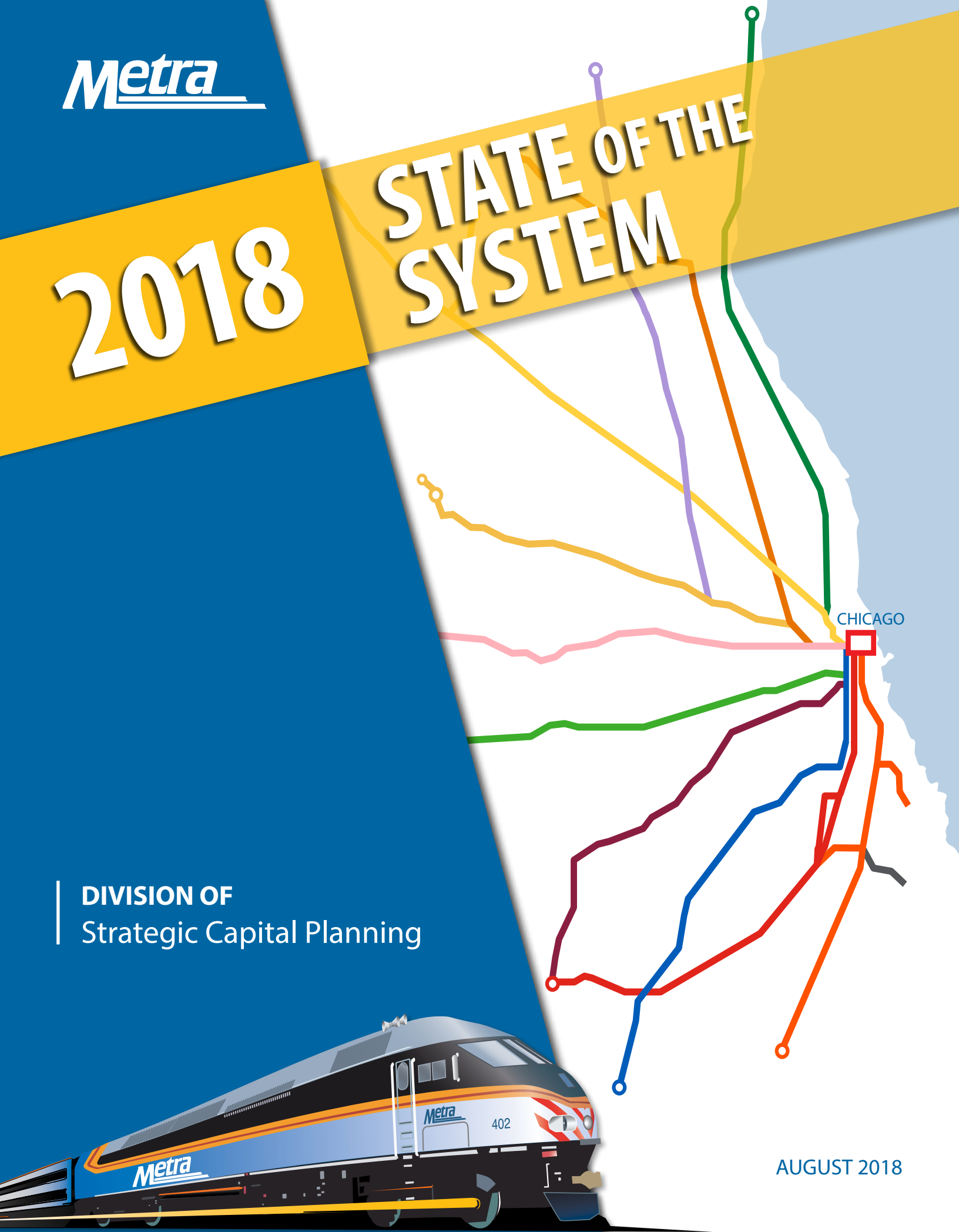
Metra

2018 STATE OF THE SYSTEM



DIVISION OF
Strategic Capital Planning

AUGUST 2018


Quiet Car

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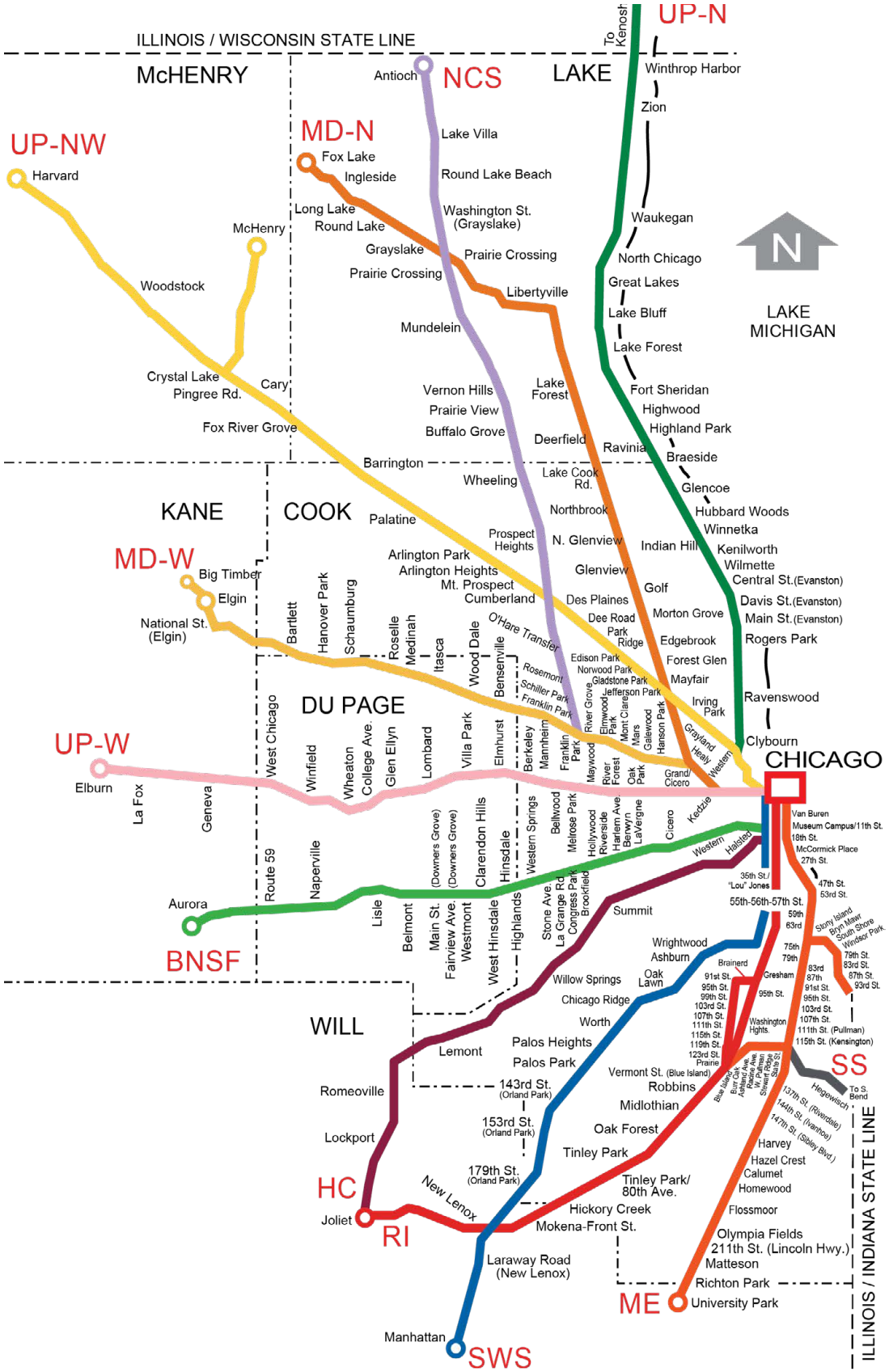
LIST OF ACRONYMS

METRA LINES

BNSF	BNSF Railway
HC	Heritage Corridor
MD-N	Milwaukee District-North
MD-W	Milwaukee District-West
ME	Metra Electric
NCS	North Central Service
RI	Rock Island
SWS	SouthWest Service
UP-N	Union Pacific-North
UP-NW	Union Pacific-Northwest
UP-W	Union Pacific-West

AC	Alternating current
ADA	Americans with Disabilities Act
AED	Automatic External Defibrillators
AESS	Automatic Engine Start-Stop System
ARRA	American Recovery and Reinvestment Act
ATWS	Another Train Warning System
BRC	Belt Railway of Chicago
BRT	Bus Rapid Transit
C&NW	Chicago and NorthWestern Railroad
CB&Q	Chicago, Burlington & Quincy Railroad
CBD	Central Business District
CCF	Consolidated Control Facility
CIP	(75th Street) Corridor Improvement Project
CMAP	Chicago Metropolitan Agency for Planning
CMAQ	Congestion Mitigation and Air Quality Improvement Program
CN	Canadian National
COST	Capital Optimization Support Tool
CP	Canadian Pacific

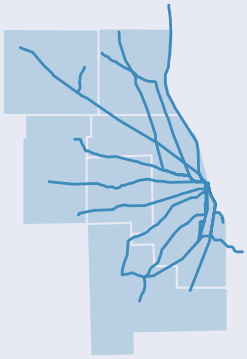
CRB	Commuter Rail Board
CRD	Commuter Rail Division (of the RTA)
CREATE	Chicago Region Environmental and Transportation Efficiency Program
CRI&P	Chicago, Rock Island & Pacific Railroad
CSS&SB	Chicago, South Shore and South Bend Railroad
CTA	Chicago Transit Authority
CTC	Centralized Traffic Control
CTCO	Chicago Transportation Coordination Office
CUS	Chicago Union Station
DC	Direct current
EMU	Electric-multiple unit
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
GPS	Global Positioning System
HVAC	Heating, ventilation and air conditioning
IC	Illinois Central Railroad
INFRA	Infrastructure for Rebuilding America
LCD	Liquid crystal display
LEED	Leadership in Energy and Environmental Design
NICTD	Northern Indiana Commuter Transportation District
NIRCRC	Northeastern Illinois Regional Commuter Railroad Corporation
NS	Norfolk Southern
OTC	Ogilvie Transportation Center
PPP	Public-private partnership
PSA	Purchase of service agreement
PTC	Positive Train Control
RTA	Regional Transportation Authority
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users
TIGER	Transportation Investment Generating Economic Recovery
UIC	University of Illinois at Chicago
UP	Union Pacific Railroad


ILLINOIS / WISCONSIN STATE LINE
McHENRY
LAKE
KANE
COOK
DU PAGE
WILL
UP-N
To Kenosha
Antioch
NCS
Winthrop Harbor
Zion
Waukegan
North Chicago
Great Lakes
Lake Bluff
Lake Forest
Fort Sheridan
Highwood
Highland Park
Braeside
Glencoe
Hubbard Woods
Winnetka
Kenilworth
Wilmette
Central St.(Evanston)
Davis St.(Evanston)
Main St.(Evanston)
Rogers Park
Ravenswood
Clybourn
CHICAGO
LAKE MICHIGAN
N
MD-N
Fox Lake
Ingleside
Lake Villa
Round Lake Beach
Long Lake
Round Lake
Washington St. (Grayslake)
Grayslake
Prairie Crossing
Prairie Crossing
Libertyville
Mundelein
Vernon Hills
Prairie View
Buffalo Grove
Lake Forest
Deerfield
Ravinia
Barrington
Wheeling
Lake Cook Rd.
Northbrook
Prospect Heights
N. Glenview
Indian Hill
Glenview
Golf
Des Plaines
Dee Road Park
Morton Grove
Ridge
Edgebrook
Forest Glen
Mayfair
Irving Park
Edison Park
Norwood Park
Gladstone Park
Jefferson Park
Elmwood Park
Mont Clare
Mars
Galewood
Hanson Park
River Grove
Franklin Park
Meywood
River Forest
Oak Park
Grand/ Cicero
Grayland
Healy
Western
UP-NW
Harvard
McHenry
Woodstock
Crystal Lake
Pingree Rd.
Cary
Fox River Grove
MD-W
Big Timber
Elgin
National St. (Elgin)
Bartlett
Hanover Park
Schaumburg
Roselle
Medinah
Itasca
Wood Dale
Bensenville
O'Hare Transfer
Rosemont
Schiller Park
Franklin Park
Arlington Park
Arlington Heights
Mt. Prospect
Cumberland
Palatine
UP-W
Elburn
La Fox
Geneva
West Chicago
Winfield
Wheaton
College Ave.
Glen Ellyn
Lombard
Villa Park
Elmhurst
Berkeley
Mannheim
Kedzie
Cicero
Hollywood
Riverside
Harlem Ave.
Berwyn
LaVergne
Bellwood
Melrose Park
Western
Halsted
Van Buren
Museum Campus/11th St.
18th St.
McCormick Place
27th St.
35th St./ "Lou" Jones
47th St.
53rd St.
55th-56th-57th St.
59th
63rd
Stony Island
Bryn Mawr
South Shore
Windsor Park
79th St.
83rd St.
87th St.
93rd St.
75th
79th
83rd
87th
91st St.
95th St.
103rd St.
107th St.
111th St. (Pullman)
115th St. (Kensington)
Brainerd
Gresham
Wrightwood
Ashburn
Oak Lawn
Chicago Ridge
Worth
Palos Heights
Palos Park
Willow Springs
Summit
Stone Ave.
La Grange Rd.
Congress Park
Brookfield
Western Springs
Hinsdale
Clarendon Hills
(Downers Grove)
(Downers Grove)
Naperville
Route 59
Aurora
BNSF
Lisle
Belmont
Main St.
Fairview Ave.
Westmont
West Hinsdale
Highlands
Lemont
Romeoville
Lockport
Joliet
HC
RI
New Lenox
143rd St. (Orland Park)
153rd St. (Orland Park)
179th St. (Orland Park)
Laraway Road (New Lenox)
Manhattan
SWS
Vermont St. (Blue Island)
Robbins
Midlothian
Oak Forest
Tinley Park
Tinley Park/ 80th Ave.
Hickory Creek
Mokena-Front St.
Harvey
Hazel Crest
Calumet
Homewood
Flossmoor
Olympia Fields
211th St. (Lincoln Hwy.)
Matteson
Richton Park
University Park
ME
SS
Hegewisch
To S. Bend
137th St. (Riverdale)
144th St. (Ivanhoe)
147th St. (Sibley Blvd.)
ILLINOIS / INDIANA STATE LINE

INTRODUCTION

Geographically, Metra is one of the largest commuter rail systems in the nation, serving a six-county region of more than 3,700 square miles. This complex system is comprised of 11 rail lines operating on 488 route miles, including 1,100 miles of track, 800 bridges, and 2,000 signals. Each weekday, 685 trains serve 242 stations, including five stations in Chicago's Central Business District (CBD), and provide approximately 270,000 trips. Metra's service area is at the center of the nation's rail network, and Metra commuter service must be closely coordinated with the movements of around 600 freight and passenger trains also operating in the Chicago region each day.

Metra: State of the System provides a broad view of Metra's infrastructure, operating environment, and customer base, to help readers gain perspective on the complexities of Metra's system and provide context for agency strategic planning efforts. Following chapters on Metra's origins, physical assets and CBD market, the document explores the Metra system on a line-by-line basis. Line-specific chapters include historical information about each corridor as well as descriptions of the line's infrastructure, particular operating limitations, and service and station characteristics. Past, present, and projected future ridership demand, including growing reverse commute and non-downtown markets, is examined. Line chapters include a demographic analysis of each fare zone in the corridor and discuss improvements that have been made to track and signal infrastructure, station facilities, and parking.



Metra: State of the System focuses on Metra's existing system, and builds on Metra's *Future Agenda for Suburban Transportation* (1992), which emphasized the agency's long-term investment needs and proposed expansion projects. This document also complements Metra's annual *Program and Budget Book*, which provides a near-term view of agency activities and planned investments.

2017 Average trip length:
22.4 miles

2017 Average fare paid:
$4.60

Source: Ridership Trends Report, Dec. 2017

Number of stations:
242

System route length:
488 miles

Number of weekday trains:
685

2017 On-time performance*:
95.6%

** On-time Performance Report, Dec. 2017*

HISTORICAL OVERVIEW

The Northeastern Illinois Regional Commuter Railroad Corporation (NIRCRC) is a public corporation of the State of Illinois that was authorized by statute and created by Regional Transportation Authority (RTA) ordinance in 1980. The corporation, commonly known as Metra, is the primary operator of commuter passenger rail services in the six-county Chicago metropolitan area in Northeast Illinois.

The RTA was formed in 1974, initially to provide financial assistance to troubled passenger rail operators and suburban bus companies throughout the region. To keep the patchwork of public transportation providers running, voters in the six-county Chicago area, comprised of Cook, DuPage, Kane, Lake, McHenry and Will Counties, authorized the RTA's creation.

From the beginning, the RTA's mission has been to coordinate and assist public transportation and to serve as the conduit for state and federal subsidies needed to keep the system operational. The RTA did not at first directly operate commuter rail service (or any other transit service), but paid private railroads to do so under purchase of service agreements (PSAs). The RTA, along with the suburban Mass Transit Districts, began to reverse decades of disinvestment in the overall commuter rail system, primarily by buying new locomotives and cars. However, with the bankruptcies of the Rock Island and the Milwaukee Road together with the financial difficulties of the Illinois Central, the Illinois General Assembly gave the RTA the authority to directly own and operate (through NIRCRC) commuter railroad operations and the RTA eventually bought the tracks of those railroads over which commuter trains operated.

In 1983, the General Assembly reorganized the RTA into a planning and financial oversight agency (rather than a direct operator of transit service) and created the Commuter Rail Division (CRD) and the Suburban Bus Division (Pace Suburban Bus). Along with the Chicago Transit Authority (CTA), previously established in 1947, the three agencies (now known as service boards) fell under the financial oversight umbrella of the RTA. The CRD is responsible for commuter rail throughout the six Northeast Illinois counties, Pace for the suburban bus and regional ADA paratransit system, and the CTA continues to be responsible for rapid transit and bus service, primarily within the city of Chicago. Under this arrangement, each service board is responsible for day-to-day operations and maintenance, setting fare policy, and planning for services and facilities for their respective systems.

The service mark "Metra" is co-registered and controlled by NIRCRC and CRD. NIRCRC operates as a separate corporation but is governed by the Commuter Rail Board (CRB), which also governs the CRD. The CRB is responsible for the commuter passenger rail operations, capital investments, finances, fare policy, and service and facilities planning for the system. Revenues come

from local sales taxes in each of the six counties in which Metra operates, farebox recovery, and capital credits and leases.

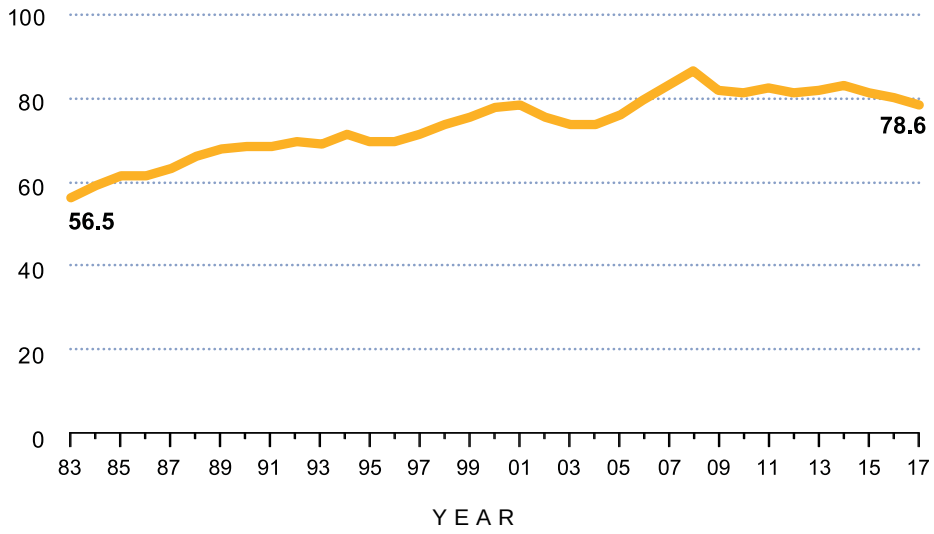
Of the Metra CRB's 11 members, five are appointed by County Board chairs or chief executives from the collar counties, four are appointed by the suburban Cook County board members, one is appointed by the Cook County President, and one is appointed by the Mayor of Chicago. The CRB's Chairman is elected by the members of the CRB. The Metra workforce is made up of over 4,400 employees, including union members, management staff, and employees of privately owned railroads operating under PSAs with Metra.

TABLE 1A: 2016 SYSTEMWIDE WEEKDAY BOARDINGS

Time of Day	Inbound	Outbound
AM Peak	111,179	7,303
Midday	13,382	13,227
PM Peak	9,430	102,388
Evening	2,735	11,997
TOTAL	**136,726**	**134,915**

Source: Metra Weekday Station Boardings and Alightings by Time-of-Day and Direction, 2016

TABLE 1B: SYSTEMWIDE ANNUAL PASSENGER TRIPS
1983 — 2017, in millions



Note: Excludes South Shore. From 2008, figures include free Circuit Permit trips. 2008-2011 figures include free senior trips; this program ended September 2011.

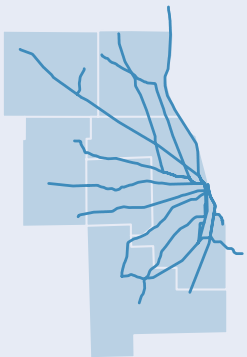
Worker monitors switch heaters at A-2 crossing near Western and Grand in Chicago

Photo: Mark Llanuza

METRA INFRASTRUCTURE

OVERVIEW

Metra operates eleven main lines radiating from the Chicago Central Business District throughout Chicago and the six-county area. Diesel-powered service operates on the BNSF Railway (BNSF), Union Pacific–North (UP-N), Union Pacific–Northwest (UP-NW), Union Pacific–West (UP-W), SouthWest Service (SWS), Milwaukee District–North (MD-N), Milwaukee District–West (MD-W), North Central Service (NCS), Rock Island (RI), and the Heritage Corridor (HC). Electric-powered service is provided on the Metra Electric (ME). Four branch lines—the McHenry Branch of the UP-NW, Beverly Branch of the RI, and Blue Island and South Chicago Branches of the ME—diverge from the main lines. Metra passenger service on the BNSF Line and three UP lines is operated by employees of these railroads under terms specified by purchase of service agreements (PSAs) with Metra, while the remaining lines are operated directly by Metra employees. Metra operates service on two lines—the HC and NCS—via trackage rights agreements with Canadian National (CN) and on the SWS via a trackage lease agreement with Norfolk Southern. Metra also operates on four Metra-owned lines: the MD-N, MD-W, ME, and RI. The Northern Indiana Commuter Transportation District (NICTD), which provides commuter rail service from Chicago to

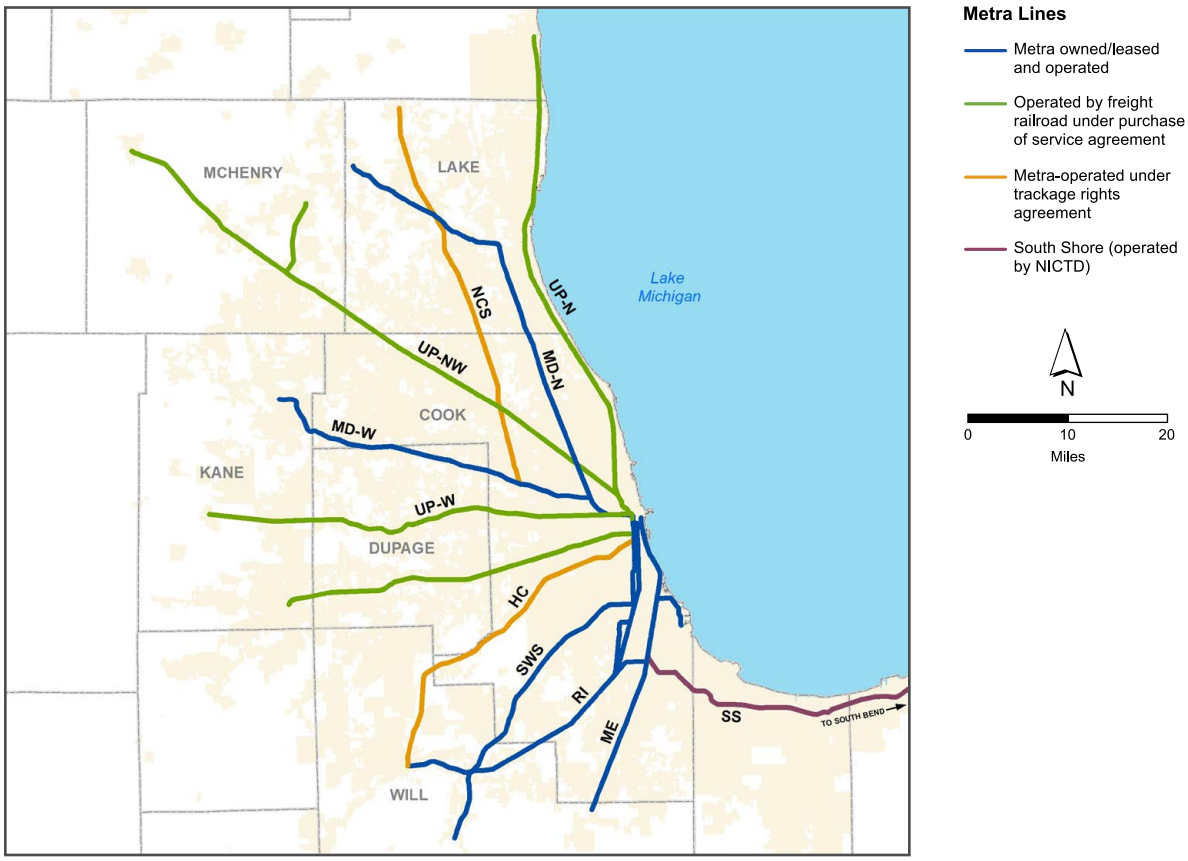


South Bend, Indiana, operates part of its South Shore commuter rail service on Metra's Electric Line tracks.

Metra's capital assets are diverse and extensive, including rolling stock, track, signal and communications equipment, yard and maintenance facilities, station buildings, platforms, parking lots, and property at administrative headquarters. Each day, delivery of safe, reliable, efficient train service depends on these assets, though many are never seen by riders. Constant maintenance, rehabilitation, and replacement—and significant funding—are required to keep Metra's facilities and equipment in working order.

Over the last several years, however, Metra has fallen behind on these investments. The availability of federal, state, and local funding for transit capital projects has decreased, resulting in a $6.1 billion backlog—the investment needed to achieve a state of good repair. Approximately 40% of Metra assets are classified as in marginal or worn condition. These assets, while safe, have exceeded their useful lives, and continued use results in higher operating costs and degraded on-time performance. This situation is unsustainable, and threatens the future viability of the important service Metra provides.

FIGURE 1: METRA OPERATIONS



Through 2023, Metra expects to receive $2.3 billion for capital projects from traditional federal and state sources. However, the Regional Transportation Authority (RTA) estimates that Metra needs $1.2 billion per year over the next ten years to achieve and maintain a "state of good repair." According to the Federal Transit Administration, "an asset or system is in a state of good repair when no backlog of capital needs exists—hence all asset lifecycle investment needs (e.g., preventative maintenance and rehabilitation) have been addressed and no capital asset exceeds its useful life." Achieving a state of good repair on Metra's existing system is vital to the region's future mobility, since providing reliable transit service depends on it.

When Metra was formed in 1983, it inherited disinvested rail lines hobbled by derailments, speed restrictions, mechanical failures, and deteriorated stations. Metra has spent billions to renew its assets, as well as introduce new stations and expand service. Now, a lack of funding limits the ability to care for critical infrastructure, jeopardizing the value of these investments. Since 1985, Metra has invested over $7.8 billion (in year of expenditure dollars) in improvements to its system. Table 1 indicates the amount of investment in different asset categories.

On the BNSF and UP lines, Metra's share of infrastructure maintenance costs are included in the fee paid by Metra under its PSA with each freight railroad, and costs for individual capital projects are allocated between Metra and the freight railroad in proportion to the improvement's value to each party and each party's usage in the area of the improvement. Similarly, infrastructure maintenance costs are included in the trackage rights fee Metra pays to operate the NCS and HC on CN track, and fixed facilities agreements are in place on these lines as well. Freight railroad employees complete maintenance and capital projects on the BNSF, UP, and CN lines used by Metra. Metra's access to CUS, which is owned by Amtrak, is controlled by a Lease Agreement that governs all operations, use and fees. A fixed facility agreement between Metra and Amtrak specifies which capital improvements at CUS will be paid for by Metra.

Canadian Pacific (CP) contributes towards the cost of capital projects that benefit the freight service the company operates over the Metra-owned Milwaukee District lines. Metra pays the entire cost of capital improvements on the SWS and on the RI and ME (apart from costs shared with NICTD as part of their fixed facilities agreement with Metra for NICTD's use of the ME). On the Milwaukee District, RI, ME, and SWS, Metra crews complete all maintenance and capital projects.

TABLE 1: METRA CAPITAL INVESTMENT HISTORY
1985 — December 2017, in millions of dollars

Carrier/Line	System	ME	RI	SWS	HC	BNSF	UPW	MDW	UPNW	MDN	NCS	UPN
Rolling stock	**$2,757**	$893	$268	$78	$25	$428	$207	$201	$241	$182	$40	$194
Track and structure	**1,432**	102	432	32	8	135	95	139	167	79	35	207
Signal, electrical, and communications	**1,002**	206	95	36	21	119	89	132	84	106	43	70
Facilities and equipment	**613**	138	132	21	11	60	17	85	27	87	16	19
Stations and parking	**1,055**	223	159	32	11	72	146	66	144	73	9	118
Acquisitions, extensions, and expansions	**599**	17	2	152	1	8	119	56	6	2	233	3
Support activities	**395**	95	56	18	13	33	23	40	28	46	18	26
TOTAL	**$7,854**	**$1,675**	**$1,144**	**$370**	**$89**	**$855**	**$697**	**$719**	**$698**	**$575**	**$394**	**$637**
PERCENTAGE	**100.0%**	**21.3%**	**14.6%**	**4.7%**	**1.1%**	**10.9%**	**8.9%**	**9.2%**	**8.9%**	**7.3%**	**5.0%**	**8.1%**

Notes: 1) Excludes South Shore, preventative maintenance, new lines, and pending grants. 2) Prior expenses are not adjusted for subsequent inflation. 3) Data is subject to budget revisions, audit adjustments, etc. at any time. 4) For many projects, work locations and associated costs have not been identified, so budget amounts are allocated among lines by various criteria. Better, more specific cost information is continually sought to improve data applicability; this will adjust the line-by-line results.

TABLE 2: TRACK OWNERSHIP WHERE METRA SERVICE OPERATES
in Route Miles

Carrier/Line	Outlying Terminal	BNSF	UP	Amtrak	CN	NS	Metra	Total Route Miles	Total Route Miles wo Double Counting
BNSF	Aurora	36.8		0.8				37.5	37.5
Electric	Univ. Park						40.6	40.6	40.6
Heritage Corridor	Joliet			1.6	35.6			37.2	37.2
Milwaukee District - North	Fox Lake			0.5			49.0	49.5	49.5
Milwaukee District - West*	Elgin						34.4	34.4	34.4
North Central Service	Antioch			**0.5	40.2		**12.1	52.8	40.2
Rock Island	Joliet						46.6	46.6	46.6
SouthWest Service	Manhattan			**1.6		33.3	5.9	40.8	39.2
Union Pacific (3 lines)			162.3					162.3	162.3
Total Route Miles Operated by Metra								**501.7**	
Total Rt. Miles by Owner		**36.8**	**162.3**	**2.9**	**75.8**	**33.3*****	**176.5**		**487.5**
Percent of Total Route Miles		**7.5%**	**33.3%**	**0.6%**	**15.5%**	**6.8%**	**36.2%**		**100.0%**

*5.4 miles of the MD-W Line (CUS to A-5 Junction) are included in the MD-N Line total and are not included in the 34.4 number
** Totals were adjusted to avoid double counting
*** Metra maintains NS-owned trackage

TRACK AND STRUCTURE

Each weekday, Metra commuter trains travel over approximately 1,100 miles of track—the backbone of Metra's system. A Metra locomotive weighs approximately 130 tons, and each train car weighs between 60 and 70 tons. A tough yet precisely calibrated system sustains this massive weight and the forces it generates. Steel rails—secured by spikes, tie plates and crossties—rest on a bed of crushed rock ballast, stabilized by the subgrade material used to build the rail embankment. These layers work together to anchor the track in place, provide drainage, and distribute the weight of the traffic passing overhead. Supporting structures such as bridges and retaining walls are also critical to track performance. Preventing and repairing damage caused by moisture, temperature extremes, and vandalism are ongoing activities of Metra track crews. Timely renewal and realignment of track components maintains safety and ride quality, reduces wear and tear on rolling stock, preserves on-time performance, and helps manage operating costs. Since 2009, 100% of Metra-owned mainline track has consisted of continuous-welded rail, which is stronger, provides better ride quality, and requires less maintenance than the jointed rail it replaced.

Metra has established inspection and renewal cycles for track and structure elements. Due to budget constraints, however, these cycles are often longer than industry best practice. Metra replaces 80,000 cross ties each year, so that every tie in the system is replaced every 21 years. Track resurfacing—compacting ballast and realigning track—is completed across the system on a four-year cycle. At highway-rail grade crossings, the rate of deterioration varies widely, based on the volume of vehicular traffic. Metra renews 12 road crossings each year, replacing cross ties, crossing material, and ballast, rewiring signals, and resurfacing the track at each location.

Since the agency was formed in 1984, Metra has built or replaced approximately 120 of the 823 bridges across its network, some over a century old. Rehabilitation and replacement of aging bridges is ongoing, and recent bridge projects include replacing a 136-year-old single-track bridge with a new double-track bridge on the MD-W, as well as the continued replacement or repair of century-old bridges at 14 locations along the UP-N line. Retaining wall rehabilitation prevents deterioration, which can destabilize the roadbed and lead to track shifting. Railroad embankments may need to be stabilized to prevent erosion. In addition to scheduled work, broken or deteriorated components must be replaced as needed. Track work takes place during midday, weekend, and overnight periods to minimize risk to employees and reduce delays to passengers.

Like most mainline track mileage in the United States, the majority of Metra's system qualifies as Class 4 according to the Federal Railroad Administration's (FRA) track class standards. However, Metra inspects and maintains its track

to meet more demanding Class 5 standards. The FRA defines track classes according to a number of criteria, including curvature, inspection frequency, and adherence to mandated parameters (for gauge, height, alignment, and other factors), and a track segment's FRA rating determines the maximum allowable speed for passenger and freight trains operating on the segment. For example, standard track gauge of North American railroads is 4 feet 8 ½ inches between rails (as measured from 5/8 of an inch below the top of the rail). To qualify as Class 5 track, gauge cannot be less than 4 feet 8 inches or more than 4 feet 9 ½ inches. To ensure that Metra track continues to meet this and other standards, all 190 miles of Metra-owned track are visually inspected two to three times each week, and inspected twice a year using specialized rail equipment. Ongoing track and right-of-way maintenance activities also include electronic rail defect testing, right-of-way fencing repair, and vegetation control.

The availability of multiple tracks, with crossovers at strategic locations, are factors that help determine service frequency and passenger travel time. Within double or triple track segments, Metra trains can pass slower trains and meet traffic in the opposite direction without stopping, which increases throughput and allows for a greater combination of stopping patterns, including express service.

Track work at A-5 Junction in Chicago

The BNSF Line and ME main line offer the highest-frequency service of all Metra lines, made possible by triple or quadruple track throughout the lines, high-speed crossovers, and advanced signals that allow closer spacing of trains. Stations on these lines are divided into zones, and many peak-period trains stop at stations within a particular zone before running express to stations in or near downtown Chicago. Where track capacity is more limited, such as on the UP-N, MD-N and MD-W, schedules combine this type of "zone express" service with limited stop service that serves certain stations with alternate trains, to provide faster travel times than all-stop "local" service.

Minimizing trip times allows trainsets to be "recycled" for a greater number of trips during high-demand periods. During the AM peak period, for example, a single trainset on the BNSF completes as many as three inbound trips. Scheduling "short turns" (trips that do not extend the full length of the line), splitting a single consist (or "trainset") into two, and running "deadhead" trains (non-stop, non-passenger trains traveling in the non-peak direction), are other strategies to maximize service frequency and use rolling stock most productively.

Besides the scheduling benefits they offer, segments of multiple track are less vulnerable to blockages caused by disabled trains, and allow service to recover more quickly following disruptions. However, the costs of track expansion projects can be very high. In addition to the cost of the track and right-of-way work itself, costs of signal system modifications, with land acquisition and bridge widening, if required, must be funded before track expansion projects can be pursued.

Chicago Region Environmental and Transportation Efficiency (CREATE) Program

The CREATE program consists of 70 projects designed to reduce and remove passenger and freight train congestion in the Chicago area. The program has a projected total cost of $4.4 billion. CREATE funding partners include freight railroads, Amtrak, Metra, and the Illinois and Chicago Departments of Transportation. The partners have also pursued federal funding, resulting in an American Recovery and Reinvestment Act (ARRA) high-speed rail grant, two Transportation Investment Generating Economic Recovery (TIGER) grants, and a SAFETEA-LU provision worth approximately $335 million. In 2018, the CREATE partners were awarded a federal INFRA grant for $132 million in funding for the 75th Street Corridor Improvement Program (CIP). As of June 2018, 29 CREATE projects have been completed since 2005 and five projects are under construction. The remainder may be completed as funds become available.

A number of CREATE projects are designed to improve Metra operations and benefit riders. Road-rail grade separations at Belmont Avenue in Downers

Grove (BNSF) and Roosevelt Road in West Chicago (UP-W) have been completed, and several other road-rail grade separations are planned. A rail-rail grade separation known as the Englewood Flyover, which eliminated conflicts between RI trains and freight and Amtrak trains at a critical junction, was completed in 2014. Crews also recently completed projects to improve the connection between UP and Indiana Harbor Belt tracks near UP's Proviso freight yard in Melrose Park and to extend third main line track adjacent to the yard. These projects included the construction of new Berkeley and Bellwood Stations on Metra's UP-W Line, and the addition of pedestrian underpasses at each station.

On the MD-W, a CREATE project will install five crossovers and associated signaling in Franklin Park. The project, set to start construction in spring 2018, will reduce conflicts between Metra trains and slower- moving freight trains near the entrance to CP's Bensenville Yard. On the SWS, the largest CREATE project, the 75th Street CIP, will decrease the number of freight and commuter train conflicts. Construction of a flyover will re-route SWS trains from Chicago Union Station to LaSalle Street Station, reducing congestion at CUS, Metra's busiest downtown terminal. Besides the federal INFRA grant award mentioned earlier, additional funding is required to complete this project.

Construction of the Englewood Flyover has eliminated conflicts between RI trains and freight and Amtrak trains at a critical rail junction near 63rd Street in Chicago

SIGNAL, ELECTRICAL AND COMMUNICATIONS

Signal

Signals convey information to locomotive engineers about the track ahead using color lights illuminated in various configurations. Signal appliances include wayside signals and track switches that safely guide trains from one track or block to another and help prevent rear end and head on collisions. (An arrangement of signals and signal appliances so interconnected that movements made through them must succeed each other in proper sequence is an interlocking, which may be automatic or controlled by an operator.) In Metra's system, signals are controlled by dispatchers or operators working at a central control center or control tower. Signals govern the movement of trains as they travel through a series of track segments, or blocks, that make up a line. Power sources and other auxiliary equipment are housed in signal bungalows and cases along the railroad right-of-way.

Signal systems allow multiple trains traveling in the same or opposite directions to operate safely between blocks, and the spacing of signal components and the type of technology used impacts the operating efficiency and traffic capacity on a line. Metra train movements are guided by approximately 2,000 wayside signals. Due to differences in operating patterns (e.g., train length, speed, stopping frequency) and safe braking distances, optimal signal spacing and block length varies for passenger and freight trains—an issue in Chicago's dense rail hub, where Metra, freight,

Signal maintenance worker

and Amtrak trains frequently share the same track. Railroad signal systems are integrated with automatic warning devices, such as flashing lights and gate arms, which are activated at roadway and pedestrian crossings when track circuits detect an approaching train.

Much of Metra's signal infrastructure is outdated and in need of replacement, and Metra has prioritized the replacement of a number of aging interlockings. The A-2 interlocking, where three sets of Milwaukee District tracks cross over four sets of UP-W Line tracks near Grand and Western Avenues in Chicago, is particularly important. More than 350 Metra, freight, and Amtrak trains move through the area each day, and movements are controlled by 31 switches. A-2 failures affect a large number of Metra riders with over one-quarter travelling through the crossing on a typical weekday. On-time service for three other Metra lines (UP-N, UP-NW, and HC) also relies on this interlocking as A-2 directs these trains to and from facilities for maintenance or servicing.

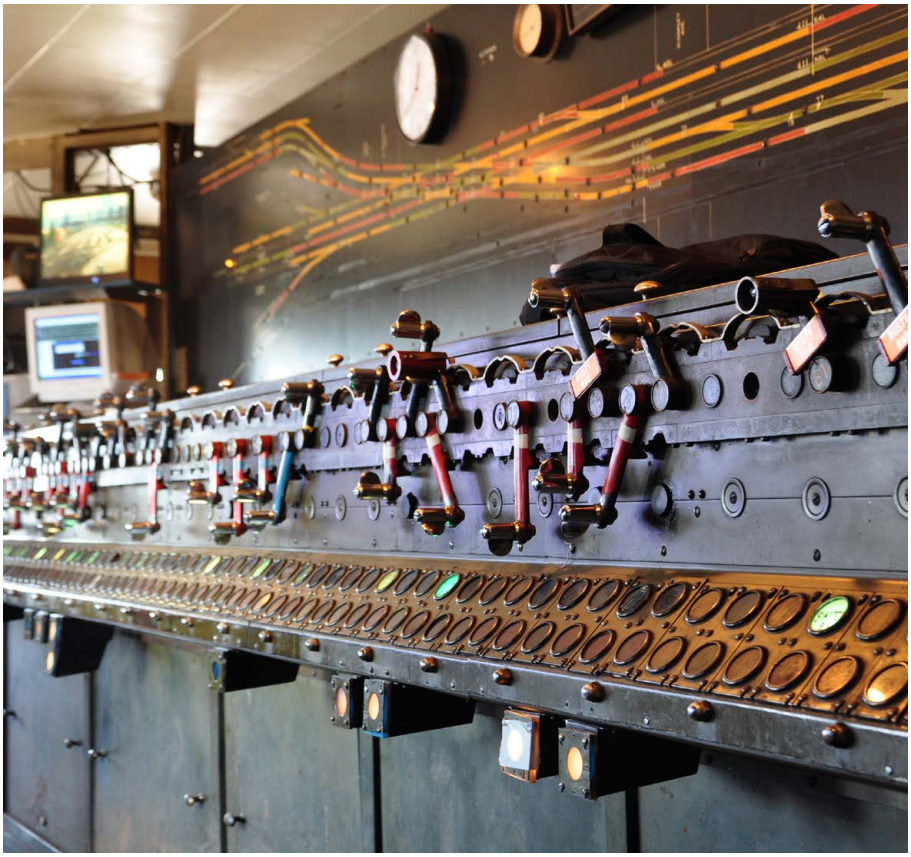
A-2 is controlled by a manually operated interlocking machine so massive that it occupies a large portion of the second floor of the tower next door. The tower operator activates track switches by moving levers on the machine, clearing a protected path for trains through the crossing. The interlocker's many moving parts require frequent maintenance and are vulnerable to breakdowns. Installed in 1932, it has reached the end of its useful life and needs to be replaced. The configuration of the junction itself is also a source of delay—Metra trains must slow to 20 miles per hour to move through the crossing, and with so much traffic, trains must frequently wait for others to cross.

