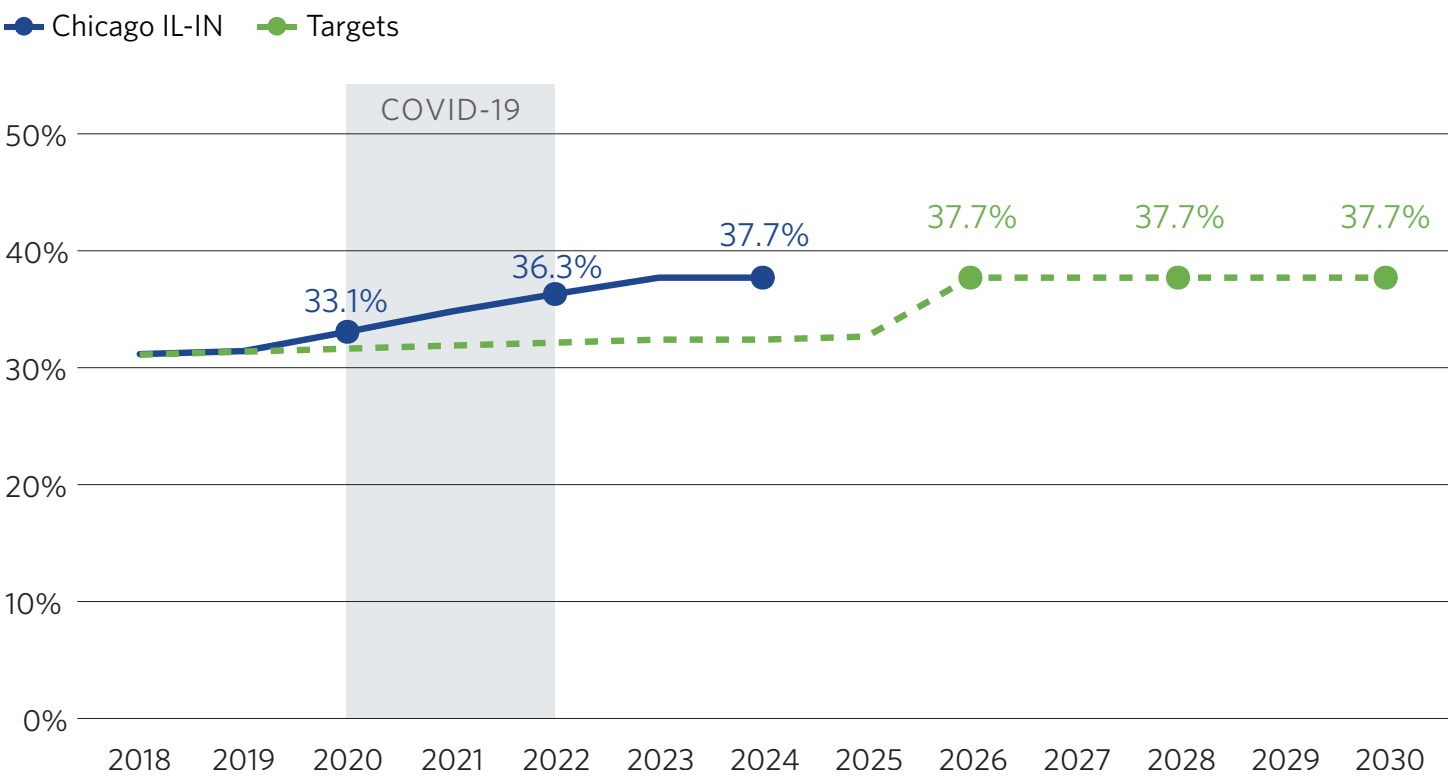
Trips to work via non-SOV modes

Higher non-SOV commute mode share supports many of the RTP's goals and objectives, including managing congestion, increasing system reliability, reducing emissions, and improving public health. The region exceeded targets set for 2023 (32.4 percent) and 2025 (32.7 percent), largely due to increases in remote work following the COVID-19 pandemic and corresponding reductions in driving alone to work.

The plan seeks to maintain the mode share gains made during the pandemic. Current trends indicate that the work from home mode share is falling, while the transit mode share is increasing. To maintain current non-SOV commuting levels, transit use will need to grow from 9 to 11 percent of commute trips, as work from home is expected to fall from near 16 to 14 percent.

Five-year estimates from U.S. Census Bureau's American Community Survey dataset (Table DP03) are used to track mode share in the urbanized area. Targets are set to maintain the gains in non-SOV mode share of the past five years. Recent data shows that work from home has slowly declined from pandemic peaks, while transit is slowly rising. Significant investment in transit and other active modes is needed to ensure that mode share targets are met.

Percent of trips to work via non-SOV modes



Travel time reliability

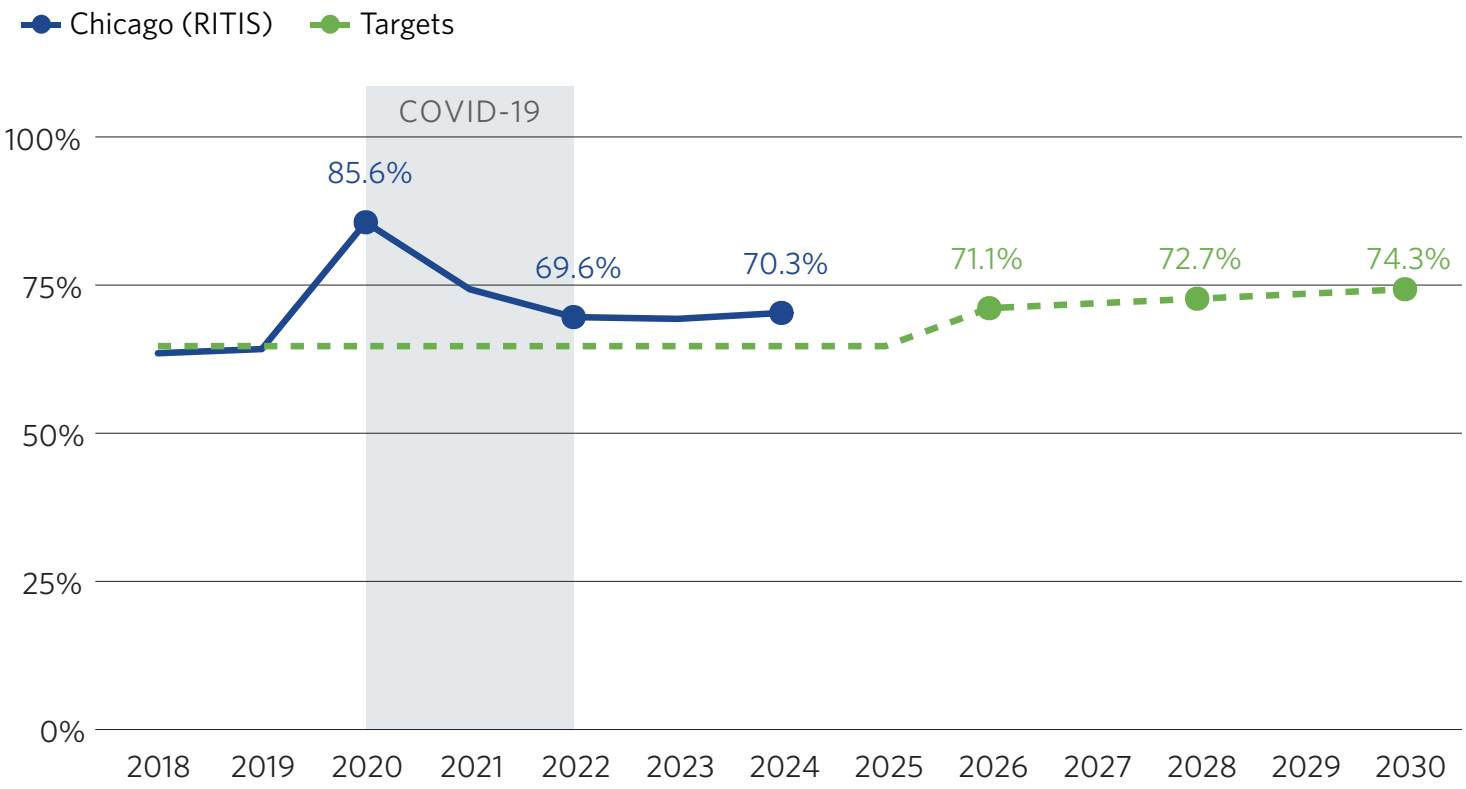
The plan proposes a target for annual interstate LOTTR of at least 74.3 percent by 2030 and a target for non-interstate LOTTR of at least 95.2 percent by 2030. LOTTR is defined as the ratio of longer travel times (80th percentile) to normal travel times (50th percentile). A ratio of less than 1.5 is considered reliable.

The region exceeded previous targets set for 2025 for both interstate and non-interstate LOTTR of at least 64.7 percent and 84.7 percent respectively. Reliability is a cornerstone of an effective transportation system. Improving reliability by reducing delays from crashes, construction, weather, and special events will make it easier for people to get around on time.

Reliable travel time spiked during the COVID-19 pandemic, especially on the interstate system, achieving an annual interstate LOTTR as high as 86 percent in 2020. Interstate reliability has since reduced back towards but remains above pre-pandemic trends, while non-interstate reliability remains at the high rates achieved during the pandemic. The recommended updated targets seek to maintain the reliability gains of the last five years.

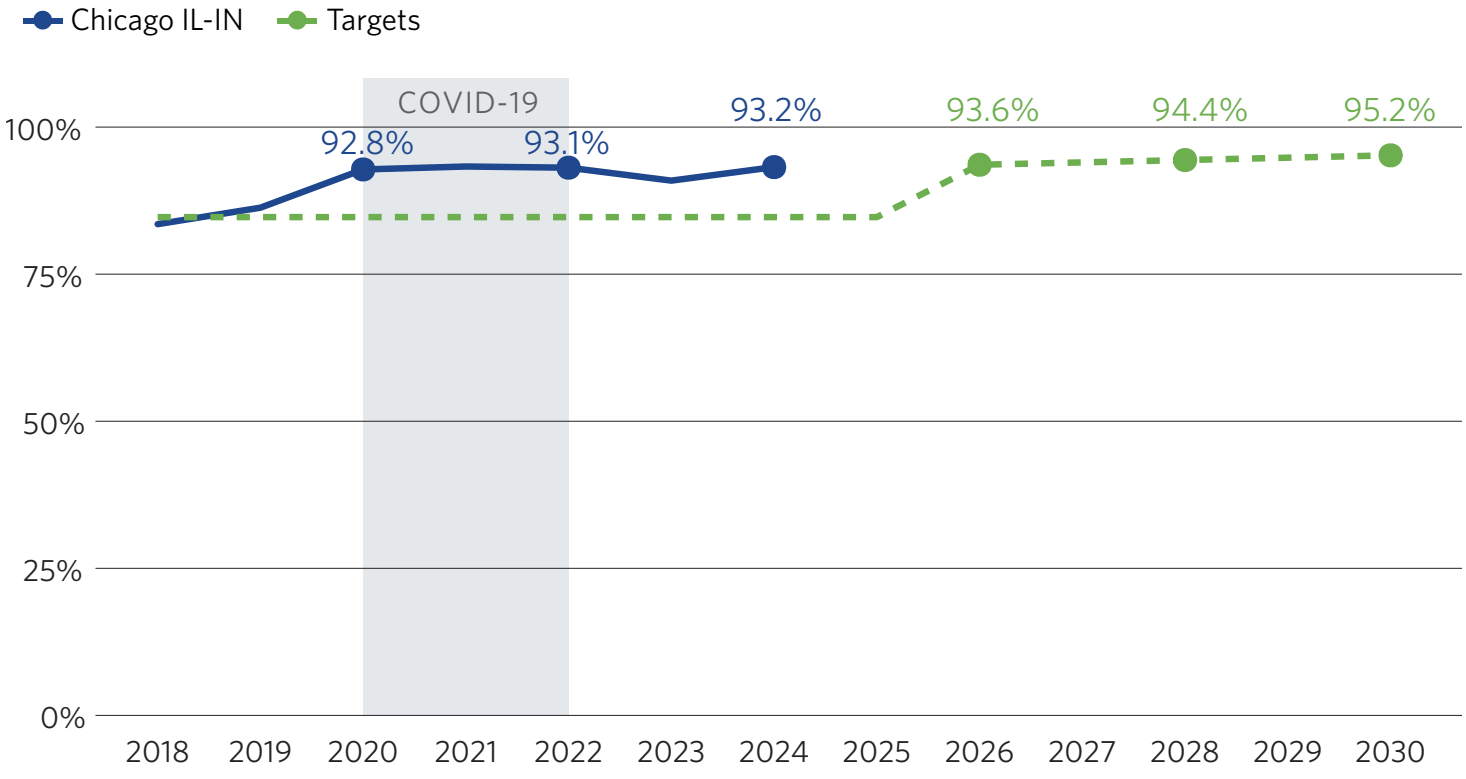
Investments in demand management and mode shift, alongside Intelligent Transportation System deployments and other operational improvements, such as signal coordination, traffic management centers, and traffic incident management are all key to improving system reliability.

Interstate travel reliability



Note: Data is from the Regional Integrated Transportation Information System (RITIS)"

Non-interstate travel reliability

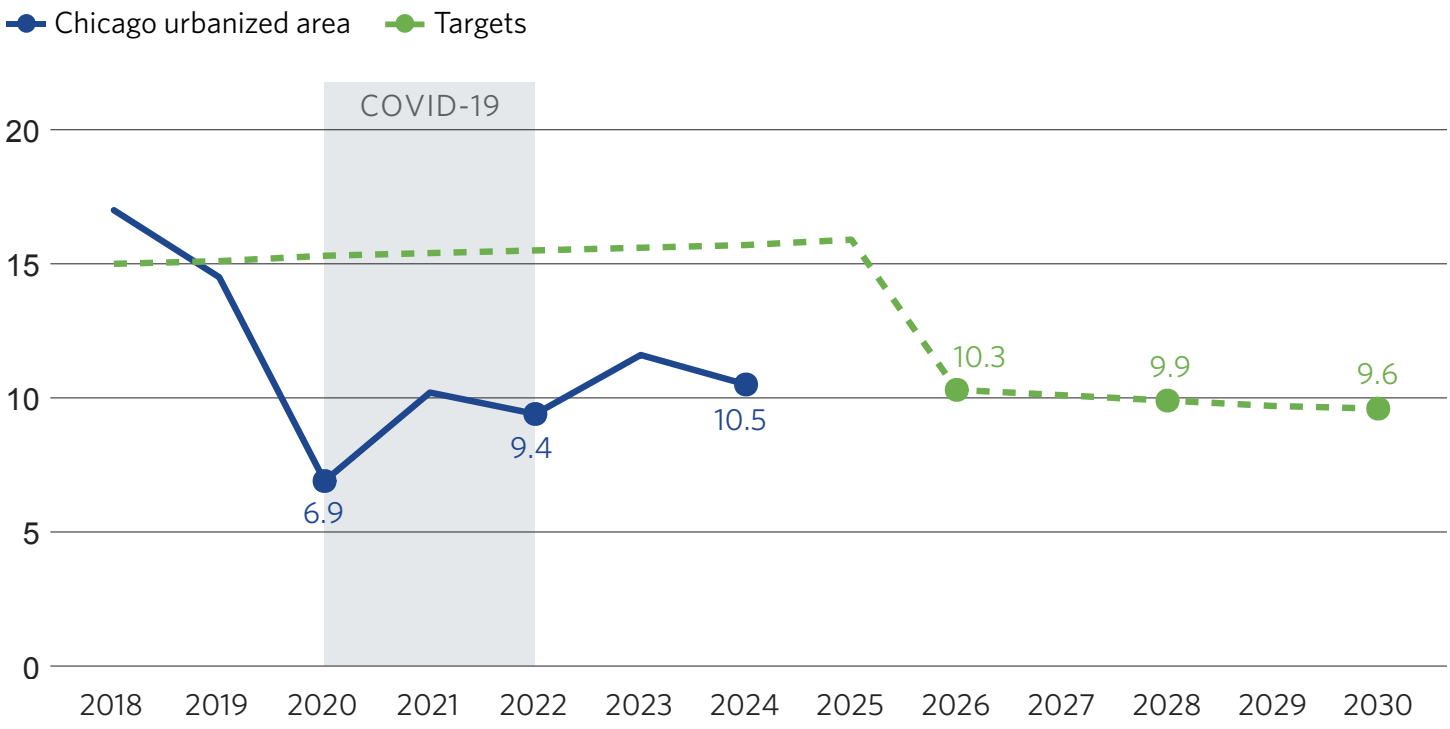


Peak hour excessive delay

The plan proposes a target for annual peak hour excessive delay of 9.6 hours (per capita) by 2030, for the Chicago IL-IN UZA, which includes portions of NW Indiana. Peak hour excessive delay per capita is a measure of traffic congestion, measuring the extra amount of time people spend in congested conditions during peak period (6 – 10 a.m., 4 - 8 p.m.). Reducing hours of excessive delay per capita is important for improving mobility and access to destinations, bolstering the regional economy.

PHED is calculated using data from the FHWA's National Performance Management Research Data Set, using travel times by road segment on the NHS in 15-minute intervals. Like with reliability, the region exceeded previous targets set for 2025 (15.9 hours per capita). At the start of the pandemic, the PHED per capita was as low as 6.9. It has since climbed back towards but remains below the previous target, at 10.5. A new target of 9.6 seeks to maintain the congestion reduction benefits achieved in the last five years, especially due to increased rates of remote and flexible work schedules, reducing peak period trips.

Peak hour excessive delay per capita (6:00 a.m. - 10:00 a.m. & 4:00 p.m. - 8:00 p.m.)

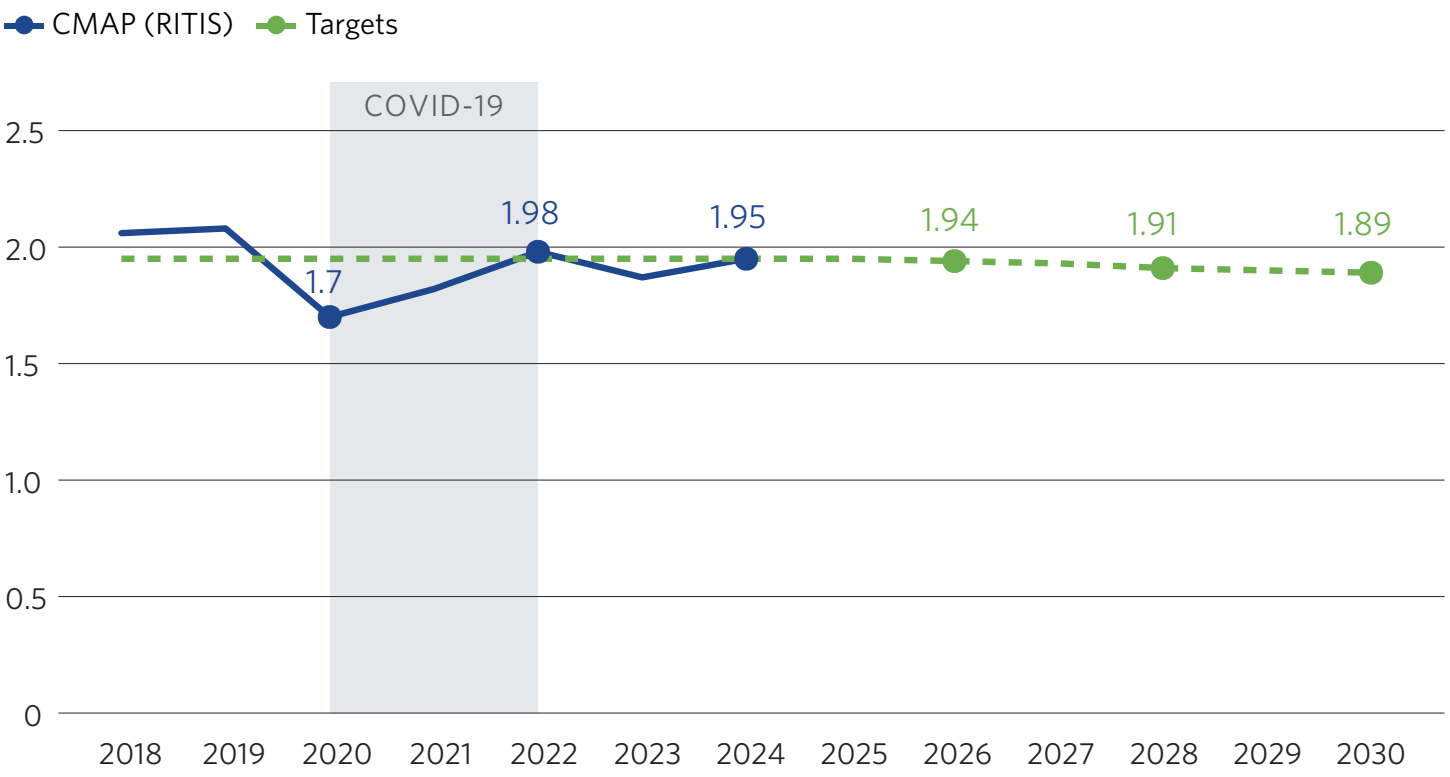


Truck travel time reliability

The plan proposes a target for truck travel time reliability (TTR) of 1.89 by 2030. Because northeastern Illinois is the freight hub for North America, truck travel time reliability in the region is critical for efficient goods movement and global economic competitiveness.[8] The TTR compares the worst freight travel times to normal travel times, to quantify the frequency of unreliable travel (e.g., higher values indicate more unreliable truck travel).

The TTR improved slightly in 2020 but has steadily climbed back towards pre-pandemic levels. A target of 1.89 for 2030 reflects a desire to maintain the modest gains in truck travel time reliability achieved over the last 5 years.

Truck travel reliability



Progress in achieving targets

CMAP and partner agencies have worked together on improving travel options, improving travel time reliability, and managing congestion. In 2024, CMAP commenced a process to update key components of the Congestion Management Process (CMP), which is a federally required element of regional transportation planning in urbanized areas with populations over 200,000.

In alignment with statutory requirements that emphasize cooperation and coordination, CMAP organized a resource group with representatives from a diverse range of stakeholder groups involved in the management and operations of the multimodal transportation system.

The process resulted in the development of two key deliverables — a Congestion Management Strategy Guidebook and a Comprehensive Corridor Study Template. The guidebook outlines a broad set of congestion management strategies with an emphasis on improving reliability, and offers a tiered framework for strategy selection, emphasizing investments in demand management, mode shift, and operations for capacity expansion, in support of the system performance targets established here.

8 Illinois Department of Transportation, "Illinois State Freight Plan," September 2024, https://idot.illinois.gov/programs-and-projects/rail-and-freight/illinois-state-freight-plan.html.

Looking ahead, CMAP and its partners will use the CMP resources to pursue comprehensive multimodal corridor plans on the region's most congested and unreliable corridors. Corridor plans will lead to the identification of strategies that seek to increase non-SOV commute mode share, improve travel time reliability, and effectively manage congestion, drawing on all the tools in the region's collective toolbox.

Performance measure	Target (2024)	Actual (2024)	Achieved (2024)	Target (2030)
Percent of trips to work via non-SOV modes	At least 32.4%	37.7%	Yes	At least 39.5%
Highway reliability (interstate)	At least 64.7%	70.3%	Yes	At least 74.3%
Highway reliability (non-interstate NHS)	At least 84.7%	93.2%	Yes	At least 95.2%
Annual hours of peak hour excessive delay per capita	Less than 15.9 hours per capita	10.5 hours per capita	Yes	Less than 9.6 hours per capita
Truck Travel Time Reliability Index	Less than 1.95	1.95	Yes	Less than 1.89

Performance measure	Target (2022 – 25)	Actual (2022 – 25)	Achieved (2022 – 25)	Target (2026 – 29)
NOX emissions reduction of on-road mobile source emissions	2,204.206	1281.977	No	826.122
VOC emissions reduction of on-road mobile source emissions	418.702	218.182	No	124.647
PM2.5 emissions reduction of on-road mobile source emissions	84.664	12.99	No	19.586
PM10 emissions reduction of on-road mobile source emissions	0	0	Yes	0

Transit asset management

CMAP establishes regional transit asset management targets in coordination with the RTA and the region's transit service boards, consistent with federal requirements under the Transit Asset Management (TAM) Final Rule.

CMAP's process for setting transit asset management targets is informed by recent performance trends across asset categories, including revenue vehicles, non-revenue vehicles and equipment, guideway infrastructure, and transit facilities (see table below).[9] For each asset category, targets reflect the goal of either returning to recent periods of better performance where conditions have deteriorated or maintaining recent gains where progress has been achieved. This approach balances the need for measurable improvement with the operational realities of maintaining complex, aging transit systems.

Proposed targets are then evaluated for financial achievability using outputs from the RTA's Capital Optimizations Support Tool (COST) model. The COST model assesses the long-term implications of different investment scenarios, allowing agencies to evaluate whether proposed targets can be met under fiscally constrained conditions. CMAP's regional targets reflect those scenarios that demonstrate both improved asset condition outcomes and consistency with anticipated funding levels.

9 CMAP sets targets for Chicago Transit Authority (NTD ID: 50066), Northeast Illinois Regional Commuter Railroad Corporation/Metra (50018), Pace - Suburban Bus Division (50113), Pace-Suburban Bus Division, ADA Paratransit Services (50182), Kendall Area Transit (50352), and Chicago Water Taxi/Wendella (50521).

Asset category	Performance measure	Definition
Transit rolling stock	Percent revenue vehicles that have met or exceeded their useful life	The percent of active revenue public transit vehicles that have met or exceeded their useful life, or the age when it is typically most cost effective to replace the vehicles
Transit non-revenue service vehicles and equipment	Percent of non-revenue vehicles and equipment that have met or exceeded their useful life	The percent of non-revenue vehicles (rubber tire vehicles such as trucks, cranes, and trailers) and equipment (steel wheel vehicles such as ballast cars, rail grinders, and tie pluggers) that have exceeded their useful life, or the age where maintenance cost and vehicle performance issues are likely to increase
Transit infrastructure	Percent of directional rail route miles with track performance restrictions	The percent of transit rail track with performance restrictions, or slow zones, where trains are required to operate at slower than normal speeds
Transit facilities	Percent of transit facilities with an asset class condition rating below 3 on the Federal Transit Administration's Transit Economic Requirements Model (TERM) scale (1=Poor to 5= Excellent)	The percent of transit facilities — including maintenance buildings, administrative buildings, passenger stations, and parking facilities — that are in marginal or poor condition

Current conditions

Transit asset conditions in northeastern Illinois reflect both the scale and age of the region's transit system and the sustained effects of historical underinvestment. While recent capital programs have improved conditions in some asset categories, a substantial portion of the system remains at or beyond its expected useful life. This results in slow trains, less reliable buses, higher operating costs, and degraded rider experience. Each transit agency publishes their asset management plans online:

- CTA TAM Plan: https://www.transitchicago.com/performance
- Metra TAM Plan: https://metra.com/transit-asset-management-plan
- Pace TAM Plan: https://www.pacebus.com/pace-transparency
- IDOT Group TAM Plan (Transit): https://idot.illinois.gov/content/dam/soi/en/web/idot/documents/transportation-system/reports/opp/transit/idot_wiu_ipta_group-tam-plan_tier-ii-agencies_2022_final.pdf
- IDOT Asset Management Plan (Roadway): https://idot.illinois.gov/programs-and-projects/highway/transportation-asset-management0.html

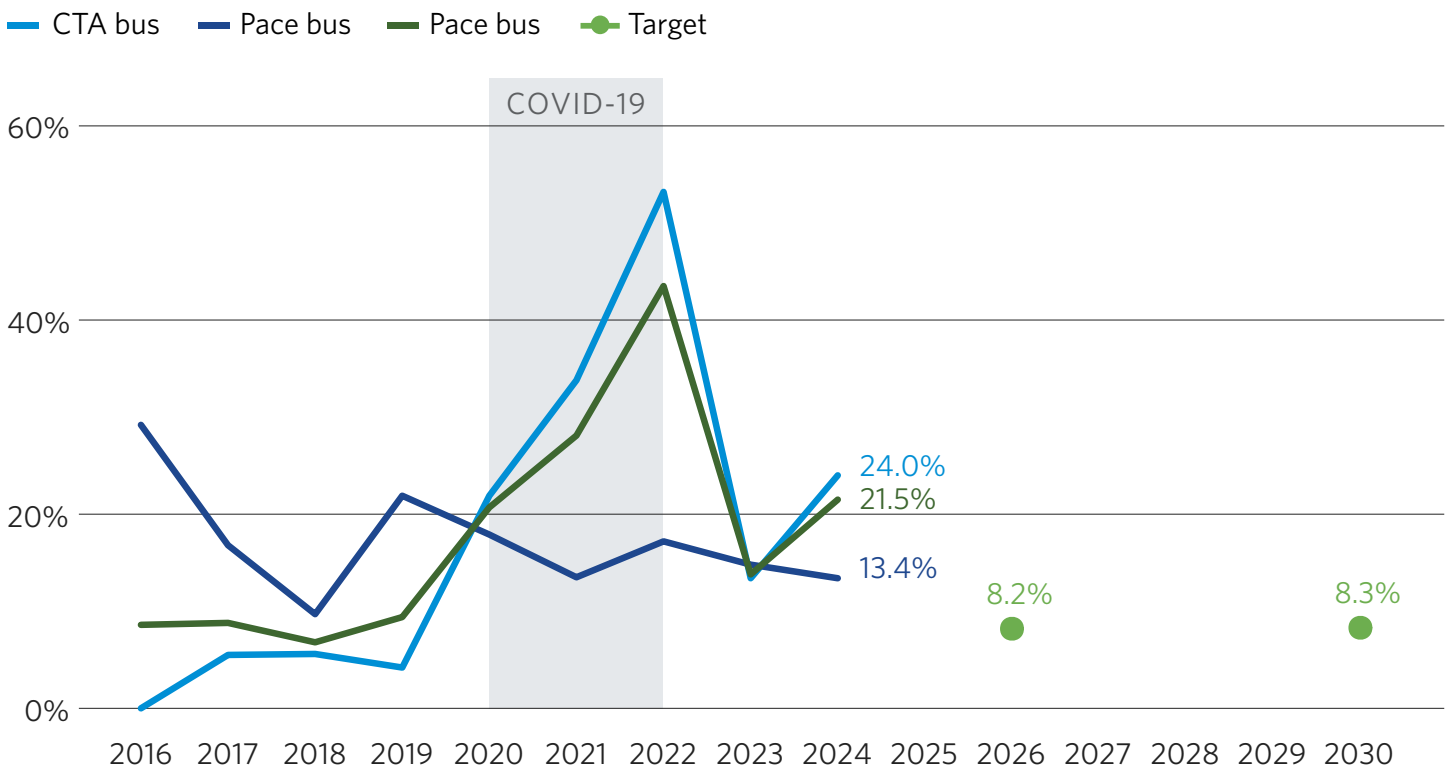
In addition, the RTA developed several documents, including the 2025 Capital Asset Condition Summary Report, that estimates a capital investment backlog of $30 billion.[10] Recent state legislation will provide much needed operating funding, while providing more limited increases in capital funding. Additional capital funding sources will be needed to substantially impact system conditions.

10 Regional Transportation Authority, "2025 Preliminary Asset Condition Report," May 2025, https://www.rtachicago.org/uploads/files/general/2025-Preliminary-Asset-Condition-Report_Final.pdf.

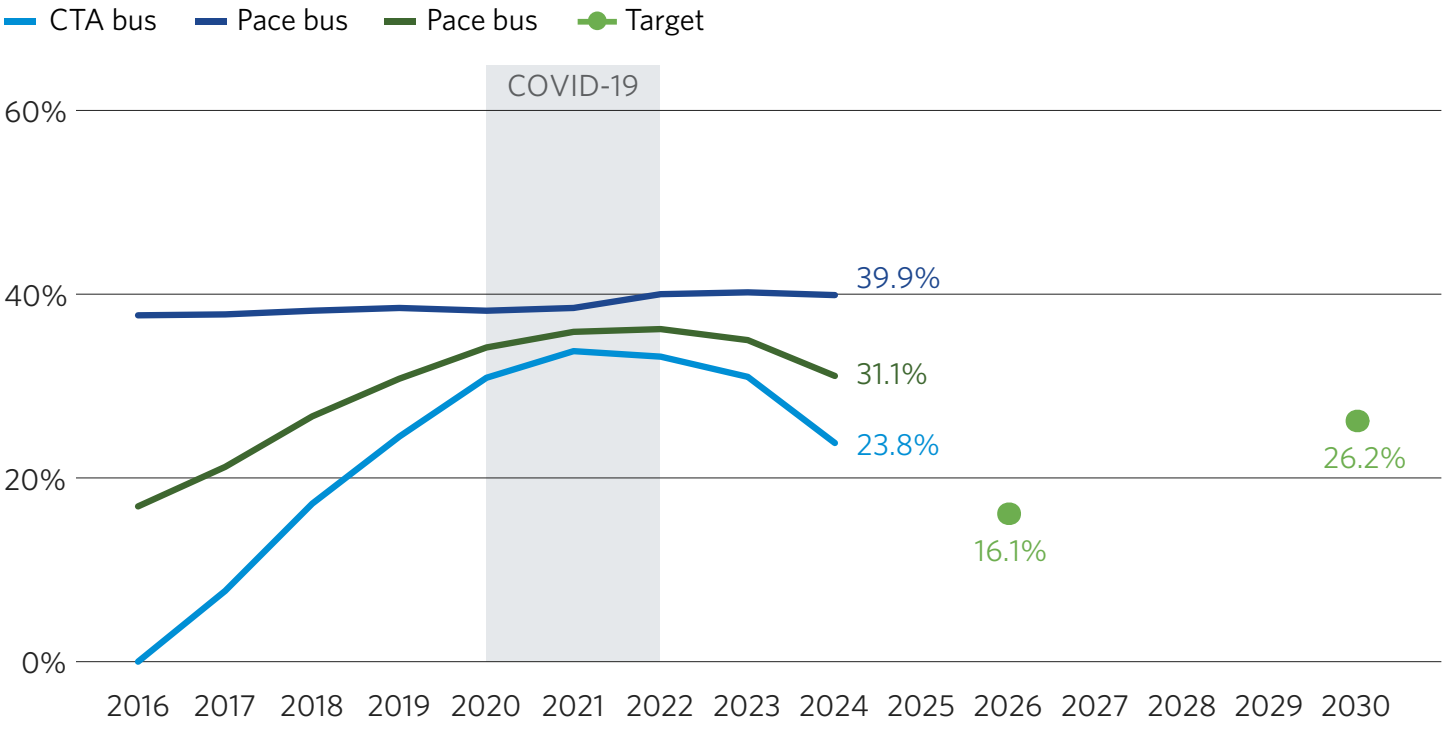
Transit revenue vehicles

Past targets for revenue vehicles have not been met, due to limited funding and supply chain challenges across modes. Existing vehicle orders should reduce the age of the fleet once manufacturers are able to deliver. Regional targets aim to restore vehicle conditions to levels last seen before 2020, recognizing that future transitions to cleaner propulsion technologies may change replacement cycles.

Percent of buses exceeding their useful life

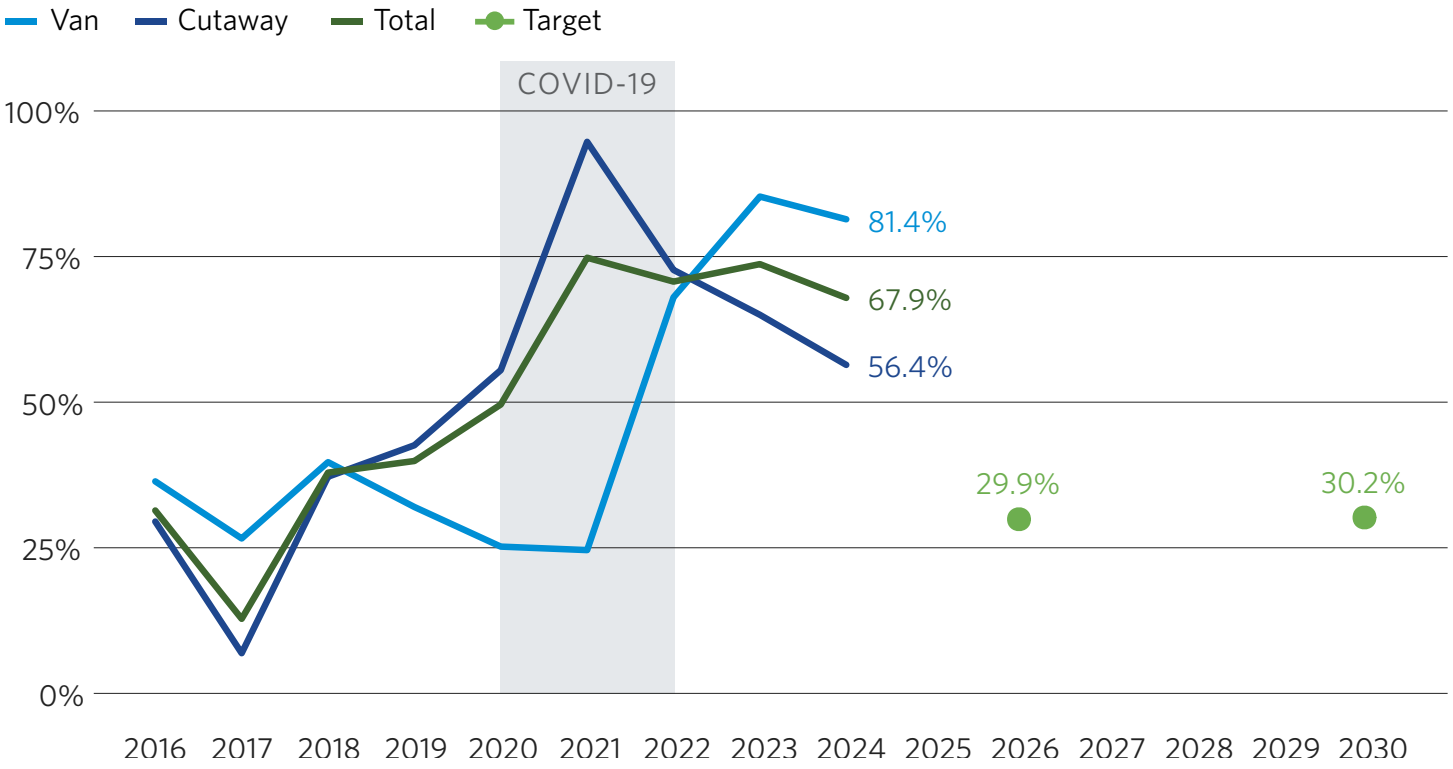


Percent of rail vehicles exceeding their useful life



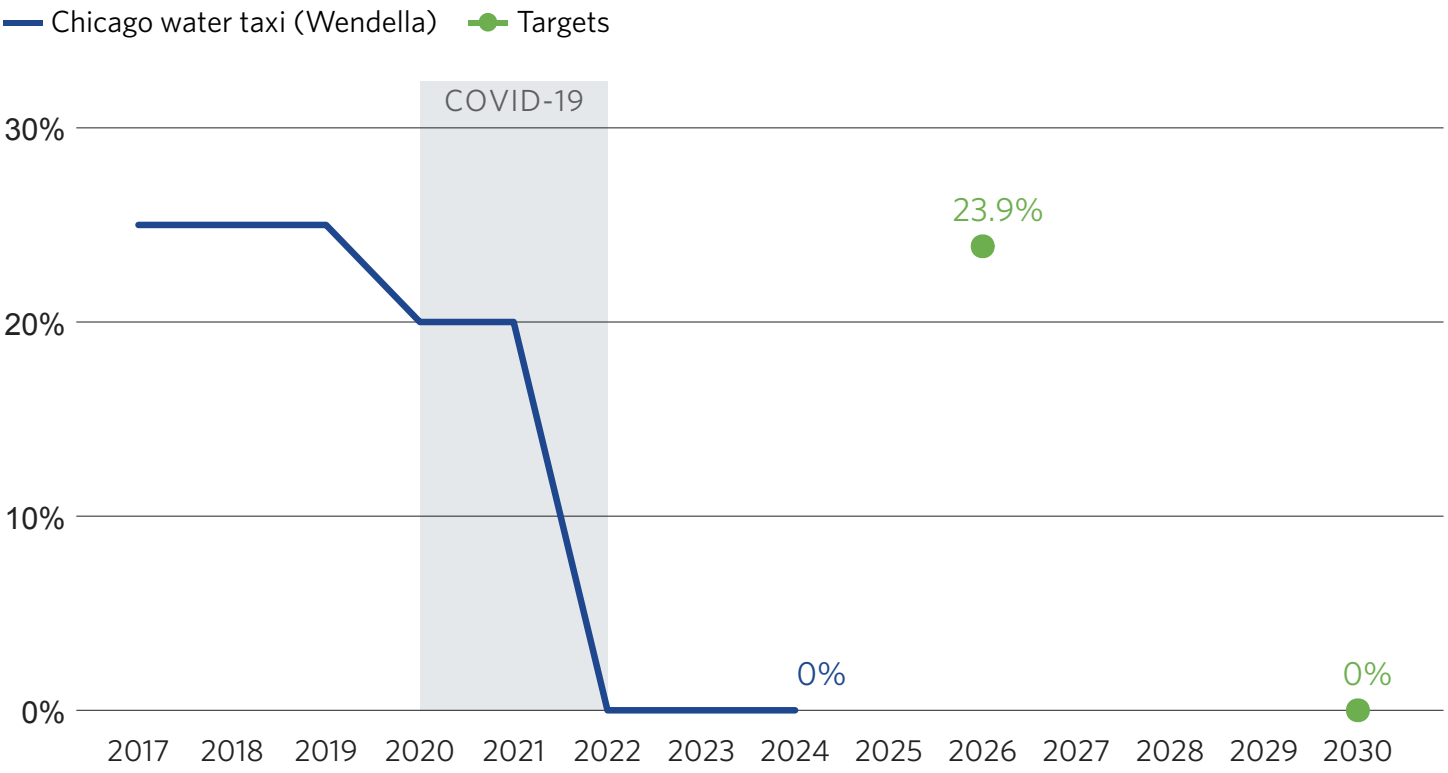
DRAFT

Percent of other passenger vehicles exceeding their useful life



In addition to Pace, Kendall Area Transit is included in "other passenger vehicles" in this report, but not in past reports.

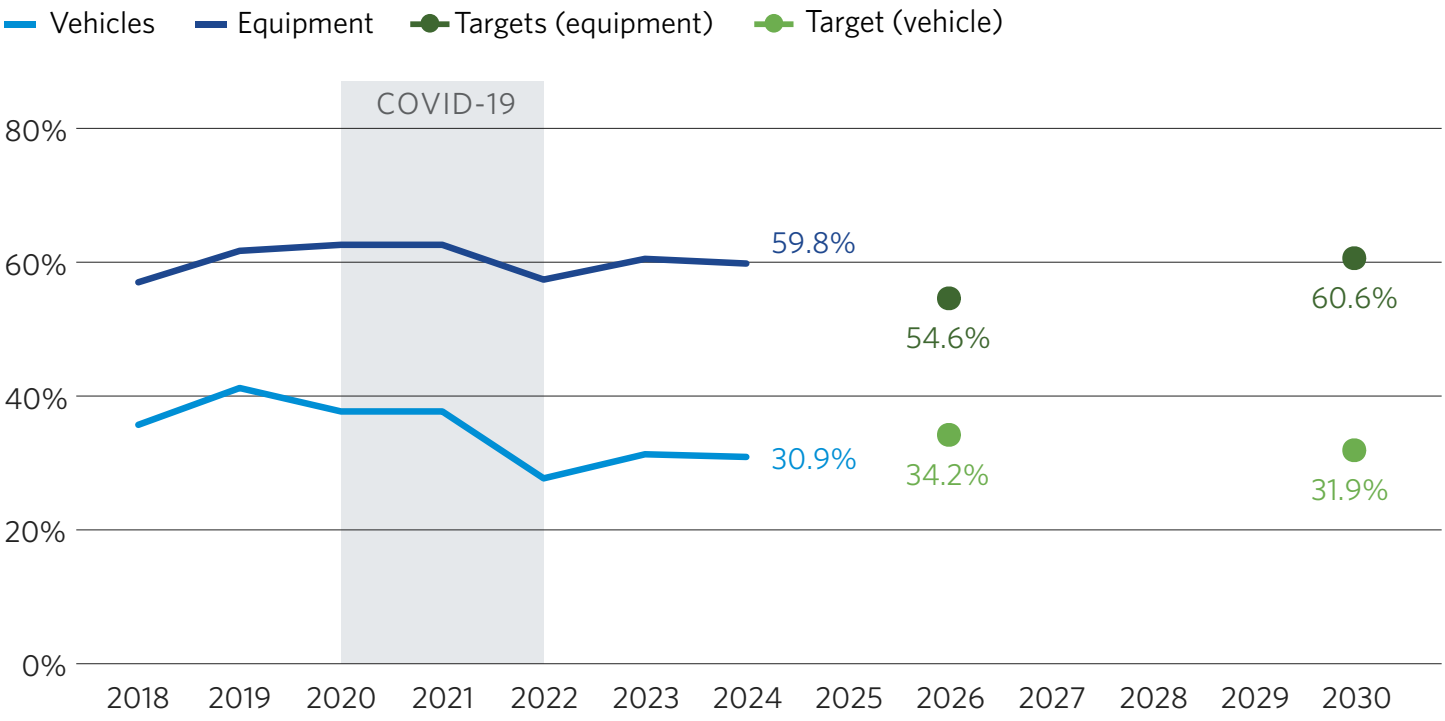
Percent of ferryboats exceeding their useful life



Transit non-revenue vehicles

Non-revenue vehicles are capital assets used for support, maintenance, and administrative activities rather than carrying fare-paying passengers. These vehicles and equipment continue to exhibit persistently high shares exceeding useful life benchmarks, reflecting deferred replacement and the lower visibility of these assets in capital programming despite their importance to system reliability. Steel wheeled rail vehicles such as rail grinders and ballast regulators are classified as equipment and often stay in service for decades with proper maintenance. However, deferred replacement can impact agencies' ability to safely and efficiently complete work. Rubber tire vehicles are grouped together under the vehicles category below. This includes a variety of types of vehicles such as tow trucks, maintenance vehicles, and sedans.

Percent of non-revenue vehicles and equipment exceeding their useful life

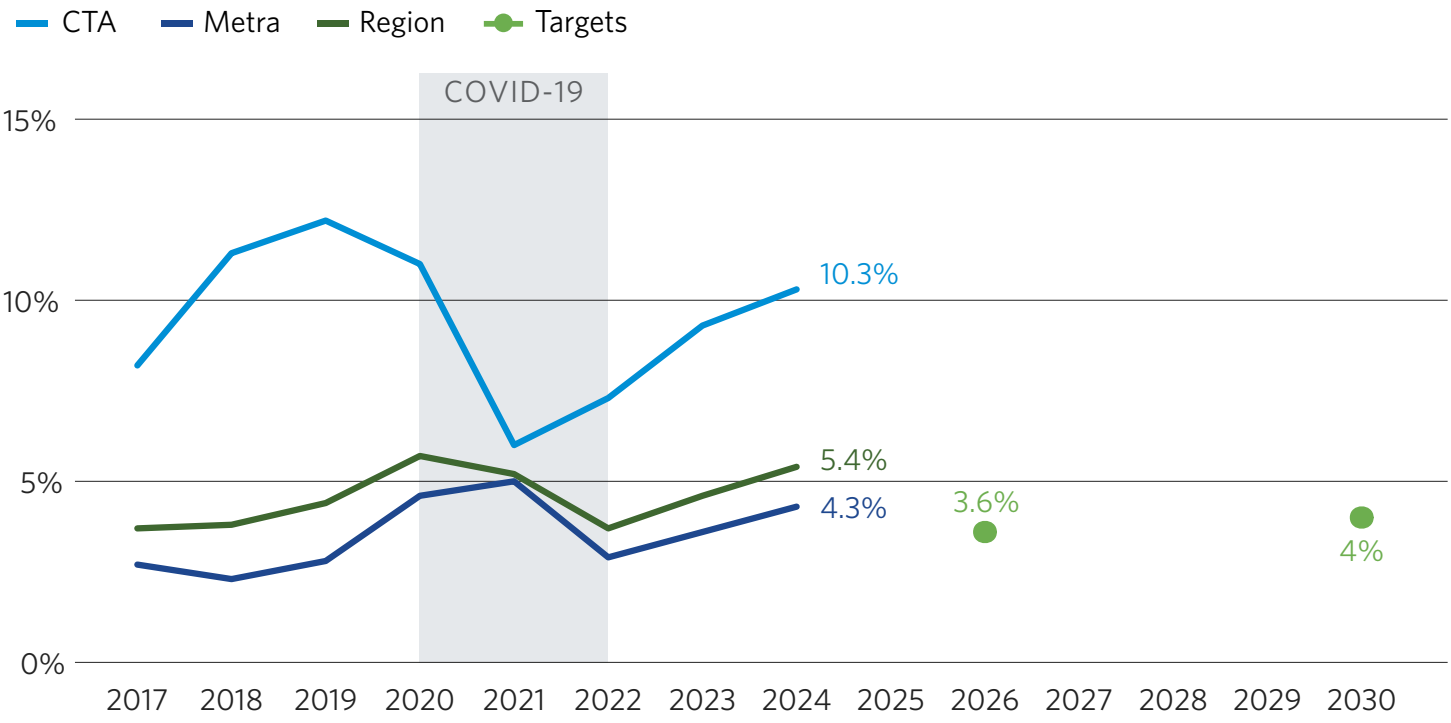


Transit infrastructure

Federal rules measure transit infrastructure condition based on rail performance restrictions or slow zones. This indicator does not fully capture the state of infrastructure, such as the backlog of aging bridges or signals that delay trains. Track and guideway infrastructure condition vary by system and corridor. While targeted investments have reduced performance restrictions in some locations, such as the CTA's Red and Purple Modernization project, systemwide trends continue to show upward pressure in the share of route-miles with restrictions, indicating ongoing state-of-good-repair challenges. Several significant efforts are in planning stages or underway to improve track condition. These projects take years to engineer and acquire funding.

DRAFT

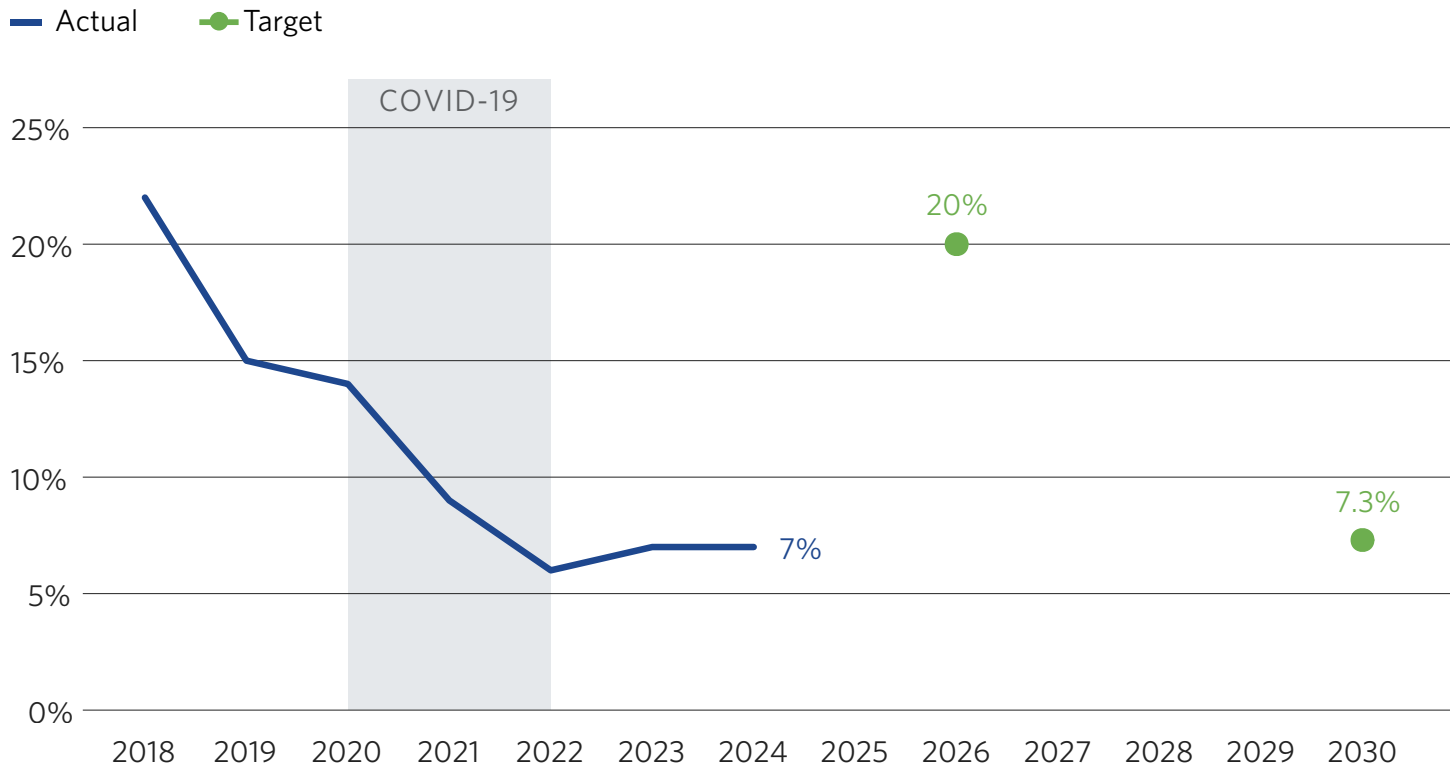
Percent of track with performance restrictions



Transit facilities

Transit facilities show recent improvement, with a declining share of stations, maintenance facilities, and support buildings rated in marginal or poor condition. This trend reflects targeted reinvestment in facilities, including station rehabilitation, accessibility upgrades, and major capital renewal projects. While a significant backlog remains, recent progress indicates that sustained investment can measurably improve facility conditions.

Percent of transit facilities rated in marginal or fair condition



Progress in achieving targets

Progress toward regional transit asset management targets reflects differing trends. In asset categories where condition has recently improved — most notably facilities — targets are designed to maintain recent gains rather than assume continued rapid improvement. In categories where conditions have worsened or remain volatile, targets aim to return to previously achieved performance levels under fiscally constrained conditions.

Evaluation using the RTA's COST model indicates that achieving the adopted targets will require maintaining investment levels consistent with or greater than recent capital programs, such as Rebuild Illinois, lasting from fiscal year 2019 through fiscal year 2031. Scenarios with lower investment result in deterioration across multiple asset categories, while higher investment scenarios are required to achieve broader improvements beyond those reflected in the current targets.

Looking ahead, the transition of capital planning to the Northern Illinois Transit Authority (NITA) and the commitment of the state to decarbonize transportation present opportunities to build on the data and programming processes that have been developed. Decarbonizing transportation may require new infrastructure such as additional bus garages and funding model changes that reflect the higher capital costs (but lower operating costs) of new vehicles.

Performance measure	Target (2022)	Actual (2022)	Achieved (2022)	Target (2030)
Percent of buses past useful life	Less than 8.4%	CTA – 53.2% Pace – 17.2% Total – 43.5%	No	Less than 8.3%%
Percent of rail vehicles past useful life	Less than 16.4%	CTA – 33.2% Metra – 40.0% Total – 36.2%	No	Less than 26.2%
Percent of other passenger vehicles past useful life	Less than 30.5%	Van – 68.0% Cutaway – 72.7% Total – 70.7%	No	Less than 30.2%
Percent of ferryboats past useful life	Less than 24.4%	0%	Yes	0%
Percent of non-revenue vehicles and equipment exceeding their useful life	Less than vehicles –35.0% Equipment – 55.8%	Vehicles – 27.7% Equipment – 57.4%	Vehicles –Yes Equipment –No	Less than Vehicles – 31.9% Equipment –60.6%
Percent of track with performance restrictions	Less than 3.7%	CTA – 7.3% Metra – 2.9% Total – 3.7%	Yes	Less than 4.0%
Percent of transit facilities rated in marginal or fair condition	Less than 20.4%	6.5%	Yes	Less than 7.3%

Note that non-fixed route includes data for Kendall Area Transit, that was not included in past reports.

Transit safety

The National Public Transportation Safety Plan (NPTSP) guides the management of safety risks and hazards within the nation's public transportation systems. The plan centers on the FTA's Safety Management System approach to improving the industry's safety performance. It also establishes performance measures to improve the safety of public transportation systems that receive federal financial assistance.

Transit agencies, MPOs, and states are required to set targets for these measures. The Federal Transit Administration (FTA) has not established penalties for not meeting safety performance targets. Metra is not subject to PTASP requirements because it is regulated for safety by the Federal Railroad Administration (FRA) rather than the Federal Transit Administration (FTA).

The FTA has established 14 performance measures to assess progress towards transit safety goals, 7 of which are new with the 2024 NPTSP and adopted by CMAP for the first time here.[11]

Performance measure	Definition
Number of fatalities by mode	The total number of fatalities reported to the National Transit Database (NTD), excluding trespassing, security events (other crimes), and suicide-related fatalities
Rate of fatalities per revenue mile by mode	The rate per million vehicle revenue miles of fatalities reported to the NTD, excluding trespassing, security events (other crimes), and suicide-related fatalities
Rate of transit worker fatalities per revenue mile by mode (new)	The rate per million vehicle revenue miles of transit worker fatalities reported to the NTD, including the categories Transit Employee/Contractor, Transit Vehicle Operator, and Other Transit Staff
Number of serious injuries by mode	The total number of injuries reported to the NTD, excluding injuries resulting from assaults and other crimes (security events)
Rate of serious injuries per revenue mile by mode	The rate per million vehicle revenue miles of injuries reported to the NTD, excluding injuries resulting from assaults and other crimes (security events) by mode
Rate of transit worker serious injuries per revenue mile by mode (new)	The rate per million vehicle revenue miles of transit worker serious injuries reported to the NTD, including the categories Transit Employee/Contractor, Transit Vehicle Operator and Other Transit Staff
Number of assaults on transit workers by mode (new)	The total number of assaults on transit workers reported to the NTD, including the categories Transit Employee/Contractor, Transit Vehicle Operator, and Other Transit Staff
Rate of assaults on transit workers per revenue mile by mode (new)	The rate per million vehicle revenue miles of assaults on transit workers reported to the NTD, including the categories Transit Employee/Contractor, Transit Vehicle Operator, and Other Transit Staff
Number of reportable safety events by mode	The total number of reportable events by mode as fall into five categories: collisions, derailments, fires, security, and not otherwise classified
Rate of safety events per revenue mile by mode	The rate of reportable events per million vehicle revenue miles by mode, as fall into five categories: collisions, derailments, fires, security, and not otherwise classified
Rate of collisions per revenue mile by mode (new)	The rate per million vehicle revenue miles of all collisions reported to the NTD

11 Federal Transit Administration, "National Public Transportation Safety Plan," April 2024, https://www.transit.dot.gov/sites/fta.dot.gov/files/2024-04/National-Safety-Plan-04-05-2024.pdf.

Performance measure	Definition
Rate of pedestrian collisions per revenue mile by mode (new)	The rate per million vehicle revenue miles of all collisions with a person reported to the NTD
Rate of vehicular collisions per revenue mile by mode (new)	The rate per million vehicle revenue miles of all collisions with a motor vehicle reported to the NTD
Mean distance between mechanical failure by mode	The mean distance between major mechanical system failures, meaning the failure of some mechanical element of the revenue vehicle that prevents the vehicle from completing a scheduled revenue trip or starting the next scheduled revenue trip because vehicle movement is limited or due to safety concerns

CMAP sets targets by mode for: [12]

- Heavy rail (CTA)
- Bus (CTA and Pace)
- Non-fixed route: paratransit (Pace) and vanpool (Pace)

Ferryboats and commuter rail are exempt from FTA safety target setting.

Current conditions

Transit safety outcomes in northeastern Illinois have seen notable shifts during and after the COVID-19 pandemic as the operating environment has evolved and staff turnover has increased.

Transit safety targets are informed by historical trends derived from the NTD Safety & Security Major Event Time Series and Monthly Modal Time Series. Targets are generally based on three-year historical averages to smooth year-to-year volatility and to account for the relatively low frequency — but high consequence — nature of safety events. In some cases, agencies use longer historical windows or mode-specific definitions consistent with their adopted Public Transportation Agency Safety Plans.

New data and tools are being used to improve transit safety. Many buses can detect and warn pedestrians in the bus's path. Sensors monitor driver behavior, such as hard braking, and highlight opportunities for training. Employee turnover during the pandemic resulted in a higher share of new staff, impacting the rate of incidents. Transit agencies are adapting their training programs to better reflect the changing needs of staff and evolving technology.

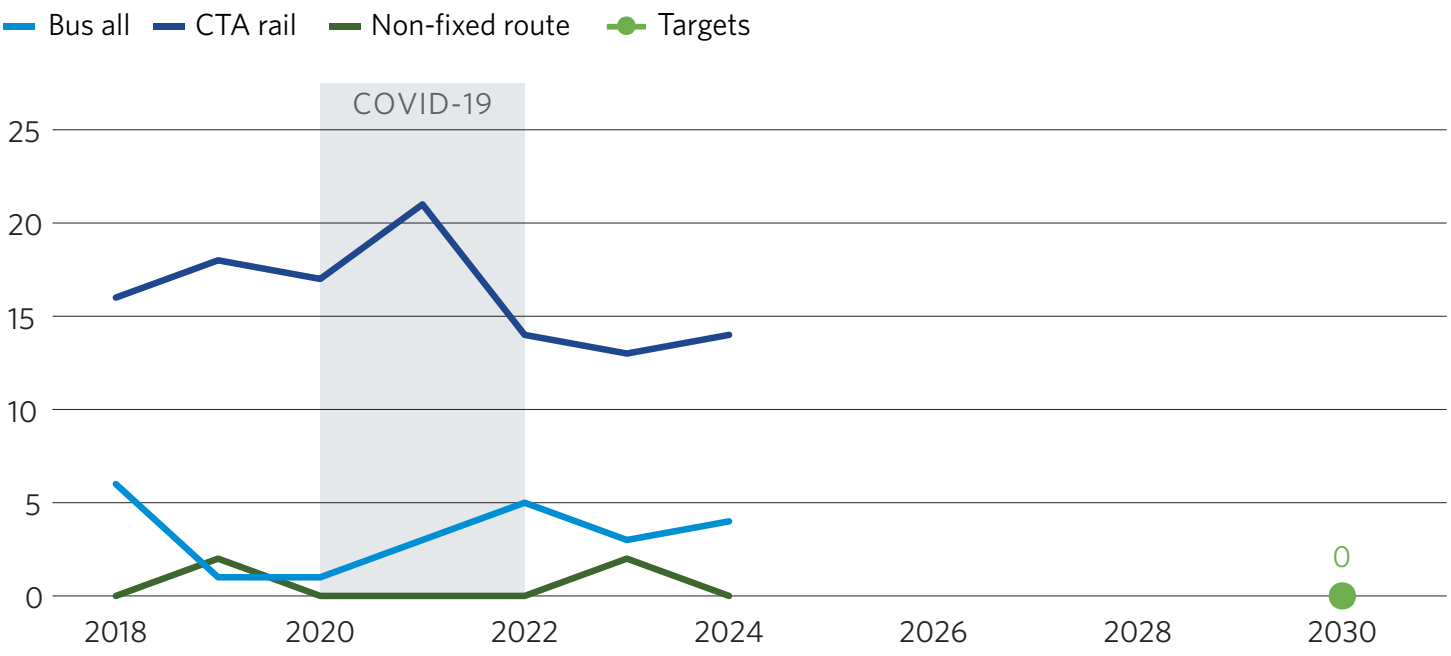
Transit fatalities

Transit fatalities remain infrequent across the system. CTA rail continues to experience a higher fatality rate than bus and non fixed route modes, reflecting the inherent risks of grade separated, high volume rail operations. Transit fatalities include all fatalities as defined by the NTD, including those related to security events, in accordance with the latest FTA guidance.

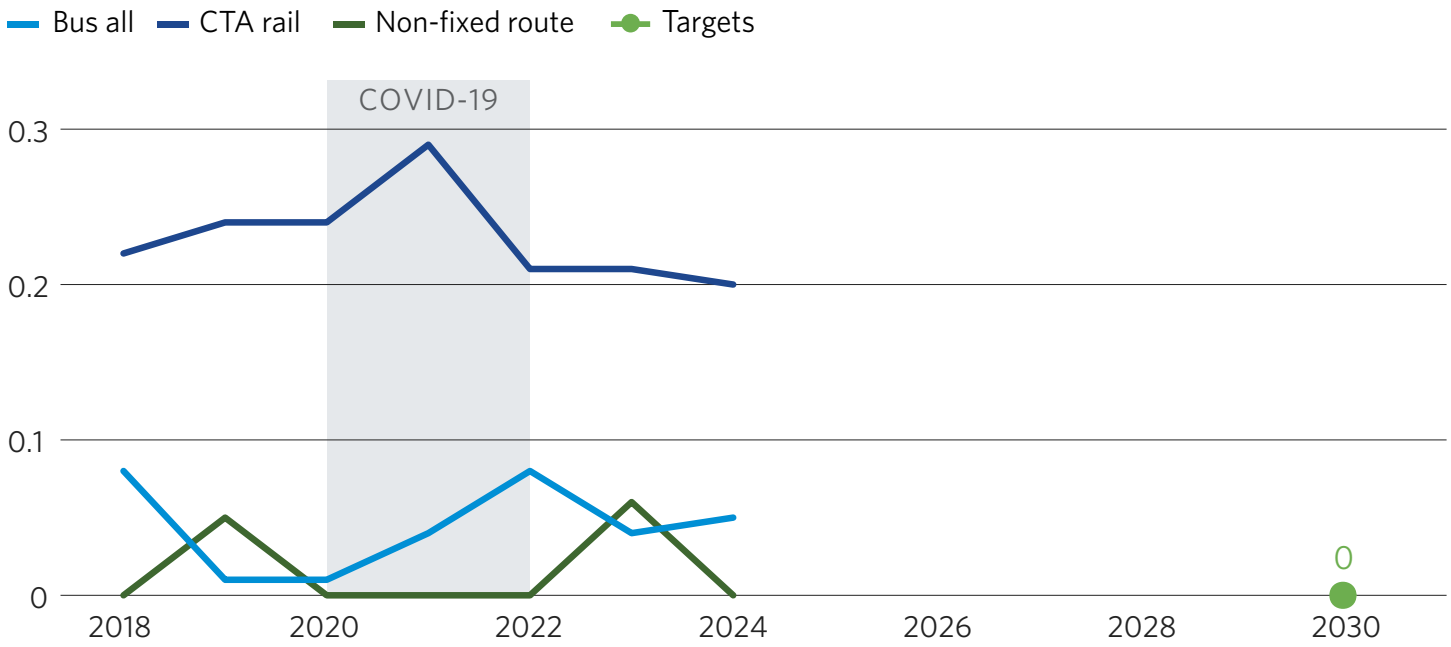
The fatality rate among transit workers is low, reflecting the rarity of such events. This rate includes all transit worker fatalities as defined by the NTD, including the categories Transit Employee/Contractor, Transit Vehicle Operator, and Other Transit Staff.

12 CMAP sets targets for Chicago Transit Authority (NTD ID: 50066), Pace - Suburban Bus Division (50113), and ADA Paratransit Services (50182).