Several solutions to the issues at A-2 are being evaluated. Potential options—ranging from least to most expensive—include rebuilding the crossing at its current location, relocating the crossing one mile east (away from maintenance facility entrances), or grade separating some or all of the crossing (to significantly reduce or completely eliminate conflicts between cross-traffic).

At A-2 and elsewhere, many replacement parts for Metra's signal equipment are no longer available from manufacturers or resellers and must be custom-made. Continued use of aging components also prevents Metra from taking advantage of efficiencies built into new equipment including fewer moving parts, automation, remote activation and energy efficiency. New equipment requires less maintenance and experience fewer breakdowns.

80-year-old manually operated interlocking machine inside tower at A-2 crossing

Photo: Mark Llanuza



Signal Technology

Centralized Traffic Control (CTC) is a technology that consolidates the use of controlled interlockings from a central location. CTC is in place on much of the track owned or leased by Metra, and on all track owned by BNSF, CN, and UP. On Metra's network, signaling in CTC territory is managed from Metra's Consolidated Control Facility (CCF) in downtown Chicago or from out-of-state dispatching centers operated by Metra's freight railroad partners. CTC supports full-speed bi-directional travel, even in single track territory, and allows for more than one train to occupy a single track separated by blocks, which maximizes line capacity and schedule flexibility.

Segments of Metra's system currently not served by CTC, but where demand exists for improved service, will be upgraded as funding becomes available. CTC installation on these segments, in conjunction with additional sidings or segments of double track, will allow Metra to increase frequency of service—including reverse commute service—and maximize utilization of existing track. Signal spacing will be adjusted to better accommodate the passenger/freight mix on the line. In upgraded areas, remote tower operators will be relocated to CCF, improving coordination and increasing efficiency.

Metra Electric District catenary maintenance vehicle

Lightly used portions of Metra's system, including the Beverly Branch (RI) and McHenry Branch (UP-NW), are non-signalized (or dark territory). In these areas, train movements are managed by dispatchers using proper permission forms and procedures. Dark territory will be eliminated with the implementation of Positive Train Control (see page 18).

Electrical

Metra's electrical needs are most demanding on the ME, Metra's only electric-powered line. Due to the significant maintenance and renewal needs of electric infrastructure, the ME consumes close to three times the average amount of capital investment of the other Metra lines.

On the ME, pantographs mounted atop railcars draw direct current (DC) power from an overhead catenary wire energized at 1500 volts. Electrical substations located every five to six miles along the right-of-way provide power to the catenary system. A consistent, adequate power supply ensures that an electric rail line operates at maximum efficiency and capacity; failure to provide adequate power limits train acceleration, speed, and

consist length. Underpowered lines are vulnerable to outages and service disruptions, particularly during peak times. Since the new ME railcars are heavier and accelerate faster than the cars they are replacing, Metra is adding substations, and upgrading existing ones, to meet the power demands of the higher-performance equipment.

Metra is working on a number of projects to upgrade electric equipment throughout its system. These include replacement of aging cable reels (used to connect railcars to head-end power supplied by locomotives) and switchgear (part of the system used to power wayside equipment). In rail yards, heaters are being added to switches to ensure functionality in cold weather, and lighting in yards and repair shops will be replaced with modern, more efficient equipment.

Communications

In the Chicago region, the tightly choreographed movements of more than 1,300 commuter, freight and Amtrak trains each day depend on constant communication between rail carriers. Approximately 65% of freight trains operating in the region interact with Metra in some way, either by crossing tracks used by Metra trains or sharing track with commuter service. No other commuter railroad in North America has such a complex interface with other railroads.

Dispatchers manage train movements through an assigned territory, while control operators direct traffic through particular interlockings and determine which train has priority when multiple trains approach an interlocking at the same time. Train priority is based on the class of train (e.g., passenger or freight, and various types of each) and other factors. At rail-rail grade crossings, the railroad in control of the crossing may prioritize its own trains over those of other carriers. Lower priority trains are more vulnerable to delays, since they can be made to wait at junctions until other trains clear the crossing. Freight interference accounts for a significant amount of delay experienced by Metra riders, and Metra lines with many at-grade rail intersections controlled by other railroads, such as the HC and SWS, are most affected by this issue.

For a three-hour period twice each weekday, freight railroads in the Chicago area significantly curtail their operations on track shared with Metra in order to protect peak-period commuter schedules, but some railroads do attempt to move some of their traffic in the small windows between Metra trains. Most freight interference with Metra trains is due to conflicts with cross traffic at at-grade intersections.

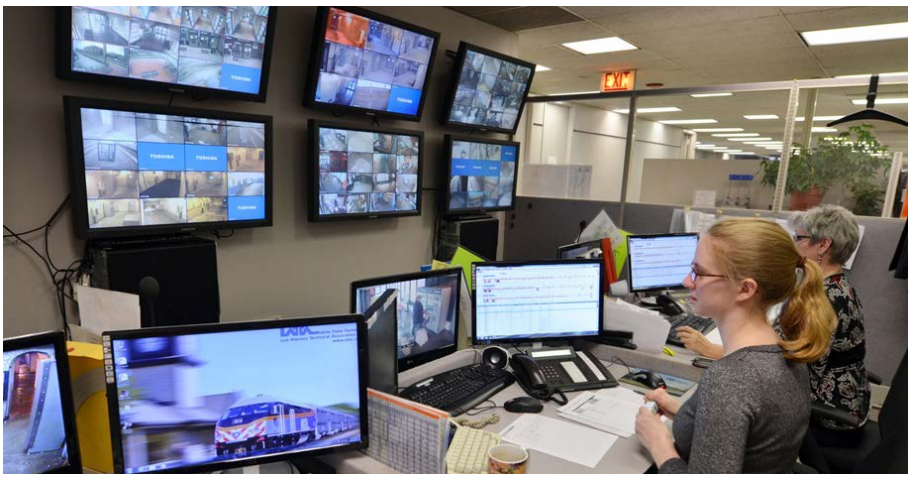
Generally, a railroad's owner is responsible for dispatching the line. Metra's BNSF Line is dispatched from Fort Worth, Texas, Metra's three UP lines from Omaha, Nebraska, and the NCS and HC from CN's facility in Homewood, Illinois.

Dispatching center

Metra trains near Union Station are dispatched by Amtrak from its Chicago Control Center. Different segments of the SWS, which is leased by Metra from NS, are dispatched by NS, Metra, and Amtrak. Metra dispatches its RI and ME lines. The Milwaukee District, owned and operated by Metra but dispatched by CP from Minneapolis, is a notable exception. CP operates freight trains over Metra-owned track and owns track beyond the extent of commuter service (north of Rondout Junction on the MD-N; west of Big Timber Road Station on the MD-W). This arrangement predates Metra's acquisition of the Milwaukee District in 1987.

Increased deployment of CTC allows Metra to shift interlocking control functions from towers located at junctions throughout the system to CCF. Uniting Metra control operators and dispatchers within the same facility improves synchronization of Metra-controlled train movements and optimizes labor allocation, and use of automated systems reduces the likelihood of human error. The Chicago Transportation Coordination Office (CTCO), which promotes cooperation among Metra, Amtrak, and private rail freight operators in the region, is housed in the same facility. Bringing Metra dispatchers and control operators under the same roof with representatives from other railroads promotes closer ties between passenger and freight rail carriers.

Metra GPS Center



At Metra's Global Positioning System (GPS) Center, located at Metra headquarters, technical communication specialists monitor a satellite system tracking the real-time location of each train. When delays and other service disruptions occur, GPS employees generate announcements communicated via station public address systems and electronic signage, Metra's website, and e-alerts sent to My Metra subscribers. GPS Center employees also monitor the functionality of ticket vending machines and elevators, as well as customer assistance phones and video monitoring systems on the ME.

Positive Train Control

Among competing capital needs in the Signal, Electrical and Communications category, no project is more pressing for Metra than implementation of Positive Train Control (PTC). PTC is a computerized system that will prevent certain types of train-to-train collisions, avoid derailments or other accidents caused by excessive speed, and increase safety for right-of-way workers. The system integrates global positioning satellites, wayside sensors and communications units, and the centralized dispatching system at Metra's CCF. Together, these components track trains, convey operating instructions, and monitor the crew's compliance. PTC will automatically stop a train if the system detects that a violation is about to occur.

Metra is responsible for implementing PTC on the five lines it controls (ME, MD-N, MD-W, RI, SWS) and contributing a share of PTC installation costs on the six other Metra lines owned by private railroads. PTC kits must be installed on all Metra locomotives and switch engines, 187 cab cars, and 26 Electric Multiple Units (EMUs; the 160 new EMUs making up the remainder of the electric fleet are PTC-compliant). On the five lines controlled by Metra, 638 wayside devices will be installed to communicate with Metra rolling stock and with CCF. As Metra obtains funding to complete signal

As part of signal modernization projects at locations such as A-5 interlocking, PTC-compliant equipment is installed and control operators are relocated to Metra's Consolidated Control Facility near downtown Chicago

Photo: Mark Llanuza

modernization projects around its system, outdated equipment is replaced with components that are ready to integrate with PTC.

Implementation of the PTC mandate presents Metra with a number of challenges. Installing the system is very expensive, exceeding the amount Metra spends annually on its entire capital program. Since PTC technology is still being developed, systems cannot be purchased off the shelf and certain components are not yet available for purchase. To support PTC-related transmissions, railroads must acquire sufficient radio spectrum bandwidth from existing license holders. PTC systems adopted by various railroads must be able to communicate with each other, so that trains can move seamlessly between tracks controlled by different systems. Achieving PTC interoperability in Chicago is a complicated undertaking, since the region has the most complex railroad network in the country.

The 2008 Rail Safety Improvement Act required implementation of PTC by the end of 2015 on all passenger rail routes and on freight lines carrying certain hazardous materials. Due to delays caused by the complexities of PTC implementation, in late 2015 Congress passed legislation extending the PTC installation deadline to 2018. The legislation allows up to two additional years to finalize implementation and testing if certain conditions are met. Metra plans to have PTC installation completed for the BNSF, UP lines and Rock Island in 2018, while the remaining lines will be completed in 2019.

ROLLING STOCK

Railcars

Metra's 10 diesel lines are served by 848 rail cars, hauled by 150 locomotives. Engineer controls in the cab car allow push-pull operation of the train: on inbound trips, the locomotive at the rear of the consist pushes the train into Chicago; on outbound trips, trains operate in pull mode with the locomotive in front, to minimize diesel emissions near passenger waiting areas at downtown terminals. (This practice was pioneered on Chicago & NorthWestern Railway's Chicago commuter lines during the 1960s, eliminating the need to back the trainset into the nearest yard at the end of each run and reposition the locomotive at the front of the train.) The number of cars in a trainset varies by line, but typically ranges from four to 11 cars. Cab cars are often strategically placed throughout Metra's system so trains can be quickly shortened for midday service, which often requires shorter consists.

The ME is served by 186 EMUs—electric-propelled cars that draw power from an overhead catenary wire system. Use of electric power allows ME trains to accelerate faster and run more quietly than the diesel-powered trains elsewhere in Metra's system. Metra's EMUs must operate in permanently coupled "married pairs," and each pair contains all controls and power systems needed to function. ME trainsets range from two to eight cars.

Metra's bi-level passenger cars are known as "gallery cars," with a single row of seating on each side of the upper level, allowing conductors on the lower level to check tickets and collect fares on both levels. This design was introduced in 1950 by the Chicago, Burlington and Quincy Railroad, a predecessor of BNSF, to increase capacity and revenue on their commuter line to Aurora. Cars serving Metra's diesel lines have approximately 150 seats, with fewer seats on bathroom-equipped cars and on cab cars. On all lines, Metra aims to provide a seat for every rider.

Metra permits bicycles to be stored in the priority seating area on reverse commute and off-peak trains (except during certain special events in downtown Chicago). The number of bicycles allowed per train is printed at the bottom of each timetable. Since accommodating passengers must remain Metra's priority, if space is needed for disabled passengers or a train is crowded, bicycles may not be allowed on board, even if otherwise permitted. Metra trains have carried bicycles since 1995, and a new shipment of disabled-accessible cars (with flip-up seats in the designated wheelchair-priority area) allowed Metra to significantly expand its Bikes on Trains program in 2008.

Also in response to rider demand, Metra implemented a Quiet Car program on all lines in June 2011, following a successful test on the RI. Each morning

inbound and evening outbound peak-period train longer than two cars has one or two designated Quiet Cars, where cell phone calls are not allowed, conversations are discouraged, and electronic devices should be muted. The program is enforced largely by peer pressure, with conductor intervention when necessary.

In early 2013, Metra completed the installation of over 400 automatic external defibrillators (AEDs) on train cars, in major work facilities and in Metra police vehicles. The portable, easy-to-use devices deliver an electrical current to those experiencing sudden cardiac arrest. Installation of the devices was funded by a grant from RTA, with maintenance and employee training made possible by a partnership with Northwestern Medicine.

All Metra trains have been compliant with Americans with Disabilities Act (ADA) standards since 1998, and today, 57% of Metra railcars on diesel lines are equipped with wheelchair lifts, as well as bathrooms to accommodate wheelchairs. Boarding platforms at all ME stations are level with the train floor, meaning that lifts are not necessary on this line. (However, not all ME stations are ADA-compliant.) All new and most recently rehabilitated Metra railcars—on the ME and diesel lines—will be equipped with LCD signs for scrolling announcements, to duplicate announcements made through the audio system.

Metra's preventive maintenance and rehabilitation programs have proven to be effective in limiting equipment failures and extending the life of rolling stock. Railcars are inspected and cleaned daily, and receive minor repairs as needed. Schedules have been established for preventative maintenance activities, and Metra implements overhaul and remanufacture programs at strategic points in the vehicle's lifespan. Metra's general practice is to perform a midlife overhaul after 15 years and complete a second rebuild at the end of a car's 25-year recommended life expectancy, extending its useful life to 35 years. However, funding constraints in recent years have caused Metra to extend midlife car rehabilitation cycles up to 19 years, which increases maintenance costs and threatens service quality.

In 2017, Metra completed a six-year effort to rehabilitate 176 Amerail trailer and cab cars built between 1995 and 1998. A new car rehabilitation program is underway with 302 Nippon-Sharyo cars manufactured between 2002 and 2008. In addition to replacing existing components—from windows to wheel assemblies—crews are adding power outlets and intercoms and are replacing the toilets and upgrading the seats. Metra workers are rehabilitating the cars to like-new condition for about $650,000 each, less than one-third of the cost of a new car. The work will extend each car's useful life by 12 to 15 years.

As part of an effort to improve air quality inside railcars serving diesel lines, Metra has installed new hoods over air intakes and upgraded HVAC

Carman Bryant Howse replaces a window in a car being rehabilitated at Metra's 49th Street Shop

filters inside train cars. The new high-efficiency filters are typically used in institutions requiring very clean air, such as hospitals, laboratories, LEED-certified green buildings, and other sensitive environments.

Metra recently replaced the entire EMU fleet with new vehicles. Until 2006, when 26 new EMUs entered service, the entire ME fleet predated Metra's formation. These legacy cars were too old to be cost-effectively rehabilitated. In 2012, the State of Illinois committed $585 million in Bond Program funds to purchase 160 new EMUs. From fall of 2012 until early 2016, four to six new EMUs arrived from the Rochelle, Illinois plant each month, and old cars were retired.

Half of the new cars are equipped with restrooms, an amenity missing from the retired EMUs. The new cars also include a variety of new features: larger windows, better seats with reversible seatbacks, brighter lighting, an improved public address system, and power outlets for customer use. EMU fleet size increased from 171 to 186, to accommodate projected ridership growth and compensate for lost seating capacity in the new cars (due to addition of bathrooms). Each new EMU pair has 128 seats in the restroom-equipped car, and 143 seats in the other car.

Locomotives

Metra operates 150 locomotives on its diesel lines. These diesel-electric units use 3000 to 3600-horsepower diesel engines to drive the electric generator powering the traction motors. Metra distributes dual-locomotive "double header" consists throughout the system to provide quick replacement power in case of equipment failure. Federal regulations cap Metra locomotive speeds at 79 miles per hour, though speeds are typically slower due to station spacing, track conditions, and signal system limitations.

As with railcars, Metra keep locomotives in a state of good repair and maximizes their lifespan by adhering to daily and periodic maintenance procedures and equipment rehabilitation schedules. Metra's goal is to perform a midlife overhaul after ten years, minimizing maintenance needed until locomotives reach the recommended lifespan of 25 years. However, budget constraints in recent years have delayed the midlife rehabilitation up to two years.

Metra is currently halfway through a major rehabilitation of 42 locomotives, 30 of which are F40PHM models from the late 1980s. Working with the original manufacturer, Progress Rail Services (PRS-EMD), Metra shared one of its locomotives for emissions research and testing that resulted in a rehabilitation template for the cleanest emissions possible for the model. The collaboration between Metra and the manufacturer resulted in rehabilitated locomotives which exceed emissions regulations requirements in nearly every category, and is accomplished at minimal cost to Metra as part of the rehabilitation project.

Another program underway is the rehabilitation of 27 MP36 locomotives that is being completed in-house at Metra's Rock Island facility. This program is the most technical and aggressive rehabilitation program in Metra's history, including a rebuild of the engine with electric fuel injection and stand-alone, head-end power systems, both of which make the locomotive more reliable, require less fuel, and produce fewer emissions. The program is targeted for completion in 2019.

In early 2018, Metra took advantage of a rare offer to purchase up to 21 used F59PHI locomotives from CalTrans. The locomotives are similar to an existing Metra fleet of EMD F40s, and can therefore be integrated into the Metra system quickly. In fact, these locomotives will be service-ready in 2018 while the others sought in Metra's 2017 Request for Proposals (for up to 30 new or 27 remanufactured locomotives) will not be ready until 2020.

Other projects focus on reducing the environmental impact of Metra's locomotive fleet. Automatic Engine Start-Stop (AESS) systems—which improve fuel efficiency by automatically shutting down an idle locomotive engine and restarting it when needed—have been installed on two-thirds of

Metra's locomotive fleet and is in progress on the remaining third. To reduce emissions and fuel consumption, certain engine parts, such as fuel injectors, cylinder heads, liners, pistons and rings, are being upgraded to state-of-the-art components.

Rolling Stock Modernization Plan

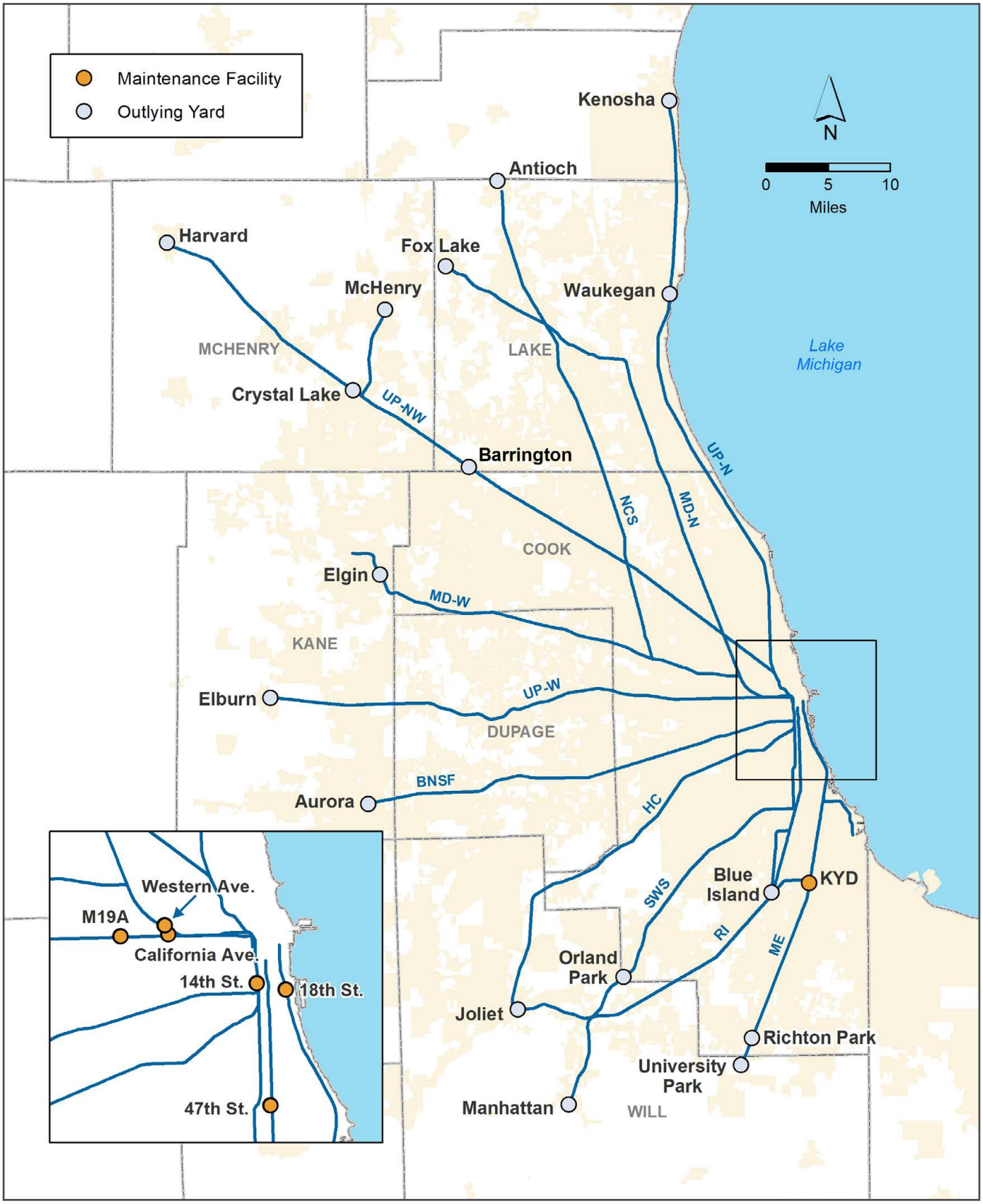
In April 2017, Metra released an RFP for new gallery cars, to procure a minimum of 75 cars with options for up to 230 cars, depending on the proposals received. The new cars received will replace some of the oldest cars in the fleet, the oldest of which dates back to 1953. In addition, Metra released an RFP in December 2017 for new or remanufactured locomotives, with budgeting for up to 42 locomotives, based on the proposals received.

FACILITIES AND EQUIPMENT

Maintenance, repair, and storage of Metra rolling stock takes place at 18 rail yards and seven maintenance support facilities located throughout the system. Some light maintenance can also be done at Metra's downtown terminals. Before the morning peak period, all rolling stock receives the required daily inspection, and is tested to ensure that each vehicle is ready to begin service. During the midday, trainsets not needed for service are stored at five layover yards near downtown Chicago. Here, vehicles are inspected, cleaned, and minor repairs or services are completed to prepare equipment for the afternoon peak. At the end of the service day, most trainsets are stored overnight at outlying yards, where the cycle begins the next day.

The expansive network of maintenance and storage facilities allows Metra to place equipment where it is needed and nearly eliminate the need for non-revenue deadhead movements. In addition, crews can respond quickly to equipment failures, reducing service disruptions. Metra's operating structure provides for a vehicle fleet that is highly intertwined. In some cases, train cycles are coordinated so that a single trainset operates on multiple lines over the course of one day, or multiple days, to maximize efficiencies of equipment and fuel. In addition, most of Metra's yards are undersized and not designed to service modern equipment, and these constraints limit the potential to expand service.

FIGURE 1: METRA OPERATIONS



STATIONS AND PARKING

Stations, along with rolling stock, are the most visible parts of Metra's infrastructure. Metra's 242 stations have a significant impact on the rider experience, and it is important to keep them functional and as attractive as possible. Station facilities such as depots, warming shelters, platforms, and access routes are in continual need of rehabilitation and/or replacement as they reach the end of their life cycles. Metra has invested $1.1 billion since 1985 to improve station and parking facilities, and host communities have also invested substantial amounts. Since Metra's formation in 1983, 32 new stations have been added throughout the system, with significant improvements completed at 145 existing stations. The Romeoville station (HC) opened for service in early 2018. The design of infill station Peterson/Ridge (UP-N) is complete while funding for construction has yet to be identified. Another infill station on the horizon is Auburn Park (RI); however, Metra currently lacks funding to pursue the design and construction phases.

Station and parking facilities at Metra stops are managed by a wide variety of legal arrangements. Station structures may be owned, leased, and maintained by separate entities (e.g., Metra, municipalities, freight railroads, and other private or public landowners). Additional parties may be involved in the ownership of the land on which station structures are built, and in the ownership and operation of parking areas. The decentralized nature of Metra station ownership stems from the long history of commuter rail service in the region, and the fact that Metra's system was assembled from commuter lines previously operated by a number of private railroads that had developed unique relationships with local communities.

Metra utilizes federal and state grants to fund the construction and expansion of station parking facilities, including the cost of land acquisition and/or construction of the parking lots themselves. Station and parking improvements partially or fully funded by these grants are subject to use restrictions and other requirements, until the grantor's interest in the property expires. In general, Metra prefers that commuter parking facilities are locally maintained, since issues that develop at individual stations can be handled more effectively by the communities rather than at an agency level. Ongoing maintenance of parking facilities is generally funded by fees paid by lot users.

At most stations, Metra has maintenance agreements with host municipalities for cleaning and small repair projects in station buildings and the nearby area. Metra is always responsible for larger repair and rehabilitation projects exceeding a cost threshold that varies among stations, and maintains all passenger communications equipment (e.g., audio equipment and LCD announcement signs). Metra forces maintain and remove snow from all station platforms, except for those at UP stations and certain stations on the BNSF Line.

When a station reaches the end of its useful life, Metra seeks to fund the replacement or rehabilitation of station structures at a basic level, based on ridership at the station. Host communities are responsible for the cost of any upgraded materials or structures.

Currently, 184 stations are fully accessible to individuals with hearing, vision, and mobility disabilities and 13 are classified as partially accessible (meaning that ramps, ticket windows, and/or buildings and shelters at these stations may not fully conform to ADA guidelines, but customers who use wheelchairs will be able to access train platforms from the street). These represent Metra's busiest stations, used by 95% of riders. Metra brings stations into full compliance with federal standards as they are rehabilitated.

A number of stations and parking projects were funded with $135 million between 2009 and 2014 from the Illinois General Assembly State Transit Bond program. However, that critical funding source was terminated by the state in 2017, and Metra has since applied for discretionary grants as they become available.

Parking

At the 213 Metra stations with parking facilities, more than 90,000 spaces are available to commuters. Only a small number of these spaces are owned and controlled by Metra; most commuter parking lots are managed by host municipalities, meaning that Metra has little authority to direct pricing policy or redevelopment near the vast majority of stations. However, Metra and station host communities are committed to coordination and creative thinking to ensure the best management of parking resources.

In 2016, 51% of weekday Metra riders accessed their boarding station in a car they parked at the station. This figure is high relative to other transit modes, but typical of other North American commuter rail systems due to the predominantly suburban nature of the area served by commuter rail. The percentage of Metra riders driving to stations varies widely within Metra's service area, and is based on station area density and land use, quality of connecting transportation options, and other factors. Automobile access rates rise with distance from downtown Chicago—in 2016, 67% of Metra riders boarding at a station over 25 miles from downtown drove to the station.

CAPITAL PLANNING

Each year, Metra makes difficult decisions about which projects to fund in its capital program, since needs always far exceed available funding.

The Capital Programming Department is transitioning to a Transit Asset Management (TAM) system as part of the Federal Transit Administration (FTA) Final Rule effective in October 2016 requiring transit agencies and their capital assets to meet performance measures that will result in safe, reliable transit while lowering operating costs.

The TAM Plan covers nine elements (inventory of capital assets, condition assessments, decision support tools, investment prioritization, TAM and State of Good Repair policy, implementation strategy, list of key annual activities, identification of resources and an evaluation plan) and is subject to FTA audit and review. Metra is currently working to develop its TAM Plan—an agency wide initiative—by Fall 2018.

Thus far, Metra has created a comprehensive inventory of its capital assets along with condition ratings and estimated useful lives for rolling stock, bridges, signals, track infrastructure and equipment. Metra is also developing a Decision Support Tool and Investment Prioritization to inform the capital decision-making process and replace the Capital Optimization Support Tool (COST) previously used.

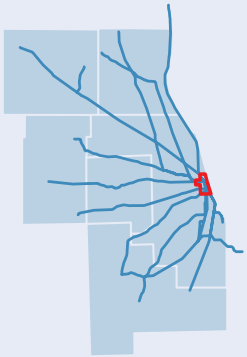
Several additional factors will influence project selection. Investments must be distributed equitably among Metra lines and across the region. Since most Metra service operates on track not owned by the agency, agreement from host railroads is required for some projects to advance.

Railcar rehabilitation at 49th Street Shop

Rock Island District riders at LaSalle Street Station

CENTRAL BUSINESS DISTRICT MARKET

Metra's network is laid out in a hub and spoke configuration, with eleven lines serving five downtown stations: Chicago Union Station (CUS), Ogilvie Transportation Center (OTC), LaSalle Street Station, Millennium Station and Van Buren Street Station. The system is oriented to serve Metra's principal customer base: suburban residents working in downtown Chicago. According to Metra's 2016 Origin-Destination Survey, 86% of all Metra riders are destined for jobs in the Central Business District (CBD) of Chicago. Approximately 70% of Metra riders alighting at the five CBD stations travel to the area known as the Loop—generally south and east of the Chicago River, north of Congress Parkway and adjacent to Grant Park—in the heart of the CBD. Figure 1 shows the CBD stations and percentage of total downtown riders' destinations by quarter section (a quarter of a square mile).

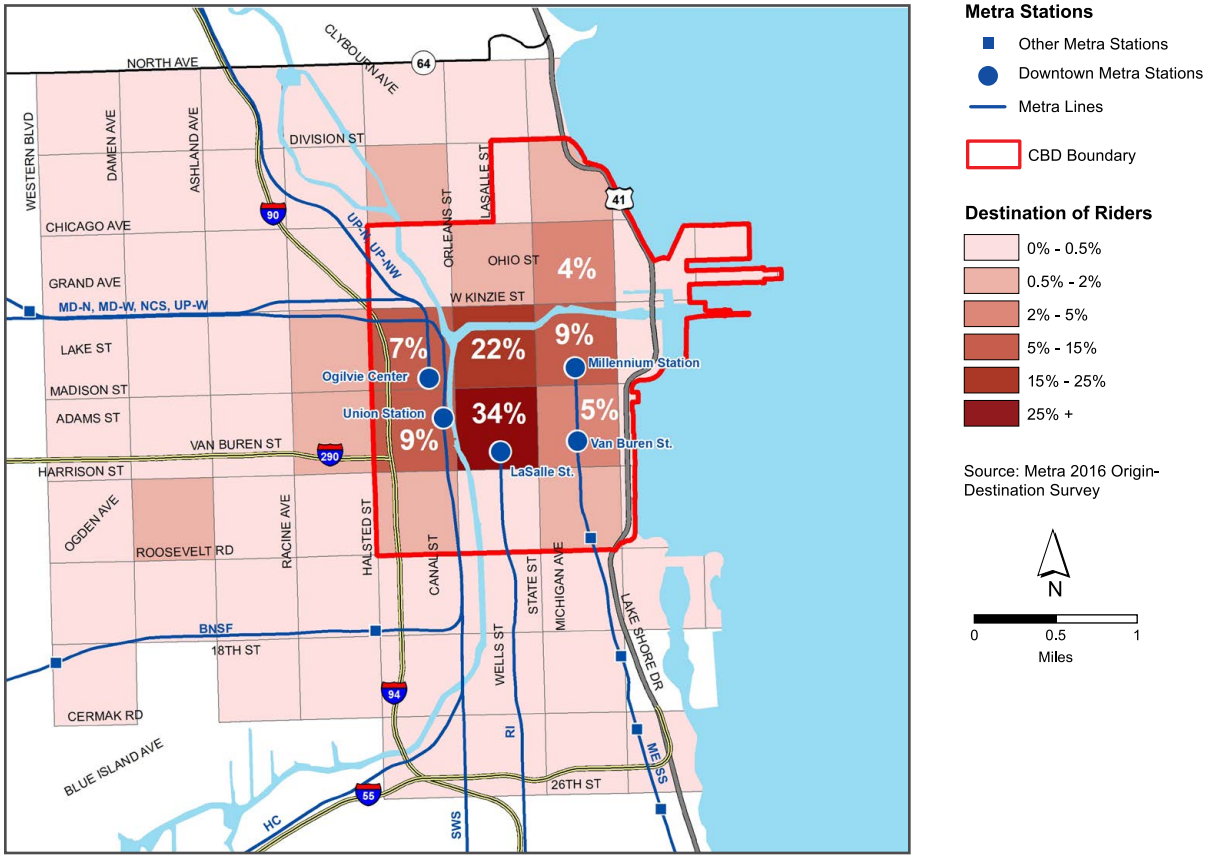


The economy of the Loop and the CBD, as a whole, is vitally important to Metra. Chicago's CBD is the second-largest in the country, after Midtown Manhattan in New York. The district is a major center for financial, legal, government, and corporate services, the headquarters of numerous Fortune 500 companies, and home of many of the region's civic, cultural, and educational institutions.

Commute trips represent 87% of Metra rides, and Metra ridership is correlated with employment rates and the general economic health of the region. This relationship is strongest in the downtown marketshed. Despite the historic migration of office growth to the suburbs and the recent recession, Chicago's CBD is expected to add nearly 165,000 jobs between 2010 and 2040. In recent years, a number of large employers, including Google, McDonald's, Conagra, and Kraft Heinz, have opened headquarters or satellite offices in the CBD, in some cases relocating from the Chicago suburbs. Many of these new offices are located in the eastern portion of the West Loop (shown in Figure 1 between Racine Avenue and the Chicago River), a short distance from OTC and Union Station.

As seen in Figure 1, the highest concentration of employment destinations in the CBD for Metra riders is the west portion of the Loop. Roughly 56% of all riders alighting at Metra's downtown terminals are destined for this area, which contains the bulk of the Loop's federal government, financial industry, and business services jobs. The next most common CBD destination for Metra riders is immediately west of the river. These areas receive roughly 16% of all CBD-bound Metra riders alighting at downtown terminals, which is an

FIGURE 1: DESTINATIONS OF METRA RIDERS ALIGHTING AT DOWNTOWN TERMINALS



increase of 2% since 2014 and has overtaken the east portion of the Loop in rank. The east portion of the Loop accounts for roughly 14% of all CBD-bound Metra riders alighting at downtown terminals, down 1% from 2014. Smaller concentrations of Metra riders travel to areas near North Michigan Avenue and the Northwestern Memorial Hospital complex, and to areas west of the CBD, near the University of Illinois at Chicago (UIC) and the Illinois Medical Center complex.

DOWNTOWN STATIONS

In terms of passenger volume, CUS is the largest Metra station downtown (and in the Metra system as a whole), accounting for 45% of alightings at the five CBD stations. It is the nation's third-busiest passenger railroad terminal, serving over 300 Metra and Amtrak trains each weekday. Ninety-one percent of the 120,000 people passing through the station each day are Metra riders. CUS serves six Metra lines—the Milwaukee District North and West Lines, the North Central Service, the Heritage Corridor, the SouthWest Service and the BNSF Line. CUS provides convenient access to the West Loop office market that has developed west of the Chicago River and east of the Kennedy Expressway; it is served by 16 Chicago Transit Authority (CTA) bus routes, one Pace express bus route, the CTA Blue Line at Clinton Street, Chicago River water taxis, private shuttle buses, and intercity buses.

The Regional Transportation Authority, Metra, CTA, Amtrak, and Pace collaborated in recent years to design and install a new wayfinding signage system for CUS. The signage guides customers transferring between transit providers, and provides information to help riders find their way to nearby attractions on foot. This improved wayfinding system will be expanded to other Metra stations, including Deerfield, Elgin, Harvey, Lake Cook Road, Lisle, Mayfair, Museum Campus and Naperville. Signs are also in place at the Van Buren Street, Davis Street and Joliet Metra stations, installed as part of the initial demonstration phase in 2012.

The Loop Link project upgraded bus service on four downtown streets by adding dedicated bus lanes, bus-only traffic signals at selected intersections, and covered stations with raised platforms. CTA buses serving CUS—including bus routes using Loop Link—utilize a new off-street transportation center just south of CUS. The transportation center, completed in late 2016, reduces traffic congestion near the station and provides a direct, underground connection to the CUS passenger concourse.

CUS operates at or close to capacity during much of the day, and the Chicago Union Station Master Plan, completed in 2012, made recommendations to address passenger crowding within the station,

ease street-level congestion, and accommodate additional commuter and intercity passenger service (including high-speed rail). Plans include improving station ventilation, renovating concourses and widening platforms, and adding vertical circulation. To assist in funding these improvements, Amtrak selected a master developer to add retail, office, hotel, and residential space.

OTC, located three blocks north of CUS, ranks second in Metra alightings, with 34% of the CBD total. OTC is the terminal for Metra's Union Pacific services: the UP–North, UP– Northwest and UP–West Lines. Like CUS, it also serves the flourishing West Loop market. OTC is served by 13 CTA bus routes, the CTA Green and Pink Lines at Clinton Street, private bus shuttles, and Chicago River water taxis.

LaSalle Street Station is the terminal for the Rock Island Line and has the third-highest number of CBD alightings, accounting for 11% of the CBD total. The station is located near the heart of the Loop, adjacent to the Chicago Stock Exchange and near the financial district. Of Metra's CBD stations, LaSalle Street is the most connected to other transit modes—the station is served by 15 CTA bus routes, the CTA Brown, Pink, Purple and Orange Lines at LaSalle/Van Buren Station, and the CTA Blue Line at LaSalle

Ogilvie Transportation Center

Station. In 2011, the City of Chicago completed construction of a bus transfer center at Congress Parkway and Financial Place, enhancing the station's multi-modal connectivity.

The Metra Electric (ME) is the only Metra line with two downtown stations: Millennium Station and Van Buren Street Station. Millennium Station is the terminal for the ME as well as the South Shore Line from Chicago to South Bend, Indiana. Previously known as Randolph Street Station, the station was rebuilt and renamed in 2005, following the construction of Millennium Park. It accounts for 7% of Metra CBD alightings (not including South Shore trains), the fourth-highest of downtown stations. Its location underneath Millennium Park and adjacent to Michigan Avenue provides access to 23 CTA bus routes, five CTA rail lines at Madison/Wabash Station, and four Pace express bus routes, as well as Chicago's pedestrian tunnel system that provides access to area retail, office buildings, government offices, and the CTA Red and Blue Lines. Of CBD Metra stations, Millennium Station has the highest share of riders using transit to travel to their final destination.

Van Buren Street Station—the only downtown Metra station that is not a terminal—is located a few blocks south of Millennium Station, at Michigan Avenue and Van Buren Street. Like Millennium Station, Van Buren Station serves both the ME and South Shore Lines and is well-connected to the CTA bus system. Three percent of morning Metra CBD alightings (not including South Shore trains) happen at this station.

STATION ALIGHTINGS/MODE OF EGRESS

Most Metra riders alighting at the downtown stations walk to their final destinations. However, public transit is the second most popular mode of egress at each downtown station, accounting for a modal share between 7% and 13%. CTA buses are the biggest recipient of Metra riders due to close proximity of bus stops and downtown Metra stations and a lack of direct connections between Metra stations and CTA 'L' stations (with the exception of Metra's LaSalle Street Station). To accommodate Metra riders using CTA trains and buses, both agencies offer the Link-Up pass, which provides Metra monthly pass holders unlimited peak-period access to CTA (and Pace at any time of day) for an additional $55 a month. Table 1 shows total alightings and mode of egress for CBD Metra stations. A number of CTA bus routes provide special rush-period service linking downtown Metra stations to employment centers such as North Michigan Avenue, the Northwestern University medical complex, McCormick Place, and UIC/Illinois Medical District.

Private bus shuttles contracted by major employers fulfill a specific transit need in downtown Chicago, providing a direct connection between CBD

Metra stations and various office buildings. These services are especially popular at OTC and CUS, since certain job-rich areas such as North Michigan Avenue lack fast transit access from the West Loop. These shuttle services can be fast and frequent during rush periods, when there is high demand to travel between one or more Metra stations and a particular workplace.

The Divvy bicycle sharing system, introduced in 2013, makes it feasible for more Metra riders to reach destinations throughout Chicago by bicycle. The network's initial roll-out placed bicycle docking stations near the five Metra downtown stations, which captured 1% of morning Metra riders alighting at downtown stations in 2016. Divvy is available at a number of Metra stations beyond the CBD, and has expanded to 580 stations around Chicago and neighboring municipality, Evanston. The City of Chicago is currently testing integration of Divvy with Ventra, the mobile application for fare payments on Metra, CTA and Pace.

In 2016, Metra entered into a marketing agreement with Uber, making the firm Metra's official ride-share partner. While rideshare companies Uber, Lyft, and Via have been increasing in market share as a general mode choice, they are not currently a stand-out mode for morning Metra riders arriving downtown looking to reach their final destinations. As of 2016, less than one-half percent of these Metra riders opted for rideshare services, fewer than the 2% who took a traditional taxi.

TABLE 1: MODE OF EGRESS FROM CBD METRA STATIONS

Station Name	Total Alightings	Walk/ Bike	Drive/Carpool Driver	Carpool Pass./ Picked up	Transit (Bus/Rail)	Taxi/ Rideshare	Private Shuttle	Other
LaSalle St. Station	12,510	83%	1%	0%	12%	2%	2%	0%
Millennium Station	8,101	83%	1%	0%	13%	2%	1%	0%
Ogilvie Trans. Ctr.	38,774	86%	0%	1%	7%	2%	4%	1%
Union Station	51,143	83%	0%	1%	9%	2%	5%	1%
Van Buren Street	3,589	85%	1%	0%	10%	1%	2%	0%
TOTAL	**114,117**	**84%**	**0%**	**0%**	**9%**	**2%**	**4%**	**1%**

Source: Metra, Spring 2016 Origin-Destination Survey

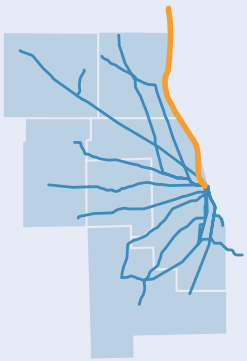
Crews stand by as a train moves through the UP-N Line Bridge Improvement Project construction zone in Fall 2012. During the first stage of this project, 22 bridges are being replaced on Chicago's north side.

UNION PACIFIC - NORTH LINE

EXISTING SERVICE AND CONDITIONS

Metra's Union Pacific-North (UP-N) Line extends north from Ogilvie Transportation Center (OTC) in downtown Chicago through Winthrop Harbor to Kenosha, Wisconsin, serving portions of Cook, Lake, and Kenosha (Wisconsin) Counties along the shore of Lake Michigan (see Figure 1). In addition to OTC, the line serves 25 year-round stations along its 52-mile route, plus one seasonal station at the Ravinia Park outdoor concert venue. In 2017, passenger trips on the UP-N totaled 9.0 million, the third-highest ridership of any line in the Metra system (based on ticket sales).

Like the Union Pacific–Northwest and Union Pacific–West Lines, the UP-N is owned by Union Pacific Railroad (UP) and operated and maintained by UP employees under a purchase of service agreement with Metra. The three lines are dispatched by UP from Omaha, Nebraska. Metra owns the passenger coaches and revenue-service locomotives serving UP line riders. Daytime train storage and coach servicing takes place at the California Avenue Yard, located on the Union Pacific–West Line about three miles west of OTC. The M-19A locomotive fuel and service facility is about two miles farther west at Keeler Avenue. On the UP-N, two outlying yards (at Waukegan and Kenosha) accommodate nighttime storage and maintenance.