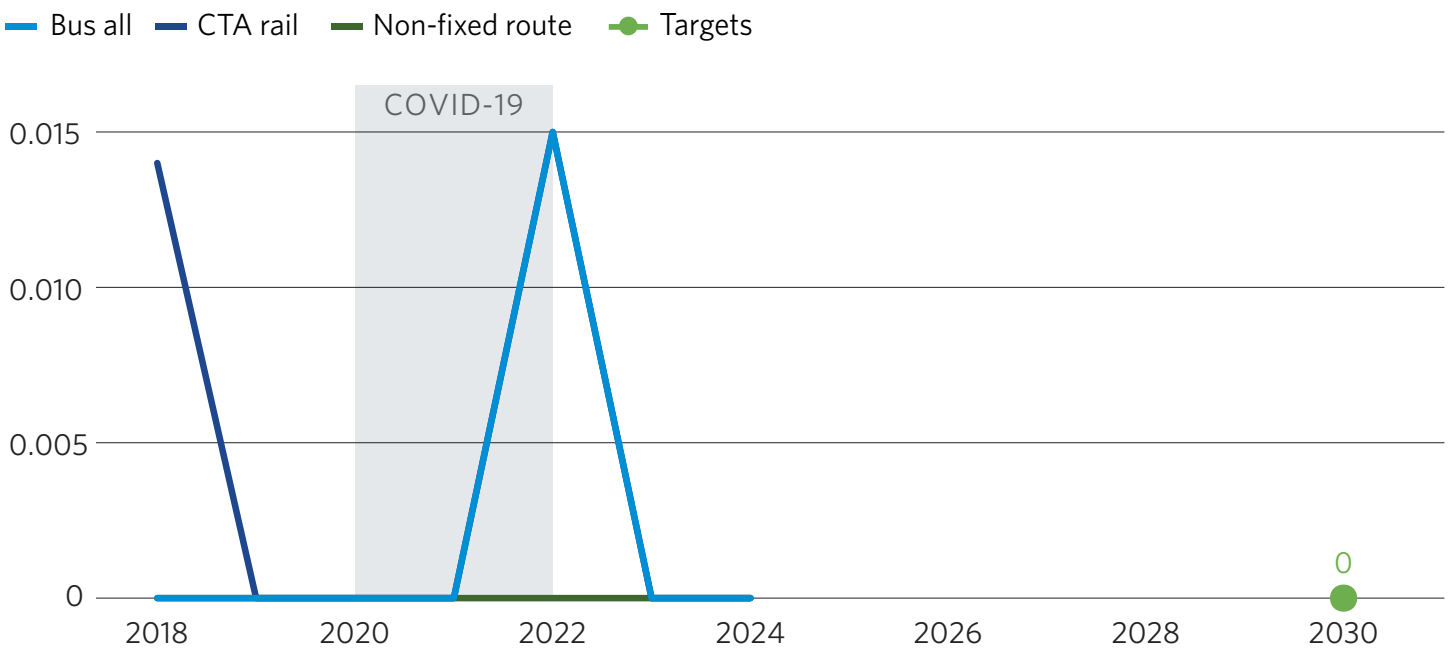
Transit fatalities



Transit fatalities per million vehicle revenue miles



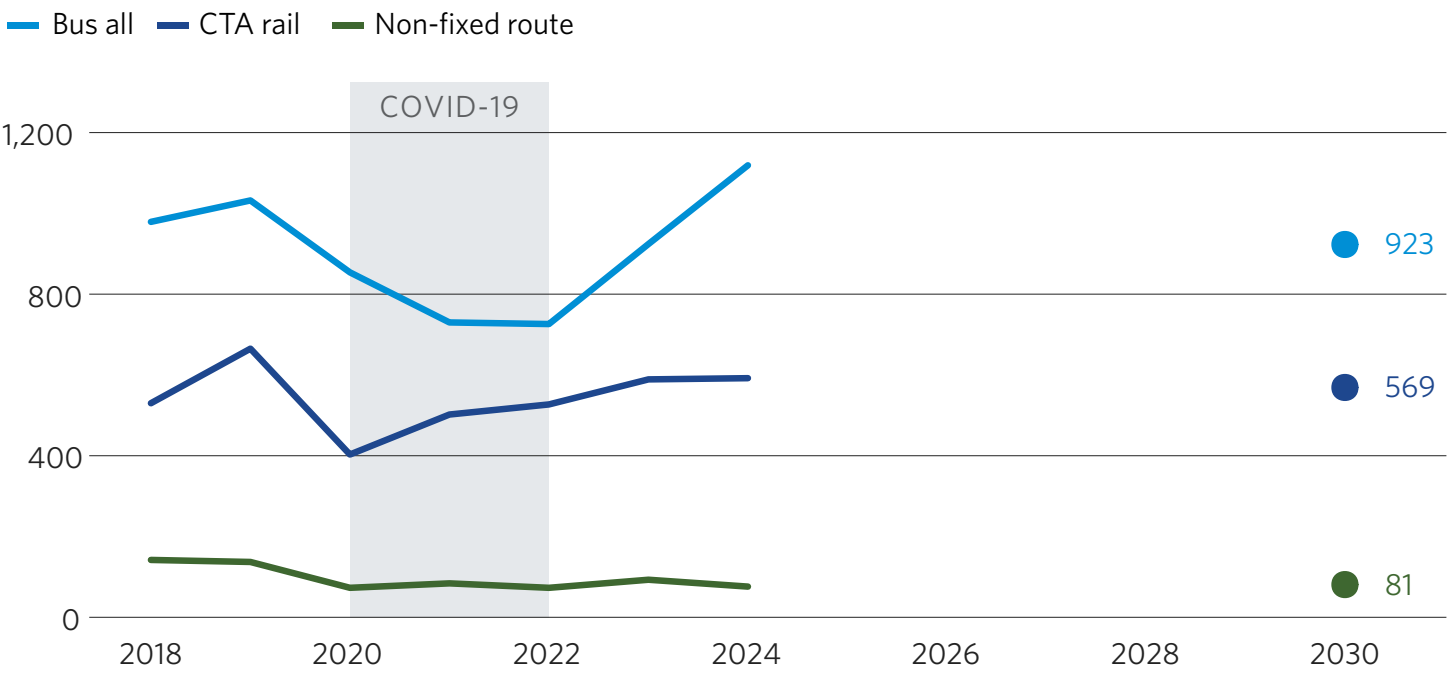
Transit worker fatalities per million vehicle revenue miles



Transit injuries

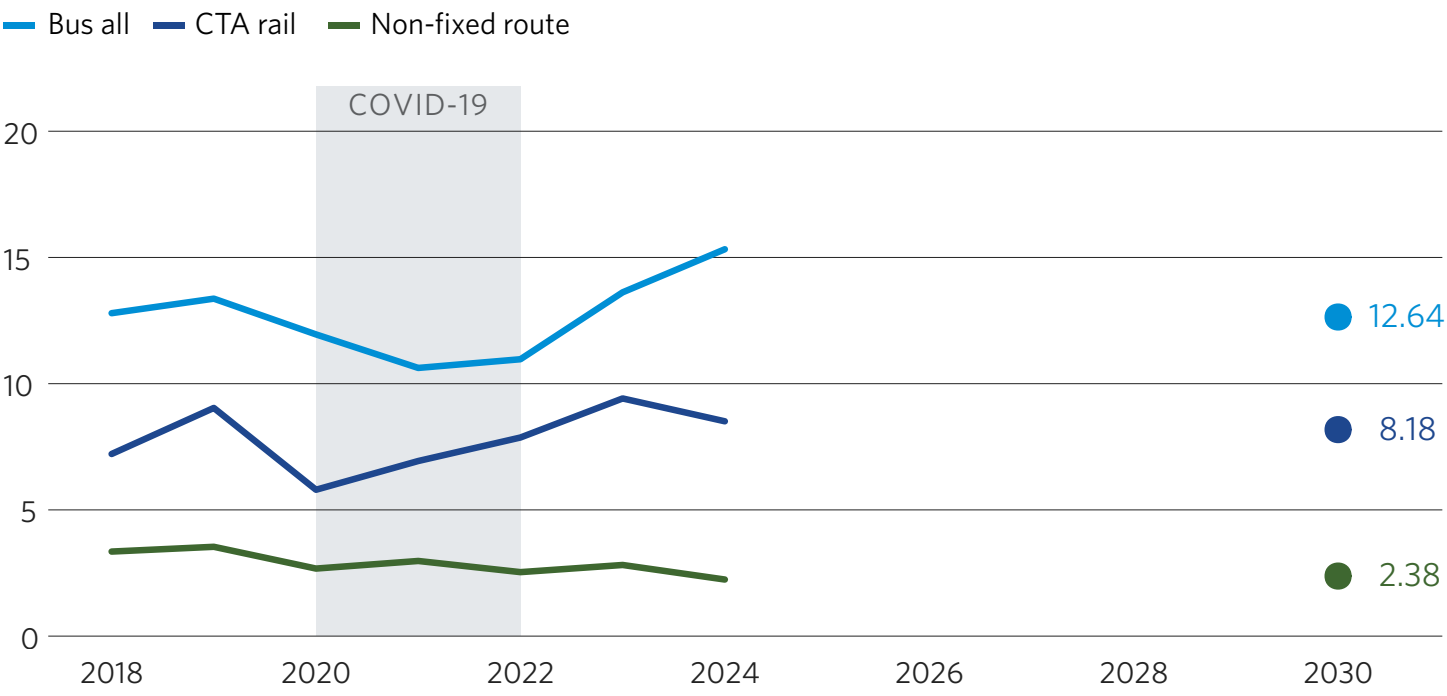
Transit injuries and injury rates are highest on fixed-route bus, both in absolute numbers and per million vehicle revenue miles. Bus injuries totaled 726 in 2022, compared to 527 for CTA rail and 73 for non-fixed route Pace. Note that the 2024 National Public Transportation Safety Plan updated the definition of reportable injuries to include all injuries as defined by the NTD — a change from prior practice, which excluded security-related injuries. The charts below reflect this updated definition, which means injury counts are not directly comparable to figures reported in prior cycles. Several initiatives are underway to address rising transit worker injury rates, including updated operator training and expanded use of onboard safety technology.

Transit injuries

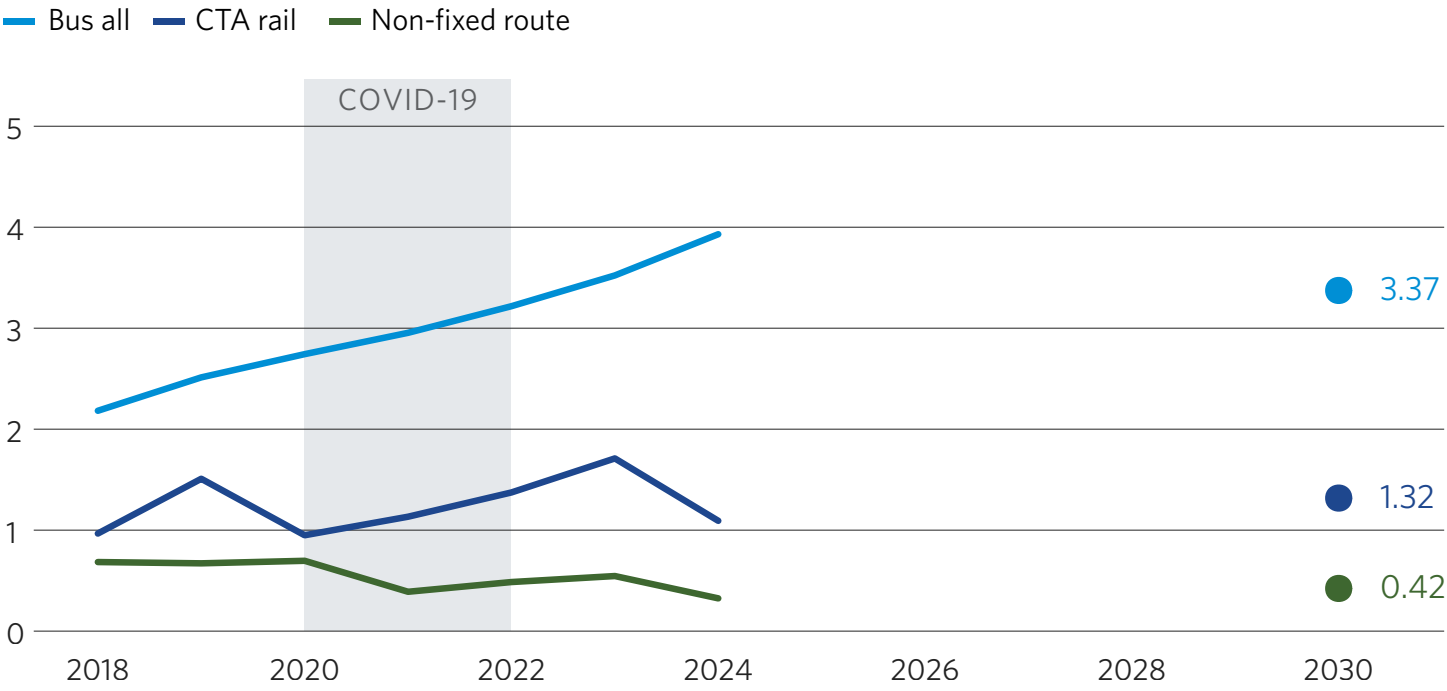


DRAFT

Transit injuries per million vehicle revenue miles



Transit worker injuries per million vehicle revenue miles

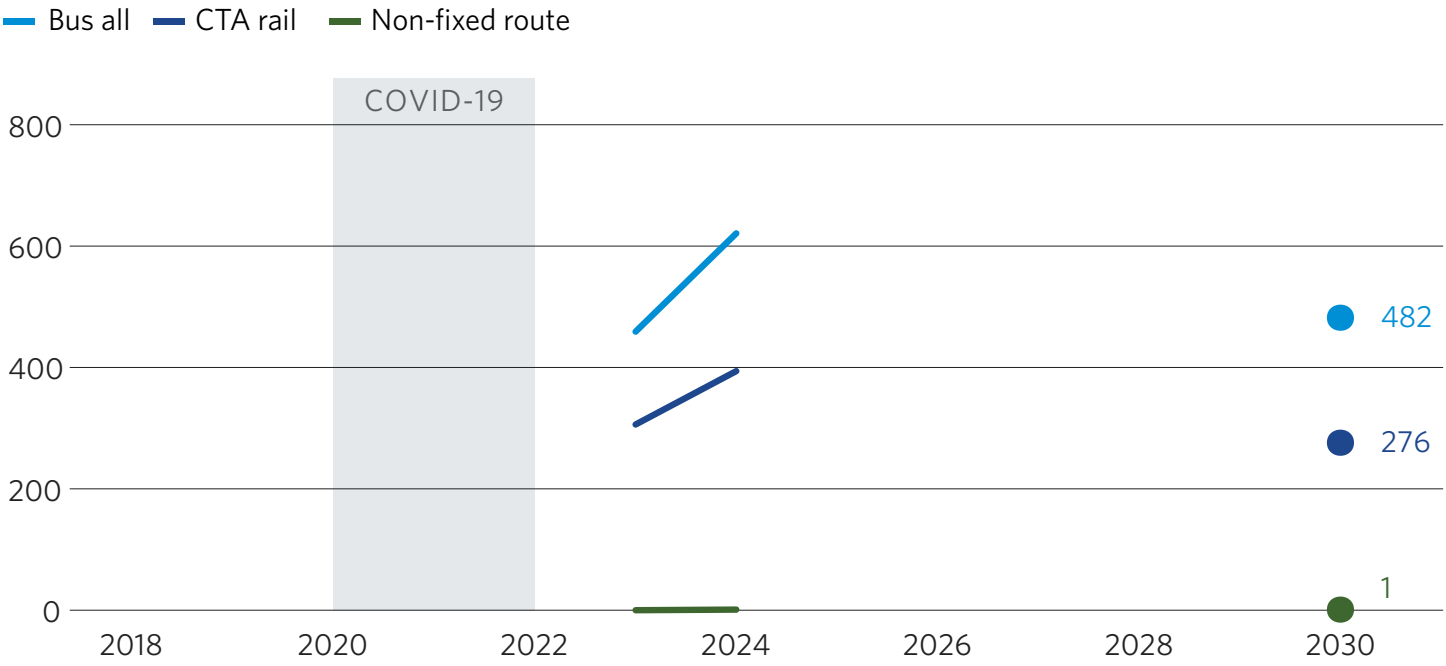


Transit worker assaults

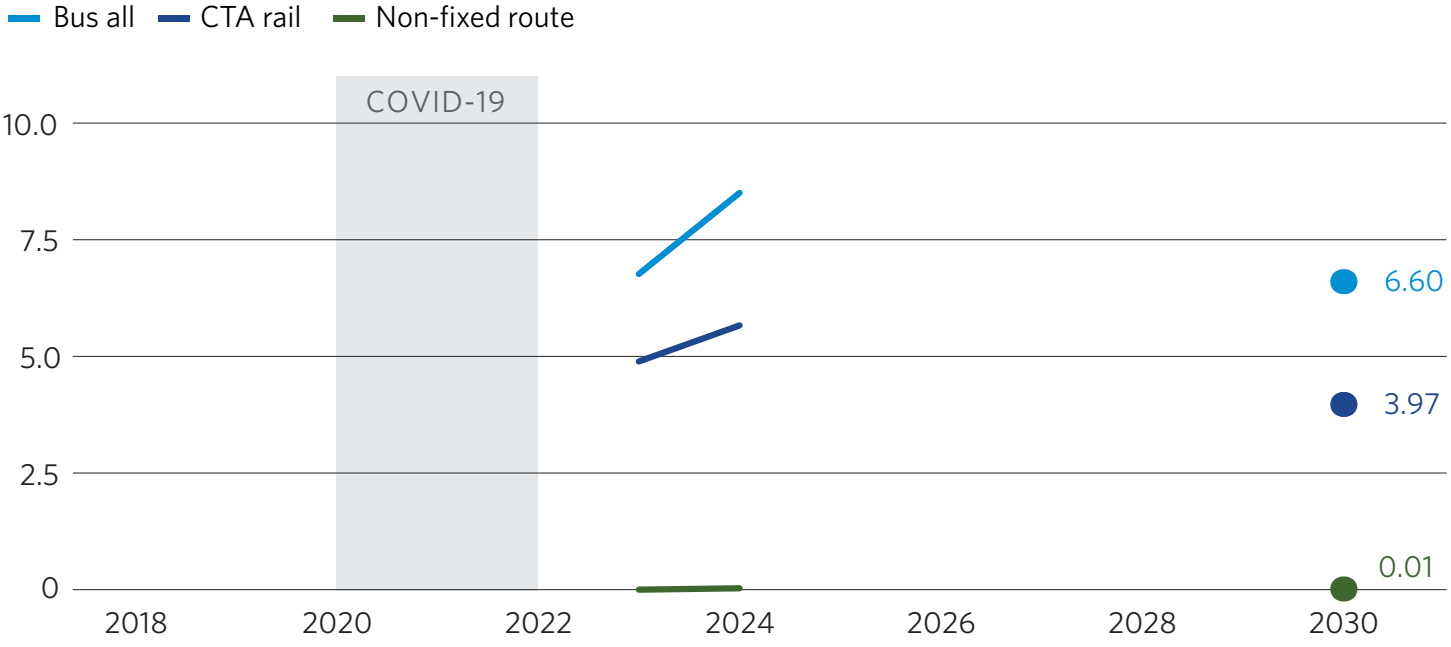
Assaults on transit workers have emerged as a significant safety challenge. Both the number and rate of assaults increased across bus and rail modes during and after the pandemic. Transit agencies are responding with enhanced training, operator assist technology, onboard cameras, and increased law enforcement coordination.

Historically, these incidents were not captured in the NTD if they did not result in a fatality, injury, or other major event threshold; formal tracking began in 2023. The total number of assaults on transit workers, and the rate per one million vehicle revenue miles, has increased across both rail and bus modes. Transit worker assaults now include all assaults on transit workers as defined by the NTD, whether or not the event resulted in injuries, and whether the assault was physical or non-physical, in accordance with the latest FTA guidance.

Transit worker assaults



Transit worker assaults per million vehicle revenue miles

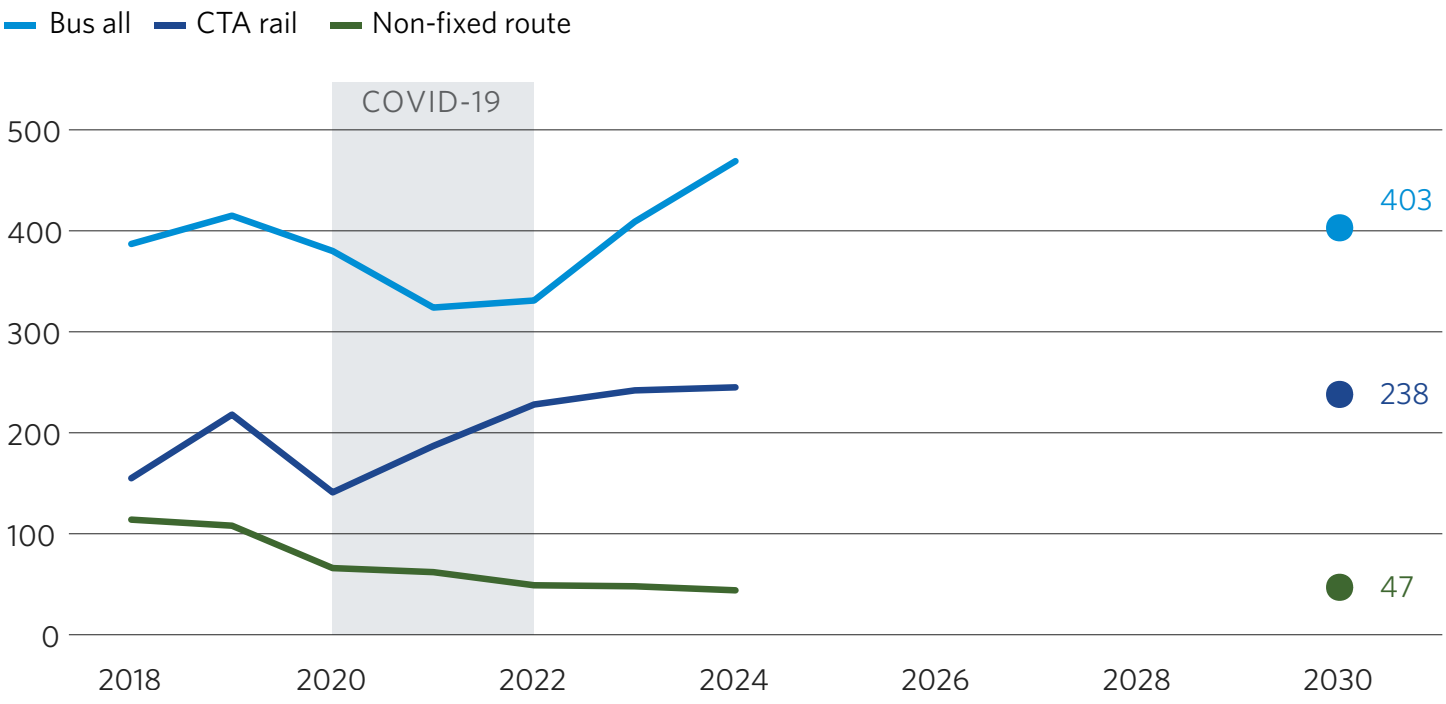


DRAFT

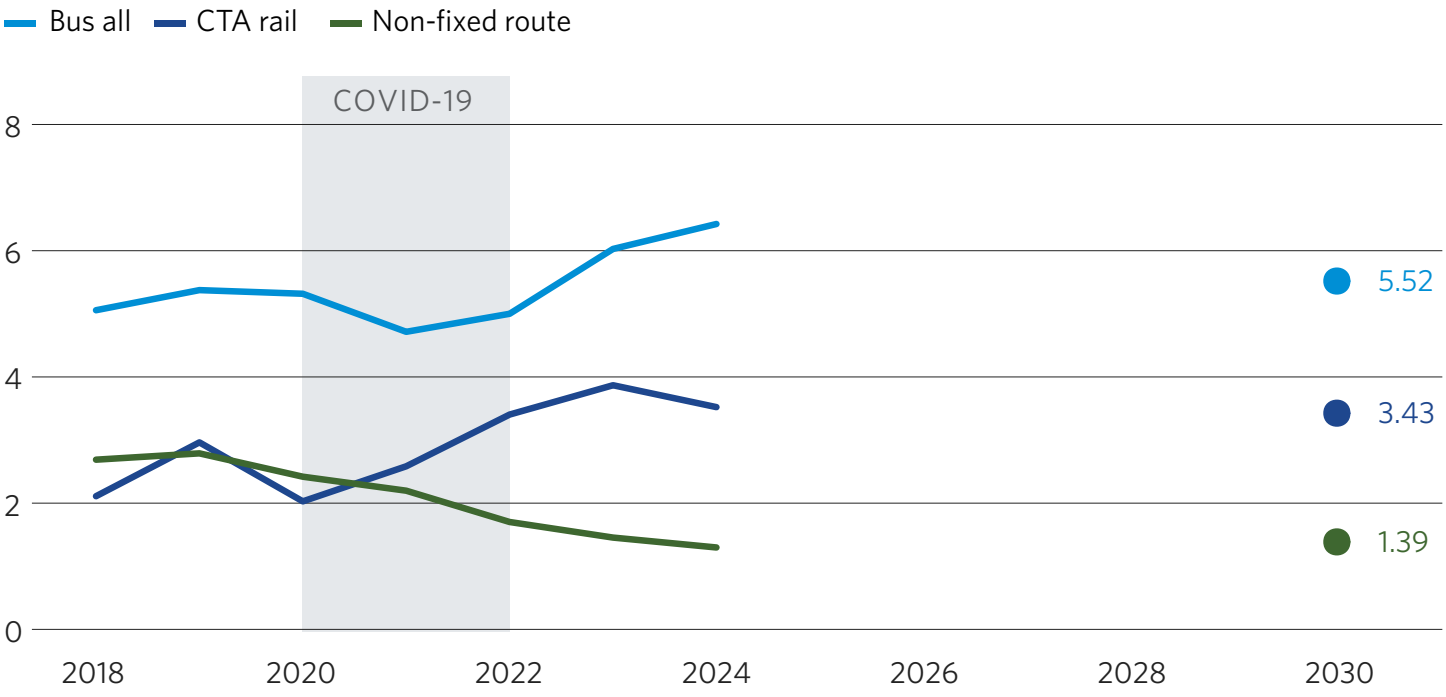
Transit major events

The total number of major events, and the rate per one million vehicle revenue miles, has been increasing for bus and rail in the aftermath of the COVID-19 pandemic, reflecting the changing operations environment and staff turnover. This measure has been updated to reflect the latest FTA guidance around major events, which include all safety and security major events as defined by the NTD.

Transit major events



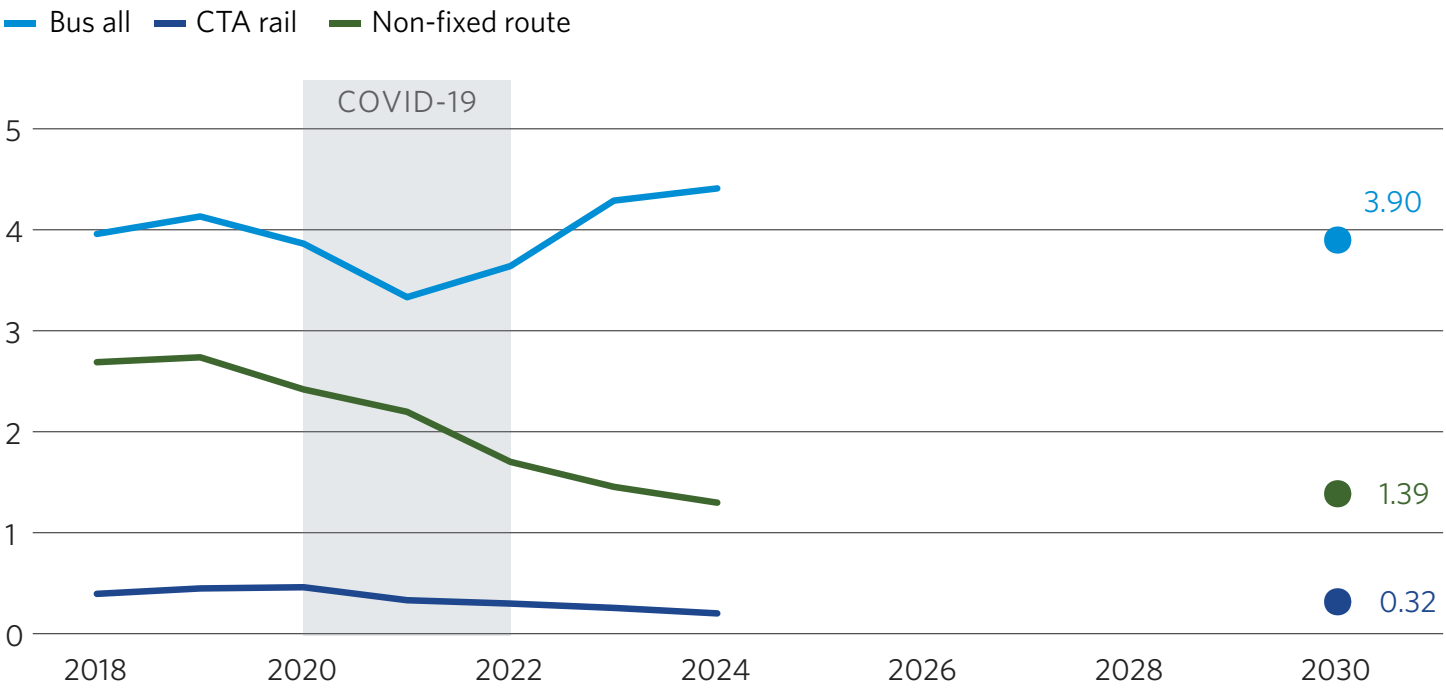
Transit major events per million vehicle revenue miles



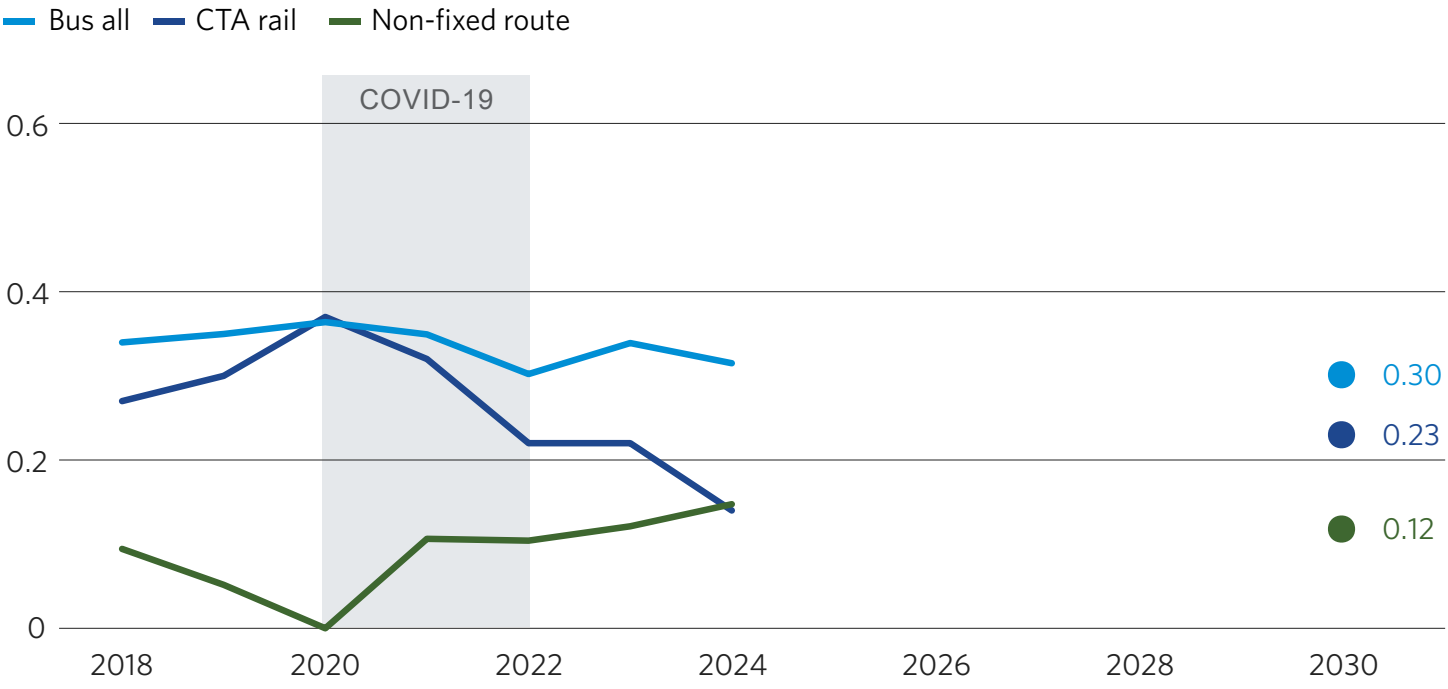
Transit collisions

Transit collisions is a new measure introduced in the 2024 NPTSP. Bus transit collision rates have trended in opposite directions since the pandemic, with fixed-route bus rates increasing and non-fixed-route rates decreasing. This trend is mostly driven by vehicular collisions, which occur at much higher rates than pedestrian collisions across all modes.

Transit collisions per million vehicle revenue miles

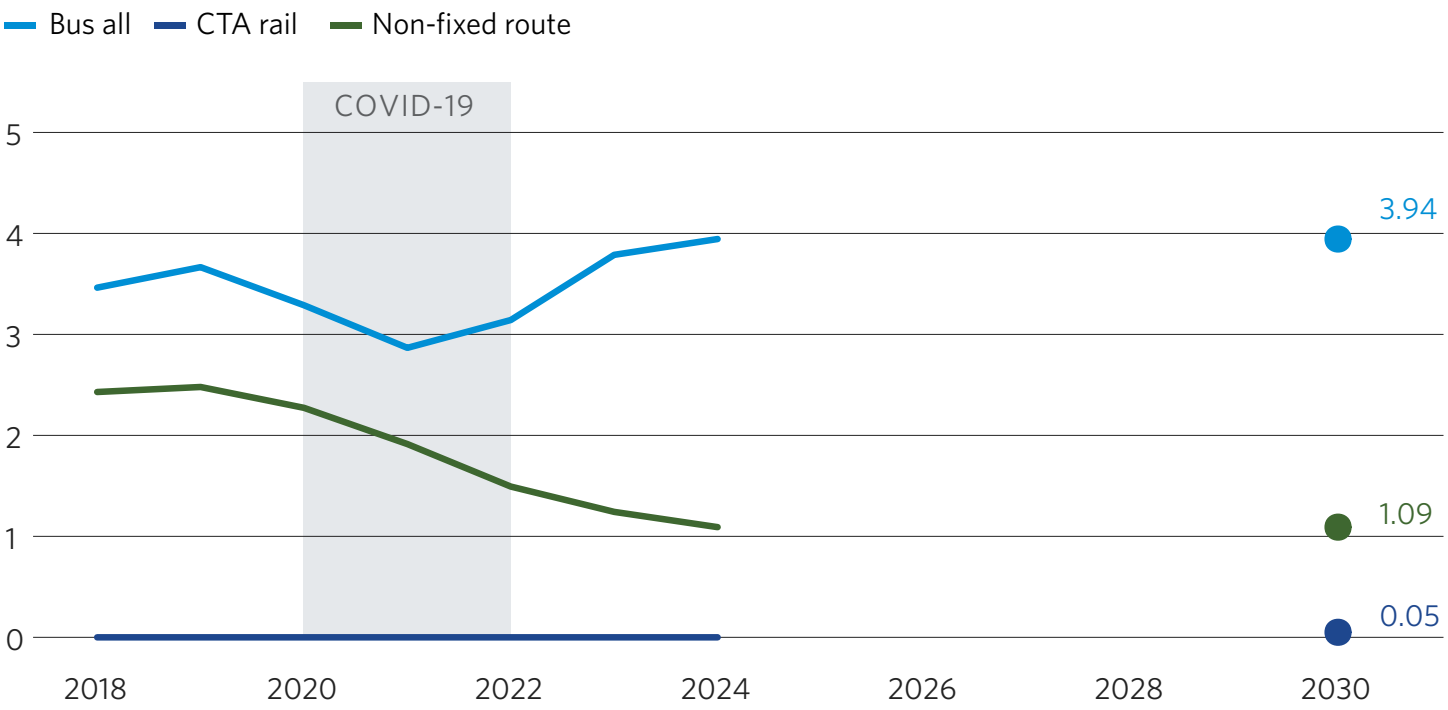


Transit pedestrian collisions per million vehicle revenue miles



DRAFT

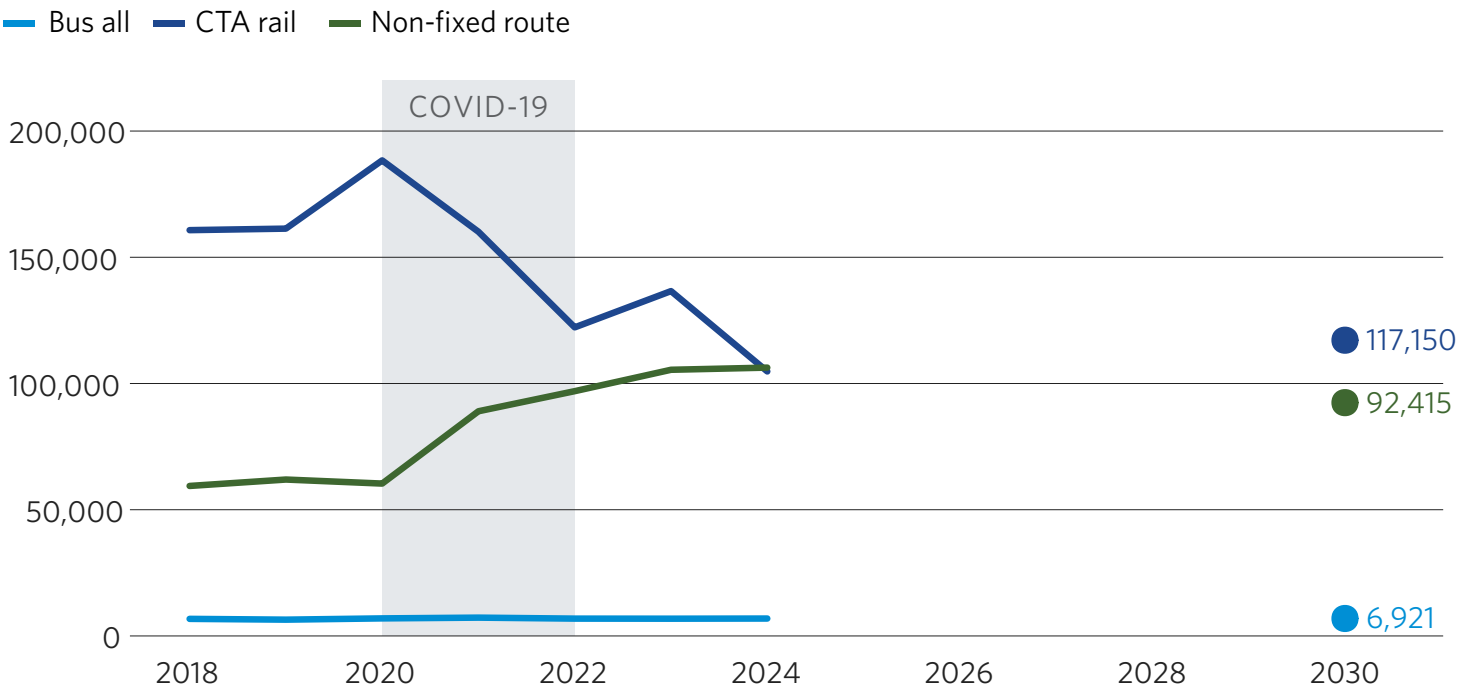
Transit vehicle collisions per million vehicle revenue miles



Transit system reliability

System reliability is measured as the mean distance between major mechanical failures, reported in miles. Higher numbers mean that vehicles are more reliable. CTA rail system reliability continues to decline, although at a less sharp rate than in the mid-2010s. Since 2018, reliability has increased for non-fixed-route buses and remained steady among fixed-route buses. Supply chain issues have delayed the acquisition of new vehicles, which are expected to improve reliability.

Mean distance between mechanical failure (miles)



Progress in achieving targets

Improvements observed in transit fatality outcomes following the pandemic contrast with continued challenges related to transit worker safety. In several measures, recent performance continues to trend worse than pre-pandemic levels, indicating the need for continued attention and targeted interventions.

CMAP's targets reflect a commitment to making transit, which is already one of the safest modes, even safer. The RTA has convened several events focused on safety including a Public Transit Safety and Security Summit in 2024. Recent governance changes, including the creation of the Office of Transit Safety and Experience and the NITA Law Enforcement Task Force, are expected to support progress toward transit safety targets by improving coordination and response capabilities.

Performance measure	Target (2022)	Actual (2022)	Achieved (2022)	Target (2030)
Number of fatalities by mode	Zero fatalities – all transit modes	Bus all – 5 CTA rail – 14 Non-fixed route Pace – 0	No	Zero fatalities – all transit modes
Rate of fatalities per revenue mile by mode	Zero fatalities – all transit modes	Bus all – 0.08 CTA rail – 0.21 Non-fixed route Pace – 00	No	Zero fatalities – all transit modes
Rate of transit worker fatalities per revenue mile by mode	N/A	N/A	New measure	Zero fatalities – all transit modes
Number of injuries by mode	*Less than* Bus all – 625 CTA rail – 213 Non-fixed route Pace – 104	Bus all – 726 CTA rail – 527 Non-fixed route Pace – 73	Definition changed in 2024 to all reportable injuries	*Less than* Bus – 923 Rail – 569 Non-fixed route – 81
Rate of injuries per revenue mile by mode	*Less than* Bus all – 8.20 CTA rail – 3.00 Non-fixed route Pace – 2.80	Bus all – 10.97 CTA rail – 7.87 Non-fixed route Pace – 1.30	Definition changed in 2024 to all reportable injuries	*Less than* Bus – 12.64 Rail – 8.18 Non-fixed route – 2.38
Rate of transit worker injuries per revenue mile by mode	N/A	N/A	New measure	*Less than* Bus – 3.37 Rail – 1.32 Non-fixed route – 0.42
Number of assaults on transit workers by mode	N/A	N/A	New measure	*Less than* Bus – 482 Rail – 276 Non-fixed route – 1
Rate of assaults on transit workers per revenue mile by mode	N/A	N/A	New measure	*Less than* Bus – 6.60 Rail – 3.97 Non-fixed route – 0.01

Performance measure	Target (2022)	Actual (2022)	Achieved (2022)	Target (2030)
Number of reportable safety events by mode	*Less than* Bus all – 422 CTA rail – 222 Non-fixed route – 100	Bus all – 331 CTA rail – 228 Non-fixed route Pace – 49	Definition changed in 2024 to all major events including security events including security	*Less than* Bus – 403 Rail – 238 Non-fixed route – 47
Rate of safety events per revenue mile by mode	*Less than* Bus all – 5.50 CTA rail – 3.00 Non-fixed route – 2.70	Bus all – 5.00 CTA rail – 3.40 Non-fixed route – 1.70	Definition changed in 2024 to all major events including security	*Less than* Bus – 5.52 Rail – 3.43 Non-fixed route – 1.39
Rate of collisions per revenue mile by mode	N/A	N/A	New measure	*Less than* Bus – 3.90 Rail – 0.32 Non-fixed route – 1.39
Rate of pedestrian collisions per revenue mile by mode	N/A	N/A	New measure	*Less than* Bus – 0.30 Rail – 0.23 Non-fixed route – 0.12
Rate of vehicular collisions per revenue mile by mode	N/A	N/A	New measure	*Less than* Bus – 3.94 Rail – 0.05 Non-fixed route – 1.09
Mean distance between mechanical failure by mode	*At least* Bus all – 7,775 CTA rail – 150,000 Non-fixed route – 53,365	Bus all – 6,894 CTA rail – 104,776 Non-fixed route – 106,291	Bus – No Rail – No Non-fixed route – Yes	*At least* Bus – 6,921 Rail – 117,150 Non-fixed route – 92,415

Conclusion

Target setting is both a technical exercise and a policy choice. The performance targets in this report reflect the financial assumptions of the 2026 Regional Transportation Plan, which show that maintaining and improving the region's transportation system will require sustained and, in many areas, significantly expanded investment. The region continues to make measurable progress in several system performance areas — particularly travel time reliability, non-SOV mode share, and congestion reduction — yet key challenges remain.

Roadway safety and highway asset conditions demonstrate the greatest need for continued attention. Despite focused safety initiatives, traffic fatalities and serious injuries remain high, and the region's pavement and bridge conditions continue to lag statewide averages. Transit conditions show mixed outcomes. Some categories have improved with recent capital investment, while others, especially aging vehicles and guideway infrastructure, continue to reflect long-term underinvestment.

These persistent challenges underscore the importance of performance-based planning. CMAP and its partners will use the data and findings summarized in this report to guide investment decisions across the system. Performance measures inform project prioritization in the Transportation Improvement Program, support safety action planning, shape multimodal corridor studies, and guide asset management strategies at the regional and agency levels.
To support transparency and accessibility, CMAP maintains an online performance dashboard that will continue to be updated as new datasets become available. This helps decision makers, stakeholders, and the public monitor progress toward long term regional goals.

As the region implements the 2026 RTP, the insights from this report will help align investments with outcomes, ensuring that limited resources deliver the greatest benefit and support a safer, more reliable, and more equitable transportation system for northeastern Illinois.

RTP 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.

Chicago Metropolitan Agency for Planning

433 West Van Buren Street
Suite 450
Chicago, IL 60607

cmap.illinois.gov
312-454-0400

APPENDIX H - DRAFT

Transportation System Inventory









RTP

2026
Regional Transportation Plan

Chicago Metropolitan Agency for Planning

Table of contents

Introduction **1**
Overview 1
Roads **2**
Overview 2
Functional Class I roads 3
Functional Class II roads 4
Bridges **5**
Overview 5
Bridge condition 5
Transit **7**
Overview 7
Transit agencies 8
Access to transit 9
Intercity rail and bus **10**
Overview 10
Intercity rail 10
Intercity bus 10
Aviation facilities **11**
Overview 11
Passenger airline activity 11
Air freight activity 12
Freight network **13**
Overview 13
Freight rail 13
Freight trucks 14
Ports and waterways 15
Active transportation **16**
Overview 16
Bike network 16
Bike share programs 17
Sidewalks and pedestrian infrastructure 18

Introduction

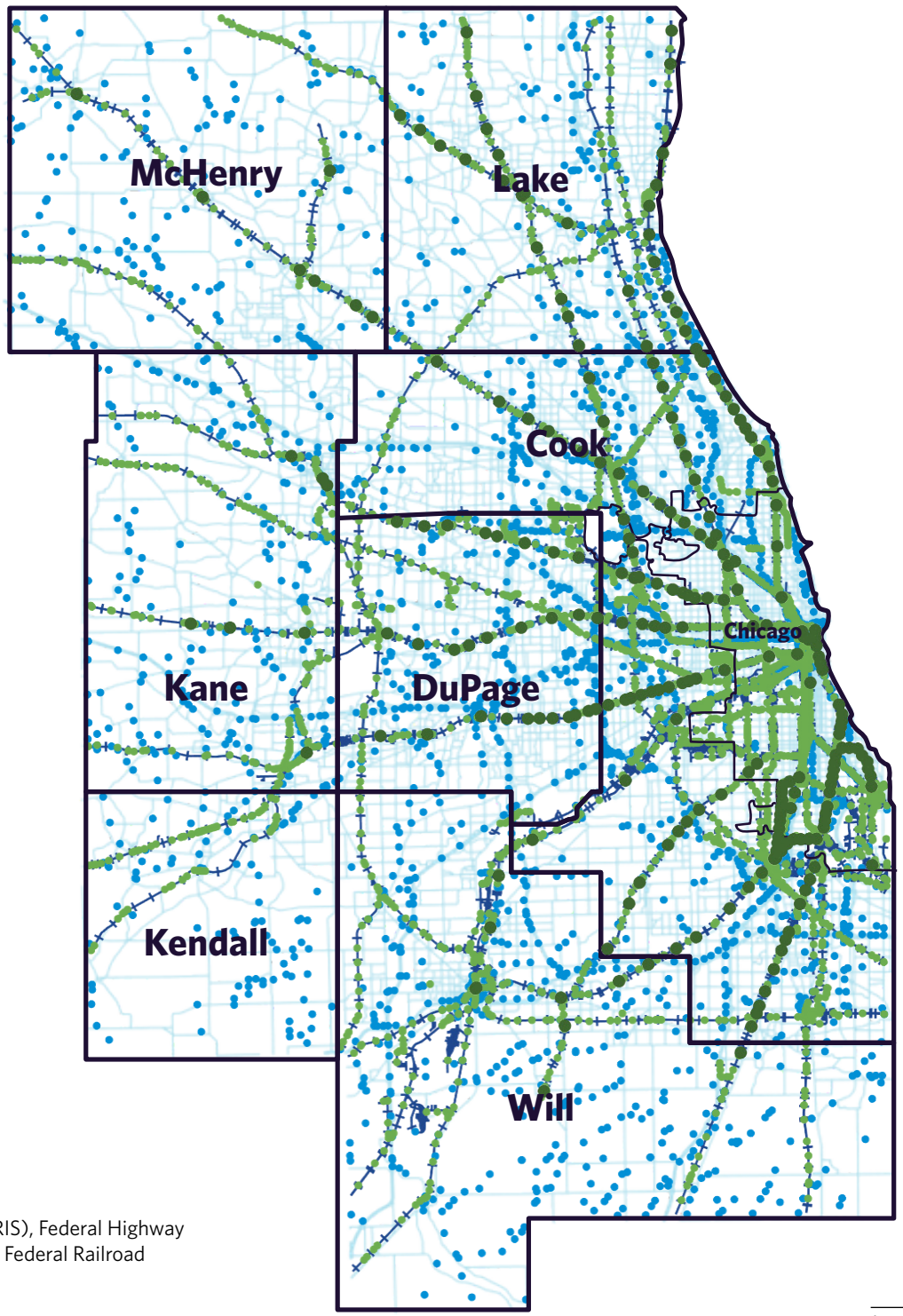
Overview

Northeastern Illinois is served by an extensive and long-established transportation system. The region has invested in the development, operation, and ongoing maintenance of transportation infrastructure for more than a century. Today, northeastern Illinois supports a large and highly connected multimodal network that facilitates both passenger and freight movement, serving as the region's backbone as a nationally and internationally significant transportation hub. Continued investment in the preservation and modernization of this infrastructure is critical to maintaining system performance, supporting economic growth, and advancing the region's long-term goals.

The following sections describe the existing transportation system by mode, including the infrastructure and services that support both passenger and freight travel. Each section summarizes the current extent of the system and the services provided by that mode.

Figure 1: The northeastern Illinois transportation system

- **34,423 miles of roads**
- **3,660 bridges**
- **7,200 miles of rail lines**
- **1,646 rail crossings**
- **391 train stations**



Source: Illinois Roadway Information System (IRIS), Federal Highway Administration's National Bridge Inventory, and Federal Railroad Administration's Rail Network, 2025.

Roads

Miles of interstates, highways, and arterials in northeastern Illinois



Interstates
424.9 miles



Highways and principal arterials
1,735.7 miles



Minor arterials
2,247.9 miles

Overview

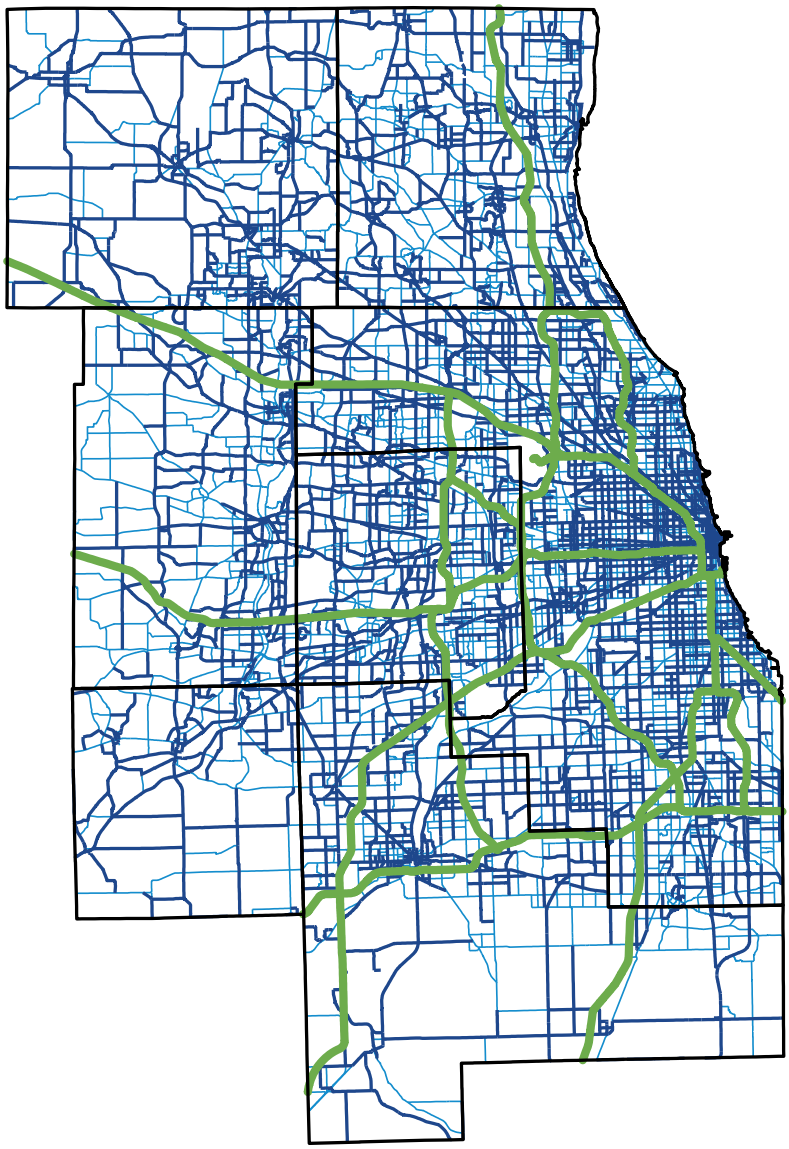
The roadway network in northeastern Illinois includes approximately 34,423 miles of public roadways spanning all functional classifications. The roadway network ranges from limited access interstate highways that support regional and interregional travel to local streets that provide direct access to residential and commercial land uses.

Roadways are assigned a functional classification based on a framework developed by the Federal Highway Administration (FHWA) and implemented by the Illinois Department of Transportation (IDOT). Functional classification is used to inform planning and investment priorities, determine federal-aid eligibility, and categorize roads by their primary roles within the regional transportation system, balancing mobility and access to destinations.

Figure 2: Functional Class I roads in northeastern Illinois

Road types

- Interstate
- Highways and principal arterials
- Local and minor arterials



Source: Illinois Roadway Information System (IRIS), 2025.

DRAFT

Functional Class I roads

Within this network, the region contains over 4,400 miles of functional Class I roads, including interstates, highways, principal arterials, and minor arterials.[1] These facilities form the backbone of regional travel, carrying a substantial share of passenger and freight trips and providing connections to major employment centers, intermodal terminals, and airports.

Interstate roads represent the highest level of mobility in the functional hierarchy. These roadways are designed for uninterrupted travel over long distances. They are characterized by full access control, divided highways, and grade-separated interchanges.

Freeways and expressways (noted in Figure 2 as highways), are similar to interstates in that they are designed to maximize mobility and generally do not serve adjacent land uses. They are either fully or partially access controlled, and along with interstates, are critical for supporting high volumes of passenger vehicles, long-haul freight, and interregional travel.

Principal arterials are roadways that serve major development centers and provide a high degree of mobility, however, surrounding land uses are served more directly. While not always fully access controlled like interstates and freeways, principal arterials connect major urban centers, employment concentrations, and transportation hubs. They facilitate substantial intraregional travel and link with the broader principal arterial network across both urbanized and rural areas.

Minor arterials provide connectivity between principal arterials and the lower-tier collector network. They support moderate-length trips, serve smaller geographic areas than their principal arterial counterparts, and offer connectivity to the higher arterial/expressway system. In urban areas, minor arterials help distribute traffic from principal arterials to surrounding communities. In rural settings, they provide interregional or inter-county service.

Table 1: Northeastern Illinois counties' mileage by functional classification I, 2022

Subarea	Total functional Class I miles	Interstate miles	Highways and principal arterials miles	Minor arterials
Chicago	536.4	64.1	172.2	300.0
Suburban Cook	1,236.6	149.8	460.0	626.7
Total Cook	1,772.9	213.9	632.3	926.8
DuPage	505.4	54.3	197.9	253.3
Kane	454.1	35.0	172.1	247.0
Kendall	157.0	0.0	59.6	97.4
Lake	644.7	25.6	255.9	363.3
McHenry	316.2	9.0	203.2	103.9
Will	558.3	87.2	214.8	256.3
Total	**4,408.5**	**424.9**	**1,735.7**	**2,247.9**

Source: IDOT, Illinois Highway Information System Roadway Information & Procedure Manual, 2026.

1 Illinois Department of Transportation, "2022 Illinois Travel Statistics," 2022, https://idot.illinois.gov/content/dam/soi/en/web/idot/documents/transportation-system/reports/opp/travel-stats/2022-its-original-website.pdf.

Functional Class II roads

Functional Class II roads include major and minor collectors and local roads or streets. These roadways provide a critical link between the arterial network and destinations where trips begin and end.

Major and minor collectors gather traffic from local roads and funnel it to the arterial network. They balance mobility and access, primarily serving intra-county travel, with shorter travel distances than those that occur on arterial routes. Collectors are broken down into two categories: major collectors and minor collectors. Major collector routes are longer, have lower driveway densities, higher speed limits, and higher traffic volumes than minor collectors.

Local roads constitute the remainder of the roadway system. Local roads provide direct access to properties and connect with higher classified routes. These roadways have lower speeds and are focused on providing high accessibility to local destinations.

Table 2: Northeastern Illinois counties' mileage by functional classification II, 2022

Subarea	Total functional Class II miles	Major collectors miles	Minor collectors miles	Local roads and streets miles
Chicago	3,859.4	460.9	54.7	2,807.5
Suburban Cook	8,585.0	656.3	236.7	6,455.5
Total Cook	12,444.4	1,117.1	291.3	9,263.1
DuPage	3,626.9	272.3	110.9	2,738.3
Kane	2,852.9	236.6	138.8	2,023.4
Kendall	1,075.3	137.0	26.2	755.0
Lake	3,381.9	273.6	52.9	2,410.7
McHenry	2,472.8	286.0	88.5	1,782.1
Will	4,160.7	328.6	120.5	3,153.3
Total	**30,014.8**	**2,651.3**	**829.0**	**22,125.8**

Source: IDOT, Illinois Highway Information System Roadway Information & Procedure Manual, 2026.

Fun fact

If all the roadways in northeastern Illinois were lined up consecutively, they would span four times the diameter of the earth.[2]



2 National Aeronautics and Space Administration, "Facts About Earth," accessed April 2026, https://science.nasa.gov/earth/facts/.

Bridges

Overview

Bridges are a critical component of the regional transportation system, enabling roadway and rail networks to cross rivers, roadways, and other barriers. The region has 3,660 bridges as of 2024.

Bridge condition

CMAP maintains a regional bridge inventory dataset, which classifies bridges by condition rating as good, fair, or poor. The number and share of bridges in each condition category are shown in Table 3.[3]

Table 3: Northeastern Illinois bridge condition status

Bridge condition	Number of bridges in CMAP region	Percent of bridges in CMAP region
Good	1,322	36%
Fair	1,897	52%
Poor	441	12%
Total	**3,660**	

Source: CMAP Regional Bridge Inventory Dataset, 2025.

Did you know?
1 in 8 bridges in northeastern Illinois are in poor condition.



Bridge condition ratings follow federal performance management standards established by the FHWA's 2017 rule on pavement and bridge condition measures.[4] These standards evaluate bridge condition using inspection-based measures of key bridge components and overall integrity.

Bridge condition is categorized as:

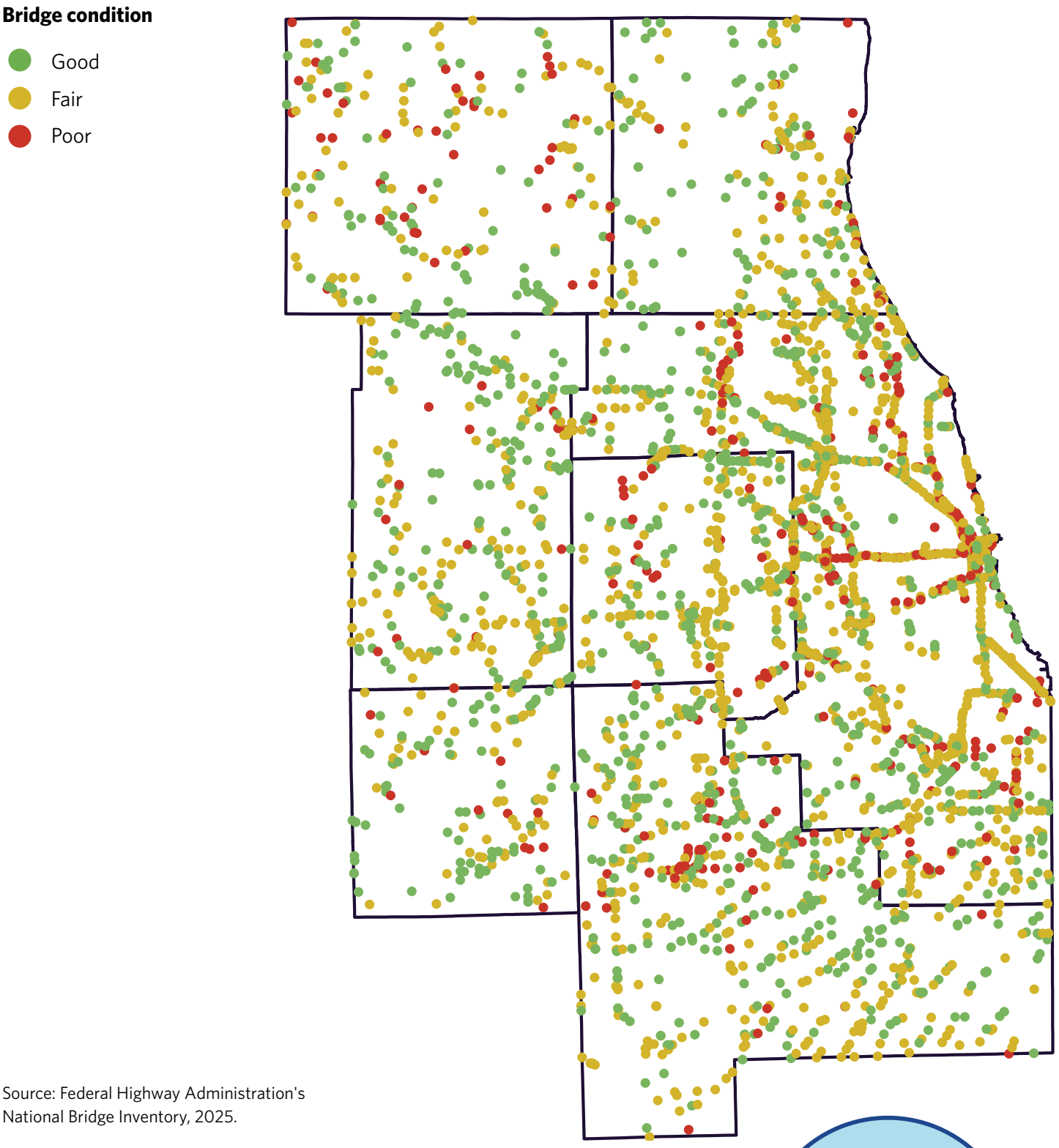
- **Good:** The bridge is in sound condition, with no significant deterioration and minimal maintenance needs.
- **Fair:** The bridge shows minor deterioration and may require preventive maintenance or rehabilitation but remains structurally adequate for service.
- **Poor:** The bridge exhibits advanced deterioration that may reduce structural capacity and typically requires major rehabilitation or replacement.

Monitoring bridge condition supports the region's assets, helps to prioritize preservation and rehabilitation needs, and informs investment decisions aimed at maintaining safety and reliability.

3 Chicago Metropolitan Agency for Planning, "ON TO 2050 Indicators: Percentage of NHS Bridge Area in Poor Condition," https://cmap.illinois.gov/regional-plan/resources/indicators/percentage-of-nhs-bridge-area-in-poor-condition/.

4 Federal Highway Administration, "National Performance Management Measures; Assessing Pavement Condition for the National Highway Performance Program and Bridge Condition for the National Highway Performance Program," January 2017, https://www.federalregister.gov/d/2017-00550.

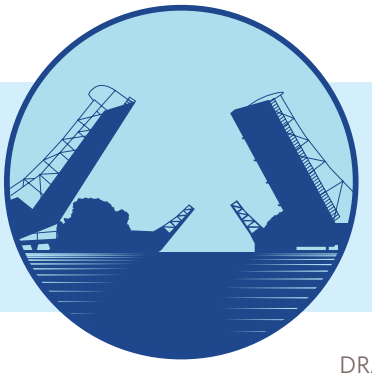
Figure 3: Northeastern Illinois bridge condition status



Source: Federal Highway Administration's National Bridge Inventory, 2025.

Fun fact

The CMAP region has eight times the number of bridges in Venice, Italy, and Chicago is home to the highest number of movable bridges of any city in the world.



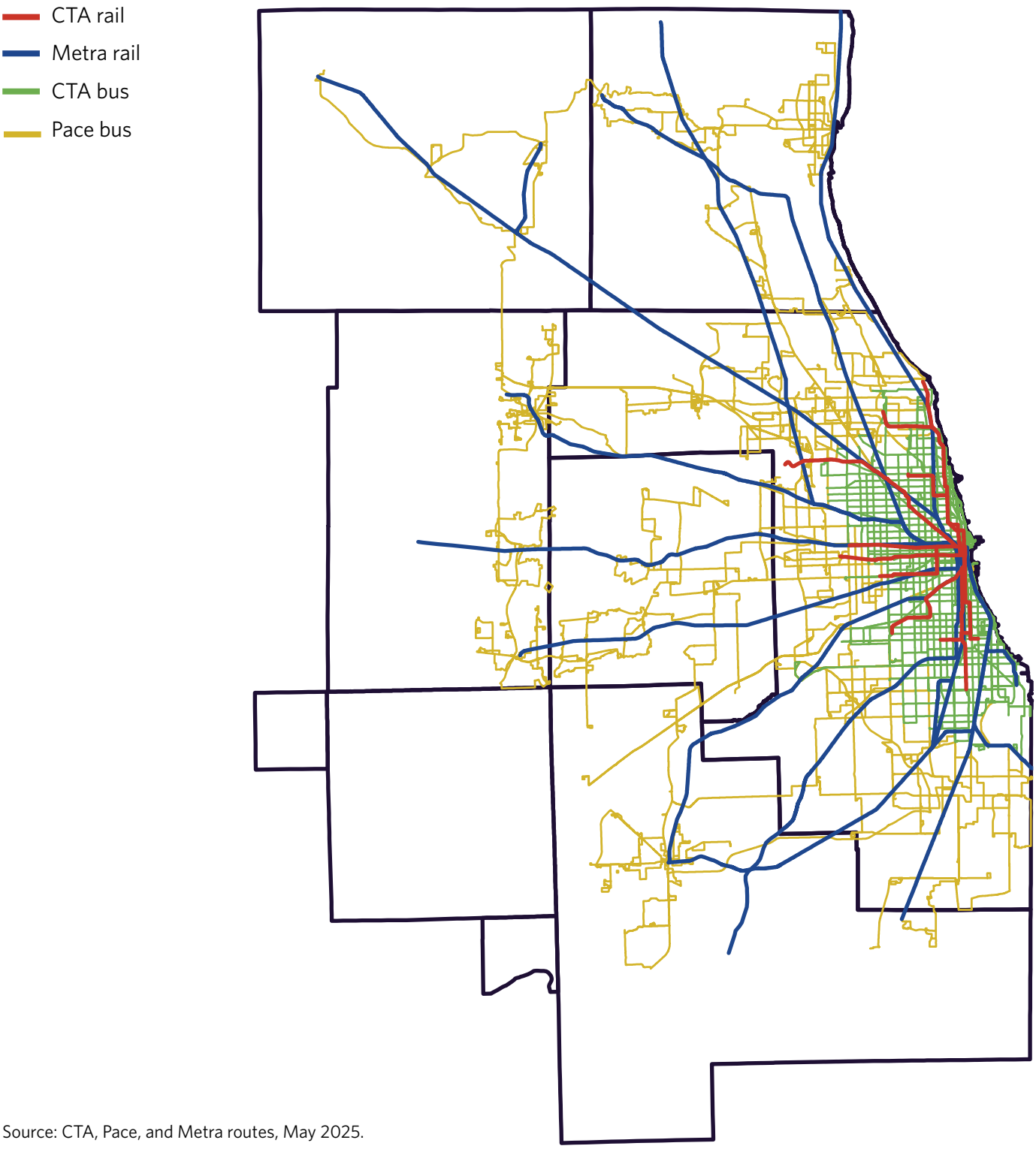
DRAFT

Transit

Overview

Northeastern Illinois is served by an extensive public transit network, including 11 commuter rail lines, 8 rapid transit rail lines, and 273 bus routes.

Figure 4: Public transit routes in northeastern Illinois



Source: CTA, Pace, and Metra routes, May 2025.

Transit agencies

In 2024, transit riders in the region took 367.6 million unlinked passenger trips,[5] ranking third nationwide in total transit usage, behind the New York City and Los Angeles metropolitan areas.[6]

Northeastern Illinois is served by three primary transit agencies: Chicago Transit Authority (CTA), Metra, and Pace. Additional transit services are provided by smaller operators, including the Chicago Water Taxi and Kendall County Transit.

The CTA operates 8 rail lines and 127 bus routes, primarily within Chicago, with some service extending into adjacent suburbs. The CTA operates the nation's second largest heavy rail system and the third largest bus system by ridership.[7] In 2024, the CTA provided over 300 million unlinked annual passenger rides. CTA rail service accounted for 41 percent of these trips, while CTA bus service accounted for 59 percent of those trips.

Metra provides commuter rail service on eleven lines, connecting communities throughout the region with downtown Chicago. Metra is the fourth-largest commuter rail system in the United States by ridership. In 2024, Metra provided more than 35 million unlinked passenger trips. Together, CTA and Metra rail operations include 391 passenger rail stations in northeastern Illinois.

Pace operates 146 suburban bus routes, including local and regional services, as well as limited express service to downtown Chicago. In addition to fixed-route service, Pace provides paratransit and on-demand services that support mobility for older adults and residents with disabilities. As the designated provider of paratransit services in the Regional Transportation Authority (RTA) service area, Pace completed more than 2.5 million paratransit trips in 2022. Additional on-demand services are provided by local governments, including municipalities, townships, and counties.

The Chicago Water Taxi provides ferry service along the Chicago River. It operates seven days per week, providing service between Ogilvie Transportation Center, Union Station, Michigan Avenue, and Chinatown. The system operates 3 revenue vessels, providing 384,914 unlinked passenger trips annually.

Kendall Area Transit serves Kendall County, providing on-demand services for Kendall County residents, providing 32,051 unliked passenger trips in 2024.

The Northern Indiana Commuter Transportation District (NICTD) also serves portions of the region. The NICTD operates the South Shore Line, which runs between Millennium Station in downtown Chicago and South Bend Airport station in South Bend, Indiana. While the line primarily serves northwest Indiana, it also stops at six permanent stations and one special event station in northeastern Illinois.

Table 4: Northeastern Illinois transit agency statistics, 2024

Transit agency	Annual unlinked trips	Annual passenger miles traveled
CTA	309,197,026	1,223,298,041
Metra	35,051,943	762,111,032
Pace	21,121,330	140,761,517
Chicago Water Taxi	384,914	691,607
Kendall Area Transit	32,051	N/A

5 This total includes South Shore Line trips originating in northwest Indiana that are allocated to the Chicago Urbanized Area in the National Transit Database.

6 Federal Transit Administration, "2022-2024 NTD Annual Data - Metrics," October 2025, https://data.transportation.gov/Public-Transit/2022-2024-NTD-Annual-Data-Metrics/ekg5-frzt/about_data.

7 Ibid.

Transit agency	Annual unlinked trips	Annual passenger miles traveled
Northern Indiana Commuter Transportation District	1,771,513	57,773,167
Total	**367,558,777**	**2,126,862,197**

Source: National Transit Database, 2025.

Note: Only a small portion of the NICTD service area falls within the region's boundaries, and thus, these trips are not included in the total line.

Access to transit

The AllTransit Metrics from the Center for Neighborhood Technology (CNT) evaluate transit system performance across the United States using measures related to jobs accessibility, economy, equity, health, transit quality, and mobility. Using CNT's composite scoring methodology, the region receives an overall transit performance score of 5.4 out of 10. On average, households in the CMAP region have 2,422 transit trips per week and 5 transit routes within one-half-mile of their residence. Using AllTransit's accessibility measures, this level of service corresponds to an average of 222,065 jobs accessible within a 30-minute transit trip. Regionwide, over 11 percent of commuters use transit and nearly 73 percent of jobs are located within one-half mile of transit.[8]

However, transit access and service levels vary across the region. AllTransit scores range from 9.2 in Chicago to 0 in Kendall County. Chicago's score of 9.2 ranks fourth among U.S. cities, highlighting high connectivity, frequent service, and strong access to jobs. On average, Chicago households have access to more than 6,000 potential weekly transit trips within one-half mile and can access over 500,000 jobs via transit. While these metrics represent citywide averages, transit service levels vary widely between neighborhoods.

Table 5: AllTransit metrics by county, Center for Neighborhood Technology, 2023

County	Score	Average accessible jobs	Jobs within ½ mile of transit	Average trips/week within ½ mile	Commuters who use transit
Chicago	9.2	545,242	98.2%	6,082	25.1%
Cook	7.3	339,626	88.7%	3,716	16.6%
DuPage	2.5	35,696	55.5%	199	6.0%
Kane	2.7	17,745	56.4%	278	2.0%
Kendall	0.0	77	1.4%	2	1.0%
Lake	2.9	16,557	42.5%	249	3.9%
McHenry	1.3	4,277	37.0%	72	1.9%
Will	1.3	7,926	32.0%	100	3.2%
Total	**5.4**	**222,065**	**N/A**	**2,422**	**11.4%**

Source: Center for Neighborhood Technology, 2025.

Notes: Average accessible jobs is an average number of jobs accessible via transit within a 30 minute transit commute throughout the noted geography. The average trips/week within ½ mile measures the number of transit trips per week in each geography.

Fun fact

The "L" began service in 1892, making it the second oldest rapid transit system in the U.S.



8 Center for Neighborhood Technology, "AllTransitRankings," accessed April 2026, https://alltransit.cnt.org/rankings.

Intercity rail and bus

Overview

Intercity passenger rail and bus services provide important regional connections between northeastern Illinois and destinations across Illinois, the Midwest, and the United States. These services provide an affordable, longer distance mode of travel for residents and visitors. They expand mobility options for households without access to a private vehicle while strengthening the region's role as a national transportation hub.

Intercity rail

Northeastern Illinois is a major hub for Amtrak intercity passenger rail, with fifteen Amtrak routes servicing Chicago Union Station. In total, there are eight Amtrak stations located in the region. In 2024, Amtrak stations in northeastern Illinois served over three million passengers. Chicago Union Station alone ranked as the fourth busiest Amtrak station in the United States in 2024.[9]

Table 6: Northeastern Illinois Amtrak ridership by station

Station	2024	2023	2022	2021	2020	2019
Chicago	3,011,972	2,722,448	2,359,084	1,336,525	1,688,452	3,331,513
Glenview	56,587	47,591	38,221	20,571	31,551	62,347
Homewood	40,820	35,220	26,722	10,299	22,994	36,588
Joliet	70,113	60,583	54,905	28,348	35,319	64,752
La Grange	8,892	7,157	8,407	4,712	6,673	10,773
Naperville	30,704	25,987	26,991	16,598	22,563	40,902
Plano	5,289	4,237	4,746	2,679	3,588	6,269
Summit	19,749	16,697	15,111	8,310	9,607	14,516
Total	**3,244,126**	**2,919,920**	**2,534,187**	**1,428,042**	**1,820,747**	**3,567,660**

Source: Bureau of Transportation Statistics, 2024.

Intercity bus

Northeastern Illinois is also served by several intercity bus operators that provide scheduled service to destinations across Illinois, the Midwest, and the United States. Greyhound is the most prominent intercity bus operator in the region, though additional carriers provide service through shared facilities and curbside pickup locations.

In 2025, Chicago advanced plans to purchase the existing intercity bus terminal and convert it into a city-owned facility that would be available for use by all intercity bus operators.

9 Bureau of Transportation Statistics, "Amtrak Ridership," accessed April 2026, https://www.bts.gov/browse-statistical-products-and-data/state-transportation-statistics/amtrak-ridership.

Table 7: Intercity bus services in northeastern Illinois

Carrier	Stops in region	Major destinations from northeastern Illinois
Greyhound	Chicago Greyhound terminal, Naperville, Elgin, 95th Red Line station	Indianapolis, Cincinnati, Cleveland, Detroit, Memphis, St. Louis, St. Paul
Flixbus	Chicago Greyhound terminal, Naperville, Elgin, 95th Red Line station	Detroit, St. Paul
Coach USA/Van Galder	Chicago Union Station, O'Hare multimodal facility	Madison, Milwaukee
Barons	Chicago Greyhound terminal	Indianapolis, Cincinnati, Cleveland, Detroit, Memphis, St. Louis, St. Paul
Peoria Charter	Des Plaines, O'Hare multimodal facility, Midway, Northbrook, Skokie, Matteson, Downers Grove, Oak Brook, Schaumburg	Peoria, Bloomington-Normal, Champaign-Urbana, West Lafayette
Amtrak Thruway	Chicago Union Station	Peoria, Nashville, Louisville, Indianapolis, Madison
Tornado Bus	Chicago	Memphis, Texas
UI Ride	University of Illinois Chicago	Champaign-Urbana

Note: Services as of May 2025.

Aviation facilities

Overview

Northeastern Illinois is home to a diverse network of aviation facilities that support regional and international travel, air cargo, and broader economic activity. The region's aviation system includes major commercial service airports as well as smaller general aviation facilities.

Passenger airline activity

In 2023, airports in the region served nearly 49 million enplanements (airplane boardings), a 5 percent increase from the prior year, according to the Federal Aviation Administration.[10]

Most aviation activity in northeastern Illinois is concentrated at two facilities: O'Hare International Airport and Midway International Airport. O'Hare ranks among the nation's busiest airports for passenger boardings, with the fourth-highest number of enplanements in the U.S. in 2023. Midway also plays a significant role in the regional aviation system, ranking 31st nationally in enplanements.

10 Federal Aviation Administration, "Passenger Boarding (Enplanements) and All-Cargo Data for U.S. Airports," accessed April 2026, https://www.faa.gov/airports/planning_capacity/passenger_allcargo_stats/passenger.

Table 8: Northeastern Illinois enplanements by airport

Airport	2023 enplanements	2024 enplanements
O'Hare International Airport	35,843,104	38,575,693
Midway International Airport	10,659,520	10,360,093
Chicago Executive Airport	273	1,146
Waukegan National Airport	91	126
DuPage Airport	136	105
Lewis University Airport	12	26
Aurora Municipal Airport	32	11
Bolingbrook's Clow International Airport	8	4
Schaumburg Regional Airport	0	2

Source: Federal Aviation Administration CY 2024 Passenger Boarding Data, 2025

Air freight activity

O'Hare International Airport and Midway International Airport also support significant freight activity and serve as key components of the national and international freight network. In 2024, O'Hare ranked as the seventh busiest airport for air freight activity.[11]

Table 9: Northeastern Illinois air freight activity, 2024

Airport	O'Hare International Airport	Midway International Airport
Domestic freight metric tons	634,701	15,669
International freight metric tons	1,439,304	0
Total freight metric tons	**2,074,006**	**15,669**
Domestic cargo aircraft operations	12,609	0
International cargo aircraft operations	16,852	0
Total cargo aircraft operations	**29,461**	**0**

Source: Chicago Department of Aviation, 2024.

Note: Freight includes volumes on domestic passenger flights.

Fun fact

In 2025, Chicago's O'Hare International Airport was the busiest airport in the U.S. by aircraft operations, according to preliminary data.[12]



11 Chicago Department of Aviation, "Air Traffic Data," accessed April 2026, https://www.flychicago.com/business/CDA/factsfigures/Pages/airtraffic.aspx.

12 USA Today, "Busiest airport in America is not in Atlanta anymore. See where it is," January 2026, https://www.usatoday.com/story/travel/airline-news/2026/01/22/america-busiest-airport-chicago-ohare/88204007007/.

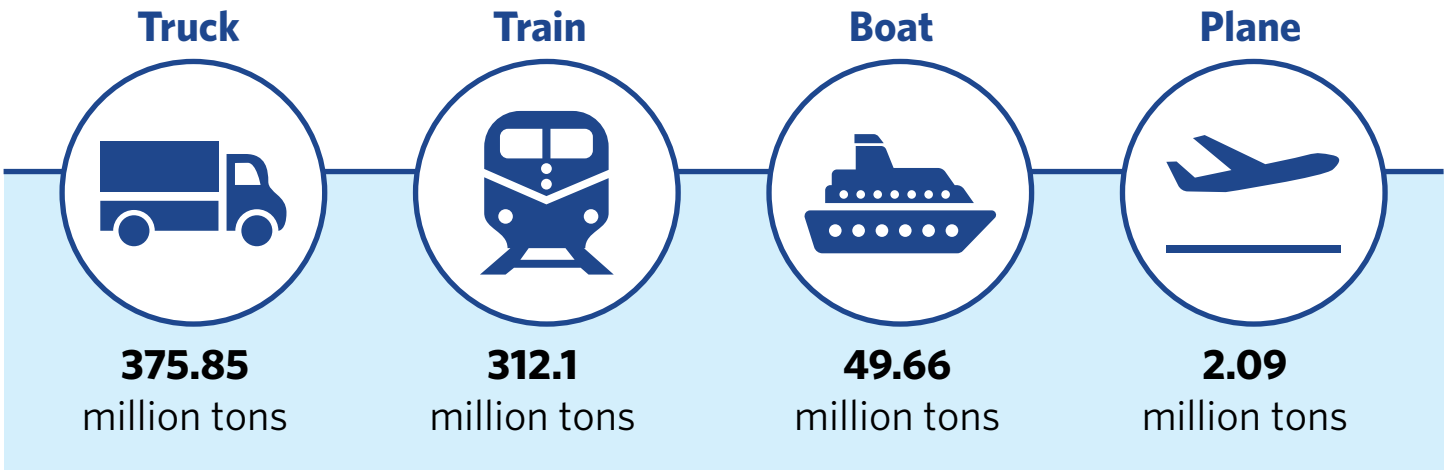
Freight network

Overview

Freight movement is a critical element of northeastern Illinois' economy and transportation system. In 2023, the region's freight network moved nearly 700 million tons of goods to, from, and within the region, with a total value of more than $1 trillion based on Freight Analysis Framework (FAF) data. FAF uses a broader definition of the Chicago region that extends beyond CMAP's seven-county planning area.[13]

The freight network is a key source of jobs in the region, providing more than 210,000 jobs in 2024, primarily in trucking and freight-supportive industries like warehousing and arrangement, but also in the rail, maritime, pipeline, and aviation industries. The freight network supports more than 14,000 freight and freight support establishments in 2022.

Figure 5: How do 737 million tons move through the region?



Freight rail

Northeastern Illinois is the nation's busiest rail hub and is served by an extensive rail network comprising 3,900 miles of rail lines. All six Class 1 freight railroads operate in northeastern Illinois, along with numerous regional and short-line railroads. Short-line railroads serve an important role in connecting rail-served industrial sites and providing first-mile/last-mile freight rail access to shippers. All railroads that run through northeastern Illinois are shown in Table 10.[14]

Table 10: Northeastern Illinois freight railroads, 2023

Railroad class	Reporting mark	Railroad name
Class I railroads	BNSF	BNSF Railway
	CN	Canadian National Railway
	CPKC	CPKC
	CSXT	CSX Transportation
	NS	Norfolk Southern
	UP	Union Pacific Railroad

13 Bureau of Transportation Statistics, "Freight Analysis Framework," February 2026," https://www.bts.gov/faf.
14 Association of American Railroads, "Freight Rail Facts and Figures," accessed April 2026, https://www.aar.org/resources/#1-facts-amp-figures.

Railroad class	Reporting mark	Railroad name
Class II railroads	IAIS	Iowa Interstate Railroad
	WSOR	Wisconsin and Southern Railroad
Class III railroads	CSS	Chicago, South Shore, and South Bend Railroad
	IR	Illinois Railway
Switching and terminal railroads (Class III)	AVRR	Ag Valley Railroad
	BJRY	Burlington Junction Railway
	BRC	Belt Railway Company of Chicago
	CCUO	Chicago Chemung Railroad
	CERR	Cicero Central RR
	CJR	Chicago Junction Railway
	CLCY	Chessie Logistics Co.
	CPRR	Chicago Port Railroad
	CRL	Chicago Rail Link
	CSPX	Chicago, St. Paul & Pacific Railroad
	IHB	Indiana Harbor Belt Railroad
	MWRD	Metropolitan Water Reclamation
	SCIH	South Chicago & Indiana Harbor

Source: CMAP Regional Freight Assessment, 2025.

Freight trucks

Freight trucking is the primary mode for moving consumer and business goods within the region. Freight trucks provide critical first-mile/last-mile connections to rail terminals, ports, warehouses, and industrial areas. The region's trucking industry includes more than 12,000 establishments with 108,000 employees.[15]

Trucks are commonly categorized by weight class:

- **Light-duty trucks:** Gross vehicle weight (GVW) up to 10,000 pounds
- **Medium-duty trucks:** GVW up to 26,000 pounds
- **Heavy-duty trucks:** GVW greater than 26,000 pounds

As of 2021, the region registered a combined 128,000 medium-duty trucks and 166,000 heavy-duty trucks.

15 Chicago Metropolitan Agency for Planning, "Regional Freight Assessment: The Freight Landscape," October 2025, https://cmap.illinois.gov/wp-content/uploads/dlm_uploads/CMAP_FreightLandscapeSummary.pdf.

Table 11: Northeastern Illinois commercial vehicles, 2021[16]

Truck	Vehicle class	Gross weight	Estimated Illinois statewide vehicles from the 2021 Vehicle Inventory and Use Survey
Medium-duty	Class 3	10,001 – 14,000 lbs.	63,330
	Class 4	14,001 – 16,000 lbs.	24,257
	Class 5	16,001 – 19,500 lbs.	19,496
	Class 6	19,501 – 26,000 lbs.	21,136
Heavy-duty	Class 7	26,001 – 33,000 lbs.	21,145
	Class 8	> 33,000 lbs.	144,659

Source: U.S. Census 2021 Vehicle Inventory and Use Survey (VIUS), 2021.

Ports and waterways

Northeastern Illinois is served by three ports and six navigable waterways, which support commerce by facilitating the transport of industrial materials and bulk commodities into, out of, and through the region. In 2023, the Illinois International Port received and shipped more than 9 million tons of commodities, making it the busiest port in the region. The Joliet Regional Port followed closely, handling over 7 million tons..

Maritime freight moves through the Chicago Area Waterway System on a variety of vessels. The count of these vessels within northeastern Illinois is shown in Table 12.[17] Vessels over five tons are categorized as follows:

- **Decked barge:** a barge topped with a platform on which equipment and other cargo can be placed. It can be used not only for moving equipment, but also sometimes as a work location for bridge or waterway work.
- **Covered dry cargo barge:** a barge that carries loads of solid bulk cargo, such as agricultural goods or building materials, that need to be kept dry.
- **Open dry-cargo barge:** a barge that carries bulk cargo that does not require protection from the weather.
- **Tank barge:** a barge that carries liquid products.
- **Towboat**: a motorized vessel that moves barges along the waterways.

Table 12: Count of maritime cargo vessels based in northeastern Illinois, 2022

Type of vessel	Count of vessels
Decked barges	107
Covered dry-cargo barges	288
Open dry-cargo barges	99
Tank barges	5
Towboats	66
Total	**565**

Source: CMAP Regional Freight Assessment, 2025.

Note: Information was not available for lake-wise vessels. No active lakers or salties are based in the region, though they call at the port regularly.

16 U.S. Census Bureau, "2021 Vehicle Inventory and Use Survey," accessed April 2026, https://www.census.gov/programs-surveys/vius.html.
17 CMAP analysis of U.S. Army Corps of Engineers, Institute for Water Resources, "Vessel Company Summary and Vessel Characteristics," 2022, https://usace.contentdm.oclc.org/utils/getfile/collection/p16021coll2/id/14468

The two most important anchors for maritime freight in northeastern Illinois are the Calumet Harbor and Lake Calumet and the Illinois River. Calumet Harbor and Lake Calumet provide access to the Great Lakes and the Saint Lawrence Seaway, while the Illinois River connects the region to the Mississippi River waterway. As a result, these waterways carry the highest freight tonnages in the region.[18]

Aside from the two anchor waterways, overall maritime freight volumes are highest on the Chicago Sanitary and Ship Canal and the Calumet-Sag Channel, where through-movements between connecting waterways represent a large share of traffic.

Table 13: Tonnages for selected waterways in northeastern Illinois, by direction, 2022 (millions)

Waterway	Through	In	Out	Local	Total
Calumet Harbor and River	2.4	4.8	1.7	0	**8.9**
Lake Calumet	0	1.0	0.1	0	**1.1**
Illinois River	6.5	5.5	17.7	0.4	**30.1**
Chicago Sanitary and Ship Canal	4.4	3.2	2.2	0.9	**10.7**
Calumet-Sag Channel	3.8	0.3	0.1	0	**4.2**

Source: CMAP Regional Freight Assessment, 2025.

Active transportation

Overview

Active transportation infrastructure, including bicycle facilities and sidewalks, are a critical resource in the region, supporting short-distance travel, first-mile/last-mile connections to transit, and access to jobs, schools, and services. These facilities also play an important role in improving transportation safety, expanding mobility options, and supporting regional public health and environmental goals.

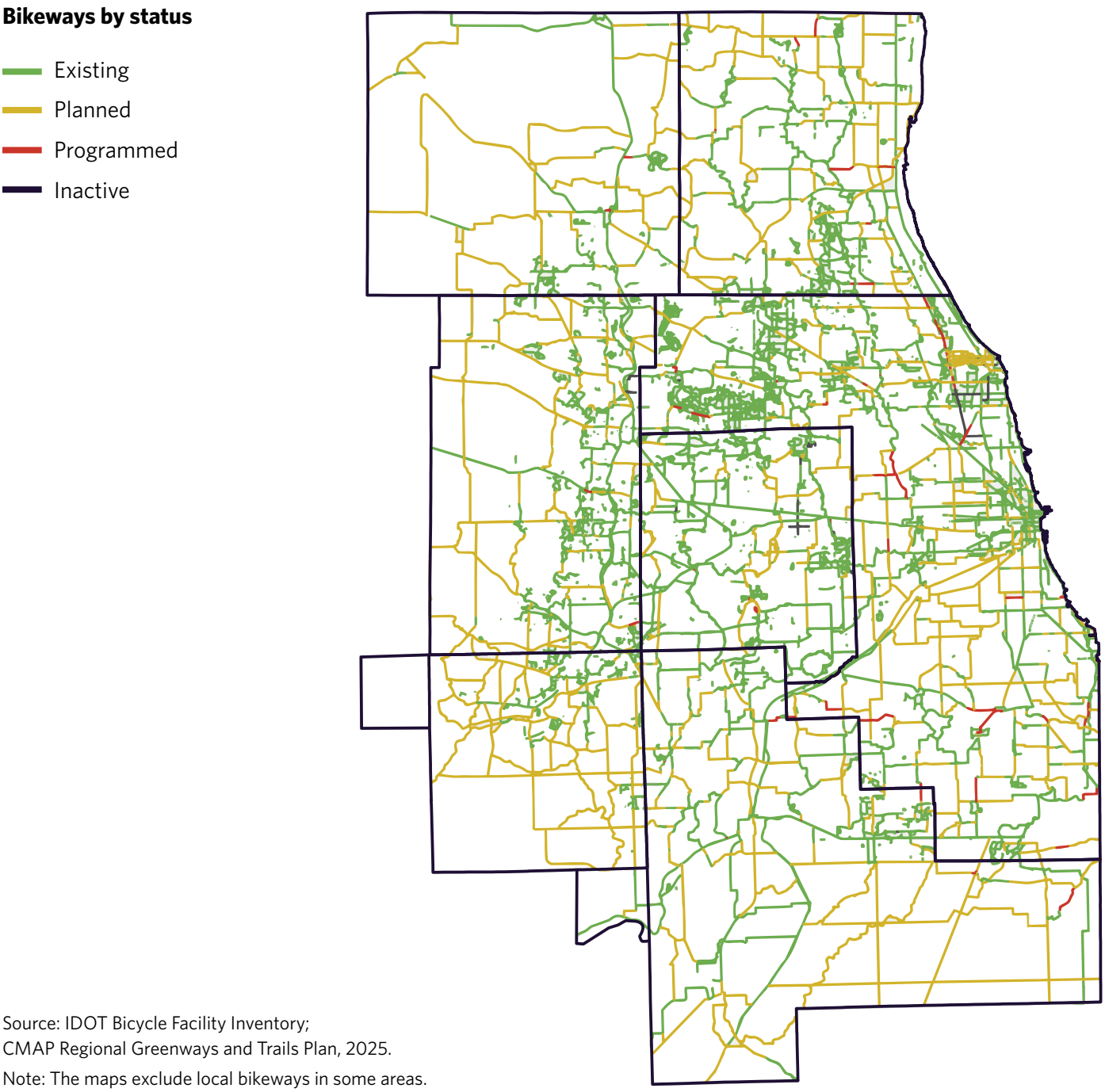
Bike network

Northeastern Illinois has a growing bicycle network, consisting of on-street bikeways, off-street shared-use paths, and regional trail corridors. These facilities provide local connections within communities. Existing and proposed bikeways in the CMAP region are shown in Figure 6.[19]

18 CMAP analysis of U.S. Army Corps of Engineers, Institute for Water Resources, Waterborne cargo and trips data files (manuscript files), WCSC 2022 cargo for Mississippi Valley/Gulf Coast (14576) and Great Lakes (14575).

19 Illinois Department of Transportation, "Bicycle Facility Inventory," accessed April 2026, https://bfis.app.dot.illinois.gov/; Chicago Metropolitan Agency for Planning Regional, "Greenways and Trails Plan," accessed April 2026, https://cmap.illinois.gov/focus-areas/transportation/walking-and-biking/greenways-and-trails/.

Figure 6: Active and proposed bikeways in the CMAP region



Source: IDOT Bicycle Facility Inventory;
CMAP Regional Greenways and Trails Plan, 2025.
Note: The maps exclude local bikeways in some areas.

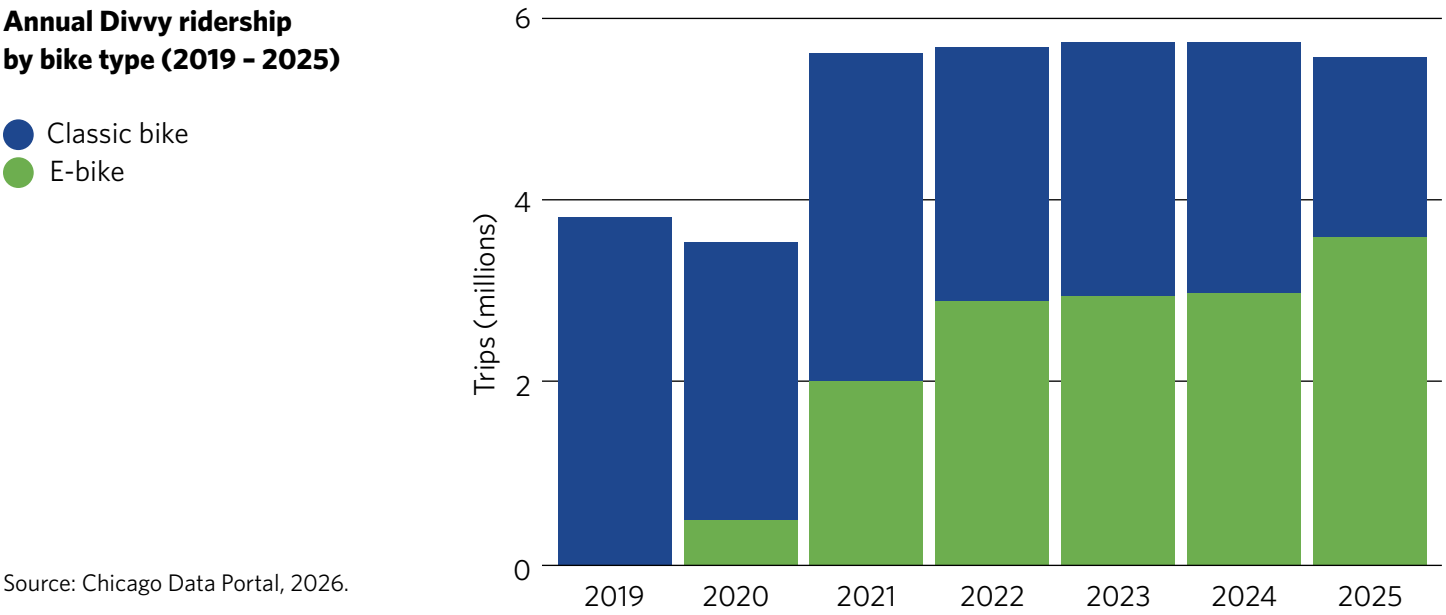
Bike share programs

Northeastern Illinois is home to one of the largest bike share programs in North America. Divvy, operated by Lyft, primarily serves Chicago and provides service in several municipalities in Cook County.

In 2025, Divvy recorded more than 5.5 million combined classic bike and e-bike rides, representing an increase of approximately 45 percent compared to 2019. Divvy ridership has shifted over time with the introduction and expansion of e-bikes, which were first rolled out in July 2020 and have grown to represent a larger share of the bike share inventory and total trips.[20]

20 City of Chicago Data Portal, "Divvy Trips," accessed April 2026, https://data.cityofchicago.org/Transportation/Divvy-Trips/fg6s-gzvg.

Annual Divvy ridership by bike type (2019 – 2025)



Source: Chicago Data Portal, 2026.

Table 14: Annual Divvy trips (by bike type)

Bike type	2019	2020	2021	2022	2023	2024	2025
Classic	3,818,004	3,036,938	3,563,371	2,778,688	2,774,298	2,735,510	1,948,041
E-bike	0	504,745	2,031,692	2,889,029	2,945,579	2,980,510	3,604,953
Total	**3,818,004**	**3,541,683**	**5,595,069**	**5,667,717**	**5,719,877**	**5,716,020**	**5,552,994**

Source: Chicago Data Portal, 2026.

Note: E-bikes were first rolled out in July 2020 and have progressively become a larger portion of the Divvy bicycle fleet.

Sidewalks and pedestrian infrastructure

Sidewalks and pedestrian infrastructure play a key role in nearly every trip with an origin or destination in the region. As of 2023, northeastern Illinois includes more than 39,000 miles of sidewalks.[21] Cook County alone contains nearly 20,000 miles of sidewalk. Sidewalk availability and continuity vary across the region, reflecting differences in development patterns, roadway ownership, and historical investment levels.

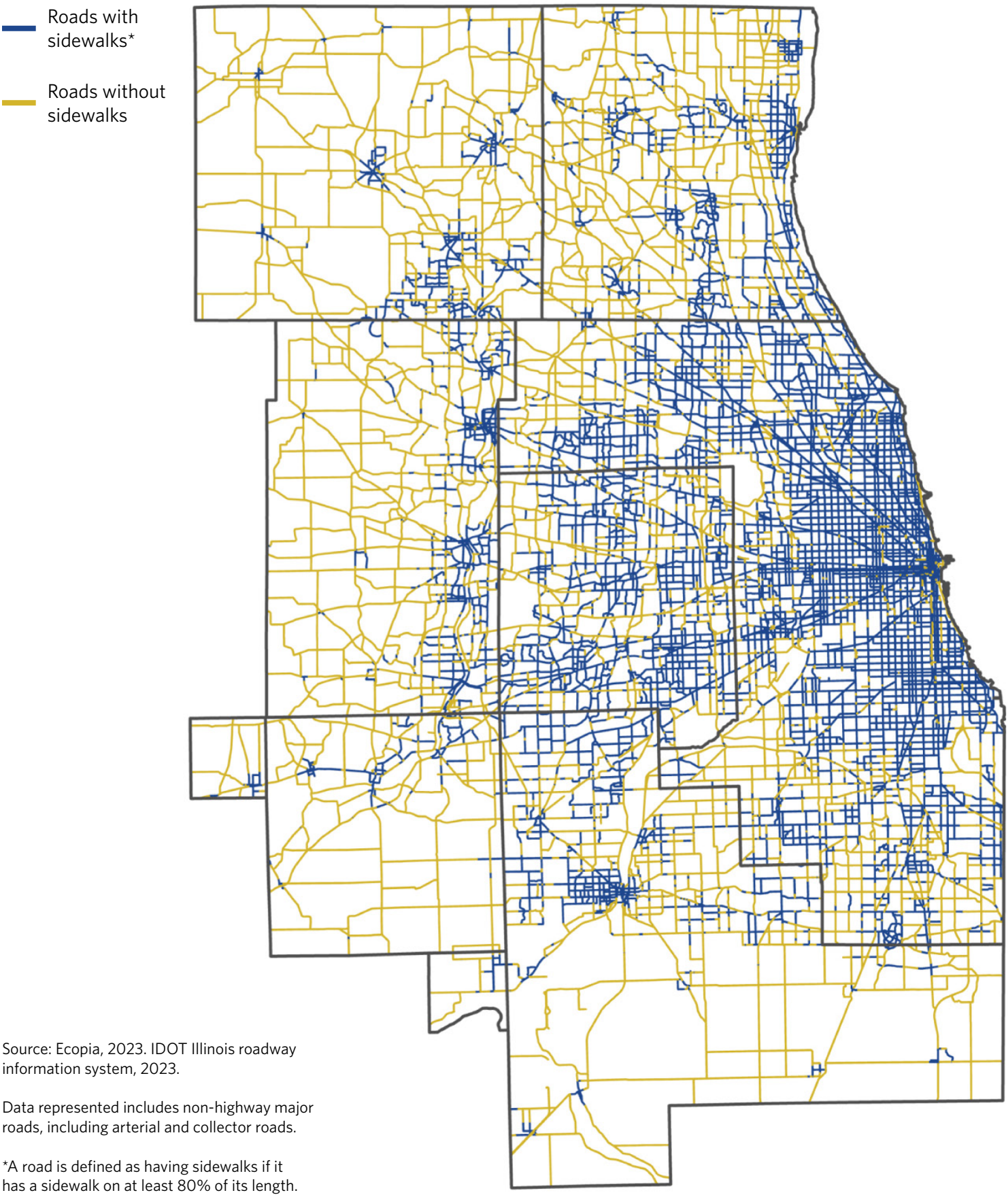
Table 15: Miles of sidewalk by county, 2023

County	Miles of sidewalk	Sidewalk miles per sq mile
Cook	19,711.4	20.84
DuPage	5,589.0	16.73
Kane	3,219.3	6.19
Kendall	909.3	2.83
Lake	3,564.7	7.96
McHenry	1,621.9	2.69
Will	4,533.4	5.42
Total	**39,148.9**	**9.76**

Source: Ecopia, 2023.

21 CMAP analysis of Ecopia sidewalk data, 2023

Figure 7: Sidewalk coverage in northeastern Illinois



Source: Ecopia, 2023. IDOT Illinois roadway information system, 2023.

Data represented includes non-highway major roads, including arterial and collector roads.

*A road is defined as having sidewalks if it has a sidewalk on at least 80% of its length.



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.

Chicago Metropolitan Agency for Planning

433 West Van Buren Street
Suite 450
Chicago, IL 60607

cmap.illinois.gov
312-454-0400

APPENDIX I - DRAFT

Travel Demand Model Documentation









RTP

2026
Regional Transportation Plan

Chicago Metropolitan Agency for Planning

Table of contents

Table of contents 2

Overview 5

Overview of the regional model structure and process 5

Travel model data inputs 9

Travel survey data 10

Socioeconomic data 11

Highway network 12

Network line-node topology 14

Spatial and geometric accuracy 16

Highway project coding 17

Bus route coding 20

Future bus coding 25

Rail network 27

Link fields 28

Node fields 29

Rail route coding 29

Future rail coding 32

Zone systems 34

Trip generation zones 34

Modeling zones 35

Capacity zones 38

Analysis network preparation 40

Highway network 40

Transit network 42

Transfer links 43

Access and egress links 44

Zonal impedances 45

Ancillary data input files 46

M01 file 46

DISTR file 47

M023 file 48

CBD parking file 50

Monte Carlo simulation **52**
Population synthesis **53**
Trip generation **55**
Telework **56**
Trip generation processing steps **59**
Model control keywords 59
Study area geography 60
Household type table 60
Load synthetic households 62
Household vehicle availability 62
Household trip productions and attractions 64
Group quarters trip generation 70
Allocation of non-home trip ends 71
External trip ends 75
Create final vehicle trip output file 76
Mode choice-destination choice model **77**
Private auto costs **79**
Hired auto costs **79**
Taxi 79
Transportation network companies 80
Transit costs **80**
Utility calculations **81**
Visitor trips **91**
Time-of-day model **91**
Hired auto deadhead trips **93**
Final trip roster **93**
Traffic assignment **94**
Special trip handling **94**
Commercial vehicle trips **95**
Point-of-entry trips **97**
Tolling **98**
Assignment time periods **100**
Time-of-day factors **103**
Volume-delay functions **104**

VDFs for links ending at signalized intersections (vdf1 and vdf3) 104
VDFs for freeways and expressways (vdf2, vdf4 and vdf5) 106
VDF for metered freeway entrance ramps (vdf8) 107
VDF for links with tolls (vdf7) 108
Link speeds 108
Emissions calculation 109
Travel model validation 109
Trip generation 110
Household crosstabs 110
Vehicle availability crosstabs 114
Trip rates versus the NHTS 116
Employment 117
Work from home household analysis 118
Trip distribution 120
Home-based work trip distances 120
County-to-county work trip flow comparison 122
Mode choice 123
Home based work mode share 123
Distribution of transit origins and destinations 123
Bike trip distance analysis 124
Hired vehicle rates 124
Carpooling rates 125
Commercial vehicles trips 125
Traffic assignment (highway) 126
Probe data analysis: travel speed 126
VMT shares by district and facility 129
Observed vs. modeled VMT 130
Transit assignment 133
2026 validation 134

Overview

The Chicago Metropolitan Agency for Planning (CMAP) is the primary agency responsible for the development and maintenance of travel forecasting methods for northeastern Illinois. Prior to CMAP, this responsibility resided at one of its predecessor agencies, the Chicago Area Transportation Study (CATS). CMAP/CATS has been developing and improving travel forecasting procedures regularly since 1956. CATS originally developed and employed travel demand models to assist in the development of regional transportation plans. The four-step modeling process (trip generation, trip distribution, mode split, and traffic assignment) was fundamental from the beginning. Early enhancements focused on making the process run more quickly on the computers available at the time and on the calibration of individual model components. As time passed and transportation questions changed, the model was updated, revised, and extended to answer them.

In the 1970s, in response to concerns about improving public transit, CATS concentrated enhancement activities on the mode split model and transit assignment techniques. In the late 1970s and early 1980s, efforts were focused on adapting the modeling process to subarea and project specific studies. For example, CATS developed a block-by-block zone system for downtown Chicago. Trips were generated based on zonal floor space from a building-by-building file of the area. Networks were coded with detailed pedestrian links. These techniques were employed to evaluate transit alternatives for the central business district. Similarly, zone sizes were reduced and more detailed highway networks were coded in suburban areas to evaluate freeway proposals.

When federal regulations were changed to require emissions estimates for air quality conformity analysis, the regional models were initially employed as they then existed. In 1994, the first significant model changes, explicitly motivated by conformity issues, were implemented. Since then, CATS (and now CMAP) has committed substantial resources to develop models that are responsive to the needs imposed by air quality requirements. CMAP continuously strives to improve its travel forecasting techniques in response to policy priorities.

This report documents the status of CMAP's regional travel demand model. Much of the text in this document is drawn from predecessor reports developed for the adoption of GO TO 2040[1] and ON TO 2050 plan[2] plans. Since then, several model coefficient updates have been implemented within the CMAP model.

Overview of the regional model structure and process

The CMAP trip-based travel demand model reflects the travel behavior reported in the 2018-2019 My Daily Travel survey. CMAP is currently administering a new household travel survey to capture post-COVID travel behavior, which will inform future updates to the model. Additionally, the model has been revised to include several modeling procedure improvements and enhancements, which

---

[1] Chicago Metropolitan Agency for Planning, "Travel Model Documentation Final Report," October 2010, http://www.cmap.illinois.gov/documents/10180/29685/Travel-Model-Documentation_10-2010.pdf/526a71e3-62c2-450d-a34e-4cda1f81b1ad.

[2] Chicago Metropolitan Agency for Planning, "ON TO 2050 Travel Demand Model Documentation," October 2018, https://www.cmap.illinois.gov/documents/10180/911391/FINAL+Travel+Demand+Model+Documentation+Appendix.pdf/f3b1322c-2e60-2513-720f-38ee68b799d1?t=1538537837892.

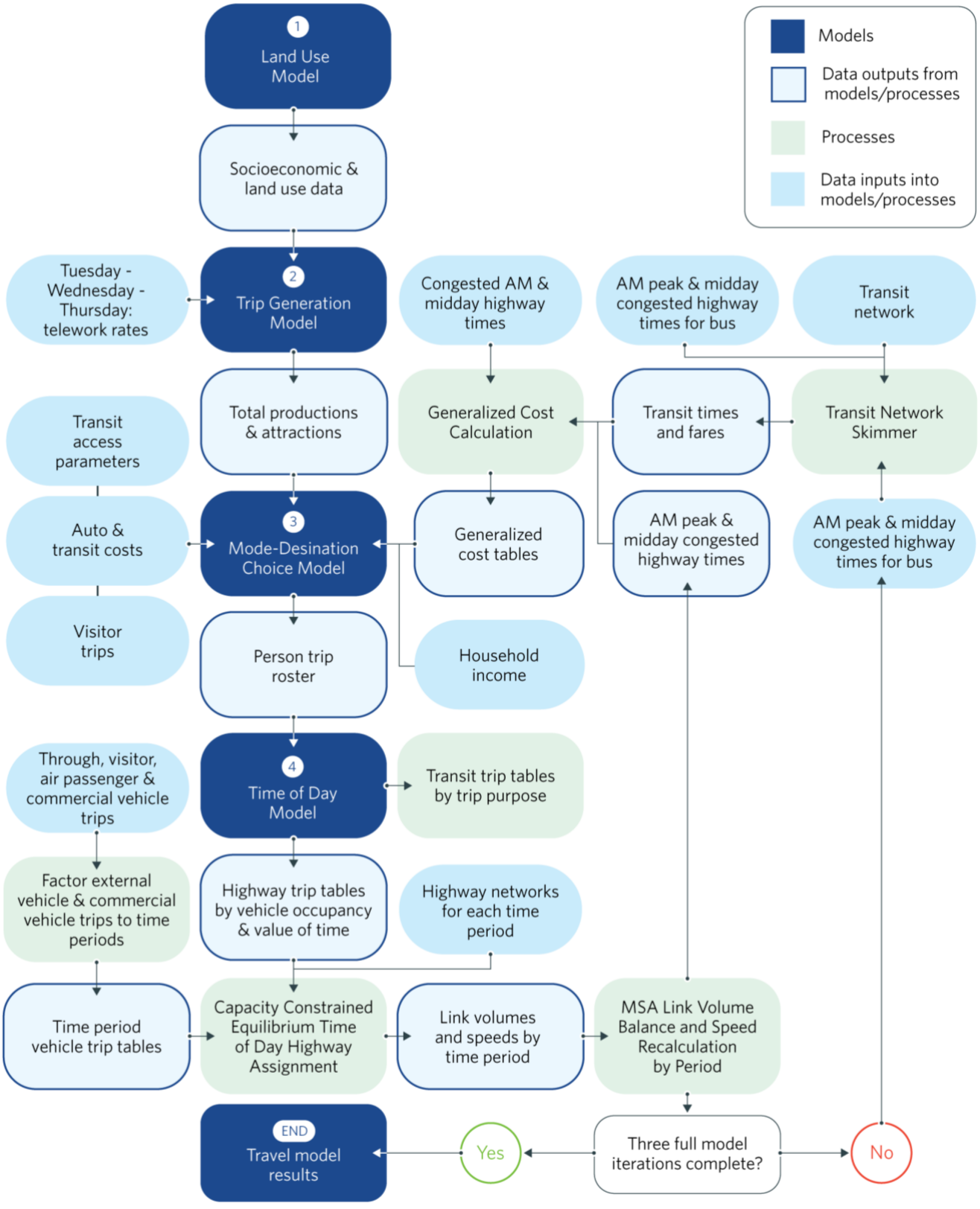
will be discussed in this document. The present CMAP region, for analysis purposes, includes Cook, DuPage, Kane, Kendall, Lake, McHenry, and Will counties, as well as parts of other counties in Illinois, Indiana, and Wisconsin that buffer the region. Figure 1 contains a flow chart showing the general steps used in the travel demand modeling process, including data inputs that feed model procedures and processes, and the output data generated at each step. Many outputs then serve as inputs to subsequent procedures.

Socioeconomic and land use data are supplied to the travel model from the UrbanSim land use model. UrbanSim provides information on the spatial distribution of households, population, and employment throughout the modeling area, which is used to estimate where trips begin and end. UrbanSim provides a synthetic population for the region, which includes a variety of characteristics of both the households and the people who live in them.

Trip generation is the first step in the trip-based model. It is how land use planning and zoning quantities are converted into trip productions (beginnings) and attractions (endings) that serve as measures of transportation demand. The process enumerates of all households in the modeling area and matches them to households from the My Daily Travel survey to develop trips made by household members. For home-based trips (ones that start or end at a home location), trip ends located at the travelers' homes are defined as productions, and trip ends located at the non-home end are defined as attractions. The trip generation model includes special procedures to address households with at least one worker working from home. The output of trip generation is a complete set of trip productions and attractions. These are complete lists of trip starting and ending locations, segmented by specific trip purposes, but at this stage the trip ends are unconnected to one another.

The next model in the process is a joint mode choice-destination choice model, which simultaneously answers the questions of *where are trips going* (i.e., what are the origin and destination zones for each trip) and *what mode is being used to get there*. This model is implemented as a hierarchical nested logit model. Trips are estimated for five trip purpose categories, including: home-based work trips for residents of low-income households; home-based work trips for residents of high-income households; home-shopping trips; all other home-based trips; and all non-home-based trips.

Figure 1. Modeling process overview



The modal options included in the mode choice-destination choice model are single-occupant vehicles (driving alone), private vehicles with two occupants, private vehicles with at least three occupants, taxis, regular ride hail using a transportation network company (TNC), shared ride hail using a TNC, transit, walking, and biking. Procedures used to estimate auto and transit costs were ported over from the prior version of the CMAP model and retain the use of Monte Carlo simulation, which attempts to decrease the errors inherent in modeling when average values are used. By contrast, Monte Carlo simulation allows models to use knowledge of the distribution of attributes and probabilistically select them — a meaningful number of simulations is generally run to minimize variability in the results. Monte Carlo simulation is used to estimate parking costs, the traveler's income, and the access and egress times from the primary transit routes.

Following mode choice-destination choice, a time-of-day model is run for auto-based trips to determine which of the eight time-of-day periods modeled by CMAP the trip occurs in. These models are sensitive to road congestion during the day. Additionally, a set of deadhead trips is created for taxi and TNC trips. These represent no-fare trips the drivers make between dropping off a passenger and picking up the next one.

The final step of the travel demand procedures is the assignment models. The highway assignment and transit assignment models rely on two different algorithms. The highway assignment model uses the vehicle trips developed from the time-of-day model and a description of the transportation system to estimate the volume of trips on each segment of the road network. For the air quality analysis, the highway assignment procedure is essential for estimating the vehicle miles traveled (VMT) on each highway segment and estimating the speed of each highway segment. The highway assignment step has two significant features that are important for both transportation and air quality analysis. First, because it is a capacity-constrained equilibrium assignment, the level of service (in terms of travel time) worsens as additional volumes are assigned to each link. Second, the equilibrium procedure solution ensures that simulated travelers are not able to improve their level of service (i.e., travel time) by any alternate routing. For each individual simulated traveler, travel times are optimal to the supply and demand of transportation because the traveler cannot find a shorter route.

The transit assignment model is a multipath procedure that evaluates the potential times and costs of all the transit strategies between an origin and destination, identifies the good strategies, and creates zone-to-zone times and costs. This model is also used to assign person trips to the transit network. The transit assignment model is important because it generates the transit times and costs used by the mode choice-destination-choice model, while the assignment of trips to transit routes is needed for project studies.

As shown in Figure 1, the steps of mode choice-destination choice, time-of-day modeling, and time-of-day assignment are iterated through three times (iterations zero through two). Morning peak congested times and distances are used for the work-trip purposes and midday times and distances are used for the nonwork purposes to determine trip destinations and modes. To create these, the link volumes from each full model iteration time-of-day assignment are combined (the step termed “volume balancing and speed recalculation”) with the link volumes from the same period in the previous iterations using the Method of Successive Averages (MSA). For example, the link volumes resulting from the first and second iterations of the time-of-day highway assignment for period three are combined using the MSA procedure, then skimmed to produce the highway travel information input to the generalized cost calculation for the next iteration of the process.

This process is enhanced through the inclusion of iterative feedback involving the transit system. During initial global iteration zero, the transit schedules for morning peak and midday service are used to feed the generalized cost calculation but are overwritten for links where estimated congestion would cause a bus to fall behind its schedule. Buses that operate on roads are obviously impacted by other traffic on the road (and vice versa). Once the congested roadway times are calculated at the end of global iteration zero, they are fed back into the appropriate transit schedules, which are adjusted to reflect the traffic conditions. These updated transit times are then used in the revised generalized cost calculations. Buses that have special operating priorities (such as bus-on-shoulders or traffic signal vehicle pre-emption) are only subject to the congested roadway times for the appropriate segments of their itinerary.

The time-of-day traffic assignment procedure more realistically matches travel demand to network supply and structure as these vary over the course of 24 hours. The time-of-day procedure relies on a multiclass traffic assignment, enabling the conformity emissions analysis to reflect link volumes by specific vehicle type rather than using regional or statewide averages. The traffic assignment also includes consideration of tolling where the separate vehicle classes experience different toll rates and toll rate weights, based on differing values of time for the vehicle classes. Separate assignments estimate highway vehicle-miles and travel speeds for eight time periods during the day:

- Overnight off-peak (8:00 p.m. to 6:00 a.m.)
- Preceding morning peak (6:00 to 7:00 a.m.)
- Morning peak (7:00 to 9:00 a.m.)
- Post morning peak (9:00 to 10:00 a.m.)
- Midday (10:00 a.m. to 2:00 p.m.)
- Preceding evening Peak (2:00 to 4:00 p.m.)
- Evening peak (4:00 to 6:00 p.m.)
- Post evening peak (6:00 to 8:00 p.m.)

Results of the separate period assignments are accumulated into daily volumes and tabulated into the vehicle-mile-by-vehicle-type-by-speed-range tables needed for the vehicle emission calculations. The assignment results are also used to support project, program, and policy analyses.

The remainder of this document discusses each component of the trip-based model and describes the various data inputs required to run the model.

Travel model data inputs

Model calibration ensures that the various components of the overall travel model replicate observed data for a base year. Calibration requires adjusting parameters for individual sub-models to ensure that they each produce realistic results. Calibration is complete once model results match the observed patterns found in Census data, regional household travel surveys, transit

origin-destination surveys or other data sources. The CMAP trip-based model is calibrated to the base year 2019.

Several data inputs are required to provide the trip-based models with the information necessary to estimate travel patterns. Demand side information includes travel surveys and socioeconomic data on where people live and work. Supply side data include the physical road and transit networks. Various zone systems are used to aggregate data to meaningful geographies. This section briefly describes the data used to develop and apply the regional model.

Travel survey data

Travel models are behavioral models of travel choices made by people and require data describing observed travel behavior. These data come from household travel surveys. The original CATS home interview survey was taken in 1956 and consisted of almost 40,000 household interviews. CMAP's travel models were originally developed using a 1970 home interview survey, which obtained the daily travel patterns for over 21,000 households in the region.

In 1979, a much smaller home interview was conducted. This survey was combined with the 1980 Census Journey to Work data and was used to review and modify the agency's modeling procedures. Between 1988 and 1991, another large-scale home interview survey (over 19,000 households) was conducted. The information from this survey and the 1990 and 2000 censuses have been used to update and modify the travel demand procedures.

Starting in January 2007 and lasting one year, CMAP completed a comprehensive travel and activity survey for northeastern Illinois called Travel Tracker. A total of 10,552 households participated in either a one- or two-day survey, providing a detailed travel inventory for each member of their household on the assigned travel day(s). As a test of available technology, 460 Travel Tracker participants also volunteered to wear global positioning devices (GPS) or to use auto-based devices to track their travel.

The next regional travel survey completed by CMAP was called My Daily Travel. Data collection began in summer 2018 and concluded in spring 2019. Nearly 12,400 households participated, logging their detailed travel information for one day.[3] A quarter of these households recorded their itineraries via a GPS-enabled mobile app. At present, CMAP is conducting a multi-phase update to My Daily Travel to capture post-COVID travel behavior. Phase 1 data were collected between September 2024 and June 2025 from 3,522 households.

In addition to the home interview surveys, there have been several other data collection efforts, including a 1986 Commercial Vehicle Survey, a 1963 Pedestrian Survey, a 1987 Survey of Parkers in the Chicago Central Business District, and a 1991 Survey of Parking Spaces in the Chicago Central Business District. All of these surveys were used to enhance the region's travel demand procedures.

[3] As with the Travel Tracker survey, the Northwestern Indiana Regional Planning Commission conducted the My Daily Travel survey in coordination with CMAP to collect the same data for three counties in northwest Indiana. The CMAP My Daily Travel survey data are available on the CMAP Data Hub.

Socioeconomic data

Socioeconomic data used for trip generation estimates are generated by UrbanSim and guided by the regional socioeconomic forecast. UrbanSim is a land use microsimulation model that predicts the activities of individual agents (households, employers) within the region. Several sub-models control the number and distribution of regional households and population including the employment and household transition models, employment and household relocation models, household tenure choice model, and employment and household location choice models. UrbanSim is used to predict growth patterns from the present to the year 2050. The current base year of the UrbanSim model is 2020.

A synthetic population is developed for 2020, as described in the population synthesis section of this document, and UrbanSim sub-models evolve this population over the years. 2020 base year data for households and residential units are acquired from the 2020 Census Demographic and Housing Characteristics (DHC) file and the 5-year 2018-2022 American Community Survey (ACS). Detailed socioeconomic and demographic information only available in the ACS at the block group and tract level are scaled to match the block-level totals in the DHC. These data are used as controls to synthesize households and units using 5-year 2018-2022 American Community Survey Public Use Microdata Sample (PUMS) data at the 2020 Public Use Microdata Area (PUMA) level. Totals will align with the DHC at block level and the more detailed ACS socioeconomic and demographic data will have their distributions align with the ACS at the block group or tract level.

Household control totals from the regional socioeconomic forecast are provided to UrbanSim to ensure reasonable household and population outputs for each year after 2020. The regional socioeconomic forecast consists of a demographic model and an economic model. The demographic model provides population projections for 2020 to 2050 using the cohort-component method. Results are provided at the sub-regional level. There are four sub-regions: the seven county CMAP region, external Illinois modeling areas, external Indiana modeling areas, and external Wisconsin modeling areas.

More information about UrbanSim and the regional socioeconomic forecast, as well as a discussion of their sources, is available in the Socioeconomic Forecast Appendix.

A few additional pieces of information are needed by the travel demand model, including:

Regional median household income: To obtain an accurate estimate of median household income for the 21-county modeling area, the 2017-2021 5-year ACS PUMS) was used, providing the number of households within 16 distinct income bins. Data was obtained at the tract level for all of Illinois, Indiana, and Wisconsin and filtered to use only tracts that exist within the 21-county modeling area. Grouped frequencies of the number of households across income bins were used to calculate the median income, assuming that households are weighted equally within a bin. The median income from the 2021 ACS PUMS was inflation-adjusted to 2019 dollars using the Bureau of Labor Statistics' Consumer Price Index (All Goods). Using this technique, the 2019 regional median household income was estimated to be $72,800 (in 2019 dollars).

Private vehicle occupancy rate of all worker trips to work: This is the ratio between the number of workers traveling to work in a zone (all workers, not just those in households) who commute by household vehicles (single-occupant vehicles and carpool) divided by the number of vehicles used for those trips. Estimates of modeling area resident worker flows at the census tract level were taken from the 2017-2021 Census Transportation Planning Products (CTPP) - table B302103, means of transportation (18) (workers 16 years and over). For each flow, workers were summed

across auto modes and number of vehicles was calculated as vehicles = sov + (hov2/2) + (hov3/3) + (hov4/4) + (hov5_or_6/5.5) + (hov7_or_more/7.1). Workers and vehicles were allocated to zones using the workplace tract and average vehicle occupancy to each workplace zone was calculated as stated above.

Group quarters population: The travel model requires information on residents of non-institutionalized group quarters, namely persons in military barracks, college or university dormitories, and other group quarters. These data are based on the 2020 Census SF-1 block-level table P5, "Group Quarters Population By Major Group Quarters Type." At the time of computation, combined group quarter population totals were not available by age breakouts at the block-level. The 2010 Census age distributions were used to generate age breakouts by creating a 2010 block group file with proportions for each age group. Block-level populations were geocoded to subzones using block centroids. Base-year (2019) estimates by subzone are based on each subzone's share of the 2010 total for each group quarters type, excluding dorm group quarters population, and are scaled to match 2019 regional estimates provided by the regional socioeconomic forecast. Dormitory group quarter data are also based on 2020 Census SF-1 block-level table P5, "Group Quarters Population By Major Group Quarters Type." Since these data do not require age breakouts, the census data were used directly. Three rates were calculated for each sub-region using 2020 Census data: the percentage of the total population that lives in group quarters, the percentage of group quarters population that are non-institutionalized, and the percentage of non-institutionalized group quarter population that live in dorms. These rates were applied to the total population by sub-region from the regional socioeconomic forecast to determine dormitory population totals by sub-region and growth rates across the forecast period. Growth rates for each sub-region were applied to base-year dormitory population in subzones within the respective region for the forecasting period.

Highway network

The Master Highway Network (MHN) is the official road network database used to develop travel demand model networks at CMAP. The MHN includes roads within northeastern Illinois that have a functional classification of minor collector or higher. In certain instances, additional local roads have been included in the MHN to provide connectivity within the network.

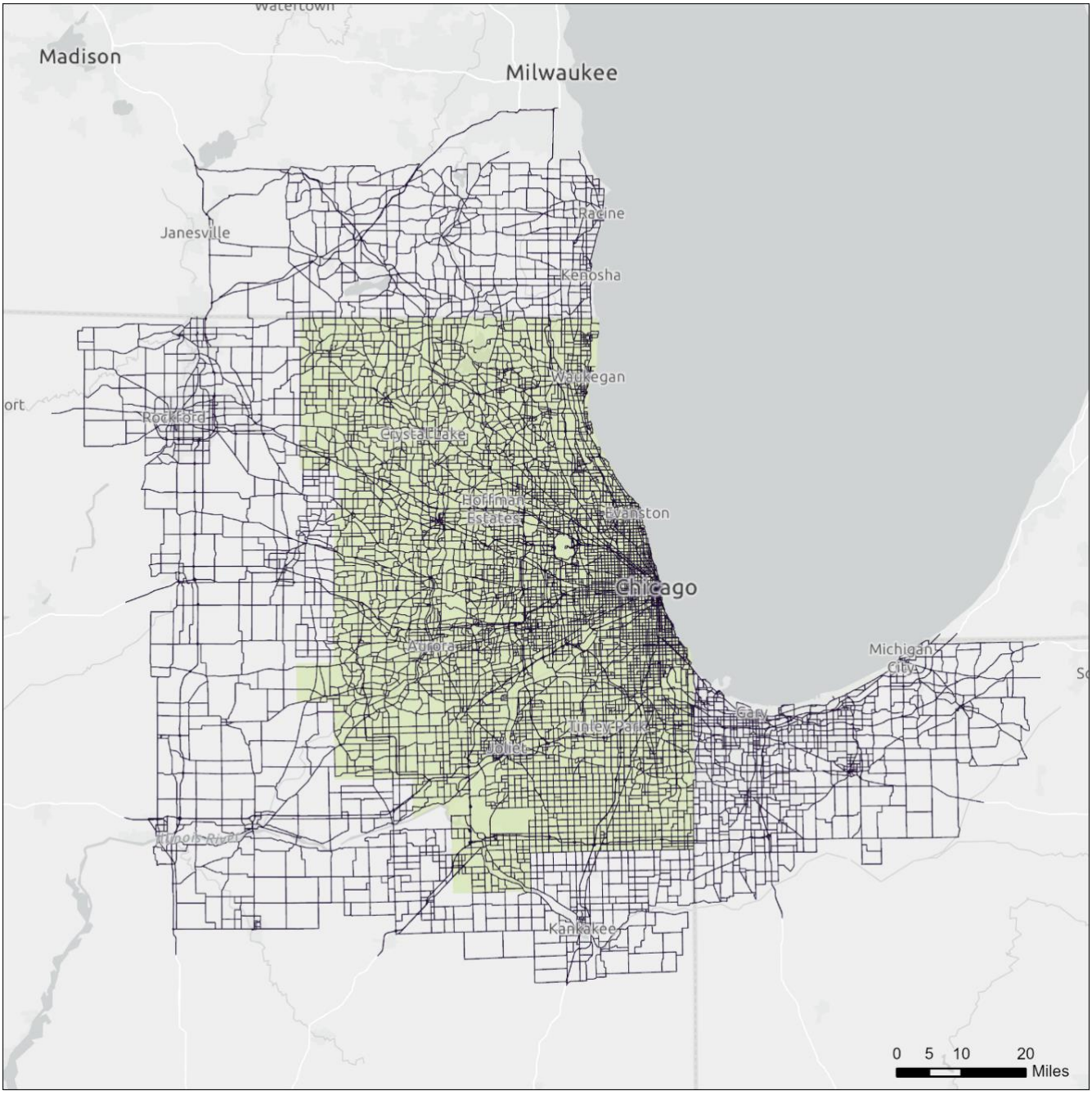
The MHN covers an area of more than 10,000 square miles and extends into northwestern Indiana and southeastern Wisconsin, as shown in Figure 2. The MHN includes roads for the following areas:

- **Illinois:** Twelve full counties (Boone, Cook, DeKalb, DuPage, Grundy, Kane, Kankakee, Kendall, Lake, McHenry, Will, and Winnebago) and three partial counties (LaSalle, Lee, and Ogle)
- **Indiana:** Three full counties (Lake, LaPorte, and Porter — corresponding to the Northwestern Indiana Regional Planning Commission's planning area)
- **Wisconsin:** Three full counties (Kenosha, Racine, and Walworth — the southern portion of the Southeastern Wisconsin Region Planning Commission's planning area) plus additional minimal road network extending into two other counties (Milwaukee and Rock)

The MHN is a collection of links and nodes representing road segments and intersections throughout the region. It contains information on more than 57,400 directional road segments and includes more than 21,200 nodes. The MHN is a comprehensive database for CMAP's regional travel demand modeling needs. It contains not only existing road segments and intersections, but

also future planned facilities and improvements. The MHN itself is edited and maintained using Esri's ArcGIS Geographic Information System (GIS) software. The MHN has a current base year of 2015, meaning that the road attributes on existing facilities represent the conditions from that year. As other years are modeled, future project coding updates the network to make it consistent with the analysis year conditions. It is a relational database (specifically, an Esri file geodatabase) that maintains spatial and topologic relationships between features classes. The feature classes that define the road network in the MHN are lines and nodes. The projection of the data is State Plane Coordinate System, Illinois East zone, North American Datum of 1927. The unit of length is the U.S. survey foot.

Figure 2. CMAP Master Highway Network



Network line-node topology

MHN lines represent road segments located between intersections. Most lines in the MHN are digitized as bidirectional links with the appropriate direction-specific attributes coded to the link. Expressways are digitized as a set of parallel single-direction links to replicate their limited-access characteristics.

Table 1 lists the highway network link variables contained in the line attribute table that are relevant to CMAP's production modeling work. The attribute table also contains additional information not currently used for modeling purposes. As most links in the network represent bidirectional road segments, attributes must be included for each direction. Variable names ending in "1" describe attributes in the ANODE-BNODE direction of the link (this is the from-to direction of a link that is recognized by GIS software based on how the link was digitized). Those variable names ending in 2 represent attributes in the opposite direction. The directions variable indicates whether a link is a single or bidirectional segment and has three possible values, which determines how link attributes are coded:

1. A value of "1" indicates that the link represents a single direction of travel. No second direction variables are coded (i.e., they equal 0).
2. A value of "2" indicates that the link represents both directions of travel and all attributes are the same in both directions. No second direction variables require coding (except applicable parking restrictions).
3. A value of "3" indicates that the link represents both directions of travel and at least one attribute differs between the two directions. All second direction variables require explicit coding.

The BASELINK variable identifies whether a segment represents an existing facility (value of one) or a future facility (value of zero, referred to as skeleton links). If BASELINK=0, only ANODE, BNODE, MILES and DIRECTIONS are coded on highway links. All other link attributes are intuitively named. Each link in the MHN is identified by a unique ANODE-BNODE-BASELINK combination (variable ABB).

Table 1. Master Highway Network link attributes

Variable	Description
ANODE	Links "from" node
BNODE	Links "to" node
BASELINK	Link description flag: 0 = future project link ("skeleton" link), attributes added via highway project coding 1 = existing network link ("base" link), all attributes present
ABB	Unique arc ID, of the form "ANODE-BNODE-BASELINK"
MILES	Link length in miles
TYPE1 & 2	Facility type: 1=Arterial 2=Freeway (controlled-access) 3=Freeway-arterial ramp 4=Expressway (limited-access) 5=Freeway-freeway ramp 6=Centroid connector 7=Toll plaza 8=Metered ramp
TOLLDOLLARS	Toll amount in dollars for autos with I-PASS. If link type is 7 (toll plaza), this is applied as a fixed-cost toll; for other link types, it is applied as a per-mile rate.

AMPM1 & 2	Time period restrictions: 1=open all time periods (1-8) 2=open a.m. periods (2-5) only, e.g. Kennedy reversible lanes inbound 3=open p.m. periods (1, 6-8) only, e.g. Kennedy reversible lanes outbound 4=open off-peak periods (1, 5) only
SIGIC	Signal interconnect flag: 0=no, 1=yes
POSTEDSPEED1 & 2	Posted speed limit (mph)
THRULANES1 & 2	Number of driving lanes. (This represents the most-restrictive capacity on the link, i.e. the fewest number of lanes present at any single point.)
PARKLANES1 & 2	Number of on-street parking lanes
PARKRES1 & 2	Peak period parking restrictions, when on-street parking is not available and an extra through lane is available. *Coded separately for each direction on all 2-way links*. Code is text string of affected time periods (currently only 3 & 7). Default blank value means no peak period parking restrictions.
THRULANEWIDTH1 & 2	Average driving lane width (feet)
DIRECTIONS	Link directions flag: 1=one way 2=two way, attributes in both directions identical 3=two way, at least one attribute different in opposing direction
MODES	Modes permitted on link: 1=all vehicles 2=all vehicles (with truck restrictions from *TRUCKRES* applied) 3=trucks only 4=transit only (only called for transit networks) 5=HOV only
TRUCKRES	Detailed truck restriction codes, which translate into the following model coding: No restriction known/codeable: 0, 6, 15, 20, 22-24, 26, 28, 32, 33, or 36 No trucks: 1 or 18; also, 21 in time period 1 only No trucks except B-plates: 2-4, 9-11, 13, 25, 35, or 37; also, 12 in time period 1 only No medium or heavy trucks: 7, 8, 14, 16, 17, 19, 27, 29, 31, 34, 38-47, or 49 No heavy trucks: 5, 30, 45, 48
VCLEARANCE	Vertical clearance (inches). The following mode restrictions are applied for non-zero values: Clearance < 162": no heavy trucks Clearance < 150": no medium/heavy trucks Clearance < 138": no light/medium/heavy trucks

Nodes in the MHN represent intersections between roads, junctions where road segments converge/diverge (such as an entrance ramp merging into an expressway through-lane), or where roadways otherwise significantly change (such as an interstate toll collection location). The line-node topology enforced in the MHN is such that nodes represent the end points of lines and lines with common end points are connected. CMAP's modeling staff maintains a set of scripts that automatically update highway network topology after edits have been made and populate several attribute fields. These scripts (along with various other MHN processing scripts) are maintained in a publicly accessible GitHub repository at github.com/cmap-repos/mhn_programs.