Metra's three UP lines were formerly owned by the Chicago and NorthWestern Railroad (C&NW), which operated commuter service on these routes for over a century until the company became part of UP in 1995. In terms of number of routes and total mileage, the C&NW once operated the most extensive commuter service in the region. Metra trains on the former C&NW lines run on the left-hand side—thought to be a function of how the first track and depots were situated when a second track was added.

The UP-N Line operates on two tracks adjacent to the Union Pacific–Northwest Line between OTC and Clybourn Junction (near Armitage and Ashland in Chicago), a distance of approximately three miles. From Clybourn north to Kenosha (49 miles), the line is double-tracked. None of the UP-N stations are more than two miles from the lakefront. Most have been in the same general locations for more than a century, with commercial centers that grew around them.

Consequently, the UP-N weekday schedule has had few changes during its history. In 1986, the North Chicago and Abbott Platform Stations were consolidated at the North Chicago location. In 2007, more peak-period service was added to accommodate dramatic ridership increases, especially in reverse commuting and at the stations in Evanston and Chicago. There is frequent passenger service on the line between OTC and Waukegan—almost hourly or better on weekdays. Service is less frequent to the three stations north of Waukegan, where much of the line is adjacent to large swaths of open land. There is little freight service on the UP-N, and essentially none over the 27 miles of track between Clybourn and Lake Bluff Stations. Table 1 details the service, station, and ridership characteristics of the UP-N.

2017 Average trip length:
16.8 miles

2017 Average fare paid:
$4.21

Source: Ridership Trends Report, Dec. 2017

Number of stations:
26 †

Route length:
51.6 miles

Number of weekday trains (May 2018):
70

2017 On-time performance*:
97.2%

† Does not include seasonal station at Ravinia Park

** On-time Performance Report, Dec. 2017*

FIGURE 1: METRA STATIONS ON THE UP-N LINE

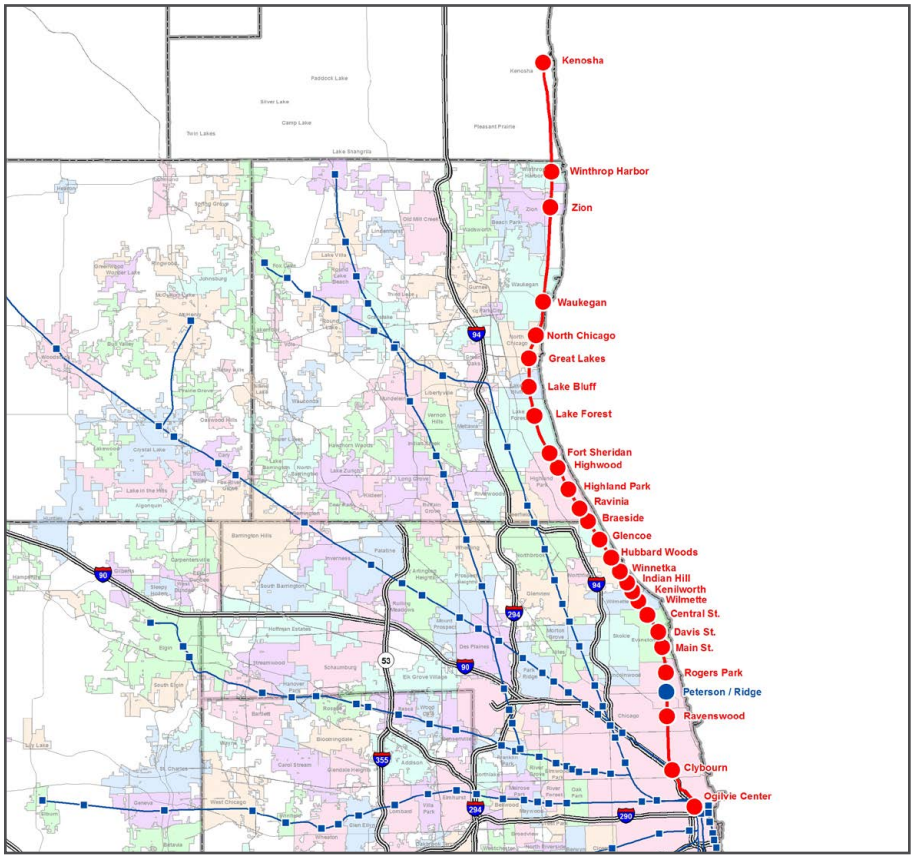
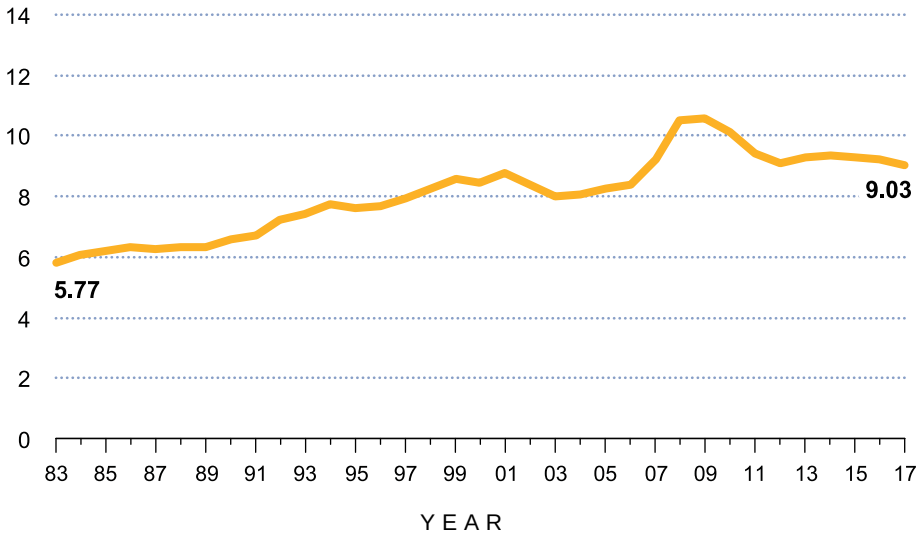


TABLE 1A: 2016 UP-N WEEKDAY BOARDINGS

Time of Day	Inbound	Outbound
AM Peak	11,369	2,390
Midday	1,721	1,423
PM Peak	2,541	10,461
Evening	623	1,459
TOTAL	**16,254**	**15,733**

Source: Metra Weekday Station Boardings and Alightings by Time-of-Day and Direction, 2016

TABLE 1B: UP-N ANNUAL PASSENGER TRIPS
1983 — 2017, in millions



Note: from 2008, figures include free Circuit Permit trips. 2008-2011 figures include free senior trips; this program ended September 2011.

TABLE 1C: UP-N STATION CHARACTERISTICS

Station	Fare Zone	Mile Post	Accessibility[1]	Boardings		Station Parking (2017)			Time to Chicago (minutes)[1]	
				1983[2]	2016[3]	Capacity (Spaces)[4]	Effective Use[5]	Observed Use[6]	Shortest Trip	Longest Trip
Ogilvie Trans. Center	A	0.0	Full	8,437	12,566	0	n/a	n/a	--	--
Clybourn[7]	A	2.9	None	110	974	25	96%	96%	8	12
Ravenswood	B	6.5	None	307	2,721	0	n/a	n/a	11	19
Rogers Park	B	9.4	Full	464	1,389	139	78%	78%	16	24
Main St./Evanston	C	11.0	Full	481	1,133	85	86%	86%	17	28
Davis St./Evanston	C	12.0	Full	565	1,939	59	98%	98%	18	31
Central St./Evanston	C	13.3	Full	771	1,428	318	99%	78%	21	34
Wilmette	C	14.4	Full	1,175	1,614	386	95%	95%	23	37
Kenilworth	D	15.2	Full	444	500	99	100%	93%	25	40
Indian Hill	D	15.8	None	356	382	90	100%	100%	29	42
Winnetka	D	16.6	Full	673	737	265	96%	87%	24	44
Hubbard Woods	D	17.7	None	511	374	164	100%	62%	32	48
Glencoe	D	19.2	Full	748	715	414	96%	71%	30	51
Braeside	E	20.5	Partial	301	442	141	81%	81%	30	54
Ravinia	E	21.5	Full	366	295	154	73%	46%	37	56
Highland Park	E	23.0	Full	970	978	461	78%	77%	36	59
Highwood	E	24.5	Full	230	293	123	24%	24%	47	62
Ft. Sheridan	F	25.7	Full	311	274	283	50%	47%	41	65
Lake Forest	F	28.3	Full	644	717	696	92%	92%	45	69
Lake Bluff	G	30.2	Full	307	681	145	100%	92%	48	73
Great Lakes	G	32.0	Full	76	293	146	54%	54%	51	77
North Chicago	G	33.7	Full	175	170	50	38%	32%	54	81
Waukegan	H	35.9	Full	553	911	439	41%	41%	59	86
Zion	I	42.1	Full	81	124	98	65%	65%	68	92
Winthrop Harbor	I	44.5	Full	21	61	107	50%	31%	72	97
Kenosha	K	51.5	Full	142	276	418	78%	64%	84	105
TOTAL UP-N				**19,233**	**31,987**	**5,744**	**79%**	**72%**		

[1] Union Pacific-North Line Schedule

[2] Metra 1983 Boarding/Alighting Counts. Total includes 14 boardings from Abbott Platform Station, which closed in 1986.

[3] Metra, "Commuter Rail System Station Boarding/Alighting Counts," Fall 2016.

[4] Metra Station Parking Capacity and Use, 2017

[5] Effective use: all sold permit spaces are assumed to be used, even if unoccupied during parking survey

[6] Observed use: spaces physically occupied during parking survey

[7] Parking area at this station serves UP-N and UP-NW Lines

Note: Ravinia Park station is not shown; this station is open during Ravinia Festival's summer outdoor concert season only.

TABLE 1D: MODE OF ACCESS AT UP-N METRA STATIONS

Station Name	Walk/Bike	Drive/Carpool Driver	Carpool Passenger/ Dropped Off	Transit	Other
Ogilvie Trans. Center[1]	47%	3%	9%	28%	12%
Clybourn	53%	13%	12%	15%	7%
Ravenswood	75%	7%	7%	8%	3%
Rogers Park	63%	21%	10%	5%	2%
Main St./Evanston	76%	14%	7%	2%	1%
Davis St./Evanston	62%	20%	10%	6%	1%
Central St./Evanston	55%	29%	11%	4%	1%
Wilmette	41%	38%	18%	2%	1%
Kenilworth	70%	20%	10%	0%	0%
Indian Hill	63%	29%	7%	0%	1%
Winnetka	51%	32%	14%	1%	1%
Hubbard Woods	79%	12%	8%	0%	1%
Glencoe	34%	47%	19%	0%	0%
Braeside	31%	53%	14%	1%	1%
Ravinia	58%	30%	12%	1%	0%
Highland Park	25%	56%	17%	1%	1%
Highwood	56%	26%	18%	0%	0%
Ft. Sheridan	22%	61%	17%	0%	0%
Lake Forest	25%	55%	20%	0%	1%
Lake Bluff	31%	54%	14%	1%	1%
Great Lakes	12%	36%	45%	5%	2%
North Chicago	33%	24%	31%	5%	7%
Waukegan	12%	46%	31%	9%	3%
Zion	14%	53%	30%	0%	3%
Winthrop Harbor	10%	65%	25%	0%	0%
Kenosha	17%	49%	31%	0%	2%
TOTAL UP-N[2]	**53%**	**28%**	**13%**	**4%**	**2%**
SYSTEM TOTAL	**26%**	**53%**	**16%**	**4%**	**1%**

[1] Includes riders boarding on all Metra lines departing from station

[2] Line total does not include downtown terminal

Source: Metra, Fall 2016 Origin-Destination Survey

TABLE 2: METRA CAPITAL INVESTMENT HISTORY
1985 — December 2017, in millions of dollars

Asset	UP-N	System
Rolling stock	$194	$2,757
Track and structure	207	1,432
Signal, electrical, and mechanical	70	1,002
Facilities and equipment	19	613
Stations and parking	118	1,055
Acquisitions, extensions, and expansions	3	599
Support activities	26	395
TOTAL	**$637**	**$7,854**
PERCENTAGE	**8.1%**	**100.0%**

Notes: 1) Excludes South Shore, preventative maintenance, new lines, and pending grants. 2) Prior expenses are not adjusted for subsequent inflation. 3) Data is subject to budget revisions, audit adjustments, etc. at any time. 4) For many projects, work locations and associated costs have not been identified, so budget amounts are allocated among lines by various criteria. Better, more specific cost information is continually sought to improve data applicability; this will adjust the line-by-line results.

IMPROVEMENTS SINCE THE START OF METRA

Since 1985, Metra has invested $637 million (in year of expenditure dollars) in improvements to the UP-N corridor, as shown in Table 2. Metra has completed improvements at a number of UP-N stations since 1985 (see right).

Currently, a major project to replace 22 aging UP-N Line bridges is underway, funded in part by an American Recovery and Reinvestment Act (ARRA) award. These bridges, on Chicago's north side, are more than a century old and can no longer be economically repaired and maintained. As part of the project, the Ravenswood Station—the busiest outlying station on the UP-N Line—is being reconstructed, expanded, and made accessible to disabled riders. Construction is taking place in stages. During the first stage (2010–2020), the bridges carrying UP-N tracks over 11 streets, between Balmoral and Grace, are being rebuilt, and the Ravenswood station is being replaced. A phased approach is necessary to keep two tracks in operation throughout the project (and maintain regular UP-N service). First, the bridges and the portion of the Ravenswood station on the west/outbound side of the right-of-way were replaced, which opened in 2015. Work on the bridges and station on the opposite side started in 2017. For the second phase, three bridges at the south end of the project area are undergoing construction – including two rehabilitations and one fill-in. In the third phase, bridges over 11 additional streets, between Addison and Fullerton, will be rehabilitated. Metra will soon begin the design process for this final phase.

Depots and warming houses constructed since 1985 at:

Great Lakes
Highwood
North Chicago
Waukegan

Other significant improvements completed since 1985 at:

Central Street/Evanston
Davis Street/Evanston
Main Street/Evanston
Fort Sheridan
Glencoe
Highland Park
Hubbard Woods
Indian Hill
Kenosha
Lake Bluff
Lake Forest
Ravenswood
Ravinia
Wilmette
Winnetka
Winthrop Harbor
Zion

Improvements planned for:

Hubbard Woods
Peterson/Ridge (new station)
Kenilworth

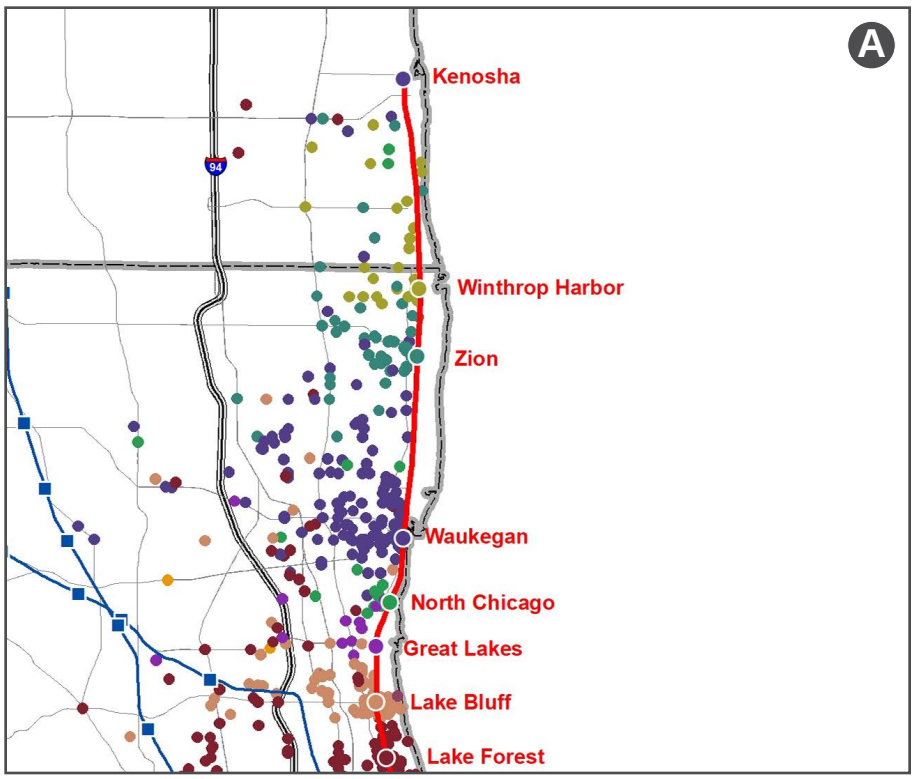
Most UP-N stations now comply with the accessibility requirements of the Americans with Disabilities Act (ADA), and approximately 85% of UP-N weekday boardings take place at these accessible stations. Metra's station compliance program started with designating eight of the busiest UP-N stations, including OTC in downtown Chicago, as "key stations", all of which were made fully accessible by 2004. Since 1985, Metra has completed access improvements at a number of non-downtown UP-N stations, and 20 outlying UP-N stations are fully accessible to disabled riders. Metra will bring the remaining stations into full ADA compliance as they are rehabilitated, so that eventually all will be accessible.

A new station stop on the UP-N Line at Peterson Avenue, between the Edgewater and West Ridge neighborhoods in the City of Chicago, has been designed and Metra is currently seeking funding for construction.

PRESENT AND FUTURE DEMAND

In 2016, nearly 32,000 boardings took place each weekday on the UP-N, with 68% of boardings occurring on peak-period, peak-direction trains. At UP-N

FIGURE 2A: ORIGINS OF RIDERS USING NON-CBD UP-N STATIONS



stations, ridership has increased 66% since 1983 (see Table 1c). Growth has been most dramatic at stations on Chicago's north side and in Evanston, where boardings increased an average of 255% since 1983. Figure 2 shows the origins of UP-N riders who board at stations outside of Chicago's Central Business District (CBD). Overall passenger ridership on the UP-N totaled 9.0 million in 2017.

Approximately 5,700 parking spaces serve UP-N riders, as shown in Table 1c. According to parking counts conducted in 2017, the effective rate of parking space utilization at all stations on the line averages 79%. At 12 stations, effective parking utilization exceeds 85%. This indicates a demand for increased parking on the line, since Metra considers lots over 85% occupied to be approaching full capacity.

Demographic forecasts anticipate continued growth in population and employment along the UP-N, as shown in Tables 3, 4, and 5, suggesting that demand for commuter rail service in the corridor will continue to rise. The Chicago Metropolitan Agency for Planning (CMAP) forecasts that the UP-N corridor will attract nearly 250,000 new residents between 2010 and 2040, a 24% increase. Employment growth will be a significant factor in stimulating ridership growth. A 23% increase in employment is projected for marketsheds within the UP-N corridor from 2010 to 2040.

FIGURE 2B: ORIGINS OF RIDERS USING NON-CBD UP-N STATIONS

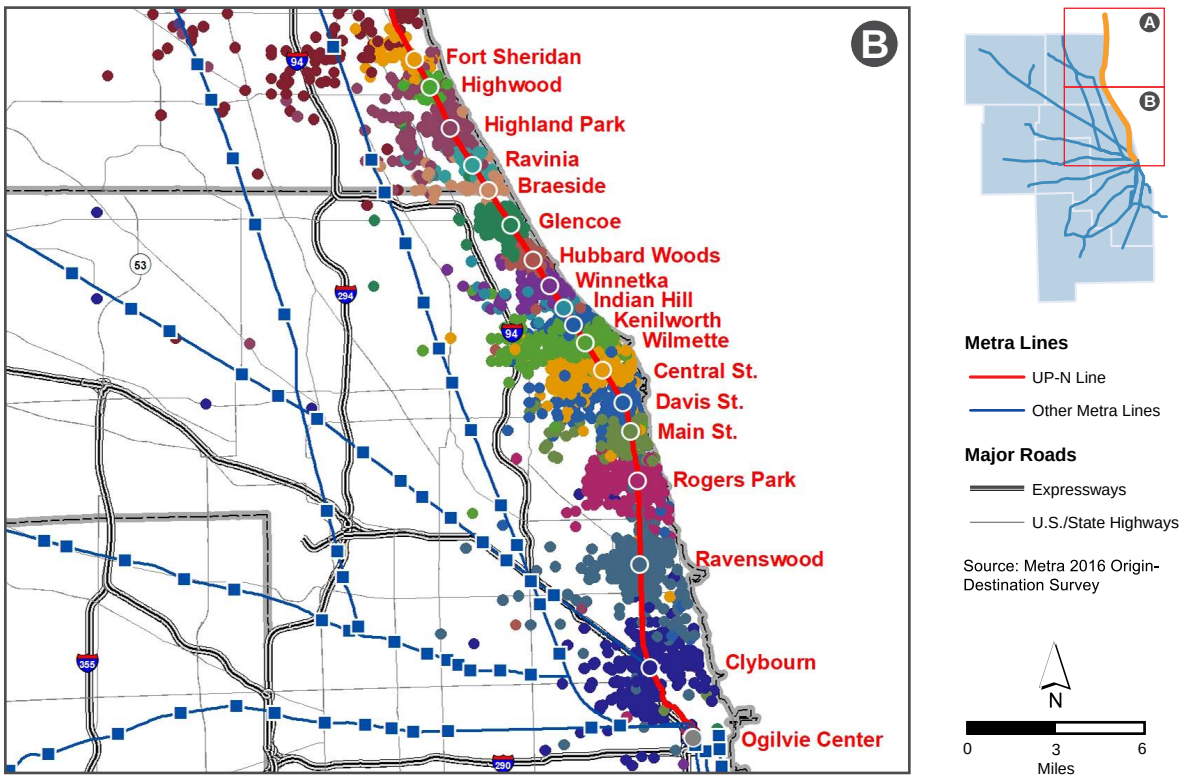


TABLE 3: UP-N CORRIDOR POPULATION

Station	Fare Zone	Area Sq. Mi.	Population in Zone			Percent Change	
			2000	2010	2040	2000 vs 2010	2010 vs 2040
Ogilvie Trans. Center, Clybourn	A	12.6	217,022	237,400	296,087	9.4%	24.7%
Ravenswood, Rogers Park	B	18.3	383,769	367,136	445,992	-4.3%	21.5%
Main St., Davis St., Central St., Wilmette	C	16.4	115,569	122,933	143,531	6.4%	16.8%
Kenilworth, Indian Hill, Winnetka, Hubbard Woods, Glencoe	D	14.2	39,370	38,528	55,406	-2.1%	43.8%
Braeside, Ravinia, Highland Park, Highwood	E	14.3	32,179	32,057	48,355	-0.4%	50.8%
Fort Sheridan, Lake Forest	F	11.4	15,541	16,212	22,714	4.3%	40.1%
Lake Bluff, Great Lakes, N. Chicago	G	25.1	68,234	78,102	91,370	14.5%	17.0%
Waukegan	H	26.1	84,286	86,173	106,783	2.2%	23.9%
Zion, Winthrop Harbor	I	46.4	47,559	53,813	71,901	13.1%	33.6%
Kenosha[1]	K	n/a	n/a	n/a	n/a	n/a	n/a
UP-N TOTAL		**184.8**	**1,003,529**	**1,032,354**	**1,282,139**	**2.9%**	**24.2%**
REGION TOTAL		**3,748.0**	**8,091,717**	**8,456,762**	**11,717,936**	**4.5%**	**38.6%**

[1] Station is not located in Illinois, and marketshed data is not available.

TABLE 4: UP-N CORRIDOR HOUSEHOLDS

Station	Fare Zone	Area Sq. Mi.	Households in Zone			Percent Change	
			2000	2010	2040	2000 vs 2010	2010 vs 2040
Ogilvie Trans. Center, Clybourn	A	12.6	112,854	122,915	160,216	8.9%	30.3%
Ravenswood, Rogers Park	B	18.3	169,194	163,940	197,148	-3.1%	20.3%
Main St., Davis St., Central St., Wilmette	C	16.4	44,346	44,845	56,355	1.1%	25.7%
Kenilworth, Indian Hill, Winnetka, Hubbard Woods, Glencoe	D	14.2	13,829	13,467	19,028	-2.6%	41.3%
Braeside, Ravinia, Highland Park, Highwood	E	14.3	11,883	11,677	17,664	-1.7%	51.3%
Fort Sheridan, Lake Forest	F	11.4	5,290	5,369	7,317	1.5%	36.3%
Lake Bluff, Great Lakes, N. Chicago	G	25.1	18,570	17,049	25,434	-8.2%	49.2%
Waukegan	H	26.1	27,866	27,759	34,024	-0.4%	22.6%
Zion, Winthrop Harbor	I	46.4	16,211	18,336	24,698	13.1%	34.7%
Kenosha[1]	K	n/a	n/a	n/a	n/a	n/a	n/a
UP-N TOTAL		**184.8**	**420,043**	**425,357**	**541,884**	**1.3%**	**27.4%**
REGION TOTAL		**3,748.0**	**2,906,924**	**3,050,134**	**4,224,349**	**4.9%**	**38.5%**

[1] Station is not located in Illinois, and marketshed data is not available.

TABLE 5: UP-N CORRIDOR EMPLOYMENT

Station	Fare Zone	Area Sq. Mi.	Employment in Zone			Percent Change	
			2000	2010	2040	2000 vs 2010	2010 vs 2040
Ogilvie Trans. Center, Clybourn	A	12.6	257,635	259,322	352,184	0.7%	35.8%
Ravenswood, Rogers Park	B	18.3	71,269	84,439	97,844	18.5%	15.9%
Main St., Davis St., Central St., Wilmette	C	16.4	76,407	72,573	63,216	-5.0%	-12.9%
Kenilworth, Indian Hill, Winnetka, Hubbard Woods, Glencoe	D	14.2	15,953	16,898	20,838	5.9%	23.3%
Braeside, Ravinia, Highland Park, Highwood	E	14.3	20,972	26,211	34,774	25.0%	32.7%
Fort Sheridan, Lake Forest	F	11.4	11,056	10,732	15,767	-2.9%	46.9%
Lake Bluff, Great Lakes, N. Chicago	G	25.1	46,817	44,039	44,809	-5.9%	1.7%
Waukegan	H	26.1	35,349	31,423	37,328	-11.1%	18.8%
Zion, Winthrop Harbor	I	46.4	7,863	9,163	16,893	16.5%	84.4%
Kenosha[1]	K	n/a	n/a	n/a	n/a	n/a	n/a
UP-N TOTAL		**184.8**	**543,321**	**554,800**	**683,653**	**2.1%**	**23.2%**
REGION TOTAL		**3,748.0**	**4,340,215**	**3,786,224**	**5,267,696**	**-12.8%**	**39.1%**

[1] Station is not located in Illinois, and marketshed data is not available.

REVERSE COMMUTE AND NON-DOWNTOWN MARKETS

Although Metra's primary market involves commuters who follow the traditional suburb-to-CBD trip pattern, in recent years Metra has seen a demand for city-to-suburb reverse-commute options (Metra's primary commuter market is discussed in the Central Business District Market chapter). The UP-N Line hosts a substantial amount of reverse commute traffic. Seventeen percent of UP-N boardings during the AM peak are in the reverse (outbound) direction, the highest percentage of any line in the Metra system and well above the system average of 6.2%. Nearly 86% of these outbound boardings take place at the four stations in Chicago, from OTC to Rogers Park. Ravenswood is Metra's busiest reverse commute station outside downtown. During the AM peak, 761 riders at this station board outbound trains—more than the total number of boardings in either direction at 187 of Metra's 242 stations.

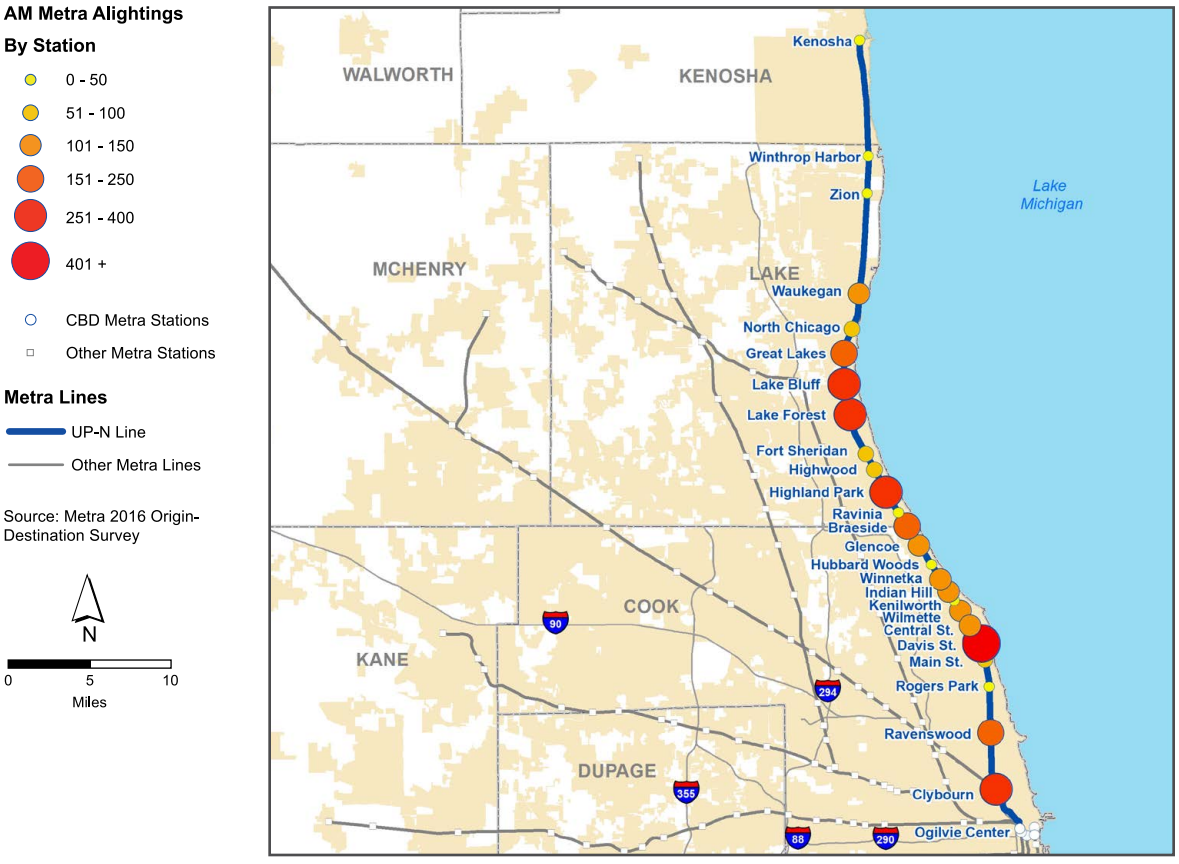
Dense development along the UP-N Line, in Chicago and lakefront suburbs to the north, has led to heavy use of outlying UP-N stations as destination stations. (Figure 3 shows AM alightings at non-CBD UP-N stations.) According to Metra's 2016 Boarding and Alighting Count, 22% of AM peak-period UP-N alightings take place at outlying stations. The proximity of stations to residences, employment centers, and cultural attractions makes it possible for many Metra riders—even those using stations far outside the CBD—to walk to and from stations at both ends of their trip. In fact, the UP-N Line has the highest walk and bike mode of access (48%) of any Metra line, well above the system average of 23% (see Table 1d).

Many riders utilize stations in suburban downtowns along the UP-N to reach nearby jobs. For example, at the Davis Street Station in Evanston, which serves the downtown Evanston business district and Northwestern University, approximately 780 riders—close to half (46%) of the station's users during the AM peak—alight rather than board. At the Lake Forest and Braeside Stations, bus routes that are part of the Shuttle Bug service connect Metra riders with employers at nearby corporate campuses. (The Shuttle Bug service is discussed further in the Milwaukee District–North Line chapter.)

Ravinia Festival is an important non-downtown destination on the UP-N. Ravinia Park station, adjacent to the park's front gate, is only served during the summer concert season, when Metra runs additional trains and offers a special discounted round-trip pass for riders traveling to the venue.

Indicators suggest that travel to outlying stations, including reverse-commute travel, will increase in the UP-N corridor. The planned Peterson Ridge station, mentioned above, will accommodate some of this growth. Significant employment growth is projected by 2040 in marketsheds from Kenilworth to Lake Forest, and in the Zion and Winthrop Harbor marketsheds (see Table 5). Such suburban employment growth, accompanied by an increase in

FIGURE 3: AM ALIGHTINGS AT NON-CBD UP-N STATIONS



population and households in the city and inner suburbs (as shown in Tables 3 and 4), has been linked to increased demand for reverse-commute travel. Population growth of 22% by 2040 is projected in the marketsheds for the eight UP-N stations serving Chicago, Evanston, and Wilmette.

TABLE 6: MAJOR TRIP GENERATORS ACCESSIBLE FROM THE UP-N CORRIDOR

Generator Type	Name	Comments	Municipality
Colleges and Universities	Loyola University Chicago	Main residential campus in Rogers Park	Chicago
	Northwestern University	Main residential campus	Evanston
	Lake Forest College	1,600 students	Lake Forest
	Rosalind Franklin University	2,200 students	North Chicago
	College of Lake County - Lakeshore Campus		Waukegan
	Carthage College	2,900 students	Kenosha, WI
	Gateway Technical College	8,700 students	Kenosha, WI
	Univ. of Wisconsin - Parkside		Kenosha, WI
	New Trier High School	4,200 students	Winnetka
Culture and Entertainment	Wrigley Field	Chicago Cubs' historic ballpark; cap. 41,000	Chicago
	Ryan Field	Northwestern Univ. football stadium; cap. 47,000	Evanston
	Welsh-Ryan Arena	Northwestern Univ. basketball arena; cap. 7,000	Evanston
	Chicago Botanic Garden	> 1M visitors/year	Glencoe
	Ravinia Festival	Outdoor concert venue	Highland Park
	Genesee Theatre	Performing arts venue; cap. 2,400	Waukegan
	Six Flags Great America	Theme park with rides, shows, and other attractions	Gurnee
	Illinois Beach State Park		Zion
	Anderson Arts Center	9,000 sq. ft. arts center	Kenosha, WI
	Downtown Kenosha Museums	Civil War Museum, Dinosaur Discovery Museum, Kenosha Public Museum	Kenosha, WI
Shopping	Westfield Old Orchard	Super-regional outdoor mall	Skokie
	Gurnee Mills	Super-regional mall; 20M visitors/year	Gurnee
Government	Naval Station Great Lakes	Home of US Navy boot camp; 40K recruits/year	North Chicago
	Lake County Courthouse	County administrative offices	Waukegan
	Kenosha County Admin. Building & Courthouse	County administrative offices	Kenosha, WI
Hospitals	Methodist Hospital of Chicago	145 beds	Chicago
	Evanston Hospital		Evanston
	Presence St. Francis Hospital	195 beds	Evanston
	Highland Park Hospital		Highland Park
	Lovell Federal Health Care Ctr.		North Chicago
	Vista Medical Center East	190 beds	Waukegan
	Vista Medical Center West	67 beds	Waukegan
	Midwestern Regional Med. Ctr.	73 beds	Zion
	Kenosha Medical Center	221 beds	Kenosha, WI
Large Private Employers	S&C Electric	Manf., service of electric power systems	Chicago
	Rotary International	Non-profit service organization	Evanston
	Abbott Laboratories/AbbVie	Pharmaceutical manufacturers	North Chicago
	Jockey	Clothing manufacturer	Kenosha, WI
	Snap-on	Tool developer and manufacturer	Kenosha, WI

MD-N train travels north through Rondout Junction toward the MD-N Fox Lake Branch

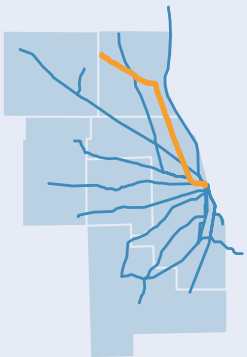
Photo: Mark Llanuza

MILWAUKEE DISTRICT - NORTH LINE

EXISTING SERVICE AND CONDITIONS

Metra's Milwaukee District-North (MD-N) Line extends 49.5 miles north-northwest from Chicago's Union Station (CUS or "Union Station") to Fox Lake. The MD-N Line provides service to 20 intermediate stations between CUS and Fox Lake with service to the northwest side of Chicago, northern Cook County, and Lake County (see Figure 1). In 2017, passenger trips on the MD-N totaled 6.8 million, ranking seventh among the eleven Metra lines (based on ticket sales).

The Milwaukee District–North and Milwaukee District–West (MD-W) Lines were acquired by Metra following the demise of the Milwaukee Road (the Chicago, Milwaukee, St. Paul and Pacific Railroad). Both the MD-N and MD-W are operated and maintained by Metra employees and trains on both lines are dispatched from Minneapolis by Canadian Pacific (CP), which operates freight service over Metra-owned Milwaukee District track. Wisconsin & Southern Railroad also moves freight traffic over portions of the MD-N, and the main line segment of the MD-N (from CUS to Rondout Junction, which is located between the Lake Forest and Libertyville Stations) handles Amtrak's Hiawatha and Empire Builder trains, which originate at CUS and also stop in Glenview.



Maintenance and daytime storage of all Milwaukee District trainsets, as well as trainsets serving Metra's North Central Service (NCS) and Heritage Corridor

lines, takes place at the Western Avenue Yard, located approximately three miles west of CUS. Overnight storage of trainsets serving the MD-N Line takes place at the Fox Lake Yard, just east of the station in Fox Lake.

Both Milwaukee District lines as well as the NCS share the Western Avenue Station in Chicago and Metra's three main tracks for the five miles between CUS and A-5 Junction, where the MD-N splits from the MD-W/NCS. The MD-N has three distinct segments: a triple-track main line from CUS to A-5, a double-track main line north from A-5 to Rondout Junction, and a single-track branch line (the Fox Lake Subdivision northwest from Rondout to Fox Lake) (Figure 1). The main line north of Rondout is owned by CP while the branch line beyond Fox Lake is owned by the Wisconsin River Rail Transit Commission.

Service levels are higher on the double-track main line than the single-track Fox Lake Subdivision. The variety of train operations on the main line, as well as limited crossovers and lack of a second track on the Subdivision, preclude the maximization of reverse-commute service and additional recycling of trains for peak-period trips.

Table 1 details the service, station, and ridership characteristics of the MD-N.

2017 Average trip length:
23.1 miles

2017 Average fare paid:
$4.74

Source: Ridership Trends Report, Dec. 2017

Number of stations:
22

Route length:
49.5 miles

Number of weekday trains (May 2018):
60

2017 On-time performance*:
93.8%

** On-time Performance Report, Dec. 2017*

FIGURE 1: METRA STATIONS ON THE MD-N LINE

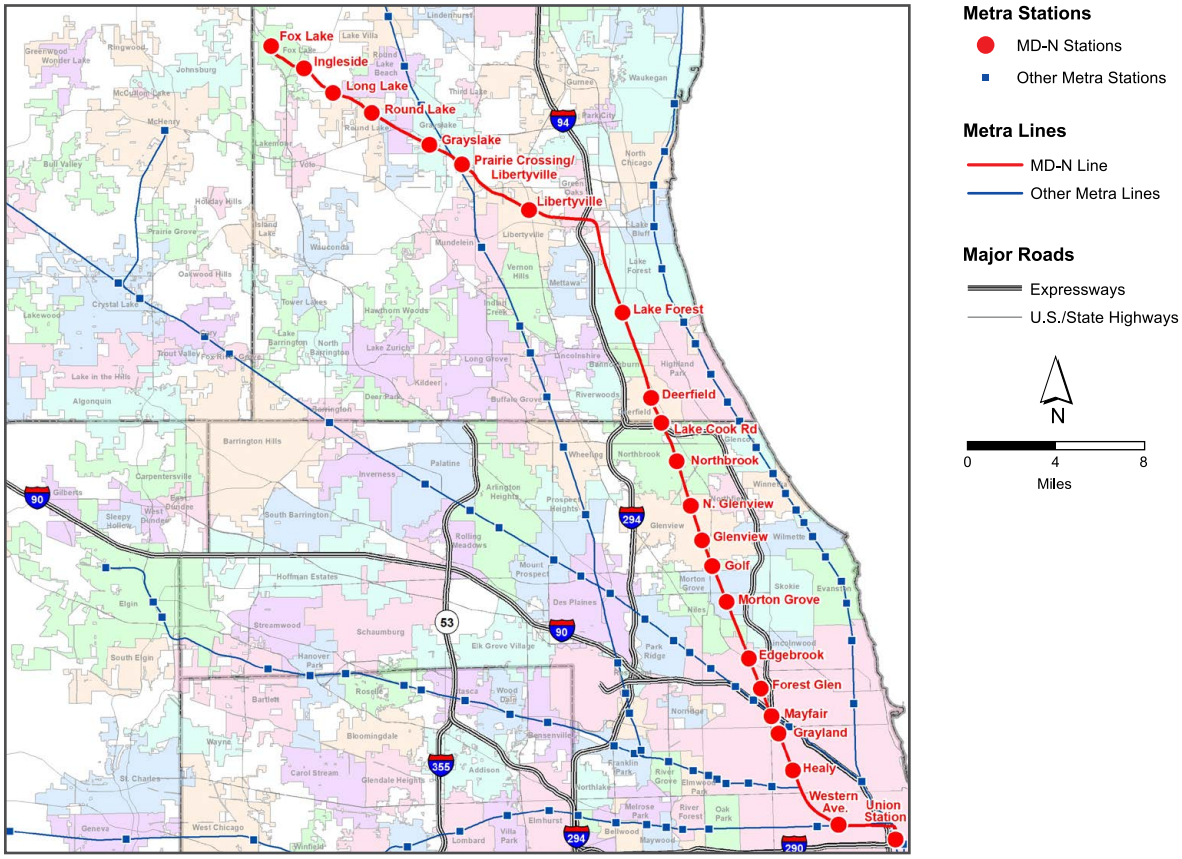
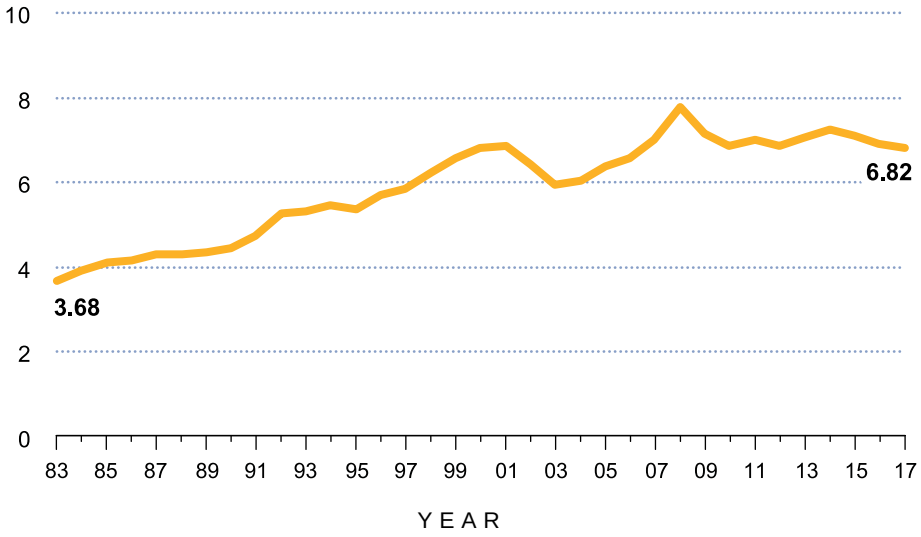


TABLE 1A: 2016 MD-N WEEKDAY BOARDINGS

Time of Day	Inbound	Outbound
AM Peak	8,434	1,367
Midday	1,513	1,003
PM Peak	1,642	7,904
Evening	318	1,262
TOTAL	**11,907**	**11,536**

Source: Metra Weekday Station Boardings and Alightings by Time-of-Day and Direction, 2016

TABLE 1B: MD-N ANNUAL PASSENGER TRIPS
1983 — 2017, in millions



Note: from 2008, figures include free Circuit Permit trips. 2008-2011 figures include free senior trips; this program ended September 2011.