Node attribute variables are listed in Table 2. These mostly serve to define the network lines by providing values for ANODE and BNODE. Values for the entire set of node variables listed are automatically populated through scripting. All node attributes are automatically populated by the scripts.

Table 2. Master Highway Network node variables

Variable	Description
NODE	CMAP network node ID
POINT_X	Auto-generated x-coordinate (NAD27 IL East State Plane feet)
POINT_Y	Auto-generated y-coordinate (NAD27 IL East State Plane feet)
SUBZONE17	Subzone ID from current CMAP modeling subzone system
ZONE17	Zone ID from current CMAP modeling zone system
CAPZONE17	2017 Capacity Zone code: 1=Chicago Central Business District (2009 subzones 1-47) 2=Remainder of Chicago Central Area (2009 subzones 48-80) 3=Remainder of City of Chicago (2009 subzones 81-976) 4=Inner ring suburbs where Chicago street grid is generally maintained 5=Remainder of Illinois portion of the Chicago Urbanized Area 6=Indiana portion of the Chicago Urbanized Area 7= Other Urbanized Areas and Urban Clusters within the CMAP Metropolitan Planning Area plus other Urbanized Areas in northeastern Illinois 8=Other Urbanized Areas and Urban Clusters in northwestern Indiana 9=Remainder of CMAP Metropolitan Planning Area 10=Remainder of Lake County, IN (rural) 11=External area 99=Points of Entry – not defined in the Capacity Zone system
IMAREA	Illinois Vehicle Inspection and Maintenance Program area flag: 0=no, 1=yes

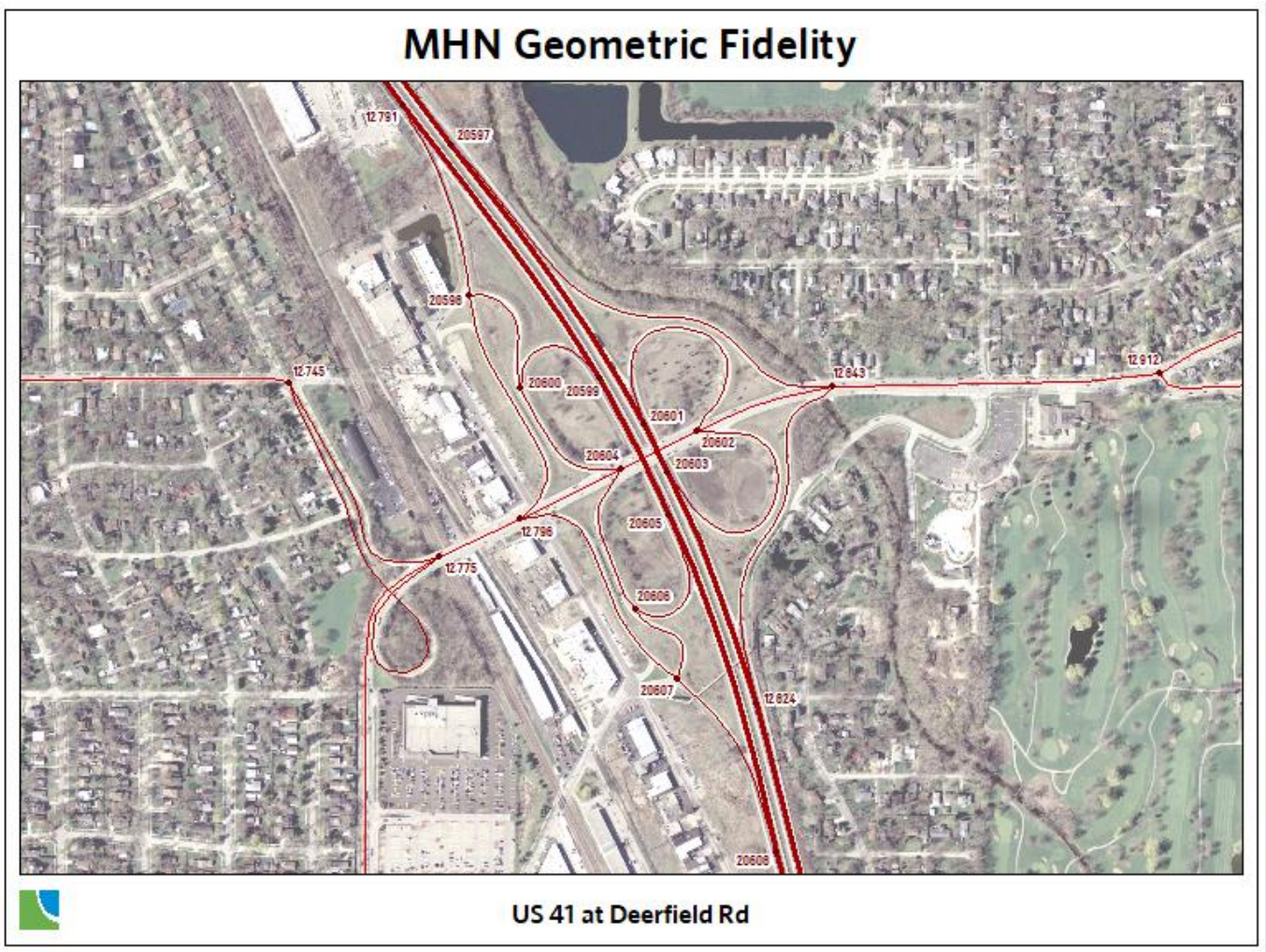
Spatial and geometric accuracy

CMAP ensures the MHN is spatially and geometrically accurate with respect to:

- Geocoding intersections to spatially accurate locations
- Applying vertex coordinates to links to replicate road geometry
- Ensuring expressway interchanges are fully expanded to include ramps representing all possible traffic movements

Figure 3 illustrates the network accuracy for one interchange in the MHN.

Figure 3. Master Highway Network accuracy



Highway project coding

The MHN includes links serving as placeholders for future planned facilities, identified by BASELINK=0. The Northeastern Illinois Transportation Improvement Program (TIP) database is the repository of project information for planned and programmed projects. Relying solely on the TIP database for project information provides a single direct link for reconciling model network coding with the planned improvement.

The MHN geodatabase stores highway project coding in a table containing detailed attributes and a line feature class containing the project ID, completion year and geographic extent. A group of network links is selected by their unique ABB values to define an individual highway project. The highway project line feature class contains summary information for each project, as shown in Table 3. Each project is represented by a single, multi-part line feature, which is automatically generated based on the links referenced in the detailed coding table. This data structure allows a single highway project to be associated with numerous MHN lines and, by extension, allows a single MHN line to be associated with multiple highway projects. The result is the project coding table contains one record for every line referenced by every highway project.

Table 3. Master Highway Network highway project line feature class attributes

Variable	Description
TIPID	TIP project identification number
COMPLETION_YEAR	Project completion year from the TIP. Inactive projects have a value of 9999.

The project coding table is used to store link attributes that will be updated or applied when the associated highway projects are completed. An action code determines how the attributes for each link are processed. The list of section table variables, shown in Table 4, most directly correspond to MHN line attributes. As with the line attribute table, variables ending in 1 apply to the "from-to" direction of the link, while those ending in 2 apply to the "to-from" direction. During network processing, data from the line attribute table are updated (overwritten) on the fly with project coding table entries to represent conditions after the project is implemented. Only those attributes changing due to project implementation are coded in the section table.

Project coding rules for parking lanes are slightly different than for other variables. The values for this attribute are added to (or subtracted from) line table coding to yield the final result. This allows for these attributes to be increased, decreased, or removed. This is necessary because there is no practical way to determine whether a zero in the section table represents no change in conditions or the removal of this attribute.

Four action codes control the link processing. Action code 1 modifies the coded attributes on links with existing attributes. Action code 4 is applied to new links (skeleton links), which have no attributes except MILES and DIRECTIONS. Action code 2 is used when new links replace an old link without any change in its attributes, such as when a new intersection is introduced into the network. This action code requires to fill in the REPLACE_ANODE and REPLACE_BNODE. These represent the nodes of the link where the attributes will be drawn from. Action code 3 deletes a link from the network.

Table 4. Master Highway Network highway project coding table fields

Variable	Description
TIPID	TIP project identification number
ABB	Reference to unique arc ID, of the form "ANODE-BNODE-BASELINK"
ACTION_CODE	CMAP action code: 1=modify (change an existing network link) 2=replace (replace an existing link with a new one but retain all attributes) 3=delete (remove a link from the network) 4=add (add a new link to the network)
NEW_TYPE1 & 2	New facility type number
ADD_SIGIC	Add signal interconnect to link (code=1)
NEW_THRULANEWIDTH 1 & 2	New average driving lane width (feet)
NEW_THRULANES1 & 2	New number of driving lanes
NEW_POSTEDSPEED1 & 2	New speed limit (mph)
REP_ANODE REP_BNODE	*ANODE* and *BNODE* of MHN link providing attributes, ONLY for action_code=2
NEW_TOLLDOLLARS	New I-PASS toll amount for autos (dollars). If link type is 7 (toll plaza), this is applied as a fixed-cost toll; for other link types, it is applied as a per-mile rate.

NEW_DIRECTIONS	New directions flag
ADD_PARKLANES1 & 2	Add/remove parking lanes, coded number will be added to number in MHN arc attributes to calculate final lanes (code positive to add, negative to remove)
NEW_AMPM1 & 2	New time period restrictions
NEW_MODES	New modes permitted
TOD	Time-of-day code indicating specific time periods when changes are applied. Default of blank or 0 means changes applied to all periods. Code is text string of affected time periods: 1=8 p.m. – 6 a.m. (overnight) 2=6 a.m. – 7 a.m. 3=7 a.m. – 9 a.m. (AM peak) 4=9 a.m. – 10 a.m. 5=10 a.m. – 2 p.m. (midday) 6=2 p.m. – 4 p.m. 7=4 p.m. – 6 p.m. (PM peak) 8=6 p.m. – 8 p.m.

Storing the existing and future highway network components in a single database allows the analyst to ensure project and base network reconciliation is handled comprehensively with all analysis networks for a particular application, at one step, existing in a single dataset. Storing the MHN in a GIS format also greatly simplifies project coding tasks. The MHN structure allows for:

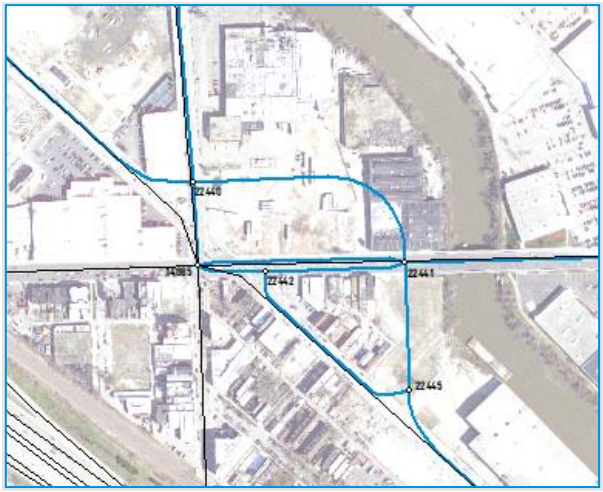
- **Analysis into multiple future years:** Assignable networks are produced that maintain consistent project coding into future years (e.g., a project that is built in an earlier year will be included in all subsequent networks).
- **Analysis across multiple scenarios:** Assignable networks are produced that maintain consistent project coding between differing analysis scenarios (e.g., a project that is included in one land use scenario will be identically coded in any other appropriate scenario).

This topology was in direct response to the types of comparative evaluations that were necessary under the air quality conformity baseline/action rules. With approval of a state implementation plan budget, conformity analysis no longer entails a baseline/action test, so a simpler hierarchy is used. Nonetheless, this ability is useful within any forecasting exercise where multiple time frames and scenarios are compared (e.g., land use/transportation interactions).

A list of modeled project TIP identification numbers and the year that they are to be constructed is all that is required to create a set of highway network files for the travel demand modeling software (Emme®). The completion year is attached to each project and stored in the highway project line feature class. As complete project coding information exists in the feature class and associated coding table, simple database queries can select only those records needed to prepare the desired analysis year network. A set of scripts process all the project coding information, apply the attribute updates to the set of links comprising the scenario network, and create a set of time-of-day link and node attribute files suitable for import into Emme. Figure 4 illustrates this process.

Figure 4. Highway network coding example

MHN network



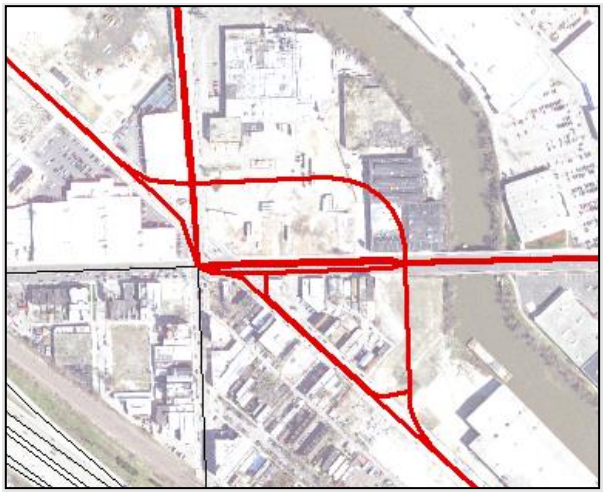
Step 1. All existing road facilities (black) and a planned realignment (blue) are coded into the MHN. The project will reroute the diagonal road northeast of the current six-way intersection and convert part of it to a service road.

Emme Network – base year scenario



Step 2. An Emme base year scenario network is created. Since the road realignment has not yet happened, it is not reflected in the model network.

MHN network project coding



Step 3. All links impacted by the project are associated with the project ID through a route system (red). The link coding contained in the route system's section table serves as a set of instructions on how to process each link. The coding identifies which links associated with this project to: (1) modify the characteristics of, (2) replace existing links, (3) delete from the network, and (4) add as new links.

Emme network – future year scenario



Step 4. A future scenario modeling network includes the realigned road and new intersections. Since this particular project was actually completed in 2018, it is displayed with current imagery showing the final result.

Bus route coding

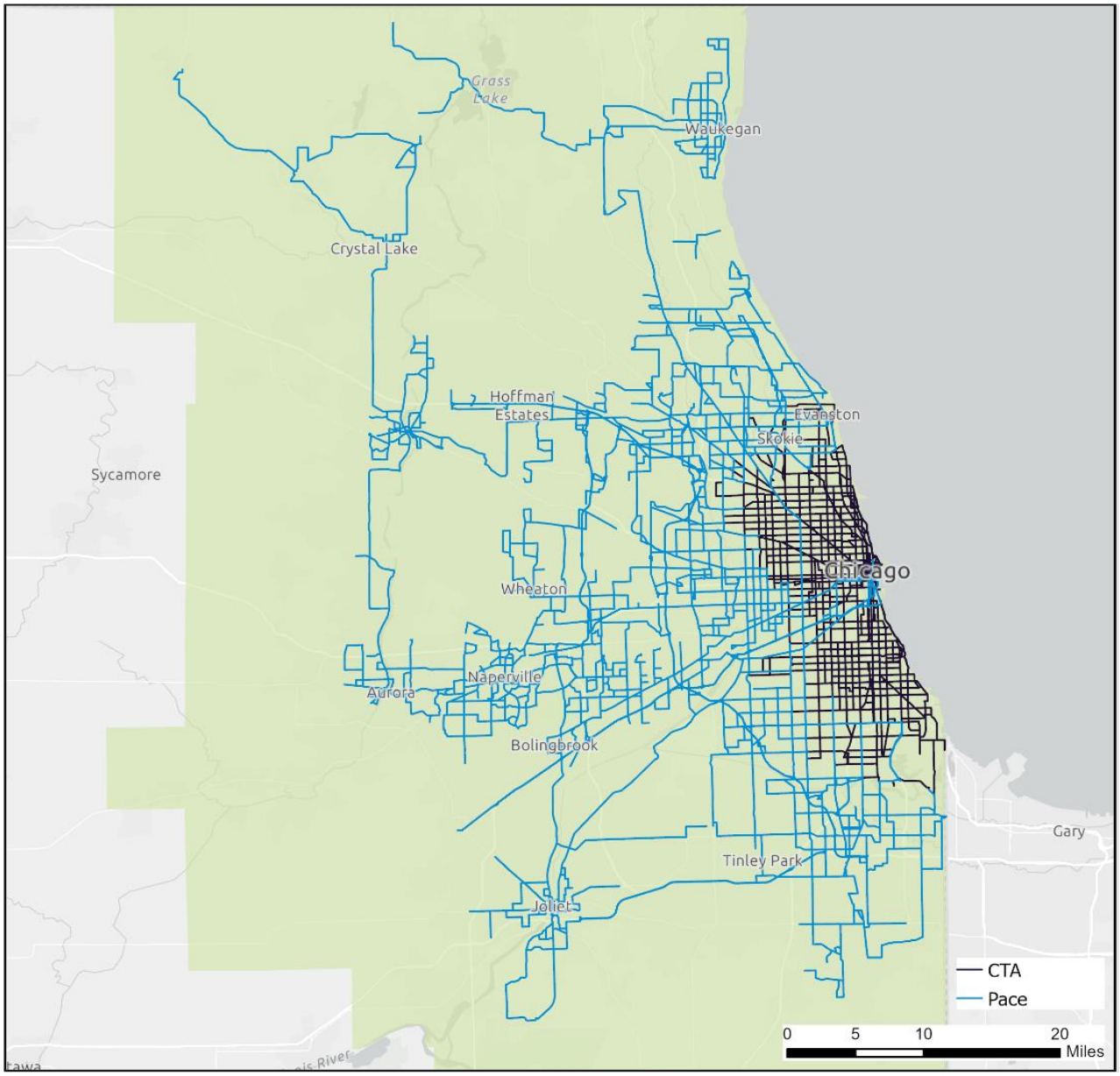
Northeastern Illinois has one of the most extensive public transportation systems in North America. Bus and rail service is provided by three public operating agencies, including the Chicago Transit Authority (CTA), Metra commuter rail, and Pace suburban bus. Each of the three agencies

has its own board, management, and operating personnel. The agencies' service areas overlap to varying degrees and many riders' trips involve transfers between services provided by different operators.

The CTA operates bus service within Chicago and several adjacent suburbs. Pace operates nearly exclusively in the suburbs, with some express service to downtown Chicago. Pace operates regular bus routes, feeder buses that provide connections to suburban Metra commuter rail and CTA rail stations, and all paratransit service in the region, as well as a vanpool program and some long-distance express buses. Bus route coding maintained in the model networks includes publicly operated, fixed-route service. It does not include vanpools, paratransit, or subscription service.

Like the highway project coding structure, existing bus service coding is maintained as two separate pairings of a route feature class and an itinerary table within the MHN. One pairing is for the base network, based on route data from 2015 (this is only used to reflect transit service in the 2019 model base year). Another is based on more current route data (currently December 2024), which forms the basis for most future model networks. The data structure ensures bus coding always reconciles with the underlying highway network links. Bus routes are forced to conform to the available MHN links. If a particular route uses local streets that are not included in the MHN, the coding for the route is altered accordingly so that it only uses MHN links. Figure 5 shows the extent of the region's bus service.

Figure 5. MHN general transit feed specification-based base bus coding, 2015



Bus coding in the MHN includes the complete itinerary (or node-by-node path) of the bus route and attributes associated with each itinerary segment. Bus routes are coded as single-direction runs. CMAP bus coding is derived from General Transit Feed Specification (GTFS) data files created by the transit operators. The GTFS files contain data on all runs of every bus during the entire week. As CMAP models weekday traffic, the bus coding data from the GTFS files are limited to a representative weekday (Wednesday).

Conversion of the GTFS data from its raw form into usable bus coding proceeds through the following steps:

- Python is used to transform source GTFS datasets for loading into an OpenPaths Emme project database.
- OpenPaths Emme API tools filter, load, and match schedule data to the model network, to import transit lines.

- Transit line geometry is extracted and loaded into an Esri file geodatabase for verification in ArcGIS Pro.
- ArcPy tools compare transit line geometry to shapes in the source GTFS datasets, to assess the network match quality. If necessary, adjustments are made to the match criteria and transit lines are imported again with the new parameters.
- OpenPaths Emme API tools transform and enrich transit line data for loading into the MHN and MRN geodatabases.
- Transit line data are extracted and loaded into the MHN and MRN geodatabases by custom geoprocessing tools that automatically generate the line feature classes and geodatabase tables that represent the route and itinerary for each scheduled service run.

As with the highway project coding, bus-run details are stored in a set of related itinerary tables. These tables relate to the link table in the same manner as the highway project coding tables. The bus-run-line features and itinerary tables are linked through the TRANSIT_LINE variable, which is a unique identifier given to each bus run.

Table 5 highlights the data fields maintained in the MHN that are used to describe bus route attributes. The variables shaded in gray correspond to header information Emme requires when reading in bus itineraries. Other attributes are merely informational. Note that at this point the HEADWAY value only represents the total minutes in the time-of-day period within which the bus run occurs. The actual bus service headway is calculated at a later stage, when individual runs are grouped into representative runs.

Table 5. Master Highway Network base and current bus run feature class attributes

Variable	Description
TRANSIT_LINE	Unique CMAP bus run identifier. (Mode + 5-digit number, starting at 00000 for base, 50000 for current.)
DESCRIPTION	Real-world description of bus route (format: "*ROUTE_ID LONGNAME*: *DIRECTION* TO *TERMINAL*")
MODE	Bus mode code: B=CTA regular service E=CTA express service P=Pace regular service Q=Pace express service L=Pace local service
VEHICLE_TYPE	Bus vehicle type code (based on mode code): 25-27=mode B 31-33=mode E 28=mode P 29=mode Q 30=mode L
HEADWAY	Length of the time-of-day period (in minutes) within which the bus run falls, since every run is represented individually
SPEED	Average bus route speed in MPH from GTFS data; minimum value of 15 allowed. [Not used in CMAP modeling but a non-zero value is required by Emme.]
FEEDLINE	Unique GTFS identifier for each run
ROUTE_ID	Bus number in route name (e.g. 52A, 112, X98)
LONGNAME	Proper name of bus in route name (e.g. Wentworth, Halsted/95th)
DIRECTION	Predominant direction of travel for bus run
TERMINAL	Location of final stop on bus run
START	Start time of bus run in seconds
STARTHOUR	Start hour of bus run

The actual itinerary information for bus routes is contained in the itinerary table variables, which are listed in Table 6. The itinerary provides the node-by-node path on the MHN that the bus follows. Again, most of these variables reflect information Emme expects to receive when bus routes are imported.

Two GTFS-based bus coding route systems exist simultaneously in the MHN database:

- **Bus_base:** GTFS–based coding that corresponds to CMAP's model base year of 2015 (reflecting service at that time).
- **Bus_current:** Coding built from the most recent GTFS data files. This represents up-to-date coding and is used as the basis for future modeling scenarios.

Each of the bus route systems listed above contains over 25,000 bus runs comprising roughly 750,000 itinerary segments, representing one weekday of service. For purposes of modeling travel demand, the bus runs are combined into representative bus routes. A script analyzes the runs of each bus route that occur during a time-of-day period and uses the stopping pattern to determine which are similar enough to be collapsed into a typical directional bus route. The start times of all the individual runs that are associated with a representative bus route are used to calculate the service headway that goes into the travel demand model.

Table 6. Master Highway Network base and current bus itinerary table fields

Variable	Description
TRANSIT_LINE	Unique CMAP bus run identifier. (Mode + 5-digit number, starting at 00000 for base, 50000 for current.)
ITIN_A	CMAP node number bus travels from
ITIN_B	CMAP node number bus travels to
ABB	Unique ID of the segment's corresponding MHN link
ITIN_ORDER	Order number of bus segment in itinerary, sequentially increasing from 1 for each run
LAYOVER	Layover time in minutes applied to *ITIN_B*. Default=3
DWELL_CODE	Code for stops (corresponding Emme code), applied to *ITIN_B*: 0=stop allowed (default time of 0.01 minutes) 1=no stop (#) *available for future use:* *2=alighting only (>)* *3=boarding only (<)* *4=boarding & alighting allowed (+)* *5=dwell time factor (*)*
ZONE_FARE	Incremental zone fare in cents
LINE_SERV_TIME	Itinerary segment travel time in minutes
TTF	Emme transit time function code: 0,1=1 2=2 (used for bus rapid transit/arterial rapid transit only)
DEP_TIME	Time departing node *ITIN_A* (seconds since midnight)
ARR_TIME	Time arriving at node *ITIN_B* (seconds since midnight)
LINK_STOPS	Number of stop locations from GTFS data that were combined into itinerary segment
IMPUTED	Flag indicating segment was imputed by shortest path algorithm during import: 0=not applicable. 1=itinerary segment created by shortest path algorithm 2=segment modified by logic to condense unreasonable vacillation in itinerary.

Table 7 lists the eight time-of-day (TOD) modeling periods used by CMAP for traffic assignment. It also includes the selection rules used to determine which TOD period a particular bus run falls in, and it shows the number of representative bus routes (from bus_current) used in the travel demand model. This information is used to provide background bus volumes on roadway links during traffic assignment.

For transit assignment, only four TOD periods are used: 1=Overnight/early AM (6 p.m. – 6 a.m.), 2=AM peak (6 a.m. – 9 a.m.), 3=Midday (9 a.m. – 4 p.m.) and 4=PM peak (4 p.m. – 6 p.m.). The AM peak and midday periods in this scheme are used to generate the transit level-of-service variables used to develop zonal generalized costs for the destination choice-mode choice model.

Table 7. Time-of-day base bus routes

Time period	Selection rule	Number of bus routes
1 – (8 p.m. – 6 a.m.)	*Starthour* >=20 or *Starthour* <=5	606
2 – (6 a.m. – 7 a.m.)	*Starthour* =6	631
3 – (7 a.m. – 9 a.m.)	7<= *Starthour* <=8	698
4 – (9 a.m. – 10 a.m.)	*Starthour* =9	497
5 – (10 a.m. – 2 p.m.)	10<= *Starthour* <=13	503
6 – (2 p.m. – 4 p.m.)	14<= *Starthour* <=15	645
7 – (4 p.m.– 6 p.m.)	16<= *Starthour* <=17	653
8 – (6 p.m. – 8 p.m.)	18<= *Starthour* <=19	563

Future bus coding

While the GTFS data provide for existing bus service, future bus routes also are coded in the MHN to represent planned or programmed service. Consistent with GTFS bus runs, future bus routes are generally coded as single-direction service. While GTFS routes are coded on existing network links (BASELINK=1), future routes are coded to run on future highway network links (i.e., links that will be in the network in the horizon year of the projects being modeled). Thus, it is convenient to have the highway project coding information stored in the same database as the bus coding.

Table 8 lists the future bus route information stored in the line-feature-classes-attribute table. Many of these variables provide the bus route information Emme requires to build transit routes and have the same definition as in the GTFS-based bus coding table. The notes field is used to store TIP project numbers or other useful information related to future bus service. The following variables provide instructions on how the future routes are processed:

- **Scenario:** Identifies all the specific modeling scenarios that individual bus routes should be included in
- **Replace:** Identifies the existing GTFS route(s) that will be replaced by the future route coding, if any
- **Reroute:** Identifies the existing GTFS route(s) that will be modified by the future route coding, if any
- **TOD:** Indicates which time-of-day networks will include the future bus service

Table 8. MHN future bus route attributes

Variable	Description
TRANSIT_LINE	Unique CMAP bus route identifier (Mode + 5-digit number, starting at 99000 for future)
DESCRIPTION	Real-world description of bus route
MODE	Bus mode code
VEHICLE_TYPE	Bus vehicle type code
HEADWAY	Average bus headway in minutes. This coded value will only be applied during time-of-day periods specified in TOD attribute, below. *A value of zero indicates that the headway for the existing route coding from route flagged in REPLACE will be used (i.e., there will be no change in service frequency).*
SPEED	Average bus route speed in MPH; default value of 12 used.[Not used in CMAP modeling but a non-zero value is required by Emme]
SCENARIO	Future scenarios bus line will be used in. Must include ALL scenarios that will contain route. May NOT be blank.
COMPLETION_YEAR	Completion year in which bus line will be implemented. May NOT be blank.
REPLACE	Identifier of the existing bus route coding that will be replaced by the future project. A blank indicates the future route is not replacing existing routes. Constructed as: Uppercase mode letter + "-" + route number. If multiple existing routes are being replaced by the same future route, separate the affected route numbers with colons. *Note: the replacement will only occur in the time periods identified in the TOD field.*
REROUTE	Identifier of the existing bus route coding that will be modified by the future project. A blank indicates the future route coding is not modifying existing routes. Constructed as: Uppercase mode letter + "-" + route number. If multiple existing routes are being modified by the same future route, separate the affected route numbers with colons. *Note: the replacement will only occur in the time periods identified in the TOD field.*
TOD	Transit assignment time-of-day periods when the new coding will be implemented. As with SCENARIO, all applicable time periods must be listed. *A value of zero indicates that the new coding will be applied to all time periods.*
NOTES	TIP ID number (and possibly other descriptive information). Entries must be separated by colons. 30 character limit.

As with the highway project coding, CMAP modeling staff maintain a set of scripts that generate scenario-specific TOD transit network input files for the travel demand model. While processing of the base/current year bus routes is relatively straight-forward, the future bus routes require additional logic to process all changes correctly. The following rules are used to generate future scenario TOD transit network input files:

- New routes only appear in the specific time periods identified in the TOD field, or in all periods if TOD=0.
- The REPLACE field identifies current bus routes that will be replaced by the future coding for the time periods in TOD. These current routes are deleted from the network. The routes are identified by the letter MODE code and the Route_id from the route table.
- The REROUTE field identifies current bus routes that will be modified by the future coding for the time periods in TOD. These current route itineraries are replaced with the future itinerary coding between the start and end points of the future itinerary coding. All other information for the modified routes remains the same. The routes are identified by the letter MODE code and the Route_id from the route table.

Several potential values are used to determine future headways:

- **Coded headway:** This is the headway coded for future bus routes. It applies only to AM and PM peak time periods.

- **Factored headway:** The value is coded headway (if greater than zero) times a TOD multiplier [3 for period 3; 4 for period 1].
- **Replaced headway:** The TOD headways for the bus routes being replaced by future service (this value is calculated when the bus runs are collapsed into representative routes). To avoid having to apply directional headways to the future service, this value is the minimum of the current directional headways.
- **Mode headway:** The average headway for a time period for a given bus mode (B,E,P,L,Q) based on the existing bus routes, excluding those being replaced.
- **Last chance headway:** A final future headway value if all other options fail; set to 90 minutes.

The logic used to determine the final TOD future headway for each future route is:

- **Priority 1:** If replaced headway is nonzero and is less than factored headway, use replaced headway. If that does not apply, go to Priority 2.
- **Priority 2:** If factored headway is nonzero, use factored headway. If that does not apply, go to Priority 3.
- **Priority 3:** The future headway is the maximum of [mode headway, last chance headway].

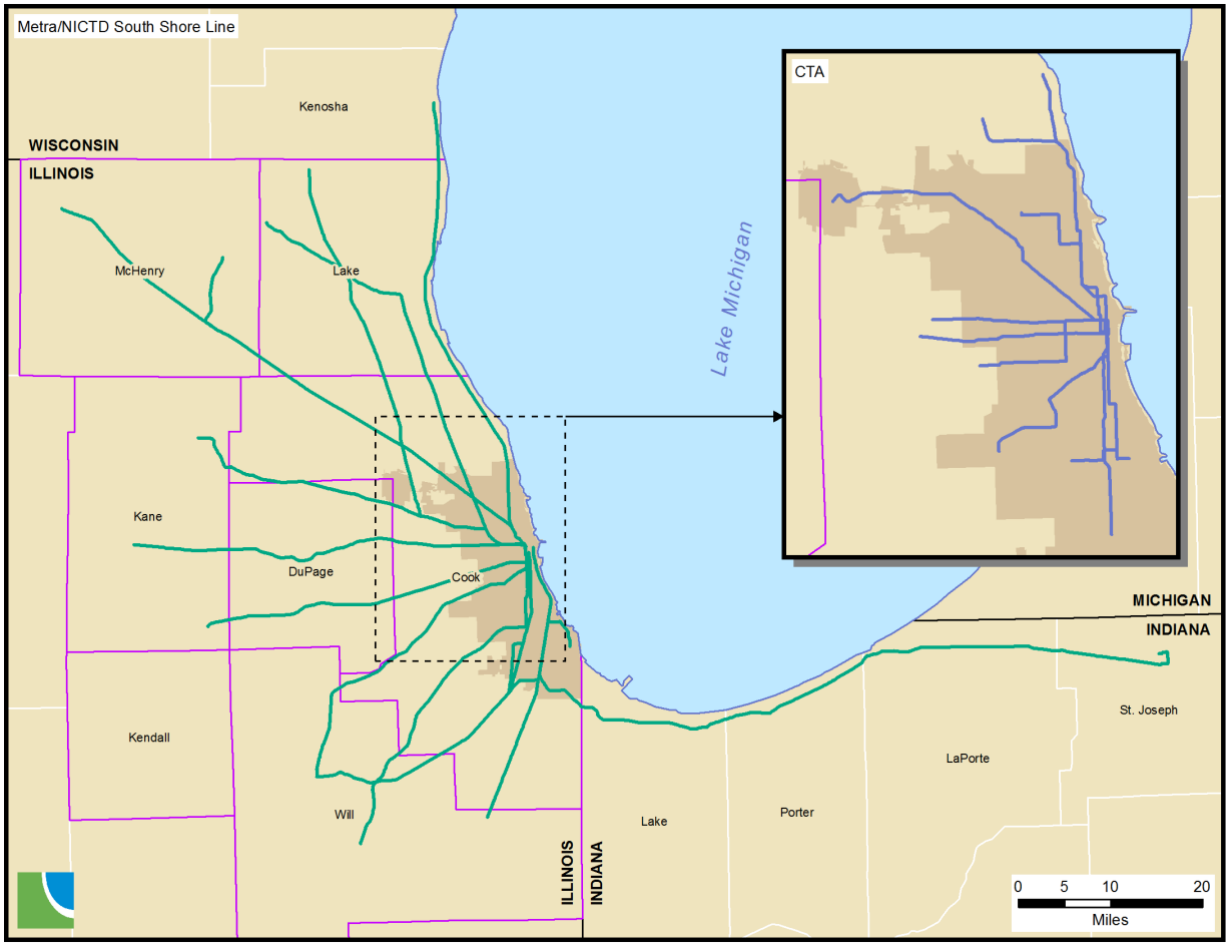
The outcome is that the future headway for non-peak periods cannot be less than the headway in the peak periods. Regardless of priority, headway is capped by the length of the time period the service is operating in.

Rail network

The Master Rail Network (MRN) is stored in a file geodatabase, which contains all rail segments representing heavy and commuter rail service in northeastern Illinois. The geodatabase stores all feature class data needed to build rail transit networks for regional analyses, including links, nodes, rail routes and itineraries. While it would be possible to combine the MHN and MRN into one relational database, the rail network has few link attributes compared to the highway network, and it is much smaller in scope than the MHN. Thus, it is easier to maintain them separately. The MRN is stored in the same projection as the highway network database, so that they work together seamlessly. Like the MHN, the MRN is maintained with a set of scripts stored in a publicly accessible GitHub repository.

In addition to bus service, the CTA operates heavy rail transit within the city of Chicago and several adjacent suburbs. Suburban commuters are served by Metra's radial rail services oriented between suburban areas and the central area. There are numerous Metra stations within the city of Chicago, and some Metra lines run parallel to CTA rail lines. Additionally, the Northern Indiana Commuter Transportation District operates commuter rail service between downtown Chicago and South Bend, Indiana. The extent of the MRN is illustrated in Figure 6.

Figure 6. Master Rail Network



Topology rules within the MRN are enforced programmatically by rebuilding the routes each time the network is updated or new routes are imported using the line geometry. In addition to being an efficient way to process the data, this procedure also ensures rail routes will always be coincident with the underlying lines (which is necessary for selecting scenario-specific route coding).

Link fields

Table 9 lists the rail network link variables contained in the line table and are the variables required by the travel demand modeling software. Most of the lines represent the rail line segments that connect stations (either mode “C” for CTA rail or mode “M” for Metra). Two other kinds of links are included in the MRN on a limited basis — transfer links connecting different rail service and walk links providing access or egress to the service. These auxiliary links are discussed in detail later.

Table 9. Master Rail Network link attributes

Variable	Description
ANODE	CMAP "From" node
BNODE	CMAP "To" node

MILES	Link length in miles
MODES1	Modes permitted on ANODE-BNODE direction of link (string of mode letters)
MODES2	Modes permitted on BNODE-ANODE direction of link (string of mode letters); blank if link is only 1 direction
DIRECTIONS	Link directions flag: 1=one-way, 2=two-way

Node fields

Node variables are listed in Table 10. The nodes represent rail stations or, in a few instances, rail line junctions that are not actual stations. Rail service does not stop at junction locations. In addition to a unique identifier for each station, the node table contains information on the availability of parking at the rail stations. The value PSPACE indicates the number of parking spaces available at the station and the cost of parking is stored in PCOST. Both values represent conditions in the base year of the MRN. Thus, PSPACE equals zero if no parking is available and PCOST equals zero if there is no fee.

Table 10. Master Rail Network node attributes

Variable	Description
NODE	CMAP node number; used to assign ANODE and BNODE values in link table CTA rail: uses range 30000-39999 Metra: uses range 40000-49999
LABEL	Node label (4-character station name)
PSPACE	Number of parking spaces at node in base scenario; zero if not used in base scenario
PCOST	Parking cost at node in base scenario; zero if not used in base scenario
FTR_PSPACE	Number of parking spaces at node in future scenarios. This text string uses the format "s1:p1:s2:p2: …" where s=the hundred's place value from CMAP's scenario numbering scheme and p=the number of parking spaces in the corresponding scenario. Each value must be separated by a colon.
FTR_PCOST	Parking cost at node in future scenarios; same format as *ftr_pspace*

Future scenario parking information is also stored in the node attribute table in variables FTR_PSPACE and FTR_PCOST. A value of "4:150:6:200" for FTR_PSPACE is interpreted as follows: The node will have 150 parking spaces, beginning in scenario 400 and 200 parking spaces beginning in scenario 600. The value is assigned through scenarios until a later scenario is specified, so the node will have 150 parking spaces in scenario 500, as well. While it is easier for the analyst to read this value if the scenarios are coded in chronological order, the processing programs do not require this to assign the correct value to each scenario. Values for FTR_PCOST are coded using the same format.

Rail route coding

As with bus coding stored in the MHN, rail service coding in the MRN is built from GTFS data files for a representative weekday (Wednesday). Each individual run of every rail line is stored in the database, representing a single direction of travel. Processing of the GTFS rail service data into usable model coding follows the same set of procedures and logical reviews as bus route data. Rail service coding is stored in the geodatabase as a pair of related tables containing information on the rail run and its itinerary.

Table 11 lists the variables in the rail route table. As with bus route coding, the variables are a combination of header fields that Emme requires when reading in rail itineraries (highlighted in gray) and GTFS fields maintained for clarity. These variables have the same definition in both the bus and rail route tables, although the values may differ. Special attention is given to the transit line name variable (TR_LINE) in the rail coding.

Table 11. Master Rail Network rail route attributes

Variable	Description
TR_LINE	Unique CMAP rail run identifier (6 characters)
DESCRIPTION	Real-world description of rail run (20 characters maximum – limit imposed by Emme)
MODE	Rail mode code: C=CTA rail M=Metra/NICTD
VEHICLE_TYPE	Rail vehicle type code (based on mode code): 1-5=mode C 6-24=mode M
HEADWAY	Rail headway (in minutes). A value of 99 indicates headway will be set to the length of the time-of-day period within which the rail run falls. In future routes, headway values can be different if headway changes throughout day. In this case the value is in a colon delimited format with the TOD periods followed by the effective headway for those periods. (e.g. 234678am:6.7:5:11.3:1:19.2)
SPEED	Average rail route speed in MPH from GTFS data; minimum value of 15 allowed. [Not used in CMAP modeling but a non-zero value is required by Emme]
FEEDLINE	Unique GTFS identifier for each run
ROUTE_ID	For CTA: lists line (Blue, Red, etc.) For Metra: lists train run number.
LONGNAME	Lists the proper name of the train line (Blue Line, Union Pacific Northwest, etc.)
DIRECTION	Lists final stop on train run
START	Start time of train run in seconds
STARTHOUR	Start hour of train run

To allow for simple identification of runs on a specific rail line, the following rail route naming scheme is applied to the six-character TR_LINE variable.

- **First character:** lowercase MODE letter.
- **Second and third characters:** two letter line identifier (lowercase).
- **Fourth through sixth characters:** unique counter for each MODE-line combination, starting with “001” for base runs and “401” for current runs (automatically generated).

The three-character rail line coding prefixes are summarized in Table 12.

Table 12. Rail line coding prefixes

Transit agency	Line	Coding prefix
CTA	Blue	cbl
	Brown	cbr
	Green (Ashland branch)	cga
	Green (Cottage Grove branch)	cgc
	Orange	cor
	Pink	cpk
	Purple	cpr
	Red	crd
	Yellow	cye
Metra	BNSF	mbn
	Heritage Corridor	mhc
	Metra Electric	mme
	Milwaukee District North	mmn
	Milwaukee District West	mmw
	North Central Service	mnc
	Union Pacific Northwest	mnw
	Rock Island District	mri
	SouthWest Service	msw
	Union Pacific North	mun
	Union Pacific West	muw
NICTD	South Shore	mss

The itinerary information for rail lines is stored in a related data table, and the contents are listed in Table 13. These variables provide the same information as their counterparts in the bus itinerary tables. One variable of interest is the zone fare variable (ZN_FARE). This value applies to commuter rail lines, and it is the marginal cost per ride (in cents) for traveling between fare zones. It is calculated as:

> [the difference between monthly pass costs from station zone to zone A] x [100 cents] / [40 (the average number of one-way rides for a monthly pass holder, assuming 20 workdays per month].

For example, a Union Pacific North (UP-N) line monthly pass from Kenilworth (zone D) to Ogilvie Transportation Center (zone A) is $181.25. A monthly pass from Wilmette (zone C) to Ogilvie is $159.50. The ZN_FARE on the link between Kenilworth and Wilmette is: [(181.25 - 159.50) x (100)]/40 = 54.38.

As with the bus coding, two GTFS-based rail coding route systems exist simultaneously in the geodatabase:

- **all_runs_base:** GTFS–based coding that corresponds to a base year of 2015 (reflecting service at that time)
- **all_runs:** Coding built from the most recent GTFS data files. This represents up-to-date coding, and it is used as the basis for future modeling scenarios.

Each of the rail route systems listed above contain more than 2,500 rail runs, made up of more than 76,000 itinerary segments, representing one weekday of service. For travel demand modeling purposes, the CTA rail runs are combined into representative rail routes. This is accomplished using the same script and collapsing logic that is applied to the bus run coding. All individual commuter rail runs are allowed to pass through to the travel demand model unchanged.

Table 13. Master Rail Network itinerary attributes

Variable	Description
TR_LINE	Unique CMAP rail line identifier (6 characters)
ITIN_A	CMAP node number of first node of link rail run travels on
ITIN_B	CMAP node number of second node of link rail run travels on
IT_ORDER	Order number of rail segment in itinerary
LAYOVER	Layover time in minutes applied to ITIN_B. Default=3
DWELL_CODE	Code for stops (corresponding Emme code), applied to ITIN_B: 0=stop allowed (default time of 0.01 minutes) 1=no stop (#) *available for future use:* *2=alighting only (>)* *3=boarding only (<)* *4=boarding & alighting allowed (+)* *5=dwell time factor (*)*
ZN_FARE	Incremental zone fare in cents
TRV_TIME	Itinerary segment travel time in minutes
DEP_TIME	Departure time at beginning of segment from GTFS data (in seconds)
ARR_TIME	Arrival time at end of segment from GTFS data (in seconds)
IMPUTED	Flag indicating segment was imputed by shortest path algorithm during import: 0=not applicable 1=itinerary segment created by shortest path algorithm

Future rail coding

As with bus coding, there is a need to store future rail project information for use by the travel demand model. The route coding table for future rail service includes the same set of fields as the existing coding, as well as a few additional fields shown in Table 14. The TOD variable identifies all specific time-of-day periods that individual future rail routes should be included in. The SCENARIO variable identifies all specific modeling scenarios that individual rail routes should be included in. The NOTES variable contains other descriptive information about the project. The ACTION variable requires a more detailed explanation.

Table 14. Future rail route additional attributes

Variable	Description
TOD	Time-of-day periods that rail route will be used in. A string of ALL TOD periods (1–4) that will contain the route. Applies to new service routes (ACTION=1) only.
SCENARIO	Future scenarios rail line will be used in. A string of ALL scenarios (first digit of three-digit code) that will contain route. May NOT be blank.
ACTION	Action code for the route
TIP_ID	TIP ID number
COMPLETION_YEAR	Year in which the project is to be completed
RSP_ID	ID for regionally significant projects
NOTES	Other descriptive information. Entries must be separated by colons. 30 character limit.
RCPnoBuild	Indicates if the route is included in the RCP No-build scenario
RCP_ID	ID for Regional Capital Projects

Implementation of the GTFS-based rail coding required a reimagining of how future rail project coding would be handled. The desired outcome was to maintain the simple, spreadsheet-based future service coding procedures CMAP has used for years. To achieve this, an ACTION code variable was added to the required attributes in the future route table. This value describes what type of service or improvement is being implemented and instructs the processing scripts on how to handle the data input. A brief description of the future rail ACTION codes is provided in Table 15.

Table 15. Future rail coding action codes

Action code	Meaning	Discussion
1	New line or service	The entire itinerary must be coded
2	Travel time reduction on selected links	ITIN_A and ITIN_B define the nodes between which the travel times will be reduced (only the end points need to be coded). Code both directions of travel if applicable. The TRV_TIME value represents the % reduction applied to the base year travel time (for instance 0.1 means a 10% reduction). To apply the travel time savings to the entire itinerary, code ITIN_A and ITIN_B as the beginning and ending nodes on the line and code LAYOVER=99. If the time reduction applies to multiple lines, each must be coded separately.
3	New station	ITIN_A and ITIN_B define the nodes between which the new station will be inserted. Store node number of new station in LAYOVER. Code both travel directions if applicable.
4	Line extension	Itinerary only contains the coding for the additional segments to be added to the base year runs. Code both directions of additional segments if applicable. For extension at ending terminal, code IT_ORDER values beginning with 1001. For extension at beginning station, use negative values.
5	Shift to different downtown station	The SWS will switch from Union Station to LaSalle Street Station – essentially this is just swapping one link for another at the CBD end of the itinerary. In itinerary coding: ITIN_A and ITIN_B are the original nodes defining the link. LAYOVER holds the new node number. IT_ORDER is used to identify which node is being replaced by the value in LAYOVER: 1=ITIN_A and 2=ITIN_B. Code both travel directions if applicable.
6	Placeholder for TIP identification number	When a future project reaches its time horizon and is implemented, it gets coded into the current routes. At this point the project could be removed from the future routes, except it is necessary to maintain the project's TIP ID in the future routes. To do this without affecting the network, the project is coded like an action code 2 with a 0% travel time reduction.
7	New consolidated rail station	Two existing rail stations are being consolidated and replaced with a new station. In itinerary coding: ITIN_A and ITIN_B are the remaining nodes between which the new station will be inserted LAYOVER holds the new station node number Code both travel directions if applicable

When the future rail coding is processed to create scenario transit networks, new lines/service (ACTION=1) are added to the set of existing ones to increase the total. For ACTION codes 2-5 and 7, the changes described in the coding are applied to the existing transit routes (no actual processing is performed for ACTION=6). Additionally, modified unique counters (characters four through six in TR_LINE) are used for future rail lines:

For ACTION code 1: the counter should be a 900 series (i.e., starting with “9” followed by two digits beginning with “01”).

For ACTION codes 2-7: the counter should start with two asterisks (one if the counter requires two digits) followed by a counter. For example, mri**1 identifies the coding as a general improvement that will apply to all runs on the specified line.

Future rail itinerary coding contains the same fields as the existing itinerary coding, except for the GTFS-derived fields. The use of the ACTION code allows for a great deal of flexibility in coding the itineraries. CMAP staff uses this flexibility to rely upon one future rail coding template where the definitions of the itinerary fields are dependent upon the ACTION code applied to the specific route. The benefit to the analyst of using this coding scheme is only minimal future rail coding input is required to implement the desired changes. Processing scripts perform all the painstaking work.

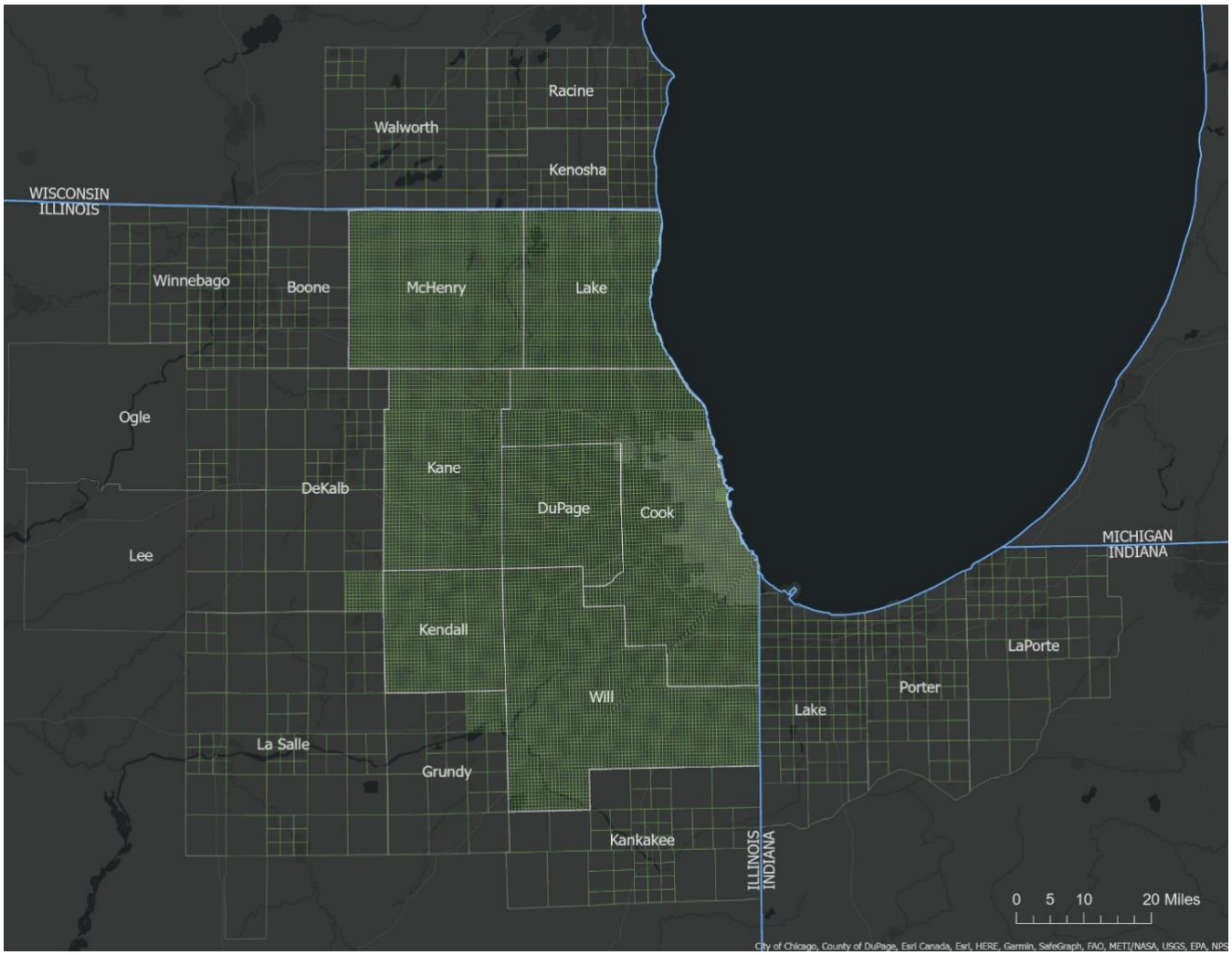
Zone systems

Three different zone systems are used in the regional travel demand model. The zone systems all serve different purposes within the regional travel demand model.

Trip generation zones

Trip generation zones (or subzones) are the smallest level of geography used in the travel demand model. Subzones are quarter-section-sized geographies that CMAP uses for household and employment forecasting. The current edition of the subzones is known as "Subzone17" (identifying the year in which it was developed). This most recent improvement to the subzones included adding a few hundred more subzones by replacing previous Census-based subzone boundaries with boundaries based on the Public Lands Survey Systems (PLSS). The CMAP modeling region comprises 17,418 subzones (shown in Figure 7).

Figure 7. CMAP trip generation zones



Quarter-sections are based on the PLSS subdivision of land into township and range, and then into sections. Two major benefits of using this system as the basis for the subzones are:

- The geometry does not change (unlike Census-based geography).
- The PLSS sections conform in most cases to state, county, and township boundaries (unlike other referencing systems, such as the U.S. National Grid).

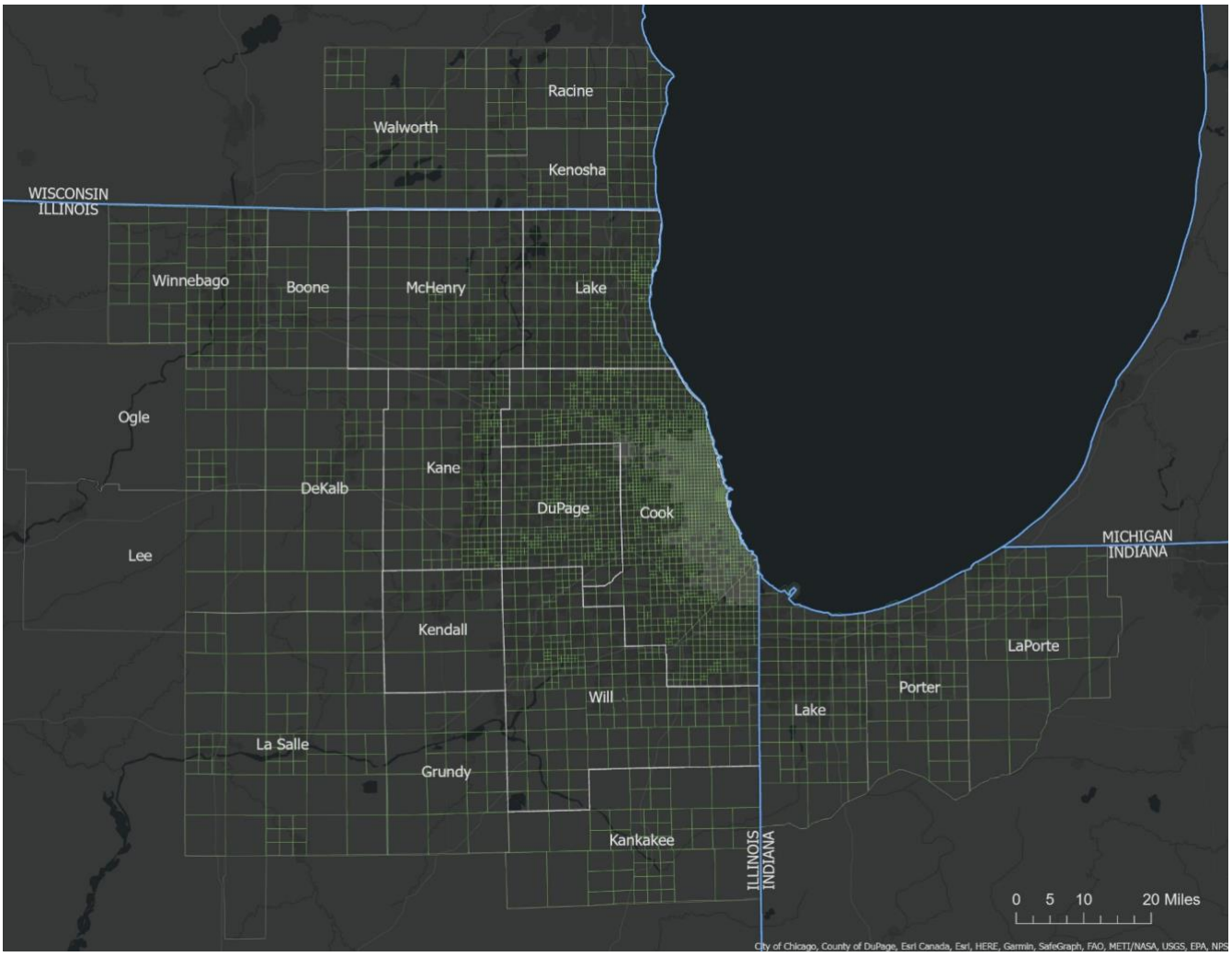
As indicated by their name, the trip generation zones are used to aggregate socioeconomic data into geographic units suitable for providing input to the trip generation model to generate trip productions and attractions. Trip generation zones serve as the base level for CMAP's modeling zone systems. The two remaining zone systems are created by aggregating the subzones into larger geographies. Thus, the subzones always nest perfectly within the other zone systems.

Modeling zones

While the trip productions and attractions are generated in a zone system based on survey quarter-sections, this level of detail is not used for the remaining modeling processes. At this time, the space and computing capabilities required to complete calculations on matrices composed of over 17,000 trip generation zone origins and destinations (more than 300 million values) is prohibitive. Therefore, the subzones are aggregated into the CMAP modeling zone system for the remaining steps of the modeling process —destination choice-mode choice, and assignment.

Figure 8 shows the 3,632 modeling zones for the CMAP region. These zones generally follow the survey township geography. Zones are either sections (approximately one square mile) or regular subdivisions of townships (4-square-mile ninths of townships, 9-square-mile quarters of townships, or whole townships). The modeling zones are equivalent to their underlying subzones outside of the CMAP planning area. Additionally, there are 17 external zones, or points of entry, that are not shown. These are arrayed around the outside of the pictured zone system, representing trips on major highways entering the region.

Figure 8. CMAP modeling zones



The density of the modeling zones (and by extension the subzones) increases within downtown Chicago. The Chicago Central Business District (CBD) is a pre-GIS convention established by CATS and the Northeastern Illinois Planning Commission (NIPC) that was based on boundaries set at Chicago Avenue, Halsted Street, and Roosevelt Road. It includes modeling zones 1 through 47. The larger Central Area also was established by CATS and NIPC prior to GIS to reflect the high density of trips made in this area. It is based on the boundaries at North Avenue, Ashland Avenue, and Cermak Road. The Chicago Central Area is shown in Figure 9.

The Central Area includes modeling zones 1 through 77. Of the 77 zones, 30 are quarter section sized zones (one-half mile by one-half mile). Most remaining modeling zones (representing the CBD) are quarter-quarter-section sized zones (one-quarter mile by one-quarter mile).

Figure 9. CMAP central area zones



To simplify selecting discrete geographic areas, the modeling zones are numbered consecutively by county and township. Chicago is consecutively numbered, starting with the CBD (1-47), the Central Area (48-77), the Transit Hub (78-121) — which provides a one-mile buffer around the Central Area — and then by townships for zones within the city limit. Table 16 lists the correspondence between subzones, modeling zones, and geographic areas.

Table 16. CMAP subzone-zone correspondence

COUNTY		ZONE17		SUBZONE17	
FIPS	Name	First	Last	First	Last
17031	Cook	1	1732	1	3895
	Chicago (excluding DuPage portion)	1	717	1	983
	CBD	1	47	1	52
	Chicago Central Area	1	77	1	84
	Chicago Transit Hub	1	121	1	129
17043	DuPage	1733	2111	3896	5252
	Chicago portion	1733	1734	3896	3904
17089	Kane	2112	2304	5253	7406
17093	Kendall	2305	2325	7407	8702
17097	Lake	2326	2583	8703	10598

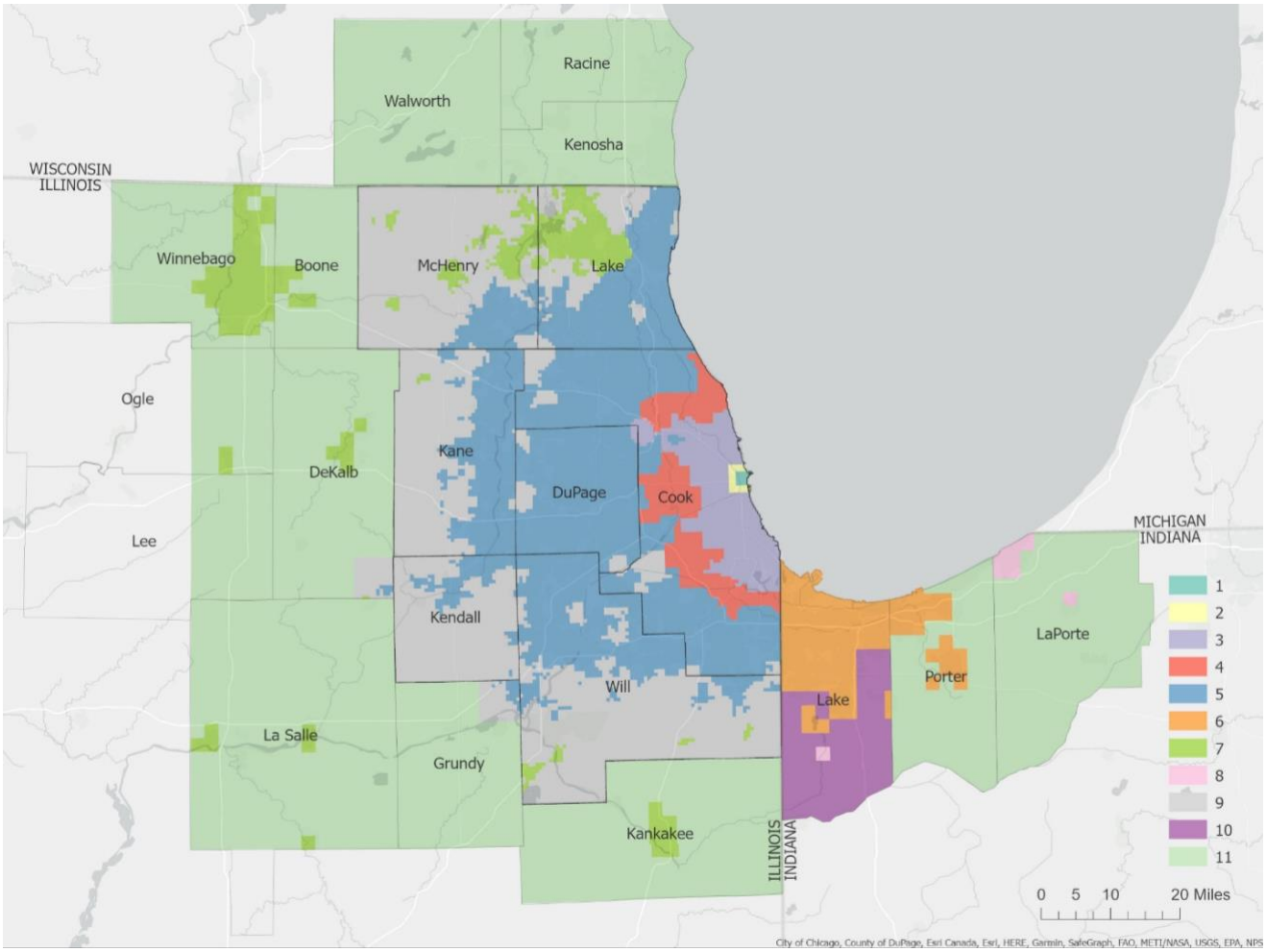
17111	McHenry	2584	2702	10599	13042
17197	Will	2703	2926	13043	16426
17063	Grundy	2927	2950	16641	16807
	Aux Sable Township	2949	2949	16664	16807
17007	Boone	2951	2975	16427	16451
17037	DeKalb	2976	3021	16452	16640
	Sandwich & Somonauk Townships	2977	2977	16454	16597
17091	Kankakee	3022	3073	16808	16859
17099	LaSalle (partial)	3074	3145	16860	16931
17103	Lee (partial)	3146	3151	16932	16937
17141	Ogle (partial)	3152	3168	16938	16954
17201	Winnebago	3169	3247	16955	17033
18089	Lake, IN	3248	3344	17034	17130
18091	LaPorte, IN	3345	3400	17131	17186
18127	Porter, IN	3401	3467	17187	17253
55059	Kenosha, WI	3468	3512	17254	17298
55101	Racine, WI	3513	3568	17299	17354
55127	Walworth, WI	3569	3632	17355	17418
	POEs	3633	3649	N/A	

Capacity zones

The final zone system used in the regional travel demand model is the capacity zone system (displayed in Figure 10). As with the modeling zones, these zones are built by aggregating the subzones. The capacity zones help estimate general road capacity for the highway assignment procedures. Some specific calculations that use the capacity zone value include:

- Calculation of an ordinal arterial functional class within the model
- Calculation of the number of inbound approaches into an intersection
- Estimation of traffic signal green-to-cycle ratios and signal cycle length for ramps connecting arterials and expressways

Figure 10. CMAP capacity zones



The values of the capacity zone system are listed below in Table 17. Within the travel demand model structure, the capacity zone values are stored as a node attribute in the highway network database. Thus, the values in the table below correspond to the values of the AREATYPE variable in the highway network node table.

Table 17. CMAP capacity zone codes

Capacity zone value	Description
1	Chicago Central Business District (2017 subzones 1-52)
2	Remainder of Chicago Central Area (2017 subzones 53-84)
3	Remainder of City of Chicago (2017 subzones 85-983 and 3896-3904)
4	Inner ring suburbs where Chicago street grid is generally maintained
5	Remainder of Illinois portion of the Chicago Urbanized Area
6	Indiana portion of the Chicago Urbanized Area
7	Other Urbanized Areas and Urban Clusters within the CMAP Metropolitan Planning Area plus other Urbanized Areas in northeastern Illinois
8	Other Urbanized Areas and Urban Clusters in northwestern Indiana
9	Remainder of CMAP Metropolitan Planning Area
10	Remainder of Lake County, IN (rural)
11	External area
99	Points of Entry – not defined in the Capacity Zone system

Analysis network preparation

Preceding sections briefly discussed the procedures used to take the highway network and transit service information from the GIS databases and process it for use in modeling networks. Processing programs export data from the model network databases and update the highway network and transit service characteristics based on the scenario network being created. After all characteristics are updated, a set of text files suitable for importing into the travel demand software is created, containing the data defining the transportation network.

Highway network

Separate import files are created for each of the TOD highway networks, as well as for one all-inclusive highway network. The TOD networks contain time-period specific changes to links, such as time-of-day parking restrictions and reversible lanes. Each TOD highway network has a set of four import files — two defining link attributes and two defining node attributes. The files contain the standard link and node attributes required by the travel demand software, as well as extra attributes (denoted by "@") used within the travel demand model. The files are imported into the modeling software to create the TOD highway networks.

Highway network link attributes are shown in Table 18 with required attributes highlighted in blue. Link modes are defined to enable a multiple vehicle class highway assignment that matches the vehicle types used for emission calculations. Mode "A" is the primary auto mode, and all other modes are secondary auto modes. No transit modes are included in the highway network because the transit network exists as a separate entity. This also means that no transit-only links (such as rail links or dedicated busways) are included in the highway network.

Secondary auto modes "S" for single occupancy vehicle (SOV) and "H" for high occupancy vehicle (HOV) allow high occupancy vehicle facilities to be represented in the network. For example, mode "S" would not be coded on HOV links. All links in the network allowing high occupancy vehicles would include mode code "H."

Table 18. Model Highway Network link attributes

Variable	Description	Source
i	From node	Batchin files
j	To node	
len	Link length in miles	
mode	Modes on link: A=primary auto S=single occupant auto (SOV) H=high occupancy auto (HOV) T=general truck b= B plate truck l=light truck m=medium truck h=heavy truck	
lanes	Number of driving lanes	
vdf	Volume-delay function code. 1=arterial street 2=freeway 3=freeway-arterial ramp 4=expressway 5=freeway-freeway ramp 6=zone centroids connector 7=link where toll is collected 8=metered entrance ramp	
@speed	Speed limit or CMAP free speed	
@parkl	Number of parking lanes along roadway	

@sigic	Link with interconnected signals	
@width	Driving lane width in feet	
@toll	Toll amount in dollars	
@ftime	Uncongested link travel time in minutes	scripts
@emcap	Level of Service E lane capacity on link	
@artfc	Arterial link functional class: 1 = Principal Arterial 3 = Minor Arterial 2 = Major Arterial 4 = Collector	
@gc	Green time to cycle length ratio	

Secondary auto mode "T" is a general truck mode coded on all network links that allow trucks. By excluding truck modes, commercial vehicles can be prohibited from facilities, such as Lake Shore Drive, and the Kennedy and Dan Ryan express lanes. The additional truck modes "b," "l," "m," and "h" permit more specialized coding of truck prohibitions to represent local restrictions or the testing of truck-only facilities based on weight classes.

A link's volume-delay function (VDF) is based upon the five categories in CMAP's link capacity calculations, which include arterial, freeway, arterial-freeway ramp, expressway, and freeway-to-freeway ramps. Three additional volume-delay functions are included for links connecting zone centroids to the network, links where tolls are collected, and metered freeway entrance ramps.

In addition to these standard variables required by the modeling software, some additional link attributes are included in the network. Many supplemental variables come directly from the MHN database. Other attributes used in the scripts include the link's posted speed limit, as well as whether curb parking is allowed and the average width of driving lanes. For toll collection links, the amount of the toll also is included.

Table 19 lists the highway network node variables that are used. Standard node attributes are the node number and the x- and y-coordinates of the node. Node extra attributes are additional quantities associated with the node, including the zone number and area type (capacity zone value) at the node location. Area type definitions are listed in Table 17.

Table 19. Model Highway Network node attributes

Variable	Description	Source
i	Node number	Batchin files
xi	x-coordinate (NAD27 IL East State Plane feet)	
yi	y-coordinate (NAD27 IL East State Plane feet)	
@zone	Modeling zone node resides in	
@atype	Capacity Zone values (refer to Section 2.5)	
@napp	Number of approach links	scripts
@cycle	Traffic signal cycle length in minutes	

After the TOD highway networks are imported into the travel demand software, two scripts prepare the additional link and node attributes needed for the time assignments. The first script, *Ftime_capacity,* calculates link lane capacities in vehicles per hour, and uncongested speeds based on link characteristics, such as functional class, lane width, and posted speed limit. The network database also includes variables to flag those links that change characteristics depending on the time, such as links that have peak period parking restrictions. These factors also are considered when link capacity is calculated.

The calculations in the *Ftime_capacity* script generally are consistent with the capacity procedures found in the 1985 Highway Capacity Manual and the 1994 update to the manual. The capacities of arterial street links reflect the type of signalized intersection at the link's j-node, or downstream node. The script logic first analyzes the links entering a node and then estimates the capacity for each approach link based on generalized signalized intersection characteristics. Capacities for ramps between freeways and arterial streets ending at signalized intersections are determined in the same manner as arterial streets.

The concept behind this process is link capacities. Uncongested travel times must always be recalculated before an assignment is run, rather than be maintained as static network variables in the database. The capacities and uncongested travel time for links ending at a signalized intersection depend on the characteristics of all approach links into the intersection, not just the link of interest. As a result, link capacities and uncongested travel times depend on network topology. Adding, removing, or modifying a link affects the capacities and uncongested travel times of all links that intersect it at a signalized intersection. Calculating these network quantities as part of the assignment procedure ensures they are current when the assignment is carried out. This approach simplifies the introduction of certain types of improvements into the modeled network. The effects of parking restrictions, traffic control device improvements, signal progression, and intersection improvements can be modeled in the script, eliminating lengthy manual adjustment of capacities and times on a link-by-link basis.

The *Ftime_capacity* script develops some extra link attributes, which briefly are described. Link uncongested travel time (@ftime) is calculated and is used in the volume-delay functions. It should be noted that this travel time does not contain any intersection delay, which is calculated separately by the volume-delay functions. Capacity values calculated by the script (@emcap) are hourly lane capacities at level-of-service E. Link capacity for the time-of-day period, referenced within the volume-delay functions, is later obtained by multiplying @emcap by the number of driving lanes on the link and the number of hours in the assignment time period.

The second script, *Arterial_delay,* repeats many of the same calculations as *Ftime_capacity*. It again evaluates approach links at signalized intersections and estimates signal cycle lengths at the j-nodes of arterial street links. It also estimates the proportion of the cycle length allocated to traffic on the link. These two quantities are retained in extra node and link attributes — @cycle and @gc, respectively — to be used later in the volume-delay functions that estimate intersection delays. An ad hoc functional class (@artfc) also is assigned to arterial street links based on the location of the link, its speed limit, and number of driving lanes. This functional class only is used to allocate green time at signalized intersections, which depends on the cycle length, and the number and types of conflicting approach links. The final link extra attribute in the table is the ratio of green time to cycle length, @gc, at the downstream node of a link. This value is used in the volume-delay functions.

Transit network

The travel model uses coded transit networks reflecting transit service in the morning peak period (6:00 to 9:00 a.m.) and the midday period (9:00 a.m. to 4:00 p.m.) to obtain transit cost and service information. A transit network contains over 12,000 bus and rail mode links, totaling nearly 5,700 miles in length. While the highway network data are all contained within the MHN database, the transit network comprises three separate components that must be integrated to create transit modeling networks, including:

- **Bus route coding:** All current and future bus route coding is stored in the route systems of the MHN geodatabase. This coding includes the following transit modes — B (CTA regular bus service), E (CTA express bus), P (Pace regular service), L (Pace local service), and Q (Pace express service).
- **Rail route coding:** All current and future rail route coding is stored in the rail route systems of the MRN geodatabase. This coding includes modes C (CTA rail) and M (Metra rail).
- **Auxiliary links:** In addition to the transit coding itself, model transit networks require a system of auxiliary links to provide needed connections. Auxiliary links provide transfer links between different transit modes or lines that do not pass through the same nodes, as well as walk access to transit service from zone centroids (trip beginning) and walk egress from transit service to zone centroids (trip end). A set of auxiliary links is created dynamically when the transit network files are generated. The procedures used to create the auxiliary links are discussed below. Zones requiring drive access to transit stations are not provided with specific auxiliary drive access links, rather drive access is handled by a matrix calculation that will be discussed later.

Table 20 lists the auxiliary link modes included in the transit networks. The transit network modes are case sensitive, which means all transit modes are uppercase and all auxiliary link modes are lowercase. The three types of auxiliary links are transfer links connecting transit lines to one another, access links to connect a zone centroid to transit service at the beginning of a trip, and egress links connecting transit service to a zone centroid at the end of a trip. Transfer links are bi-directional while access and egress links only serve one direction of travel. In practice, access and egress links are generally bi-directional links with the appropriate mode assigned to the appropriate direction. O'Hare International Airport's people mover transit service is a special auxiliary link type reflecting service moving travelers between O'Hare terminals and a multimodal center.

Table 20: Auxiliary link modes

Link Type	Mode	Description
Transfer	b	Bus-Bus walk
	c	Bus-CTA rail walk
	m	Bus-Metra walk
	d	Metra-Metra walk
	r	CTA rail-CTA rail walk
	t	CTA Rail-Metra walk
Access	u	Home-Bus walk
	v	Home-CTA rail walk
	w	Home-Metra walk
Egress	x	Bus-Work walk
	y	CTA rail-Work walk
	z	Metra-Work walk
Auxiliary	k	O'Hare people mover

Transfer links

There are six different transfer link modes, each identifying a connection between different types of transit service. Transfer links are needed when two services are physically separate because they

don’t share a station node. While Metra and CTA rail service are identified separately by the auxiliary links, no such distinction is made between CTA and Pace bus service. All bus service is combined into “bus.” All transfer links are bi-directional, so passengers can move in either direction between the transit lines. Transfer links “r,” “t,” and “d” are hard-coded in the MRN and are read directly into the final transit network via the rail.network file. The remaining transfer links are created as follows:

Mode b: All highway network arterials (TYPE=1 in the MHN) located in modeling zones 1-78, representing an area just slightly larger than Chicago's Central Area, are assigned mode “b”. This allows trips to use “sidewalks” along arterial links for transfers. These links are included in the input file bus.network.

Mode c: The Euclidean distance is calculated between CTA rail stops and all bus stops. A maximum distance of one-eighth mile (660 feet) is allowed between CTA rail stops in the CBD and bus stops. A maximum distance of a half mile (2,640 feet) is allowed between bus stops and the remaining CTA rail stops. The shortest mode “c” link available to connect a CTA rail stop to each bus route is retained. As CTA rail stations may be served by multiple bus routes, there may be instances where more than one mode “c” link connects a bus route to the same CTA rail stop. This only occurs if the shared stop was not the shortest link from the CTA rail stop for all the affected bus routes. These auxiliary links are stored in access.network.

Mode m: Straight-line distances are calculated between Metra stops and all bus stops. Maximum distances of a quarter mile (1,320 feet) and 0.55 miles (2,904 feet), respectively, are allowed between Metra stops and CTA bus stops, and Metra stops and Pace bus stops. Mode “m” links are attached to all bus stops determined to be within the allowable distance. There are no constraints on connecting a Metra stop to multiple stops on the same bus route or on connecting a bus stop to multiple Metra stops. These auxiliary links are stored in access.network.

Access and egress links

Access and egress links are specific to modes, so there are three access modes connecting zone centroids to different types of transit service and three egress modes connecting transit service to a centroid. Each access and egress mode applies to only one direction. For example, a centroid is connected to a Metra station by one mode “w” link from the centroid to the station, and one mode “z” link from the station to the centroid. In practice, this usually, but not always, results in a two-way link with different modes in each direction. The access and egress links are created as follows:

Modes u and x, generic bus access and egress: The Euclidean distance between centroids and transit stops is calculated to determine access and egress link length. Bus stops are separated into CBD and non-CBD stops. A maximum distance of a quarter mile is allowed between centroids and CBD bus stops, while a maximum of 0.55 miles is allowed between centroids and the remaining bus stops. The access/egress links are merged with bus itineraries, connecting multiple links per transit line to the same centroid. This allows for numerous access/egress connections between the same bus route-zone centroid pair if the bus itinerary varies by direction. Redundant access and egress links are eliminated, and links are grouped by centroid and sorted by link length in ascending order. A maximum of eight mode “x” links are kept for each CBD centroid. No more than two mode “x” links are retained for each non-CBD centroid. A maximum of three mode “u” links are saved per centroid. These auxiliary links are stored in access.network.

Modes v and y, CTA rail access and egress: The straight-line distances are calculated between centroids and CTA rail stops. A maximum distance of 0.55 miles is allowed between CTA rail stops

and zone centroids. By rule, each CTA rail station is connected to the centroid of the zone it resides in with an assigned distance of 0.55 miles if the link length exceeds 0.55 miles. The remaining access links are ranked in ascending order and are assigned to centroids until the maximum allowable number is reached. A maximum of three mode "v" links is assigned to each centroid in a zone with a CTA rail station. The same process is used for the egress links. Maximums of seven and three mode "y" links are assigned to centroids in the CBD and outside the CBD, respectively, in addition to the connection to the station zone. These auxiliary links are stored in access.network.

Modes w and z, Metra rail access and egress: Metra station access and egress links follow the same basic procedures as CTA rail station links. A maximum distance of 0.55 miles is allowed for these links. Metra stations are connected to the centroid of the zone they are within, and a length of 0.55 miles is assigned to the link if it exceeds the distance limit. Unlike with the other access and egress links, there is no constraint on the number of Metra access and egress links per centroid, so all are put in the final network. These auxiliary links are stored in access.network.

Table 21 summarizes the processing rules used to develop the auxiliary links. When the processing is completed, the result is a set of scenario transit network files that are formatted to be imported into a single scenario of the travel demand software.

Table 21: Auxiliary link processing rules

Mode	Maximum distance	Forced to connect to centroid?	Maximum number of links per centroid
c	⅛ mile in CBD ½ mile outside CBD	No	N/A
m	¼ mile for modes BE 0.55 miles for modes PLQ	No	N/A
u, x	¼ mile in CBD 0.55 miles outside CBD	No	u – 3 x – 8 in CBD, 2 outside CBD
v, y	0.55 miles	Yes	v – forced + max. of 3 additional y – forced + max of 7 additional in CBD, forced + max of 3 additional outside CBD
w, z	0.55 miles	Yes	N/A

Zonal impedances

A primary role of transit networks is to generate transit level of service variables for the generalized cost procedures used in the destination choice-mode choice model. Impedance matrices are created for zone-to-zone in-vehicle times, fares, first wait time and remaining out-of-vehicle time. In the logic of the CMAP models, the zone-to-zone quantities are all measured from the point where transit service is first boarded rather than the actual trip origin. Access modes, times, and costs are generated using Monte Carlo simulation techniques. These techniques will be discussed later in the document.

Zone-to-zone impedances are built using the time and cost components of the transit network. Time components are weighted to reflect the relative disutility to the traveler. For instance, walking time is weighted at two times the rate of time spent within a transit vehicle. Similarly, fares are weighted so they can be combined with times to create an overall measure of the impedance of a particular path.

A multi-path transit assignment is completed to provide transit impedances for zones that have walk access to a transit station. For zones with no walk access to a transit station, highway

impedances from a complementary highway assignment are used to index the origin zone to a station zone that minimizes drive access and transit impedance to the destination. All cost components in the impedance matrix between the auto access zone with no walk access and the destination are replaced with cost components from the selected station zone to the destination. The result is, instead of the zone being disconnected, the origin to destination times and costs are populated with times and costs reflecting the selected station. In this application, a generalized parking cost is calculated to reflect on- and off-street parking availability and cost.

The transit network scenario also is used to generate travel districts based on a hierarchy of services present in the zone. This is analogous to CMAP's historic use of first, last, and priority mode categorization. The mode matrices are constructed based upon the transit services likely to be used when moving between these zone groups.

The effects of congestion on bus travel times are included in the transit skimming procedures. The modeled bus travel times start with scheduled times from the GTFS files produced by the transit service providers. In iteration zero, the scheduled times for the morning peak and midday scenarios are compared to congested auto travel times from a comparable model run. The congested times are used if they are longer than the scheduled bus times. After each full model iteration, bus travel times are again updated with auto travel times when the auto time is longer than the scheduled time. The transit impedance matrices are recalculated with each iteration and maintain a consistent relationship with the auto travel times. This is important because the relationship between auto and transit travel times is an important determinant of the regional model results. An additional feature allows the schedule time to be retained by coding the transit travel time function as two where congested times should not be considered. This is helpful for scenarios that include bus rapid transit or other similar services that will not be impacted by prevailing traffic conditions.

Ancillary data input files

In addition to the network datasets, several ancillary data files contain information on transit service levels, park-and-ride availability, CBD parking, and auto operating costs. These files are briefly described in this section.

M01 file

The M01 file ("ALLPURPOSE_M01.TXT") stores several variables to provide the destination choice-mode choice model with zonal transit availability, and park and ride characteristic parameters. Some of the parameters are calculated using transit network characteristics and are specific to each scenario network. The contents of the M01 file are summarized in Table 22.

Table 22: M01 file attributes

Field name and position	Description
Zone number (1)	Modeling zone number
Zone type (2)	1 – Chicago Central Area zone (1-77) 2 – Chicago zone outside of the Central Area (78-309) 3 – dense suburban zone (more than 500 activities [population + employment] per square mile)

	4 – remaining suburban zones
Park and Ride cost (3)	The cost of parking at the park and ride lot closest to the zone's geographic centroid. This represents the lowest rate of either the daily parking rate or the cost of a monthly parking pass divided by twenty workdays.
Median zone household income (4)	The median household income in the zone (in $100s) derived from POPSYN_HH.CSV (2019 dollars)
Park and ride availability (5)	A binary value indicating that the zone has park and ride access if there is a park and ride location within ten miles of the zone's geographic centroid
Average waiting time for bus service in zone for home-work trips (6)	The average wait time for bus work trip (in minutes) for modes BEPQ. Calculated as the mean of (headway*0.5) for all bus stops served by selected modes within the zone during the AM peak period. To account for spatial inaccuracy, stops are buffered by 0.1 miles. M*aximum value is 99, default value of 99 used for zones with no bus service*.
Average waiting time for bus service in zone for non-work trips (7)	The average wait time for bus non-work trip (in minutes) for modes BEPQ. Double the wait for bus work trip (as a proxy for midday service). *Maximum/missing values set to 99*.
Average waiting time for feeder bus service in zone for home-work trips (8)	The average wait time for feeder bus work trip (in minutes) for mode L. Calculated as the mean of (headway*0.5) for all bus stops served by mode L within the zone during the AM peak period. To account for spatial inaccuracy, stops are buffered by 0.1 miles. *Maximum/missing values set to 99*.
Average waiting time for feeder bus service in zone for non-work trips (9)	The average wait time for feeder bus non-work trip (in minutes) for mode L. No feeder bus service in off-peak period, so: *all values set to 99*.
Home-work trip auto work end auto occupancy (10)	Zone vehicle occupancy rate for commuters (i.e., workers per vehicle), measured at destination (work) location. Calculated using data from the 2017-2021 5-year CTPP data.

DISTR file

The DISTR files contain zonal transit approach distribution parameters, which are used to determine mode choice. The parameters are calculated using transit network characteristics and are specific to each scenario network. Table 23 describes the DISTR file fields.

Table 23: DISTR file attributes

Mode category	Field number	Description
	1	CMAP modeling zone number
Commuter rail (fields 2-4) CTA rail (fields 5-7) Park and Ride (fields 14-16)	2,5,14	Mean distance in miles to station (or park and ride) *Calculation*: A distance calculation is performed to find the rail station closest to each subzone centroid. The closest station distances are then aggregated to the zonal level to determine the mean distance weighted by subzone households. The maximum mean distance is set to 19.95 miles. The analysis is performed separately for the commuter rail stations, rapid transit stations and park and ride locations.
	3,6,15	Standard deviation of distance to station (or park and ride) *Calculation*: The standard deviation is calculated as the square root of the sum of [the zonal variance calculated above and a subzone variance, estimated to be 0.042].
	4,7,16	Type of Mode Choice distribution: 101 (default) = normal distribution 102 = exponential distribution
Bus (fields 8-10)	8, 11	Minimum bus stop distance (miles). *Calculation*: A set of bus stop buffers (incremented by 0.1 miles from 0.1 up to 1.1 miles) are created. The buffers are overlaid with

Feeder Bus (fields 11-13)		the zone system to determine the proportion of each zone covered by each buffer. The minimum bus stop distance is determined by the size of the smallest buffer that covers any part of the zone. The value is set to 999 for zones that are not covered by any portion of the largest buffer. The analysis is performed separately for bus (modes BEPQ) and feeder bus (mode L) stops.
	9, 12	Maximum bus stop distance (miles) *Calculation*: The maximum bus stop distance is determined by the size of the smallest buffer that covers the entire zone (for practical reasons the threshold is 97% of the zone). The value is set to 999 for zones with a minimum distance of 999 or is set to 1.1 if no buffer meets the coverage threshold and the minimum distance is not 999.
	10, 13	Proportion of the zone within minimum walking distance *Calculation*: This value is calculated as the area of the zone covered by the minimum distance buffer divided by the area of the zone covered by the maximum distance buffer. This value is set to 999 for zones with a minimum distance of 999.

Three separate DISTR files are used: HO_DISTR.TXT, HW_DISTR.TXT and NH_DISTR.TXT. As with the M01 file, two separate formats of the DISTR file are created, including one for home-based work trips and one for the other trip purposes. The only difference between the formats is that the feeder bus fields (11-13) are all set to 999 for the home-based other and nonhome-based files.

M023 file

The M023 file contains transit fare and auto operating cost data used by the pre-distribution and mode choice models. The cost data reflect 2019 values. The file is composed of six records, including:

- CTA fares
- Pace feeder bus fares
- Pace regional bus fares
- Auto operating costs in 5-mile-per-hour increments for speeds between 0-40 miles per hour
- Auto operating costs in 5-mile-per-hour increments for speeds between 40-80 miles per hour
- Average auto operating costs per-mile-by-zone-type used to estimate transit access/egress costs

The CTA fares used in the M023 file are:

- Bus boarding fare is $1.51
- Rail transit boarding fare is $1.70
- First transfer is $0.19
- Link-Up pass per ride is $1.38 (approximately equal to $55 monthly cost divided by 40 trips per month)

The Pace fares used in the M023 file are:

- Feeder bus boarding is $1.38 (assumes Link-Up pass)
- CBD feeder bus fare is $0.00 (fare calculations revised and no longer used)
- Pace current regular fare is $1.58
- Pace first transfer is $0.24

Auto operating costs were updated to reflect current fuel consumption and the current costs of tires, maintenance, and gasoline. These costs were derived from two sources. A 2016 publication by AAA was the source for the per-mile costs of auto maintenance and tires. These values were adjusted to 2019 using the Consumer Price Index. Figures on the average gasoline consumption per mile were obtained from the U.S. Energy Information Administration. A $3.00 per gallon gasoline cost was assumed to convert the gasoline consumption into a cost per mile. The resulting costs per mile for auto travel are listed in Table 24.

Table 24: M023 file auto operating costs

		Cents per mile			
Miles/hour	**Fuel used gallons/mile**	**Gasoline (@$3.00/Gal)**	**Tires**	**Maintenance**	**Total**
0-5	0.060	18.08	1.06	5.62	24.76
5-10	0.049	14.69	1.06	5.62	21.37
10-15	0.041	12.43	1.06	5.62	19.11
15-20	0.036	10.74	1.06	5.62	17.42
20-25	0.032	9.61	1.06	5.62	16.29
25-30	0.030	9.04	1.06	5.62	15.72
30-35	0.030	9.04	1.06	5.62	15.72
35-40	0.030	9.04	1.06	5.62	15.72
40-45	0.030	9.04	1.06	5.62	15.72
45-50	0.029	8.76	1.06	5.62	15.44
50-55	0.029	8.76	1.06	5.62	15.44
55-60	0.029	8.76	1.06	5.62	15.44
60-65	0.031	9.32	1.06	5.62	16.00
65-70	0.034	10.17	1.06	5.62	16.85
70-75	0.037	11.02	1.06	5.62	17.70
75-80	0.040	11.87	1.06	5.62	18.55

The last record in the file contains the average per mile auto operating cost for each of the four zone types (defined in the M01 file). The M023 data is collapsed into six records, which are shown in Table 25. All values are reported in cents.

Table 25: M023 file layout

	Field locations							
	1-5	6-10	11-15	16-20	21-25	26-30	31-35	35-40
CTA fares	151	170	19	138				
Feeder bus fares	138		0					
Pace fares	158		19					
Auto operating costs by 5 MPH	2476	2137	1911	1742	1629	1572	1572	1572
	1572	1544	1544	1544	1600	1685	1770	1855
Auto operating costs by zone type	2000	1700	1500	1500				

CBD parking file

CBD parking costs also are important to the destination choice-mode choice model. A database of selected central area parking facilities is used to provide parking cost distribution information to the composite cost and mode choice models. The specification of the variables and fields is described in CATS Working Paper 95-01. The parking supply database currently is treated as a fixed input unless a scenario is testing the effect of downtown parking costs on regional mode choice.

There are two different CBD parking files. The first file identifies the parking supply characteristics of each Central Area zone that contains parking. Each zone in this set has five records with the following information:

- Central Area parking zone number
- The probability of finding parking within the zone at or below the threshold parking cost (this value must be 100 percent in each zone's fifth record)
- The threshold parking cost in cents per hour
- The savings in parking costs in cents per hour determined by subtracting the threshold parking cost from the maximum parking cost in the zone
- The amount of time needed to walk one block in the CBD (180 seconds)

A sample of the parking supply records for CBD zone 5 is displayed in Table 26. Note the maximum cost to park in this zone was identified as $6.00 ($48.00 per eight-hour day).

Table 26: CBD parking file 1 — sample parking supply records

CBD parking zone	Parking probability (0.0001)	Threshold cost (cents/hour)	Cost savings (cents/hour)	Walk speed (seconds/block)
5	2000	153	447	180
5	3000	154	446	180
5	6000	178	422	180
5	8000	311	289	180
5	10000	600	0	180

The parking supply records were updated using the following procedures. A website for downtown parking availability (bestparking.com) provided data for these values. Off-street parking facilities were organized by Central Area parking zones. The least costly daily rate for each facility was determined using either the early bird daily rate, daily rate, hourly rate multiplied by nine hours, or a monthly rate divided by 20 workdays. Each parking facility in a zone was assumed to have the same selection probability. Probabilities of facilities in the same zone and with the same best daily rate were combined. Cumulative rate probabilities for each zone were then totaled from least to most expensive parking facility and the cost savings compared to the most expensive facility in each zone were calculated. Five parking supply records were created from the parking probabilities and threshold costs. In zones with many off-street parking locations, threshold costs were selected to yield nearly equal probability intervals.

User characteristics are important to the cost paid for parking, and they were updated in 2020 using data from the My Daily Travel survey. These characteristics include the percentage of people who have access to free parking, and the percentage of trips by auto occupancy. Both characteristics are stratified by income. While it may seem curious to input quantities that are estimated by the models, these travel characteristics are needed to compute the free versus paid CBD parking and the parking costs per person. Given their role in the cost calculations, they only need to be rough estimates based on observed travel.

The user characteristics are included in the second CBD parking file. There are only five records in this file. These records are ordered by household income ranges and include the following variables for Central Area commuters:

- The upper value of the household income quintile range (last record is the lower bound of the highest quintile)
- The percentage of Central Area auto commuters with free parking
- The percentage of all Central Area workers taking transit to the Central Area
- The percentage of Central Area auto commuters in single-occupant vehicles
- The percentage of Central Area auto commuters ridesharing in two-person vehicles
- The percentage of Central Area auto commuters carpooling in three-person vehicles
- The percentage of Central Area auto commuters carpooling in four-or-more-person vehicles.

The user characteristics are shown in Table 27. Most of the values do not change with income. This is due to the limited sample of Central Area parkers found in My Daily Travel.

Table 27: CBD parking file 2 – user characteristics

Income quintile	Park free	Transit	Auto occupancy			
			One	Two	Three	Four or more
29999	32.6	41.3	85.4	10.1	0.8	3.7
59999	32.6	43.5	85.4	10.1	0.8	3.7
99999	32.6	53.9	85.4	10.1	0.8	3.7
149999	32.6	53.6	85.4	10.1	0.8	3.7
150000	32.6	49.1	85.4	10.1	0.8	3.7

Monte Carlo simulation

A major source of inaccuracy in travel demand modeling is the use of average values, such as the average cost of parking in a traffic analysis zone or the average income of the traveler. The CMAP/CATS travel demand analysts recognized this potential source for inaccuracy early, perhaps before anyone else was aware of the problems that could be generated by using average values. The solution was to identify the major areas affected by average values and use a method that would convert the average values into individual values. This methodology is called a Monte Carlo simulation technique, and, after the Chicago application, the technique also was used in the Dallas-Fort Worth region and the Cleveland region. Presently, a Monte Carlo simulation is used widely in travel demand modeling practices.

A Monte Carlo simulation focuses on selecting a representative value for a measure with this value being selected at random from a distribution of potential values. Table 28 shows an example where 1,000 parking spaces are spread out over six parking garages in an area, with each garage having the following characteristics.

Table 28: Monte Carlo example

Parking lot	Spaces	Daily cost	Probability
A	150	$3.50	0.150
B	175	$3.75	0.175
C	275	$3.25	0.275
D	75	$1.25	0.075
E	150	$3.50	0.150
F	175	$3.25	0.175

In this case, the weighted average parking cost for the 1,000 spaces is $3.26. But a few lucky people (7.5 percent) could park for $1.25 and some unfortunate people (17.5 percent) have to pay $3.75. The difference between the average cost and the low cost is $2.00 while the difference between the average cost and the high cost is 50 cents. These differences are substantial given that the cost of using a mode is a major determinant of which mode is selected. In a Monte Carlo simulation, a specific parking lot would be selected using a random number draw. The probability of being selected is a function of a relative parameter — in this case, the number of spaces. Therefore, the inexpensive parking lot would be selected 7.5 percent of the time, while the most expensive lot would be selected about 17.5 percent of the time.

Throughout the CMAP trip-based model, Monte Carlo simulation is used to determine several components of the submodels. Table 29 summarizes how Monte Carlo simulation is used.

Table 29: Monte Carlo simulation applications

Model	Monte Carlo applications
Trip generation	Selection of household workers who work-from-home Work-from-home frequency for workers who telecommute less than five days a week (for the 2019 base year) Selection of survey household to use for trip enumeration
Mode choice-destination choice	Traveler's household income Distances to available approach modes for transit access Distances to available departure modes for transit egress Parking costs Walk distance from parking lot to destination Final selection of destination and mode
Time-of-day	Selection of time period for trip

Population synthesis

CMAP uses an open-source platform for population synthesis called PopulationSim to generate a synthetic population for the modeling region for 2020 — the UrbanSim base year. PopulationSim generates household weights that satisfy marginal control distributions using entropy maximization-based list balancing. It then expands households using these weights to create a full synthetic population. The file, HH_IN.TXT (Table 30), provides the marginal control distributions for various attributes at the household and person level. The number of households is specified at the subzone level. Household size bin counts are specified at the regional level. The remaining attributes are specified at the zone level. Data from the 2018-2022 ACS 5-year PUMS is used for the disaggregate population sample, or seed data. A geographic crosswalk is used to provide a correspondence between subzones, zones, and PUMAs.

Once the synthetic distribution has been developed, an output file, called POPSYN_HH.CSV, is created to provide the relevant information needed by the trip generation model. The variables in this file are listed in Table 31. This file provides the household information the trip generation model will use to create trips for each enumerated household.

Populations for model years 2019 to 2050 come from UrbanSim. A script converts UrbanSim household and person output tables to the tables required by the trip-based model. To guide the evolution of the 2020 population through 2050, household control tables are developed and provided as inputs to UrbanSim for each year between 2020 and 2050. To produce the household

counts at the disaggregate level required for the travel model, synthetic populations are created for every scenario year needed to support Regional Transportation Plan analyses and to meet vehicle emissions budgets out to the year 2050. Marginal control distributions for these future-year populations come from the CMAP demographic model. All attributes are specified at the sub-regional level except for the number of households, which is specified at the subzone level, as required by the population synthesizer. Since the household totals are only provided by the demographic model at the sub-regional level, the base-year distribution of subzone households is preserved through 2050.

Table 30. HH_IN.TXT input file

Variable	Description
SUBZONE	The trip generation subzone, which must be in sequence in the file from low to high values
SUBZONE HOUSEHOLDS	Number of households in the trip generation subzone
ADULTS	Total adults (sixteen and older) in the subzone
WORKERS	Total adult workers in the subzone
CHILDREN	Total children (fifteen and younger) in the subzone
INCOME CATEGORY 1	Census income data in 2019 dollars: Households in category 1 (under $30,000)
INCOME CATEGORY 2	Households in category 2 ($30,000 - $59,999)
INCOME CATEGORY 3	Households in category 3 ($60,000 - $99,999)
INCOME CATEGORY 4	Households in category 4 ($100,000 and over)
AGE OF HOUSEHOLDER CATEGORY 1	Households in subzone where head of household is under 35
AGE OF HOUSEHOLDER CATEGORY 2	Households in subzone where head of household is 35-64
AGE OF HOUSEHOLDER CATEGORY 3	Households in subzone where head of household is 65 and older
HOUSEHOLD SIZE 1	Number of 1-person households
HOUSEHOLD SIZE 2	Number of 2-person households
HOUSEHOLD SIZE 3	Number of 3-person households
HOUSEHOLD SIZE 4	Number of 4-person households
HOUSEHOLD SIZE 5	Number of 5-person households
HOUSEHOLD SIZE 6	Number of 6-person households
HOUSEHOLD SIZE 7	Number of 7-or-more-person households
PRIVATE AUTO COMMUTE MODE SHARE	The ratio between the workers in the subzone who commute by household vehicle (auto, truck, van, sport utility vehicle, motorcycle) either as a single occupant or in a carpool divided by the workers in the subzone developed from the 2017-2021 CTPP
SIDEWALK DENSITY	Miles of sidewalk per square mile from CMAP's regional sidewalk inventory – a measure of pedestrian friendliness

Table 31. POPSYN_HH.CSV output file

Variable	Description
SUBZONE	The trip generation subzone
HHTYPE	Household type code for the synthetic household – one of 624 values based on the combination of adults-workers-children-age of householder and income index (see Trip Generation Section).
VEHICLES	Number of vehicles available in the synthetic household (PUMS data)
SERIALNO	Unique identifier assigned to the household in the ACS data
STPUMA5	Concatenation of the State FIPS code and the 5% PUMA number
ROWCOL	Variable identifying the location of the synthetic household in the region: 1 = Inner Chicago 2 = Outer Chicago and Inner Suburbs 3 = Mid Suburban 4 = Fringe and External Areas
ADULTS	Number of adults in the synthetic household
WORKERS	Number of workers in the synthetic household
CHILDREN	Number of children in the synthetic household
INCOME CATEGORY	Income category for synthetic household (2019 dollars): 1 = under $30,000 2 = $30,000 - $59,999 3 = $60,000 - $99,999 4 = $100,000 and over
AGE CATEGORY	Age of head of householder for synthetic household: 1 = householder age 16-34 2 = householder age 35-64 3 = householder age 65+
HHVTYPE	Household vehicle type code for the synthetic household – one of 624 values based on the combination of adults-workers-children-age of householder and vehicles available (see Trip Generation Section).
INCOME	Household income of the synthetic household (in 2019 dollars)

Trip generation

Trip generation is the first model step used by CMAP to forecast travel behavior. It is how land use planning and zoning quantities, such as households and employment, are converted into trip origins and destinations that serve as transportation demand measures. The trip generation process links the region's current and forecasted socioeconomic characteristics — the variables that drive travel demand — with the remaining sequential steps used to estimate choices of a trip destination, its mode, and route.

Trip generation is based upon an enumeration of all households in the study area. Each trip generation subzone is populated with synthetic households whose information on daily trips is drawn from CMAP's My Daily Travel survey data based on specified criteria. Since the household sample in the survey is small relative to total regional households, a survey household may appear multiple times in the same subzone. Trips reported by these households are used in the travel model, instead of the typical trip generation methodology, which is based upon trip generation rates. This approach eliminates the intermediate step of estimating trips generated per person or household.

As the trip generation model software executes, it writes files of households tabulated by composition, income, and vehicle ownership. These files have value beyond their role in trip generation. For example, these household files might prove useful in studies dealing with issues of social and economic justice related to alternative transportation investments.

Telework

CMAP's trip-based model explicitly accounts for workers who telework (or work from home). In 2021, it became apparent that the widespread occurrence of workers teleworking may not be a fleeting phenomenon and should be addressed in the model. Data from the 2018-19 My Daily Travel and 2007-08 Travel Tracker surveys showed the share of workers who telework at least part time had been increasing over the past decade. A telework allocation method is implemented prior to trip generation to identify households as having no workers teleworking or at least one worker teleworking. Household trip enumeration then applies trips from the appropriate work from home (WFH) or non-WFH household category.

Due to the large difference in telework rates observed in 2019 (the model base year) compared to current post-pandemic rates, separate telework allocation methods are used to model the base year and future years. For the base year, two targets are set for telework behavior: the overall share of workers who usually telework (usualwfh) and the overall share of workers who telework between one and four days per week (tc14). These targets are implemented through a process that uses person and household attributes from the synthetic population to flag specific workers as teleworking five or more days a week, teleworking one to four days a week, or not teleworking. For the 2019 base year, usualwfh is set to 0.0510 and tc14 is set to 0.1031.

Attributes used in determining work-from-home status are means of transportation to work, household income, worker industry, and worker education level. Inputs into the process define relationships between variables (see Table 32). Data for these files came from analysis of work-from-home workers in travel survey data and 2015-2019 PUMS data.

Table 32. Telework allocation inputs

Name	Description
incdist	Defines distributions of workers across income bins for 'low' and 'high' income industries
indusmix	Defines distribution of workers across industries for each work-from-home group (usualwfh and tc14)
indp_naics	Crosswalk file to attach NAICS codes to workers in the UrbanSim output files
lowlist	List of NAICS2 industries where <60% of work-from-home workers are in the highest income group. Corresponds to the 'low' distribution in incdist.
highlist	List of NAICS2 industries where >=60% of work-from-home workers are in the highest income group. Corresponds to the 'high' distribution in incdist.
eduw	List of education weights for the usualwfh group in order of ascending education level.
eduwtc	List of education weights for the tc14 group in order of ascending education level
tcportions	Distribution of work-from-home days within tc14 group in ascending day order. (1 day per week at home, 2 days, etc.)

The main steps in the telework allocation process are:

- The person files output by UrbanSim are read and all workers are identified. The industry-NAICS crosswalk file is used to attach a two-digit NAICS code to each worker.

- Numeric targets are established for each industry/income group within the two telework categories (usualwfh and tc14).
- Workers are sampled from both telework categories until the target values are reached.
- For tc14 workers:
    - Assign each worker the number of days they telework (1, 2, 3 or 4).
    - Determine if each tc14 worker is teleworking on the simulated model day.

The final output file, HH_WFH_STATUS.CSV shown in Table 33, assigns a work-from-home status to each household. Since the relevant information for the travel model is whether workers worked from home on the modeled day, workers who work-from-home one to four days a week are assigned work-from-home probabilities based on the tcportions input, and then a random number is used to determine final assignments.

Table 33. HH_WFH_STATUS.CSV output file

Variable	Description
SERIALNO	Unique identifier assigned to the household in the ACS data.
FLAG	Work-from-home status for the household. 1 = at least one worker with 'usualwfh' status in household 2 = at least one worker with 'tc14' status in household that is working on the modeled day, and no workers with 'usualwfh' status in household
WFHWORKERS	Number of people working from home in the household on the modeled day
TC14NW	Flag to indicate if there are tc14 workers in the household that are not working on the modeled day 0 = no people in this category 1 = at least one tc14 worker present who is not working

The telework allocation process for post-pandemic analysis years uses a modified methodology. Observed data show that Monday and Friday currently have higher rates of teleworking, while Tuesday through Thursday see more workers commuting to the office. The future year allocation method uses rates that reflect Tuesday-Wednesday-Thursday telework.

The Current Population Survey (CPS) publishes monthly data on national telework rates. Data from January 2025 through August 2025 were analyzed to determine mean monthly telework rates by NAICS code. The NAICS codes were then grouped into low, medium and high telework categories (shown in Table 34) based on the following thresholds:

- Low – under 20% telework rate
- Medium – between 20% and 30% telework rate
- High – more than 30% telework rate

Table 34. Telework categories

Telework category	NAICS code	Description
Low	11	Agriculture, Forestry, Fishing and Hunting
	21	Mining
	23	Construction
	31-33	Manufacturing
	44-45	Retail Trade
	48-49	Transportation and Warehousing
	55	Management of Companies and Enterprises
	56	Administrative and Support and Waste Management and Remediation Services
	61	Educational Services
	62	Health Care and Social Assistance
	72	Accommodation and Food Services
	81	Other Services (except Public Administration)
Medium	22	Utilities
	42	Wholesale Trade
	71	Arts, Entertainment and Recreation
	92	Public Administration
High	51	Information
	52	Finance and Insurance
	53	Real Estate Rental and Leasing
	54	Professional, Scientific and Technical Services

My Daily Travel Phase One data (2024-25) were analyzed in a similar fashion to determine average Tuesday-Wednesday-Thursday telework rates by NAICS code. The survey data required some additional processing as there are people who commute to work for part of the day and telework during the same day. Based on how the household trip enumeration process is applied, for travel model purposes anyone who commutes to work is deemed to be not teleworking (even if they do both) so that the appropriate travel behavior can be applied within the model.

While the My Daily Travel data showed a pattern similar to the CPS data, ultimately the CPS data were used due to the household travel survey data having small sample sizes for certain NAICS categories. The rates used for workers in the telework categories are:

- Low – 0.143
- Medium – 0.232
- High – 0.552

As with the base year telework allocation, household income and the worker's level of education are used to influence the sample of workers selected for telework. Data from the My Daily Travel Phase One survey were used to develop the shares in Table 35, as the CPS data do not provide the detailed data to support this analysis. Household income is simplified into two categories: under $100,000 and $100,000 and up, and education level reflects workers who have not earned a bachelor's degree and those who have earned at least a bachelor's degree. The work-from-home status of each household is written to HH_WFH_STATUS.CSV.

Table 35. Future allocation teleworker shares

Telework category	Household income		Education level	
	Under $100,000	$100,000 or more	Less than bachelor's degree	At least bachelor's degree
Low	0.353	0.647	0.305	0.695
Medium	0.418	0.582	0.268	0.732
High	0.231	0.769	0.202	0.798
Overall	0.295	0.705	0.251	0.749

Trip generation processing steps

The main processing steps in the trip generation model are briefly summarized below.

Model control keywords

Several important parameters (displayed in Table 36) are supplied to the trip generation model code through the file trip_generation_model.yaml. These keywords are read from the file and control the operation of the program.

Table 36. Trip generation input file parameters

Variable	Description	Model run values
MODEL VERSION	A text description identifying the model version being run	
SUBZONES	Number of trip generation subzones in the study area	17418
PUMA5	Number of Census 2010 five percent sample PUMAs in the modeled study area	74
ZONES	Zones used in the remaining CMAP models for trip distribution (linking of trip ends into trips between zones), mode choice (allocation of trips to travel modes), and assignment (allocation of trips to highway and transit routes)	3632
COUNTIES	Number of counties in the study area	21
MEDIAN HOUSEHOLD INCOME	The regional median household income	72800
SIDEWALK MAXIMUM DENSITY	Maximum value used by the vehicle availability submodel for subzone sidewalk density (miles of sidewalk per square mile) – this value replaces the Pedestrian Environment Factor	40.0
REPLICATE MAXIMUM	Maximum number of times a specific survey household can be matched to a synthetic household before resampling occurs	1900
RESAMPLE MAXIMUM	Maximum number of times resampling will occur if a survey household has reached the replicate maximum	100
MILITARY WORKERS PER PERSON	Number of workers per group quarters resident of military barracks	1.00
UNIVERSITY WORKERS PER PERSON	Number of workers per group quarters resident of college or university dormitories	0.385
OTHER 16-64 WORKERS PER PERSON	Number of workers per other group quarters resident ages 16-64	0.306
OTHER 65+ WORKERS PER PERSON	Number of workers per other group quarters resident ages 65 and older	0.12

MILITARY WORK TRIP RATE	Work trips per military worker	2.00
UNIVERSITY WORK TRIP RATE	Work trips per dormitory resident worker	0.77
OTHER 16-64 WORK TRIP RATE	Work trips per other group quarters resident worker ages 16-64	0.612
OTHER 65+ WORK TRIP RATE	Work trips per other group quarters resident worker ages 65 and older	0.24
RANDOM SEED	The program uses random numbers in the process that selects households to populate subzones. This keyword allows the user to repeat the same sequence of random numbers when set to a positive value.	211

Study area geography

The trip generation model uses the geographic input file GEOG_IN.TXT, to define various geographies. The fields in the file are listed in Table 37. GEOG_IN.TXT input fileTable 37.

Table 37. GEOG_IN.TXT input file

Variable	Description
SUBZONE	The trip generation subzone
COUNTY	A five digit code identifying the county where the subzone is located. The first two digits are the state Federal Information Processing Standards (FIPS) code for the state and the remaining three digits are the county FIPS code. (Example: DuPage County is 17043).
COUNTY NAME	Ten character county name enclosed in double quotes
STATE	Two character state code enclosed in double quotes
FIVE PERCENT PUMA	Five digit numeric code for five percent PUMAs (2010 Census)
ZONE	Modeling zone
CHICAGO	Variable is set to 1 when trip generation subzone is inside Chicago; 0 elsewhere
CBD	Variable is set to 1 when trip generation subzone is inside the Chicago CBD; 0 elsewhere. The first forty-seven trip generation subzones presently make up the Chicago CBD.
ROW-COLUMN	Variable identifies the portion of the region that previously provided the tables of cross-classified households for the procedure to disaggregate households within smaller trip generation subzones: 1 = Inner Chicago 2 = Outer Chicago and Inner Suburbs 3 = Mid Suburban 4 = Fringe and External Areas
AREA	Area of the trip generation subzone in square miles
CMAP	Variable is set to 1 when trip generation subzone is inside the CMAP planning area; 0 elsewhere

Household type table

Within the trip generation model households are classified by one of 624 different categories (HHTYPE) defined by the composition of the household. Households initially are cross classified by:

- **Adults –** four categories [1, 2, 3, 4 or more adults]

- **Workers –** four categories [0, 1, 2, 3 or more workers]
- **Children 15 years and younger –** four categories [0, 1, 2, 3 or more children]
- **Income categories –** four categories
- **Age of householder –** three categories [16-34, 35-64, or 65 and older categories].

Workers include all employed persons (classes of worker 1 through 8 in the 2018-2022 PUMS person file), a small number of family business, or farm unpaid workers. Six hundred and twenty-four different types of households are possible with this scheme. This is less than all possible combinations of the household stratifying variables because of the constraint that households must have a number of adults that is equal to or greater than the number of workers. Thus, there are only 13 possible combinations of adults and workers (rather than 16) as shown in Table 38.

Table 38. Adult-worker household types

		Adults in household			
		1	2	3	4 or more
Workers in household	0	1	2	3	4
	1	5	6	7	8
	2		9	10	11
	3 or more			12	13

The 13 adult-worker categories provide a key to the numbering of all 624 categories. The adult-worker categories are nested within the other stratifying variables of age of householder, income quartile and number of children. Table 39 shows the complete list of household-type definitions.

Table 39. Household-type definitions

Householder ≤ 34			35 ≤ Householder ≤ 64			Householder ≥ 65		
Household type	Children	Income category	Household type	Children	Income category	Household type	Children	Income category
1-13	0	1	209-221	0	1	417-429	0	1
14-26	1	1	222-234	1	1	430-442	1	1
27-39	2	1	235-247	2	1	443-455	2	1
40-52	3+	1	248-260	3+	1	456-468	3+	1
53-65	0	2	261-273	0	2	469-481	0	2
66-78	1	2	274-286	1	2	482-494	1	2
79-91	2	2	287-299	2	2	495-507	2	2
92-104	3+	2	300-312	3+	2	508-520	3+	2
105-117	0	3	313-325	0	3	521-533	0	3
118-130	1	3	326-338	1	3	534-546	1	3
131-143	2	3	339-351	2	3	547-559	2	3
144-156	3+	3	352-364	3+	3	560-572	3+	3
157-179	0	4	365-377	0	4	573-585	0	4
170-182	1	4	378-390	1	4	586-598	1	4
183-195	2	4	391-403	2	4	599-644	2	4
196-208	3+	4	404-416	3+	4	612-624	3+	4

The file tg_hhtype_lookup.csv (shown in Table 40) is used to define the 624 household types. Household income categories were derived from the household income options available in the My Daily travel survey. A similar file (tg_hhvtype_lookup.csv) is used to define the 624 household types that rely on household vehicles available rather than household income category. This file has the same format shown in Table 40.

Table 40. tg_hhtype_lookup.csv input file

Variable	Description
HOUSEHOLD TYPE	Code indicating cross-classification of household (as per numbering in Table 37).
ADULTS IN HOUSEHOLD	Coded 1, 2, 3, or 4 with code 4 equal to 4 or more.
WORKERS IN HOUSEHOLD	Coded 0, 1, 2, or 3 with code 3 equal to 3 or more.
CHILDREN IN HOUSEHOLD	Coded 0, 1, 2, or 3 with code 3 equal to 3 or more.
HOUSEHOLD INCOME QUARTILE	Coded 1, 2, 3, or 4 from low to high income categories (in 2019 dollars). 1 = under $30,000 2 = $30,000 - $59,999 3 = $60,000 - $99,999 4 = $100,000 and over
AGE OF HOUSEHOLDER CODE	Age of head of householder index: 1 = householder age 16-34 2 = householder age 35-64 3 = householder age 65+

Load synthetic households

The synthetic households from UrbanSim are read into the program, populating each subzone with a list of unique households identified by household type. These are stored in POPSYN_HH.CSV.

Household vehicle availability

The household vehicle ownership sub-model is applied to estimate the vehicle ownership levels for each household. This effectively adds an additional dimension (vehicles available in the household) to the cross-classification of households. Household types are redefined with vehicle availability, replacing income quartile.

The household vehicle availability sub-model is a discrete choice logit model similar to models that predict mode choice behavior. There are three or four possible vehicle level choices for each household, depending on the number of adults (workers plus nonworking adults) in the household. Single-adult households may have zero, one, or two or more vehicles. Larger households have the alternatives of zero, one, two, or three or more vehicles.

Each vehicle availability level has an associated utility. In these logit models, utilities are weighted linear combinations of household and subzone variables that have been entered or developed in earlier steps. Model estimation consists of determining which variables best explain observed vehicle availability levels and the relative importance of these variables in the utility expressions. The utilities also may include bias constants that indicate preferences toward certain vehicle availability levels that are not otherwise accounted for by the utility expressions.

The vehicle availability sub-models have the following general form:

$$\text{Prob}\{\text{Vehicle Availability Level } i\} = \frac{e^{u_i}}{\sum_i e^{u_i}}.$$

Where u_i is the utility of household vehicle availability level *i*, which is computed by the linear equation:

$$u_i = \sum_j \alpha_{ij} H_j + \beta_i.$$

For these utility equations:

- The model coefficient α_{ij} is the weight attached to the *j*'th independent household variable for household vehicle availability level *i*.
- H_j is the *j*'th independent household variable (number of workers in household, household income quartile, etc).
- The constant β_i is the bias toward vehicle availability level *i*, and it must equal zero for at least one alternative.

Model coefficients for the sub-models were estimated with data from the CMAP Travel Tracker survey. After completing estimation, several incremental changes to the sub-models were introduced. This includes some model coefficients that were similar for different levels of vehicle availability and the utility equations were modified to replace these multiple coefficients with a single coefficient across utility equations. Also, a few marginally significant model coefficients became insignificant and were dropped. Lastly, a complete set of bias coefficients for location and age of householder were estimated.

Model calibration was completed by adjusting bias coefficients, so that estimated and observed levels of household vehicle ownership matched within the study area. Additional bias constants also were included to account for the new age of householder household variable. The modified vehicle availability sub-models finally were coded into the CMAP trip generation model code. The original pedestrian environment factor (PEF) has been replaced with the sidewalk density index (SDI), which was capped at the same maximum value as the PEF. The PEF was a walkability metric estimated from street network data provided by NAVTEQ. The SDI is derived from CMAP's 2018 Regional Sidewalk Inventory and measures the miles of sidewalk per square mile. However, only 86 percent of the modeling subzones, located exclusively in the seven-county area, have data from this inventory. For those subzones, SDI is equal to of subzone area. For the remaining subzones, the SDI value is estimated based on a linear regression model using the former walkability metric.

The vehicle availability sub-model was not re-estimated, because it provides a good match to observed data. The following table (Table 41) lists the coefficients in the logit equation utilities that comprise the household vehicle availability sub-model. Separate models were estimated and calibrated for three different sized households defined by the total adults (workers plus nonworking adults) in the household. Each line in the table lists the model coefficients for estimating the utility attached to that level of vehicle availability for one of the three household type models.

Table 41. Vehicle availability sub-model coefficients

	One adult household vehicle availability			Two adult household vehicle availability				Three or more adult household vehicle availability			
Variable	0	1	≥ 2	0	1	2	≥ 3	0	1	2	≥ 3

Sidewalk density index (Maximum=40)	0.0616	0.0319		0.1280	0.0631	0.0336		0.1703	0.0659	0.0659	
Workers?											
≥ 1 (0/1)		0.4731	0.4731			0.6940	0.6940		1.114	1.114	1.114
≥ 2 (0/1)						0.5198	0.5198			0.7934	0.7934
≥ 3 (0/1)											1.389
Income quartile?											
≥ 2 (0/1)		1.182	1.766		1.702	2.466	2.466		0.9492	1.487	1.487
≥ 3 (0/1)		0.9910	1.690			0.8650	0.8650			0.8723	1.571
= 4 (0/1)			0.467			0.4517	0.8827			1.390	1.834
Commute auto mode share		4.677	4.677			5.284	5.284			4.959	4.959
Nonworking adults											0.1491
Children?											
≥ 1 (0/1)						0.2218					
Household location bias											
1. Inner Chicago		-2.600	-5.077		2.018	-2.827	-4.393		2.806	-1.836	-1.631
2. Rest of Chicago and inner suburbs		-2.676	-4.823		2.259	-2.637	-3.944		2.552	-2.139	-1.789
3. Mid-suburbs		-2.869	-4.914		2.151	-2.728	-4.126		1.547	-2.783	-2.668
4. Far suburbs and fringe		-3.082	-4.984		1.925	-3.144	-4.302		2.272	-2.430	-2.278
Age of householder bias											
16-34		0.392	0.394		0.392	0.394	0.403		0.392	0.394	0.403
35-64		0.401	0.465		0.401	0.465	0.574		0.401	0.465	0.574
≥ 65		0.249	0.218		0.249	0.218	0.007		0.249	0.218	0.007

The vehicle availability sub-model is applied to each of the enumerated households. The household type variable is then revised to include household vehicle availability (HHVTYPE). It has the same structure as the original household type variable listed in Table 39, except that four levels of vehicle availability (0, 1, 2 or 3 or more vehicles) replace the income quartile value. At the conclusion of the vehicle availability model, the file, SIMULATED_HHVEH.TXT, is written to store the category of simulated vehicles available for each household, so that it can be used in the trip enumeration process. The contents of this file are displayed in Table 42 below.

Table 42. SIMULATED_HHVEH.TXT

Variable	Description
PUMS SERIAL NUMBER	PUMS household serial number for the enumerated household
VEHICLE AVAILBILITY CATEGORY	Simulated vehicle availability category for the enumerated household: 0=0 vehicles, 1=1 vehicle, 2=2 vehicles, 3=3+ vehicles
RECORD NUMBER	The record number of the household in POPSYN_HH.CSV

Once the number of household vehicles has been simulated, the next step is separating work-from-home households from households that have no workers working from home. The file, HH_WFH_STATUS.CSV, which was created by the work-from-home allocation model, is used to determine which group each household belongs to.

Household trip productions and attractions

The subzones have been populated with the households from the population synthesis. The next step is to pair each one with a comparable household from the My Daily Travel survey, so that actual trips can be assigned to specific households. Household trip generation can then be accomplished without the intermediate step of computing trip generation rates. Table 43 below defines the 49 trip purposes recognized in the trip generation model.

Table 43. CMAP trip purposes

Origin activity	Destination activity	Trip code
Worker	Workplace-low income households (a)	1
Home (P)	Workplace-high income households (a)	2
	Work-related (a)	3
	School (a)	4
	Non-home or work at residences [visit] (a)	5
	Non-home or work not at residences (a)	6
	Shop (a)	7
Work (P)	Non-home or work at residences [visit] (a)	8
	Non-home or work not at residences (a)	9
	Shop (a)	10
Work (O)	Work (d)	11
Non-home or work at residences [visit] (O)	Non-home or work at residences [visit] (d)	12
	Non-home or work not at residences (d)	13
	Shop (d)	14
Non-home or work not at residences (O)	Non-home or work at residences [visit] (d)	15
	Non-home or work not at residences (d)	16
	Shop (d)	17
Shop (O)	Non-home or work at residences [visit] (d)	18
	Non-home or work not at residences (d)	19
	Shop (d)	20
Nonworking adult	School (a)	21
Home (P)	Non-home at residences (a)	22
	Non-home not at residences (a)	23
	Shop (a)	24
Non-home at residences [visit] (O)	Non-home at residences (d)	25
	Non-home not at residences (d)	26
	Shop (d)	27
Non-home not at residence (O)	Non-home at residences (d)	28
	Non-home not at residences (d)	29
	Shop (d)	30
Shop (O)	Non-home at residences (d)	31
	Non-home not at residences (d)	32
	Shop (d)	33
Child 12-15	School (a)	34
Home (P)	Non-home at residences (a)	35
	Non-home not at residences (a)	36
	Shop (a)	37
School (P)	Non-home at residences (a)	38
	Non-home not at residences (a)	39
	Shop (a)	40
Non-home at residences (O)	Non-home at residences (d)	41

	Non-home not at residences (d)	42
	Shop (d)	43
Non-home not at residences (O)	Non-home at residences (d)	44
	Non-home not at residences (d)	45
	Shop (D)	46
Shop (O)	Non-home at Residences (D)	47
	Non-home Not at Residences (D)	48
	Shop (D)	49

A file of travel survey households is read from HI_HHENUM_IN.TXT (shown in Table 44). This file has a serial number identifying the household, the household type, characteristics of the household, and trips made by the household during the weekday surveyed. Trips in this input file were tabulated in the same manner as earlier versions of the program. Trip files that were the basis for trip generation rates simply were resumed by household. Trip purpose definitions are unchanged and rules for the linking of trips are the same as in previous versions.

The end result is 48 different trip purposes, including 19 for workers, 13 for nonworking adults, and 16 for children between the ages of 12 and 15, as listed in the preceding table. Note that in the input file HI_HHENUM_IN.TXT, 49 trip purposes are allowed for the splitting of home productions-work attractions into home-work trips made by low and high income households by the trip generation model. The first trip purpose in the file includes all home productions to work attractions, while the second trip purpose serves as an empty placeholder.

Each non-work-from-home synthetic household is matched to a survey non-work-from-home household using the following process, which encompasses four mutually exclusive methods. These include:

- If there are seven or more survey households with the same vehicle-based household type (HHVTYPE) within the resident PUMA, one of these households is selected randomly as the match (match category 1).
- If there are less than seven survey households in the PUMA with the correct HHVTYPE, they are combined with households of the same type in the ring of adjacent PUMAs around the central PUMA. If this results in at least seven households of the specific type, one of these households in this larger group is selected randomly as the match (match category 2).
- If there are less than seven survey households of the same type in the adjacent geography, but seven or more in the full study area, one of these households is selected randomly as the match (match category 3).
- If there are less than seven survey households of the same type in the full study area, a final match category (match category 4) ensures all remaining households find a match in the survey households, regardless of how small the likelihood is that the household occurs. Households initially are categorized into 13 groups, which correspond to the combinations of adults and workers in the households. These groups then are subdivided based on the number of children in the household (0, 1, or 2+). Large groups (those with at least 500 households) are further subdivided based on the number of household vehicles (0, 1, or 2+). At this stage, groups with fewer than 20 households are recombined based on the adult-worker-children combinations. The end result is 43 household categories that all

have a minimum of 20 households to select from.

A similar process is used to match synthetic work-from-home households to work-from-home survey households. A notable difference is that work-from-home households are matched based on the resident PUMA and the household type based on income (HHTYPE) not the number of vehicles. Work-from-home matches use HHTYPE because a strong income component was discovered in analyzing these households for the work-from-home allocation model. These households use the same match priority as the non-work-from-home households. For the final match category, households are divided into groups based on the adult-worker combinations, the presence or absence of children, and the household income category. Groups with fewer than 20 households are aggregated based on the adult-worker-children combinations to achieve that minimum number of members. The result is 24 household categories to select survey households from.

Table 44. HI_HHENUM_IN.TXT input file

Variable	Description
PUMA	A seven-digit code with the first two digits equal to the FIPS state code and the last five digits equal to the PUMA
HHVTYPE	The revised household type code based on vehicle availability in the survey household
SERIAL NUMBER	The eight-digit household code from the My Daily Travel
ADULT	Number of adults in survey household
WORKER	Number of workers in survey household
NONWORKER	Number of non-workers in survey household
CHILD	Number of children aged 0-15 in survey household
CHILD 12-15	Number of children aged 12-15 in survey household
VEHICLES	Number of vehicles available in survey household
TRIPS1	Household's home production-work attraction trips
TRIPS2	Empty placeholder
TRIPS3	Household's home production-work related attraction trips
….	Additional columns for TRIPS4 through TRIPS48
TRIPS49	Household's shop-shop trips by child 12-15.

The processing of the survey households into match categories is handled outside of the trip generation model. The results are read into the model via files. Work-from-home households use the information in HHID_choices1.csv and HHID_choices2.csv. The first file, whose fields are shown in Table 45, provides the following information: the resident PUMA, the household type code (HHVTYPE), the match category used (for tracking purposes), and the positions of the first and last potential households that can be matched against in the array in the second file. The second file (HHID_choices2.csv) is an array of household serial numbers that correspond to the set of households available within each match category. For this final match category, it lists the households available within each subgroup discussed above. Households within each selection category do not have an equal probability of being chosen. Household expansion weights from the My Daily Travel survey are used to develop a cumulative probability distribution within each selection category to better reflect observed household data and minimize the likelihood that

extremely rare households replicate many times during the enumeration process. The file also contains the probability of each household being selected from its match category.

Comparable files are used to enumerate trips for the WFH households (HHID_wfh1.csv and HHID_wfh2.csv). These contain the same fields as their counterparts; however, the household type identifier in the work-from-home version is HHTYPE. Two values in trip_generation_model.yaml help prevent individual survey households from being replicated an excessive number of times during the enumeration process. A maximum replicate value is provided. This is not a hard ceiling on the value but once a survey household has been selected this many times, it will trigger resampling of the synthetic household, up to the maximum number of iterations identified.

Table 45. HHID_choices1.csv input file

Variable	Description
PUMA	A seven-digit code with the first two digits equal to the FIPS state code and the last five digits equal to the PUMA
HOUSEHOLD TYPE	Household vehicle type code (HHVTYPE)
MATCH CATEGORY	A numeric code identifying the household match methodology used to match the enumerated household with a survey household: 1 = household in PUMA 2 = household in adjacent PUMA 3 = household in region 4 = final match category
CHOICES START	Identifies the start location in HHID_choices2.csv of the first potential household to match against based on PUMA-HHVTYPE
CHOICES END	Identifies the end location in HHID_choices2.csv of the final potential household to match against based on PUMA-HHVTYPE

Table 46. HHID_choices2.csv input file

Variable	Description
SERIAL NUMBER	The eight-digit household code from the My Daily Travel survey
PROBABILITY	The cumulative probability (based on My Daily Travel household weights) of the specific household being selected within the PUMA-HHVTYPE category

After the household trip enumeration process has finished, two files are created that summarize the enumeration selections. The file households_selected_noWFH_enumeration_count.csv lists the travel survey identification number of each potential household that could have been chosen during enumeration for households with no teleworkers and lists the number of times each was selected. A similar file (households_selected_WFH_enumeration_count.csv) provides the same information for survey households used to complete the enumeration for households with at least one teleworker.

Optionally, enumerated synthetic households can be written to the output file HI_HHENUM_TRIP_OUT.CSV (shown in Table 47). Trip productions and attractions are summed by subzone, organized, and reported as in previous versions of the trip generation model.

Table 47. HI_HHENUM_TRIP_OUT.CSV output file

Variable	Description
HOUSEHOLD RECORD	Record number of household in POPSYN_HH.CSV
SUBZONE	The trip generation subzone, which must be in sequence in the file from low to high values
SURVEY NUMBER	Eight digit household serial number assigned to the household in the My Daily Travel survey
PUMA	A seven digit code with the first two digits equal to the FIPS county code and the last five digits equal to the PUMA
HHTYPE	The original income quartile household type code
HHVTYPE	The revised vehicle availability household type code
VEHICLES	Modeled household vehicles available
ROW-COLUMN	Geographic identifier: 1 = Inner Chicago 2 = Outer Chicago and inner suburbs 3 = Mid suburban 4 = Fringe and external areas
PUMS SERIAL NUMBER	Thirteen digit household serial number from ACS data
MATCH CATEGORY	Matching method used to enumerate household trips
WORK-FROM-HOME	Work from home flag for household
INCOME	Household income (2019 dollars)
CHILDREN	Number of children aged 0-15 in household
TRIPS1	Household's home-work trips by low income worker
TRIPS2	Household's home-work trips by high income worker
TRIPS3	Household's home production-work related attraction trips
….	Additional columns for TRIPS4 through TRIPS48
TRIPS49	Household's shop-shop trips by child 12-15

Optionally, a summary of the subzone-level trip productions by household type can be written to PRODS_HH_OUT.CSV. The productions can be further segmented by trip type and by households with and without teleworkers. The format of this file is listed in Table 48.

Table 48. PRODS_HH_OUT.CSV contents

Variable	Description
SUBZONE	Trip generation subzone
WORK-FROM-HOME	Work from home flag
HOUSEHOLD CATEGORY	Household category: 1 = 0 children and 0 vehicles 2 = 1 or more children and 0 vehicles 3 = 0 children and 1 or more vehicles 4 = 1 or more children and 1 or more vehicles
TRIP TYPE	Type of trip production (1-49)
TRIP PRODUCTIONS	Total trip productions

Group quarters trip generation

The CMAP survey did not specifically gather travel data from group quarters residences. The ACS does collect some limited information on persons in group quarters, including institutionalized and non-institutionalized persons. For trip generation, it is assumed institutionalized persons do not travel independently, which means group-quarters trip generation applies only to individuals in dormitories, military barracks, group homes, and the like. A second assumption is all children in group quarters are in institutions and do not travel independently.

As noted, four types of group quarters residents remain to be considered, including:

- Persons in military barracks
- Persons in college/university dorms
- Persons aged 16 to 64 in other types of group quarters
- Persons aged 65 or more in other types of group quarters

A trip generation subzone input file, called GQ_IN.TXT, containing workers and nonworking adults in non-institutionalized group quarters, is read by the program. It contents are listed in Table 49.

Table 49. GQ_IN.TXT input file

Variable	Description
SUBZONE	The trip generation subzone
GQ MILITARY	Persons in military barracks
GQ UNIVERSITY	Persons in college/university dormitories
GQ OTHER (16-64)	Persons in other group quarters aged 16 to 64
GQ OTHER (≥ 65)	Persons in other group quarters aged 65 and older

Group-quarters trip rates for non-work trips were developed using data from the My Daily Travel survey. These rates are read into the model via an input file (GQ_TRIPRATES.CSV). The format of the file is listed in Table 50 below. Home-work trip rates were developed from the 2014-18 ACS PUMS person file, which provided the number of workers per person in group quarters and the home-work trip rate. Trip rates for group-quarters, non-work trips are the household survey rates for workers and non-workers in single person, low income, zero vehicle households.

Table 50. Group quarters trip rates

Variable	Description
TRIP TYPE	Type of trip production (3-33) – [home-work trip rates are read from trip_generation_model.yaml]
TRIP PRODUCTION RATE	My Daily Travel trip generation rate

Once group quarters trip productions are calculated, an optional summary file of the data (PRODS_GQ_OUT.CSV) can be written. The contents of this file are listed in Table 51.

Table 51. PRODS_GQ_OUT.CSV file contents

Variable	Description
SUBZONE	The trip generation subzone
GQ TYPE	Type of group quarters (military, college, other16-64 or other65)
GQ PERSONS	Number of persons in non-institutionalized group quarters
GQ WORKERS	Number of workers in non-institutionalized group quarters
GQ NONWORKERS	Number of nonworkers in non-institutionalized group quarters
TRIP TYPE	Type of trip production (1, 3-33)
TRIP PRODUCTIONS	Total trip productions

Allocation of non-home trip ends

At this point in the logic of the CMAP trip generation model, all trips generated by persons residing inside the modeled study area (both in households and group quarters) are accounted for. Due to the synthetic household information, the location of the home end of each trip also is known. What remains to be determined is where the non-home trip ends are located. These are allocated to trip generation subzones in this step of the model.

To allocate an attractiveness share, a function of employment, households, or school enrollment (depending on the trip's purpose) is calculated for each subzone. Since Chicago's central business district is atypical in its mix of employment, subzones within the central business district are weighted differently from non-central-business-district subzones. After totaling the shares for all subzones, trip ends then are proportionally allocated to subzones by these shares. The input ATTR_IN.TXT (shown in Table 52) is read into the model to supply the employment values necessary for the allocation.

Table 52. ATTR_IN.TXT input file

Variable	Description
SUBZONE	The trip generation subzone
RETAIL EMPLOYMENT	Retail employment in the trip generation subzone
TOTAL EMPLOYMENT	Total employment in the trip generation subzone
FRACTION OF HIGH EARNERS	The fraction of workers working in the subzone with earnings above the regional median worker earnings, developed from the 2017-2021 CTPP

The two employment quantities in ATTR_IN.TXT are derived from the employment data provided by UrbanSim. The fraction of higher income workers working in the subzone was estimated from the 2017-21 CTPP. Weights for allocating non-home productions or trip origins are listed in Table 53 below. The tables display coefficients that have been normalized since the values are only used to create relative weights for the allocations.