TABLE 1C: MD-N STATION CHARACTERISTICS

Station	Fare Zone	Mile Post	Accessibility[1]	Boardings		Station Parking (2017)			Time to Chicago (minutes)[1]	
				1983[2]	2016[3]	Capacity (Spaces)[4]	Effective Use[5]	Observed Use[6]	Shortest Trip	Longest Trip
Union Station	A	0.0	Full	5,805	10,072	0	n/a	n/a	n/a	n/a
Western Ave.[7]	A	2.9	Full	136	421	20	100%	100%	9	17
Healy	B	6.4	Full	226	345	13	54%	54%	13	22
Grayland	B	8.2	None	78	339	15	80%	80%	16	25
Mayfair	B	9.0	None	53	284	12	100%	100%	18	27
Forest Glen	C	10.2	None	73	343	101	70%	70%	21	30
Edgebrook	C	11.6	Full	197	609	192	91%	91%	22	33
Morton Grove	C	14.3	Full	451	969	460	96%	88%	24	38
Golf	D	16.2	Full	131	375	35	80%	80%	30	41
Glenview	D	17.4	Full	1,218	1,439	654	100%	91%	25	44
Glen/N. Glenview[8]	D	18.8	Full	--	1,070	1,261	56%	56%	28	47
Northbrook	E	21.1	Full	1,213	1,392	697	100%	100%	33	52
Lake Cook Rd.[8]	E	23.0	Full	--	1,271	655	67%	67%	32	56
Deerfield	E	24.2	Full	1,185	1,282	616	97%	93%	36	59
Lake Forest	F	28.4	Full	193	548	508	63%	47%	42	65
Libertyville	H	35.5	Full	702	825	455	100%	87%	52	75
Prairie Crossing[8, 9]	H	39.2	Full	--	422	390	71%	71%	58	81
Grayslake	I	41.0	Full	196	494	666	41%	41%	62	85
Round Lake	I	44.0	Full	317	417	480	48%	43%	68	91
Long Lake	J	46.0	Full	45	96	47	98%	98%	72	95
Ingleside	J	47.8	Full	15	74	119	36%	36%	75	99
Fox Lake	J	49.5	Full	405	356	444	80%	73%	84	101
TOTAL MD-N				**12,670**	**23,443**	**7,820**	**75%**	**70%**		

[1] Milwaukee District-North Line Schedule

[2] Metra's 1983 Boarding/Alighting Counts. Total includes 14 boardings at Wilson Road station, which closed in 1984.

[3] Metra, "Commuter Rail System Station Boarding/Alighting Counts," Fall 2016

[4] Metra Station Parking Capacity and Use, 2017

[5] Effective use: all sold permit spaces are assumed to be used, even if unoccupied during parking survey

[6] Observed use: spaces physically occupied during parking survey

[7] Parking area at this station serves MD-N, MD-W and NCS Lines

[8] Glen/North Glenview opened in 2001. Prairie Crossing/Libertyville opened in 2004. Lake Cook Rd. opened in 1996.

[9] Parking area at this station serves MD-N and NCS Lines

TABLE 1D: MODE OF ACCESS AT MD-N METRA STATIONS

Station Name	Walk/Bike	Drive/Carpool Driver	Carpool Passenger/ Dropped Off	Transit	Other
Union Station[1]	42%	3%	7%	32%	16%
Western Ave.	38%	38%	11%	8%	5%
Healy	61%	14%	6%	16%	3%
Grayland	54%	29%	10%	8%	0%
Mayfair	34%	21%	9%	34%	2%
Forest Glen	34%	54%	8%	3%	1%
Edgebrook	38%	40%	18%	3%	1%
Morton Grove	22%	59%	18%	1%	1%
Golf	54%	13%	33%	0%	1%
Glenview	30%	51%	17%	0%	2%
Glen/N. Glenview	9%	76%	14%	0%	1%
Northbrook	20%	66%	14%	0%	1%
Lake Cook Rd.	3%	84%	12%	0%	2%
Deerfield	23%	61%	15%	0%	0%
Lake Forest	8%	78%	14%	0%	0%
Libertyville	15%	58%	25%	1%	0%
Prairie Crossing	5%	79%	16%	0%	0%
Grayslake	16%	67%	15%	0%	2%
Round Lake	7%	62%	27%	2%	2%
Long Lake	17%	62%	17%	2%	2%
Ingleside	13%	72%	15%	0%	0%
Fox Lake	6%	71%	19%	2%	2%
TOTAL MD-N	**23%**	**57%**	**16%**	**2%**	**1%**
SYSTEM TOTAL	**26%**	**53%**	**16%**	**4%**	**1%**

[1] Includes riders boarding on all Metra lines departing from station

[2] Line total does not include downtown terminal

Source: Metra, Fall 2016 Origin-Destination Survey

TABLE 2: METRA CAPITAL INVESTMENT HISTORY
1985 — December 2017, in millions of dollars

Asset	MD-N	System
Rolling stock	$182	$2,757
Track and structure	79	1,432
Signal, electrical, and mechanical	106	1,002
Facilities and equipment	87	613
Stations and parking	73	1,055
Acquisitions, extensions, and expansions	2	599
Support activities	46	395
TOTAL	**$575**	**$7,854**
PERCENTAGE	**7.3%**	**100.0%**

Notes: 1) Excludes South Shore, preventative maintenance, new lines, and pending grants. 2) Prior expenses are not adjusted for subsequent inflation. 3) Data is subject to budget revisions, audit adjustments, etc. at any time. 4) For many projects, work locations and associated costs have not been identified, so budget amounts are allocated among lines by various criteria. Better, more specific cost information is continually sought to improve data applicability; this will adjust the line-by-line results.

IMPROVEMENTS SINCE THE START OF METRA

Since 1985, Metra has invested $575 million (in year of expenditure dollars) in improvements to the MD-N Line. Table 2 indicates the amount of investment in different asset categories.

Metra has completed improvements at a number of MD-N stations, including the addition of three new infill stations and improvements at a number of existing stations (see right). Over the years, Metra has partnered with Amtrak, owner of CUS, to complete a number of upgrades to the terminal's commuter facilities. For more information on proposed CUS improvements, see the CBD chapter of this report.

Additional infrastructure improvements since 1992 include bridge repair and replacements, rehabilitated crossovers at Mayfair Interlocking—where the MD-N crosses Union Pacific-Northwest Line (UP-NW) tracks—and upgrades to the tower at A-5 Junction. As part of implementation of Positive Train Control (PTC), a new signal system will be installed along track between Rondout and Fox Lake for the transmission of voice, signal data, corporate data, video, and PTC data. In addition, construction of six new control points are underway, which will greatly improve efficiency through the remote dispatching of switches. Dispatching and track switching on the entire MD-N Line will be controlled from a centralized traffic control center, after the center's completion in late 2018.

Depots and warming houses constructed since 1985 at:

Glenview
Ingleside
Lake Cook Road (new station)
Lake Forest
Glen/North Glenview (new station)
Northbrook
Prairie Crossing (new station)

Other significant improvements completed since 1985 at:

Deerfield
Fox Lake
Golf
Grayland
Healy
Mayfair
Lake Cook Road
Lake Forest
Western Avenue

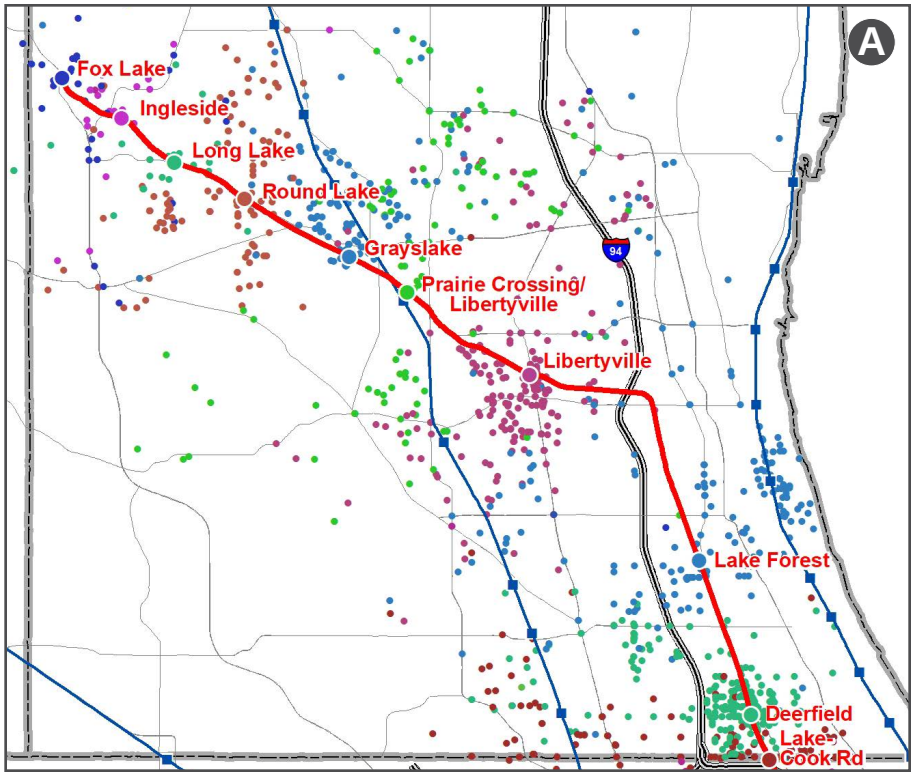
Improvements planned for:

Libertyville
Prairie Crossing/Libertyville
Union Station

The construction of a siding between Rondout and Libertyville was completed in 2017, which will provide increased operational flexibility on a 17-mile section of single track. The Fox Lake crew facility also has ongoing improvements, which includes an upgrade to the locker room facilities to add female restrooms and locker rooms. The upgrade will also improve layover facilities.

Most MD-N stations now comply with the accessibility requirements of the Americans with Disabilities Act (ADA), and approximately 96% of MD-N weekday boardings took place at these accessible stations. Metra's station ADA-compliance program started with designating ten of the busiest MD-N stations, including CUS, as "key stations," all of which were made fully accessible by 2007. Since 1985, Metra has completed access improvements at 12 non-downtown MD-N stations, and 17 outlying stations on the line are now fully accessible to disabled riders. In spring 2017, Metra broke ground on the renovation of the Healy station, which will be made fully ADA-compliant. Metra will bring the remaining stations into full ADA compliance as they are rehabilitated so that eventually all stations will be accessible.

FIGURE 2A: ORIGINS OF RIDERS USING NON-CBD MD-N STATIONS



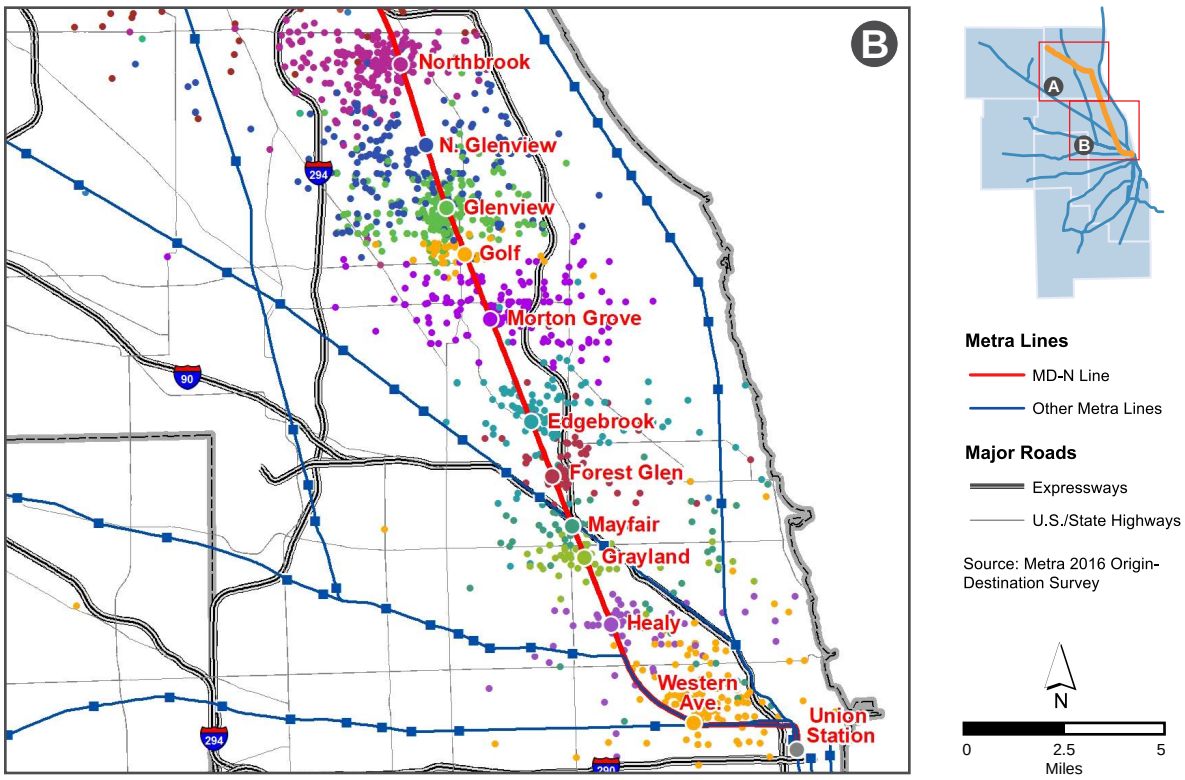
PRESENT AND FUTURE DEMAND

Due to substantial increases in population along the MD-N corridor, demand for commuter rail service is expected to grow. Figure 2 shows the origins of MD-N riders using stations outside the Central Business District (CBD).

According to the 2016 Metra Boarding and Alighting Count, the MD-N had over 23,000 boardings, with 70% of boardings on peak period, peak-direction trains. Overall, the MD-N has seen an 85% increase in boardings since 1983 (see Table 1c). Significant ridership growth has been experienced at stations in Chicago (207% at non-CBD stations) and at a number of stations in Lake County, and all MD-N stations have increased in boardings with the exception of Fox Lake. Despite considerable population and ridership growth in northwest Lake County along the Fox Lake Subdivision, approximately 66% of weekday non-CBD boardings on the MD-N take place in Cook County (including Lake Cook Road Station). Overall passenger ridership on the MD-N totaled 6.8 million in 2017.

Close to 8,000 parking spaces serve MD-N riders. According to parking counts conducted in 2017, the effective parking utilization rate on the MD-N as a whole is 75%. Nine stations have effective utilization rates above 85%, which

FIGURE 2B: ORIGINS OF RIDERS USING NON-CBD MD-N STATIONS



indicates a demand for increased parking on the line, since Metra considers lots over 85% occupied to be approaching full capacity.

In 2010, the population of the entire MD-N corridor was 653,000. By 2040, the population of the corridor is expected to increase by 32% to 860,000. Stations along the Fox Lake Subdivision are estimated to have the greatest percent increase in population, with projected growth of 50%. In contrast, the main line station marketshed population is estimated to increase by 26%. With heavy population and household growth along the MD-N corridor, it is likely that the MD-N will continue to see ridership gains and increased service demands in the future, particularly along the Fox Lake Subdivision. Tables 3, 4 and 5 describe the population, household and employment demographics for stations along the MD-N corridor.

Employment growth is likely to contribute to increased ridership. A 42% increase in employment is projected for MD-N marketsheds from 2010 to 2040. By 2040, significant job growth is expected to occur in the Lake Cook Road corridor (near the Northbrook, Lake Cook Road, and Deerfield Stations), which is already one of the region's significant non-CBD employment centers. Significant suburban employment expansion is also anticipated along the Fox Lake Subdivision (Libertyville to Fox Lake Stations). Here, employment is projected to increase by 135% over the 2010 level, compared with a 28% increase in employment in main line station marketsheds. However, main line station marketsheds outside of downtown Chicago are still projected to have over three times as many jobs as Fox Lake Subdivision marketsheds by 2040.

REVERSE COMMUTE AND NON-DOWNTOWN MARKETS

Although traditional suburb-to-CBD commuters are Metra's primary market, Metra has also seen a demand for city-to-suburb reverse-commute options (Metra's primary commuter market is discussed in the Central Business District Market chapter). The shift of employment to suburban locations has left many commuters with limited transit accessibility to jobs. Figure 3 shows AM alightings at non-CBD MD-N stations.

In the Lake Cook Road corridor, the Shuttle Bug system of Pace buses links the MD-N Lake Cook Road and Deerfield Stations with nearby corporate campuses. Shuttle Bug service is managed by the Lake Cook Transportation Management Association (a non-profit association of employers) in cooperation with Pace and Metra. Other Shuttle Bug routes serve the MD-N Glen/North Glenview station, and stations on the UP-N and UP-NW Lines and the Chicago Transit Authority Yellow Line. A total of 13 Shuttle Bug routes provide a viable transit solution for reverse commuters. By concentrating

TABLE 3: MD-N CORRIDOR POPULATION

Station	Fare Zone	Area Sq. Mi.	Population in Zone			Percent Change	
			2000	2010	2040	2000 vs 2010	2010 vs 2040
Union Station, Western Ave.	A	3.6	61,046	56,719	76,351	-7.1%	34.6%
Healy, Grayland, Mayfair	B	9.2	207,047	189,203	230,090	-8.6%	21.6%
Forest Glen, Edgebrook, Morton Grv.	C	19.4	110,958	114,518	140,560	3.2%	22.7%
Golf, Glenview, Glen/N. Glenview	D	20.5	63,705	68,695	82,471	7.8%	20.1%
Northbrook, Lake Cook Rd, Deerfield	E	22.9	55,891	56,654	78,132	1.4%	37.9%
Lake Forest	F	14.6	11,480	12,087	19,539	5.3%	61.7%
Libertyville, Prarie Crossing	H	35.3	45,702	48,881	62,614	7.0%	28.1%
Grayslake, Round Lake	I	30.8	28,718	42,917	70,023	49.4%	63.2%
Long Lake, Ingleside, Fox Lake	J	83.6	46,282	63,097	100,166	36.3%	58.7%
MD-N TOTAL		**239.9**	**630,829**	**652,771**	**859,946**	**3.5%**	**31.7%**
REGION TOTAL		**3,748**	**8,091,717**	**8,456,762**	**11,717,936**	**4.5%**	**38.6%**

TABLE 4: MD-N CORRIDOR HOUSEHOLDS

Station	Fare Zone	Area Sq. Mi.	Households in Zone			Percent Change	
			2000	2010	2040	2000 vs 2010	2010 vs 2040
Union Station, Western Ave.	A	3.6	24,349	26,143	29,606	7.4%	13.2%
Healy, Grayland, Mayfair	B	9.2	64,824	63,481	68,608	-2.1%	8.1%
Forest Glen, Edgebrook, Morton Grv.	C	19.4	42,165	42,399	50,910	0.6%	20.1%
Golf, Glenview, Glen/N. Glenview	D	20.5	23,429	25,370	29,179	8.3%	15.0%
Northbrook, Lake Cook Rd, Deerfield	E	22.9	20,117	20,985	27,632	4.3%	31.7%
Lake Forest	F	14.6	3,513	3,766	6,373	7.2%	69.2%
Libertyville, Prarie Crossing	H	35.3	16,477	17,901	22,872	8.6%	27.8%
Grayslake, Round Lake	I	30.8	9,788	14,366	24,084	46.8%	67.6%
Long Lake, Ingleside, Fox Lake	J	83.6	16,793	23,771	35,442	41.6%	49.1%
MD-N TOTAL		**239.9**	**221,455**	**238,182**	**294,706**	**7.6%**	**23.7%**
REGION TOTAL		**3,748**	**2,906,924**	**3,050,134**	**4,224,349**	**4.9%**	**38.5%**

TABLE 5: MD-N CORRIDOR EMPLOYMENT

Station	Fare Zone	Area Sq. Mi.	Employment in Zone			Percent Change	
			2000	2010	2040	2000 vs 2010	2010 vs 2040
Union Station, Western Ave.	A	3.6	50,855	40,907	53,328	-19.6%	30.4%
Healy, Grayland, Mayfair	B	9.2	30,054	29,878	35,449	-0.6%	18.6%
Forest Glen, Edgebrook, Morton Grv.	C	19.4	81,007	71,143	88,636	-12.2%	24.6%
Golf, Glenview, Glen/N. Glenview	D	20.5	48,557	36,192	43,021	-25.5%	18.9%
Northbrook, Lake Cook Rd, Deerfield	E	22.9	75,327	59,412	85,705	-21.1%	44.3%
Lake Forest	F	14.6	18,923	19,819	24,527	4.7%	23.8%
Libertyville, Prarie Crossing	H	35.3	26,253	18,554	41,736	-29.3%	124.9%
Grayslake, Round Lake	I	30.8	14,315	9,897	21,204	-30.9%	114.2%
Long Lake, Ingleside, Fox Lake	J	83.6	5,517	10,107	27,654	83.2%	173.6%
MD-N TOTAL		**239.9**	**350,808**	**295,909**	**421,260**	**-15.6%**	**42.4%**
REGION TOTAL		**3,748**	**4,340,215**	**3,786,224**	**5,267,696**	**-12.8%**	**39.1%**

the routes around a dense employment cluster and focusing service on peak times and directions, the Shuttle Bugs have attracted the critical mass of riders—an average of 1,000 daily trips—needed for cost-effectiveness.

As evidence of the Shuttle Bug system's success, Lake Cook Road has the second-highest number (after the UP-N Davis Street/Evanston Station) of AM peak alightings of any Metra station outside downtown Chicago, and is one of the 15 outlying stations where more riders alight than board during the AM peak period. On the MD-N Line, 13.9% of AM peak boardings are in the reverse (outbound) direction, the second-highest percentage on the Metra system (after the UP-N Line) and well above the system average of 6.2%.

Employment in outer MD-N marketsheds, from Northbrook north, is expected to increase 70% between 2010 and 2040 (see Table 5). Meanwhile, population growth of 36% is forecast for the two station marketsheds closest to downtown Chicago (see Table 3). Growth in suburban employment and growth of population in the city and inner suburbs have been linked to increased reverse commuting, suggesting that this type of trip pattern will continue to increase on the MD-N Line.

FIGURE 3: AM ALIGHTINGS AT NON-CBD MD-N STATIONS

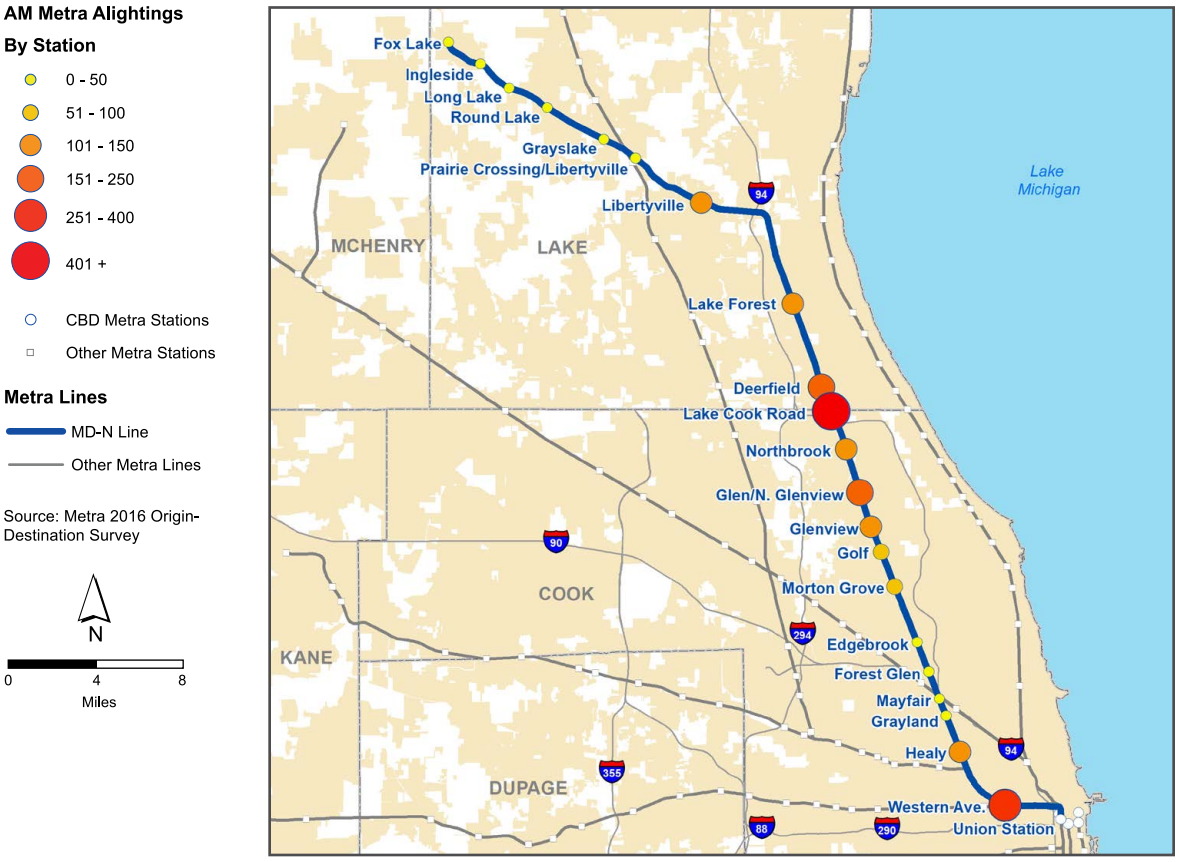


TABLE 6: MAJOR TRIP GENERATORS ACCESSIBLE FROM THE MD-N CORRIDOR

Generator Type	Name	Comments	Municipality
Colleges and Universities	Wilbur Wright College	One of the City Colleges of Chicago; 10,200 students	Chicago
	Hebrew Theological College	340 students	Skokie
	College of Lake County - Grayslake campus	Community college; 1 of 3 campuses	Grayslake
Culture and Entertainment	Wrigley Field	Chicago Cubs' historic ballpark; capacity 41,000	Chicago
	Kohl Children's Museum	46,700 sq. ft. children's museum	Glenview
	Marytown	Catholic shrine and retreat center	Libertyville
	Lake County Fairgrounds	Hosts several events throughout the year	Grayslake
Shopping	Golf Mill Shopping Center	Regional shopping center	Niles
	The Glen Town Center	Lifestyle center	Glenview
	Northbrook Court	Super-regional mall	Northbrook
	Deerfield Square	Lifestyle center	Deerfield
	Westfield Hawthorn Mall	Super-regional mall	Vernon Hills
Government	Cook County Juvenile Court	28 courtrooms and juvenile temporary detention center	Chicago
	Cook County District 2 Courthouse	Cook County courthouse and administrative offices	Skokie
Hospitals	Norwegian American Hospital	185 beds	Chicago
	Presence Sts. Mary and Elizabeth Medical Center	219 beds	Chicago
	Kindred Chicago Central Hospital	187 beds	Chicago
	Swedish Covenant Hospital	316 beds	Chicago
	Glenbrook Hospital		Glenview
	Advocate Condell Medical Center	271 beds	Libertyville
Large Private Employers	John Crane	Mechanical seal manufacturer	Morton Grove
	Illinois Tool Works (ITW)	Equipment manufacturer	Glenview
	Kraft Heinz	Food and beverage company R&D	Glenview
	Mead Johnson Nutrition	Manufacturer of nutritional formula for infants and children	Glenview
	Corporate cluster near I-294 & Willow Road	Incl. Allstate, CVS, Astellas	Northbrook
	UL	HQ of safety consulting and certification company	Northbrook
	Corporate cluster near I-94/I-294 & Lake-Cook Road	Incl. Baxter, Takeda, Walgreens, Discover	Northbrook/ Deerfield
	Caterpillar	Equipment maker's global HQ	Deerfield

Metra train arrives at NCS O'Hare Transfer Station

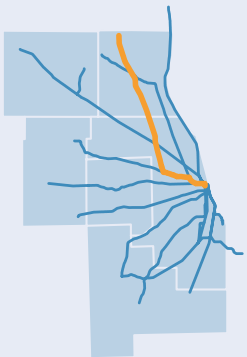
Photo: Mark Llanuza

NORTH CENTRAL SERVICE

EXISTING SERVICE AND CONDITIONS

Metra's North Central Service (NCS) Line extends north from Chicago Union Station (CUS, or "Union Station") in downtown Chicago to Antioch, near the Wisconsin state line, serving portions of Cook and Lake Counties (see Figure 1). In addition to CUS, the line serves 17 other stations along its 53-mile route. In 2017, passenger trips on the NCS totaled nearly 1.7 million, ranking tenth among the eleven Metra lines (based on ticket sales).

In August 1996, when Metra initiated the NCS almost from scratch, it was the first new commuter rail line in the Chicago region in 70 years. Service began with 10 trains each weekday, and 10 years later Metra increased the total number of weekday trains to 22 and added four more intermediate stations.



The NCS route includes 40 miles owned by Canadian National (CN; formerly Wisconsin Central 1987-2001, and Soo Line before that) and 13 miles using Metra's own Milwaukee District. Before 1996, the CN portion of the line had never had commuter service, and its very limited intercity passenger operation had ended in 1965. None of the old Soo Line passenger stations and yards remained in usable form, and former double-tracked sections had reverted to single track.

Today, CN and Metra maintain their respective tracks, signals, and rights-of-way, while Metra owns and operates the NCS trains and commuter yards. Daytime NCS train storage and servicing takes place at the Western Avenue Yard, located on the Milwaukee District Line about three miles west of CUS. The outlying NCS Antioch Yard accommodates nighttime storage and maintenance.

The NCS and the Milwaukee District–North and West Lines (MD-N and MD-W) share the Western Avenue Station in Chicago and Metra's three main tracks for the first five miles from CUS to A-5 Junction (where the MD-N and MD-W/NCS separate). Metra's next seven miles between A-5 and B-12 Junction (where the NCS diverges towards Antioch) are shared by MD-W and NCS trains. Metra upgraded the third main track between the two junctions for commuter service in 2006, allowing NCS and MD-W trains to run express through this segment. Canadian Pacific and Wisconsin & Southern also operate freight trains over these tracks, paying Metra for the trackage rights.

CN owns and maintains the track and operates freight trains over the 40 route miles between B-12 and Antioch that it shares with NCS commuter trains. (CN also owns and operates the track north of Antioch and south of B-12.)

2017 Average trip length:
31.6 miles

2017 Average fare paid:
$5.41

Source: Ridership Trends Report, Dec. 2017

Number of stations:
18

Route length:
52.8 miles

Number of weekday trains (May 2018):
20

2017 On-time performance*:
94.0%

** On-time Performance Report, Dec. 2017*

FIGURE 1: METRA STATIONS ON THE NCS LINE

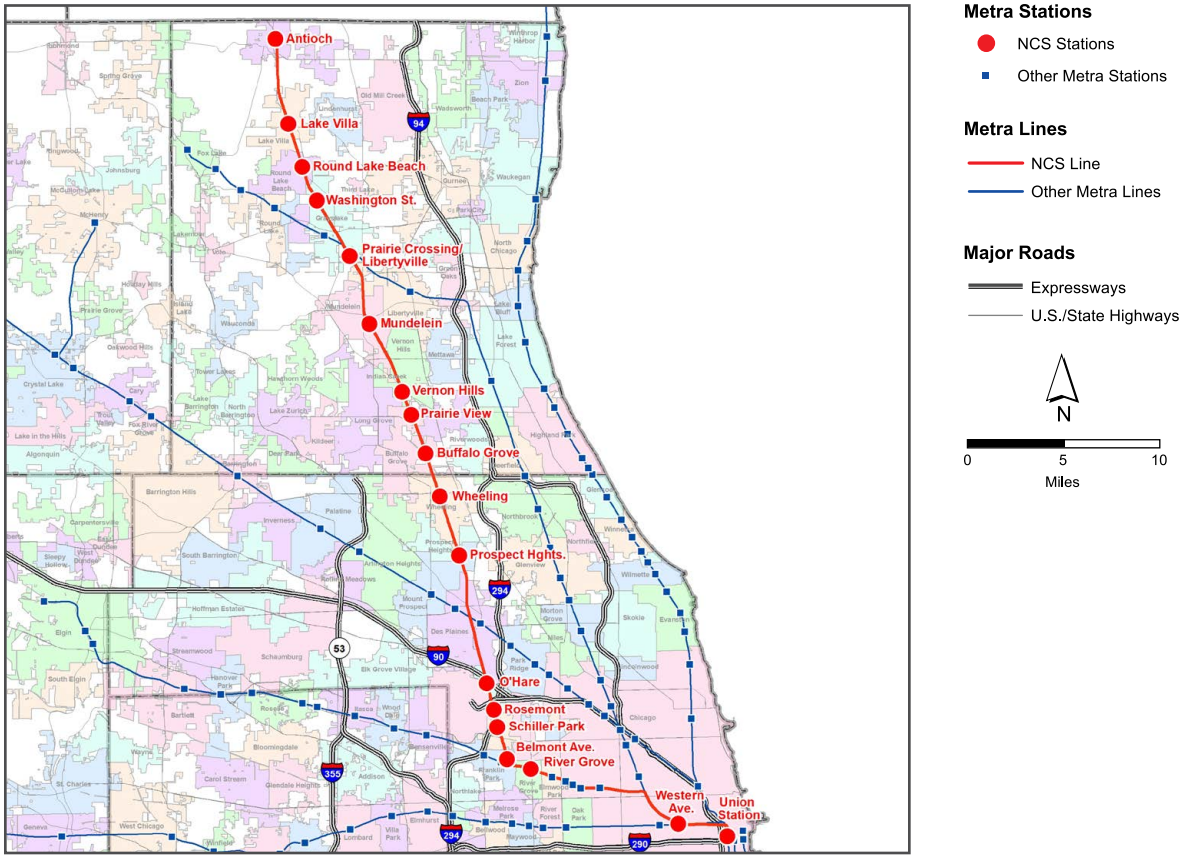


TABLE 1A: 2016 NCS WEEKDAY BOARDINGS

Time of Day	Inbound	Outbound
AM Peak	2,680	112
Midday	225	340
PM Peak	152	2,347
Evening	5	267
TOTAL	**3,062**	**3,066**

Source: Metra Weekday Station Boardings and Alightings by Time-of-Day and Direction, 2016

TABLE 1B: NCS ANNUAL PASSENGER TRIPS
1996 — 2017, in millions

Note: from 2008, figures include free Circuit Permit trips. 2008-2011 figures include free senior trips; this program ended September 2011.

TABLE 1C: NCS STATION CHARACTERISTICS

Station	Fare Zone	Mile Post	Accessibility[1]	Boardings		Station Parking (2017)			Time to Chicago (minutes)[1]	
				1983[2]	2016[3]	Capacity (Spaces)[4]	Effective Use[5]	Observed Use[6]	Shortest Trip	Longest Trip
Union Station	A	0.0	Full	--	2,772	0	n/a	n/a	--	--
Western Ave.[7]	A	2.9	Full	--	53	20	100%	100%	8	13
River Grove[8]	C	11.4	Full	--	174	171	90%	80%	20	26
Belmont Ave./Franklin Park	C	13.0	Full	--	32	92	12%	12%	23	30
Schiller Park	C	14.8	Full	--	36	102	26%	26%	26	34
Rosemont	D	15.6	Full	--	35	100	24%	24%	29	37
O'Hare Transfer	D	17.1	Full	--	123	0	n/a	n/a	27	40
Prospect Heights	E	24.0	Full	--	266	328	38%	38%	42	52
Wheeling	F	27.2	Full	--	353	348	51%	51%	43	57
Buffalo Grove	F	29.5	Full	--	590	1,045	37%	37%	51	61
Prairie View	G	31.6	Full	--	388	410	75%	74%	50	66
Vernon Hills	G	33.0	Full	--	370	646	35%	35%	57	69
Mundelein	H	36.9	Full	--	277	494	45%	42%	58	75
Prairie Crossing[9]	H	40.7	Full	--	102	252	27%	27%	58	81
Washington St./ Grayslake	I	43.9	Full	--	110	149	33%	33%	52	86
Round Lake Beach	J	45.9	Full	--	115	366	15%	15%	55	89
Lake Villa	J	48.2	Full	--	148	228	40%	40%	59	93
Antioch	K	52.8	Full	--	184	316	37%	37%	76	100
TOTAL NCS				**--**	**6,128**	**5,067**	**41%**	**40%**		

[1] North Central Service Schedule
[2] NCS service began in 1996
[3] Metra, "Commuter Rail System Station Boarding/Alighting Counts," Fall 2016
[4] Metra Station Parking Capacity and Use, 2017
[5] Effective use: all sold permit spaces are assumed to be used, even if unoccupied during parking survey
[6] Observed use: spaces physically occupied during parking survey
[7] Western Ave. Station serves MD-N, MD-W and NCS Lines
[8] River Grove Station serves MD-W and NCS Lines
[9] Parking area at Prairie Crossing Station serves MD-N and NCS Lines

TABLE 1D: MODE OF ACCESS AT NCS METRA STATIONS

Station Name	Walk/Bike	Drive/Carpool Driver	Carpool Passenger/ Dropped Off	Transit	Other
Chicago Union Station[1]	42%	3%	7%	32%	16%
Western Ave.[1]	38%	38%	11%	8%	5%
River Grove[1]	28%	57%	12%	2%	1%
Belmont Ave./Franklin Park[2]	0%	50%	38%	13%	0%
Schiller Park[2]	36%	36%	29%	0%	0%
Rosemont[2]	0%	83%	17%	0%	0%
O'Hare Transfer[2]	40%	0%	40%	0%	20%
Prospect Heights	17%	56%	24%	2%	0%
Wheeling	8%	66%	25%	0%	2%
Buffalo Grove	15%	68%	17%	0%	0%
Prairie View	22%	56%	22%	0%	0%
Vernon Hills	17%	62%	20%	1%	0%
Mundelein	12%	68%	20%	1%	0%
Prairie Crossing	3%	77%	20%	0%	0%
Washington St./Grayslake	8%	59%	28%	0%	4%
Round Lake Beach	4%	63%	32%	0%	1%
Lake Villa	5%	73%	22%	0%	1%
Antioch	8%	66%	23%	0%	3%
TOTAL NCS[3]	**18%**	**59%**	**20%**	**2%**	**1%**
SYSTEM TOTAL	**26%**	**53%**	**16%**	**4%**	**1%**

[1] Includes riders boarding on all Metra lines departing from station

[2] Data not statistically significant due to number of survey responses received.

[3] Line total does not include downtown terminal

Source: Metra, Fall 2016 Origin-Destination Survey

TABLE 2: METRA CAPITAL INVESTMENT HISTORY
1985 — December 2017, in millions of dollars

Asset	NCS	System
Rolling stock	$40	$2,757
Track and structure	35	1,432
Signal, electrical, and mechanical	43	1,002
Facilities and equipment	16	613
Stations and parking	9	1,055
Acquisitions, extensions, and expansions	233	599
Support activities	18	395
TOTAL	**$394**	**$7,854**
PERCENTAGE	**5.0%**	**100.0%**

Notes: 1) Excludes South Shore, preventative maintenance, new lines, and pending grants. 2) Prior expenses are not adjusted for subsequent inflation. 3) Data is subject to budget revisions, audit adjustments, etc. at any time. 4) For many projects, work locations and associated costs have not been identified, so budget amounts are allocated among lines by various criteria. Better, more specific cost information is continually sought to improve data applicability; this will adjust the line-by-line results.

IMPROVEMENTS SINCE THE START OF METRA

Since 1985, Metra has invested $394 million (in year of expenditure dollars) in improvements to the NCS corridor, as shown in Table 2. Since the line's 1996 inauguration, numerous adjustments have been made to the schedule, increasing service and reducing delays. On the NCS Line, a new depot was added at Prospect Heights and the depot at Buffalo Grove was expanded after the initial stations were constructed in 1996. Four additional new stations opened in 2006. That year, the number of weekday trains was doubled, which required that Metra and CN partner to double-track all but eight miles of the 40-mile shared route and upgrade its signals. Metra and CN have each contributed to a number of bridge repair or replacement projects on the NCS north of B-12. In addition, Metra has made other bridge improvements on the portion of the Milwaukee District that is used by NCS trains (these costs are counted as Milwaukee District investments, and are not reflected in Table 2).

Over the years, Metra has partnered with Amtrak, owner of CUS, to complete a number of upgrades to the terminal's commuter facilities. For more information on proposed CUS improvements, see the CBD chapter of this report.

Metra recently completed a rehabilitation of the Buffalo Grove Station that centered on replacement of the platform surface.

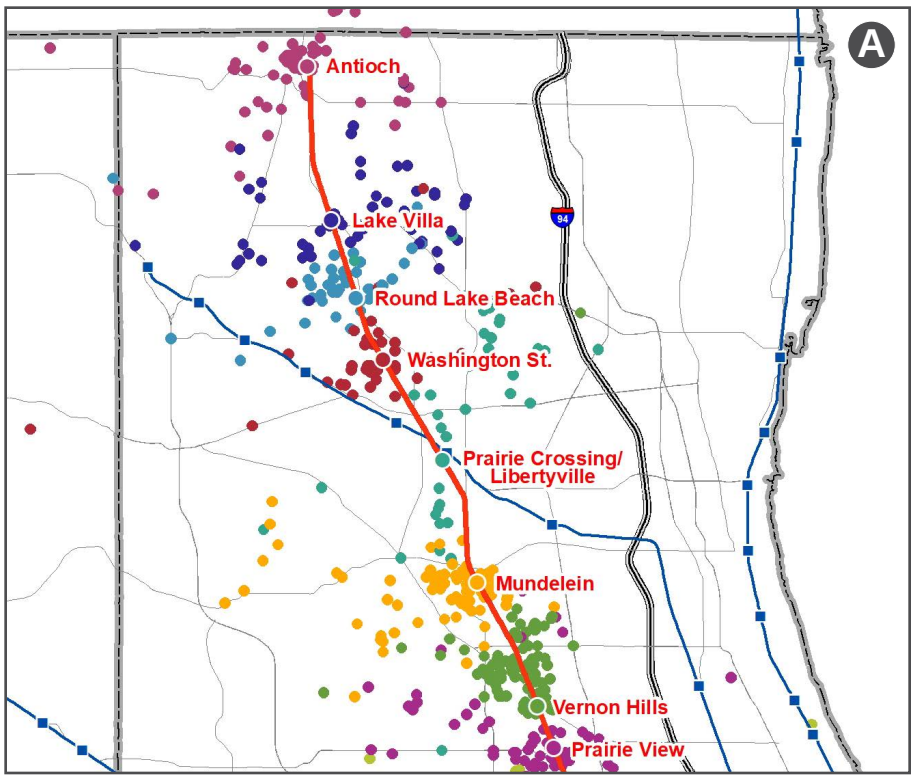
All NCS stations comply with the accessibility requirements of the Americans with Disabilities Act (ADA). The NCS-specific stations north of River Grove were fully accessible to disabled riders when they opened for service. As part of the 2006 NCS/MD-W upgrade, all of the remaining inaccessible stations between CUS and River Grove were also brought into ADA compliance.

PRESENT AND FUTURE DEMAND

In 2016, more than 6,100 boardings took place each weekday on the NCS, with 82% of boardings occurring on peak-period, peak-direction trains. Figure 2 shows the origins of NCS riders who board at stations outside of Chicago's Central Business District (CBD). Overall passenger ridership on the NCS totaled nearly 1.7 million in 2017.

Over 5,000 parking spaces serve the riders of the NCS, as shown in Table 1c. According to parking counts conducted in 2017, the effective rate of utilization at all stations on the line averages 41%. Because parking was expanded substantially as part of the 2006 NCS/MD-W upgrade to accommodate anticipated future demand, there is not an immediate need

FIGURE 2A: ORIGINS OF RIDERS USING NON-CBD NCS STATIONS



for more commuter parking on the NCS. Metra considers that lots more than 85% occupied are approaching full capacity and in need of expanded parking, and Western Avenue and River Grove are the only NCS stations to meet this standard.