Table 53. Allocation weights for origin non-home trip ends

		Households		Employment category					
				Retail		Non-Retail		Total	
Origin activity	**Destination activity**	**CBD**	**Non-CBD**	**CBD**	**Non-CBD**	**CBD**	**Non-CBD**	**CBD**	**Non-CBD**
Worker (non-WFH)	Non-home/Work at residence (A)							1.000	3.048
Work (P)	Non-home/Work not at residence (A)							1.000	0.765
	Shop (A)							1.000	1.901
Work (O)	Work (D)							1.000	1.837
Non-home/work at residence (O)		1.000	1.401						
Non-home/work not at residence (O)	All destinations (D)			1.000	0.401	0.050	0.097		
Shop (O)				1.000	1.129				
Worker (wfh)	Non-home/work at residence (a)							1.000	6.545
Work (P)	Non-home/Work not at residence (A)							1.000	2.525
	Shop (A)							1.000	4.900
Work (O)	Work (D)							1.000	2.059
Non-home/work at residence (O)		1.000	1.010						
Non-home/work not at residence (O)	All destinations (D)			1.000	0.963	0.038	0.195		
Shop (O)				1.000	1.227				
Nonworking adult									
Non-home at residence (O)		1.000	1.281						
Non-home not at residence (O)	All destinations (D)			1.000	0.734	0.046	0.176		
Shop (O)				1.000	1.441				
Child 12-15									
School (P)	All attractions (A)	1.000	2.599						
Non-home at residence (O)		1.000	22.00						
Non-home not at residence (O)	All destinations (D)				1.000		0.137	0.065	
Shop (O)				1.000	1.000				

The formulas used to determine the attractiveness shares for non-home productions are stored in coefficients_nonhome_productions.csv. The contents of the file are listed in Table 54. This input file simplifies the process of updating the coefficients used to allocate non-home trip productions. A separate file (coefficients_attractions.csv) stores the weight formulas to allocate trip attractions and has the same format shown in Table 54.

Table 54. coefficients_nonhome_productions.csv input file

Variable	Description
TRIP TYPE	Type of trip production (8-20, 25-33, 38-49)
WFH FLAG	Telework flag: 0=no, 1=yes
CBD FLAG	CBD flag: 0=no, 1=yes
WEIGHT FORMULA	The formula to develop subzone allocation weights (e.g., 0.065 * subzone total employment)

Similar to Table 53, Table 55 lists the weights used for allocating attractions or trip destinations. These weights were updated using My Daily Travel survey data and SCHOOL_IN.CSV, an input file of combined high school and university enrollment totals by subzone. SCHOOL_IN was developed specifically to guide the allocation of home-school trips for adults. It is comprised of data from the National Center for Education Statistics and the Illinois State Board of Education. It includes both public and private schools.

Table 55. Allocation weights for destination trip ends

		Households		Employment category: Retail		Non-Retail		Total		
Origin activity	**Destination activity**	**CBD**	**Non-CBD**	**CBD**	**Non-CBD**	**CBD**	**Non-CBD**	**CBD**	**Non-CBD**	**Enrollment**
Worker (non-WFH)										
	Workplace (A)							1.000	0.755	
	Work-related (A)			1.000	3.103	0.241	0.634			
	School (A)									1.000
Home (P)	Non-home/work at residence (A)	1.000	1.132							
	Non-home/work not at residence (A)			1.000	0.623	0.042	0.180			
	Shop (A)			1.000	1.430					
Work (P)	Non-home/work at residence (A)	1.000	2.309							
	Non-home/work not at residence (A)			1.000	0.383	0.095	0.106			
	Shop (A)			1.000	1.882					
Work (O)	Work (D)							1.000	1.550	
All origins (O)	Non-home/work at residence (D)	1.000	1.414							
	Non-home/work not at residence (D)			1.000	0.401	0.051	0.099			
	Shop (D)			1.000	1.106					
Worker (WFH)										
	Workplace (A)							1.000	0.755	
	Work-related (A)			1.000	3.103	0.241	0.634			
	School (A)									1.000
Home (P)	Non-home/work at residence (A)	1.000	0.567							
	Non-home/work not at residence (A)			1.000	0.941	0.024	0.208			
	Shop (A)			1.000	0.938					

Work (P)	Non-home/work at residence (A)	1.000	0.738							
	Non-home/work not at residence (A)			1.000	0.641	0.027	0.158			
	Shop (A)			1.000	0.556					
Work (O)	Work (D)							1.000	2.722	
All origins (O)	Non-home/work at residence (D)	1.000	0.990							
	Non-home/work not at residence (D)			1.000	0.938	0.036	0.189			
	Shop (D)			1.000	1.217					
Nonworking adult										
	School (A)									1.000
Home (P)	Non-home at residence (A)	1.000	1.173							
	Non-home not at residence (A)				1.000		0.263	0.088		
	Shop (A)			1.000	1.634					
All Origins (O)	Non-home at residence (D)	1.000	0.985							
	Non-home not at residence (D)			1.000	0.754	0.047	0.180			
	Shop (D)			1.000	1.530					
Child 12-15										
	School (A)	1.000	1.511							
	Non-home at residence (A)	1.000	36.33							
Home (P)	Non-home not at residence (A)			1.000	2.501	0.031	0.324			
	Shop (A)			1.000	1.000					
	Non-home at residence (A)	1.000	16.44							
School (P)	Non-home not at residence (A)				1.000		0.922	0.058		
	Shop (A)			1.000	1.000					
	Non-home at residence (D)	1.000	16.44							
All Origins (O)	Non-home not at residence (D)				1.000		0.922	0.058		
	Shop (D)			1.000	1.000					

Certain non-home trip ends (residences, shops, schools) are restricted in subzones located entirely within airport boundaries. The file airport_sz.csv identifies which subzones are within airport boundaries and their opening year. This allows flexibility for the trip generation model to accommodate future airport expansion or the opening of new airports. After workplace attractions are allocated, they are factored into workplace attractions for workers with above and below median earnings by the factors in the ATTR_IN.TXT input data set.

Optionally the file FIRST_PA_OUT.CSV can be created to summarize all preliminary household and group quarters productions and attractions by trip type. The contents of the file are listed in Table 56. Work trip productions and attractions will proceed through one final processing step.

Table 56. FIRST_PA_OUT.CSV contents

Name	Description
SUBZONE	The trip generation subzone
ZONE	Modeling zone
WORK-FROM-HOME	Work from home flag for household
TRIP TYPE	Type of trip production (1-49)
HOUSEHOLD PRODUCTIONS	Total trip productions of household residents
HOUSEHOLD ATTRACTIONS	Total trip attractions of household residents
GQ PRODUCTIONS	Total trip productions of non-institutionalized group quarters residents
GQ ATTRACTIONS	Total trip attractions of non-institutionalized group quarters residents

External trip ends

After accounting for all trips made by study area residents, the next step is to factor out trip ends for trips with one trip end outside the modeled study area. In the model, only home-workplace trips for households are factored in this manner (e.g., trip types 1 and 2). This is largely due to data limitations. The CMAP survey sample is far too small for any reliable estimation of these factors and only the CTPP commuting data are available. Additionally, home-workplace trips are lengthier than other trip purposes and more likely to have one trip end outside the area modeled. Trips by persons residing in group quarters are not factored for external trip ends.

Summary home-workplace tables were first developed from CTPP Table B302103, using data from the five-year (2017-2021) ACS estimates. These tables contain the home to workplace commutes by mode for all workers. Tract-to-tract journey-to-work flow totals were scaled to match county-to-county journey-to-work flow totals to adjust for data suppression at the tract geography level. After removing workers who work at home, the tables have three components. These components include workers who travel to work and who (1) live and work inside (internal-internal) the modeled study area; (2) workers who live outside (external) the study area but work inside (internal) the study area; and workers who (3) live inside (internal) the study area but work outside (external) the study area. Total workers for each group by tract are aggregated to the 5 percent PUMAs geography prior to calculating the external trip factors.

External trip factors to adjust the home productions and workplace attractions in a 5 percent PUMA were developed in the following manner. The home production factor is the fraction of all trips from internal households (internal-internal plus internal-external) linked to external workplaces (internal-external), and the workplace attraction factor is the fraction of all trips to internal workplaces (internal-internal plus external-internal) that are linked to external households (external-internal). Home productions in 5 percent PUMS are factored first followed by workplace attractions. These external trip factors are stored in an input file named EXT_IN.TXT (shown in Table 57).

Home Production Factor = [internal-external] / ([internal-internal] + [internal-external])

Workplace Attraction Factor = [external-internal] / ([internal-internal] + [external-internal])

Table 57. EXT_IN.TXT input file

Variable	Description
FIVE PERCENT PUMA	Seven digit numeric code for five percent PUMAs (two digit county FIPS code plus five digit code for five percent PUMA)
EXTERNAL PRODUCTION FACTOR	Fraction of home productions in home-workplace trips linked to external workplace attractions
EXTERNAL ATTRACTION FACTOR	Fraction of workplace attractions in home-workplace trips linked to external home productions

The factors in EXT_IN.CSV are applied to the household productions and attractions based on the PUMA value. External home-work attractions are then balanced to external productions and adjustments are distributed proportionally within PUMAs. An optional file (EXTERNAL_PA_OUT.CSV) of the adjusted external home-work productions and attractions can be written, and its contents are listed Table 58. The final step is subtracting the external productions and attractions from the subzone-level home-work trip productions and attractions.

Table 58. EXTERNAL_PA_OUT.CSV contents

Name	Description
SUBZONE	The trip generation subzone
ZONE	Modeling zone
WORK-FROM-HOME	Work from home flag for household
TRIP TYPE	Type of trip production (1-2)
EXTERNAL HOUSEHOLD PRODUCTIONS	Total external trip productions of household residents
EXTERNAL HOUSEHOLD ATTRACTIONS	Total external trip attractions of household residents

Create final vehicle trip output file

Lastly the trip generation model code creates two fixed-width output files (TRIP49_PA_OUT.CSV and TRIP49_PA_WFH_OUT.CSV) for use in the mode choice-destination choice model. These files contain the final productions and attractions for internal trips for all residents in the modeled study area. Both files have the same structure, shown in Table 59.

Table 59. TRIP49_PA_OUT.CSV output file

Variable	Description	Width
SUBZONE	Trip generation subzone	6
ZONE	Modeling zone number	6
TRIP TYPE	Trip type	2
HH PRODUCTIONS	Household trip productions/origins for trips within the modeled study area	9
HH ATTRACTIONS	Household trip attractions/destinations for trips within the modeled study area	9

A final file created by the trip generation model is TG_HHENUM_OUTPUT.CSV (shown in Table 60),

which lists the subzone and zone of each enumerated household, as well as the HHVTYPE. This file is subsequently used in the mode choice-destination choice model.

Table 60. TG_HHENUM_OUTPUT.CSV output file

Variable	Description
SUBZONE	Trip generation subzone
ZONE	Modeling zone number
HOUSEHOLD VEHICLE TYPE	Household type code based on vehicle availability

Mode choice-destination choice model

Unlike past versions of CMAP's trip-based model, the current model does not execute trip distribution and mode choice as two separate, sequential models. Rather, an integrated mode choice and destination choice model is implemented as a hierarchical nested logit model. This model was estimated using full-information, maximum-likelihood methods.

The 49 types of trips created during trip generation are aggregated into the following trip purposes, which are modeled by the full mode choice-destination choice model.

- Home-based work trips for residents of low-income households (HBWL). The regional median household income value is used to determine whether households fall into the low- or high-income categories.
- Home-based work trips for residents of high-income households (HBWH).
- Home-based shopping trips (HBS).
- All other home-based trips not included in the first three categories (HBO).
- All non-home-based trips (NHB).

Nine discrete modal alternatives are included in the model, listed in Table 61. This represents a major improvement from the binary auto-transit mode choice alternatives included in prior versions of the model. A private auto group nest includes single- and multiple-occupancy vehicles. The hired auto group nest includes three modal alternatives not previously available in CMAP's trip-based model, including taxi and transportation network company (TNC) options for passengers using either the regular or the shared-ride services. The final group of alternatives (which is not implemented as a nest) includes the non-auto modes of transit, walking and biking. Past versions of CMAP's trip-based model did not include non-motorized modes of transportation (walking and bicycling) beyond the trip generation model.

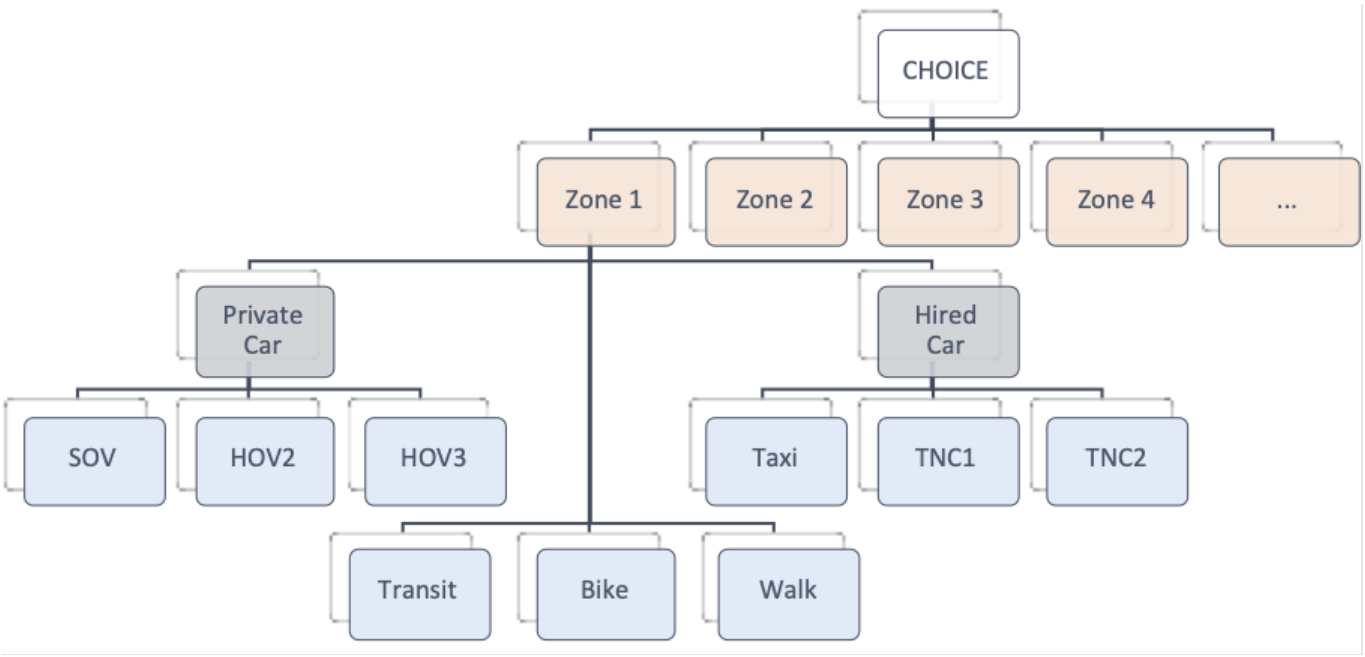
Table 61. Modal alternatives

Modal alternative	Group	Description
1	Private Auto Nest	Single occupant private vehicles
2		High occupancy private vehicles – 2 occupants
3		High occupancy private vehicles – 3 or more occupants

4	Hired Auto Nest	Taxi
5		Transportation Network Company – regular ride hail
6		Transportation Network Company – shared ride hail
7		Transit
8		Walk
9		Bicycle

Figure 11 shows the structure of the hierarchical nested logit model. The top of the hierarchy is the attraction zone for each trip. This is the non-home end for all home-based trips and the trip destination for all other trip purposes. No sampling of alternatives is implemented during model application. So, for each trip, the total mode and destination alternatives is 32,688 (9 modes x 3632 zones).

Figure 11. Mode-destination choice model logit structure



Each modal alternative considered has its own cost components that factor into the utility calculations. These cost components and utility calculations are discussed in the following sections. Table 62 lists the general cost attributes included in the calculations that apply across modes. The procedures to calculate costs for private auto trips, and transit access and egress were ported over from the prior version of CMAP's trip-based model.

Table 62. Mode-destination choice cost components

Value	Description
50	Number of trips used to determine average impedance
3	Walk speed (MPH)
14	Driver's value of time per minute (cents)
2.0	Ratio of out of vehicle time (OVT) to in-vehicle time (IVT)
35	Auto fixed cost for driver (cents)
20	Auto fixed cost for passenger (cents)
2	Walk time from park and ride lot to platform (minutes)
Zonal approach speeds	**Area definition**
7 (auto), 5 (bus)	Chicago Central Area zone

15 (auto), 10 (bus)	Chicago zone outside of the Central Area
20 (auto), 12 (bus)	dense suburban CBD zone
30 (auto), 17 (bus)	remaining suburban zones

Private auto costs

Auto operating costs are calculated using the information in the M023 file. Auto times and distances are pulled using zone-to-zone assigned times and distances. Matrices of morning peak conditions are applied to home-based work trips, and matrices of midday conditions are applied to all other trip types.

Parking costs are estimated using different methods depending on the trip purpose and destination. As noted, home-based work trips to the central area use Monte Carlo simulation and the central business district parking file data to estimate parking costs, including the possibility of free parking. Parking costs for destination zones outside of Chicago's central area are applied using the rates Table 63. Currently, these hourly rates are the same for all trip purposes, but the flexibility exists to alter the rates by trip purpose.

Table 63. Private auto costs

Hourly parking costs (cents)	Area definition
80	Chicago Central Area zone
10	Chicago zone outside of the Central Area
20	dense suburban CBD zone
0	remaining suburban zones
Parking duration (hours)	
10 – home-based work trips	
6 – all other home-based trips	
3 – non-home based trips including visitors	

Hired auto costs

The same time and distance skims used for private autos are also used for the utility calculations for hired autos. In addition, these modal options have additional costs reflected in fares and surcharges, which are discussed below. These cost components are stored in the file cmap_trip_config.yaml, which is used by the mode choice-destination choice model.

Taxi

A single set of taxi rates based on Chicago medallion rates for in-city trips is used to estimate rates for these trips. Because fares for taxi trips outside of Chicago have similar rates and are far less numerous, the same single set of rates is used. Table 64 below lists the taxi rates and wait times that are used in the cost estimation. The airport departure surcharge is applied to specific zones for O'Hare and Midway airports.

Table 64. Taxi costs

Cost (cents)	Description
325	Initial base fare
225	Per-mile cost
41.667	Cost per minute, regulated at 25 cents per 36 seconds
400	Airport departure surcharge

Wait time (minutes)	Area definition
1 (peak), 2 (offpeak)	Chicago Central Area zone
5 (peak), 7 (offpeak)	Chicago zone outside of the Central Area
10	dense suburban CBD zone
15	remaining suburban zones

Transportation network companies

The TNC cost structure is similar to that used for taxis, however separate costs are applied for pooled versus regular service, which are summarized in Table 65. TNCs implement a downtown Chicago surcharge applied to specific zones. In addition, a special surcharge is applied to Chicago's airports and major attractions.

Table 65. Transportation network company costs

Cost (cents)		Description
TNC	***Pooled***	
136 (peak), 163 (offpeak)	68 (peak), 128 (offpeak)	Initial base fare
109	106 (peak), 101 (offpeak)	Per-mile cost
28 (peak), 26 (offpeak)	0	Cost per minute
485	0	Minimum fare
257	257	Booking fee not included in minimum fare (in 2019 $1.85 to the company, 72¢ taxes)
500	500	Surcharge for O'Hare and Midway airports, Navy Pier and McCormick Place
0 in 2019, 175 thereafter	0 in 2019, 175 thereafter	Downtown Chicago surcharge applied 6am – 10pm
Wait time (minutes)	**Area definition**	
1 (peak), 2 (offpeak)	Chicago Central Area zone	
5	Chicago zone outside of the Central Area	
5	dense suburban CBD zone	
15	remaining suburban zones	

Transit costs

Unlike the auto modes, the utility calculations for transit modes must include estimates of the costs passengers incur when accessing and egressing the transit service. As noted, the FORTRAN-based transit access and egress calculation procedures used in past versions of CMAP's trip-based model were transferred into Python. The underlying logic of the level of service calculations is unchanged, and it is based on a random distribution of transit access characteristics based on the geography and service levels of each zone.

The concepts of first mode, priority mode, and last mode are used to identify available transit access and egress options. These mode identifiers are based on the following hierarchy of transit service, listed from highest to lowest priority: Metra, CTA rail, and bus. First mode is identified by skimming the transit network for zonal interchanges by using the transit access links listed in Table 20 based on the priority hierarchy. Similarly, the transit egress links are used to identify last mode for zone pairs. The priority linehaul mode is determined based on the combinations of first and last mode.

There are five potential transit approach (access) modes: 1-Walk, 2-Bus, 3-Park and Ride, 4-Kiss and Ride, and 5-Feeder Bus. Monte Carlo simulation is used to determine the access and egress distance for each of the approach options, given that the DISTR files contain different distances by zone for Metra, CTA rail, bus, feeder bus, and Park and Ride. Fewer options are available for transit egress, based on the following rules:

- Walk is always available as an access and egress option.
- For Bus priority mode, walk is the only available access and egress option.
- For Rail priority modes:
    - Park and Ride is only available as an access option for home-based trips.
    - Kiss and Ride is only available as an access option for HBW trips.
    - Park and Ride, Kiss and Ride, and Feeder Bus are not available as egress options.

Table 66 below summarizes the logic of the transit access and egress cost calculations.

Table 66. Transit access and egress cost logic

Approach option	Cost components
Walk (first or last mode)	• The only approach cost is the time to walk to the bus. For work trips in the CBD, this cost is increased by 20 percent. • The walk time is multiplied by the driver's value of time and the OVT factor
Bus (first or last mode) Feeder Bus (first mode only)	• Walk time – Simulated distance to walk divided by walk speed (increased by 20% in the CBD to account for congested walking conditions). Value multiplied by the OVT factor and the driver's value of time. • Drive time – Approach distance divided by the zone type auto speed multiplied by the driver's value of time • Wait time – Zonal average wait time for bus multiplied by the OVT factor and the driver's value of time • Cost – Based on the zone location the appropriate fares and transfer costs are included
Park and Ride (first mode only)	• Walk time – Default walk time from parking lot to platform multiplied by the OVT factor and the driver's value of time • Drive time – Approach distance divided by the zone type auto speed multiplied by the driver's value of time • Cost – Driving distance multiplied by the per-mile auto operating costs based on zone type. The fixed driver auto costs and half of the parking costs are added to this.
Kiss and Ride (first mode only)	• Walk time – Default walk time from parking lot to platform multiplied by the OVT factor and the driver's value of time • Drive time – Approach distance is divided by the zone type auto speed and multiplied by the driver's value of time. This is multiplied by three (to cover the time traveled by the driver and passenger, as well as an assumed trip by the driver back home) and by the driver's value of time. • Cost – Driving distance multiplied by the per-mile auto operating costs based on zone type. Double the auto passenger fixed costs are added to this.

Utility calculations

This section shows the utility formulas for each modal alternative in the mode choice-destination choice model. The formulas quantify the benefits and costs associated with the different travel choices. Two placeholder variables are listed in the equations to reflect where the specific value varies based upon the specific conditions:

- [*PK|OP*] – reflects that either PEAK or OFFPEAK values will be used. PEAK values are applied for home-based work trips (HBWH, HBWL) and OFFPEAK values are applied for all other trip purposes.
- [*PURPOSE*] – reflects the variable value specific to each trip purpose.

Each of the utility equations includes the same formula for utility at the trip destination, which is shown in Table 67 and referenced by name (utility destination) in the subsequent modal utility formulas. "P" values represent the model coefficients while the "X" variables are the actual trip values.

Table 67. Utility_destination

Formula
P.samp_af * X('log(1/actualdest_samp_wgt)') + P.log_attraction * X.actualdest_log_attractions_[*PURPOSE*] + P.intrazonal * X('o_zone == actualdest') + P('distance[1]: up to 5') * X('piece(actualdest_auto_dist_OFFPEAK,None,5)') + P('distance[2]: 5 to 10') * X('piece(actualdest_auto_dist_OFFPEAK,5,10)') + P('distance[3]: over 10') * X('piece(actualdest_auto_dist_OFFPEAK,10,None)')

In the following tables shaded blocks represent groups of conditional logic and identify which components are applied when specific conditions are met.

Table 68. SOV (1) utility

Formula	Conditions
P.cost * 0.01 * X.actualdest_auto_opcost_[*PK|OP*] + P.totaltime * X.actualdest_auto_time_[*PK|OP*] + P.cost * 0.01 * X.actualdest_auto_parking_cost_[*PURPOSE*] + P.unavail * X('1-actualdest_auto_avail_[*PURPOSE*]') + utility_destination	
+ P.cost * 0.01 * X.actualdest_auto_toll_hiinc_PEAK	If HBWH
+ P.cost * 0.01 * X.actualdest_auto_toll_loinc_PEAK	If HBWL

+ P.cost * 0.01 * X.actualdest_auto_toll_OFFPEAK	Not HBW
+ P.AUTO_ozone_autopropensity * X.ozone_autopropensity	If NHB
+ P.AUTO_dzone_autopropensity * X.actualdest_autopropensity	If NHB
+ P.AUTO_no_veh * X('hhveh==0')	Not NHB
+ P.AUTO_sufficient_veh * X('hhveh>=hhadults')	Not NHB

Table 69. HOV2 (2) utility

Formula	Conditions
P.Const_HOV2 + P.cost * 0.005 * X.actualdest_auto_opcost_hov_[*PK|OP*] + P.totaltime * X.actualdest_auto_time_[*PK|OP*] + P.cost * 0.005 * X.actualdest_auto_parking_cost_[*PURPOSE*] + P.unavail * X('1-actualdest_auto_avail_[*PURPOSE*]') + P('HOV2_distance[1]: up to 5') * X('piece(actualdest_auto_dist_OFFPEAK,None,5)') + P('HOV2_distance[2]: 5 to 10') * X('piece(actualdest_auto_dist_OFFPEAK,5,10)') + P('HOV2_distance[3]: over 10') * X('piece(actualdest_auto_dist_OFFPEAK,10,None)') + utility_destination	
+ P.cost * 0.005 * X.actualdest_auto_toll_hov_hiinc_PEAK	If HBWH
+ P.cost * 0.005 * X.actualdest_auto_toll_hov_loinc_PEAK	If HBWL
+ P.cost * 0.005 * X.actualdest_auto_toll_OFFPEAK	Not HBW
+ P.AUTO_ozone_autopropensity * X.ozone_autopropensity	If NHB
+ P.AUTO_dzone_autopropensity * X.actualdest_autopropensity	If NHB

+ P.AUTO_no_veh * X('hhveh==0')	Not NHB
+ P.AUTO_sufficient_veh * X('hhveh>=hhadults')	Not NHB

Table 70. HOV3+ (3) utility

Formula	Conditions
P.Const_HOV3 + P.cost * 0.0033 * X.actualdest_auto_opcost_[*PK|OP*] + P.totaltime * X.actualdest_auto_time_[*PK|OP*] + P.cost * 0.0033 * X.actualdest_auto_parking_cost_[*PURPOSE*] + P.unavail * X('1-actualdest_auto_avail_[*PURPOSE*]') + P('HOV3_distance[1]: up to 5') * X('piece(actualdest_auto_dist_OFFPEAK,None,5)') + P('HOV3_distance[2]: 5 to 10') * X('piece(actualdest_auto_dist_OFFPEAK,5,10)') + P('HOV3_distance[3]: over 10') * X('piece(actualdest_auto_dist_OFFPEAK,10,None)') + utility_destination	
+ P.cost * 0.0033 * X.actualdest_auto_toll_hov_hiinc_PEAK	If HBWH
+ P.cost * 0.0033 * X.actualdest_auto_toll_hov_loinc_PEAK	If HBWL
+ P.cost * 0.0033 * X.actualdest_auto_toll_OFFPEAK	Not HBW
+ P.AUTO_ozone_autopropensity * X.ozone_autopropensity	If NHB
+ P.AUTO_dzone_autopropensity * X.actualdest_autopropensity	If NHB

+ P.AUTO_no_veh * X('hhveh==0')	Not NHB
+ P.AUTO_sufficient_veh * X('hhveh>=hhadults')	Not NHB

Table 71. Taxi (4) utility

Formula	Conditions
P.Const_TAXI + P.cost * 0.01 * X.actualdest_taxi_fare_[*PK|OP*] + P.ovtt_dist * X('actualdest_taxi_wait_time_[*PK|OP*]/actualdest_auto_dist_[*PK|OP*]') + P.totaltime * X.actualdest_taxi_wait_time_[*PK|OP*] + P.totaltime * X.actualdest_auto_time_[*PK|OP*] + P.unavail * X('1-actualdest_auto_avail_[*PURPOSE*]') + utility_destination	
+ P.cost * 0.01 * X.actualdest_auto_toll_hiinc_PEAK	If HBWH
+ P.cost * 0.01 * X.actualdest_auto_toll_loinc_PEAK	If HBWL
+ P.cost * 0.01 * X.actualdest_auto_toll_OFFPEAK	Not HBW

Table 72. TNC (5) utility

Formula	Conditions
P.Const_TNC1 + P.cost * 0.01 * X.actualdest_tnc_solo_fare_[*PK|OP*] + P.ovtt_dist * X('actualdest_tnc_solo_wait_time_[*PK|OP*]/actualdest_auto_dist_[*PK|OP*]')	

+ P.totaltime * X.actualdest_tnc_solo_wait_time_[*PK|OP*] + P.totaltime * X.actualdest_auto_time_[*PK|OP*] + P.unavail * X('1-actualdest_auto_avail_[*PURPOSE*]') + utility_destination	
+ P.cost * 0.01 * X.actualdest_auto_toll_hiinc_PEAK + P.cost * 0.01 * X.actualdest_auto_toll_loinc_PEAK + P.cost * 0.01 * X.actualdest_auto_toll_OFFPEAK	If HBWH If HBWL Not HBW

Table 73. TNC shared ride (6) utility

Formula	Conditions
P.Const_TNC2 + P.cost * 0.01 * X.actualdest_tnc_pool_fare_[*PK|OP*] + P.ovtt_dist * X('actualdest_tnc_pool_wait_time_[*PK|OP*]/actualdest_auto_dist_[*PK|OP*]') + P.totaltime * X.actualdest_tnc_pool_wait_time_[*PK|OP*] + P.totaltime * X.actualdest_auto_time_[*PK|OP*] + P.unavail * X('1-actualdest_auto_avail_[*PURPOSE*]') + utility_destination	
+ P.cost * 0.005 * X.actualdest_auto_toll_hiinc_PEAK + P.cost * 0.005 * X.actualdest_auto_toll_loinc_PEAK + P.cost * 0.005 * X.actualdest_auto_toll_OFFPEAK	If HBWH If HBWL Not HBW

Table 74. Transit (7) utility

Formula	Conditions
P.Const_Transit + P.cost * 0.01 * X.actualdest_transit_fare_[*PK|OP*] + P.totaltime * X.actualdest_transit_ovtt_[*PK|OP*] + P.cost * 0.01 * X.actualdest_transit_approach_cost_[*PK|OP*] + P.totaltime * X.actualdest_transit_approach_drivetime_[*PK|OP*] + P.totaltime * X.actualdest_transit_approach_walktime_[*PK|OP*] + P.totaltime * X.actualdest_transit_approach_waittime_[*PK|OP*] + P.unavail * X('1-actualdest_transit_avail_[*PURPOSE*]') + P.ovtt_dist * X('actualdest_transit_ovtt_[*PK|OP*]/actualdest_auto_dist_[*PK|OP*]') + P.ovtt_dist * X('actualdest_transit_approach_walktime_[*PK|OP*]/actualdest_auto_dist_[*PK|OP*]') + P.ovtt_dist * X('actualdest_transit_approach_waittime_[*PK|OP*]/actualdest_auto_dist_[*PK|OP*]') + P.transit_intrazonal * X('o_zone == actualdest') + utility_destination	
+ P.transit_areatype2 * X('fmin(ozone_areatype, actualdest_areatype)==2') + P.transit_areatype3 * X('fmin(ozone_areatype, actualdest_areatype)==3') + P.transit_areatype4 * X('fmin(ozone_areatype, actualdest_areatype)==4') + P.metra_longtrip * X('actualdest_auto_dist _[*PK|OP*]') [*where commuter transit is available and drive time to the station is less than walk time or waiting for a feeder bus and the trip is 15-35 miles long between area types 1 and 3]*	if HBW if HBW if HBW if HBW

+ P.transit_walk_is_short * X('hard_sigmoid(actualdest_transit_approach_walktime_OFFPEAK, 4.0, 2.0)')	not HBW
+ P.transit_areatype3) * X('fmax(ozone_areatype, actualdest_areatype)==3')	not HBW
+ P.totaltime * X('piece(actualdest_transit_ivtt_OFFPEAK, None, 20)')	if NHB
+ P.ivtt_longtransit * X('piece(actualdest_transit_ivtt_OFFPEAK, 20, None)')	if NHB
+ P.totaltime * X.actualdest_transit_ivtt_PEAK	not NHB

Table 75. Walk (8) utility

Formula
P.Const_WALK
+ P('walk_time[1]: up to 0.5') * 20.0 * X('piece(actualdest_auto_dist_OFFPEAK,None,0.5)')
+ P('walk_time[2]: 0.5 to 1.0') * 20.0 * X('piece(actualdest_auto_dist_OFFPEAK,0.5,1.0)')
+ P('walk_time[3]: over 1.0') * 20.0 * X('piece(actualdest_auto_dist_OFFPEAK,1.0,None)')
+ P.walk_intrazonal * X('o_zone == actualdest')
+ P.walk_areatype2 * X('fmax(ozone_areatype, actualdest_areatype)==2')
+ P.walk_areatype3 * X('fmax(ozone_areatype, actualdest_areatype)==3')
+ P.walk_areatype4 * X('fmax(ozone_areatype, actualdest_areatype)==4')
+ utility_destination

Table 76. Bicycle (9) utility

Formula
P.Const_BIKE
+ P.bike_time * 5.0 * X.actualdest_auto_dist_OFFPEAK
+ P.bike_intrazonal * X('o_zone == actualdest')

+ utility_destination

Table 77 contains the parameter coefficient used by the mode choice-destination choice models. Within the model setup, these are stored in the file choice_model_params.yaml.

Table 77. Mode-destination choice utility coefficients

Parameter name	Coefficient value				
	HBWH	HBWL	HBS	HBO	NHB
AUTO_no_veh	-2.0207	-2.6528	-3.9228	-2.9707	
AUTO_sufficient_veh	0.5191	0.6889	0.8557	0.7343	
AUTO_dzone_autopropensity					2.6097
AUTO_ozone_autopropensity					7.9026
Const_BIKE	-1.0735	-1.094	-1.848	-1.62	3.6597
Const_HOV2	-0.3669	-0.4461	-0.62	-0.2296	-0.3537
Const_HOV3	-0.4181	-0.629	-1.7535	-0.7619	-1.0022
Const_TAXI	-2.4311	-3.8304	-5.2536	-2.9427	4.042
Const_TNC1	-2.0083	-2.4175	-3.8162	-2.1496	4.506
Const_TNC2	-2.4553	-2.8384	-4.5589	-2.9871	3.1428
Const_Transit	0.601	0.48	-0.9632	0.1118	6.2099
Const_WALK	1.9303	3.5174	6.5967	4.6708	9.2578
"HOV2_distance[1]: up to 5"	-0.0649	-0.1107	0.009	0.0179	-0.0103
"HOV2_distance[2]: 5 to 10"	-0.1154	-0.0492	0.0493	-0.0002	-0.0767
"HOV2_distance[3]: over 10"	-0.0132	-0.0028	-0.0235	-0.0166	-0.0181
"HOV3_distance[1]: up to 5"	-0.1252	-0.1545	0.1013	0.0398	0.0018
"HOV3_distance[2]: 5 to 10"	-0.1476	-0.1264	0.0233	-0.0128	-0.0687
"HOV3_distance[3]: over 10"	-0.0171	-0.0172	-0.0269	-0.0177	-0.0403
HOV_no_veh	-2.1033	-2.039	-2.6988	-2.3244	
HOV_sufficient_veh	0.4762	0.3912	0.8003	0.7002	
HOV_dzone_autopropensity					2.2062
HOV_ozone_autopropensity					7.9581
Mu-Dest	0.5835	0.8404	1	0.9173	1
Mu-HiredCar	0.4376	0.6302	0.75	0.688	0.75
Mu-PrivateCar	0.4376	0.6302	0.7489	0.688	0.75
bike_intrazonal	-1.6637	-0.994	-0.4423	-0.6768	0.6138
bike_time	-0.0278	-0.0633	-0.147	-0.0755	-0.0297
cost	-0.0119	-0.0294	-0.0305	-0.0254	-0.107
"distance[1]: up to 5"	-0.2988	-0.4452	-0.7298	-0.6121	-0.4686
"distance[2]: 5 to 10"	-0.251	-0.2557	-0.5109	-0.4018	-0.3335
"distance[3]: over 10"	-0.1017	-0.0913	-0.1317	-0.1082	-0.0641
intrazonal	0.3947	0.0217	-0.8717	-0.4601	-0.0319
log_attraction	1	1	1	1	1
metra_longtrip	9.375	5.625			
ovtt_dist	-0.1598	-0.0764	-0.2468	-0.2748	-0.2685
samp_af	1	1	1	1	1
totaltime	-0.017	-0.0147	-0.03	-0.0254	-0.03
ivtt_longtransit					-0.011
transit_areatype2	-1.3747	-1.2441			
transit_areatype3	-3.1399	-3.8502	-0.5	-1.1	-1.1
transit_areatype4	-2.5397	-1.7423			

transit_intrazonal	1.6254	1.2836	2.8339	2.1563	3.5821
transit_walk_is_short			1.6524	0.5258	0.7232
unavail	-999	-999	-999	-999	-999
walk_areatype2	0.149	0.6465	0.0794	0.4343	0.5752
walk_areatype3	-0.2521	0.0891	-1.4849	-0.0197	0.9757
walk_areatype4	-0.6561	0.0183	-1.7738	-0.3177	1.0862
walk_intrazonal	-0.3987	-1.113	-1.2366	-0.8354	-0.3277
"walk_time[1]: up to 0.5"	-0.1508	-0.2681	-0.4763	-0.3086	-0.1878
"walk_time[2]: 0.5 to 1.0"	-0.0505	-0.0588	-0.0959	-0.0835	-0.0905
"walk_time[3]: over 1.0"	-0.0451	-0.0789	-0.1057	-0.0848	-0.0938

During execution of the mode choice-destination choice model, the Python code directly reads skim matrix values to perform the utility calculations. Table 78 summarizes the matrices used to determine the utility of each modal option. Note that matrices applied for HBW trips reflect morning peak conditions, while the matrices applied for non-work trips reflect midday travel conditions. The utility calculations include the effects of tolling. The presence of tolls increases the cost to travelers of using specific routes, so it is accounted for within the traffic assignment procedures. The increased travel cost also impacts the choice of travel mode and is included in the utility calculations.

Table 78. Utility calculation matrices

	Matrix	
Auto		
	HBW	**Non-work**
Travel time - SOV	44	46
Travel time - HOV	76	46
Travel distance – SOV	45	47
Travel distance – HOV	77	47
Toll – SOV low income	111	NA
Toll – SOV high income	114	NA
Toll – HOV low income	112	NA
Toll – HOV high income	115	NA
Toll	NA	117
Transit		
	HBW	**Non-work**
In-vehicle time	822	922
Out of vehicle time	823	923
Headway	838	938
Fare	828	928
First mode	829	929
Priority mode	830	930
Last mode	831	931

A file of the propensity of home-based trips to be attracted to zones based on a private auto mode share (SOV or HOV) is used to adjust the probability that non-home-based trips produced in these zones also will use a private auto mode. This file is created during each global iteration of the model and is used in the subsequent iteration of the mode-destination choice model. A default file (default_auto_propensity.csv.gz) is used during the initial model iteration.

As noted in trip generation, modeled households are divided into two groups — those with no workers working from home and those with at least one worker who works from home with some frequency. This results in separate sets of trip productions and attractions. This bifurcation of the trip data continues through mode choice-destination choice. The model is first run on the trip data for households with no workers who work-from-home and then is run again for the other group of trips. While the parameters of the mode choice-destination choice models are the same between the two groups, the trip productions and attractions do differ, resulting in unique utility functions and different behavior patterns.

The trip-based model is not a full microsimulation. Only a representative set of trips is modeled for each origin zone. No destination sampling is used in the mode choice-destination choice model. Typically, such sampling is used to ensure the model provides good coverage of less attractive destinations. A weighted sampling approach was used to estimate the model, which used fully disaggregated trips from the My Daily Travel survey. After testing several sizes, a sample size of 25 destinations ultimately was used and provided parameter estimates that are statistically indistinguishable from larger sample sizes.

Visitor trips

CMAP's trip-based model includes daily demand for visitor trips — trips with both ends located within the modeling area that are made by people whose home location is outside of the modeling area. This demand was developed using 2019 LOCUS mobile location data to create a base year zone-to-zone visitor trip table. The mode choice model for non-home base trips is used to determine the travel mode for visitor trips, with constants shifted so visitors have a higher likelihood of using taxis and TNCs than residents would for non-home-based trips.

Visitor trips assigned to the SOV mode must also be categorized by value of time level for traffic assignment. The value of time distribution for visitor trips is assumed to mirror that for resident non-home-based trips. The VOT distribution is shown in Table 87.

As the visitor trip table reflects 2019 trips, a set of growth factors were developed to represent increased visitor demand in future scenarios. These growth factors were developed based on historical trends in the growth in air passengers at O'Hare and Midway airports, and the growth in tourism nationally and for Chicago. The growth factors assume visitor demand in northeastern Illinois returns to pre-pandemic levels (2019) in 2023. The visitor trip growth rates are shown in Table 79.

Table 79. Visitor trip growth factors

2019	2026	2030	2035	2040	2045	2050
1.00	1.05	1.18	1.34	1.51	1.70	1.92

Time-of-day model

After the mode-destination-choice model runs, the time-of-day model is applied to auto trips (for both private and hired autos). This model separates auto trips into the eight time-of-day periods modeled by CMAP. The time-of-day model is sensitive to congested travel times throughout the day. It is a simple multinomial logit model that has alternative specific constants that reflect behavioral preferences and the duration of each period. The utility functions are also sensitive to

mode choice as TNC use is significantly different than private auto use. Many TNC trips happen in the evening and overnight periods.

The time-of-day utility formula is listed in Table 80. Two placeholder variables are listed in the equations to reflect where the specific value varies based on the specific conditions:

- [*TOD label*] – the time period label refers to the following: 'EA'=evening/early morning; 'AM1'=pre-AM peak shoulder; 'AM2'=AM peak; 'AM3'=post-AM peak shoulder; 'MD'=midday; 'PM1'=pre-PM peak shoulder; 'PM2'=PM peak; and 'PM3'=post-PM peak shoulder.
- [*TOD period*] – the numeric time-of-day period (1-8). MF461-468 are skimmed highway times for SOVs for each period.

Table 80. Time-of-day model utility formula

Formula	Conditions
P.ASC_[*TOD label*] + P.time * X.mf46[*TOD period*] + P.hiredcar_[*TOD label*] * X('mode9 in ('TAXI','TNC1','TNC2')')	
+ P.ASC_[*TOD label*]_r * X.paFlip	not NHB
+ P.hiredcar_[*TOD label*]_r * X('(mode9 in ('TAXI','TNC1','TNC2'))*paFlip')	if HBW, HBO

The following table contains the parameter coefficient used by the time-of-day model. Within the model setup, these are stored in the file tod_model_params.yaml. Parameters ending with "_r" represent the reverse trip. These are only applied to home-based trips, meaning they represent the attraction-production trip.

Table 81. Time-of-day model parameters

Parameter name	Coefficient value				
	HBWH	HBWL	HBS	HBO	NHB
ASC_AM1	-1.1259	-1.1102	-1.8298	-1.2922	-1.8283
ASC_AM1_r	-1.1231	-0.9133	-0.3437	-0.126	
ASC_AM2	0	0	0	0	0
ASC_AM2_r	0	0	0	0	
ASC_AM3	-2.5156	-1.8888	-0.2645	-1.14	-0.8498
ASC_AM3_r	0.7526	0.7235	0.7867	0.6787	
ASC_EA	-1.9622	-1.6429	-1.5805	-1.5318	-1.348
ASC_EA_r	1.6611	2.1924	2.47	2.7275	
ASC_MD	-1.6343	-0.9985	1.2134	0.1653	1.1168

ASC_MD_r	1.9892	1.6542	1.4565	1.3714	
ASC_PM1	-2.2204	-1.8976	0.2849	-0.4321	0.5517
ASC_PM1_r	3.7918	3.4383	2.2642	1.8336	
ASC_PM2	-2.3658	-2.4245	0.3984	0.1484	0.2782
ASC_PM2_r	3.654	3.6741	2.1922	1.5952	
ASC_PM3	-3.9189	-4.0392	-0.0874	-0.9093	-0.6503
ASC_PM3_r	4.0171	4.3707	2.2669	2.5158	
hiredcar_AM1	-0.2335	-1.1946	-11.7505	1.00E-04	0.8795
hiredcar_AM1_r	-12.1216	-10.706		0.189	
hiredcar_AM2	0	0	0	0	0
hiredcar_AM2_r	0	0		0	
hiredcar_AM3	1.0709	0.9707	-0.1476	0.0347	0.4629
hiredcar_AM3_r	-14.0951	0.0756		-0.1058	
hiredcar_EA	-0.1723	0.5339	-17.5549	0.9544	2.8669
hiredcar_EA_r	3.1961	1.6282		1.5105	
hiredcar_MD	0.3483	0.4738	0.0168	0.2375	0.7199
hiredcar_MD_r	0.6849	0.262		-0.378	
hiredcar_PM1	-1.5686	0.7303	0.0839	-0.2086	0.9617
hiredcar_PM1_r	2.5324	-0.0527		0.2851	
hiredcar_PM2	-1.3687	-0.497	0.6512	0.6264	1.2375
hiredcar_PM2_r	3.3293	1.1441		-0.642	
hiredcar_PM3	0.7728	-16.158	1.209	1.6335	2.0767
hiredcar_PM3_r	1.5941	17.7847		-0.5611	
time	-0.0551	-0.0367	-0.0273	-0.0552	-0.0200

Hired auto deadhead trips

Within the model, a set of deadhead trips are generated for taxis and TNCs to represent trips connecting revenue trips. These are the trips that drivers make once a passenger is dropped off to reach the location where the next passenger will be picked up. The method links together the destinations of taxi and TNC trips (when passengers are dropped off and thus, the productions for deadhead trips) with the origins of taxi and TNC trips (when the new passenger is collected and thus, the attractions for deadhead trips) within each time period. A simplifying assumption is made that these productions and attractions are balanced within each period.

Distribution of the deadhead trips is accomplished using a simple gravity model with congested travel time skims for the time period as the impedance, meaning that drivers travel close to the minimum distance needed to serve the revenue trips. This reflects the rational behavior of drivers trying to minimize the distance of trips traveled without a fare. For traffic assignment, these trips are added to the SOV trip tables using the value of time shares listed in Table 87.

Final trip roster

Completion of the time-of-day model results in the creation of a set of parquet files, which use columnar data storage to reduce file sizes. These parquet files collectively contain the roster of trips created by the models and can be used to develop specific trip demand tables. The labeling for these files is "choice_simulator_trips_[*range of zones*]_HBWH_HBWL_HBS_HBO_NHB_[*typical*|*wfh*].pq" where:

- *Range of zones* lists the origin zones included in the file

- *typical|wfh* identifies whether the trips are from households with at least one worker who works from home or from households with no workers working from home.

Table 82 lists the fields contained in the parquet files.

Table 82. Parquet file fields

Variable	Description
trips	Number of trips
purpose	Trip purpose (HBWH, HBWL, HBS, HBO, NHB, VISIT, DEAD)
mode	Trip mode (numeric value)
o_zone	Origin zone (the beginning of the actual trip – may not be the home/production zone)
d_zone	Destination zone (the end of the actual trip – may not be the attraction zone)
a_zone	Attraction zone (either the production or attraction zone, depending on trip directionality)
hh_autos	Number of household vehicles available (0,1,2+) – applicable only for home-based trips
hh_inc5	Household income category of the trip maker (in 2019 dollars): 1=less than $30,000, 2=$30,000-$59,999, 3=$60,000-$99,999, 4=$100,000-$149,999, 5=$150,000+
timeperiod	Time period labels; NA applied to transit, walk and cycling trips

During execution of the time-of-day model, home-based trips (which are modeled in production-attraction format rather than origin-destination format) are converted to origin-destination trips using the following factors to create the attraction-production trips.

- Home-based work high income: 0.459
- Home-based work low income: 0.443
- Home-based shopping: 0.647
- Home-based other: 0.513

Traffic assignment

The final step in the trip-based model is traffic assignment. This step uses all the travel demand created and routes trips over the highway network. A final step after completion of the time-of-day model is the creation of time-period-specific demand matrices that are used for the highway assignment. Person trips are converted to vehicle trips for these matrices, meaning auto occupancy is accounted for. The following vehicle occupancy rates are used for HOV trips with at least three people.

- Home-based work trips: 3.36
- All other home-based trips: 3.31
- Nonhome-based trips and visitor trips: 3.39

Special trip handling

Traffic assignment includes several other classes of vehicle trips in addition to auto vehicle trips. These require special data-handling procedures to create the demand matrices.

Commercial vehicle trips

CMAP models commercial vehicle trips for four truck classes: B-plate, light trucks, medium trucks, and heavy trucks. B-plate trucks are vans, pickup trucks, and sport utility vehicles with performance characteristics similar to passenger cars and carrying "B" license plates. These license plates are issued to vehicles weighing less than 8,000 pounds. Light trucks are "step vans" and smaller delivery vans, which carry weight plates D-J and MD-MJ. Medium trucks are defined as heavy fixed-wheelbase trucks, such as concrete mixers, scavenger trucks, double rear axle refrigerator units, and some other lighter weight articulated vehicles carrying weight plates K-T and MK-MT. This covers trucks weighing between 28,001 and 64,000 pounds. Finally, heavy trucks comprise the 73,280- and 80,000-pound maximum load vehicles, which are tractor-trailer combinations. These carry weight plates of V-Z.

In the past, CMAP used vehicle registration files from the Illinois Secretary of State's office to develop "base year" trip totals for each of the truck classes. The relationship between registered vehicles and actual trips was always somewhat tenuous, but it provided the best available information at the time. CMAP currently uses more robust data to develop the base year trip totals that inform the trip-based model, including:

B-plate trucks: These license plates are issued to either personal or commercial vehicles. However, for the purpose of modeling b-plate trucks as a specific vehicle class, CMAP is only interested in commercial vehicle demand. Personal vehicle demand is included in household trips. An analysis of b-plate vehicle registrations was conducted for the Illinois counties in the CMAP modeling area using data from the Illinois Secretary of State's office. Using the registrations and total population in these counties, an average rate of b-plate vehicles per person was developed. This rate was applied to the remaining counties in the CMAP modeling area to determine total b-plate vehicles registered within the modeling area. It was factored by 10 percent to reflect external b-plates that operate on the road network within the modeling area.

National auto sales information from the last two decades was used to determine the increased share of trucks, minivans and sport utility vehicles in use. Sales shares were combined with Illinois data from the Vehicle Inventory and Use Survey on the share of miles by these vehicle types used for commercial purposes. Finally, an analysis of b-plate vehicles included in the My Daily Travel survey provided the average number of trips made daily. This value multiplied by the number of b-plate vehicles provides an estimate of daily commercial trips for this vehicle class.

Heavy trucks: CMAP purchases data on heavy truck trips within the modeling area from the American Transportation Research Institute (ATRI). Agency staff analyzed this dataset to determine the number of trips heavy vehicles make within the CMAP modeling area and to identify the specific locations they visit.

Light and medium trucks: The data purchased from ATRI does not include these truck classes. Instead, the number of trips for these trucks is derived from vehicle registration data and established relationships in the number of trips these truck classes take relative to heavy trucks. As an extra level of data verification, the reasonableness of these trip values was confirmed by reviewing the results of a special truck demand model developed for the Illinois Department of Transportation (IDOT) in 2012 to support the Illiana Expressway analysis.

Once the truck trips were developed, they were converted to a year 2000 "base value" to provide a set of trip values consistent across all truck classes. These base values were developed assuming a growth rate of 10 percent per decade, the same growth used to forecast future truck trips. Table 83 presents the base trip totals by vehicle class.

Table 83. Truck trip totals by vehicle class

Truck type	Base year 2000 total
B-plate trucks	1,468,500
Light trucks	246,500
Medium trucks	229,500
Heavy trucks	395,000

Once the total number of trucks per class is determined, the non-heavy truck trips are allocated to production and attraction zones based on development patterns that come from UrbanSim. The measure of development is represented by nonhome-based trip productions. These are most closely related to total development with an emphasis on employment density. The process is a simple allocation of trips to zones based on the zonal share of the total regional development. The distribution of trips is then created based on trip length distribution parameters derived from data on light and medium truck trips in the region purchased from INRIX.

For b-plate trucks, the trip length distribution was enhanced using odometer readings collected by the Illinois Environmental Protection Agency as part of the vehicle inspection and maintenance program. These readings were obtained for the seven CMAP counties and Grundy County. Specific vehicles were matched to the Illinois Secretary of State registration data to isolate b-plate trucks from the resulting dataset, and the distribution of average daily vehicle miles traveled was calculated for b-plates.

The distribution of heavy truck trips is also weighted using information from UrbanSim. Base year employment by NAICS category for each building in the seven-county CMAP region is supplemented with average heavy commercial vehicle trip rates per 1,000 square feet by building type, as identified in NCHRP Report 298, to estimate regional trips per employee rates by NAICS code. UrbanSim provides employment by NAICS for each forecasted year, so total trips are estimated by multiplying the trips per employee by the number of employees by NAICS code for each zone. Employment-based estimations of trip frequencies tend to favor employment dense regions, such as the CBD, so the estimated trips are scaled by the share of non-residential building area per zone to produce the final heavy truck trip weights.

Since these final weights are not used as actual productions and attractions, but merely as weights for the distribution process, scaling the final estimated trips by the share of non-residential building area helps differentiate between pickup and delivery needs of different types of land uses. Non-residential building area zonal share was calculated from the UrbanSim base year buildings file and shares are held constant in all future years. The buildings file only includes buildings in the CMAP seven-county region, so an estimated zonal share of non-residential building area was assigned to the remaining modelling zones by matching the zone with an unknown share to a zone with a known share based on similar observed trip rates from the ATRI dataset.

The size and operating characteristics of commercial vehicles require them to be treated differently than automobiles during traffic assignment. Prior to the traffic assignment process, truck vehicle trips are converted to trips measured in vehicle equivalents. The truck vehicle trips are converted using the following factors:

- B-plate and light trucks equal one vehicle equivalent.
- Medium trucks equal two vehicle equivalents.
- Heavy trucks (and buses) equal three vehicle equivalents.

Point-of-entry trips

Point-of-entry trips represent three categories of travel: auto travel entering or leaving the modeled region on major expressways, heavy truck travel entering or leaving the region on major expressways, and auto passenger travel supporting the region's airports entering or leaving the region. Point-of-entry locations are external zones (numbered 3633 through 3649) and are not modeled in the same way as the rest of the region's travel because there is little knowledge about the traveler, the trip purpose, or the trip origin or destination located outside of the region. These trips are created based on observed traffic counts at the locations in question and some assumptions about the travel behavior of the trip maker, including an assumption that external travelers are indifferent about the actual length of the trip within the region (i.e., their destination is fixed).

Base year trip production totals for highway point of entry are derived from expressway traffic counts at locations around the region. Base year trips for airport point of entry are based on an analysis of observed enplanements. To create future productions and attractions, the base year number of total trips is factored using the same growth rates as commercial vehicles: 10 percent per decade. The year 2015 POE productions are presented in Table 84.

Table 84. Point-of-entry base year productions

Truck type	Base year 2015 total
Auto external	255,600
Truck external	109,500
Air traveler	69,500

All point-of-entry trips are handled at the same time using a gravity model. To begin, an impedance file based on a gamma function was created. To accomplish this, a destination vector of non-work trip attractions plus a weighted number of point-of-entry trips was calculated. Again, this information is used as a measure of development density with an emphasis on employment density. The impedance matrix is proportional to the productions multiplied by the attractions and inversely proportional to the square of the midday travel distance (capped at 60 miles):

$$Impedance = \frac{(.0001 * (POE\ Productions * Destination\ Development))}{(60.max.travel\ distance)^2}$$

The impedance matrix is balanced using the original productions at the origin, and trip attractions apportioned to destinations based on zonal shares of non-work attractions and zonal point-of-entry totals as the attractions.

At this point, the balanced trip matrix must be separated into its component pieces to be used within the traffic assignment procedures. Trips with origins at the expressway points-of-entry are extracted to a matrix, which is summed with its transpose matrix. This represents the total external

expressway daily trip table. Thirty percent of the trips in this daily trip table are apportioned as external truck trips. The remaining 70 percent are allocated to external auto trips. To determine air traveler trips, all trips with origins in the region are extracted to another matrix, which is also summed with its transpose matrix. External truck trips are assumed to be heavy commercial vehicles. Thus, this demand matrix is factored by three vehicle equivalents prior to the traffic assignment.

Tolling

Within the traffic assignment procedures, tolling is reflected in the generalized cost of a road segment. While all the user classes perceive the same travel time on a link, they may perceive differing generalized costs. This scheme allows different vehicle classes to be assessed with different toll amounts. It also allows for differing toll amounts to be charged to the user classes based on the time-of-day. CMAP's traffic assignment includes seven user classes:

- SOVs with a low value of time (1)
- SOVs with a medium value of time (2)
- SOVs with a high value of time (3)
- HOVs (4)
- B-plate and light trucks (5)
- Medium trucks (6)
- Heavy trucks (7)

The generalized cost on toll links reflects travel time and a fixed link cost. The fixed link cost is the traveler's value of time multiplied by a perception factor, which reflects that users may not perceive 100 percent of the cost of a toll during a trip. Table 85 lists the hourly values of time used for each user class. Values of time for commercial vehicle drivers were developed using information published by the Bureau of Labor Statistics on the mean hourly wages for drivers of heavy and light trucks in the Chicago region. Values of time for household vehicles were developed using a method described by Lemp and Rossi.[4]

Table 85. Vehicle value of time and perception factor by user class

User class	Hourly value of time	Perception factor
SOV value of time bin 1	$2.30	2.25
SOV value of time bin 2	$7.20	2.25
SOV value of time bin 3	$24.00	2.00
HOV2	$9.00	2.25
HOV3+	$14.00	2.25
B-Plate truck	$24.00	1.00
Light truck	$32.00	1.00
Medium truck	$47.00	1.00

[4] Lemp, J. and T. Rossi, (2018) Practical Framework to Incorporate Value of Time Heterogeneity in an Aggregate Travel Model, Proceedings of the Annual Transportation Research Board Conference, Washington, D.C.

Heavy truck	$52.00	1.00
External auto	$18.00	1.00
Air traveler	$30.00	1.00

The generalized cost process converts the value of time into a minutes per dollar value that is multiplied by the toll amount. This straight-forward calculation fails to account for all of the other elements that individuals consider when determining whether the cost of a tolled route is "worth it." Drivers may not perceive the cost of paying a toll as 100 percent of the actual amount. Transponder users, for instance, are not paying cash out-of-pocket for each toll and may only "see" the cost when they view a monthly credit card statement (at which point the cost has already been incurred). Additionally, the expected travel time savings from using the tollway may more than offset the perceived cost of the toll. Similarly, commercial vehicle drivers may be reimbursed for toll expenses or their Just-in-Time delivery responsibilities may play a much larger role in routing decisions than tolls. The perception factors in Table 85 are an attempt to quantify these individual decisions and effectively increase the user classes' value of time, lowering their minutes per dollar and the effective impedance of tolling. The perception factors were calibrated using vehicle class volumes on tollway facilities.

As noted, three value of time bins (low, medium, and high) are used to categorize SOV trips. The value of time for a specific trip is not solely a function of income but is also related to the trip purpose and the perceived "cost" of not arriving on time. Work trips and attending a concert may have high values of time associated with them, while a routine shopping trip may have a low value of time. Table 86 shows how the value of time bins are applied to SOV trips across trip purposes and household income categories.

Table 86. SOV trip VOT distribution

Trip purpose	Income category	Low VOT	Mid VOT	High VOT
HBWL	1	0.648	0.333	0.018
HBWL	2	0.383	0.537	0.08
HBWH	3, 4	0.197	0.605	0.198
HBWH	5	0.036	0.425	0.53
HBO	1	0.648	0.333	0.018
HBO	2	0.383	0.537	0.08
HBO	3, 4	0.197	0.605	0.198
HBO	5	0.036	0.425	0.53
HBS	1	0.648	0.333	0.018
HBS	2	0.383	0.537	0.08
HBS	3, 4	0.197	0.605	0.198
HBS	5	0.036	0.425	0.53
NHB	1	0.648	0.333	0.018
NHB	2	0.383	0.537	0.08
NHB	3, 4	0.197	0.605	0.198
NHB	5	0.036	0.425	0.53
VISIT	N/A	0.3	0.55	0.15
DEADHEAD	N/A	0.7	0.25	0.05

Table 87 shows the value of time factors applied to categorize the remaining trip demand into the VOT bins. Drive to transit trips are assumed to be mostly work trips, which is why their VOT distributions are similar. The VOTs for external and air passenger trips are assumed to be higher than average. Implementation of this VOT scheme ensures that route choice decisions are sensitive to changes in toll amounts.

Table 87. Value of time distribution

VOT category	Drive to transit trips	External trips
Low VOT bin	15 percent	10 percent
Medium VOT bin	50 percent	45 percent
High VOT bin	35 percent	45 percent

Assignment time periods

The principal objective behind multiple period highway assignments is to develop more accurate estimates of vehicle-miles by different speed ranges and vehicle classes for air quality conformity analyses. Separate assignments estimate highway vehicle-miles and travel speeds for eight time periods during the day:

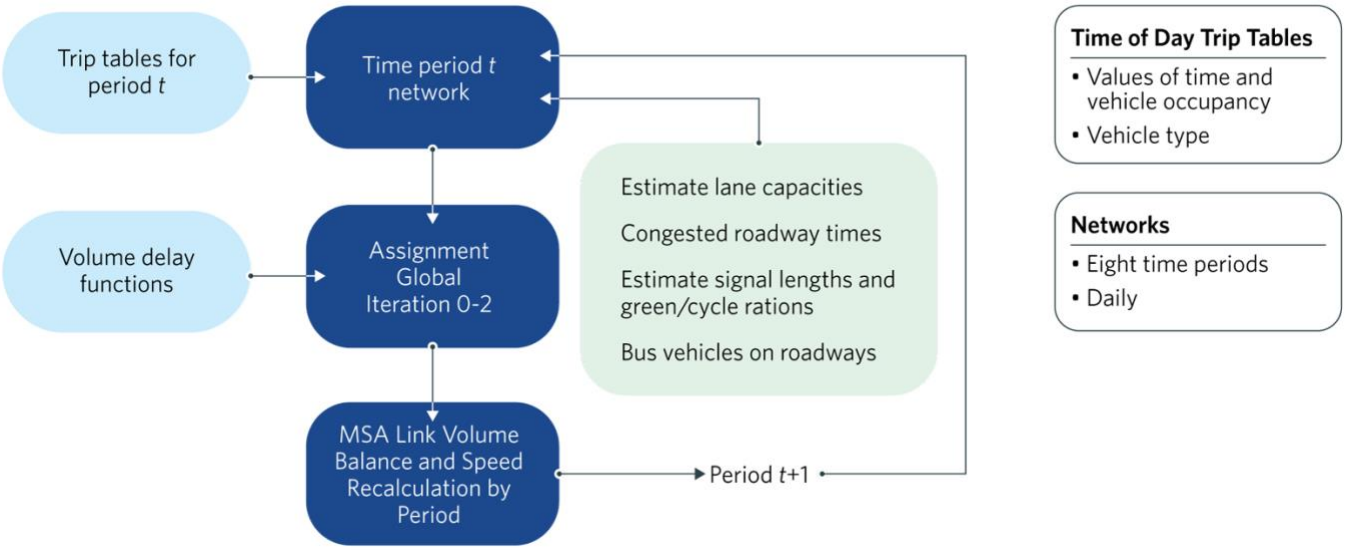
- Overnight off-peak (8:00 p.m. to 6:00 a.m.)
- Preceding morning peak (6:00 to 7:00 a.m.)
- Morning peak (7:00 to 9:00 a.m.)
- Post morning peak (9:00 to 10:00 a.m.)
- Midday (10:00 a.m. to 2:00 p.m.)
- Preceding evening peak (2:00 to 4:00 p.m.)
- Evening peak (4:00 to 6:00 p.m.)
- Post evening peak (6:00 to 8:00 p.m.)

Figure 12 is a schematic diagram that shows the sequence of steps in the multiple time period assignment. Nine highway network scenarios are first assembled (eight time-of-day specific networks and a ninth all-inclusive network to hold the sum of daily information). The presence of time-of-day restrictions on highway network links allows for variation between the TOD networks. At present, these restrictions are modeled on the Kennedy Expressway reversible lanes and an on-ramp from eastbound IL Route 38 to eastbound I-290, as well as on arterials with peak period parking restrictions. In practice, the eight TOD periods use a total of four unique highway networks:

- A morning peak network used in the morning peak and its shoulders.
- A midday network used during time period 5.
- A evening peak network used in the evening peak and its shoulders.
- An overnight network used in time period 1.

The travel model proceeds through three global iterations. During each iteration, the time period assignments are executed, and the assignment results are averaged with the results of the TOD assignment for the same period from the previous global iteration using the Method of Successive Averages (MSA). This results in a final link volume for each time period. These are used to estimate the morning peak and midday travel times, which are fed back into the rest of the modeling process. The effects of bus operations on other traffic also are accounted for in the assignment process, as buses operating on shared-use facilities are included in the volume-delay function calculations.

Figure 12. Multiple time period highway assignment process



After three passes through the time-of-day modeling process, the results of the separate MSA period assignments are accumulated into daily volumes. The results also are tabulated into the vehicle-mile-by-vehicle-type-by-speed range tables needed for the vehicle emission calculations. The completion and summarizing of the eight period assignments is highly simplified by using scripts to automate repetitive processes.

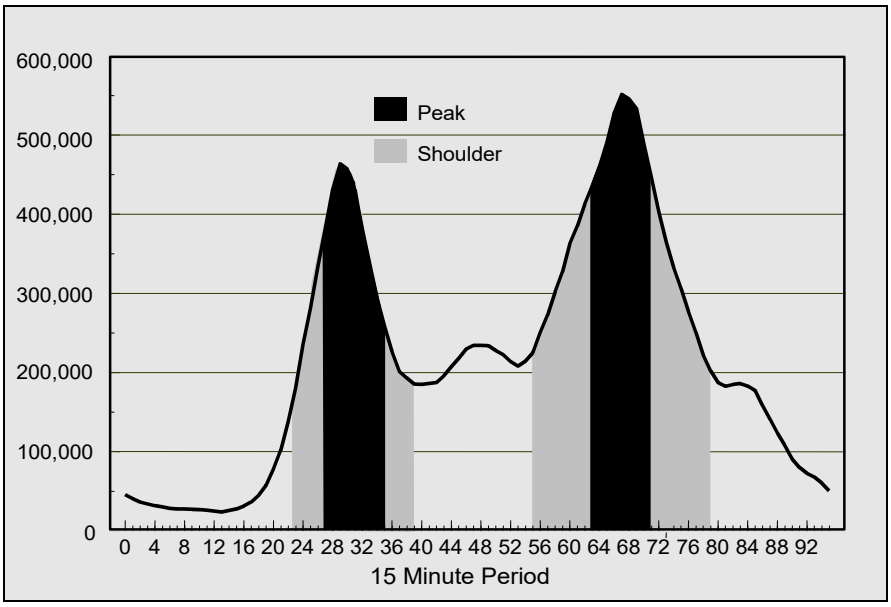
Traffic assignment is accomplished using a Second-Order Linear Approximation (SOLA) algorithm in Emme. This algorithm is an extremely efficient method to reach network equilibrium and allows for parallelization for shorter run times. Vehicle trips are assigned to the road network and the zone-to-zone travel costs (generalized cost including travel time and tolls) are determined. The algorithm seeks equality in costs among alternative paths between the same origin-destination zone pair. The behavioral representation in the SOLA algorithm is that drivers find the best choice of travel route to minimize their travel costs. If a less costly route is available, drivers will choose to take it. This is Wardrop's user optimal principle.[5] This also means that an individual's route choice impacts all other travelers.

[5] Wardrop, J. (1952) "Some theoretical aspects of road traffic research," *Proceedings of the Institution of Civil Engineers,* Part 2: 325-378.

The process begins by calling the script for the first period assignment (the overnight period). The appropriate network scenario is selected and the corresponding demand matrices for the time period are called to assign the trips. For the first time period, the standard set of volume-delay functions (discussed below) are loaded, the scenario is prepared for assignment, and a full equilibrium assignment is completed. The procedure repeats through the remaining time periods. When the eight time periods are completed, the link volumes and travel times are successively averaged with the same time periods from previous global iterations. This occurs for the second and third global iterations since iteration 0 has no previous iteration to be averaged with. The result is a set of eight modeled scenarios representing each time period and containing the final MSA volumes and speeds.

The travel data that led to selecting the eight time periods is illustrated in Figure 13. This is a plot of the auto driver and auto passenger trips in motion reported in CATS' 1990 household travel survey. Trips were accumulated at the end of 96, 15-minute periods throughout the day. The plot shows a moving average of these accumulated trips calculated over four consecutive 15-minute periods. The moving average smooths out the irregularities in the plot that are caused by the tendency of surveyed travelers to report trip start and completion times to the nearest quarter-hour or half-hour. Analysis of the Travel Tracker and My Daily Travel data confirmed that the eight time periods are still relevant, thus, they continue to be used.

Figure 13. Time distribution of auto driver and passenger trips



The plot shows the distinct peaking of auto travel during the morning and evening peak periods. The large number of trips in motion during peak travel periods is due not only to increased trip making during these time periods. Peak period auto trips also stay in motion longer because they are more likely to be lengthy work trips subjected to slower congested peak period travel speeds.

The plot in Figure 13 is not symmetric because the evening peak period is longer and slightly worse than the morning peak. The two peak periods are separated by a midday period that has a uniform number of trips in motion, except for a bulge in trip making around the noon lunch period. Trips in motion plateau between 8:00 and 9:00 p.m. after the evening peak period, and then quickly decline during the late-night period.

The two assignment peak periods are defined differently because of these auto travel characteristics. The shading under the Figure 13 curve shows the peak and shoulder periods used in the multiple time period assignments. A two hour morning peak (7:00 to 9:00 a.m.) and two, one-hour morning peak shoulder periods (6:00 to 7:00 a.m. and 9:00 to 10:00 a.m.) effectively cover the morning peak period. Six hours are needed to capture the evening peak period, including: a two-hour early evening peak (4:00 to 6:00 p.m.) plus two hour afternoon and evening peak shoulder periods on either side of the PM peak (2:00 to 4:00 p.m. and 6:00 to 8:00 p.m.). This leaves a nearly uniform four-hour midday period between the two peaks (10:00 a.m. to 2:00 p.m.), and an off-peak period (8:00 p.m. to 6:00 a.m.) covering the late evening and early morning hours.

The time period assignments provide a more detailed and accurate picture of congestion effects in the highway network, which is advantageous for several reasons. While daily estimated traffic volumes may just be marginally improved compared to volumes produced by average daily assignments, estimates of network speeds are substantially improved and regional vehicle-miles of travel agree more closely with state estimates of daily vehicle-miles. Since congestion is more correctly modeled, impacts from proposed highway improvements that reduce congestion are also more accurately reproduced by the time period assignments.

Time-of-day factors

Auto trips processed through the mode choice-destination choice model proceed to the time-of-day model, where they are assigned to one of the eight TOD periods. Truck trips and the external auto trips are not part of this process, so factors are applied to convert this demand into TOD trips. These factors are listed in Table 88.

TOD factors for the other trips were developed using the following methods:

Heavy trucks: Time-of-day factors for these vehicles were derived directly from the ATRI truck trip dataset. These same factors are applied to external truck trips.

Light and medium trucks: Factors for these vehicles were developed using transaction data from the Illinois Tollway; specifically focusing on Tier 2 and Tier 3 transactions (which correspond to CMAP's light and medium truck categories, respectively). These data were combined with hourly count data of single unit trucks on Cook County arterials provided by IDOT. The final factors represent an averaging of these two data sources.

All other vehicles: The TOD factors for all other vehicles were developed from the model validation time-of-day traffic analysis.

Table 88. Commercial vehicle and external auto time-of-day factors

	Period 1	Period 2	Period 3	Period 4	Period 5	Period 6	Period 7	Period 8
external auto	0.163	0.052	0.127	0.051	0.211	0.133	0.155	0.109
Air Passenger to/from airports	0.163	0.052	0.127	0.051	0.211	0.133	0.155	0.109
B trucks	0.230	0.007	0.016	0.016	0.238	0.165	0.176	0.152
L truck	0.230	0.007	0.016	0.016	0.238	0.165	0.176	0.152

M trucks	0.230	0.007	0.016	0.016	0.238	0.165	0.176	0.152
H trucks	0.213	0.044	0.121	0.067	0.266	0.121	0.103	0.065
external trucks	0.213	0.044	0.121	0.067	0.266	0.121	0.103	0.065

Volume-delay functions

The volume-delay functions (VDFs) are used to represent the congestion that occurs on links as traffic volumes increase. The volume-delay functions include estimated traffic signal characteristics for links that end at signalized intersections. This means that assignments are sensitive to signal characteristics and can reflect major signal modernization programs. In addition to more accurately representing the characteristics of the network, these signal sensitive volume-delay functions allow the emission reductions from signal improvements to be evaluated.

CMAP's volume-delay functions have evolved from their initial versions because of the previous functions' limitations when they were used for time period assignments. Their most severe limitation was that freeways and expressways tended to be over-assigned in the congested peak time periods. Several factors contributed to this peak period over-assignment including: (1) an unrealistic initial peak period assignment since paths were built using uncongested travel times; (2) the inability to model bottlenecks in the freeway network that occur during peak periods, and; (3) not restricting freeway on-ramps whose peak period capacities were controlled by metering. The approach taken was to alter the volume-delay functions for freeways, expressway and metered freeway entrance ramps so that travel times increase far more quickly after capacity is reached. The capacities of metered on-ramps are also set to maximum metered flow rates.

Note that the link volume included in the volume-delay function calculations includes all assigned auto and truck traffic (in VEQs), as well as buses operating on the roadway links, represented as three vehicle equivalents. The capacity values in CMAP's VDFs represent lane capacities at level of service E traffic conditions except for arterials (vdf1) and ramps connecting freeways (vdf5), which reflect level of service C.

VDFs for links ending at signalized intersections (vdf1 and vdf3)

Intersection delays in the volume-delay functions are based upon the Webster equation.[6] In this equation, intersection delay has uniform and incremental components, and both are rather complicated to calculate. For CMAP's volume-delay functions, simpler regression equations were fit to calculated uniform and incremental delays for a range of signal cycle lengths and green time-to-cycle length ratios.

The regression equations for uniform and incremental signal delays are combined with link travel time estimates in the first (arterial) and third (freeway exit ramp to arterial) volume-delay functions as follows:

Link travel time between intersections is:

[6] F. V. Webster and B. M. Cobbe, *Traffic Signals*. Road Research Laboratory, Ministry of Transport Road Research, Technical Paper No. 56, 1966.

$$T_{link} = T_0 \times \left(1 + 0.15 \times \left(\frac{volume}{capacity}\right)^4\right)$$

This is the widely used BPR (Bureau of Public Roads) function where T_{link} equals the link's travel time without any intersection delay and T_0 is the uncongested link travel time without intersection delay. The uncongested link travel time is computed using the maximum speed permitted on the link. Quantity *volume* is the link's traffic volume for the time period in auto equivalents. Capacity represented within the link travel time function is approximately the service volume at level of service C. It is calculated as 75 percent of the level of service E time period link capacity. Note that link capacity is calculated by multiplying the hourly lane capacity by the number of lanes and the number of hours in the assignment time period.

Uniform intersection delay is the maximum of zero or:

$$D_u = 5.96 \times \left(\frac{volume}{capacity}\right) - \left(0.234 \times cycle \times \frac{green}{100}\right) + (0.21 \times cycle) - 4.47$$

Where D_u is the average uniform intersection delay at the link's j-node in seconds. *Green* is the green time allowed the link at the j-node intersection and *cycle* is the cycle length at the intersection. Both quantities are in seconds. The uniform delay is restricted to positive values in the volume-delay functions.

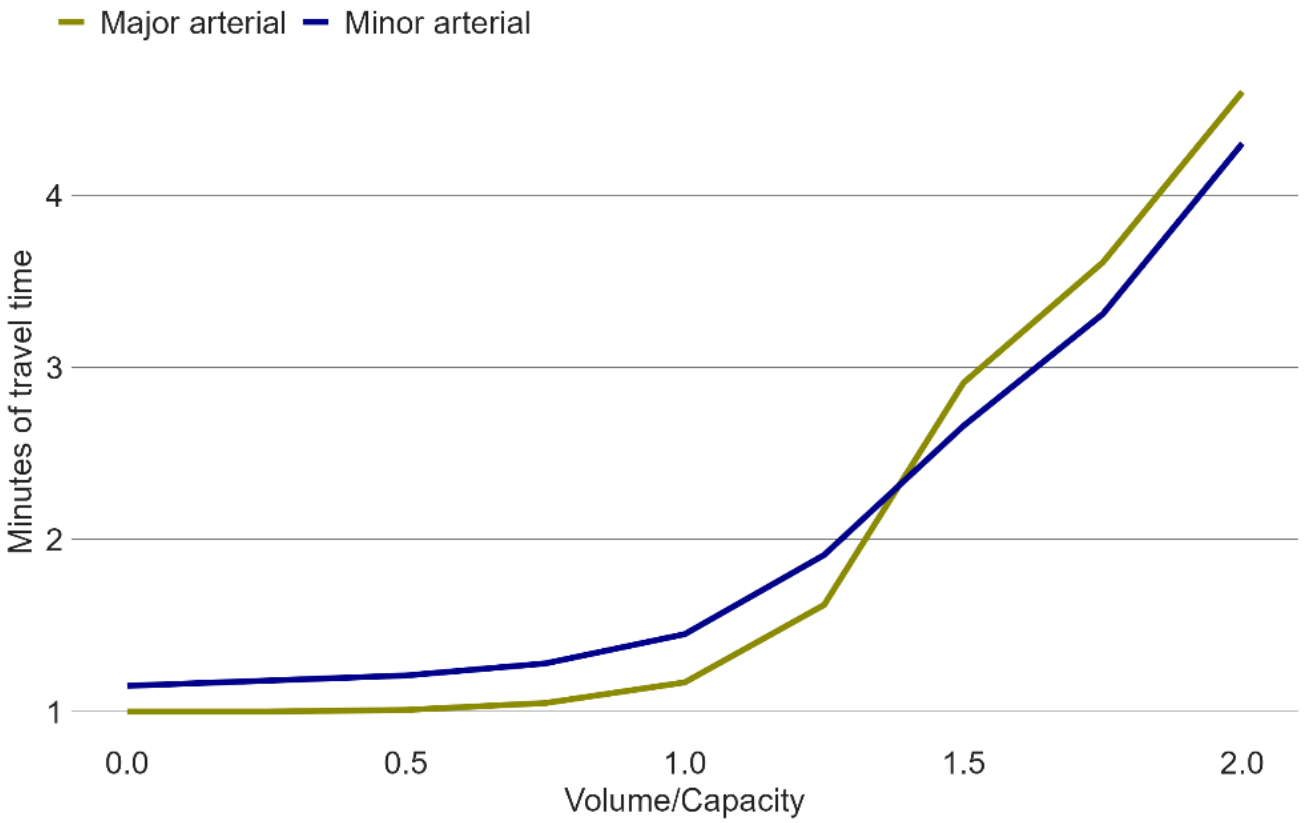
Incremental delay at intersections is the maximum of zero or:

$$D_i = 2.65 \times \left(\frac{volume}{capacity}\right)^8 - \left(7.3 \times \frac{green}{100}\right) + 0.338$$

Where D_i is the average incremental intersection delay at the link's j-node in seconds. Incremental delay is also restricted to positive values in the volume-delay functions.

Figure 14 shows the estimated travel times for a major and minor arterial including intersection delay. Both arterials have an uncongested travel time of one minute between intersections. For the minor arterial the signal cycle length at the j-node is ninety seconds, and the link receives thirty seconds of green time in the cycle. The signal cycle length at the j-node is 120 seconds for the major arterial, with ninety seconds of green time in the cycle. The major arterial is allowed more green time at the j-node than the minor one and intersection delays on the major link are less than on the minor link until the volume to capacity ratios exceed 1.25. Both volume-delay relationships have a kink in them because the maximum combined uniform and incremental intersection delay is limited to one cycle length.

Figure 14. Example volume-delay functions for two arterial links



VDFs for freeways and expressways (vdf2, vdf4 and vdf5)

The second (freeway), fourth (expressway) and fifth (freeway-freeway ramps) volume-delay functions start with a variation on the BPR function. Additional adjustments were made to the expressway function: uncongested link travel times on freeway links were reduced 15 percent to reflect drivers' tendency to exceed speed limits on high-volume facilities at low traffic volumes, and the link capacity value was increased by 300 vehicles to reflect traffic management and operations strategies implemented on the region's Interstate system. For all three of these VDFs the exponent was increased from the BPR value to increase travel times more dramatically for volume to capacity ratios greater than one. The quantity T_0 is determined by the maximum legal speed

For freeways (vdf2):

$$T_{link} = \left(\frac{T_0}{1.15}\right) \times \left(1 + 0.15 \times \left(\frac{volume}{capacity + 300}\right)^8\right) \times \left(1 + 0.15 \times Minimum\left(\frac{volume}{capacity}\middle|1.0\right)\right)$$

For expressways (vdf4):

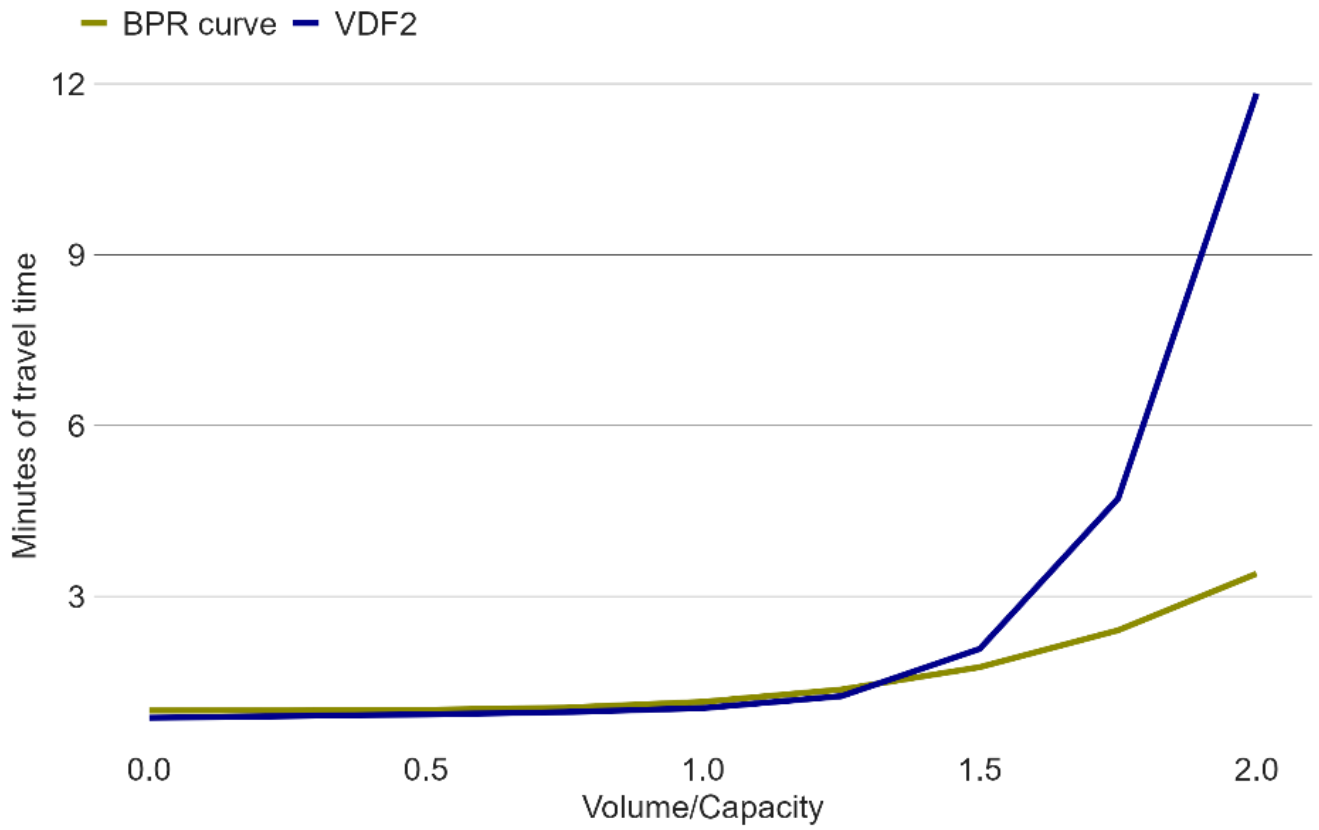
$$T_{link} = T_0 \times \left(1 + 0.15 \times \left(\frac{volume}{capacity}\right)^8\right) \times \left(1 + 0.15 \times Minimum\left(\frac{volume}{capacity}\middle|1.0\right)\right)$$

For freeway-to-freeway ramps (vdf5)

$$T_{link} = T_0 \times \left(1 + 0.15 \times \left(\frac{volume}{capacity}\right)^8\right)$$

Figure 15 compares expressway link travel times using CMAP's VDF to those from the original BPR volume-delay function for a one mile link with a maximum speed of 60 miles per hour. At volume to capacity ratios below 1.25, both functions predict very similar link travel times; in fact, the CMAP value is slightly below that of the BPR curve due to the lower initial uncongested travel time. For volume to capacity ratios greater than 1.25, the travel time predicted by CMAP's function is higher and rapidly increases because the volume to capacity ratio is exponentiated to a higher power.

Figure 15. Revised BPR volume-delay function for freeway links



VDF for metered freeway entrance ramps (vdf8)

For metered freeway entrance ramps, the original BPR function is revised so that travel time greatly increases when the link volume exceeds the maximum metered flow rate. This effectively restricts the ramp's volume to the metered flow rate. The adjusted BPR function is:

$$T_{link} = T_0 \times \left(1 + 0.15 \times \left(\frac{volume}{metered\ flow}\right)^{10}\right)$$

The maximum metered flow rate is taken as 720 vehicles per hour per lane, or an average vehicle delay at the ramp metering signal of five seconds.

VDF for links with tolls (vdf7)

The original toll collection link volume-delay function implemented in the trip-based model decades ago attempted to measure delay at the toll collection facility itself through the generalized cost (time and money) of using the facility. This method of reflecting the impact of tolls on individuals' route choice makes little sense today given the state of toll collection technology. The entire system operated by the Illinois Tollway uses electronic toll collection technology: mainline plazas require no reduction in operating speed and no-stop tolling is available at ramp tollbooths. Further, most toll transactions in the CMAP region use transponders, thus only a small share of tollway drivers even stop at plazas.

The current toll collection link volume-delay function merely reflects the travel time on the link (generally coded as 200 feet long) based on the average speed of the incoming link. These links are of negligible length within the larger overall network. Thus, no attempt is made to constrain their capacity. The true impact of tolling on route choice is measured through the generalized cost procedures described earlier.

Link speeds

Traffic volume on every link for each period of the day is one product of the time-of-day network assignment. The speed of travel for each link is calculated by an equation that uses the volume-capacity ratio for the link as the independent variable. The following equations are used to produce the final link speed.

Freeways:

$$S=S_0 \frac{1}{1+0.15\,(V/C)} \times \frac{1}{1+0.15\,(V/C)^8} \qquad \text{for } V/C \le 1$$

$$S=S_0 \frac{1}{1+0.15\,(V/C)^8} \qquad \text{for } V/C > 1$$

Arterials:

$$S=S_0 \frac{1}{(\ln(S_0) * 0.249) + 0.153\,(V/(C * .75))^{3.98}}$$

Where:

S = Speed on link used for emission calculation

S_0 = Initial speed on link

V/C = Volume-capacity ratio for the link

These curves represent modifications to the BPR curves that have been used at CMAP and other agencies for many years. Consistent with a national trend for agencies to use modified curves based on local data, these curves are based on the information gathered from local empirical data. The freeway curve is the same as used in the volume delay functions in the time-of-day assignment

iterations. The arterial curve is slightly modified to better correlate with the empirical data. The data used to develop the modification is from IDOT's traffic sensor system for the expressway system as well as CATS-conducted speed runs for the arterial system. This database is documented in CATS Working Paper 95-09: Travel Time Database and Structure Chicago Area Expressway System (September 1995), and CATS Working Paper 97-09: 1994, 1995 and 1996 Combined Travel Time Database Documentation: Arterial Highway System (July 1997)[7]. The methodology for the curve development is presented in CATS Working Paper 97-12: Method for Adjusting Modeled Speeds Based on Empirical Speed Data (August 1997).

Emissions calculation

As northeastern Illinois does not meet federal air quality standards for ozone, CMAP must show the region's long range transportation plan and Transportation Improvement Program meet established emission budgets. This is the air quality conformity process. Final link volumes and link speeds from the travel demand model serve as inputs to the vehicle emissions model, which is used to make the conformity determination. Please refer to the Air Quality Conformity Documentation Appendix for more information.

Travel model validation

An important step following the development of a travel model is model validation, demonstrating that model results are reasonable when compared to observed data. Model validation is focused on comparing the results of a calibrated travel model to other data sources such as daily traffic counts, daily transit boardings, and more recent Census data. Best practice within travel demand modeling is to use different datasets for model calibration and validation activities to confirm that the results reasonably replicate observed travel patterns. In instances where comparison data are limited, a dataset may be used for calibration and validation if the data records are separated into distinct subsets for each purpose.

There are no specific regulations defining what a well-validated travel model looks like, and the federal government has not developed specific benchmarks that must be met to show that a travel model is well-validated. The Federal Highway Administration has published the Travel Model Validation and Reasonableness Checking Manual to offer guidelines and examples on how travel model validation can be evaluated. It is important to note that no single evaluation measure can be used to determine if travel model results are reasonable. Rather, the model should be evaluated across an array of measures to establish an overall pattern consistent with observed data.

Travel demand model results are not expected to perfectly match observed data, and in fact travel demand modelers are wary of "over-fitting" models. This refers to adjusting model parameters to a

[7] Note: All CATS Working papers are available on the CMAP Data Hub.

point where the results nearly match observed data. While this might sound like a worthwhile goal, it is often the case that this level of fine-tuning leads to a loss in the model's sensitivity to key variables and thus diminishes the model's explanatory and predictive capabilities.

The following sections, divided into trip generation, trip distribution, mode choice, and travel assignment, compare various aspects of the model against real-world measurements.

Trip generation

Household crosstabs

This section compares the travel models' synthetic households to the 2017-2021 5-year ACS PUMS data. The households used in the trip generation model are developed during the population synthesis process within the UrbanSim land use model. Household characteristics are defining factors used within trip generation to develop daily household productions and attractions, which are the building blocks for the remainder of the travel model.

Data are summarized for the seven counties in CMAP's Metropolitan Planning Area (MPA) and the external area that comprises the remainder of the modeling geography. The PUMS data were summarized to be consistent with the household type definitions used in CMAP's trip generation model (e.g., adults were defined as anyone age 16 and older).

In total, the travel model's household characteristics match PUMS data very closely, with differences of less than one percent in most categories. The largest differences between modeled and observed household characteristics occur in very large or very small household sizes. Figures 16 through 18 below describe these differences in more detail.

Figure 16 compares households by number of adults and children. The single largest categories are "1 Adult, 0 Children" households and "2 Adult, 0 Children" households within CMAP's seven counties, which combined represent nearly half of the total households in the model. The model slightly underrepresents "1 Adult, 0 Children" households (by 1.4 percentage points) but matches the share of "2 Adult, 0 Children" households almost exactly. All other categories show a close correlation between the modeled and observed data.

Figure 16. Share of households by number of adults and children

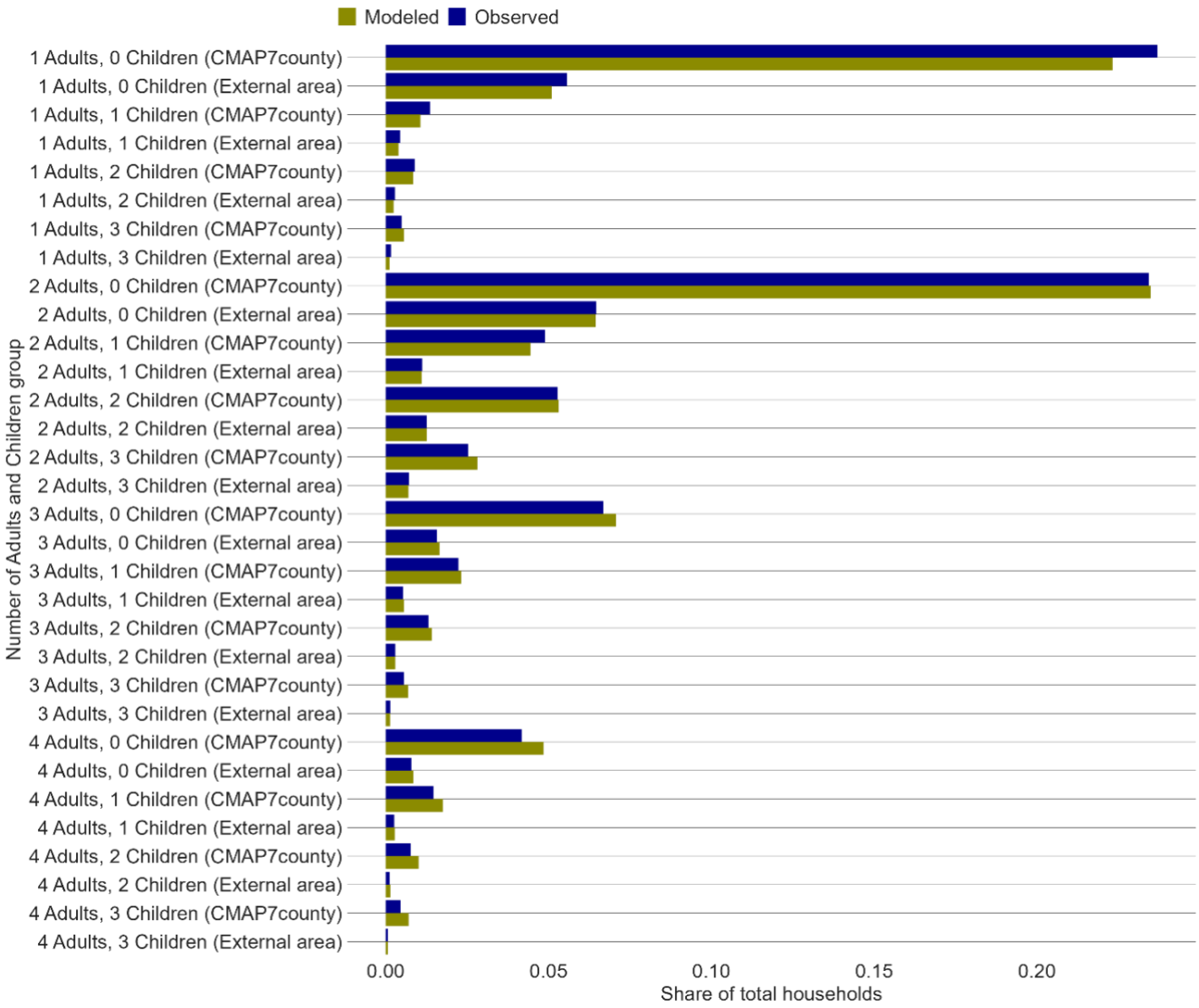


Figure 17 compares households by number of adults and workers. The largest category is “2 Adult, 2 Worker” households in the CMAP seven counites, and the modeled share of total households nearly matches the observed share exactly. The model slightly underrepresents both categories of “1 Adult” households in the CMAP area and overrepresents households with at least four adults and at least three workers in the seven counties. Overall, the modeled data closely matches the PUMS data.

Figure 17. Share of households by number of adults and workers

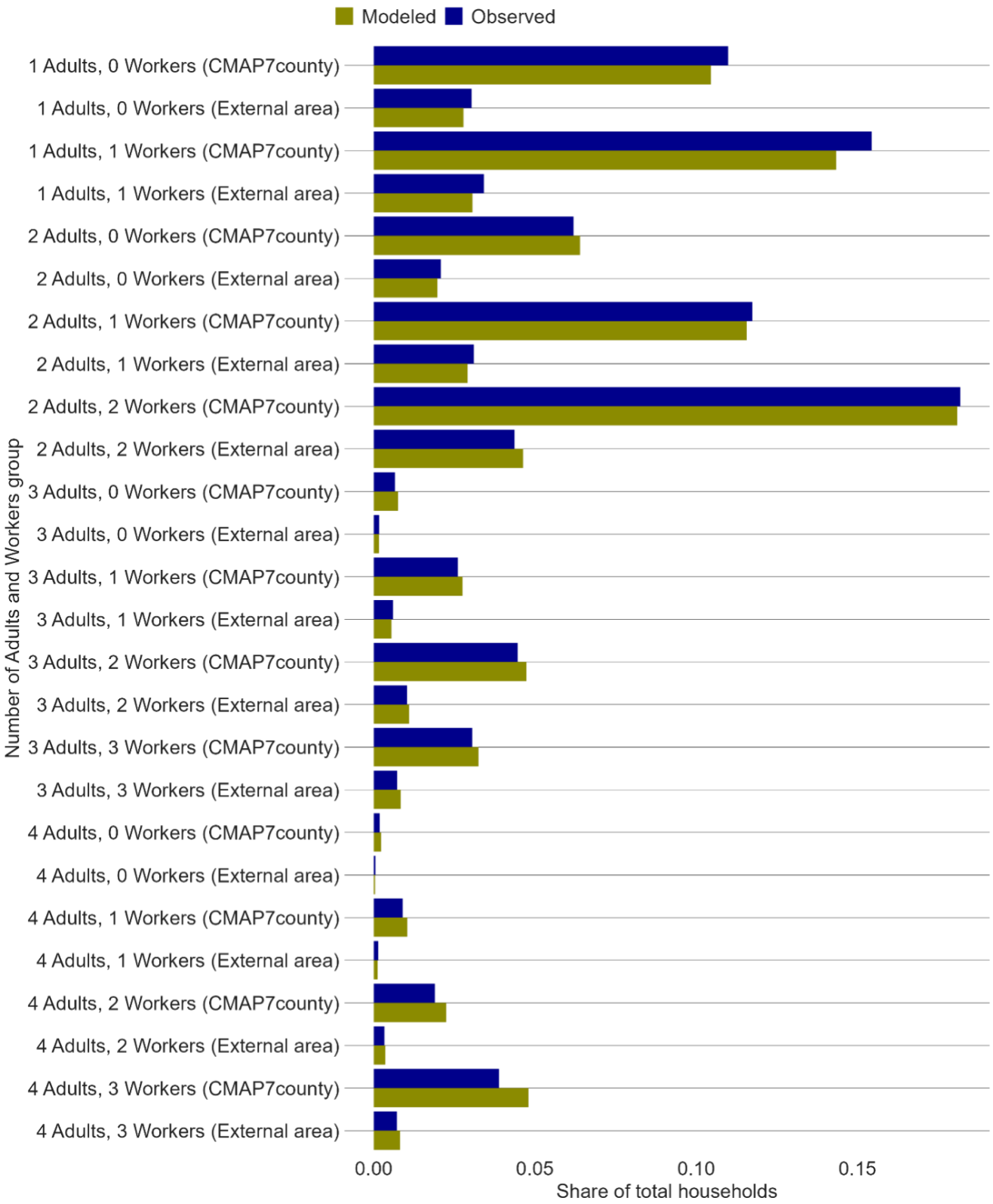
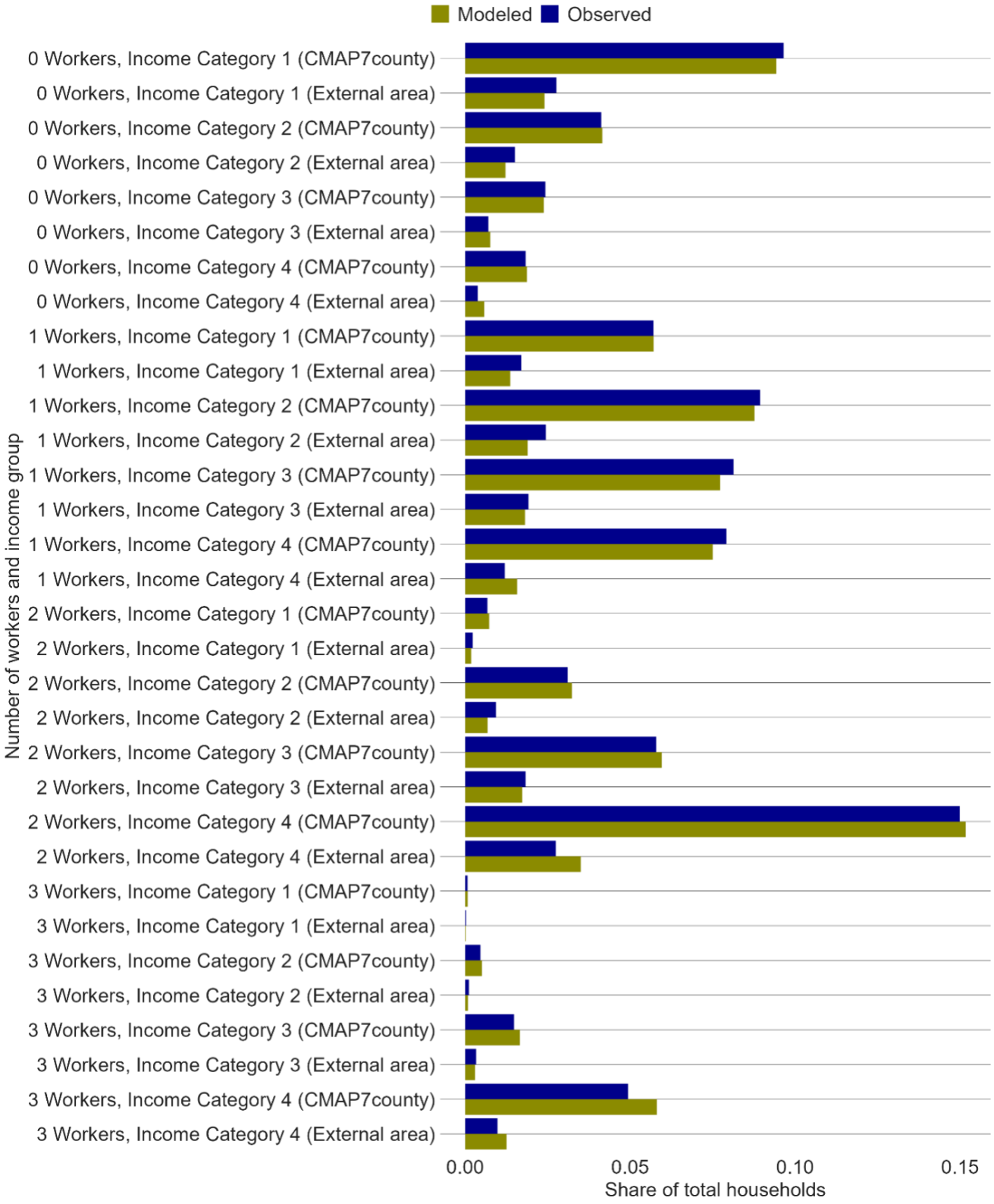


Figure 18 compares households by number of workers and household income category. These reflect the income categories listed in Table 30. Overall, the modeled households reflect the observed data. Within the CMAP seven counties, the model slightly underpredicts the share of "1 Worker" households for all but the lowest income category and overpredicts the share of

households with at least three workers in the highest income category by around one percentage point.

Figure 18. Share of households by number of workers and income category



Vehicle availability crosstabs

Household vehicle ownership plays an important role in the model's trip generation and destination choice calculations. This section provides a comparison of vehicles available to synthetic households in the travel demand model to the 2017-2021 5-year ACS PUMS data for vehicle ownership per household.

Overall, the travel model data exhibits the same pattern as the PUMS data. Figure 19 below shows the share of total households in both CMAP's seven-county and the external area by number of vehicles available and adults per household. Households with 2 adults and 2 vehicles make up the largest share of households in the 7-county region (20 percent for both the PUMS data and the CMAP model data). The second largest group is households with 1 adult and 1 vehicle in the 7-county region, which the travel model slightly underestimates.

Figure 19. Household share by number of vehicles and adults

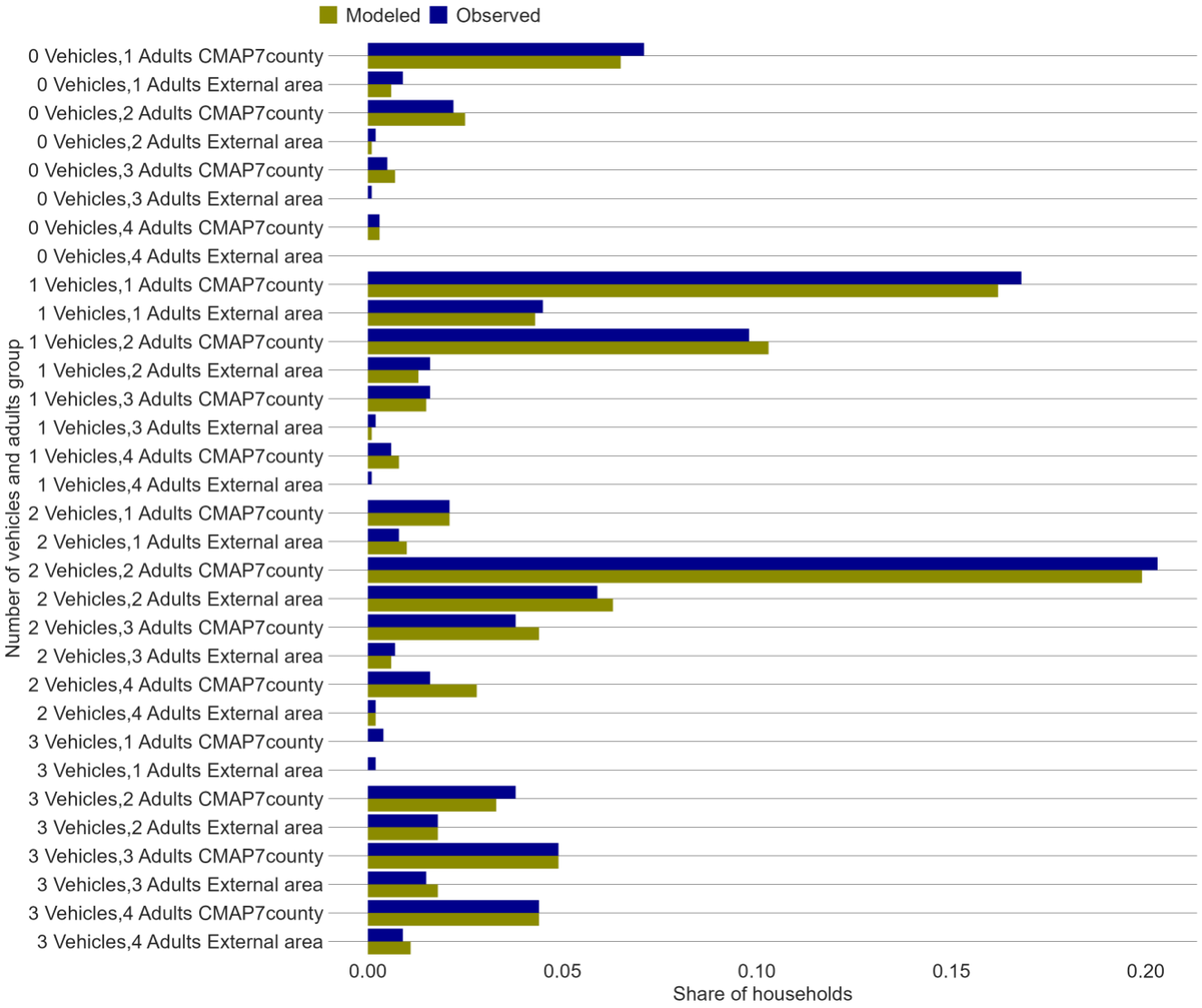


Figure 20 illustrates the share of total households by number of vehicles and number of workers. The model shows a pattern that closely matches the observed data. The two largest categories are 1 vehicle-1 worker and 2 vehicles-2 workers in the 7- county region. The discrepancies between the modeled and observed data for these categories are less than one percentage point.

Figure 20. Household share by number of vehicles and workers

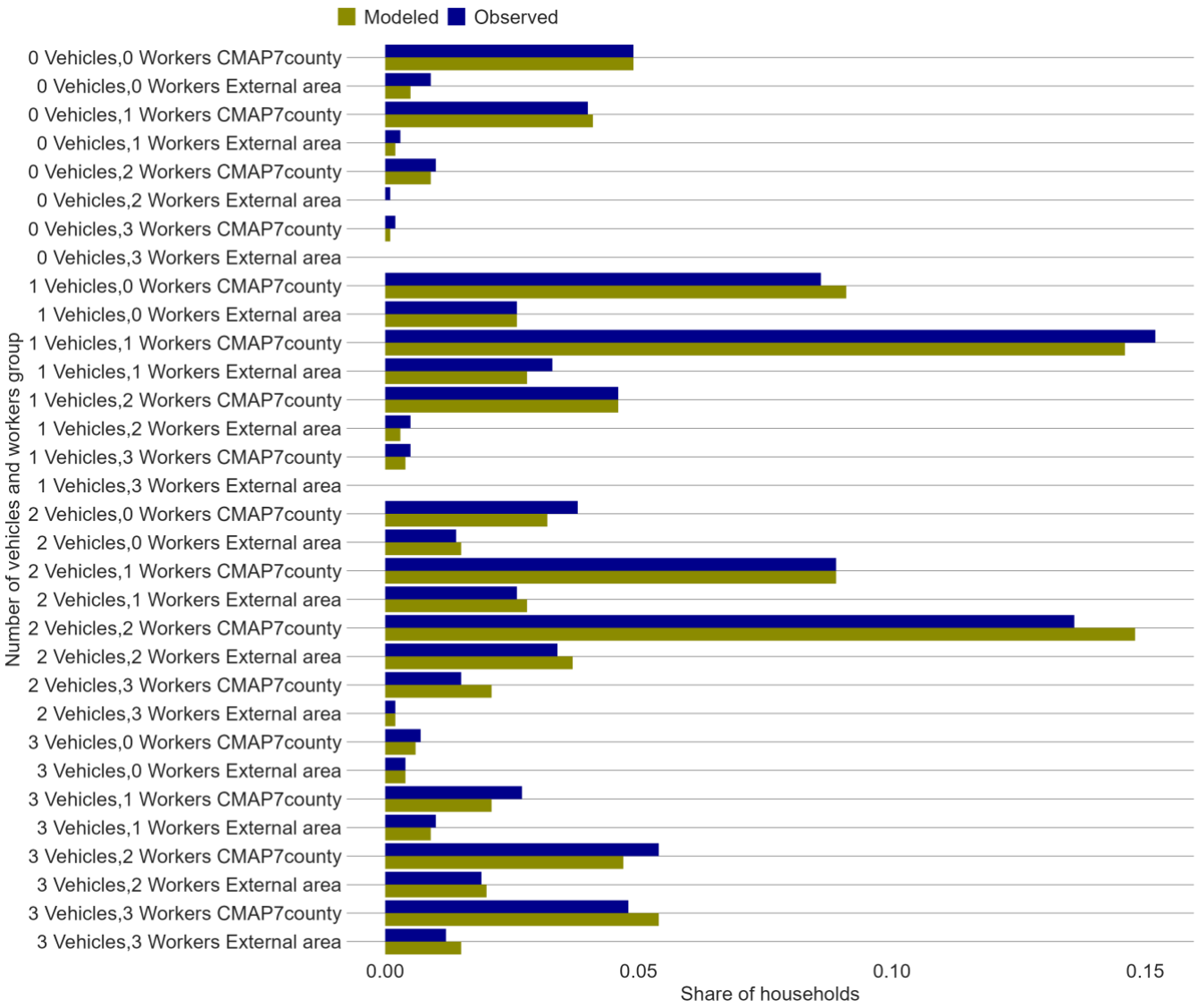
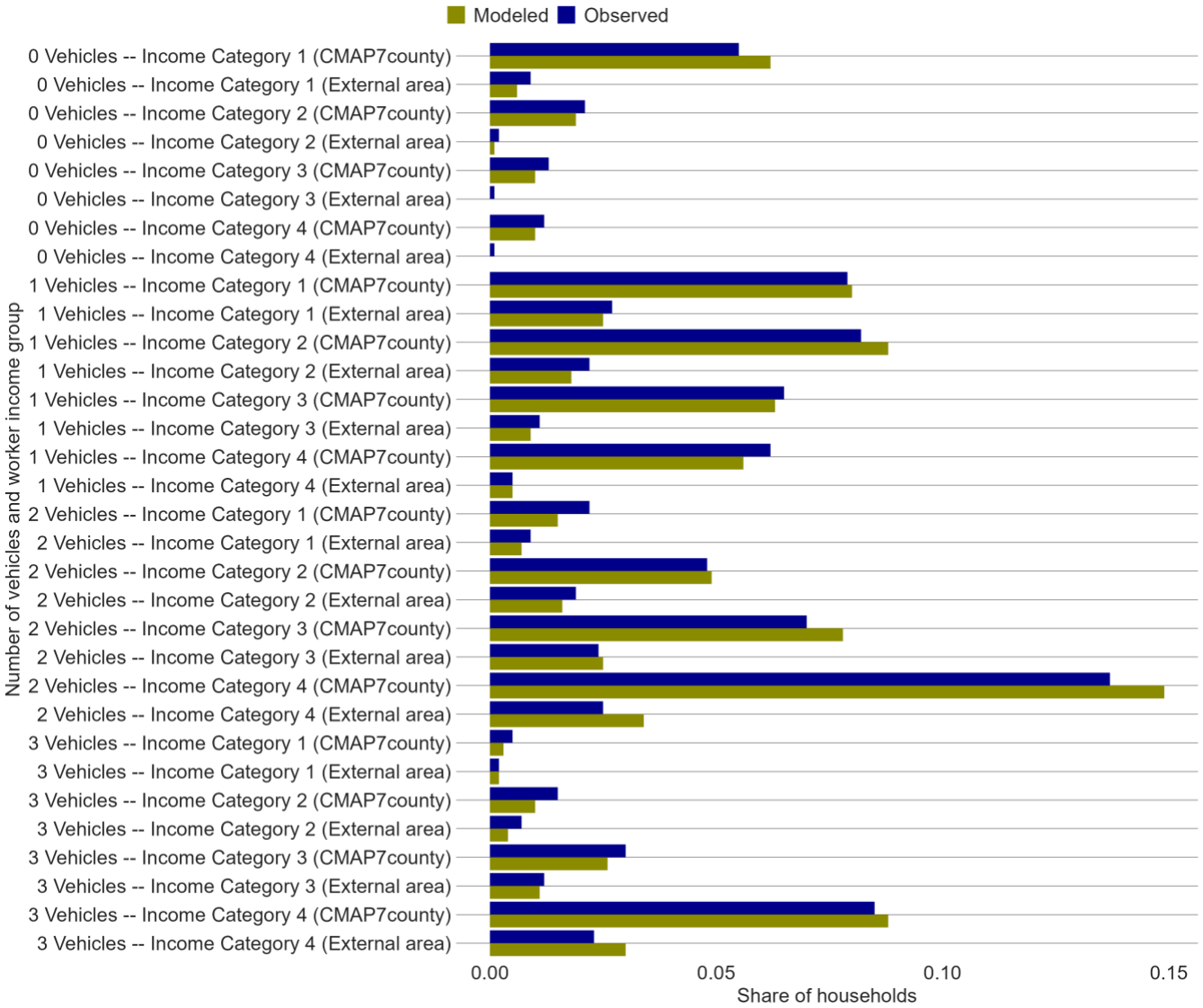


Figure 21 shows the share of total households by number of vehicles and household income category. Comparing households based on these attributes, the largest model overestimation occurs in the two-vehicle category in the highest income level for both the CMAP seven-county and external areas. Overall, the model data support the general pattern reflected in the PUMS data.

Figure 21. Household share by number of vehicles and income category



Trip rates versus the NHTS

Once household information is imported and processed, the trip generation model converts household data into individual trips. To verify the reasonableness of the number of trips generated in the CMAP travel demand model, data are compared to the 2017 National Household Travel Survey (NHTS). The NHTS data have been processed to make trip purpose definitions as comparable to the CMAP model definitions as possible, and trips with a primary purpose of "change mode" or "serve passenger" have been linked with the following trip.

Table 89 displays average household trip rates in the model and in the 2017 NHTS. Home-based shopping trips and non-home based trips contain the largest difference between the model and the NHTS, with a daily trip difference of 0.3 trips per household for each purpose. Home-based work and home-based other trips are within 0.1 trips per household compared to the NHTS.

Table 89. Average household trip rates

Trip purpose	CMAP model	2017 NHTS	Difference
Home-based work	1.7	1.6	0.1
Home-based shop	0.7	1.0	-0.3
Home-based other	2.9	2.8	0.1
Non-home based	1.9	2.2	-0.3
All trips	7.2	7.6	-0.4

Table 90 provides a trip rate comparison for households with and without teleworkers. The model data show patterns like the NHTS data: fewer home-based work trips in households with teleworkers and more home-based other trip in households with teleworkers. Note that the NHTS data for home-work trips for households with teleworkers seems a bit questionable. It shows virtually no difference in the average number of home-work trips for households without teleworkers, which is counterintuitive and conflicts with other observed data. The largest discrepancy between the model data and the NHTS data occurs for non-home based trips in households with teleworkers, with the model showing a small decrease in values while the NHTS shows a small increase. Non-home based trips are one of the more difficult trip purposes to estimate because the origin and destination of these trips are both unknown at the beginning of modeling, while for home-based trips either the origin or destination is the home location. The model underestimates non-home based trips for households with at least one teleworker by less than one trip, which is not large enough of a discrepancy to cause concern.

Table 90. Average household trip rates based on the presence of teleworkers

Teleworkers	Trip purpose	CMAP model	2017 NHTS	Difference
Households with zero teleworkers	Home-based work	1.8	1.6	0.2
	Home-based shop	0.7	1.0	-0.3
	Home-based other	2.8	2.7	0.1
	Non-home based	2.0	2.2	-0.2
	All trips	7.3	7.5	-0.2
Households with at least one teleworker	Home-based work	1.1	1.5	-0.4
	Home-based shop	0.9	1.0	-0.1
	Home-based other	3.7	3.4	0.3
	Non-home based	1.6	2.5	-0.9
	All trips	7.3	8.4	-1.1

Employment

In addition to reviewing household data, it is important to look at employment data, another driver of activity within the trip-based model. Table 91 presents a comparison between the work trip attractions and jobs, and between the employment used as input to the trip generation model and observed Longitudinal Employer-Household Dynamics (LEHD) employment. Within the CMAP region, the 2019 total employment considered by the trip generation model is virtually identical to the 2019 LEHD regional employment. This is expected given that both are derived from data provided by the Illinois Department of Employment Security (IDES). The model uses IDES data that has been improved by CMAP staff to properly allocate employment inaccurately reported at

headquarters locations to their actual branch locations. The LEHD data do not reflect these updates.

If all workers traveled to their jobs each day, the model would produce two attractions for every job, since the production-attraction format of the trip data in the model reflects both the home-to-work and work-to-home trips as ending at work. However, many people do not go to work every day due to job schedules, vacations, appointments, illness, or a host of other reasons, so the true number of attractions per job should be less than two. A benchmark of between 1.20 and 1.55 work attractions per job is commonly cited as a reasonable range based on work from the Florida Department of Transportation. All counties within the CMAP area have a modeled ratio within the benchmark range and compare reasonably well with the observed ratios, with the largest discrepancies in Kendall and McHenry counties.

Table 91. Modeled home-based work attractions per observed employee

	Attractions	Model input employment	Observed employment	Attractions / Model input employment	Attractions / Observed employment	Employment difference (model – observed)
Chicago - Cook	2,064,068	1,409,162	1,444,392	1.46	1.43	-2.5%
Suburban Cook	1,528,962	1,220,829	1,221,801	1.25	1.25	-0.1%
DuPage	781,790	617,695	639,614	1.27	1.22	-3.6%
Kane	267,367	213,415	218,456	1.25	1.22	-2.4%
Kendall	40,368	32,972	28,366	1.22	1.42	14.0%
Lake	436,010	346,755	334,367	1.26	1.30	3.6%
McHenry	130,675	104,639	93,794	1.25	1.39	10.4%
Will	331,743	267,366	260,203	1.24	1.27	2.7%
CMAP region	5,580,983	4,212,833	4,240,993	1.32	1.32	-0.7%

Sources: LEHD Origin-Destination Employment Statistics (LODES7) data by county, 2019 Workplace Area Characteristics for All Jobs accessed via the 'lehdr' R package.

Work from home household analysis

Many workers in the region work from home for one or more days of the workweek. It is important to accurately model work-from-home behavior since working from home directly impacts the volume of traffic on the roadway. Observed data was obtained from 2017-2021 5-year ACS PUMS data. Work-from-home rates were compared at the worker level and at the household level. Table 92 shows the modeled share of work-from-home workers compared to the observed share of work-from-home workers by county.

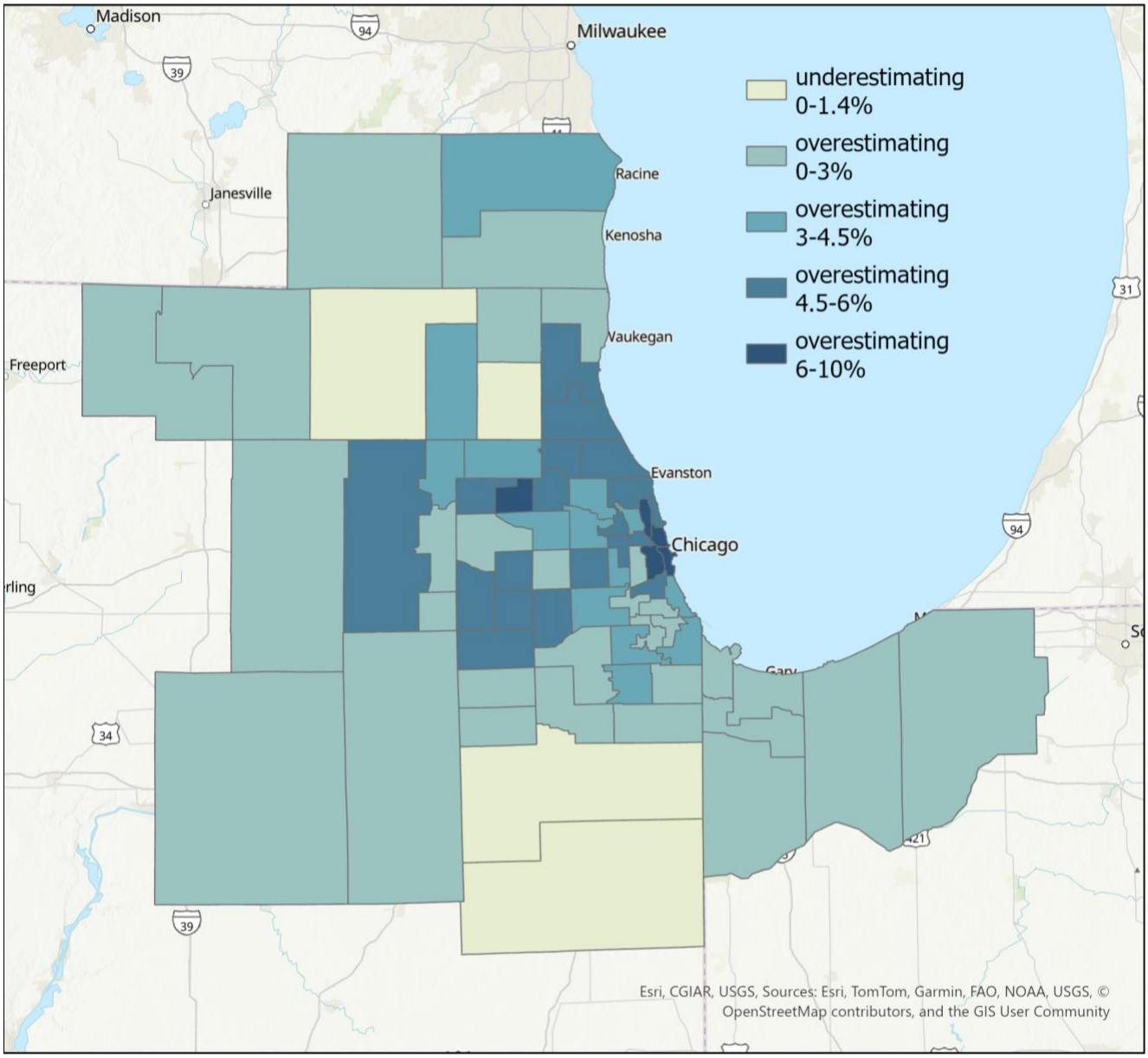
Table 92. Modeled vs observed share of work from home workers by county

County	Modeled	Observed
Cook	0.088	0.026
DuPage	0.106	0.041
Kane	0.076	0.027
Kendall	0.065	0.038
Lake	0.087	0.035
McHenry	0.085	0.035
Will	0.076	0.027

Regionally, modeled work-from-home households are 3.64 percent higher than is reported in the observed data. This is expected, because the ACS questionnaire asks survey respondents to describe their "typical" workday, missing individuals who work from home one or two days a week. As noted in the trip generation section, the CMAP model provides a more holistic accounting of teleworkers by including those workers who usually work from home (the PUMS share) and those who work from home on a less frequent basis.

Figure 22 depicts the differences in telework rates by PUMA. Modeled telework household rates range from 1.4 percentage points lower than the observed rate up to 10.2 percentage points higher than the observed rate. While the PUMS data tends to slightly underestimate work-from-home households due to its more limited definition of teleworkers, most PUMAs have a modeled rate that falls within 5 percentage points of the observed share.

Figure 22. Modeled versus observed household work-from-home rates, 2019



Trip distribution

Home-based work trip distances

After trips are generated, the travel model determines where and how individual trips are distributed throughout the region. Table 93 compares average work trip distances in the travel model against 2017-2021 ACS CTPP data, sorted by county of residence. Modeled roadway distances were applied to CTPP tract-to-tract trip flows to estimate the distance traveled on the transportation network. Regionwide, the model underestimates work trip distances from most counties by about 4.85 miles.

Table 93. Average work trip distances (miles) by residence county

County	Modeled	Observed
Cook	9.32	13.55
DuPage	11.18	14.77
Kane	12.44	17.42
Kendall	15.60	22.57
Lake	11.60	16.96
McHenry	13.52	19.60
Will	13.77	19.87
CMAP Region	10.69	15.54

Figure 23 displays the comparison between modeled and observed work trip distances by TAZ. Overall, modeled distances from trips originating within the MPA tend to match more closely to observed data compared to distances from trips originating outside the MPA.

Figure 23. Difference in average work trip distance

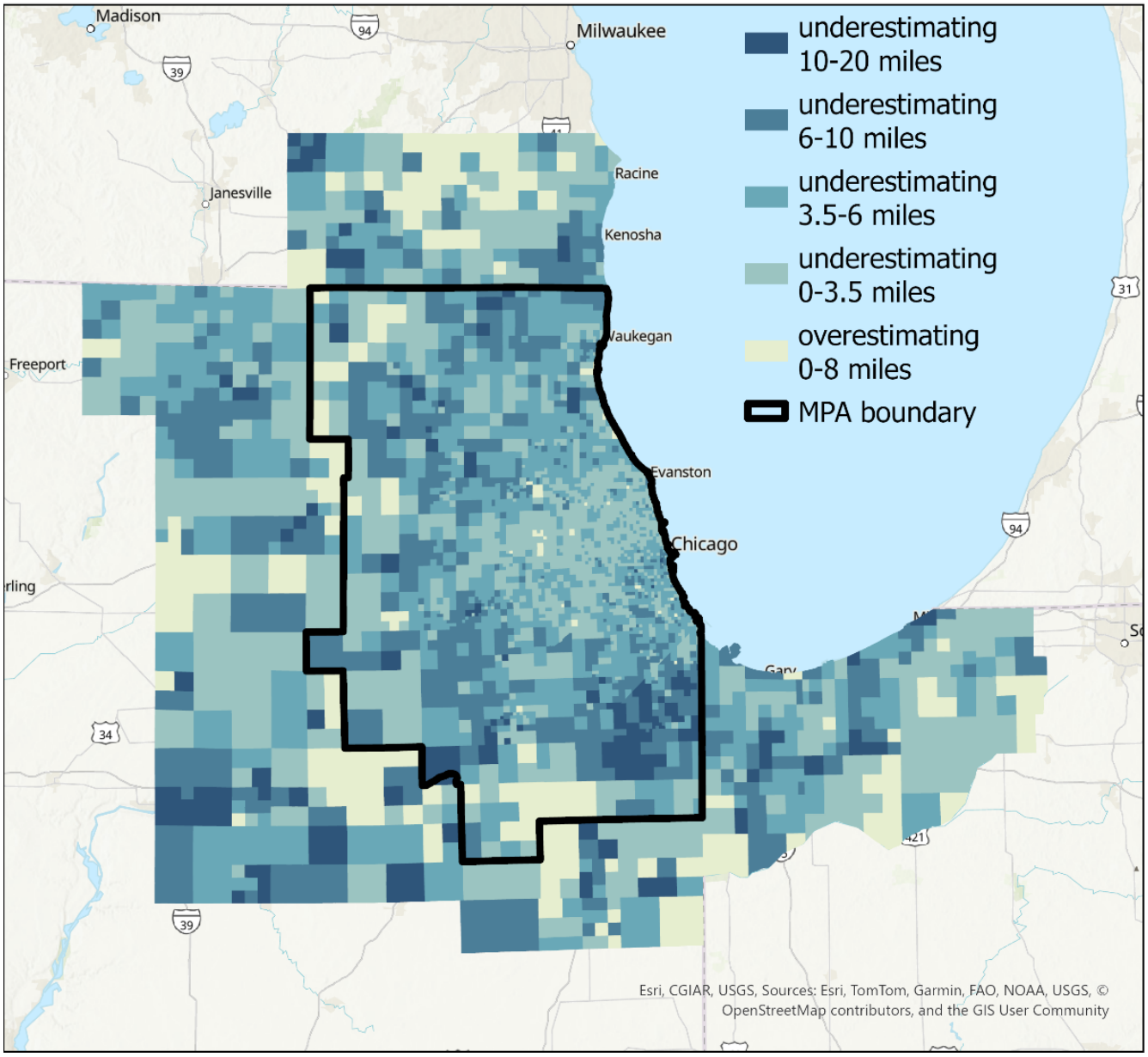
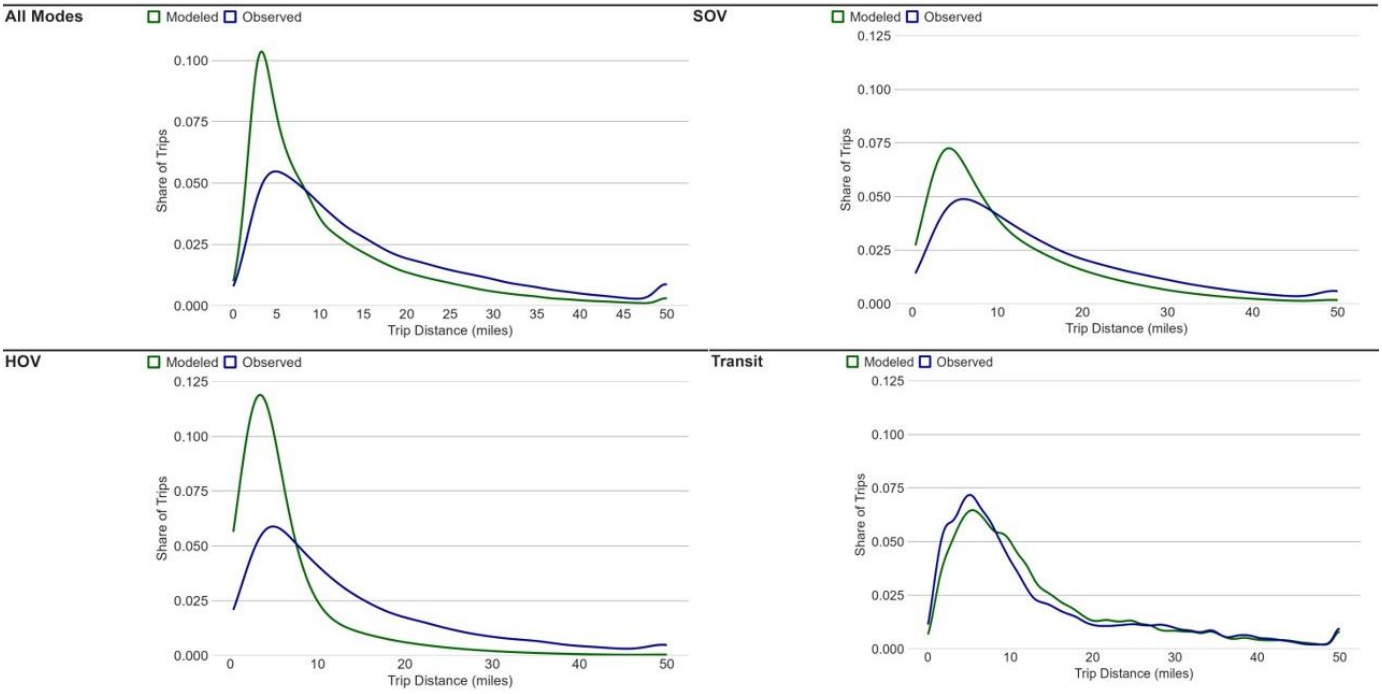


Figure 24 illustrates observed versus modeled trip distances by travel mode. For SOV and HOV modes, the model tends to assign shorter work trip distances compared to observed data. For transit trips, trip distances match relatively well with observed data.

Figure 24. Share of observed and modeled trips by distance for each mode



County-to-county work trip flow comparison

While the model tends to underestimate SOV and HOV trip distances, the number of modeled work trips strongly correlates to observed data. Table 94 illustrates a ratio of observed to modeled county-to-county work trips.

Observed trips comprise all primary jobs within the CTPP data derived from the 2017-2021 ACS. County-to-county ratios were calculated as the total number of modeled work trips divided by the total number of CTPP work trips. A ratio value of 1.00 reflects perfect agreement between the modeled and observed flows; values greater than 1.00 indicate more modeled trips than observed, while values less than 1.00 indicate less modeled trips than observed.

Overall, modeled and observed work trip flows for all county pairs have a correlation coefficient of 0.928, indicating a strong positive relationship between the sets of values. Most county pairs have modeled work trips within 30 percent of observed trips. County-to-county flows to, from, and between counties outside of the seven-county region tend to diverge from observed data more greatly; of the twelve county-to-county flows that are more than 50 percent different from observed data, eight include counties outside of the region. Large over- and under-estimations occurring in external counties are not as concerning as the travel model is primarily calibrated on the seven-county MPA.

Table 94. Work trip flow ratios

Origin	Cook	DuPage	Kane	Kendall	Lake	McHenry	Will	Ext. IL	Ext. IN	Ext. WI
Cook	0.88	0.74	0.93		0.51	0.73	0.63	0.25	1.70	0.30
DuPage	0.97	0.84	0.96	1.06	0.49		0.91	0.31		
Kane	0.81	0.94	0.95	0.68	0.92	1.28	1.16	1.00		
Kendall	0.73	0.91	1.01	1.00			1.38	0.77		
Lake	0.87	0.84	1.55		0.93	1.63				1.61
McHenry	0.65	0.68	1.20		1.07	1.01		1.22		1.49

Will	0.82	0.94	1.34	1.34	0.28		0.97	0.49	1.90	
External IL	0.67	0.73	0.59	0.73		0.79	0.74	1.17		
External IN	1.16	0.50					0.67		1.13	
External WI	0.57				0.85	1.98				1.15

Note: County-to-county interchanges with fewer than 1,000 observed work trips are excluded. Interchanges shown represent 99% of observed work trips.