Tables 3, 4, and 5 show that NCS station marketsheds in Chicago or inner-ring suburbs experienced negative or little growth in population and households between 2000 and 2010, though healthy growth was experienced in marketsheds furthest from the CBD. However, the Chicago Metropolitan Agency for Planning (CMAP) forecasts significant population growth by 2040 along the NCS—an overall increase of 30% in the corridor. Employment expansion will also be a factor in stimulating ridership growth. Substantial job growth is projected in all but one zone (encompassing the Rosemont and O'Hare Transfer Station marketsheds), and is expected to be particularly strong near the outer end of the NCS corridor in northern Lake County.

FIGURE 2B: ORIGINS OF RIDERS USING NON-CBD NCS STATIONS

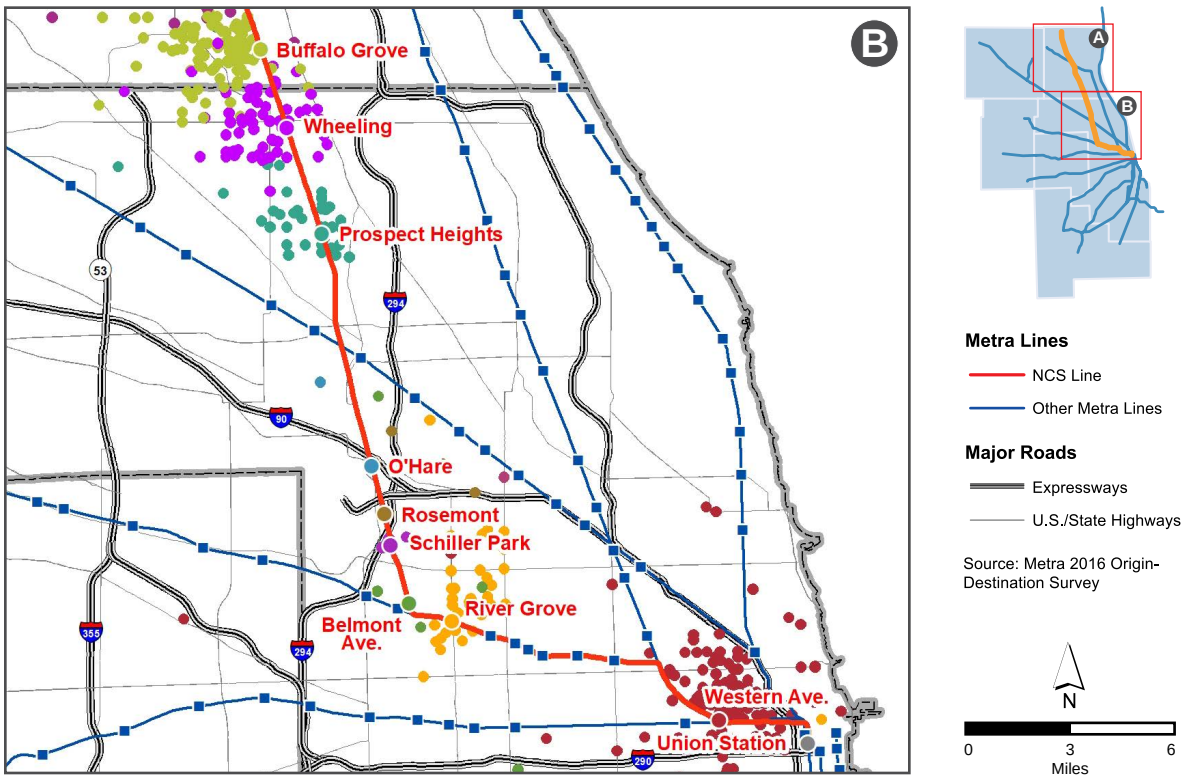


TABLE 3: NCS CORRIDOR POPULATION

Station	Fare Zone	Area Sq. Mi.	Population in Zone			Percent Change	
			2000	2010	2040	2000 vs 2010	2010 vs 2040
Union Station, Western Ave.	A	3.6	61,046	56,719	76,351	-7.1%	34.6%
River Grove, Belmont Ave./Franklin Park, Schiller Park	C	10.2	45,485	44,664	52,070	-1.8%	16.6%
Rosemont, O'Hare Transfer	D	12.5	20,956	22,133	24,290	5.6%	9.7%
Prospect Heights	E	11.8	36,565	35,342	43,338	-3.3%	22.6%
Wheeling, Buffalo Grove	F	25.9	89,757	90,898	112,750	1.3%	24.0%
Prairie View, Vernon Hills	G	30.1	41,516	45,188	62,251	8.8%	37.8%
Mundelein, Prairie Crossing	H	36.5	44,105	48,325	61,049	9.6%	26.3%
Washington St./Grayslake	I	14.0	29,196	32,255	42,072	10.5%	30.4%
Round Lake Beach, Lake Villa	J	43.0	44,960	52,826	74,867	17.5%	41.7%
Antioch	K	35.5	16,461	21,415	35,975	30.1%	68.0%
NCS TOTAL		**223.1**	**430,047**	**449,765**	**585,013**	**4.6%**	**30.1%**
REGION TOTAL		**3,748.0**	**8,091,717**	**8,456,762**	**11,717,936**	**4.5%**	**38.6%**

TABLE 4: NCS CORRIDOR HOUSEHOLDS

Station	Fare Zone	Area Sq. Mi.	Households in Zone			Percent Change	
			2000	2010	2040	2000 vs 2010	2010 vs 2040
Union Station, Western Ave.	A	3.6	24,349	26,143	29,606	7.4%	13.2%
River Grove, Belmont Ave./Franklin Park, Schiller Park	C	10.2	17,940	17,529	20,089	-2.3%	14.6%
Rosemont, O'Hare Transfer	D	12.5	9,107	9,204	10,137	1.1%	10.1%
Prospect Heights	E	11.8	13,533	13,304	15,803	-1.7%	18.8%
Wheeling, Buffalo Grove	F	25.9	33,949	35,486	41,088	4.5%	15.8%
Prairie View, Vernon Hills	G	30.1	14,017	16,332	20,726	16.5%	26.9%
Mundelein, Prairie Crossing	H	36.5	14,369	15,998	20,037	11.3%	25.2%
Washington St./Grayslake	I	14.0	9,673	10,936	13,884	13.1%	27.0%
Round Lake Beach, Lake Villa	J	43.0	14,829	17,454	24,756	17.7%	41.8%
Antioch	K	35.5	6,164	7,893	13,298	28.0%	68.5%
NCS TOTAL		**223.1**	**157,930**	**170,279**	**209,424**	**7.8%**	**23.0%**
REGION TOTAL		**3,748.0**	**2,906,924**	**3,050,134**	**4,224,349**	**4.9%**	**38.5%**

TABLE 5: NCS CORRIDOR EMPLOYMENT

Station	Fare Zone	Area Sq. Mi.	Employment in Zone			Percent Change	
			2000	2010	2040	2000 vs 2010	2010 vs 2040
Union Station, Western Ave.	A	3.6	50,855	40,907	53,328	-19.6%	30.4%
River Grove, Belmont Ave./Franklin Park, Schiller Park	C	10.2	27,319	22,476	25,446	-17.7%	13.2%
Rosemont, O'Hare Transfer	D	12.5	130,803	70,157	52,641	-46.4%	-25.0%
Prospect Heights	E	11.8	42,048	21,168	35,029	-49.7%	65.5%
Wheeling, Buffalo Grove	F	25.9	42,997	46,618	52,774	8.4%	13.2%
Prairie View, Vernon Hills	G	30.1	60,964	34,641	44,154	-43.2%	27.5%
Mundelein, Prairie Crossing	H	36.5	18,151	19,589	36,341	7.9%	85.5%
Washington St./Grayslake	I	14.0	9,824	11,430	15,699	16.3%	37.3%
Round Lake Beach, Lake Villa	J	43.0	4,911	7,625	14,767	55.3%	93.7%
Antioch	K	35.5	4,052	4,116	8,428	1.6%	104.8%
NCS TOTAL		**223.1**	**391,924**	**278,727**	**338,607**	**-28.9%**	**21.5%**
REGION TOTAL		**3,748.0**	**4,340,215**	**3,786,224**	**5,267,696**	**-12.8%**	**39.1%**

REVERSE COMMUTE AND NON-DOWNTOWN MARKETS

Although Metra's primary market involves commuters who follow the traditional suburb-to-CBD trip pattern, in recent years Metra has seen a demand for city-to-suburb reverse-commute options (Metra's primary commuter market is discussed in the Central Business District Market chapter). The shift of employment to suburban locations has left many commuters with limited transit accessibility to jobs. Figure 3 shows AM alightings at non-CBD NCS stations.

Beyond downtown Chicago, a number of employment centers are located near the NCS Line. For instance, at four O'Hare-area stations (Belmont Ave./ Franklin Park to O'Hare Transfer), the share of AM peak station users who alight at the station ranges from 22% (Schiller Park) to 84% (O'Hare Transfer). At Rosemont and O'Hare Transfer Stations in particular, more passengers alight rather than board during the AM peak, reflecting that these stations serve airport travelers and employees, and others who work nearby. O'Hare Station is likely to see an increase in activity due to the current construction of an intermodal facility adjacent to the station. The new facility will consolidate rental cars, public parking, public roadways, shuttle buses, CTA and the Metra station into one access point. The Airport Transit System (ATS) will be extended to the facility, which will speed up the transfer from the O'Hare Metra Station to the airport. Dense employment areas further north, such as the Lake Cook Road corridor, have potential to attract reverse-commute riders to the NCS, but infrastructure limitations and freight traffic demands have precluded the expansion of this type of service on the line.

FIGURE 3: AM ALIGHTINGS AT NON-CBD NCS STATIONS

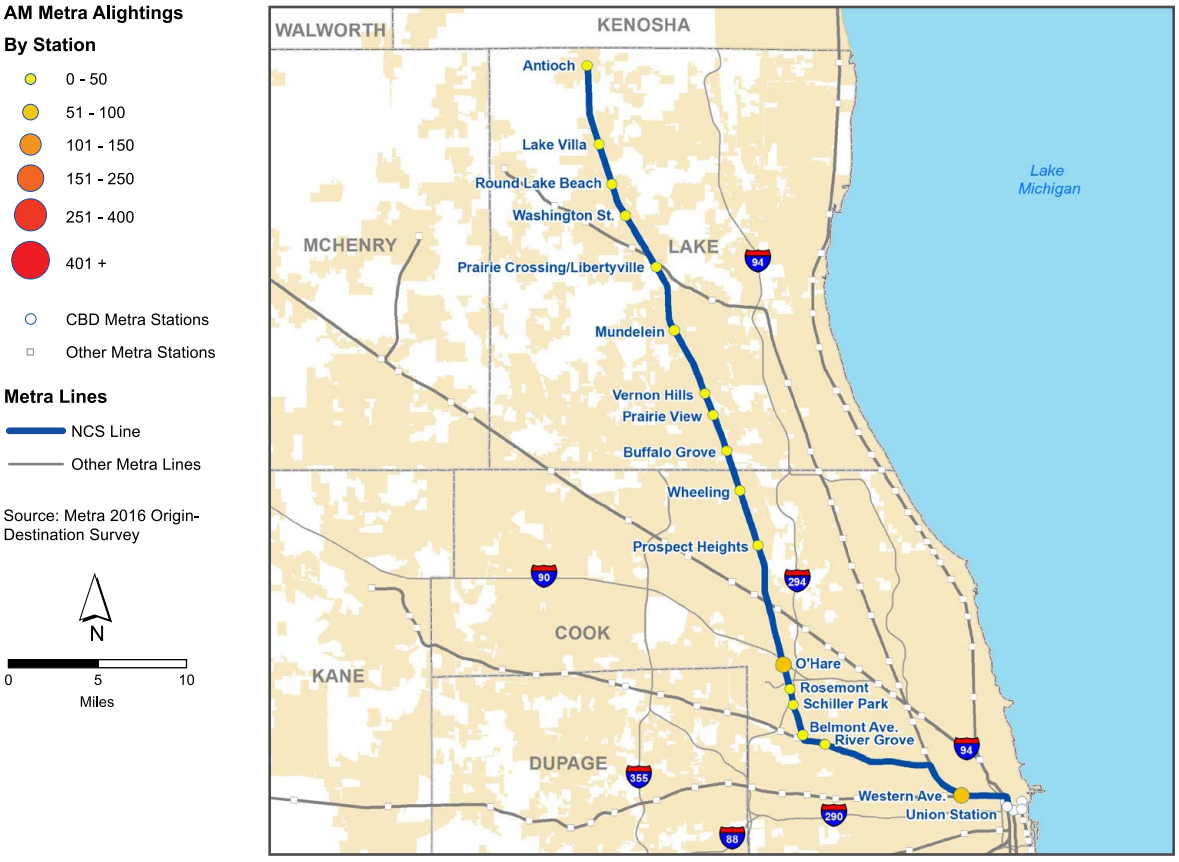


TABLE 6: MAJOR TRIP GENERATORS ACCESSIBLE FROM THE NCS CORRIDOR

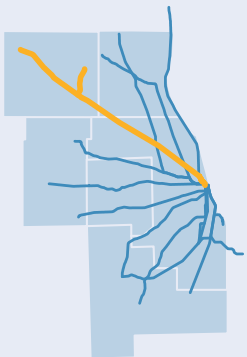
Generator Type	Name	Comments	Municipality
Airports	O'Hare International Airport	Second-busiest airport in U.S.	Chicago
	Chicago Executive Airport	General and business aviation	Wheeling
Colleges and Universities	Triton College	Community college; 11,400 students	River Grove
	College of Lake County - Southlake campus	Community college; 1 of 3 campuses	Vernon Hills
	University of St. Mary of the Lake	250 students	Mundelein
	College of Lake County - Grayslake campus	Community college; 1 of 3 campuses	Grayslake
Culture and Entertainment	Allstate Arena	Sports arena; cap. 17,500	Rosemont
	Rosemont Entertainment District	Fashion Outlets of Chicago/MB Financial Park/ Rosemont Theatre/Stephens Conv. Ctr.	Rosemont
	Marytown	Catholic shrine and retreat center	Libertyville
	Lake County Fairgrounds	Hosts events throughout the year	Grayslake
Shopping	Hawthorn Mall	Super-regional mall	Vernon Hills
Government	Cook County Juvenile Court	28 courtrooms; juvenile temporary detention center	Chicago
Hospitals	Norwegian American Hospital	185 beds	Chicago
	Presence Sts. Mary and Elizabeth Medical Center	219 beds	Chicago
	Gottlieb Memorial Hospital	214 beds	Melrose Park
	Advocate Condell Medical Center	271 beds	Libertyville
Large Private Employers	BMO Harris		Buffalo Grove
	Siemens Building Technology	Building automation and technology firm	Buffalo Grove
	Aon Hewitt	Management consulting services	Lincolnshire
	American Hotel Register	Hospitality product manufacturer	Vernon Hills
	Zebra Technologies	Bar code label and receipt printers manufacturer	Vernon Hills

Arlington Heights Station
Photo: Mark Llanuza

UNION PACIFIC - NORTHWEST LINE

EXISTING SERVICE AND CONDITIONS

Metra's Union Pacific-Northwest (UP-NW) Line extends northwest from Ogilvie Transportation Center (OTC) in downtown Chicago to Harvard, serving portions of Cook, Lake, and McHenry Counties (see Figure 1). The line is the longest in the Metra system, with 23 outlying stations along its 63-mile route. A 7.5-mile single-track branch of the UP-NW extends north from Crystal Lake to the City of McHenry. This branch is only served during weekday peak periods, while the main line offers a full schedule on weekdays and weekends. In 2017, passenger trips on the UP-NW totaled 10.9 million, the second-highest ridership of any line in the Metra system (based on ticket sales).



Like the Union Pacific-North and Union Pacific-West Lines, the UP-NW Line is owned by Union Pacific Railroad (UP) and operated by its employees under a purchase of service agreement with Metra. The three lines are dispatched by UP from its dispatching center in Omaha, Nebraska. Metra owns the passenger coaches and revenue service locomotives serving UP line riders. Daytime train storage and servicing takes place at the California Avenue Yard, located on the Union Pacific-West Line about three miles west of OTC. UP-NW locomotives are fueled and serviced at the M-19A facility about two miles west of California Avenue Yard. On the UP-NW, four outlying yards (at Barrington, Crystal Lake, Harvard, and McHenry) accommodate nighttime storage and maintenance.

Metra's three UP lines were formerly owned by the Chicago and NorthWestern Railroad (C&NW), which operated commuter service on these routes for over a century until the company became part of UP in 1995. In terms of number of routes and total mileage, the C&NW operated the most extensive commuter service in the region. Commuter service on the line's McHenry Branch once extended to Williams Bay, Wisconsin, but was gradually reduced in distance beginning in the mid-1960s. In 1975, after the RTA was formed, service was cut back from Lake Geneva, Wisconsin to Richmond, Illinois, and further cut to its present terminus at McHenry in 1980.

The UP-NW Line operates on two tracks adjacent to the Union Pacific-North Line between OTC and Clybourn Junction (near Armitage and Ashland in Chicago), a distance of approximately three miles. Metra trains on the former C&NW lines run on the left-hand side—thought to be a function of how the first track and depots were situated when a second track was added. From Clybourn to Barrington (29 miles) the line is triple-track, followed by double-track from Barrington to Harvard (31 miles), and a single-track branch line from Crystal Lake to McHenry (7.4 miles). Present operations have outbound

2017 Average trip length:
25.1 miles

2017 Average fare paid:
$4.83

Source: Ridership Trends Report, Dec. 2017

Number of stations:
23

Route length*:
70.5 miles

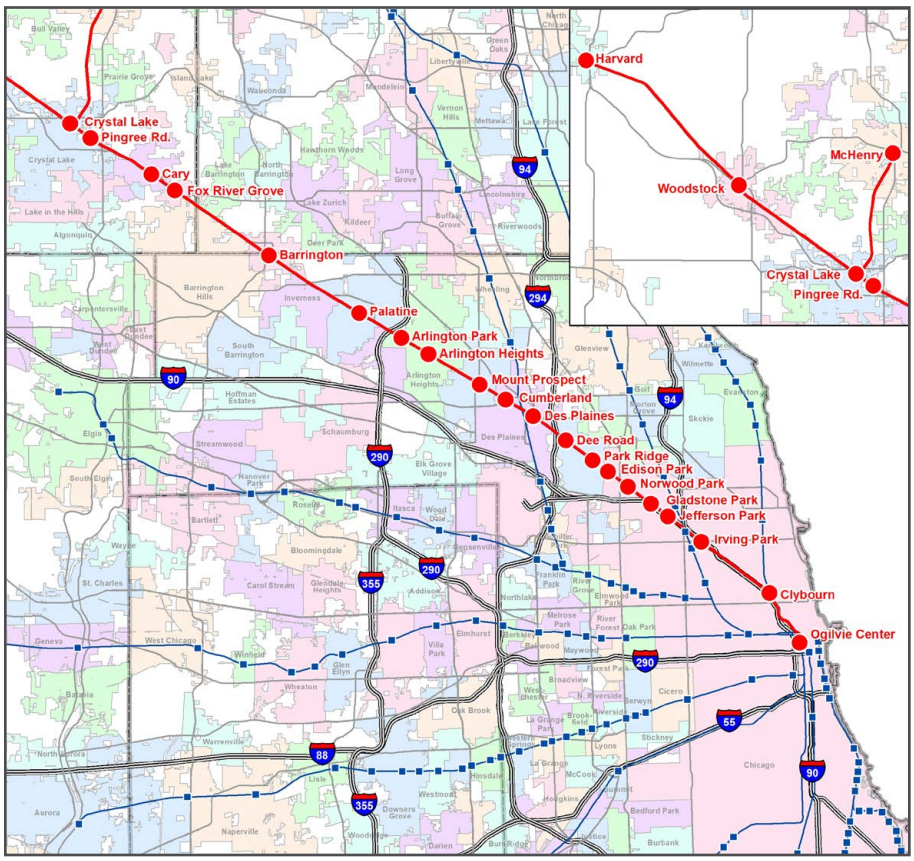
Number of weekday trains (May 2018):
65

2017 On-time performance**:
95.1%

**63.1-mile main line to Harvard and 7.4-mile branch to McHenry*

*** On-time Performance Report, Dec. 2017*

FIGURE 1: METRA STATIONS ON THE UP-NW LINE



traffic on one track and inbound traffic on the other track, with the center track in triple-track territory available for express movements in either direction. With only two sets of automated track crossovers in the 29 miles of triple-track, the ability to recycle trainsets for additional peak-period trips, or to bypass slower-moving trains, is severely limited. In addition, the line's signaling system limits train speed and operating flexibility. There is very limited freight traffic on this line.

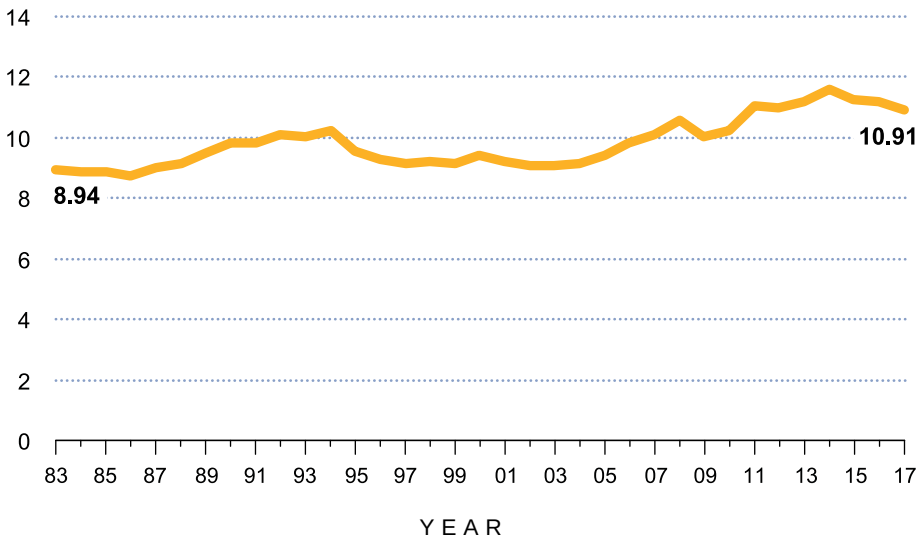
Table 1 details the service, station, and ridership characteristics of the UP-NW.

TABLE 1A: 2016 UP-NW WEEKDAY BOARDINGS

Time of Day	Inbound	Outbound
AM Peak	15,000	989
Midday	2,136	1,553
PM Peak	1,029	14,241
Evening	391	1,598
TOTAL	**18,556**	**18,381**

Source: Metra Weekday Station Boardings and Alightings by Time-of-Day and Direction, 2016

TABLE 1B: UP-NW ANNUAL PASSENGER TRIPS
1983 — 2016, in millions



Note: from 2008, figures include free Circuit Permit trips. 2008-2011 figures include free senior trips; this program ended September 2011.

TABLE 1C: UP-NW STATION CHARACTERISTICS

Station	Fare Zone	Mile Post	Accessibility[1]	Boardings		Station Parking (2017)			Time to Chicago (minutes)[1]	
				1983[2]	2016[3]	Capacity (Spaces)[4]	Effective Use[5]	Observed Use[6]	Shortest Trip	Longest Trip
Ogilvie Trans. Center	A	0.0	Full	13,737	16,395	0	n/a	n/a	--	--
Clybourn[7]	A	2.9	None	272	857	25	96%	96%	8	12
Irving Park	B	7.0	Full	175	443	89	89%	89%	12	18
Jefferson Park	B	9.1	Full	441	656	137	98%	98%	16	22
Gladstone Park	B	10.1	None	81	195	19	84%	84%	20	25
Norwood Park	C	11.4	Full	218	359	100	63%	63%	22	28
Edison Park	C	12.6	Full	383	694	263	70%	70%	24	32
Park Ridge	C	13.5	Full	908	1,043	408	79%	77%	23	34
Dee Rd.	C	15.0	Full	397	515	172	98%	98%	27	37
Des Plaines	D	17.1	Full	1,145	1,142	317	86%	84%	24	42
Cumberland	D	18.6	None	685	455	253	73%	73%	27	44
Mount Prospect	D	20.0	Full	2,146	1,816	687	98%	91%	29	48
Arlington Heights	E	22.8	Full	2,764	2,578	2,037	88%	67%	33	54
Arlington Park	E	24.4	Full	1,430	1,697	1,032	98%	98%	33	58
Palatine	F	26.4	Full	1,632	2,378	1,369	99%	93%	39	63
Barrington	G	31.9	Full	1,564	1,738	914	97%	93%	42	73
Fox River Grove	H	37.3	Full	209	451	317	71%	71%	51	79
Cary	H	38.6	Full	457	941	596	86%	85%	54	82
Pingree Rd.[8]	I	41.7	Full	n/a[8]	751	709	70%	70%	59	88
Crystal Lake	I	43.2	Full	907	1,199	1,096	66%	66%	60	93
Woodstock	K	51.6	Full	166	317	451	37%	37%	72	101
Harvard	M	63.1	Full	84	221	222	57%	57%	90	120
McHenry	K	50.6	Full	101	96	104	43%	43%	73	95
TOTAL UP-NW				**29,909**	**36,937**	**11,317**	**84%**	**78%**		

[1] Union Pacific-Northwest Line Schedule

[2] Metra 1983 Boarding/Alighting Counts; total includes 7 boardings from Hartland Station, which closed in 1984.

[3] Metra, "Commuter Rail System Station Boarding/Alighting Counts," Fall 2016.

[4] Metra Station Parking Capacity and Use, 2017

[5] Effective use: all sold permit spaces are assumed to be used, even if unoccupied during parking survey

[6] Observed use: spaces physically occupied during parking survey

[7] Parking area at this station serves UP-N and UP-NW Lines

[8] Station opened in 2005

TABLE 1D: MODE OF ACCESS AT UP-NW METRA STATIONS

Station Name	Walk/Bike	Drive/Carpool Driver	Carpool Passenger/ Dropped Off	Transit	Other
Ogilvie Trans. Center[1]	47%	3%	1%	28%	12%
Clybourn	49%	12%	3%	20%	7%
Irving Park	47%	28%	3%	17%	1%
Jefferson Park	34%	28%	5%	25%	2%
Gladstone Park	72%	23%	0%	0%	0%
Norwood Park	54%	35%	0%	1%	0%
Edison Park	50%	42%	4%	0%	0%
Park Ridge	40%	38%	5%	2%	1%
Dee Rd.	34%	50%	3%	1%	1%
Des Plaines	49%	35%	2%	3%	1%
Cumberland	28%	57%	7%	1%	0%
Mount Prospect	27%	50%	7%	2%	1%
Arlington Heights	30%	52%	2%	0%	1%
Arlington Park	9%	74%	5%	0%	1%
Palatine	13%	68%	6%	0%	0%
Barrington	10%	70%	4%	0%	1%
Fox River Grove	14%	67%	2%	0%	0%
Cary	12%	69%	3%	0%	0%
Pingree Rd.	8%	79%	3%	0%	0%
Crystal Lake	7%	73%	3%	1%	1%
Woodstock	14%	69%	3%	0%	1%
Harvard	7%	71%	8%	0%	0%
McHenry	2%	78%	3%	0%	0%
TOTAL UP-NW[2]	**24%**	**57%**	**4%**	**2%**	**1%**
SYSTEM TOTAL	**26%**	**53%**	**4%**	**4%**	**1%**

[1] Includes riders boarding on all Metra lines departing from station

[2] Line total does not include downtown terminal

Source: Metra, Fall 2016 Origin-Destination Survey

TABLE 2: METRA CAPITAL INVESTMENT HISTORY
1985 — December 2017, in millions of dollars

Asset	UP-NW	System
Rolling stock	$207	$2,757
Track and structure	95	1,432
Signal, electrical, and mechanical	89	1,002
Facilities and equipment	17	613
Stations and parking	146	1,055
Acquisitions, extensions, and expansions	119	599
Support activities	23	395
TOTAL	**$697**	**$7,854**
PERCENTAGE	**8.9%**	**100.0%**

Notes: 1) Excludes South Shore, preventative maintenance, new lines, and pending grants. 2) Prior expenses are not adjusted for subsequent inflation. 3) Data is subject to budget revisions, audit adjustments, etc. at any time. 4) For many projects, work locations and associated costs have not been identified, so budget amounts are allocated among lines by various criteria. Better, more specific cost information is continually sought to improve data applicability; this will adjust the line-by-line results.

IMPROVEMENTS SINCE THE START OF METRA

Since 1985, Metra has invested $697 million (in year of expenditure dollars) in improvements to the UP-NW corridor. Table 2 indicates the amount of investment in different asset categories. Metra has completed improvements at a number of UP-NW stations since 1985 (see right). In 2017, six diamond crossover switches were replaced at the Deval interlocking. A "diamond" interlocking earns its name due to the crossing of perpendicular or near-perpendicular tracks that form a diamond shape. Trains at these interlockings cross an intersection of multi-directional tracks. A standard interlocking, by contrast, transfers a train between two parallel tracks and has an appearance closer to an "S" shape. The work completed at Deval was a change from manual switching to automatic switching, resulting is faster service through the area. In the last 20 years, numerous adjustments have been made to the UP-NW's schedule, increasing speed and service, reducing delay and crowding during peaks, accommodating reverse commuters, and improving service reliability.

Most UP-NW stations now comply with the accessibility requirements of the Americans with Disabilities Act (ADA), and approximately 96% of UP-NW weekday boardings take place at these accessible stations. Metra's station compliance program started with designating ten of the busiest UP-NW stations, including OTC in downtown Chicago, as "key stations", all of which were made fully accessible by 2007. Since 1985, Metra has completed

Depots and warming houses constructed since 1985 at:

Arlington Heights
Dee Road
Edison Park
Fox River Grove
Jefferson Park
Palatine
Pingree Road (new station)

Other significant improvements completed since 1985 at:

Arlington Park
Barrington
Cary
Crystal Lake
Des Plaines
Irving Park
Mount Prospect
Park Ridge
Woodstock

Station improvements planned for:

Cumberland
Woodstock

access improvements at a number of non-downtown UP-NW stations, and 19 outlying stations on the line are fully accessible to disabled riders. Metra will bring the remaining stations into full ADA compliance as they are rehabilitated, so that eventually all will be accessible.

PRESENT AND FUTURE DEMAND

In 2016, nearly 37,000 boardings took place each weekday on the UP-NW, with 79% of boardings occurring on peak-period, peak-direction trains. At UP-NW stations, ridership has increased 23% since 1983 (see Table 1c). However, at the six McHenry County stations built before 2005, boardings increased an average of 68% between 1983 and 2016. Chicago stations have also experienced significant ridership gains, with boardings increasing 104% during the same period. Figure 2 shows the origins of UP-NW riders who board at stations outside the CBD. Overall passenger ridership on the UP-NW totaled 10.9 million in 2017.

Approximately 11,300 parking spaces serve the riders of the UP-NW. According to parking counts conducted in 2017, many of the existing parking

FIGURE 2A: ORIGINS OF RIDERS USING NON-CBD UP-NW STATIONS

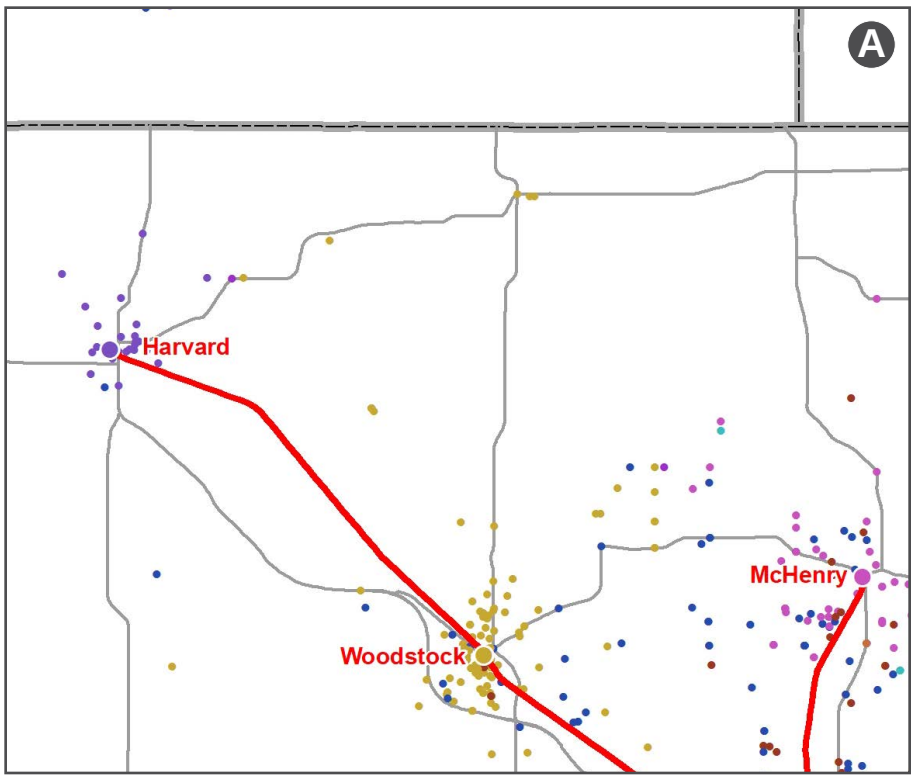


FIGURE 2B: ORIGINS OF RIDERS USING NON-CBD UP-NW STATIONS

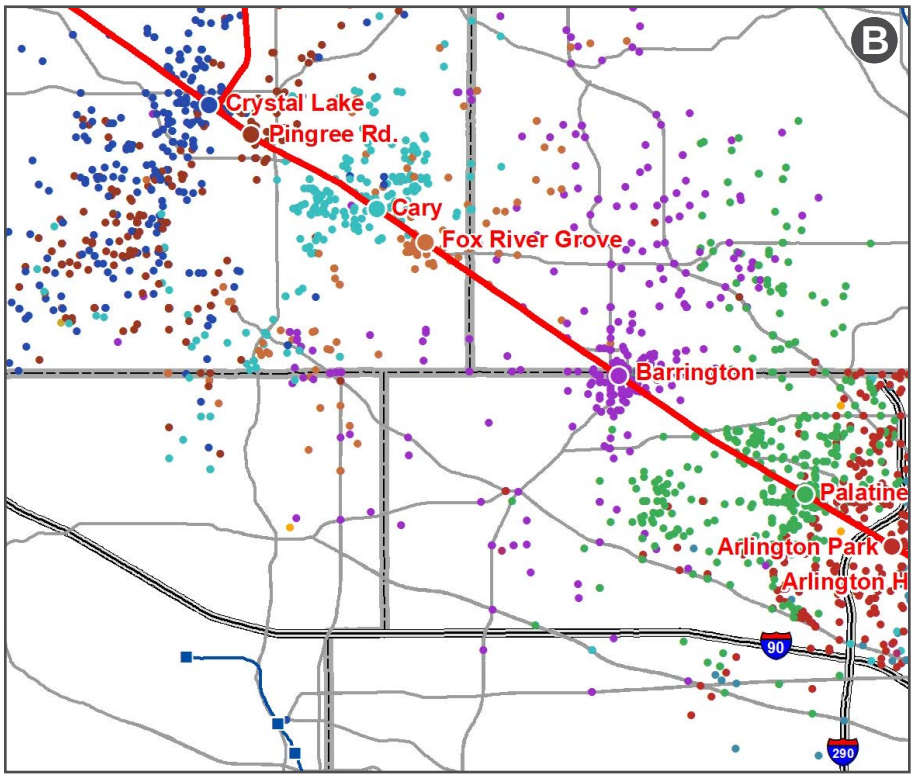
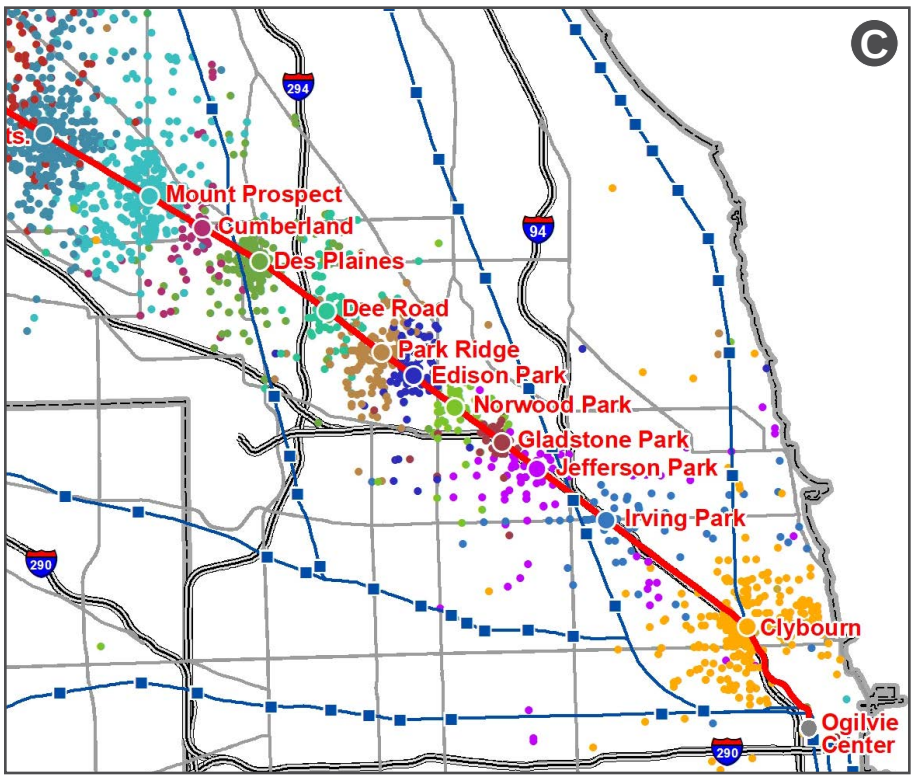
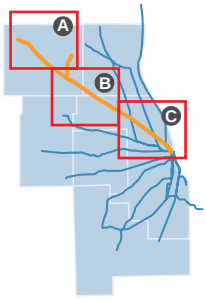


FIGURE 2C: ORIGINS OF RIDERS USING NON-CBD UP-NW STATIONS





Metra Lines

UP-NW Line

Other Metra Lines

Major Roads

Expressways

U.S./State Highways

Source: Metra 2016 Origin-Destination Survey

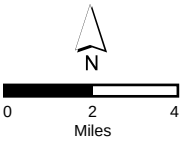


TABLE 3: UP-NW CORRIDOR POPULATION

Station	Fare Zone	Area Sq. Mi.	Population in Zone			Percent Change	
			2000	2010	2040	2000 vs 2010	2010 vs 2040
Ogilvie Transportation Center, Clybourn	A	12.6	217,022	237,400	296,087	9.4%	24.7%
Irving Park, Jefferson Park, Gladstone Park	B	9.5	160,611	152,218	171,845	-5.2%	12.9%
Norwood Park, Edison Park, Park Ridge, Dee Rd.	C	17.1	111,198	112,724	128,606	1.4%	14.1%
Des Plaines, Cumberland, Mount Prospect	D	15.6	71,556	72,225	82,149	0.9%	13.7%
Arlington Heights, Arlington Park	E	37.8	145,779	146,225	165,234	0.3%	13.0%
Palatine	F	32.2	93,081	94,621	110,430	1.7%	16.7%
Barrington	G	56.8	54,873	57,886	65,720	5.5%	13.5%
Fox River Grove, Cary	H	68.1	91,639	97,574	127,202	6.5%	30.4%
Pingree Rd., Crystal Lake	I	85.5	90,414	120,737	205,670	33.5%	70.3%
McHenry, Woodstock	K	295.7	86,937	104,004	183,370	19.6%	76.3%
Harvard	M	156.7	15,742	16,505	28,329	4.8%	71.6%
UP-NW TOTAL		**787.6**	**1,138,852**	**1,212,119**	**1,564,642**	**6.4%**	**29.1%**
REGION TOTAL		**3,748.0**	**8,091,717**	**8,456,762**	**11,717,936**	**4.5%**	**38.6%**

TABLE 4: UP-NW CORRIDOR HOUSEHOLDS

Station	Fare Zone	Area Sq. Mi.	Households in Zone			Percent Change	
			2000	2010	2040	2000 vs 2010	2010 vs 2040
Ogilvie Transportation Center, Clybourn	A	12.6	97,822	112,854	160,216	15.4%	42.0%
Irving Park, Jefferson Park, Gladstone Park	B	9.5	53,323	57,037	58,702	7.0%	2.9%
Norwood Park, Edison Park, Park Ridge, Dee Rd.	C	17.1	41,768	43,324	49,830	3.7%	15.0%
Des Plaines, Cumberland, Mount Prospect	D	15.6	25,937	28,091	31,136	8.3%	10.8%
Arlington Heights, Arlington Park	E	37.8	55,175	58,476	63,951	6.0%	9.4%
Palatine	F	32.2	32,397	35,282	41,103	8.9%	16.5%
Barrington	G	56.8	15,724	18,162	22,054	15.5%	21.4%
Fox River Grove, Cary	H	68.1	23,653	30,744	43,520	30.0%	41.6%
Pingree Rd., Crystal Lake	I	85.5	16,906	30,274	71,372	79.1%	135.8%
McHenry, Woodstock	K	295.7	24,819	31,120	65,546	25.4%	110.6%
Harvard	M	156.7	4,500	5,332	9,649	18.5%	81.0%
UP-NW TOTAL		**787.6**	**392,024**	**450,696**	**617,079**	**15.0%**	**36.9%**
REGION TOTAL		**3,748.0**	**2,906,924**	**3,050,134**	**4,224,349**	**4.9%**	**38.5%**

TABLE 5: UP-NW CORRIDOR EMPLOYMENT

Station	Fare Zone	Area Sq. Mi.	Employment in Zone			Percent Change	
			2000	2010	2040	2000 vs 2010	2010 vs 2040
Ogilvie Transportation Center, Clybourn	A	12.6	257,635	259,322	352,184	0.7%	35.8%
Irving Park, Jefferson Park, Gladstone Park	B	9.5	60,744	32,948	45,615	-45.8%	38.4%
Norwood Park, Edison Park, Park Ridge, Dee Rd.	C	17.1	42,349	52,218	65,717	23.3%	25.9%
Des Plaines, Cumberland, Mount Prospect	D	15.6	49,918	36,571	40,670	-26.7%	11.2%
Arlington Heights, Arlington Park	E	37.8	166,984	124,089	181,157	-25.7%	46.0%
Palatine	F	32.2	45,332	52,107	54,900	14.9%	5.4%
Barrington	G	56.8	22,466	23,473	35,522	4.5%	51.3%
Fox River Grove, Cary	H	68.1	20,046	18,542	31,735	-7.5%	71.2%
Pingree Rd., Crystal Lake	I	85.5	38,236	36,494	75,904	-4.6%	108.0%
McHenry, Woodstock	K	295.7	45,951	38,674	73,414	-15.8%	89.8%
Harvard	M	156.7	4,818	3,607	6,526	-25.1%	80.9%
UP-NW TOTAL		**787.6**	**754,479**	**678,045**	**963,344**	**-10.1%**	**42.1%**
REGION TOTAL		**3,748.0**	**4,340,215**	**3,786,224**	**5,267,696**	**-12.8%**	**39.1%**

lots serving the UP-NW Line are at or near capacity. At 11 stations, effective parking utilization exceeds 85%, indicating a demand for increased parking, since Metra considers lots over 85% occupied to be approaching full capacity. Due to residential growth in the UP-NW corridor, the demand for parking is expected to grow. Expanded parking is vital to Metra's success in distant suburbs, as 67% of Metra riders who board at stations more than 25 miles from downtown Chicago drive to the station (compared to the systemwide average of 51%).