Mode choice

Home based work mode share

Table 95 compares the mode share of modeled HBW trips within the MPA to observed commuter mode share from CTPP data derived from the 2017-2021 ACS. The model underestimates the share of SOV work trips by nine percentage points, and the model overestimates HOV trips by five percentage points. This means that the model represents the same number of trips with fewer vehicles, potentially leading to slightly lower localized traffic volumes and congestion than one would expect. The region-wide mode share for HBW trips is modeled quite well for all other modes relative to the CTPP 2017-2021 data.

Table 95. Modeled and observed home-based work trip shares

Mode	Modeled trips	Observed trips	Modeled share	Observed share	Share difference (modeled – observed)
SOV	2,413,850	2,657,285	0.65	0.74	-0.09
HOV	505,496	309,462	0.14	0.09	0.05
Transit	442,124	463,490	0.12	0.13	-0.01
Taxi-TNC	72,613	16,861	0.02	0.01	0.01
Bicycle	111,506	28,266	0.03	0.01	0.02
Walk	181,374	128,894	0.05	0.04	0.01
All	3,726,963	3,604,258	1	1	--

Source: CTPP Means of Transportation to Work 2017-2021 (Table B302103).

Distribution of transit origins and destinations

Table 96 and Table 97 illustrate how closely the model reproduces observed transit work trip patterns at the TAZ level. For each origin and destination zone, the modeled share of work trips made by transit is compared to the observed share from CTPP data. TAZs are grouped into bins based on the net percent difference between modeled and observed transit mode shares. These tables report the percentage of zones falling within each variance range, providing an overall measure of model calibration performance across the region.

Table 96. Transit work trip distribution by origin zone

Variance bin	Share of zones
±0-5%	61.7%
±5-10%	22.7%
±10-20%	14.5%
±20-50%	1.1%
±50-100%	0.1%

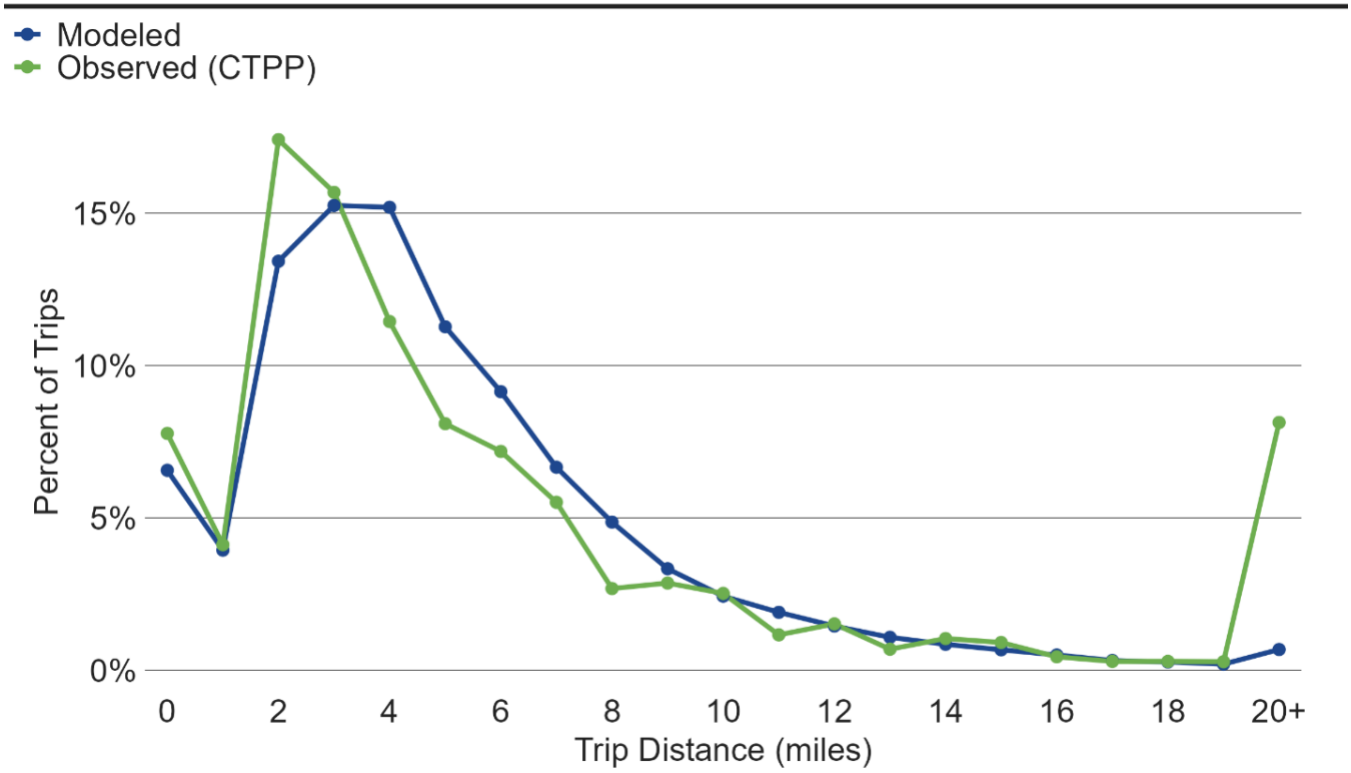
Table 97. Transit work trip distribution by destination zone

Variance bin	Share of zones
±0-5%	71.0%
±5-10%	14.9%
±10-20%	11.6%
±20-50%	2.4%
±50-100%	0.1%

Bike trip distance analysis

Figure 25 compares the trip distances of modeled bicycle work trips to those from the CTPP data derived from the 2017-2021 ACS. The distance distributions between the two are very similar. The model tends to overestimate bicycle commute trips between 3 and 8 miles, while understating the number of longer bicycle work trips (over 20 miles). It is worth noting that bicycle commute trips longer than 19 miles represent an extremely small portion of total commute trips.

Figure 25. Modeled versus observed bicycle work trip distance



Sources: CMAP travel demand model; CTPP 2021 Table B302103

Hired vehicle rates

Table 98 below compares hired vehicle trip rates from the trip-based model with CTPP data. Hired vehicle trips are defined as trips using one of the following modes: taxi, TNC shared rides and TNC solo rides. The modeled data tends to overstate the percentage of TNC trips across all counties within the region when compared to observed TNC trips. However, the difference is less than one percentage point for each county except DuPage, which is just over one percentage point.

Table 98. Hired vehicle home-based work trip mode share by origin county

Origin	Share of modeled work trips	Share of observed work trips	Difference (modeled – observed)
Cook	2.2%	1.4%	0.8
DuPage	1.9%	0.8%	1.1
Kane	1.9%	0.9%	1.0
Kendall	1.0%	0.7%	0.3
Lake	1.7%	1.0%	0.7
McHenry	1.1%	0.8%	0.3
Will	1.3%	1.1%	0.2

Carpooling rates

Table 99 below compares 2-person and 3-or-more person carpooling rates with CTPP data for commute trips. This table shows the trip-based model's tendency to overestimate HOV trips by vehicle occupancy levels. In most instances, modeled HOV work trips rest within a few percentage points of observed data.

Table 99. HOV home-based work trip mode share by origin county

	Modeled data		Observed data		Difference (modeled – observed)	
Origin	HOV2	HOV3+	HOV2	HOV3+	HOV2	HOV3+
Cook	8.5%	4.4%	5.8%	1.9%	2.7	2.5
DuPage	9.5%	4.6%	4.9%	1.5%	4.6	3.1
Kane	9.6%	4.8%	6.9%	2.4%	2.7	2.4
Kendall	8.7%	4.1%	4.4%	2.4%	4.3	1.7
Lake	10.0%	5.2%	6.3%	1.9%	3.7	3.3
McHenry	9.6%	5.0%	4.7%	1.9%	4.9	3.1
Will	9.3%	4.7%	5.3%	1.6%	4.0	3.1
Region	8.9%	4.6%	6.5%	2.1%	2.4	2.5

Commercial vehicles trips

Table 100. Heavy commercial vehicle trips by origin county shows a comparison of modeled and observed heavy truck trips by origin county. The observed data reflect July 2019 weekday conditions and are sourced from INRIX. Overall, results suggest the travel model slightly underrepresents heavy truck trips originating outside the CMAP region and traveling into the region. In the model, 9.1 percent of heavy truck trips begin in external Illinois counties, compared to 12.4 percent in the observed data. Grundy County represents over half of this variance.

Table 100. Heavy commercial vehicle trips by origin county

Origin	Modeled share	Observed share	Difference (modeled – observed)
Cook	34.2%	41.3%	-7.0
DuPage	14.0%	11.2%	2.8
Kane	5.3%	4.8%	0.5
Kendall	1.4%	1.5%	-0.1

Lake	8.7%	2.6%	6.1
McHenry	2.9%	1.0%	1.8
Will	14.2%	18.1%	-4.0
External IL	9.1%	12.4%	-3.3
External IN	5.9%	5.5%	0.4
External WI	4.3%	1.5%	2.8

Table 101shows a comparison of modeled and observed light and medium truck trips by origin county. The observed data reflect July 2019 weekday conditions and are sourced from INRIX. Overall, the CMAP model aligns reasonably well with observed origin shares for most CMAP counties, with the largest difference occurring in Will and Cook counties. In contrast, the model overrepresents trips originating outside the region, particularly from external Indiana and Wisconsin.

Table 101. Light and medium truck trips by origin county

Origin	Modeled share	Observed share	Difference (modeled – observed)
Cook	47.5%	56.9%	-9.4
DuPage	11.7%	11.2%	0.6
Kane	4.3%	5.2%	-0.9
Kendall	0.8%	0.8%	0.0
Lake	7.2%	6.3%	0.9
McHenry	2.4%	2.9%	-0.5
Will	5.7%	8.6%	-2.9
External IL	7.7%	5.6%	2.2
External IN	7.7%	1.8%	5.9
External WI	4.9%	0.7%	4.2

Traffic assignment (highway)

The highway assignment validation analysis examines two aspects of highway assignment: vehicle miles traveled (VMT) and corridor travel speeds.

Probe data analysis: travel speed

The National Performance Management Research Data Set (NPMRDS) provides vehicle probe data, including average travel time and speed by directional Traffic Message Channel (TMC) Code segments. TMC segments are unique geographies that are used to communicate traffic and travel data to and from motorists and are generally integrated into vehicle navigation systems. TMC segments used in this analysis range in length from less than 100 feet to up to 22 miles, with the average TMC having a length just under one mile. NPMRDS data used in this analysis reflect 2019 values and are reported for 15-minute periods.

The TMC analysis compares modeled travel speeds against observed speed information from probe measurements. As the modeled and observed data originate from independent networks with different geographies, CMAP developed a program for conflating the networks to transfer travel speed data from the model network to the TMC network.

Data were analyzed for four different time-of-day periods reflected in the trip-based model: Overnight (8 PM–6 AM), AM peak (7 AM–9 AM), Midday (10 AM–2 PM), and PM peak (4 PM–6 PM). To ensure the quality of the probe data used in this analysis, minimum thresholds of probe data were applied to the different time-of-day periods to ensure data quality, as shown in the table below (Table 102). For example, for a given TMC during the overnight period, data must exist for at least fifteen of the 40 total 15-minute time slices that comprise the overnight period for the data to be included in the analysis.

Table 102. Minimum data analysis threshold for NPMRDS sensor data

Time period	Total 15-minute time slices	Minimum data analysis threshold
1: Overnight (8 PM – 6 AM)	40	15
3: AM Peak peak (7 AM – 9 AM) 7: PM Peak peak (4 PM – 6 PM)	8	6
5: Midday (10 AM – 2 PM)	16	12

The following analysis compares modeled and observed travel speeds using TMCs as the unit of analysis. The difference between modeled travel speeds and observed travel speeds were examined for each TMC to show the distribution of travel speeds across the entire network.

Figure 26 shows the distribution of travel speed difference (calculated as modeled speed minus observed speed) for all roadway TMCs by time-of-day period. Overall, the distribution of values is mostly negative, showing that modeled speeds are generally lower than observed speeds. This is most pronounced in the overnight period with the distribution peaking near -5 mph. Differences between observed and modeled speeds may be influenced by real-world conditions not captured by our model, such as speeding or other risky driving behaviors. Risky driving may contribute to the especially high differences observed during the overnight periods when there is minimal traffic congestion.

Figure 26. Frequency distribution of speed differences on all roadways, by time of day

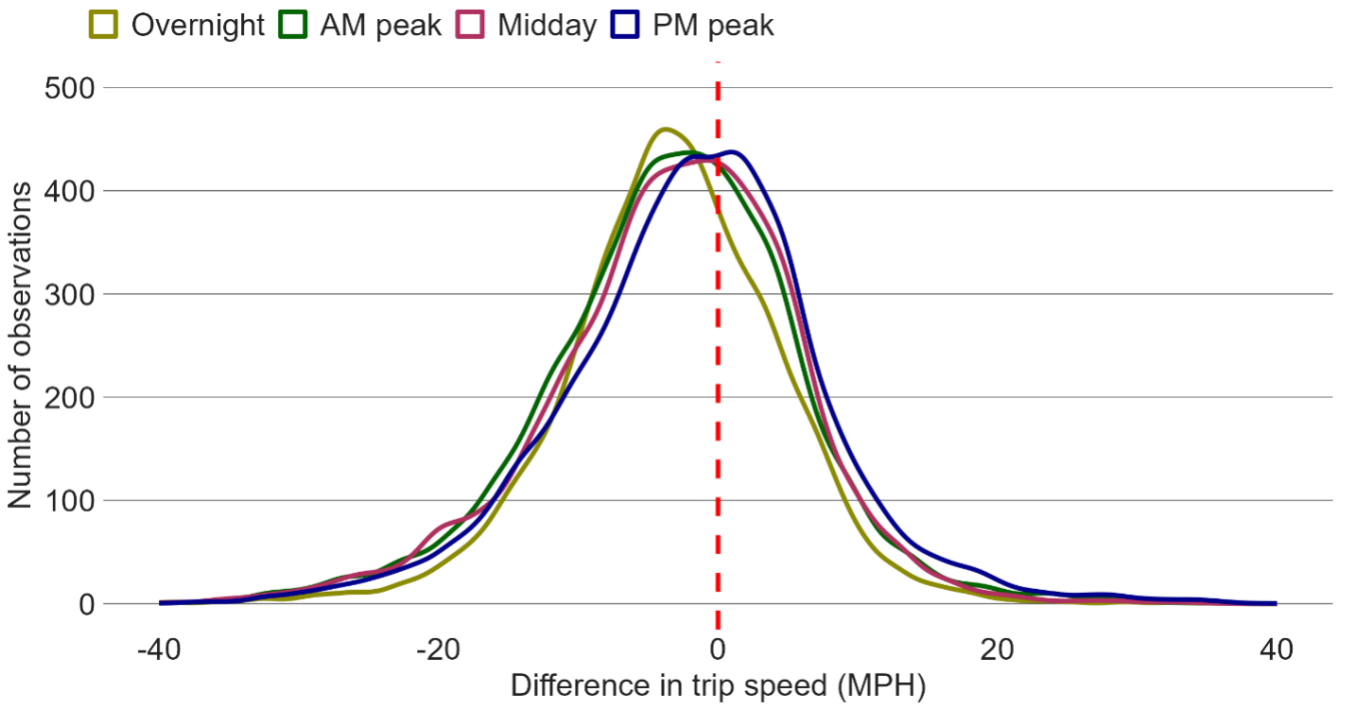


Table 103. Modeled vs observed speed differences on all roadways, by time of day

Time period	Mean difference (modeled - observed)	Standard deviation	Median difference (modeled – observed)
Overnight (8 PM – 6 AM)	-3.43 mph	7.98	-3.34 mph
AM peak (7 AM – 9 AM)	-3.49 mph	9.10	-3.02 mph
Midday (10 AM – 2 PM)	-3.34 mph	9.06	-2.63 mph
PM peak (4 PM – 6 PM)	-1.97 mph	9.34	-1.58 mph

Figure 27 shows the same distribution of travel speeds for all expressway (freeway and tollway) TMCs. While the distribution of differences is larger, modeled speeds are still generally lower than observed speeds for all time-of-day periods.

Figure 27. Frequency distribution of speed differences on expressways, by time of day

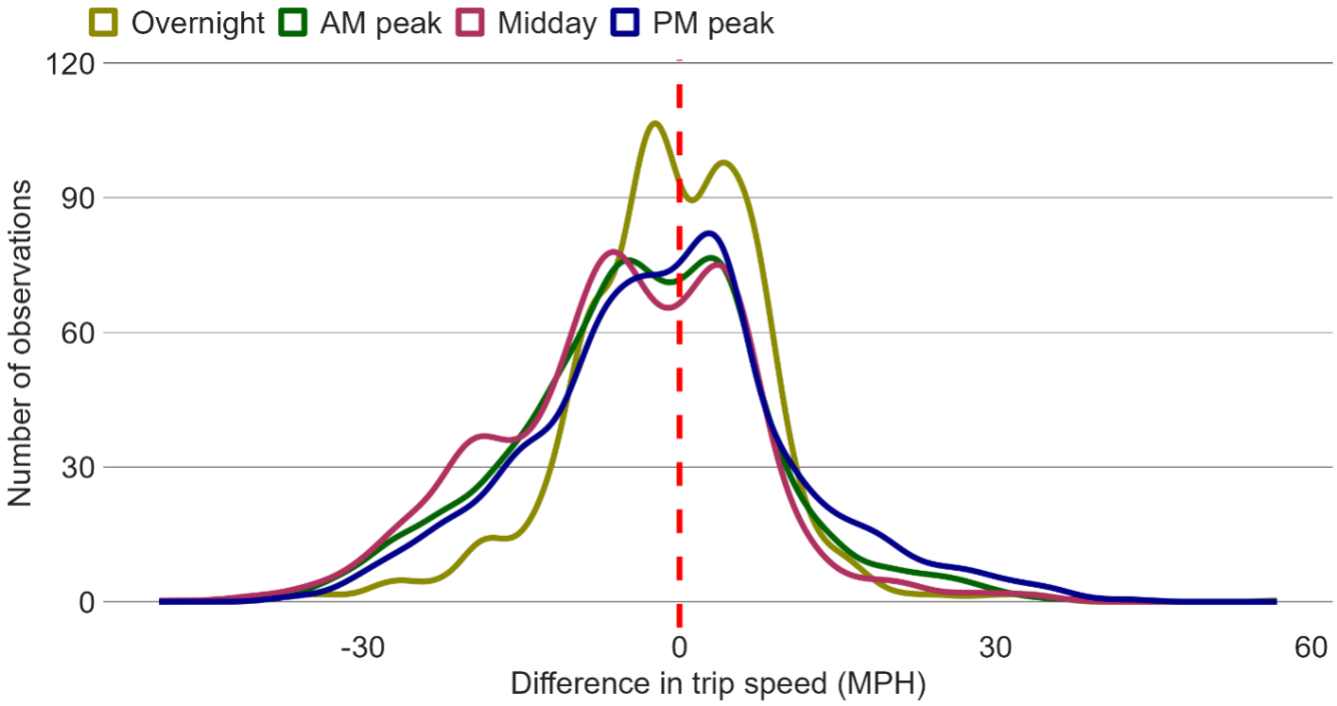


Table 104. Modeled vs observed speed differences on expressways, by time of day

Time period	Mean difference (modeled - observed)	Standard deviation	Median difference (modeled – observed)
Overnight (8 PM – 6 AM)	-1.43 mph	9.77	-1.19 mph
AM peak (7 AM – 9 AM)	-4.19 mph	12.03	-3.82 mph
Midday (10 AM – 2 PM)	-6.01 mph	11.95	-5.42 mph
PM peak (4 PM – 6 PM)	-2.05 mph	12.59	-1.83 mph

Finally, Figure 28 shows the same distribution of travel speeds for TMCs on arterial and major collector roads. Modeled speeds are generally within two to three miles per hour of observed speeds, with the overnight period seeing observed speeds about four miles per hour higher than modeled.

Figure 28. Frequency distribution of speed differences on arterial roadways, by time of day

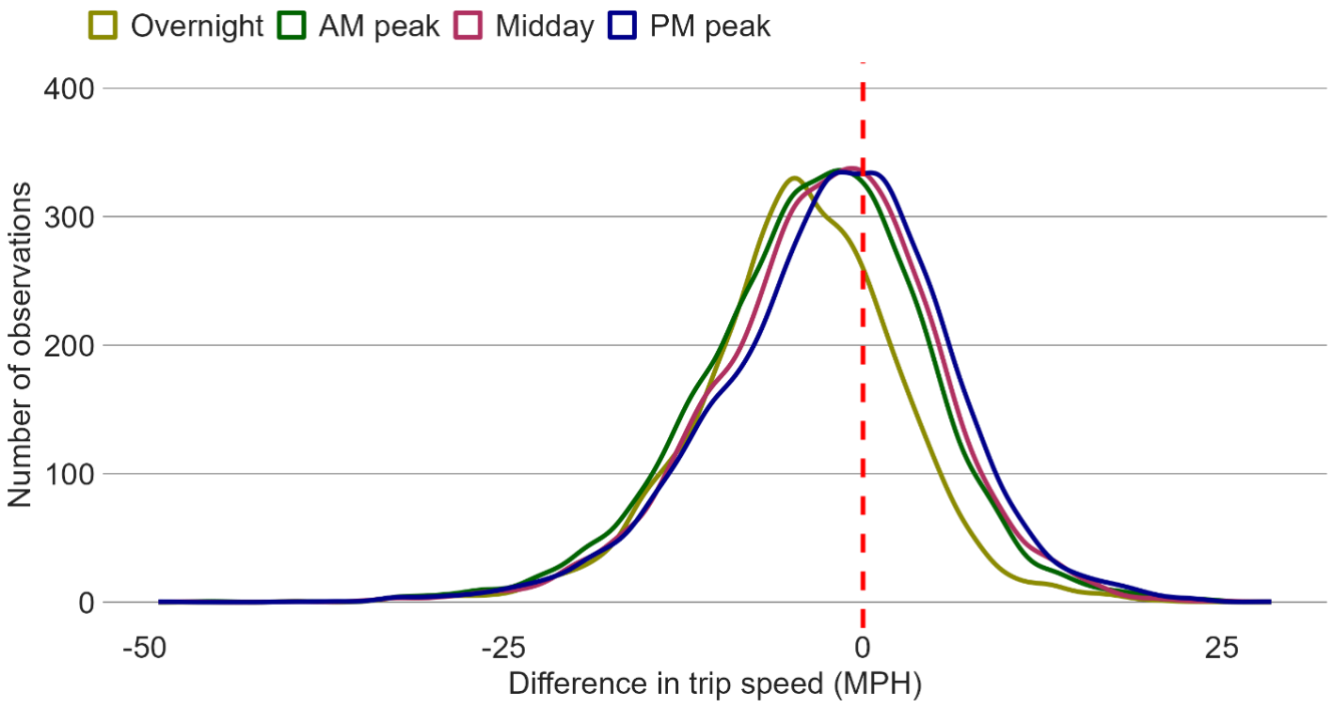


Table 105. Modeled vs observed speed differences on arterial roadways, by time of day

Time period	Mean difference (modeled - observed)	Standard deviation	Median difference (modeled – observed)
Overnight (8 PM – 6 AM)	-4.48 mph	7.05	-4.27 mph
AM peak (7 AM – 9 AM)	-3.51 mph	7.82	-3.05 mph
Midday (10 AM – 2 PM)	-2.64 mph	7.63	-2.21 mph
PM peak (4 PM – 6 PM)	-2.11 mph	7.93	-1.62 mph

VMT shares by district and facility

The following analysis compares the VMT for all links in the model network against data published by the Illinois Department of Transportation (IDOT). Results from traffic assignment are summarized by geographic area and facility type. Table 106 compares the regional totals and shares of daily average modeled VMT to observed VMT for the six CMAP counties that comprise IDOT District 1. (Corresponding values by facility type for Kendall County are not published by IDOT.) For convenience, data are reported separately for the City of Chicago and the remainder of Cook County. The observed daily VMT values were developed using annual VMT data from the 2019 Illinois Travel Statistics published by IDOT.

Table 106. Daily VMT share by county and facility type

County	Roadway class	Observed	Modeled
Cook-Chicago	Expressway	6.5%	8.6%
	Arterial	9.9%	7.9%
	Local	2.1%	1.8%
	Subtotal	18.5%	18.3%

Cook-Suburban	Expressway	13.6%	14.3%
	Arterial	17.5%	15.8%
	Local	4.3%	3.3%
	Subtotal	35.4%	33.4%
DuPage	Expressway	4.7%	6.2%
	Arterial	7.7%	7.7%
	Local	1.9%	1.6%
	Subtotal	14.3%	15.5%
Kane	Expressway	1.4%	1.8%
	Arterial	4.2%	4.6%
	Local	1.2%	0.9%
	Subtotal	6.8%	7.3%
Lake	Expressway	1.9%	3.1%
	Arterial	6.6%	6.1%
	Local	1.5%	1.2%
	Subtotal	10.0%	10.4%
McHenry	Expressway	0.3%	0.4%
	Arterial	2.8%	3.2%
	Local	1.0%	0.6%
	Subtotal	4.1%	4.2%
Will	Expressway	3.7%	4.3%
	Arterial	5.0%	5.2%
	Local	2.1%	1.3%
	Subtotal	10.8%	10.8%
TOTAL	Expressway	32.1%	38.7%
	Arterial	53.7%	50.5%
	Local	14.1%	10.7%
	Subtotal	99.9%	99.9%

Overall, the distribution of modeled VMT shares corresponds very well with the observed VMT across counties and roadway types. The model overestimates total VMT on expressways and underestimates total VMT on arterial and local facilities.

Observed vs. modeled VMT

Table 107 displays a comparison of modeled versus observed daily VMT for both arterials and expressways. Within each facility type, the links are separated into volume bins based on their observed volumes rounded to the nearest 10,000 VMT. For instance, the 10,000-vehicle bin includes links with Annual Average Daily Traffic (AADT) values ranging from 5,000 to 14,999. The general trend of the data in the table shows that CMAP's model overestimates traffic on low-volume links and underestimates volumes on high-volume links.

Table 107. VMT by volume range for expressways and arterials

	Volume range	Links	Observed VMT	Modeled VMT	Percent difference
Arterial	0	13,017	21,466,941	27,354,693	27.4%
	10000	11,867	48,619,148	49,414,176	1.6%
	20000	1,776	14,256,522	14,398,304	1.0%
	30000	84	811,673	660,375	-18.6%
	Subtotal	26,744	85,154,284	91,827,548	7.8%

Expressway	0	900	730,841	1,523,978	108.5%
	10000	1,197	6,980,670	9,407,880	34.8%
	20000	516	6,668,426	8,674,859	30.1%
	30000	302	6,456,117	7,561,546	17.1%
	40000	140	4,659,290	5,410,343	16.1%
	50000	116	3,554,405	3,787,440	6.6%
	60000	211	8,232,885	8,057,550	-2.1%
	70000	218	9,314,330	9,190,572	-1.3%
	80000	173	9,897,080	9,484,206	-4.2%
	90000	118	5,709,158	5,614,425	-1.7%
	100000	60	3,108,286	3,072,884	-1.1%
	110000	45	1,326,477	1,324,037	-0.2%
	120000	63	1,704,562	1,660,446	-2.6%
	Subtotal	4,059	68,342,526	74,770,166	9.4%
TOTAL		30,803	153,496,811	166,597,714	8.5%

Figure 29 shows a scatterplot of the daily link volumes, with observed values (AADT) plotted on the horizontal axis and modeled volumes plotted on the vertical axis. The linear regression line and equation are also included. The graph shows an extremely strong relationship between the datasets, which is verified by the R^2 value of 0.9. This coefficient of determination indicates that the regression line is a nearly perfect fit with the observed data and accounts for 90% of the variation in the data.

Figure 29. Observed versus modeled average daily link volumes

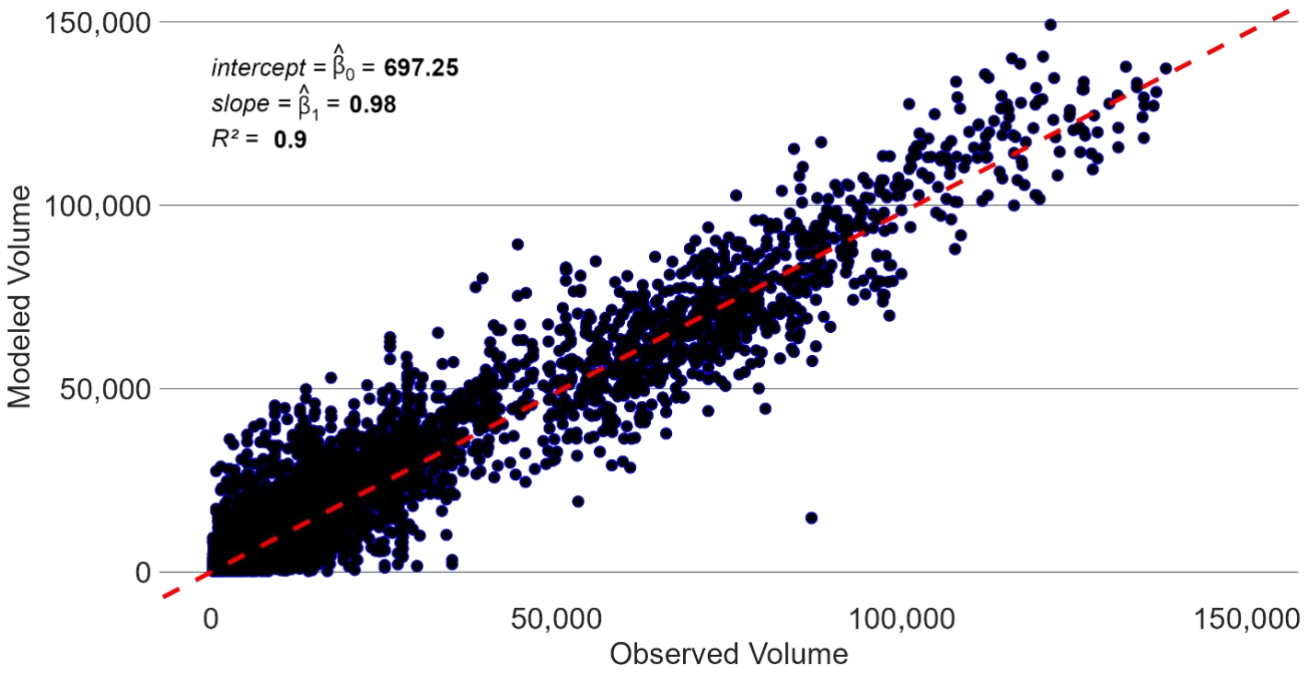


Table 108. Root mean squared error analysis of average daily link volume shows a comparison of modeled and observed link volumes. In this table, links were stratified into volume bins based on AADT and linear regression analyses (weighted by link length) were completed for each stratum. The root mean squared error (RMSE) measures the average difference between the observed values and the modeled volume predicted by the linear regression. The percent RMSE standardizes the RMSE by dividing it by the mean of the AADT (observed value). Generally, within the field of travel demand modeling, a percent RMSE of 30 percent or less is considered a good result. The Florida DOT suggests an aggregate RMSE of 35 percent, and by volume groups:

- 0 – 4,999 AADT: 45% to 100%
- 5,000 – 14,999 AADT: 27% to 45%
- 15,000 – 24,999 AADT: 15% to 35%
- 25,000 – 34,999 AADT: 15% to 27%
- 35,000 – 59,999 AADT: 10% to 25%
- 60,000 AADT or more: 10% to 20%

Based on these standards, the results show a generally favorable comparison and similar pattern, with the percent RMSE declining as the volume categories increase.

Table 108. Root mean squared error analysis of average daily link volume

Volume range	Links	AADT	Model volumes	Root mean squared error	% root mean squared error
0	13,917	2,442	3,200	2,398	98.2%
10000	13,064	8,713	8,957	4,442	51.0%
20000	2,292	18,290	18,970	6,594	36.1%
30000	386	29,050	30,788	11,228	38.7%
40000	140	39,626	45,936	10,023	25.3%
50000	116	50,870	53,395	13,234	26.0%
60000	211	60,124	57,960	10,450	17.4%
70000	218	70,277	67,543	9,692	13.8%
80000	173	79,430	75,627	10,646	13.4%
90000	118	89,197	86,572	14,969	16.8%
100000	60	99,192	99,551	11,109	11.2%
110000	45	109,660	112,795	10,538	9.6%
120000	63	124,070	122,558	9,920	8.0%

Transit assignment

Table 1099 shows how the number of modeled boardings by transit mode compares to observed boardings (from ridership data reported by the region's transit operators). The modeled heavy rail (CTA rail) boardings are extremely close to the observed counts, while commuter rail (Metra) and bus boardings are overestimated in the model.

Table 109. Daily transit boardings by mode

	Modeled	Observed	Difference
Commuter rail	334,045	236,062	42%
Heavy rail	677,861	708,149	-4%
Bus	1,242,966	850,235	46%
Total	2,254,872	1,794,446	26%

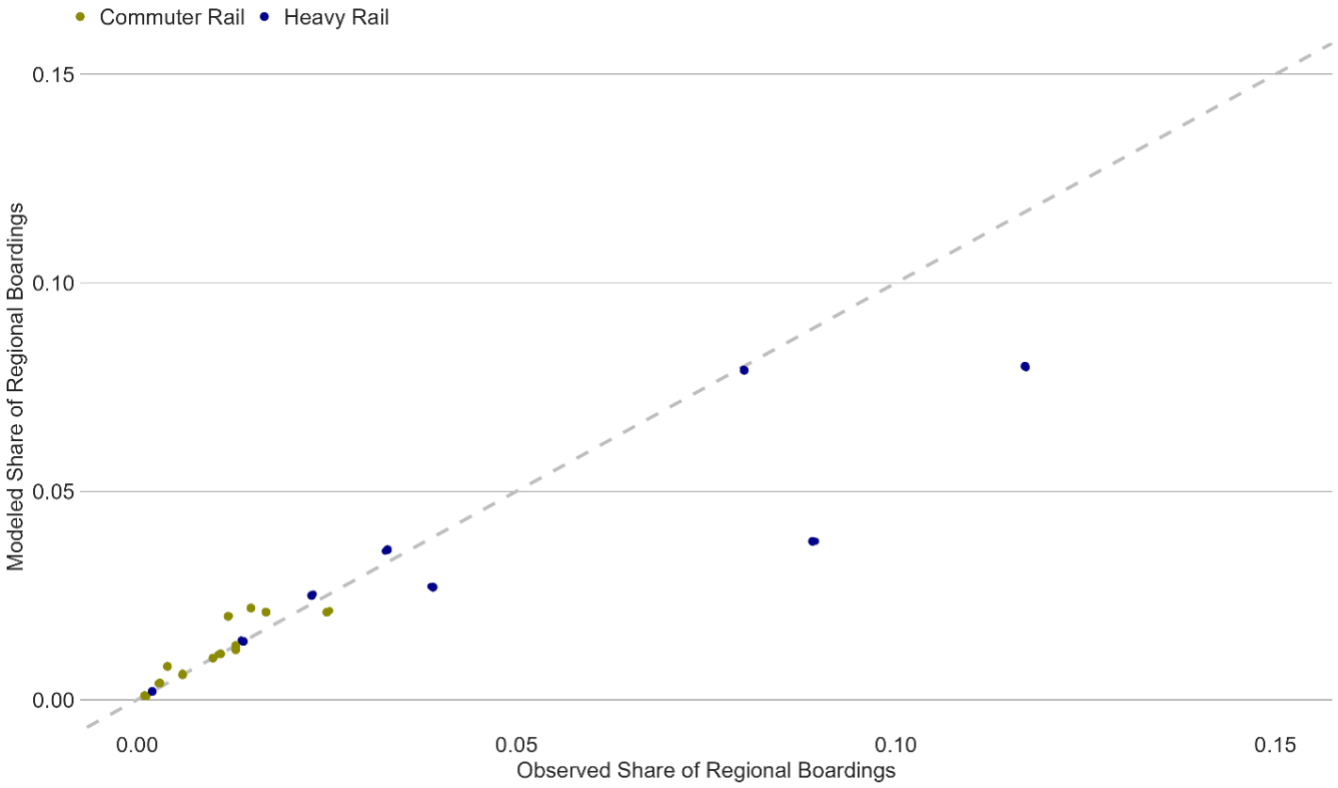
Table 110 provides more detail on transit boardings, with rail boardings broken out by individual lines. While the model overestimates total transit boardings, it does do a good job overall of matching each rail line's share of transit boardings. Figure 30presents the same information in a scatterplot. Unsurprisingly, there is a significant amount of variability in how well the modeled boardings on individual lines match up with the observed boardings, but they are generally quite close with the exception of two CTA lines. In most instances the difference between modeled and observed transit boarding shares is less than one percentage point. The largest discrepancies are on the CTA Brown and Red lines, with the model underestimating the number of boardings.

Table 110. Share of daily transit boardings by rail line and bus

	Modeled	Observed
Commuter rail (Metra)		
BNSF	2.1%	2.5%
Heritage Corridor	0.1%	0.1%
Metra Electric	1.3%	1.3%
Milwaukee District North	1.1%	1.1%
Milwaukee District West	1.0%	1.0%
North Central Service	0.4%	0.3%
Rock Island District	2.0%	1.2%
SouthWest Service	0.8%	0.4%
Union Pacific North	2.2%	1.5%
Union Pacific NorthWest	2.1%	1.7%
Union Pacific West	1.2%	1.3%
South Shore (NICTD)	0.6%	0.6%
Subtotal	14.8%	13.2%

Heavy Rail (CTA)		
Blue Line	7.9%	8.0%
Brown Line	3.8%	8.9%
Green Line	3.6%	3.3%
Orange Line	2.7%	3.9%
Pink Line	2.5%	2.3%
Purple Line	1.4%	1.4%
Red Line	8.0%	11.7%
Yellow Line	0.2%	0.2%
Subtotal	30.1%	39.5%
Bus (CTA and Pace)		
All Routes	55.1%	47.4%

Figure 30. Share of daily transit boardings by rail line



2026 validation

The COVID-19 pandemic caused drastic changes to the travel behavior of the region's residents. As the pandemic has subsided, many employers continue allowing employees to work from home at least part of the time. Since the travel model is calibrated to 2019, special procedures have been introduced to more accurately reflect current work-from-home rates. It is natural to ask how well a model calibrated to 2019 behavior reflects current post-pandemic travel patterns. While current observed data can be difficult to find due to a lag in publication time, this section provides a snapshot comparing modeled results for 2026 to available data. Note that CMAP will undertake a full recalibration of the travel model following completion of the next phase of the My Daily Travel survey.

Work-from-home households

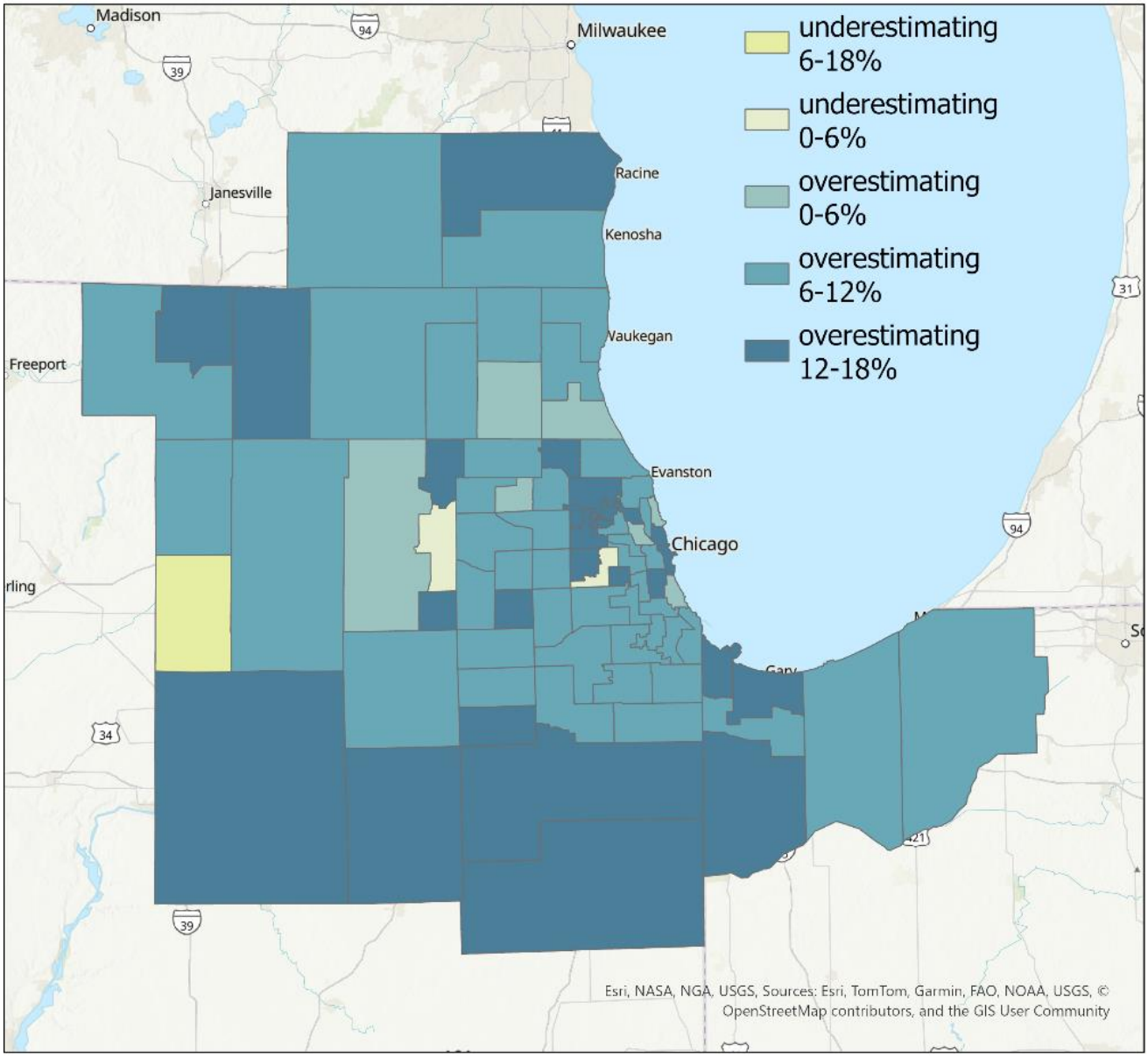
Table 111 shows the modeled shares of workers who work-from home compared to the observed share, by county using data from the 2024 ACS PUMS data. On average, modeled work-from-home rates are roughly 10 to 15 percent higher than observed data. Similarly to 2019 work-from-home rates, this discrepancy is expected. The ACS questionnaire asks survey respondents to describe their commuting patterns on a "typical" workday, missing individuals who work from home one or two days a week. By contrast, the travel model forecasts work-from-home activity for workers on any given day of the week. Current Population Survey data from 2025, which use a telework definition consistent with CMAP's definition, show an overall telework rate for the CMAP region of 22.4 percent.

Table 111. Modeled vs observed share of work from home workers by county

County	Modeled	Observed
Cook	0.240	0.081
DuPage	0.244	0.084
Kane	0.209	0.077
Kendall	0.199	0.073
Lake	0.224	0.080
McHenry	0.214	0.074
Will	0.217	0.059

Work-from-home household shares for 2026 show similar trends to 2019. About 24.7 percent of modeled households have at least one individual who works from home; the ACS PUMS reports about 14.6 percent. Figure 31 depicts these differences in observed and modeled work from home rates by PUMA.

Figure 31. Modeled versus observed household work-from-home rates, 2026



Shortest path analysis

During traffic assignment, the travel model assigns each trip to its "best route," considering roadway congestion, tolling, and total travel time, among other factors. To verify these routes are realistic, the following section compares modeled shortest paths to routes generated by the Google Routes API.

A sample of 40 individual points in the travel model were defined, and shortest path calculations were generated for each possible pair. Then, these shortest path calculations were compared to Google Routes API's "best guess" paths. "Best guess" paths represent the trip duration, distance, and "best path option" based on expected congestion at the specified date and time. For this analysis, travel paths in both the AM and midday time-of-day periods were selected for comparison to the modeled shortest paths for the same time-of-day periods.

Figure 32 shows the observed and modeled share of trips by trip duration for the selected paths. Generally, the model has a higher share of longer trips (in minutes) compared to the observed data. The travel model estimates congestion iteratively based on input data about roadway attributes

and iterative information about changing traffic flows as drivers seek to find shorter travel times. Conversely, Google Routes estimates congestion based on both live and historical traffic conditions on the roadway at that time of day. These different methods to determine the impact of congestion on travel duration are likely to drive the difference between observed and modeled trip durations.

Figure 32. Modeled vs observed share of trips by trip duration.

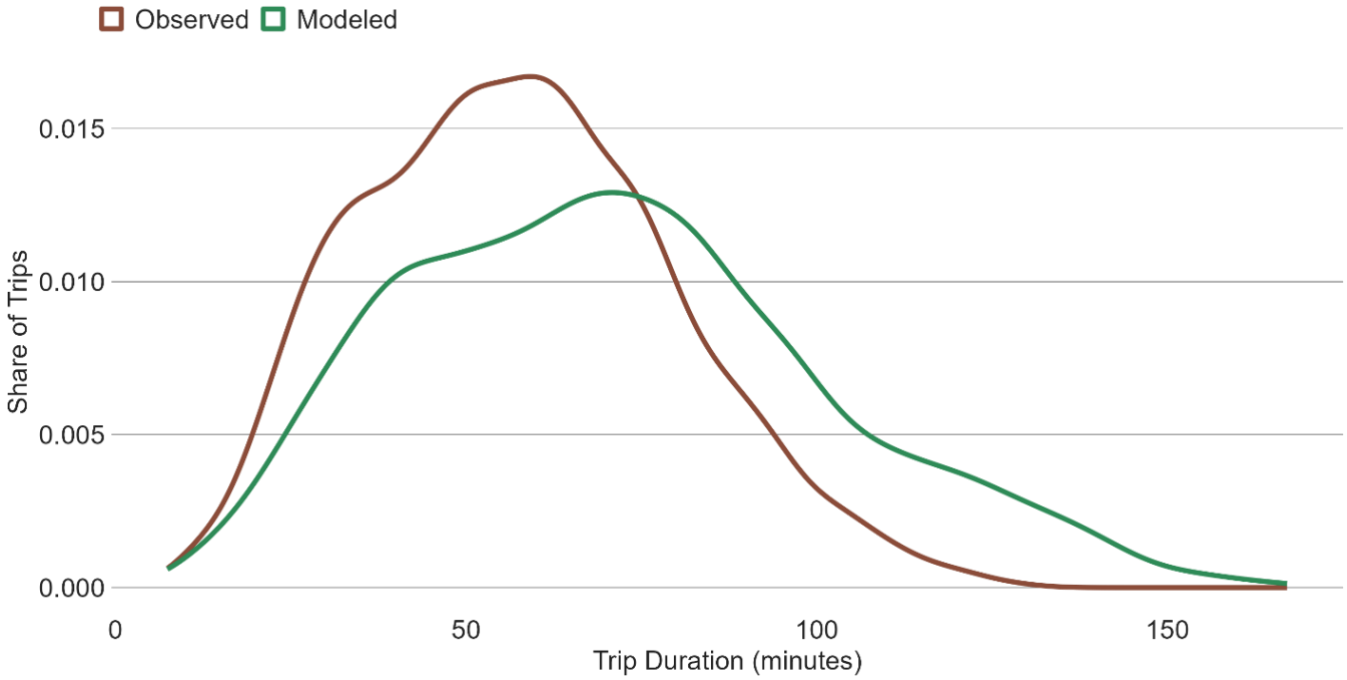


Figure 33 illustrates the difference between modeled and observed trip duration by time of day. Modeled trip duration compares better to observed data during the AM peak period than midday. The midday trip duration plot has a higher peak and is to the right of the AM peak data, indicating that modeled trip durations during the midday are relatively longer compared to the Google data than during the AM peak.

Figure 33. Difference in modeled vs observed share of trips by trip duration and time of day

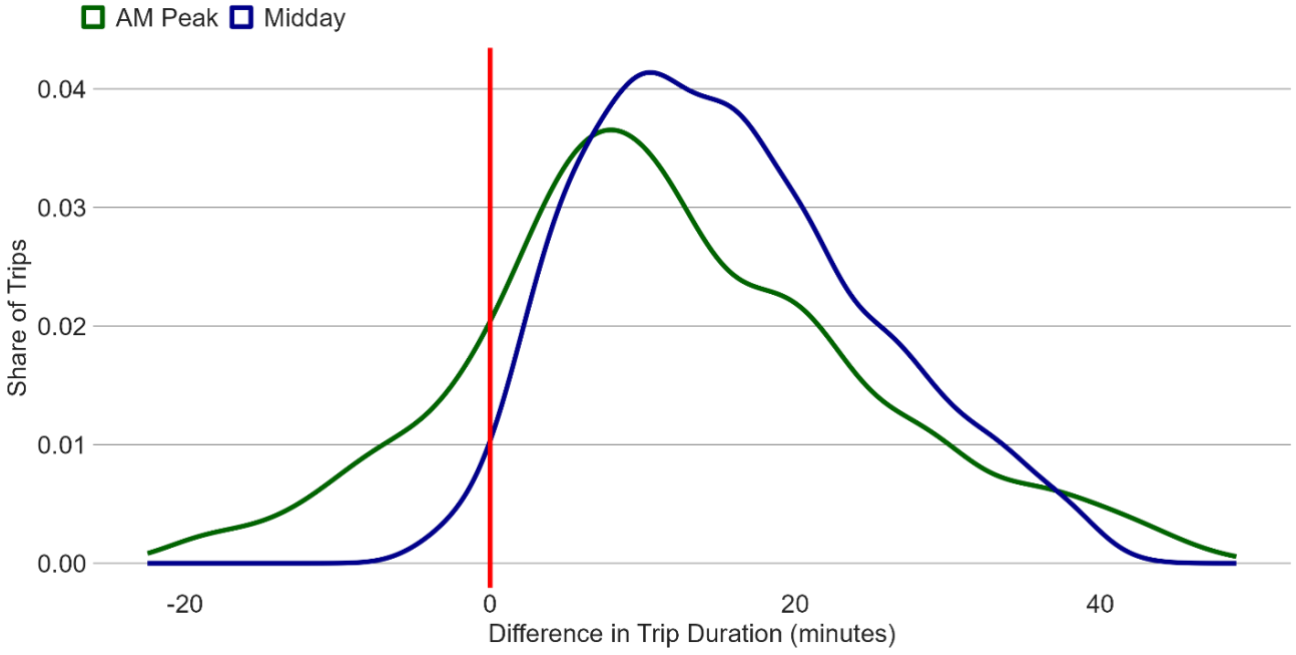


Figure 34 shows observed trip duration compared to the modeled trip duration. Notably, trips with a longer duration tend to be overestimated by the model more often than trips with a shorter duration. Meaning that the model roadway network experiences slightly higher levels of congestion and delay than the Google data indicate.

Figure 34. Modeled vs observed trip duration

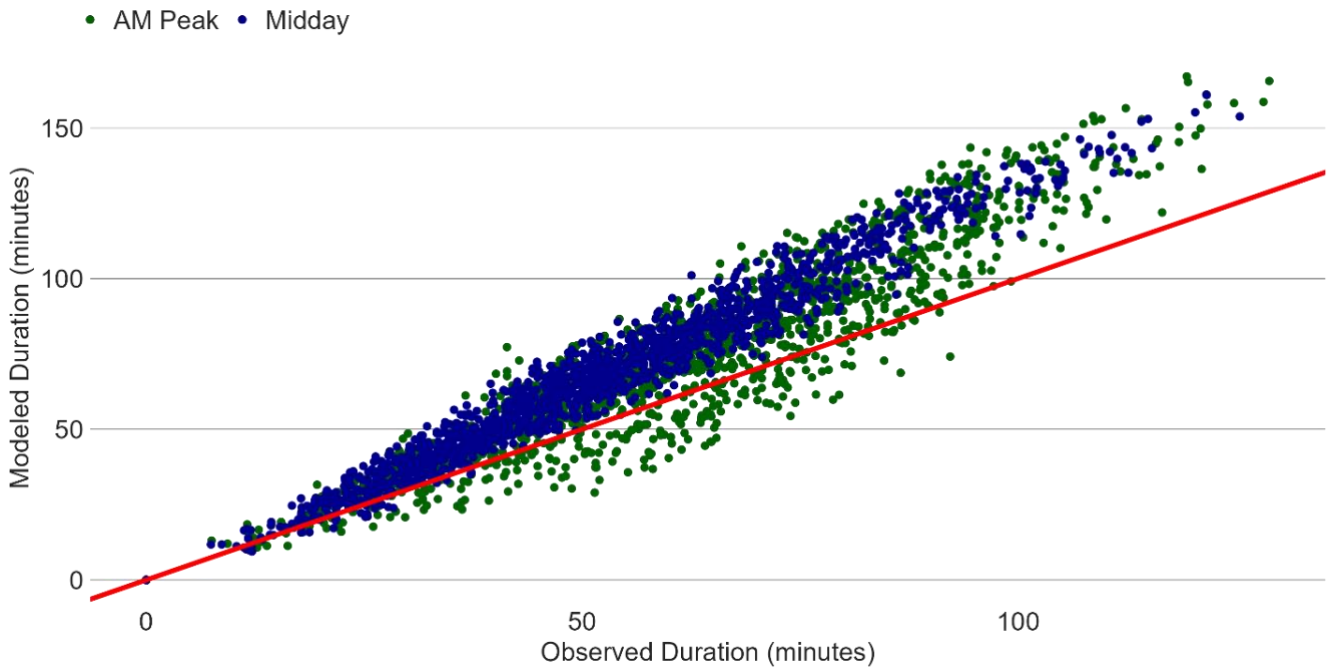
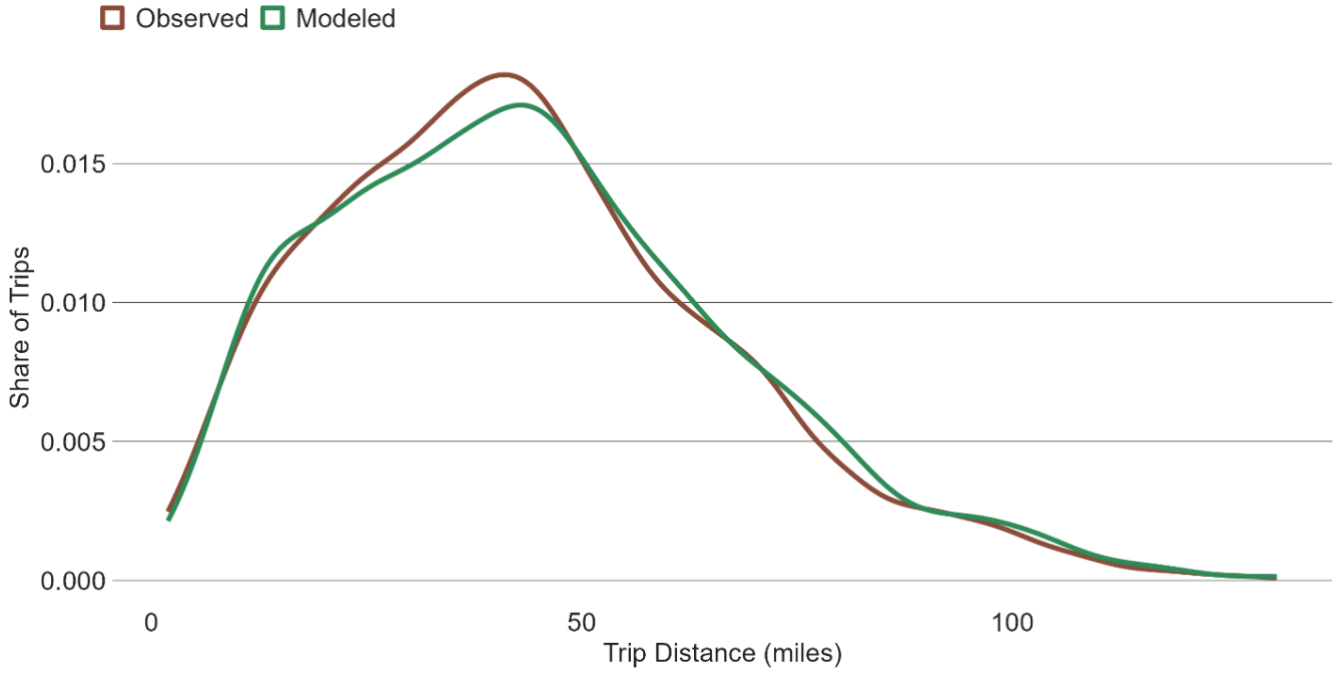


Figure 35, Figure 36 and Figure 37 compare observed and modeled trip distances. Unlike with trip duration, modeled trip distances closely match observed trip distances.

Figure 35. Modeled vs observed share of trips by trip distance.



Modeled trips slightly overestimate trip distance for both the AM and midday time periods compared to the observed distances, as shown in Figure 36.

Figure 36. Difference in modeled vs observed share of trips by trip distance and time of day

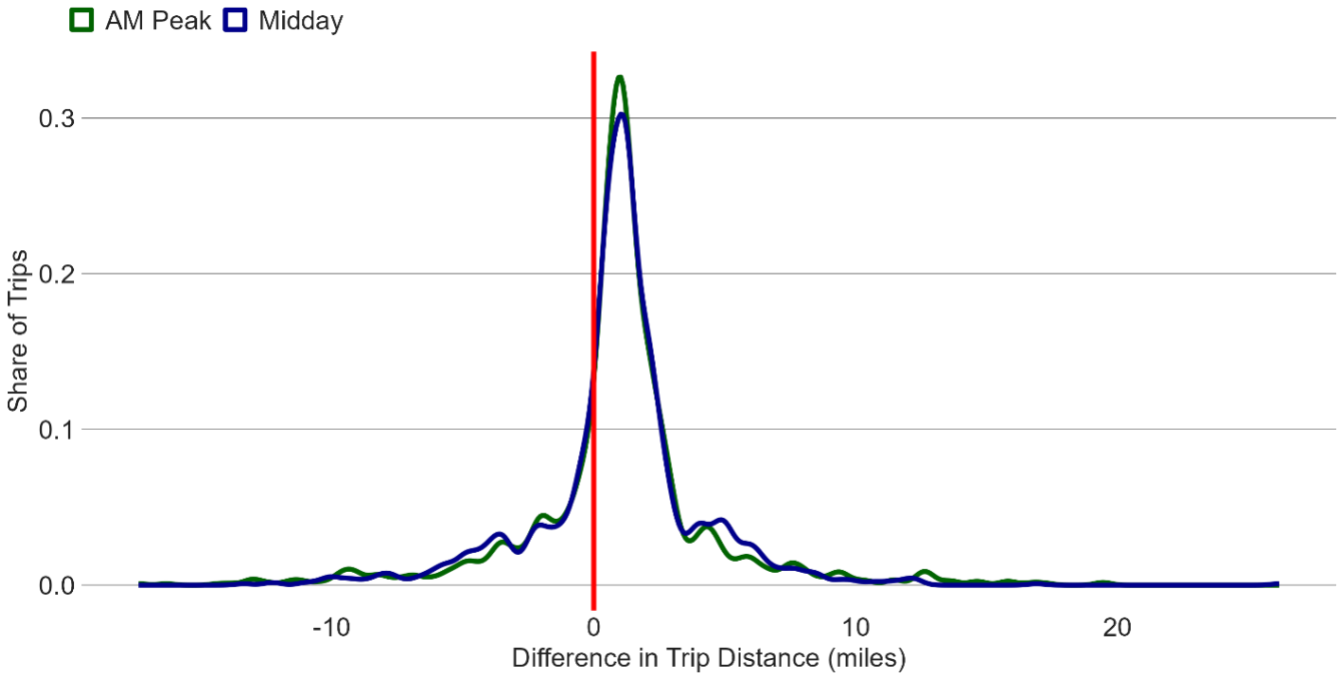
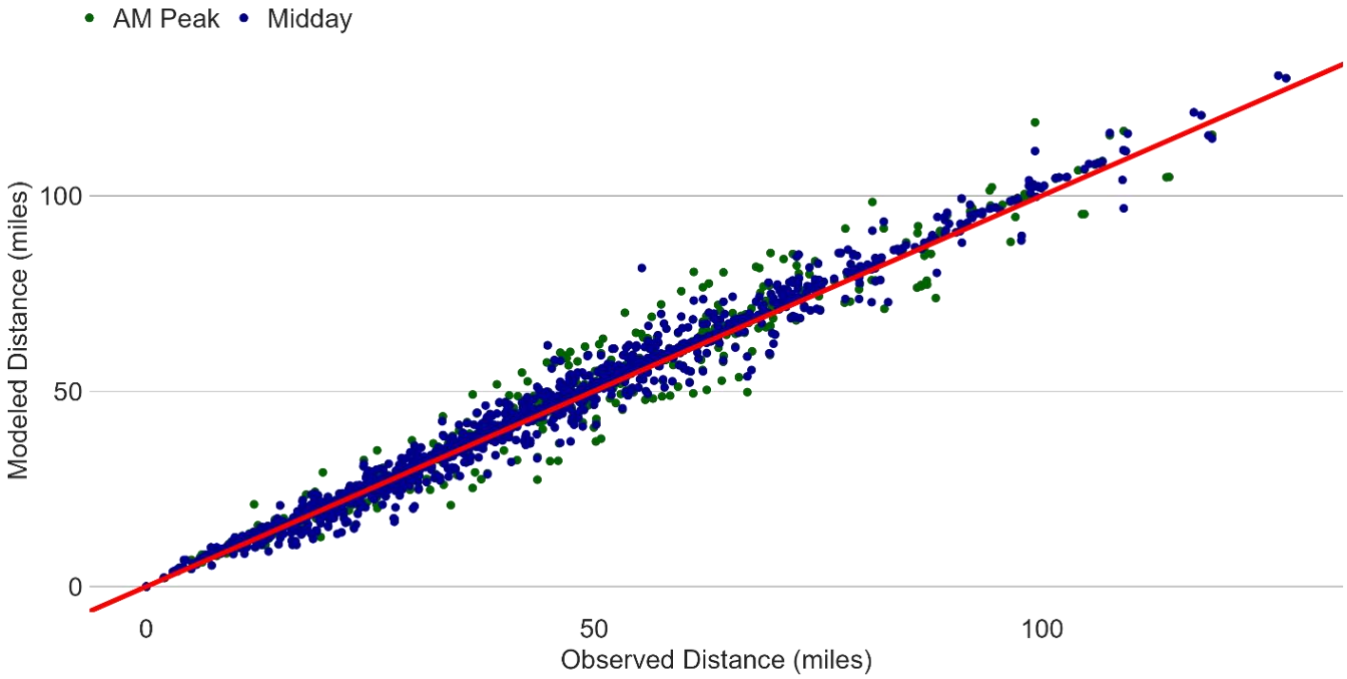


Figure 37 shows a scatter plot of observed trip distances compared to modeled trip distances for the AM and midday time periods. Overall, trip distances are estimated well by the model.

Figure 37. Modeled vs observed trip distance



Finally, a buffer analysis was performed to better understand how well the travel model's shortest paths compare to observed paths recommended by the Google Routes API. Observed trip paths were buffered at 0.02 miles, 0.25 miles, 0.5 miles, and 1 mile. These buffered paths were intersected with the modeled trip path to determine the percent of the modeled path that exists within each buffer. A large percentage coverage indicates that the modeled path is similar to the observed path.

Figure 38 shows boxplots representing the range of percentage coverage for the four buffer distances, and Table 112 contains the mean and median percent coverage for each buffer distance for the AM and midday time periods. Modeled and observed paths closely align in most cases. At buffer distances above 0.25 miles, the median percent coverage rests above 75 percent.

Figure 38. Modeled trip path percentage coverage by observed path buffer by buffer distance

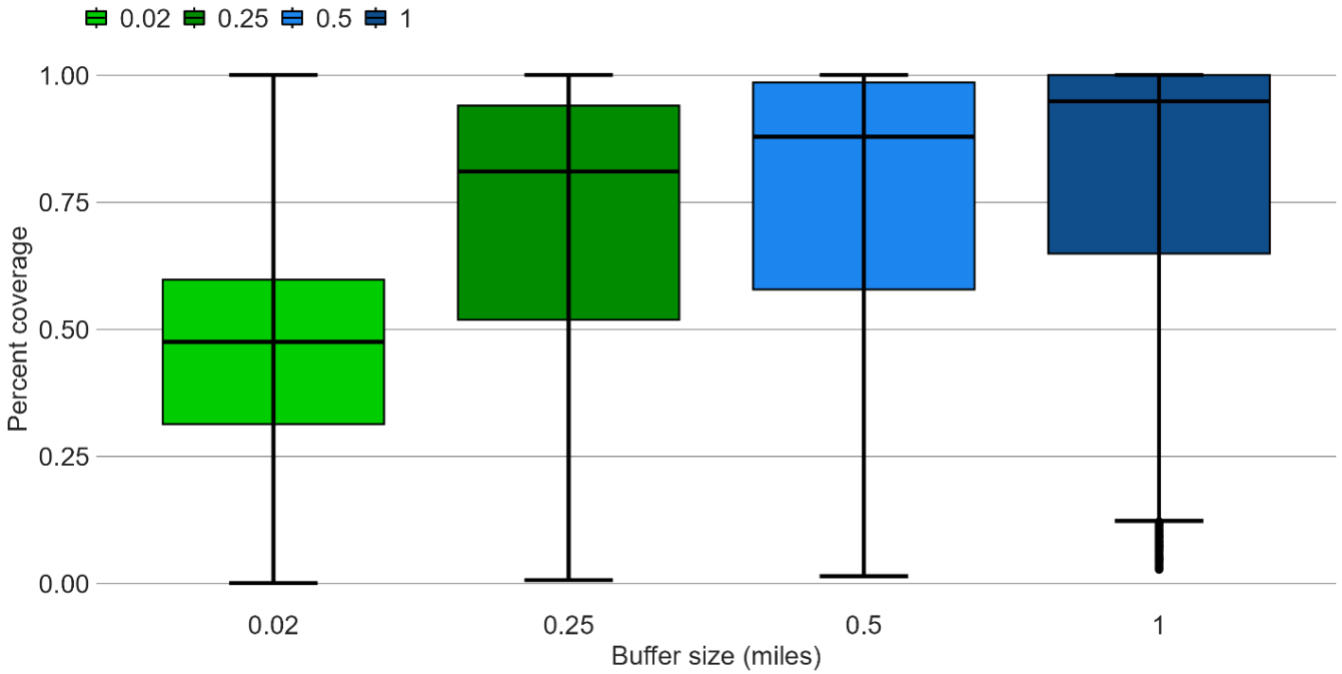


Table 112. Mean and median percent coverage of modeled path by observed path by buffer distance

Buffer distance (miles)	Mean percent coverage		Median percent coverage	
	AM	Midday	AM	Midday
0.02	44%	46%	47%	48%
0.25	69%	70%	81%	81%
0.50	74%	75%	88%	87%
1.00	79%	80%	95%	95%

The 0.02-mile buffer (approximately 100 feet) illustrates functionally perfect path matches. Roughly half of the modeled paths are exact matches to observed paths.

The median percent coverage under the quarter-mile buffer rests around 75 percent. This commonly reflects modeled trips that use a road that is within a block of the observed trip path. It can also reflect differences in road geometry between the google maps network and the modeled network. The median percent coverage under the half-mile buffer is over 80 percent. This mostly reflects modeled trips that take a different route to enter or exit a main highway or interstate.

Any modeled paths not captured by the one-mile buffer generally reflect observed trips that take a different highway or major interstate to reach the destination.

Overall, modeled trip paths compare reasonably well to observed trip paths. Many differences in paths are more commonly attributed to differences in software algorithms or network differences, rather than differences in travel behavior and congestion estimations.

Model validation summary and areas for further research

This model validation section has shown that CMAP's trip-based travel demand model yields reasonable results when compared to observed data. However, CMAP's modeling staff continually strives to improve the quality of the analysis tools used by the agency and the input data that support those tools.

The results of these validation analyses point out some areas for staff to engage in further research to enhance the quality of the modeling analysis results:

- County-level work flows – The share of modeled commute trips being made between some counties could be improved to provide a closer match with observed data.
- HOV mode share – The analysis revealed opportunities to address an over-representation of HOV home-based work trips, and hence an under-representation of SOV commute trips.



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.

Chicago Metropolitan Agency for Planning

433 West Van Buren Street
Suite 450

Chicago, IL 60607
cmap.illinois.gov
312-454-0400