A number of indicators suggest that demand for commuter rail service will continue to rise in the UP-NW corridor, as shown in Tables 3, 4, and 5. The corridor has grown in population and households in recent decades, and demographic forecasts anticipate continued growth. The Chicago Metropolitan Agency for Planning (CMAP) forecasts that the UP-NW corridor will attract over 350,000 new residents between 2010 and 2040, a 29% increase. The projected population growth is greatest near the outer edge of the corridor in eastern McHenry County. For instance, population in the McHenry and Woodstock station marketsheds is expected to increase 76% by 2040, and the population in Harvard's station marketshed is projected to increase nearly 72% in the same time period. Though 76,000 jobs were lost in the UP-NW corridor between 2000 and 2010, a period that coincided with the economic downturn, projections indicate that 285,000 jobs will be added by 2040, a 42% increase.

REVERSE COMMUTE AND NON-DOWNTOWN MARKETS

Although Metra's primary market involves commuters who follow the traditional suburb-to-CBD trip pattern, in recent years Metra has seen a demand for city-to-suburb reverse-commute options (Metra's primary commuter market is discussed in the Central Business District Market chapter). The shift of employment to suburban locations has left many commuters with limited transit accessibility to jobs. Figure 3 shows AM alightings at non-CBD UP-NW stations.

A number of substantial employment centers are located near the UP-NW Line. A concentration of six consecutive stations on the line (Des Plaines, Cumberland, Mount Prospect, Arlington Heights, Arlington Park, Palatine and Barrington) had more than 8% of users *alight* at these stations during the AM peak, and with the exception of Cumberland, had more than 100 alightings in the reverse commute direction. At the Des Plaines and Arlington Park stations, bus routes that are part of the Shuttle Bug service connect Metra riders with employers at nearby corporate campuses. (The Shuttle Bug service is discussed further in the Milwaukee District–North Line chapter.)

FIGURE 3: AM ALIGHTINGS AT NON-CBD UP-NW STATIONS

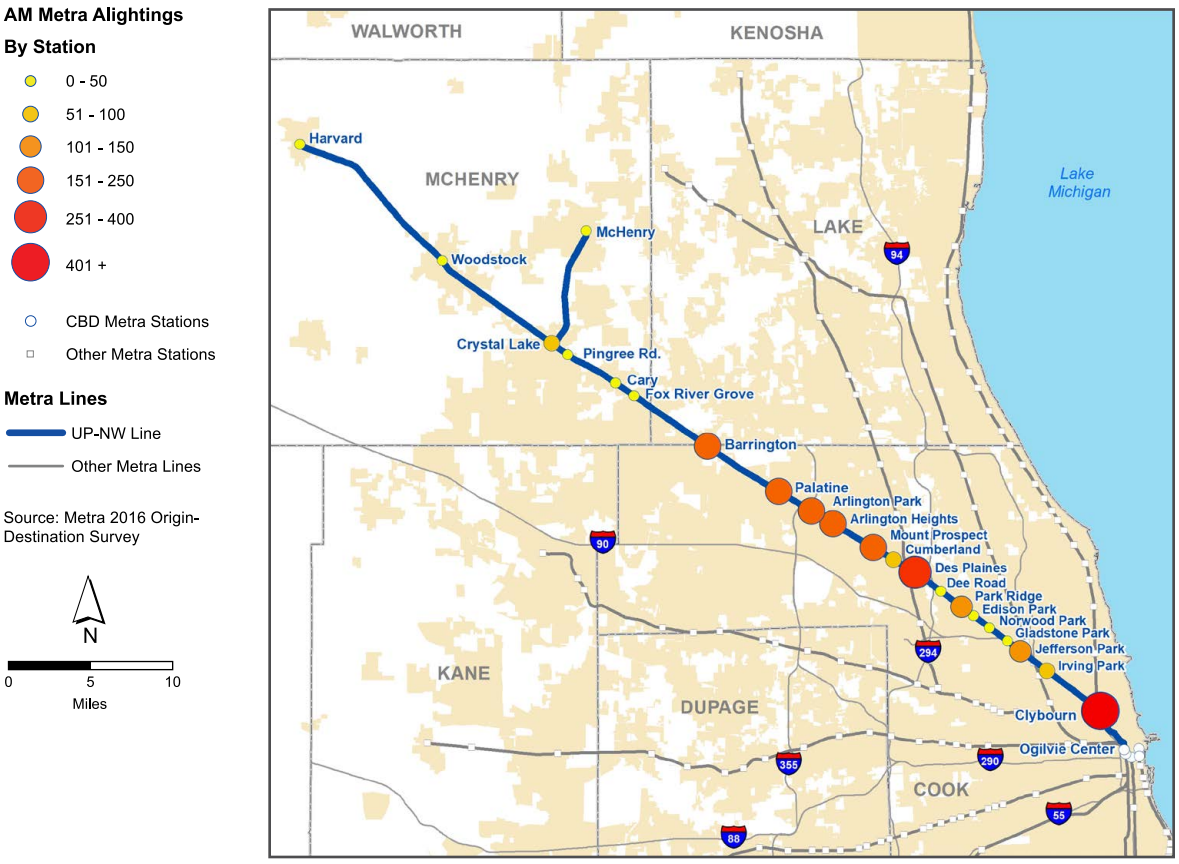


TABLE 6: MAJOR TRIP GENERATORS ACCESSIBLE FROM THE UP-NW CORRIDOR

Generator Type	Name	Comments	Municipality
Airports	O'Hare International Airport	Second-busiest airport in U.S.	Chicago
Colleges and Universities	DePaul Univ. O'Hare Campus	Branch campus serving adult/continuing education	Chicago
	Northeastern Illinois University	9,500 students	Chicago
	Oakton Community College	9,400 students	Des Plaines
	Columbia College	Branch campus of Mo.-based liberal arts college	Crystal Lake
	McHenry County College	6,400 students	Crystal Lake
Culture and Entertainment	Wrigley Field	Chicago Cubs' historic ballpark; cap. 41,000	Chicago
	Allstate Arena	Concert/sports venue; cap. 18,500	Rosemont
	Mystic Waters Aquatic Center	Public water park	Des Plaines
	Arlington Park Racecourse	Mile oval horse track; cap. 50,000	Arlington Heights
	Raue Center	Performing arts venue; cap. 800	Crystal Lake
Shopping	Golf Mill Shopping Center	Regional mall	Niles
	Randhurst Village	Lifestyle center	Mount Prospect
	Woodfield Mall/Streets of Woodfield	Woodfield Mall: over 300 stores; 27M visitors/year	Schaumburg
Government	Cook County Dist. 3 Courthouse	Circuit Court, County Clerk's office	Rolling Meadows
	McHenry County Govt. Center	Circuit Court, County Clerk's office	Crystal Lake
Hospitals	Presence Resurrection Medical Center	541 beds	Chicago
	Advocate Lutheran General Hospital	624 beds	Park Ridge
	Presence Holy Family Medical Center	128 beds	Des Plaines
	Northwest Community Hospital	392 beds	Arlington Heights
	Centegra Hospital - Woodstock	104 beds	Woodstock
	Mercy Harvard Hospital	26 beds	Harvard
	Centegra Hospital - McHenry	173 beds	McHenry
Large Private Employers	Symons Corp.	Concrete forming equipment manufacturer	Des Plaines
	Honeywell UOP	Chemical engineering services	Des Plaines
	Arthur Gallagher	Insurance brokerage and risk management services	Rolling Meadows
	Verizon	Telecommunications provider	Rolling Meadows
	Nokia Siemens	Electronics equipment supplier	Arlington Heights
	Catalent	Pharmaceutical services	Woodstock

Though many station marketsheds experienced a net employment loss between 2000 and 2010, CMAP forecasts job growth in every UP-NW marketshed by 2040, with an increase of 42%, or 285,000 jobs. Certain areas on the route are projected to experience phenomenal job growth. For instance, employment is expected to more than double in the Pingree Road and Crystal Lake marketsheds between 2000 and 2040, adding nearly 40,000 jobs. In addition, since the UP-NW is Metra's longest line, it has greater potential for growth of ridership to locations outside of downtown Chicago than other Metra lines. While few riders will choose to travel by train rather than automobile for a short suburb-to-suburb commute, they are more likely to do so for a longer, non-CBD commute. See Table 6 for a list of major trip generators accessible from the UP-NW corridor, including large employers.

PROPOSED LINE IMPROVEMENTS

Despite the significant economic and population growth expected to take place within the UP-NW corridor, the line's capacity is currently constrained on several fronts, including rail capacity, rolling stock capacity, and commuter parking capacity. Operations on the line are affected by the existing track configuration and the lack of a signal system on the McHenry Branch, the aged signal system on other portions of the corridor, and a lack of capacity at the existing outlying yards to support expansion. These limitations prevent further incremental improvements in the system needed to support future demand increases beyond those substantial investments in the UP-NW Line that have been already made by Metra. In order to address these issues, Metra proposed a series of upgrades to the UP-NW Line.

This project consists of a core capacity upgrade of the entire UP-NW Line, a 1.6-mile extension of the McHenry Branch from its existing terminus at McHenry to Johnsburg, and the addition of three new stations. Two new coach yards—at Woodstock and Johnsburg—would be constructed, and the existing Harvard Yard would be rebuilt. New rolling stock would be acquired. The existing signal system would be upgraded from OTC to Crystal Lake, and signalization would be added on the McHenry Branch. New crossovers would be added, and track, ties and ballast would be added in portions of the line. This combination of improvements would allow for expanded service and faster service throughout the line.

Des Plaines Station
Photo: Mark Llanuza

Metra locomotive pushes through snowdrifts at Elgin Yard following the blizzard of 2011

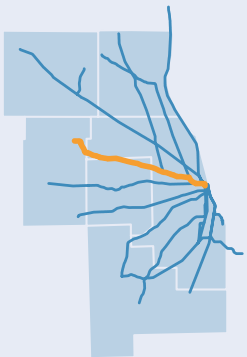
Photo: Mark Llanuza

MILWAUKEE DISTRICT - WEST LINE

EXISTING SERVICE AND CONDITIONS

Metra's Milwaukee District-West (MD-W) Line extends west from Chicago Union Station (CUS or "Union Station") to the City of Elgin. The line serves portions of Cook, DuPage, and Kane Counties with 21 outlying stations along its 40-mile route (see Figure 1). In 2017, 6.3 million trips were taken on the MD-W, the eighth-highest number of Metra's 11 lines (based on ticket sales).

The Milwaukee District-North (MD-N) and MD-W Lines were acquired by Metra following the demise of the Milwaukee Road, the Chicago, Milwaukee, St. Paul and Pacific Railroad. Both the MD-N and MD-W are operated and maintained by Metra employees. Trains on both lines are dispatched from Minneapolis by Canadian Pacific (CP), which operates freight service over Metra-owned Milwaukee District track. CP owns the track west of the Big Timber Road Station in Elgin, beyond the extent of MD-W service. Wisconsin & Southern Railroad, Canadian National, and CP subsidiary Dakota, Minnesota and Eastern Railroad also operate freight service over portions of the MD-W.



Both Milwaukee District Lines as well as Metra's North Central Service (NCS) share the Western Avenue Station in Chicago and Metra's three main tracks

for the five miles between CUS and A-5 Junction (where the MD-N splits from the MD-W/NCS). The next seven miles of triple main line track between A-5 and B-12 Junction in Franklin Park (where the NCS diverges toward Antioch) are shared by MD-W and NCS trains. Metra upgraded the third main track between the two junctions for commuter service in 2006, allowing NCS and MD-W trains to run express through this segment. The MD-W is double-tracked from B-12 to Big Timber Road, except for a single-track bridge across the Fox River, east of the National Street Station in Elgin. Also known as Z-100, the bridge crossing the Fox River was awarded a federal TIGER grant of $14 million and is currently being reconstructed. The new bridge will have double tracking, which will eliminate this "choke point" and offer the potential for more reverse commute operations

Daytime storage and servicing of all Milwaukee District trains, as well as trains serving the NCS and Heritage Corridor, takes place at the Western Avenue Yard, located approximately three miles west of CUS. Nighttime storage and maintenance of trainsets serving the MD-W Line takes place at the Elgin Yard, just south of the station in downtown Elgin.

2017 Average trip length:
24.7 miles

2017 Average fare paid:
$4.76

Source: Ridership Trends Report, Dec. 2017

Number of stations:
22

Route length:
39.8 miles

Number of weekday trains (May 2018):
58

2017 On-time performance*:
95.5%

** On-time Performance Report, Dec. 2017*

FIGURE 1: METRA STATIONS ON THE MD-W LINE

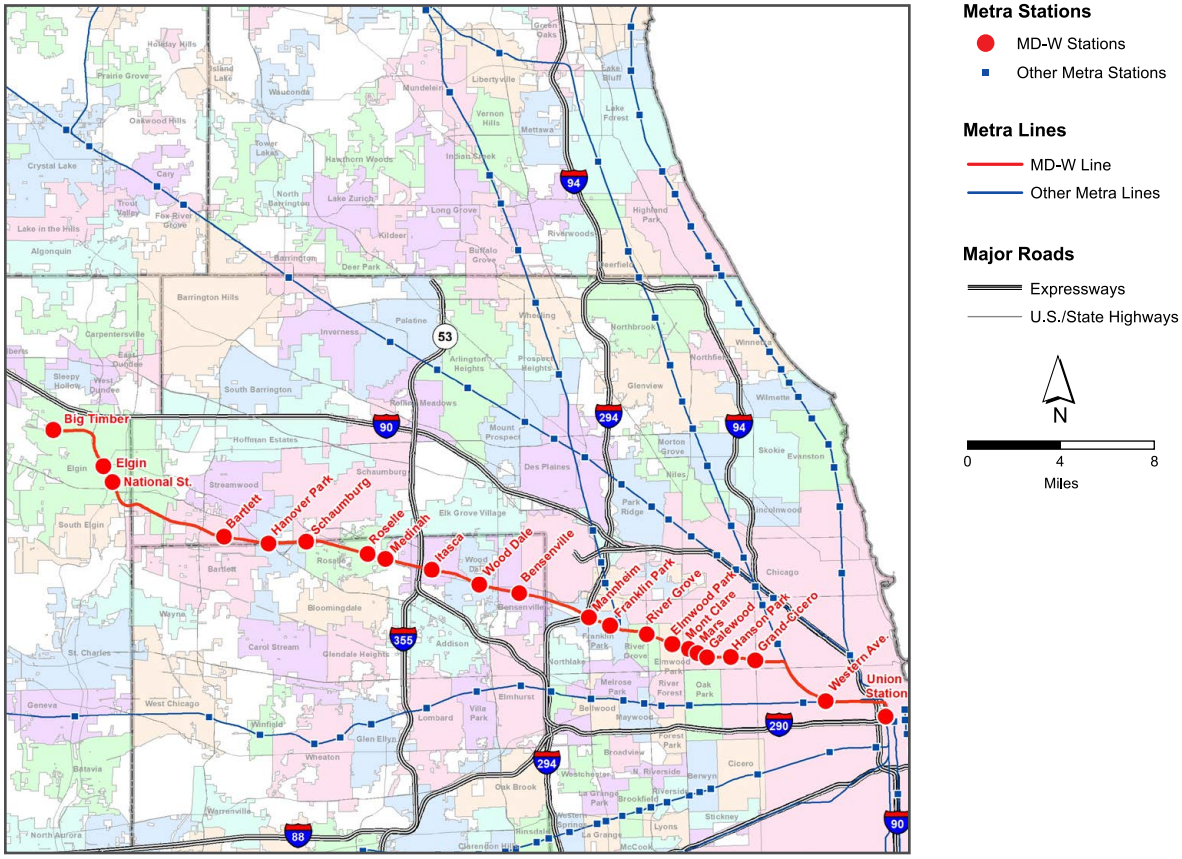
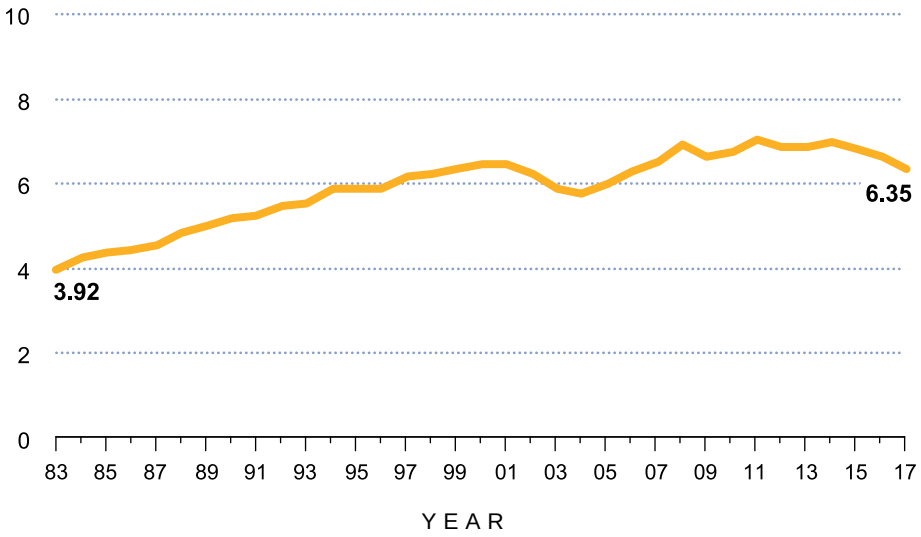


TABLE 1A: 2016 MD-W WEEKDAY BOARDINGS

Time of Day	Inbound	Outbound
AM Peak	9,005	419
Midday	1,276	992
PM Peak	758	8,786
Evening	229	904
TOTAL	**11,268**	**11,101**

Source: Metra Weekday Station Boardings and Alightings by Time-of-Day and Direction, 2016

TABLE 1B: MD-W ANNUAL PASSENGER TRIPS
1983 — 2017, in millions



Note: from 2008, figures include free Circuit Permit trips. 2008-2011 figures include free senior trips; this program ended September 2011.

TABLE 1C: MD-W STATION CHARACTERISTICS

Station	Fare Zone	Mile Post	Accessibility[1]	Boardings		Station Parking (2016)			Time to Chicago (minutes)[1]	
				1983[2]	2016[3]	Capacity (Spaces)[4]	Effective Use[5]	Observed Use[6]	Shortest Trip	Longest Trip
Union Station	A	0.0	Full	6,548	10,310	0	n/a	n/a	--	--
Western Ave.[7]	A	2.9	Full	158	350	20	100%	100%	8	17
Hermosa[8]	--	--	--	101	--	--	--	--	--	--
Grand/Cicero[8]	B	6.5	Full	--	96	0	n/a	n/a	15	24
Cragin[8]	--	--	--	111	--	--	--	--	--	--
Hanson Park	B	7.7	Full	54	60	37	95%	95%	19	27
Galewood	B	8.6	Full	202	279	115	68%	68%	18	29
Mars	B	9.1	Full	75	142	63	51%	51%	21	30
Mont Clare	B	9.5	Full	314	335	193	55%	55%	20	32
Elmwood Park	C	10.2	Full	466	405	116	79%	79%	22	34
River Grove[9]	C	11.4	Full	222	142	171	90%	80%	20	37
Franklin Park	C	13.2	Full	446	458	302	62%	62%	23	41
Mannheim	C	14.0	None	49	31	30	3%	3%	26	44
Bensenville	D	17.2	Full	439	357	195	80%	54%	28	48
Wood Dale	D	19.1	Full	497	624	462	81%	70%	32	52
Itasca	E	21.1	Full	444	601	364	84%	71%	36	56
Medinah	E	23.0	Full	194	573	399	75%	71%	40	60
Roselle	E	23.9	Full	1,455	1,455	977	99%	92%	37	62
Schaumburg	F	26.5	Full	480	1,727	1,584	75%	74%	42	67
Hanover Park	F	28.4	Full	738	1,486	1,358	88%	65%	46	71
Bartlett	F	30.1	Full	669	1,071	737	85%	71%	50	74
National St.	H	36.0	Full	132	642	572	70%	70%	59	82
Elgin	H	36.6	Full	390	436	149	77%	77%	61	84
Big Timber Rd.[10]	H	39.8	Full	--	789	722	66%	66%	71	90
TOTAL MD-W				**14,184**	**22,369**	**8,566**	**79%**	**72%**		

[1] Milwaukee District-West Line Schedule
[2] Metra 1983 Boarding/Alighting Counts
[3] Metra, "Commuter Rail System Station Boarding/Alighting Counts," Fall 2016
[4] Metra Station Parking Capacity and Use, 2017
[5] Effective use: all sold permit spaces are assumed to be used, even if unoccupied during parking survey
[6] Observed use: spaces physically occupied during parking survey
[7] Parking area at this station serves MD-N, MD-W and NCS Lines
[8] Grand/Cicero Station opened in December 2006, replacing Hermosa and Cragin Stations, which closed the same month
[9] Parking area at this station serves MD-W and NCS Lines
[10] Station opened in 1986

TABLE 1D: MODE OF ACCESS AT MD-W METRA STATIONS

Station Name	Walk/Bike	Drive/Carpool Driver	Carpool Passenger/ Dropped Off	Transit	Other
Union Station[1]	42%	3%	7%	32%	16%
Western Avenue	38%	38%	11%	8%	5%
Grand/Cicero	39%	30%	17%	9%	4%
Hanson Park[2]	21%	58%	11%	11%	0%
Galewood	31%	50%	13%	5%	1%
Mars	56%	35%	8%	2%	0%
Mont Clare	40%	47%	11%	1%	1%
Elmwood Park	45%	41%	11%	3%	1%
River Grove	28%	57%	12%	2%	1%
Franklin Park	27%	60%	8%	3%	1%
Mannheim[2]	0%	100%	0%	0%	0%
Bensenville	43%	43%	13%	1%	1%
Wood Dale	12%	72%	15%	0%	1%
Itasca	26%	56%	17%	0%	1%
Medinah	7%	77%	16%	0%	0%
Roselle	8%	72%	19%	0%	1%
Schaumburg	6%	78%	15%	0%	1%
Hanover Park	6%	73%	19%	1%	1%
Bartlett	13%	65%	22%	0%	0%
National St.	6%	76%	17%	0%	1%
Elgin	12%	62%	19%	4%	3%
Big Timber Rd.	2%	79%	18%	0%	1%
TOTAL MD-W[3]	**15%**	**66%**	**16%**	**1%**	**1%**
SYSTEM TOTAL	**26%**	**53%**	**16%**	**4%**	**1%**

[1] Includes riders boarding on all Metra lines departing from station

[2] Data not statistically significant due to number of survey responses received

[3] Line total does not include downtown terminal

Source: Metra, "Commuter Rail System Station Boarding/Alighting Counts," Fall 2016

TABLE 2: METRA CAPITAL INVESTMENT HISTORY
1985 — December 2017, in millions of dollars

Asset	MD-W	System
Rolling stock	$201	$2,757
Track and structure	139	1,432
Signal, electrical, and mechanical	132	1,002
Facilities and equipment	85	613
Stations and parking	66	1,055
Acquisitions, extensions, and expansions	56	599
Support activities	40	395
TOTAL	**$719**	**$7,854**
PERCENTAGE	**9.2%**	**100.0%**

Notes: 1) Excludes South Shore, preventative maintenance, new lines, and pending grants. 2) Prior expenses are not adjusted for subsequent inflation. 3) Data is subject to budget revisions, audit adjustments, etc. at any time. 4) For many projects, work locations and associated costs have not been identified, so budget amounts are allocated among lines by various criteria. Better, more specific cost information is continually sought to improve data applicability; this will adjust the line-by-line results.

IMPROVEMENTS SINCE THE START OF METRA

Since 1985, Metra has invested $719 million (in year of expenditure dollars) in improvements to the MD-W corridor. Table 2 indicates the amount of investment in different asset categories. Metra has completed improvements at a number of MD-W stations (see right), and a number of bridge repair or replacement projects have also been completed on the line. Over the years, Metra has partnered with Amtrak, owner of CUS, to complete a number of upgrades to the terminal's commuter facilities. For more information on proposed CUS improvements, see the CBD chapter of this report.

The amounts shown in Table 2 reflect the cost of a number of improvements made in conjunction with the NCS upgrade project, completed in 2006. These improvements included track and signal upgrades, yard expansion, and construction of new station buildings and platforms at five MD-W stations to accommodate new triple-track commuter operation: Hanson Park, Galewood, Mars, Mont Clare, and Elmwood Park. A new station was built at Grand and Cicero Avenues in Chicago, replacing two adjacent stations. Consolidation has improved operational efficiency, and the new location is more accessible for Chicago Transit Authority bus users and pedestrians.

Much of the signal equipment on the MD-W dates from the 1950s, and replacement of this aging equipment is an ongoing effort. Track and signals at the Roselle control point were replaced in 2005, and in 2014,

Depots and warming houses constructed since 1985 at:

Bartlett
Big Timber
Elmwood Park
Galewood
Grand/Cicero (new station)
Hanover Park
Hanson Park
Mars
Mont Clare
National Street
River Grove
Roselle
Schaumburg
Wood Dale

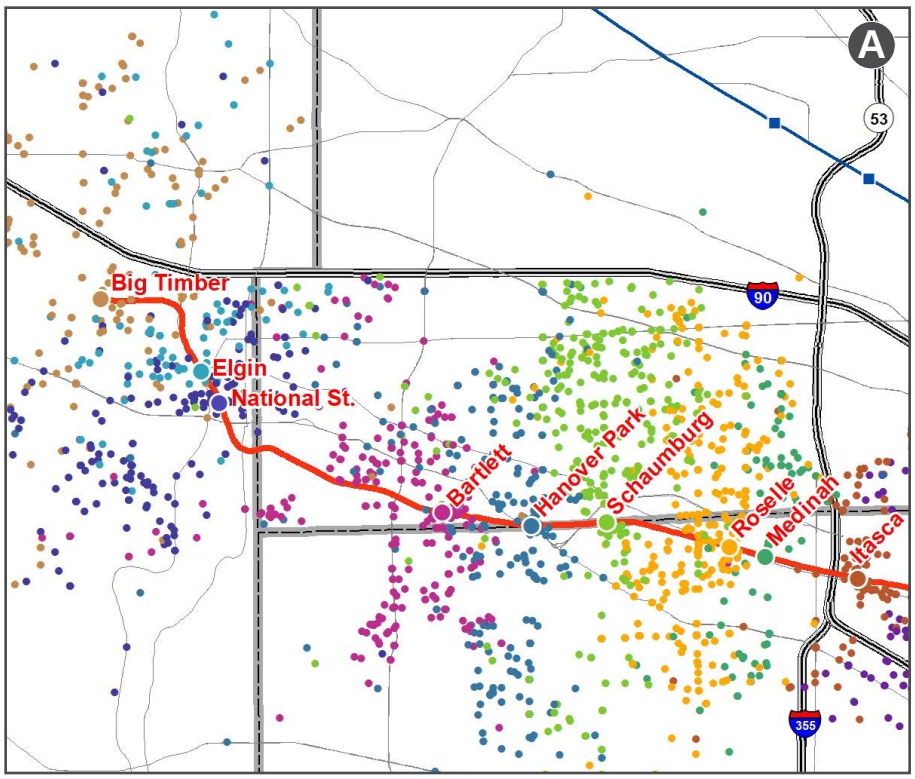
Other significant improvements completed since 1985 at:

Bensenville
Big Timber
Elgin
Franklin Park
Itasca
Medinah
Western Avenue

new signals, track circuitry, and other components were installed between Spaulding Junction near Bartlett and the eastern end of the Fox River Bridge in Elgin. A project to replace track and 1950s-era signal equipment at the A-5 interlocking in Chicago was completed in 2015, and modernization of the manually controlled interlocking at B-17 Junction in Bensenville was completed in 2016. Signal equipment at the B-35 interlocking, which controls movement over the Fox River Bridge, will have electrical components upgraded. Along with replacement of the interlocking's physical plant, it will function as a new control point. The upgrades will be completed as part of the replacement and expansion of the Z-100 bridge mentioned above. Another bridge rehabilitation, at Tyler Creek in Elgin (known as bridge Z-112), was completed in 2017. Fiber optic cable was installed for the transmission of voice, signal data, corporate data, video and Positive Train Control (PTC) data.

Numerous adjustments have been made to the MD-W's schedule over the years, to reduce congestion, improve on-time performance, accommodate reverse commuters, improve bus connections, and add service to meet demand. A zone-type schedule was implemented in 1987 to provide additional service to and from the western portion of the MD-W, where demand was—and still is—highest. More express trains and hourly midday service were also provided. During peak periods, passengers traveling to

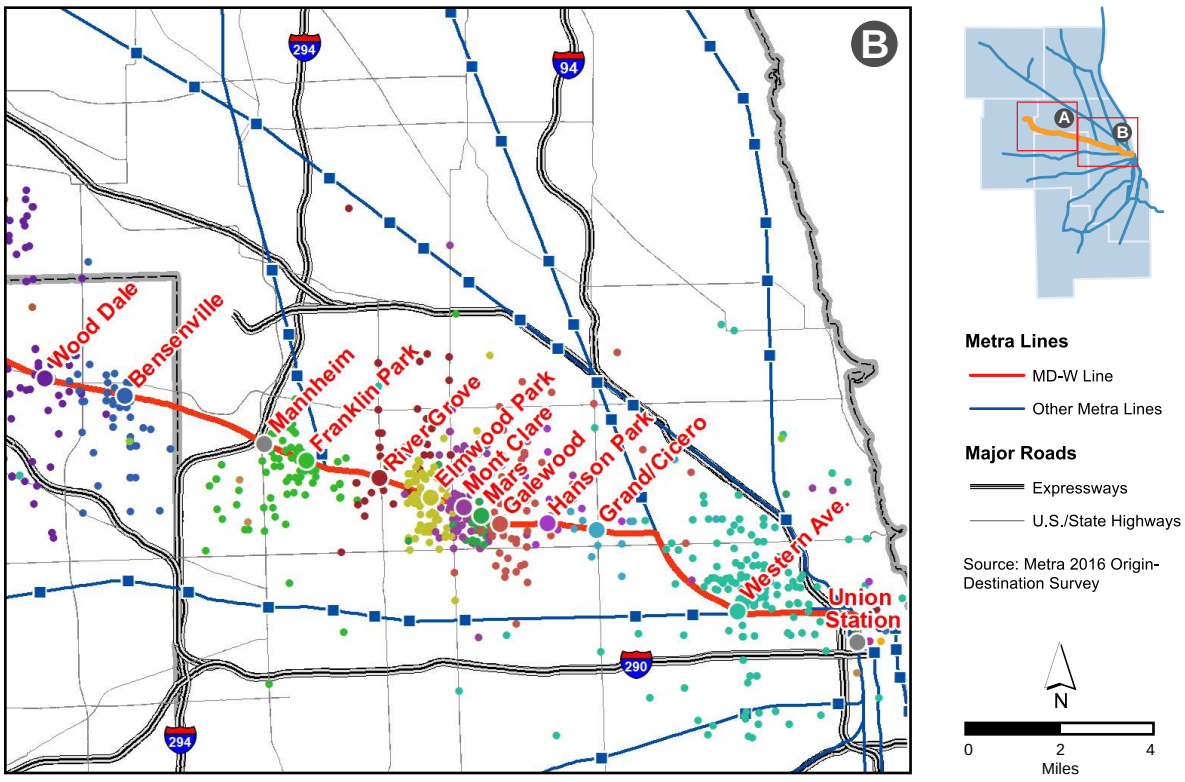
FIGURE 2A: ORIGINS OF RIDERS USING NON-CBD MD-W STATIONS



and from intermediate stations transfer between local and express trains at Franklin Park. Two years after the schedule change, boardings at MD-W stations west of Franklin Park had increased 14%. Service to the Big Timber Road Station has been expanded from two peak-period, peak-direction trains per day in 1990 to a full weekday schedule today, though the station is not served on weekends.

All but one MD-W station—Mannheim—complies with the accessibility requirements of the Americans with Disabilities Act (ADA), and over 99% of MD-W boardings take place at ADA-accessible stations. Metra's station ADA-compliance program started with designating six of the busiest MD-W stations, including CUS in downtown Chicago, as "key stations", all of which were made fully accessible by 2002. Since 1985, Metra has completed access improvements at a number of non-downtown MD-W stations, and these are now fully accessible to disabled riders. Metra will bring Mannheim into full ADA compliance when it is rehabilitated, so that eventually all MD-W stations will be accessible.

FIGURE 2B: ORIGINS OF RIDERS USING NON-CBD MD-W STATIONS



PRESENT AND FUTURE DEMAND

In 2016, 22,000 boardings took place each weekday on the MD-W, with 80% of boardings occurring on peak-period, peak-direction trains. On the MD-W, ridership has increased 58% since 1983 (see Table 1c), with the most significant ridership gains occurring at stations near the western end of the line. Since 1983, boardings have increased 72% at stations from Wood Dale westward (excluding the Big Timber Road Station, which opened in 1986). Ridership in this segment accounts for 71% of boardings at non-downtown MD-W stations.

Figure 2 shows the origins of MD-W riders who board at stations outside of the Central Business District (CBD). Overall passenger ridership on the MD-W totaled 6.6 million in 2016.

Demographic forecasts suggest that demand for commuter rail service on the MD-W will continue to rise (see Tables 3, 4 and 5). Though most of the corridor experienced a modest loss of population or only modest growth between 2000 and 2010, the Chicago Metropolitan Agency for Planning (CMAP) forecasts that the MD-W corridor will attract 264,000 new residents between 2010 and 2040, a 28% increase. Nearly 195,000 jobs are projected to be added, a 51% rise.

Projected population growth is especially significant at the outer end of the corridor in eastern Kane County. Population in the Elgin station marketsheds (National Street, Elgin, and Big Timber Road) is forecasted to increase 62% from 2010 to 2040. Employment growth in the Elgin area, as well as most marketsheds in the corridor, is also anticipated to be strong.

Currently, over 8,500 parking spaces serve the riders of the MD-W, as shown in Table 1c. According to parking counts conducted in 2017, the effective utilization rate at all stations on the line is 79%. When utilization of station parking areas exceeds 85%, Metra considers that they are approaching full capacity. Five MD-W stations exceed this threshold, indicating a demand for increased parking at these stations. Due to residential growth in the MD-W corridor, the demand for parking is expected to grow.

REVERSE COMMUTE AND NON-DOWNTOWN MARKETS

Although Metra's primary market involves commuters who follow the traditional suburb-to-CBD trip pattern, in recent years Metra has seen a demand for city-to-suburb reverse-commute options (Metra's primary commuter market is discussed in the Central Business District Market chapter). The shift of employment to suburban locations has left many commuters with limited

TABLE 3: MD-W CORRIDOR POPULATION

Station	Fare Zone	Area Sq. Mi.	Population in Zone			Percent Change	
			2000	2010	2040	2000 vs 2010	2010 vs 2040
Union Station, Western Ave.	A	3.6	61,046	56,719	76,351	-7.1%	34.6%
Grand/Cicero, Hanson Park, Galewood, Mars, Mont Clare	B	11.8	189,353	177,894	208,390	-6.1%	17.1%
Elmwood Park, River Grove, Franklin Park, Mannheim	C	15.7	102,989	100,834	108,921	-2.1%	8.0%
Bensenville, Wood Dale	D	21.6	49,982	47,874	62,835	-4.2%	31.3%
Itasca, Medinah, Roselle	E	39.9	124,537	125,421	147,164	0.7%	17.3%
Schaumburg, Hanover Park, Bartlett	F	68.1	207,037	212,801	243,443	2.8%	14.4%
National St., Elgin, Big Timber Rd.	H	198.6	172,418	224,519	363,399	30.2%	61.9%
MD-W TOTAL		**359.3**	**907,362**	**946,062**	**1,210,503**	**4.3%**	**28.0%**
REGION TOTAL		**3,748.0**	**8,091,717**	**8,456,762**	**11,717,936**	**4.5%**	**38.6%**

TABLE 4: MD-W CORRIDOR HOUSEHOLDS

Station	Fare Zone	Area Sq. Mi.	Households in Zone			Percent Change	
			2000	2010	2040	2000 vs 2010	2010 vs 2040
Union Station, Western Ave.	A	3.6	24,349	26,143	29,606	7.4%	13.2%
Grand/Cicero, Hanson Park, Galewood, Mars, Mont Clare	B	11.8	55,838	53,838	61,302	-3.6%	13.9%
Elmwood Park, River Grove, Franklin Park, Mannheim	C	15.7	37,628	36,097	39,338	-4.1%	9.0%
Bensenville, Wood Dale	D	21.6	17,029	16,183	20,672	-5.0%	27.7%
Itasca, Medinah, Roselle	E	39.9	47,515	48,454	55,202	2.0%	13.9%
Schaumburg, Hanover Park, Bartlett	F	68.1	70,771	73,279	82,885	3.5%	13.1%
National St., Elgin, Big Timber Rd.	H	198.6	57,738	74,495	124,412	29.0%	67.0%
MD-W TOTAL		**359.3**	**310,868**	**328,489**	**413,417**	**5.7%**	**25.9%**
REGION TOTAL		**3,748.0**	**2,906,924**	**3,050,134**	**4,224,349**	**4.9%**	**38.5%**

TABLE 5: MD-W CORRIDOR EMPLOYMENT

Station	Fare Zone	Area Sq. Mi.	Employment in Zone			Percent Change	
			2000	2010	2040	2000 vs 2010	2010 vs 2040
Union Station, Western Ave.	A	3.6	50,855	40,907	53,328	-19.6%	30.4%
Grand/Cicero, Hanson Park, Galewood, Mars, Mont Clare	B	11.8	35,715	22,469	29,265	-37.1%	30.2%
Elmwood Park, River Grove, Franklin Park, Mannheim	C	15.7	55,125	37,122	39,510	-32.7%	6.4%
Bensenville, Wood Dale	D	21.6	116,919	66,969	106,272	-42.7%	58.7%
Itasca, Medinah, Roselle	E	39.9	91,627	71,717	93,807	-21.7%	30.8%
Schaumburg, Hanover Park, Bartlett	F	68.1	54,898	55,078	79,150	0.3%	43.7%
National St., Elgin, Big Timber Rd.	H	198.6	115,146	87,039	174,345	-24.4%	100.3%
MD-W TOTAL		**359.3**	**520,285**	**381,301**	**575,677**	**-26.7%**	**51.0%**
REGION TOTAL		**3,748.0**	**4,340,215**	**3,786,224**	**5,267,696**	**-12.8%**	**39.1%**

transit accessibility to jobs. Figure 3 shows AM alightings at non-CBD MD-W stations.

According to Metra's 2016 Boarding and Alighting Count, 6% of morning peak-period MD-W riders alight at stations outside central Chicago (i.e., excluding CUS and Western Avenue). Five O'Hare-area stations (Franklin Park, Mannheim, Bensenville, Wood Dale, and Itasca) account for 41% of MD-W morning peak-period alightings outside central Chicago. Interestingly, 12% of passengers using the Elgin (Chicago Street) Station during the morning peak alight at this station rather than board, as riders travel to Elgin municipal offices, the Grand Victoria Casino, and other significant employers.

As noted above, substantial employment growth is projected in MD-W station marketsheds along nearly the entire line, and 195,000 jobs are expected to be added in the corridor between 2010 and 2040, a 51% increase (see Table 5). Since employment growth in an area contributes to increased ridership at nearby Metra stations, this projection is a meaningful indicator of likely ridership growth on the MD-W Line. See Table 6 for a list of major trip generators in the MD-W corridor, including large employers.

FIGURE 3: AM ALIGHTINGS AT NON-CBD MD-W STATIONS

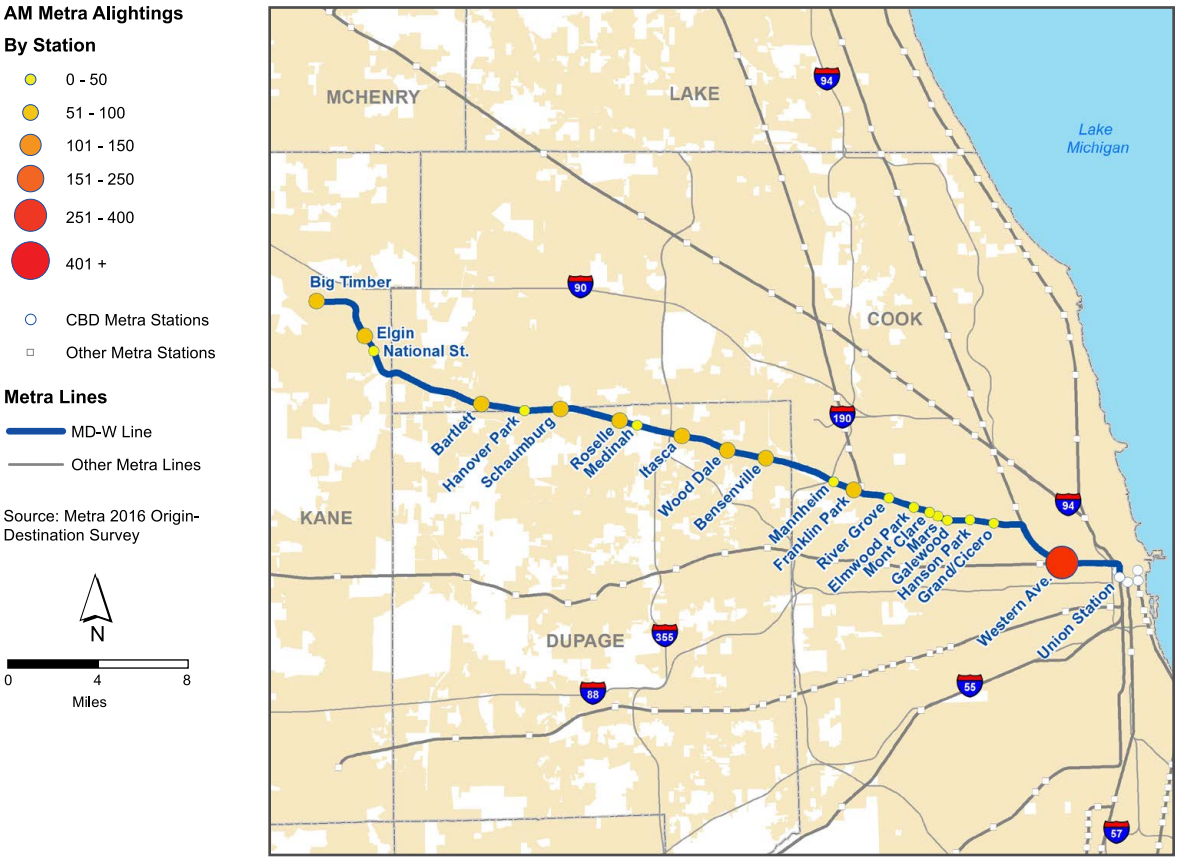


TABLE 6: MAJOR TRIP GENERATORS ACCESSIBLE FROM THE MD-W CORRIDOR

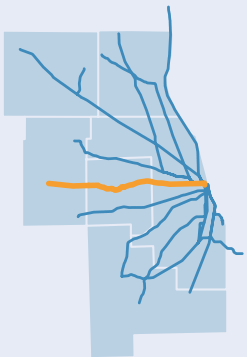
Generator Type	Name	Comments	Municipality
Airports	O'Hare International Airport	Second-busiest airport in U.S.	Chicago
Colleges and Universities	Triton College	Community college; 11,400 students	River Grove
	Elgin Community College	9,900 students	Elgin
	Judson University	1,300 students	Elgin
Culture and Entertainment	Hanson Stadium	CPS football and track stadium	Chicago
	Wonder Works	Children's museum	Oak Park
	Medinah Country Club	Past host of 5 major PGA Championships	Medinah
	Schaumburg Boomers Stadium	Cap. 7,400	Schaumburg
	Grand Victoria Casino	Riverboat casino	Elgin
Shopping	Woodfield Mall/Streets of Woodfield	Woodfield Mall: over 300 stores; 27M visitors/year	Schaumburg
Government	Cook County Juvenile Court	Courtrooms and juvenile temporary detention center	Chicago
Hospitals	Norwegian American Hospital	185 beds	Chicago
	Presence Sts. Mary and Elizabeth Medical Center	219 beds	Chicago
	Shriners Hospital for Children		Chicago
	Gottlieb Memorial Hospital	214 beds	Melrose Park
	Advocate Sherman Hospital	255 beds	Elgin
	Presence St. Joseph Hospital	184 beds	Elgin
Large Private Employers	Mars Chocolate North America	Confection manufacturer	Chicago
	Nestle USA	Confection manufacturer	Franklin Park
	JP Morgan Chase	Credit card issuer	Elgin

UP-W Schedule and Metra one-way tickets

UNION PACIFIC - WEST LINE

EXISTING SERVICE AND CONDITIONS

Metra's Union Pacific-West (UP-W) Line extends west from Ogilvie Transportation Center (OTC) in downtown Chicago to the Village of Elburn. The line serves portions of Cook, DuPage, and Kane Counties with 18 outlying stations along its 44-mile route (see Figure 1). In 2017, 8.3 million trips were taken on the UP-W, the fourth-highest number of Metra's 11 lines (based on ticket sales).



Like the Union Pacific–North and Union Pacific–Northwest Lines, the UP-W is owned by Union Pacific Railroad (UP) and operated by its employees under a purchase of service agreement with Metra. The three lines are dispatched by UP from Omaha, Nebraska. Metra owns the passenger coaches and revenue service locomotives. Daytime storage and servicing of Union Pacific Metra trains takes place at the California Avenue Yard, located on the UP-W Line about three miles west of OTC. This location also functions as the heavy repair facility for all bi-level coaches from Metra diesel lines. Union Pacific locomotives are serviced at the M-19A facility, located about two miles west of the California Avenue Yard. Elburn Yard accommodates nighttime storage and maintenance of trainsets serving the UP-W Line.

Metra's three UP lines were formerly owned by the Chicago and NorthWestern Railroad (C&NW), which operated commuter service on these routes for over a century until the company became part of UP in 1995. In terms of number of routes and total mileage, the C&NW once operated the most extensive commuter service in the region. The UP-W Line was the first railroad built in the state of Illinois. The line fueled the growth of Oak Park, Geneva, and numerous other towns along the corridor, and freight carried by the UP-W and other lines helped transform Chicago into a major transportation hub. Like Metra's two other UP lines (also former C&NW lines), UP-W trains run on the left-hand side—thought to be a function of how the first track and depots were situated when a second track was added.

Today, the UP-W Line is the main freight line into Chicago for Union Pacific Railroad, which operates as many as 70 freight trains per day on the line. Despite carrying heavy freight traffic, the UP-W supports a full schedule of commuter service, consisting of 59 passenger trains each weekday. Table 1 details the service, station, and ridership characteristics of the UP-W.

2017 Average trip length:
22.4 miles

2017 Average fare paid:
$4.65

Source: Ridership Trends Report, Dec. 2017

Number of stations:
19

Route length:
43.6 miles

Number of weekday trains (May 2016):
59

2017 On-time performance*:
94.1%

** On-time Performance Report, Dec. 2017*

FIGURE 1: METRA STATIONS ON THE UP-W LINE

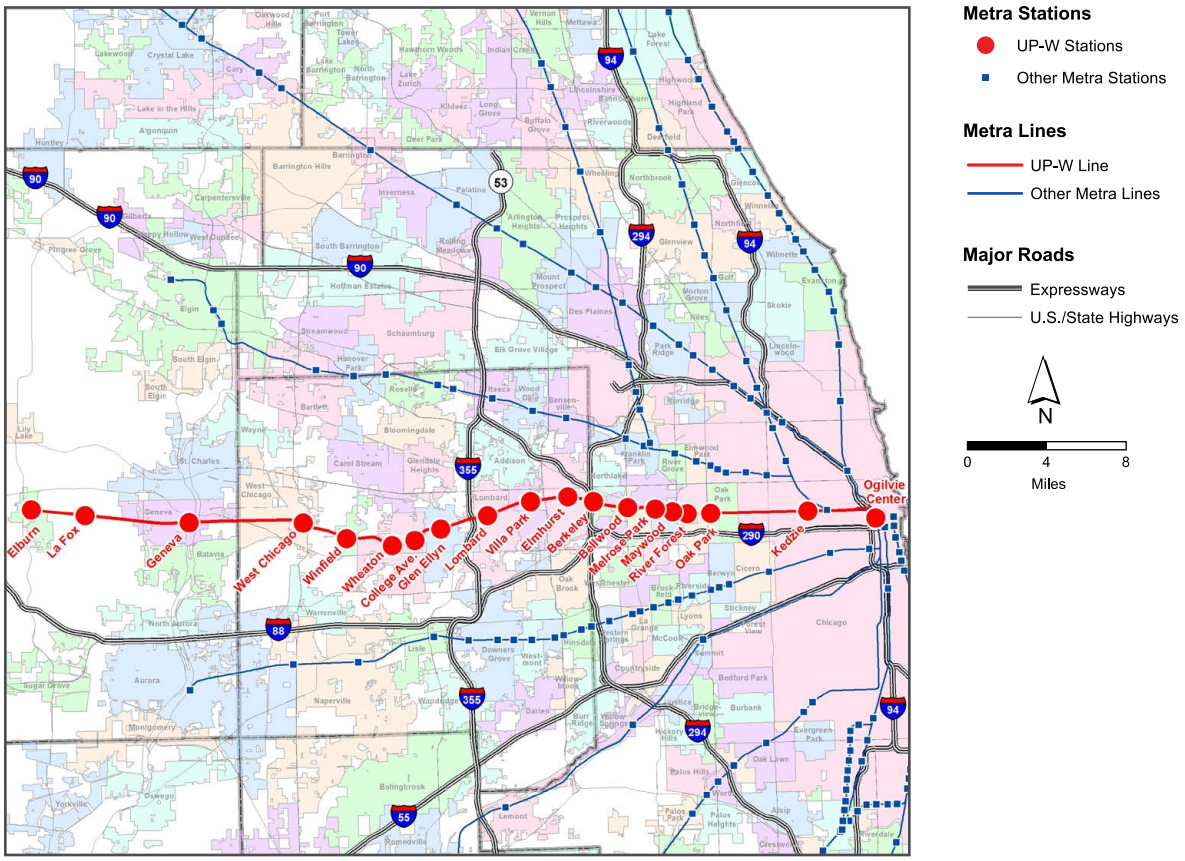
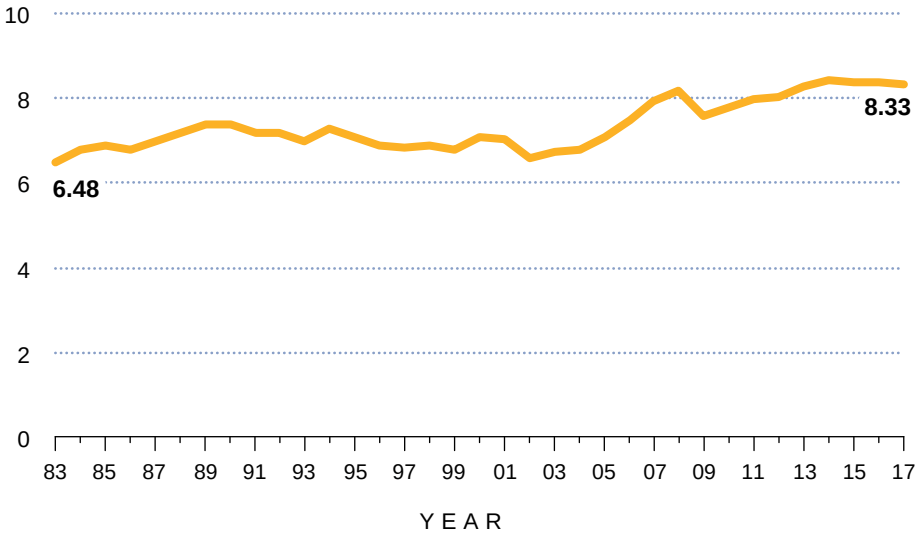


TABLE 1A: 2016 UP-W WEEKDAY BOARDINGS

Time of Day	Inbound	Outbound
AM Peak	11,160	472
Midday	1,246	1,001
PM Peak	631	11,301
Evening	320	1,241
TOTAL	**13,357**	**14,015**

Source: Metra Weekday Station Boardings and Alightings by Time-of-Day and Direction, 2016

TABLE 1B: UP-W ANNUAL PASSENGER TRIPS
1983 — 2016, in millions



Note: from 2008, figures include free Circuit Permit trips. 2008-2011 figures include free senior trips; this program ended September 2011.

TABLE 1C: UP-W STATION CHARACTERISTICS

Station	Fare Zone	Mile Post	Accessibility[1]	Boardings		Station Parking (2017)			Time to Chicago (minutes)[1]	
				1983[2]	2016[3]	Capacity (Spaces)[4]	Effective Use[5]	Observed Use[6]	Shortest Trip	Longest Trip
Ogilvie Trans. Center	A	0.0	Full	10,769	13,451	0	n/a	n/a	n/a	n/a
Kedzie	A	3.6	None	42	52	0	n/a	n/a	9	15
Oak Park	B	8.5	Full	344	905	196	82%	68%	15	23
River Forest	B	9.7	None	127	438	165	96%	93%	18	27
Maywood	C	10.5	Partial	87	82	85	29%	29%	20	29
Melrose Park	C	11.3	Partial	101	87	77	99%	81%	22	31
Bellwood	C	12.6	Full	248	148	194	45%	45%	25	34
Berkeley	C	14.3	Full	201	140	125	66%	66%	28	38
Elmhurst	D	15.7	Full	1,521	2,344	1,216	98%	97%	24	41
Villa Park	D	17.8	Full	1,289	828	489	100%	90%	28	45
Lombard	D	19.9	Full	1,418	1,343	624	92%	83%	29	49
Glen Ellyn	E	22.4	Full	1,971	1,734	702	99%	90%	34	53
College Ave.	E	23.8	Full	838	918	495	86%	85%	38	57
Wheaton	E	25.0	Full	1,770	1,577	832	84%	75%	34	60
Winfield	F	27.5	Full	341	507	270	90%	89%	39	65
West Chicago	F	29.8	Full	371	527	466	83%	64%	46	69
Geneva	H	35.3	Full	872	1,708	1,239	94%	83%	53	78
La Fox[7]	I	40.9	Full	n/a	276	300	79%	79%	67	86
Elburn[7]	I	43.6	Full	n/a	307	592	35%	35%	70	91
TOTAL UP-W				**22,310**	**27,372**	**8,067**	**86%**	**79%**		

[1] Union Pacific-West Line Schedule

[2] Metra's 1983 Boarding/Alighting Counts

[3] Metra, "Commuter Rail System Station Boarding/Alighting Counts," Fall 2016

[4] Metra Station Parking Capacity and Use, 2017

[5] Effective use: all sold permit spaces are assumed to be used, even if unoccupied during parking survey

[6] Observed use: spaces physically occupied during parking survey

[7] Stations opened in 2006

TABLE 1D: MODE OF ACCESS AT UP-W METRA STATIONS

Station Name	Walk/Bike	Drive/Carpool Driver	Carpool Passenger/ Dropped Off	Transit	Other
Ogilvie Trans. Center[1]	47%	3%	9%	28%	12%
Kedzie[2]	60%	15%	10%	15%	0%
Oak Park	68%	16%	11%	4%	1%
River Forest	52%	39%	9%	0%	0%
Maywood	13%	83%	4%	0%	0%
Melrose Park	23%	60%	15%	2%	0%
Bellwood	11%	72%	18%	0%	0%
Berkeley	24%	62%	14%	0%	0%
Elmhurst	27%	56%	16%	0%	1%
Villa Park	20%	61%	15%	1%	3%
Lombard	25%	52%	21%	2%	1%
Glen Ellyn	31%	44%	23%	1%	2%
College Ave.	28%	56%	14%	0%	1%
Wheaton	27%	47%	22%	3%	1%
Winfield	15%	64%	21%	0%	1%
West Chicago	10%	75%	14%	1%	0%
Geneva	8%	70%	21%	1%	1%
La Fox	2%	87%	11%	0%	1%
Elburn	3%	76%	20%	0%	0%
TOTAL UP-W[3]	**25%**	**54%**	**18%**	**1%**	**1%**
SYSTEM TOTAL	**26%**	**53%**	**16%**	**4%**	**1%**

[1] Includes riders boarding on all Metra lines departing from station

[2] Data not statistically significant due to number of survey responses received

[3] Line total does not include downtown terminal

Source: Metra, Fall 2016 Origin-Destination Survey

TABLE 2: METRA CAPITAL INVESTMENT HISTORY
1985 — December 2017, in millions of dollars

Asset	UP-W	System
Rolling stock	$207	$2,757
Track and structure	95	1,432
Signal, electrical, and mechanical	89	1,002
Facilities and equipment	17	613
Stations and parking	146	1,055
Acquisitions, extensions, and expansions	119	599
Support activities	23	395
TOTAL	**$697**	**$7,854**
PERCENTAGE	**8.9%**	**100.0%**

Notes: 1) Excludes South Shore, preventative maintenance, new lines, and pending grants. 2) Prior expenses are not adjusted for subsequent inflation. 3) Data is subject to budget revisions, audit adjustments, etc. at any time. 4) For many projects, work locations and associated costs have not been identified, so budget amounts are allocated among lines by various criteria. Better, more specific cost information is continually sought to improve data applicability; this will adjust the line-by-line results.

IMPROVEMENTS SINCE THE START OF METRA

Since 1985, Metra has invested nearly $697 million (in year of expenditure dollars) in improvements to the UP-W corridor. Table 2 indicates the amount of investment in different asset categories. This amount includes the extension of the line from Geneva to Elburn, which was completed in 2006. The $135 million project, funded in part with a New Starts grant from the Federal Transit Administration, included two new stations, track and signal improvements, construction of an overnight train storage yard at Elburn, and purchase of two additional locomotives to service the line. The project has relieved automobile and train congestion at Geneva and allowed Metra to better serve growing Kane County travel markets.

Metra has completed improvements at a number of UP-W stations since 1985 (see right). In 2009, Metra and UP formed a public-private partnership (PPP) to construct a number of capital improvements on the UP-W Line. As part of this work, a number of safety improvements at UP-W stations were completed in 2011. Another Train Warning System (ATWS) devices were installed at eight stations; ATWS uses audible and visual alerts to warn pedestrians at crossings near stations that a second train—in addition to the one stopped at the station—is approaching or present. Other new grade crossing protections include new paths to guide pedestrians to a gated crossing, more pedestrian gates, and additional fencing to discourage pedestrians from crossing at unauthorized locations. These

Depots and warming houses constructed since 1985 at:

College Avenue
Elburn (new station)
Geneva
La Fox (new station)
Oak Park
West Chicago
Wheaton
Winfield

Other significant improvements completed since 1985 at:

Berkeley
Bellwood
Elmhurst
Geneva
Glen Ellyn
Lombard
Maywood
Melrose Park
River Forest
Villa Park
Wheaton
Winfield

Station improvements are planned for:

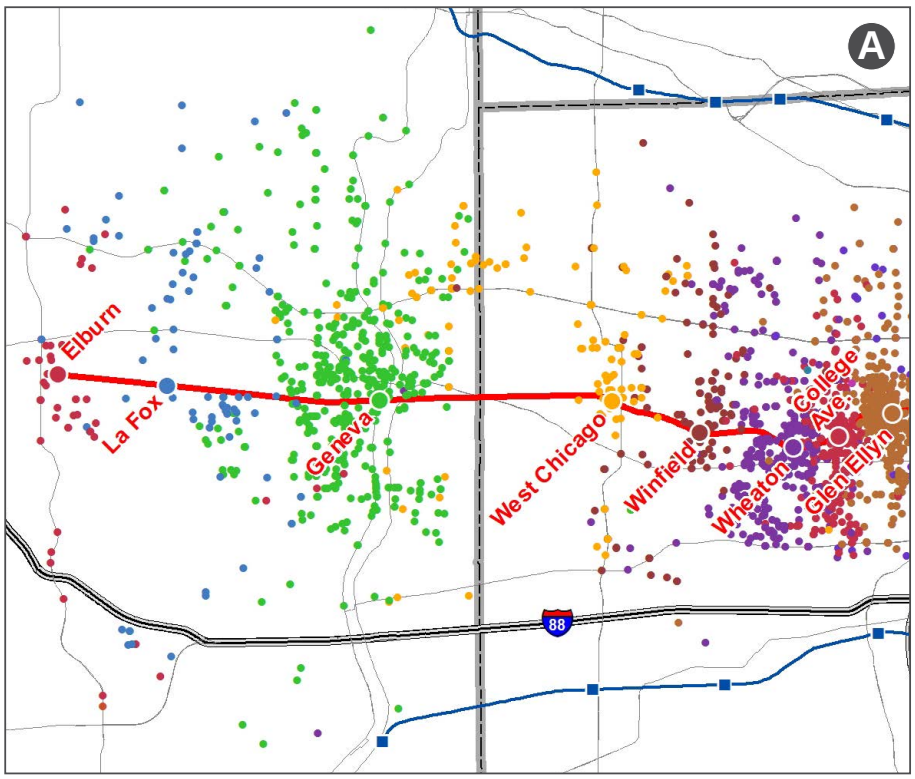
Elmhurst
River Forest
West Chicago
Wheaton

improvements allow commuter and freight traffic to safely operate past a station when a commuter train is stopped there. In addition, a pedestrian underpass at Lombard was completed in 2015 in conjunction with a station rehabilitation project, eliminating the mid-platform pedestrian crossing at the station.

In 2014, crews completed projects to improve the connection between UP and Indiana Harbor Belt tracks near UP's Proviso freight yard in Melrose Park and to extend third main line track adjacent to the yard. These projects included the construction of new Berkeley and Bellwood stations and the addition of pedestrian underpasses at each station. The work was part of the Chicago Region Environmental and Transportation Efficiency (CREATE) Program, a set of 70 projects designed to reduce and remove passenger and freight train congestion in the Chicago area.

In 2014, UP and Metra shared the cost to add crossovers at Lombard and Wheaton. Previously, a lack of crossovers between Elmhurst and West Chicago meant that trains in this 15-mile segment could not change tracks, reducing the utility and flexibility of this portion of the line. The new crossovers allow commuter trains to bypass slower-moving freight trains, and minimize delays during track repairs. Adding the crossover at Wheaton

FIGURE 2A: ORIGINS OF RIDERS USING NON-CBD UP-W STATIONS

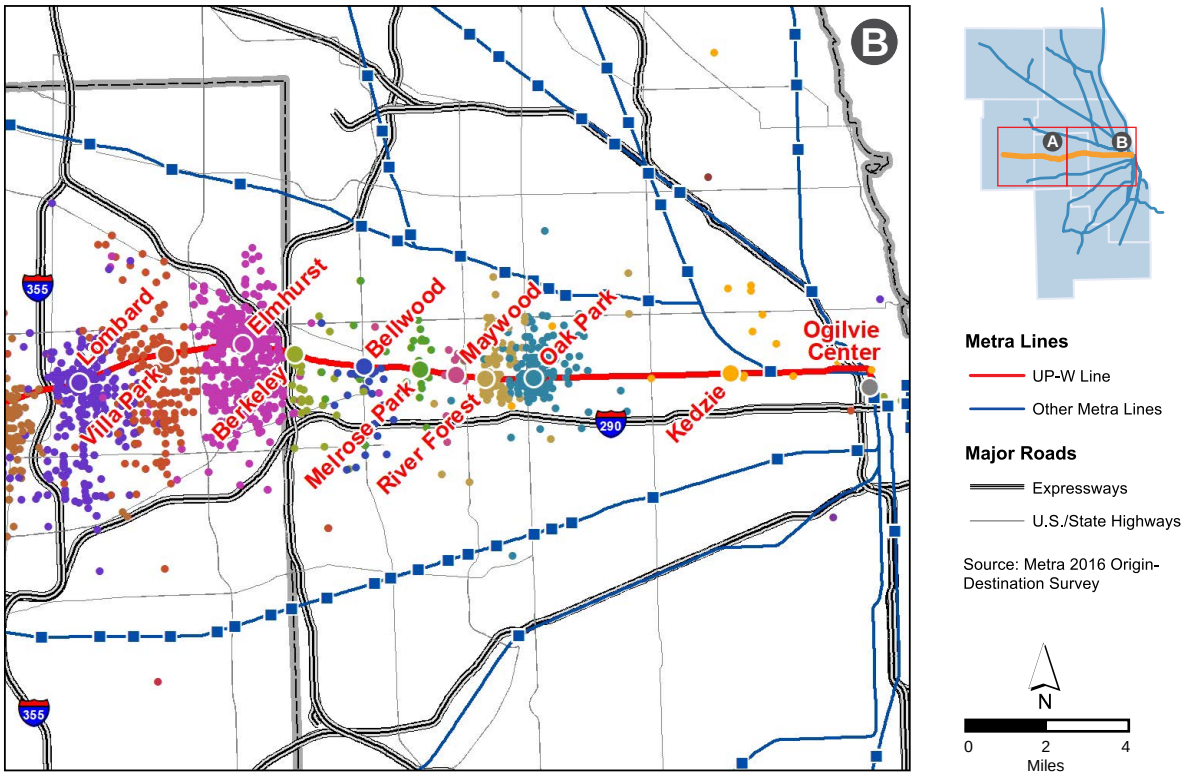


necessitated the closure of the Chase Street grade crossing near Wheaton College, and a pedestrian underpass at this location was completed in 2014.

At Geneva, the addition of a third level to the existing two-level commuter parking structure was completed in 2015, increasing the deck's capacity by 180 spaces. Some of these additional spaces will be needed to offset surface parking lost due to the extension of the third main line through Geneva, which will be funded through the Metra/UP PPP. (The PPP is discussed further in the "Proposed Line Improvements" section in this chapter.)

Most UP-W stations now comply with the accessibility requirements of the Americans with Disabilities Act (ADA), and approximately 98% of UP-W weekday boardings take place at these accessible stations. Metra's station compliance program started with designating seven of the busiest UP-W stations, including OTC in downtown Chicago, as "key stations", all of which were made fully accessible by 2007. Since 1985, Metra has completed access improvements at a number of non-downtown UP-W stations, and 14 outlying stations on the line are fully accessible to disabled riders. Metra will bring the remaining stations into full ADA compliance as they are rehabilitated, so that eventually all will be accessible.

FIGURE 2B: ORIGINS OF RIDERS USING NON-CBD UP-W STATIONS



PRESENT AND FUTURE DEMAND

In 2016, nearly 27,400 boardings took place each weekday on the UP-W, with 82% of boardings occurring on peak-period, peak-direction trains. On the UP-W, ridership has increased 23% since 1983 (see Table 1c). Ridership gains are most significant at stations near the eastern and western ends of the line, while ridership has decreased at eight of the ten stations between Maywood and Wheaton. This decrease could be attributed to the expanding suburban job market, with many workers shifting from the Central Business District (CBD) to suburb-to-suburb commutes.

At the three westernmost stations built before 2005 (Winfield, West Chicago, and Geneva) boardings increased 73% between 1983 and 2014, which reflects the population and employment growth that has taken place in this area. Ridership increased 185% in the same time period at the Oak Park and River Forest Stations, an example of the significant ridership growth that has been experienced at many of Metra's stations close to the CBD. Overall passenger ridership on the UP-W totaled 8.3 million in 2017.

Currently, approximately 8,000 parking spaces serve UP-W riders. According to parking counts conducted in 2017, the average rate of utilization at all stations on the line is 86%. At nine stations, effective parking utilization exceeds 85%, the threshold used by Metra to determine if a station is in need of additional parking.

A number of indicators suggest that demand for commuter rail service will continue to rise in the UP-W corridor, as shown in Tables 3, 4, and 5. The corridor has been growing rapidly in recent decades, and demographic forecasts anticipate continued growth in population and employment. The Chicago Metropolitan Agency for Planning (CMAP) forecasts that the UP-W corridor will attract nearly 160,000 new residents between 2010 and 2040, a 20% increase. Population growth is expected to be most significant near the outer end of the UP-W corridor in eastern Kane County. Population in Geneva's station marketshed is expected to increase 36% from 2010 to 2040 and population in the La Fox and Elburn marketsheds is expected to increase 35% during the same period (see Table 3).

Similarly, the greatest gains in suburban employment on the UP-W corridor, in terms of percentage and absolute numbers, are expected to occur in the marketsheds from Geneva west. CMAP forecasts a 242% increase in employment in the La Fox and Elburn marketsheds, with an addition of 17,200 jobs. Employment growth of 64%, representing over 35,000 jobs, is projected for the Geneva marketshed. Along the entire corridor, over 190,000 jobs are projected to be added, a 33% rise.

TABLE 3: UP-W CORRIDOR POPULATION

Station	Fare Zone	Area Sq. Mi.	Population in Zone			Percent Change	
			2000	2010	2040	2000 vs 2010	2010 vs 2040
Ogilvie Transportation Center, Kedzie	A	8.6	104,712	113,821	141,857	8.7%	24.6%
Oak Park, River Forest	B	10.8	110,781	104,823	114,666	-5.4%	9.4%
Maywood, Melrose Park, Bellwood, Berkeley	C	21.1	116,915	115,412	128,615	-1.3%	11.4%
Elmhurst, Villa Park, Lombard	D	33.5	122,435	124,565	155,888	1.7%	25.1%
Glen Ellyn, College Ave., Wheaton	E	30.9	124,603	125,482	139,934	0.7%	11.5%
Winfield, West Chicago	F	47.1	83,502	85,585	99,236	2.5%	16.0%
Geneva	H	51.7	78,484	90,799	123,625	15.7%	36.2%
La Fox, Elburn	I	216.0	29,955	44,987	60,832	50.2%	35.2%
UP-W TOTAL		**419.7**	**771,387**	**805,474**	**964,653**	**4.4%**	**19.8%**
REGION TOTAL		**3,748.0**	**8,091,717**	**8,456,762**	**11,717,936**	**4.5%**	**38.6%**

TABLE 4: UP-W CORRIDOR HOUSEHOLDS

Station	Fare Zone	Area Sq. Mi.	Households in Zone			Percent Change	
			2000	2010	2040	2000 vs 2010	2010 vs 2040
Ogilvie Transportation Center, Kedzie	A	8.6	36,834	47,780	55,642	29.7%	16.5%
Oak Park, River Forest	B	10.8	44,255	42,569	46,491	-3.8%	9.2%
Maywood, Melrose Park, Bellwood, Berkeley	C	21.1	38,010	37,336	40,686	-1.8%	9.0%
Elmhurst, Villa Park, Lombard	D	33.5	45,866	45,987	56,786	0.3%	23.5%
Glen Ellyn, College Ave., Wheaton	E	30.9	44,316	44,533	50,217	0.5%	12.8%
Winfield, West Chicago	F	47.1	26,022	26,916	31,751	3.4%	18.0%
Geneva	H	51.7	27,916	33,297	46,063	19.3%	38.3%
La Fox, Elburn	I	216.0	9,732	14,019	20,426	44.1%	45.7%
UP-W TOTAL		**419.7**	**272,951**	**292,437**	**348,062**	**7.1%**	**19.0%**
REGION TOTAL		**3,748.0**	**2,906,924**	**3,050,134**	**4,224,349**	**4.9%**	**38.5%**

TABLE 5: UP-W CORRIDOR EMPLOYMENT

Station	Fare Zone	Area Sq. Mi.	Employment in Zone			Percent Change	
			2000	2010	2040	2000 vs 2010	2010 vs 2040
Ogilvie Transporation Center, Kedzie	A	8.6	205,966	204,807	291,441	-0.6%	42.3%
Oak Park, River Forest	B	10.8	58,282	39,883	43,981	-31.6%	10.3%
Maywood, Melrose Park, Bellwood, Berkeley	C	21.1	102,738	53,753	70,919	-47.7%	31.9%
Elmhurst, Villa Park, Lombard	D	33.5	134,576	108,103	113,365	-19.7%	4.9%
Glen Ellyn, College Ave., Wheaton	E	30.9	65,199	68,893	77,433	5.7%	12.4%
Winfield, West Chicago	F	47.1	21,493	33,944	49,482	57.9%	45.8%
Geneva	H	51.7	58,442	56,037	91,719	-4.1%	63.7%
La Fox, Elburn	I	216.0	3,061	7,102	24,316	132.0%	242.4%
UP-W TOTAL		**419.7**	**649,757**	**572,522**	**762,656**	**-11.9%**	**33.2%**
REGION TOTAL		**3,748.0**	**4,340,215**	**3,786,224**	**5,267,696**	**-12.8%**	**39.1%**

REVERSE COMMUTE AND NON-DOWNTOWN MARKETS

Although Metra's primary market involves commuters who follow the traditional suburb-to-CBD trip pattern, in recent years Metra has seen a demand for city-to-suburb reverse-commute options (Metra's primary commuter market is discussed in the Central Business District Market chapter). The shift of employment to suburban locations has left many commuters with limited transit accessibility to jobs. Figure 3 shows AM alightings at non-CBD UP-W stations.

Factors that increase reverse-commute trip patterns are the growth of employment in the suburbs as well as the growth of population and households in the city and inner ring suburbs. Significant population and household growth is expected near the CBD and in western UP-W marketsheds, as shown in Tables 3 and 4. In terms of employment, CMAP projects the greatest employment growth to occur in UP-W marketsheds closest to the CBD and near the western end of the UP-W Line (see Table 5). This forecast suggests that some residents living in between may need to commute to job centers elsewhere in the UP-W corridor.

Boardings on UP-W AM peak-period outbound trains decreased by 14 percent between 2006 and 2016, whereas between 2006 and 2014, this market had been increasing by the same amount . The downward trend in reverse commute between 2014 and 2016 will likely switch back to a positive trend with projected employment growth in suburbs served by the UP-W. See Table 6 for a list of major trip generators accessible from the UP-W corridor, including large employers.

PROPOSED LINE IMPROVEMENTS

Two complementary projects are proposed for the UP-W Line in order to improve reliability of passenger and freight operations.

Metra and UP have each committed $45 million for the construction of two segments of new third main line track on the UP-W, from River Forest to Melrose Park, and from West Chicago to Geneva. This work is the final piece of the Metra/UP PPP, and will create continuous triple track from Chicago to Elburn and alleviate conflicts between freight and Metra trains. Construction on the River Forest-to-Melrose Park began in spring 2018 and construction for the West Chicago-to-Geneva portion is expected to start in Fall 2018.

A second set of improvements are required to work in conjunction with the PPP upgrades to facilitate service expansion on the UP-W. These improvements include relocating the A-2 crossing away from coach yard

entrances and upgrading the signal system from A-2 to River Forest. Adding station parking, lengthening platforms, and purchasing additional rolling stock would allow Metra to accommodate the increased ridership attracted by the service improvements.

FIGURE 3: AM ALIGHTINGS AT NON-CBD UP-W STATIONS

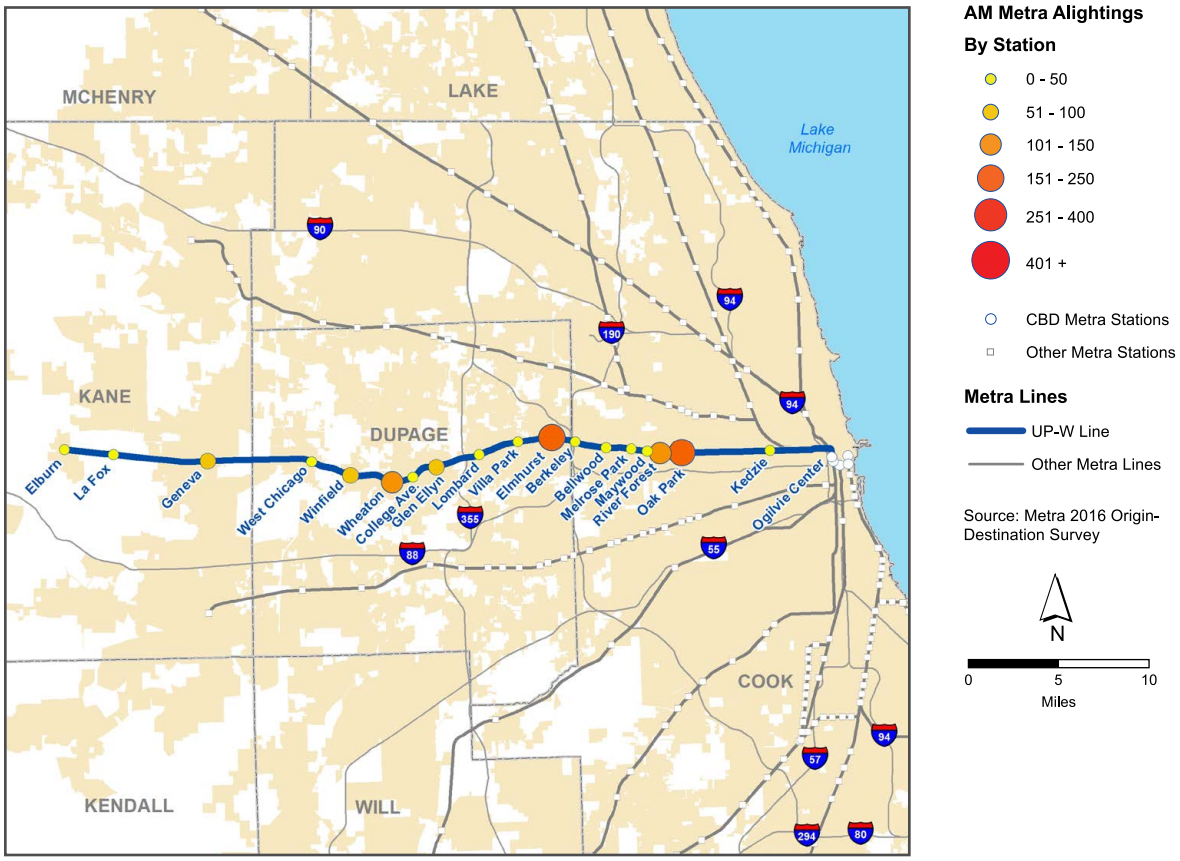


TABLE 6: MAJOR TRIP GENERATORS ACCESSIBLE FROM THE UP-W CORRIDOR

Generator Type	Name	Comments	Municipality
Colleges and Universities	Concordia University	5,600 students	River Forest
	Dominican University	3,500 students	River Forest
	Elmhurst College	3,400 students	Elmhurst
	National University of Health Sciences	700 students	Lombard
	College of DuPage	Community College; 31,000 students	Glen Ellyn
	DeVry University		Addison
	IIT - Rice Campus	Satellite campus of IIT	Wheaton
	Wheaton College	2,900 students	Wheaton
Culture and Entertainment	Frank Lloyd Wright Preservation Trust	World's largest collection of Wright structures; Hemingway's birthplace and museum	Oak Park
	Maywood Park	Half-mile oval horse track; cap. 33,300	Maywood
	Elmhurst Art Museum/Lizzadro Museum		Elmhurst
	DuPage County Fairgrounds	Hosts events throughout the year	Wheaton
	Kane County Fairgrounds	Hosts events throughout the year	Geneva
	Kane County Fairgrounds	Hosts several events throughout the year	Geneva
Shopping	Oakbrook Center	Super-regional mall	Oak Brook
	Yorktown Center	Super-regional mall	Lombard
	Stratford Square Mall	Super-regional mall	Bloomingdale
Government	DuPage County Govt. Complex	Includes administrative and judicial offices, jail, and convalescent center	Winfield
	Kane County Government Center	County administrative offices	Geneva
Hospitals	Norwegian American Hospital	200 beds; 800 employees	Chicago
	Rush Oak Park Hospital	128 beds; 900 employees	Oak Park
	Loyola University Medical Center/Health Sciences campus		Maywood
	Edward Hines Jr. VA Hospital	483 beds	Hines
	Gottlieb Memorial Hospital	214 beds	Melrose Park
	Westlake Hospital	158 beds	Melrose Park
	Kindred Hospital	244 beds	Northlake
	Elmhurst Memorial Hospital	427 beds; 3,000 employees	Elmhurst
	Central DuPage Hospital	395 beds	Winfield
Large Private Employers	Navistar	Commercial truck manufacturer	Melrose Park
	Jel Sert	Beverages and other food products	West Chicago

Pedestrian diversion at Geneva Station, one of the pedestrian safety improvements installed at UP-W stations as part of a Metra/Union Pacific public-private partnership

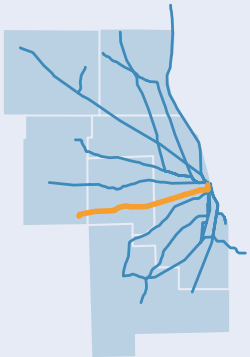
Western Springs Station

BNSF RAILWAY LINE

EXISTING SERVICE AND CONDITIONS

Metra's BNSF Railway (BNSF) Line extends west from Chicago Union Station (CUS, or "Union Station") to the Aurora Transportation Center, serving portions of Cook, DuPage, and Kane Counties (see Figure 1). In addition to CUS, the BNSF Line provides service to 25 stations along its nearly 38-mile route. In 2017, passenger trips on the BNSF totaled 16.2 million, the highest ridership of any line in the Metra system (based on ticket sales).

The BNSF Line has the region's most efficient track and signal infrastructure, with three tracks throughout its length, high-speed track crossovers every four miles, and the ability to operate in either direction on any track. As a result, BNSF commuter service operates frequent, high-speed peak-period express trains with a zone-type schedule between most stations and downtown Chicago. This infrastructure also provides the ability to efficiently recycle trains for additional peak-period trips, thus making very effective use of its trains and personnel. The high-density commuter operation shares the tracks with a high-volume freight service and eight daily Amtrak trains. Although subsidized by Metra since 1984, the line is owned by BNSF and is operated by its own employees under a purchase of service agreement with Metra. Naperville Station, LaGrange Road Station, and CUS are also served by Amtrak. Metra and the West Suburban Mass Transit District own the passenger coaches serving the BNSF, and Metra owns the revenue-service locomotives. Daytime train storage and servicing takes place at 14th Street Yard, south of CUS, and rolling stock is stored overnight at Hill Yard, immediately east of the Aurora Transportation Center. Table 1 details the service, station, and ridership characteristics of the BNSF Line.



The Chicago, Burlington & Quincy Railroad (CB&Q), a predecessor of BNSF, began suburban passenger service on this line in the 1860s. By 1895, the CB&Q boasted of a 43-minute running time between Downers Grove and downtown Chicago. Modernization in the form of a fully dieselized locomotive fleet and stainless steel bi-level passenger coaches came in the early 1950s. In 1970, the CB&Q joined with the Great Northern and Northern Pacific Railroads to form the Burlington Northern Railroad. A merger with the Atchison, Topeka & Santa Fe Railroad in 1995 created BNSF. In 2010, Berkshire Hathaway Inc. acquired all outstanding stock in the Burlington Northern Santa Fe Corporation, the parent company of BNSF.

The BNSF Line serves the rapidly growing communities within the Illinois Technology and Research Corridor along I-88 in southern DuPage County. Rapid residential, commercial, and industrial development in the corridor, particularly in the Naperville-Aurora area, has transformed Route 59 and Naperville into Metra's top two outlying stations in terms of total weekday boardings. In the past 25 years, almost all ridership growth at outlying BNSF stations has occurred from Main Street/Downers Grove to Aurora, on the outer, western portion of the corridor.

2017 Average trip length:
23.4 miles

2017 Average fare paid:
$4.69

Source: Ridership Trends Report, Dec. 2017

Number of stations:
26

Route length:
37.5 miles

Number of weekday trains (May 2018):
94

2017 On-time performance*:
94.5%

** On-time Performance Report, Dec. 2017*

FIGURE 1: METRA STATIONS ON THE BNSF LINE

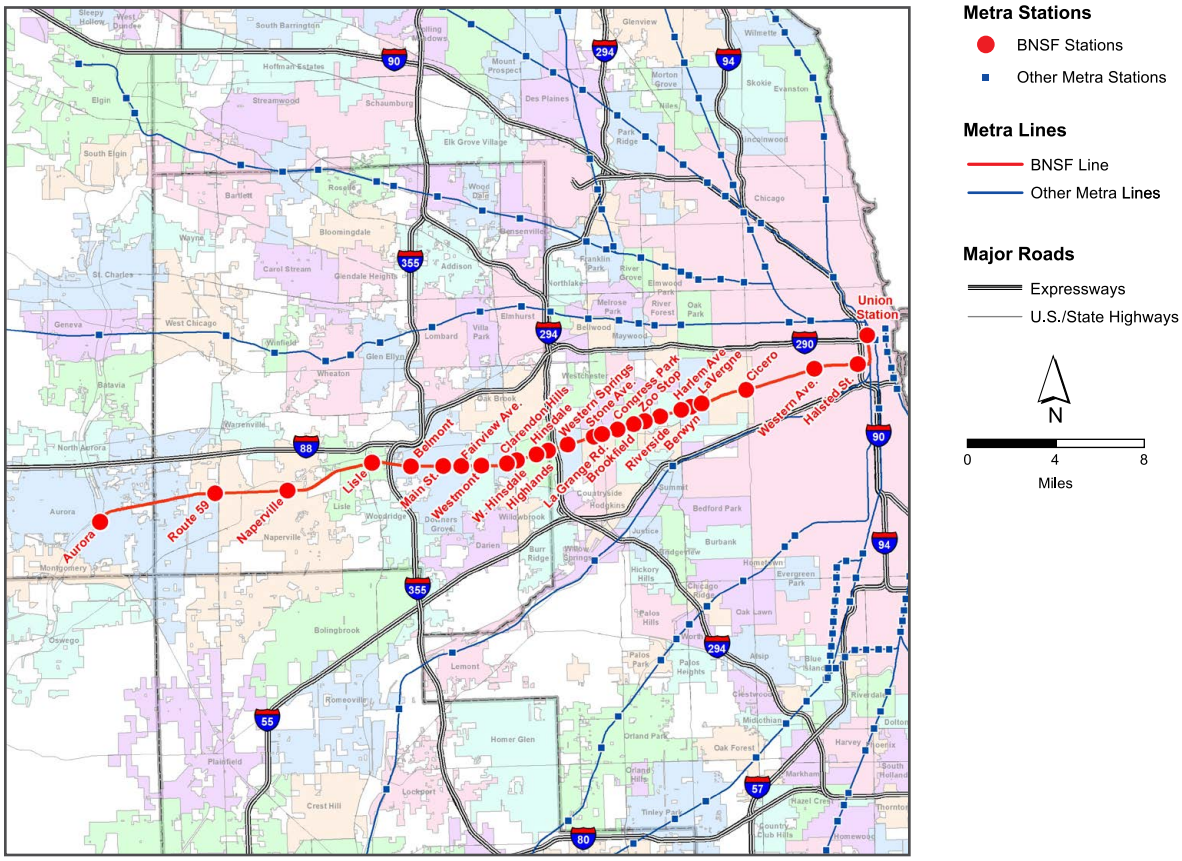
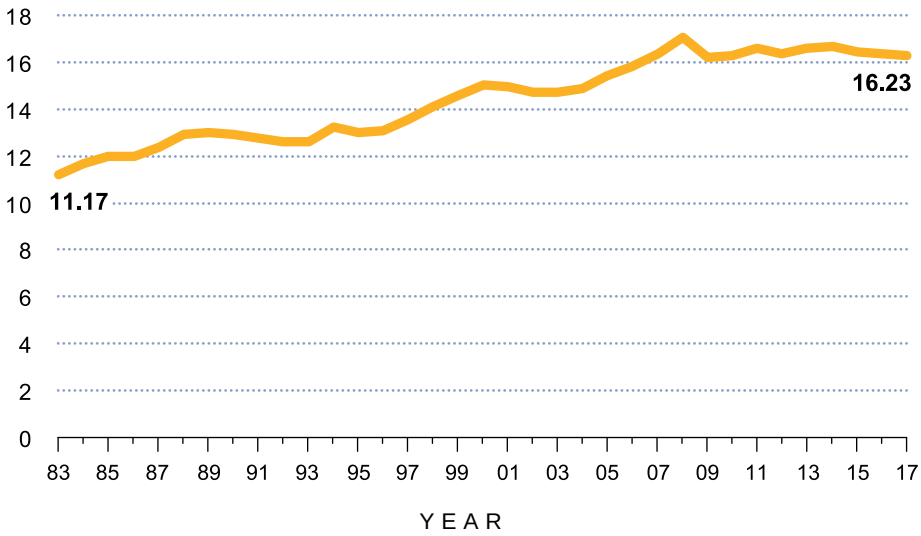


TABLE 1A: 2016 BNSF WEEKDAY BOARDINGS

Time of Day	Inbound	Outbound
AM Peak	23,837	805
Midday	1,764	3,016
PM Peak	1,329	20,725
Evening	331	2,944
TOTAL	**27,261**	**27,490**

Source: Metra Weekday Station Boardings and Alightings by Time-of-Day and Direction, 2016

TABLE 1B: BNSF ANNUAL PASSENGER TRIPS
1983 — 2017, in millions



Note: from 2008, figures include free Circuit Permit trips. 2008-2011 figures include free senior trips; this program ended September 2011.

TABLE 1C: BNSF STATION CHARACTERISTICS

Station	Fare Zone	Mile Post	Accessibility[1]	Boardings		Station Parking (2017)			Time to Chicago (minutes)[1]	
				1983[2]	2016[3]	Capacity (Spaces)[4]	Effective Use[5]	Observed Use[6]	Shortest Trip	Longest Trip
Union Station	A	0.0	Full	18,545	26,615	0	n/a	n/a	--	--
Halsted St.	A	1.8	None	36	120	0	n/a	n/a	4	14
Western Ave.	A	3.8	None	116	69	0	n/a	n/a	8	21
Cicero	B	7.0	Full	276	185	308	23%	23%	11	29
LaVergne	B	9.1	Full	235	187	172	87%	37%	15	24
Berwyn	B	9.6	Full	852	632	534	87%	71%	15	33
Harlem Ave.	B	10.1	Full	680	421	156	84%	31%	17	36
Riverside	C	11.1	Partial	531	499	230	93%	59%	19	36
Hollywood (Zoo Stop)	C	11.8	Full	152	120	49	100%	80%	24	37
Brookfield	C	12.3	Partial	708	572	240	93%	60%	22	39
Congress Park	C	13.1	None	129	290	93	87%	73%	18	35
LaGrange Rd.	C	13.8	Full	1,496	1,340	402	100%	81%	18	42
Stone Ave./LaGrange	C	14.2	Full	1,017	1,046	443	100%	79%	23	44
Western Springs	D	15.5	Full	1,022	1,133	423	97%	80%	22	46
Highlands	D	16.4	Full	210	203	81	89%	80%	29	44
Hinsdale	D	16.9	Full	1,155	1,160	325	99%	95%	20	49
West Hinsdale	D	17.8	Partial	338	376	156	96%	61%	25	51
Clarendon Hills	D	18.3	Partial	1,078	806	361	96%	77%	26	53
Westmont	D	19.5	Full	1,305	1,058	543	92%	75%	25	56
Fairview Ave.	E	20.4	Partial	598	458	279	84%	68%	31	58
Main St./Downers Grove	E	21.2	Full	1,830	2,376	889	93%	89%	23	60
Belmont	E	22.6	Full	1,204	1,472	880	99%	90%	27	63
Lisle	E	24.5	Full	2,330	1,789	738	100%	83%	31	67
Naperville	F	28.5	Full	2,571	4,107	1,478	96%	94%	32	72
Route 59[7]	G	31.6	Full	--	5,781	4,622	88%	79%	40	78
Aurora	H	37.5	Full	834	1,936	1,624	85%	73%	51	89
TOTAL BNSF				**39,248**	**54,751**	**15,026**	**90%**	**78%**		

[1] BNSF Line Schedule

[2] Metra's 1983 Boarding/Alighting Counts

[3] Metra, "Commuter Rail System Station Boarding/Alighting Counts," Spring 2016

[4] Metra Station Parking Capacity and Use, 2017

[5] Effective use: all sold permit spaces are assumed to be used, even if unoccupied during parking survey

[6] Observed use: spaces physically occupied during parking survey

[7] Station opened in 1989

TABLE 1D: MODE OF ACCESS AT BNSF METRA STATIONS

Station Name	Walk/Bike	Drive/Carpool Driver	Carpool Passenger/ Dropped Off	Transit	Other
Union Station[1]	42%	3%	7%	32%	16%
Halsted St.[2]	57%	0%	0%	29%	14%
Western Ave.	38%	8%	12%	35%	8%
Cicero	26%	49%	9%	15%	0%
LaVergne	39%	34%	24%	0%	3%
Berwyn	45%	38%	13%	3%	0%
Harlem Ave.	62%	24%	11%	3%	1%
Riverside	62%	28%	10%	0%	0%
Hollywood (Zoo Stop)	87%	10%	3%	0%	0%
Brookfield	53%	34%	13%	0%	0%
Congress Park	57%	31%	11%	0%	0%
LaGrange Rd.	45%	36%	16%	2%	1%
Stone Ave./LaGrange	49%	33%	17%	0%	1%
Western Springs	39%	40%	19%	2%	1%
Highlands	49%	37%	13%	0%	0%
Hinsdale	27%	38%	31%	2%	2%
West Hinsdale	47%	43%	10%	0%	0%
Clarendon Hills	38%	38%	18%	5%	1%
Westmont	21%	48%	22%	9%	1%
Fairview Ave.	35%	54%	10%	0%	1%
Main St./Downers Grove	27%	43%	23%	7%	1%
Belmont	9%	70%	15%	5%	1%
Lisle	13%	52%	25%	8%	2%
Naperville	13%	50%	22%	11%	3%
Route 59	9%	71%	14%	5%	1%
Aurora	4%	75%	17%	2%	2%
TOTAL BNSF[3]	**23%**	**52%**	**18%**	**5%**	**1%**
SYSTEM TOTAL	**26%**	**53%**	**16%**	**4%**	**1%**

[1] Includes riders boarding on all Metra lines departing from station

[2] Data not statistically significant due to number of survey responses received

[3] Line total does not include downtown terminal

Source: Metra, Fall 2016 Origin-Destination Survey

TABLE 2: METRA CAPITAL INVESTMENT HISTORY
1985 — December 2017, in millions of dollars

Asset	BNSF	System
Rolling stock	$428	$2,757
Track and structure	135	1,432
Signal, electrical, and mechanical	119	1,002
Facilities and equipment	60	613
Stations and parking	72	1,055
Acquisitions, extensions, and expansions	8	599
Support activities	33	395
TOTAL	**$855**	**$7,854**
PERCENTAGE	**10.9%**	**100.0%**

Notes: 1) Excludes South Shore, preventative maintenance, new lines, and pending grants. 2) Prior expenses are not adjusted for subsequent inflation. 3) Data is subject to budget revisions, audit adjustments, etc. at any time. 4) For many projects, work locations and associated costs have not been identified, so budget amounts are allocated among lines by various criteria. Better, more specific cost information is continually sought to improve data applicability; this will adjust the line-by-line results.

IMPROVEMENTS SINCE THE START OF METRA

Since 1985, Metra has invested $855 million (in year of expenditure dollars) in improvements to the BNSF corridor, as shown in Table 2. Metra has completed improvements at a number of BNSF stations since 1985 (see right). Grade separation of the BNSF tracks from Belmont Avenue in Downers Grove was completed in 2012, improving traffic flow and increasing safety at this busy crossing. This project also included platform improvements and the addition of a pedestrian underpass at the Belmont Station. A major renovation of Cicero Station, including new shelters and platforms and a new Americans with Disabilities Act (ADA)-compliant access ramp, was completed in 2014. Replacement of switches and heaters as well as several bridge repair or replacement projects have also been completed on the BNSF.

Most BNSF stations now comply with ADA accessibility requirements, and approximately 94% of BNSF weekday boardings take place at these accessible stations. Metra's station compliance program started with designating seven of the busiest BNSF stations, including CUS in downtown Chicago, as "key stations", all of which were made fully accessible by 2004. Since 1985, Metra has completed access improvements at numerous non-downtown BNSF stations, and 17 outlying stations on the line are now fully accessible to disabled riders. Metra will bring the remaining stations into full ADA compliance as they are rehabilitated, so that eventually all will be accessible.

Depots and warming houses constructed since 1985 at:

Belmont
Cicero
Route 59 (new station)
Western Springs

Other significant improvements completed since 1985 at:

Aurora
Berwyn
LaGrange Road
LaVergne
Naperville
Main Street/Downers Grove
Stone Avenue/LaGrange

Station improvements planned for:

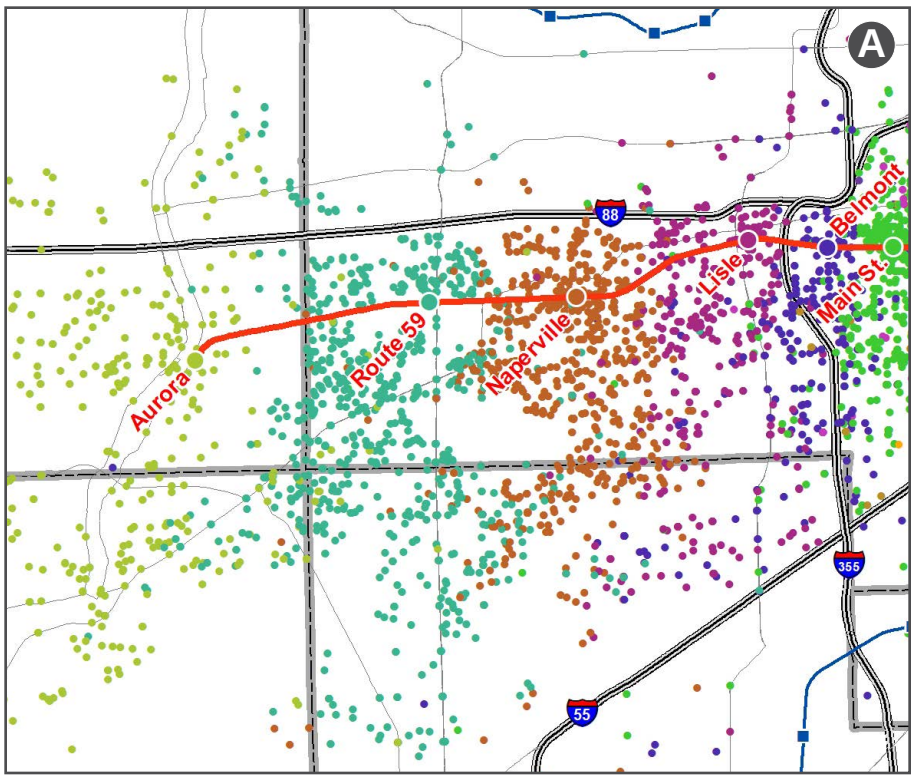
Aurora
Chicago Union Station
Stone Avenue/LaGrange
Westmont

Over the years, Metra has partnered with Amtrak, owner of CUS, to complete a number of upgrades to the terminal's commuter facilities. For more information on proposed CUS improvements, see the CBD chapter of this report.

PRESENT AND FUTURE DEMAND

In number of weekday boardings at all non-downtown Chicago Metra stations, the top two stations and four of the top ten stations in Metra's system are located on the BNSF Line. Close to 55,000 boardings took place each weekday on BNSF trains in 2016, with 81% of boardings occurring on peak-period, peak-direction trains. Ridership on the rail line has increased 39% since 1983 (see Table 1c). Almost all ridership growth on the BNSF Line during this time occurred at the six outermost stations (Main Street/Downers Grove to Aurora) with the exception of Lisle, increasing by 108% from 1983 to 2016. Riders at these stations—which accounted for 56% of all weekday BNSF boardings outside the Central Business District (CBD) in 2016—are served by a number of express trains that travel non-stop between CUS and Main Street/Downers Grove. Ridership at the remaining outlying stations,

FIGURE 2A: ORIGINS OF RIDERS USING NON-CBD BNSF STATIONS

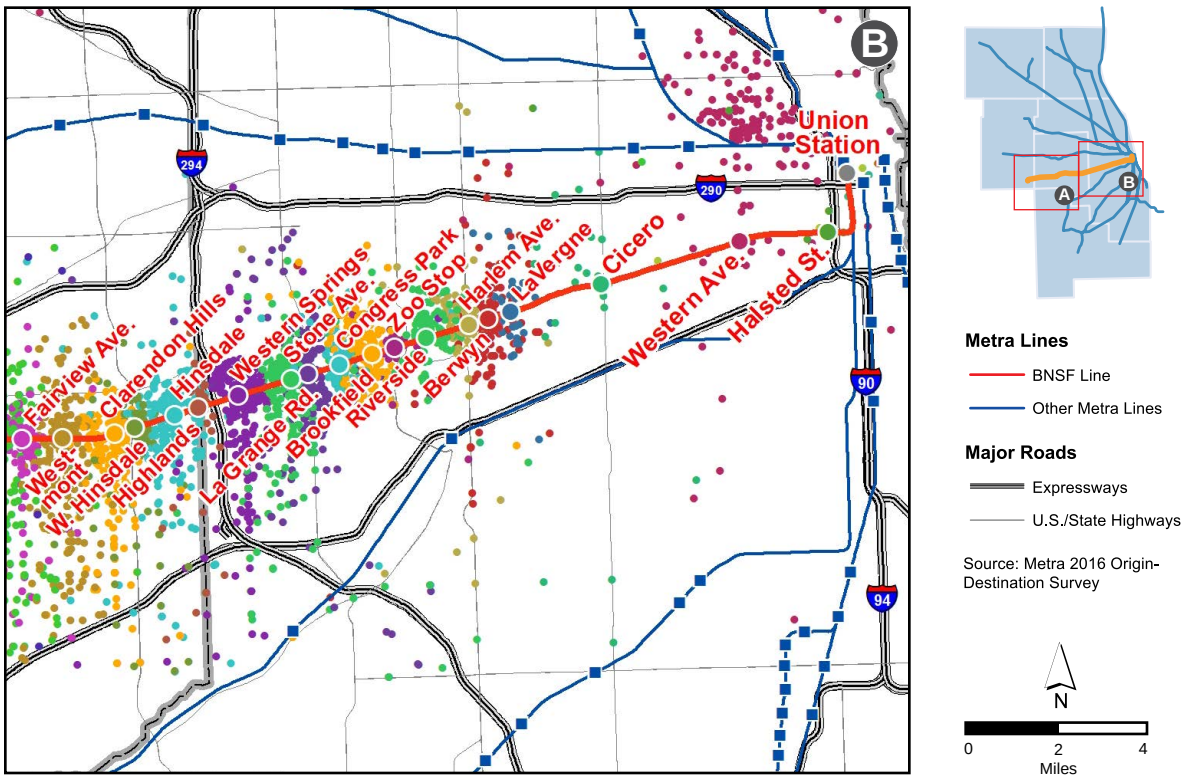


combined, fell by 13% from 1983 to 2016. Figure 2 shows the origins of BNSF riders who board at non-CBD stations. Overall passenger ridership on the BNSF Line totaled 16.2 million in 2017.

The parking utilization rate at BNSF stations is the highest of all Metra lines, with 90% effective occupancy of the more than 15,000 total parking spaces counted in 2017 (see Table 1c). Metra considers station parking areas over 85% occupied to be approaching full capacity and in need of expansion, and 19 of the 23 BNSF stations with parking facilities meet this standard. Four stations have an effective utilization rate of 100% (although observed parking utilization at these stations is much lower, indicating that many permit spaces are unoccupied). Though demand for parking at BNSF stations is expected to increase due to anticipated residential growth in the corridor, a lack of available commuter parking along the line could threaten further ridership growth.

A number of indicators suggest that demand for commuter rail service will continue to rise in the BNSF corridor. The corridor has been growing in recent decades, and demographic forecasts anticipate continued growth in population and employment, particularly in the area from Downers Grove to Aurora.

FIGURE 2B: ORIGINS OF RIDERS USING NON-CBD BNSF STATIONS



As shown in Tables 3, 4, and 5, almost all station marketsheds on the BNSF Line are forecasted to see increases in population, households, and employment by 2040. Chicago Metropolitan Agency for Planning (CMAP) forecasts that the BNSF corridor will attract 338,000 new residents between 2010 and 2040, a 28% increase (see Table 3). The corridor is forecast to attract nearly 200,000 new jobs, a 36% increase (see Table 5). Reflecting the ridership trends noted above, much of the anticipated population growth is expected in the outer areas of the corridor. The population of BNSF corridor

TABLE 3: BNSF CORRIDOR POPULATION

Station	Fare Zone	Area Sq. Mi.	Population in Zone			Percent Change	
			2000	2010	2040	2000 vs 2010	2010 vs 2040
Union Station, Halsted St., Western Ave.	A	12.2	189,076	186,896	224,876	-1.2%	20.3%
Cicero, LaVergne, Berwyn, Harlem Ave.	B	24.2	258,042	252,332	286,192	-2.2%	13.4%
Riverside, Hollywood (Zoo Stop), Brookfield, Congress Park, LaGrange Rd., Stone Ave./LaGrange	C	18.8	81,781	82,712	86,898	1.1%	5.1%
Western Springs, Highlands, Hinsdale, West Hinsdale, Clarendon Hills, Westmont	D	33.2	100,863	101,470	120,643	0.6%	18.9%
Fairview Ave., Main St./Downers Grove, Belmont, Lisle	E	44.0	133,446	131,862	182,826	-1.2%	38.6%
Naperville	F	39.1	110,475	120,210	168,890	8.8%	40.5%
Route 59	G	45.4	82,369	111,502	149,269	35.4%	33.9%
Aurora	H	80.9	143,462	204,119	309,129	42.3%	51.4%
BNSF TOTAL		**297.8**	**1,099,514**	**1,191,103**	**1,528,723**	**8.3%**	**28.3%**
REGION TOTAL		**3,765.0**	**7,261,074**	**8,091,516**	**10,033,858**	**11.4%**	**24.0%**

TABLE 4: BNSF CORRIDOR HOUSEHOLDS

Station	Fare Zone	Area Sq. Mi.	Households in Zone			Percent Change	
			2000	2010	2040	2000 vs 2010	2010 vs 2040
Union Station, Halsted St., Western Ave.	A	12.2	52,008	52,863	64,054	1.6%	21.2%
Cicero, LaVergne, Berwyn, Harlem Ave.	B	24.2	77,234	74,019	81,179	-4.2%	9.7%
Riverside, Hollywood (Zoo Stop), Brookfield, Congress Park, LaGrange Rd., Stone Ave./LaGrange	C	18.8	32,639	32,237	34,354	-1.2%	6.6%
Western Springs, Highlands, Hinsdale, West Hinsdale, Clarendon Hills, Westmont	D	33.2	38,264	38,806	46,407	1.4%	19.6%
Fairview Ave., Main St./Downers Grove, Belmont, Lisle	E	44.0	51,581	52,649	69,134	2.1%	31.3%
Naperville	F	39.1	37,404	40,712	57,323	8.8%	40.8%
Route 59	G	45.4	29,380	39,345	52,692	33.9%	33.9%
Aurora	H	80.9	46,205	62,591	102,125	35.5%	63.2%
BNSF TOTAL		**297.8**	**364,715**	**393,222**	**507,268**	**7.8%**	**29.0%**
REGION TOTAL		**3,765.0**	**2,620,271**	**2,906,983**	**3,627,412**	**10.9%**	**24.8%**

TABLE 5: BNSF CORRIDOR EMPLOYMENT

Station	Fare Zone	Area Sq. Mi.	Employment in Zone			Percent Change	
			2000	2010	2040	2000 vs 2010	2010 vs 2040
Union Station, Halsted St., Western Ave.	A	12.2	95,643	101,279	116,942	5.9%	15.5%
Cicero, LaVergne, Berwyn, Harlem Ave.	B	24.2	73,033	59,463	77,232	-18.6%	29.9%
Riverside, Hollywood (Zoo Stop), Brookfield, Congress Park, LaGrange Rd., Stone Ave./LaGrange	C	18.8	43,953	41,003	43,727	-6.7%	6.6%
Western Springs, Highlands, Hinsdale, West Hinsdale, Clarendon Hills, Westmont	D	33.2	104,679	90,511	87,046	-13.5%	-3.8%
Fairview Ave., Main St./Downers Grove, Belmont, Lisle	E	44.0	76,141	91,976	118,402	20.8%	28.7%
Naperville	F	39.1	56,762	60,406	65,850	6.4%	9.0%
Route 59	G	45.4	39,172	54,997	128,929	40.4%	134.4%
Aurora	H	80.9	79,467	50,677	110,530	-36.2%	118.1%
BNSF TOTAL		**297.8**	**568,850**	**550,312**	**748,658**	**-3.3%**	**36.0%**
REGION TOTAL		**3,765.0**	**3,845,085**	**4,323,689**	**5,563,780**	**12.4%**	**28.7%**

Depot and historic water tower in downtown Riverside

marketsheds from Downers Grove to Aurora (Fairview Avenue Station to Aurora Station) is projected to grow from 568,000 in 2010 to 810,000 in 2040. The projected population increase along this portion of the corridor accounts for 72% of the projected population growth along the entire BNSF corridor. It is essential that Metra and other public transportation services work to meet the demand related to continued population and employment growth along this corridor to prevent worsening roadway congestion.

REVERSE COMMUTE AND NON-DOWNTOWN MARKETS

Although Metra's primary market involves commuters who follow the traditional suburb-to-CBD trip pattern, in recent years Metra has seen a demand for city-to-suburb reverse-commute options (Metra's primary commuter market is discussed in the Central Business District Market chapter). According to Metra's 2016 Boarding and Alighting Counts, only 3.3% of BNSF AM peak boardings follow the reverse-commute pattern, far below the system average of 6.2%. However, in absolute number of reverse commuters, the BNSF ranks third among all 11 Metra lines.

Close to two-thirds of AM peak alightings at non-CBD BNSF stations take place at the six stations at the western end of the line, from Downers Grove, Main St. to Aurora. The three reverse-commute express trains serving these stations, nearby job growth, and Pace service connecting Metra stations to local employers, likely accounts for this phenomenon. In spring 2015, Shuttle Bug service – specialized Pace service with quick connections between Metra and large employers – was initiated for the first time on the BNSF connecting the Belmont Station with the Esplanade office complex. Three additional reverse-commute trains run express to Hinsdale, helping attract another 12% of AM non-CBD alightings to this station. Figure 3 shows AM alightings at non-CBD BNSF stations.

Demographic factors that indicate future potential for increased reverse commuting are projected growth of population and households in the city and inner ring suburbs, as well as projected growth of employment in the suburbs. Significant population and household growth is expected near the CBD, as shown in Tables 3 and 4. Meanwhile, Table 5 shows that employment along the entire BNSF corridor is expected to grow 36% between 2010 and 2040. Substantial job growth is expected in station market areas located in southwest DuPage County and southeast Kane County. According to CMAP projections, employment within the BNSF corridor from Downers Grove to Aurora (Fairview Avenue Station to Aurora Station) is projected to grow from 258,000 jobs in 2010 to 424,000 in 2040. The projected employment growth along this portion of the corridor accounts for 84% of the projected

employment growth along the entire BNSF corridor. Major trip generators along the BNSF, including large employers, are shown in Table 6.

PROPOSED LINE IMPROVEMENTS

Environmental Analysis and Preliminary Engineering is currently underway on a proposed extension of the BNSF Line west from Aurora through Montgomery, Oswego, and Yorkville, and potentially to Plano and Sandwich. The project would extend Metra service outside of the Regional Transportation Authority (RTA) six-county area, so planning efforts must include the establishment of a stable funding source for operating and maintenance expenses incurred outside of the RTA region.

FIGURE 3: AM ALIGHTINGS AT NON-CBD BNSF STATIONS

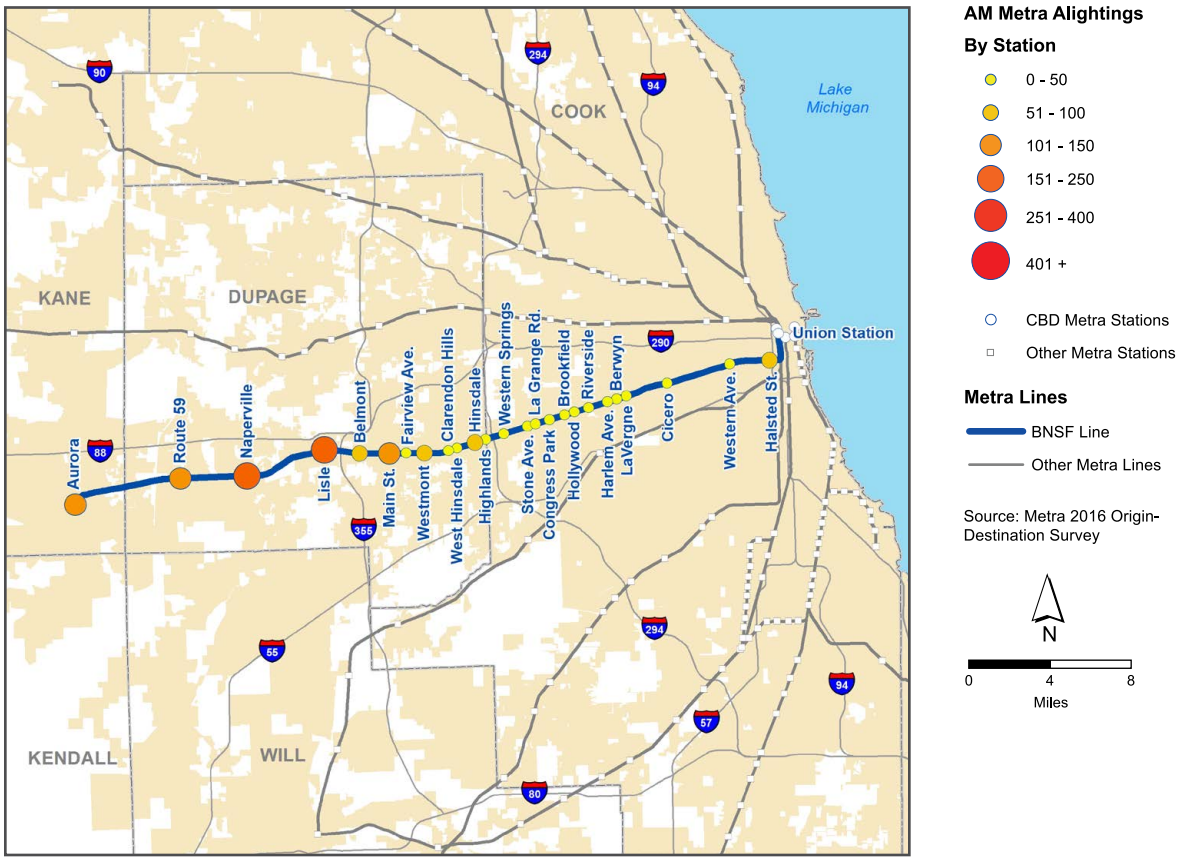


TABLE 6: MAJOR TRIP GENERATORS ACCESSIBLE FROM BNSF CORRIDOR

Generator Type	Name	Comments	Municipality
Airports	Midway Airport	Commercial aviation; second-busiest airport in Illinois	Chicago
Colleges and Universities	University of Illinois at Chicago	24,000 students	Chicago
	Morton College	5,000 students	Cicero
	Midwestern University	1,900 students	Downers Grove
	Illinois Benedictine University	5,300 students	Lisle
	North Central College	2,600 students	Naperville
	Aurora University	4,000 students	Aurora
	Illinois Math & Science Academy	Three-year residential public high school	Aurora
Culture and Entertainment	Brookfield Zoo	200-acre zoo with 450 animal species	Brookfield
	DuPage Children's Museum	Children's museum; 300,000 visitors annually	Naperville
	Naper Settlement	19th-century living history museum	Naperville
	Hollywood Casino Aurora	Riverboat casino	Aurora
	Paramount Theater	Performing arts venue	Aurora
	RiverEdge Park	Outdoor concert venue	Aurora
Shopping	Chicago Premium Outlets	Over 150 stores	Aurora
	Fox Valley Mall	Super-regional mall	Aurora
Government	Cook County Criminal Courts	Hosts felony trials	Chicago
	Cook County Juvenile Court	Courtrooms and juvenile temporary detention center	Chicago
	Argonne National Laboratory	Science and engineering research center; 3,200 employees, plus scholars and students	Argonne
Hospitals	Mount Sinai Hospital	291 beds	Chicago
	St. Anthony Hospital	151 beds	Chicago
	MacNeal Hospital	320 beds	Berwyn
	Edward Hines Jr. VA Hospital	483 beds	Hines
	Loyola University Medical Center/Health Sciences campus		Maywood
	Adventist Hinsdale Hospital	261 beds	Hinsdale
	Advocate Good Samaritan Hospital	324 beds	Downers Grove
	Edward Hospital - Main Campus	298 beds	Naperville
	Presence Mercy Medical Center	292 beds	Aurora
Large Private Employers	Esplanade at Locust Point	3M sq. ft. of office space on 80 acres	Downers Grove
	GCA Services Group	Maintenance and janitorial services	Downers Grove
	Navistar	Corporate HQ of commercial truck manufacturer	Lisle
	Nokia	Telecommunications service provider	Naperville
	LTD Commodities	Catalog fulfillment company	Aurora
	LTD Commodities	Catalog fulfillment company; 1,200 employees	Aurora

Photo: Mark Llanuza

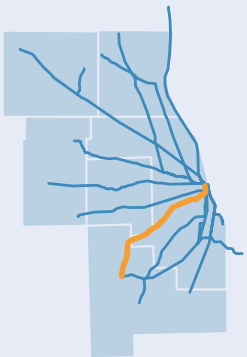
Metra train at Lemont Station. The HC Lemont and Lockport depots were built in the 1860s, and are the two oldest station buildings in Metra's system.

Photo: Mark Llanuza

HERITAGE CORRIDOR LINE

EXISTING SERVICE AND CONDITIONS

Metra's Heritage Corridor (HC) Line extends southwest from Chicago Union Station (CUS, or "Union Station") in downtown Chicago to Joliet. The line serves portions of Cook and Will Counties with service to five intermediate stations along its 37-mile route (see Figure 1). The HC is Metra's smallest line in terms of train service, number of stations, and ridership (with 727,000 trips in 2017, based on ticket sales).



Commuter service on the line was operated by Illinois Central Gulf and its predecessors until 1987, when Metra assumed operation under a trackage rights agreement and gave the service its present name. Currently, Metra operates HC trains on track owned by Canadian National (CN) between Joliet and 21st Street in Chicago, and HC trains use Amtrak-owned track to enter CUS. Union Pacific (UP) owns the last half mile of track utilized by the HC entering Joliet. CN, UP, and BNSF freight trains, as well as 10 daily Amtrak trains, also utilize the HC route. Amtrak's Lincoln Service stops at both the Joliet and Summit Metra Stations. Joliet is also the terminal station for Metra's Rock Island Line, and the only suburban transfer station serving multiple Metra lines and Amtrak routes.

The CN-owned segment of the route is double-tracked, and track west of the Brighton Park interlocking (also known as Panhandle Junction) is maintained for a maximum passenger speed of 79 miles per hour, though trains must slow to 50 miles per hour through Argo interlocking in Summit. However, intense freight activity in the eastern portion of the route makes HC trains particularly vulnerable to delays. The HC crosses four major at-grade interlockings (in Chicago: Brighton Park with CSX and Norfolk Southern, Corwith with BNSF, LeMoyne with the Belt Railway of Chicago; in Summit/ Bedford Park: Argo with the Indiana Harbor Belt and CSX), and encounters heavy traffic near two rail yards. These conflicts have constrained commuter service on the HC to seven trains per weekday, with six of these serving peak-period, peak-direction commuters. Grade separation of the four crossings would eliminate conflicts with freight traffic at these locations.

The Milwaukee District's Western Avenue Yard provides midday servicing of HC trains, which are stored overnight at the Joliet Yard, located a half mile east of Joliet Station. The Joliet Yard is shared with the Rock Island Line.

Table 1 details service, station, and ridership characteristics on the HC.

2017 Average trip length:
27.7 miles

2017 Average fare paid:
$4.93

Source: Ridership Trends Report, Dec. 2017

Number of stations:
7

Route length:
37.2 miles

Number of weekday trains (May 2016):
7

2017 On-time performance*:
93.2%

** On-time Performance Report, Dec. 2017*

FIGURE 1: METRA STATIONS ON THE HC LINE

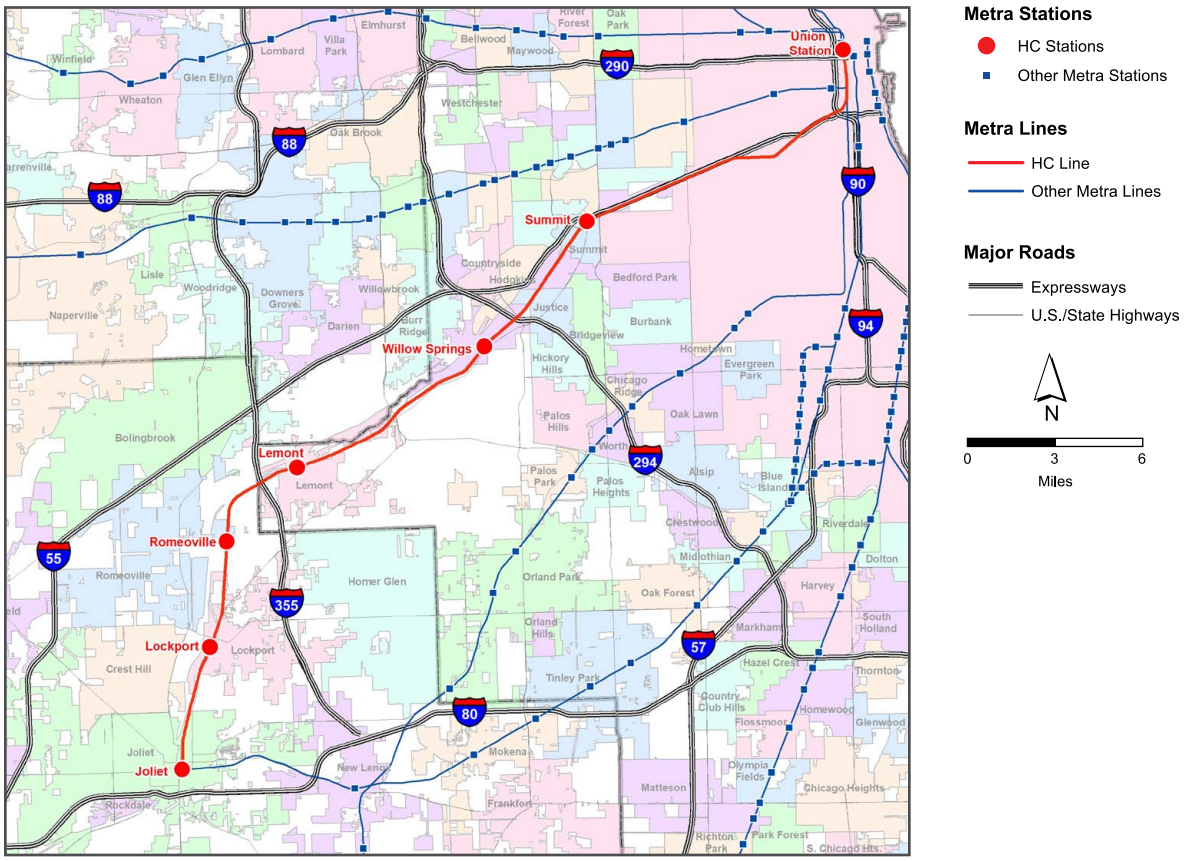
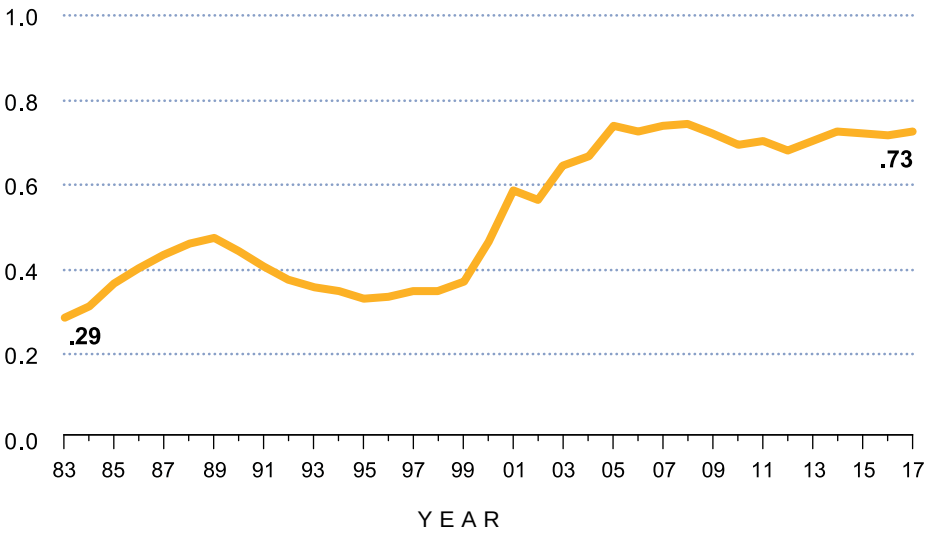


TABLE 1A: 2016 HC WEEKDAY BOARDINGS

Time of Day	Inbound	Outbound
AM Peak	1,320	0
Midday	0	52
PM Peak	0	1,175
Evening	0	0
TOTAL	**1,320**	**1,227**

Source: Metra Weekday Station Boardings and Alightings by Time-of-Day and Direction, 2016

TABLE 1B: HC ANNUAL PASSENGER TRIPS
1983 — 2017, in millions



Note: from 2008, figures include free Circuit Permit trips. 2008-2011 figures include free senior trips; this program ended September 2011.

TABLE 1C: HC STATION CHARACTERISTICS

Station	Fare Zone	Mile Post	Accessibility[1]	Boardings		Station Parking (2017)			Time to Chicago (minutes)[1]	
				1983[2]	2016[3]	Capacity (Spaces)[4]	Effective Use[5]	Observed Use[6]	Shortest Trip	Longest Trip
Union Station	A	0.0	Full	499	1,222	0	n/a	n/a	n/a	n/a
Summit	C	11.9	Full	44	100	145	48%	48%	25	33
Willow Springs	D	17.5	Full	84	115	61	100%	100%	33	41
Lemont	E	25.3	Full	130	489	336	100%	96%	43	50
Romeoville	F	29.2	Full	--	--	--	--	--	45	61
Lockport	G	32.9	Full	55	412	395	77%	74%	53	59
Joliet	H	37.3	Full	106	209	949	57%	57%	65	65
TOTAL HC				**918**	**2,547**	**1,886**	**70%**	**68%**		

[1] Heritage Corridor Line Schedule
[2] Metra's 1983 Boarding/Alighting Counts
[3] Metra, "Commuter Rail System Station Boarding/Alighting Counts," Fall 2016
[4] Metra Station Parking Capacity and Use, 2017
[5] Effective use: all sold permit spaces are assumed to be used, even if unoccupied during parking survey
[6] Observed use: spaces physically occupied during parking survey
[7] Station opened in February 2018

TABLE 1D: MODE OF ACCESS AT HC METRA STATIONS

Station Name	Walk/Bike	Drive/Carpool Driver	Carpool Passenger/ Dropped Off	Transit	Other
Union Station[1]	42%	3%	7%	32%	16%
Summit	14%	81%	5%	0%	0%
Willow Springs	28%	50%	22%	0%	0%
Lemont	9%	73%	18%	0%	0%
Lockport	6%	78%	16%	0%	0%
Joliet	4%	82%	13%	1%	0%
TOTAL HC[2]	**9%**	**75%**	**16%**	**0%**	**0%**
SYSTEM TOTAL	**26%**	**53%**	**16%**	**4%**	**1%**

[1] Includes riders boarding on all Metra lines departing from station
[2] Line total does not include downtown terminal

Source: Metra, "Commuter Rail System Station Boarding/Alighting Counts," Fall 2016

Depots and warming houses constructed since 1985 at:

Summit
Willow Springs

Other significant improvements completed since 1985 at:

Lemont
Lockport
Romeoville (new station)
Joliet

Improvements planned for:

Union Station

IMPROVEMENTS SINCE THE START OF METRA

Since 1985, Metra has invested $89 million (in year of expenditure dollars) in improvements to the HC corridor. Table 2 indicates the amount of investment in different asset categories. This amount includes costs of a track and signal upgrade project completed in 2002, new warming houses at Summit and Willow Springs, and restoration of the historic depots at Lemont and Lockport (the oldest depots in the Metra system). American Recovery and Reinvestment Act (ARRA) grants funded platform improvements at Lockport and Joliet Stations. Over the years, Metra has partnered with Amtrak, owner of CUS, to complete a number of upgrades to the terminal's commuter facilities. For more information on proposed CUS improvements, see the CBD chapter of this report.

Due to capacity constraints on the HC, Metra has had limited opportunities to adjust the service schedule on the line. In April 1999, the number of trains was increased from four to six, to better serve existing riders and add capacity during reconstruction of the Stevenson Expressway. The ridership impact of this improvement can be seen in Table 1b, as HC boardings increased 31% between 1999 and 2002. A seventh daily train, departing Chicago in mid-afternoon, was added in 2016.

In 2018, a new station opened near 135th Street and New Avenue in Romeoville. This new station was funded by the federal Congestion Mitigation and Air Quality Improvement (CMAQ) Program and a grant awarded to the village of Romeoville from the Illinois Transportation Enhancement Program (ITEP).

Also in 2018, a new multimodal transportation center opened in Joliet, to accommodate Metra, Amtrak, Pace, intercity and shuttle buses, bicycles, taxis, and intercity passenger rail (existing Amtrak service, as well as planned high-speed rail service between Chicago and St. Louis) and streamline transfers between the services. A new bus station is planned to be added to the transportation center, and will be built once funding is available. The HC platform portion of the project now allows passengers to approach the platform through two new pedestrian tunnels, instead of crossing freight tracks to board the train. The tunnels have both stairs and an elevator for ADA access to the platform. Major funding for the transportation center was provided by the State of Illinois, with additional funding from the City of Joliet and BNSF.

Metra has evaluated separating the HC's four major at-grade crossings as long-term improvements, due to the cost, complexity and service disruptions involved with these projects. Several improvements have been completed in this corridor as part of the CREATE Program in order to improve operations without construction of more costly flyovers. The improvements included the installation of a modern remote-controlled signal system and replacement

TABLE 2: METRA CAPITAL INVESTMENT HISTORY
1985 — December 2017, in millions of dollars

Asset	HC	System
Rolling stock	$25	$2,757
Track and structure	8	1,432
Signal, electrical, and mechanical	21	1,002
Facilities and equipment	11	613
Stations and parking	11	1,055
Acquisitions, extensions, and expansions	1	599
Support activities	13	395
TOTAL	**$89**	**$7,854**
PERCENTAGE	**1.1%**	**100.0%**

Notes: 1) Excludes South Shore, preventative maintenance, new lines, and pending grants. 2) Prior expenses are not adjusted for subsequent inflation. 3) Data is subject to budget revisions, audit adjustments, etc. at any time. 4) For many projects, work locations and associated costs have not been identified, so budget amounts are allocated among lines by various criteria. Better, more specific cost information is continually sought to improve data applicability; this will adjust the line-by-line results.

Downtown Lockport
Photo: Mark Llanuza

of the crossing diamonds at Brighton Park. Engineering and environmental study are underway at several other CREATE projects in this corridor.

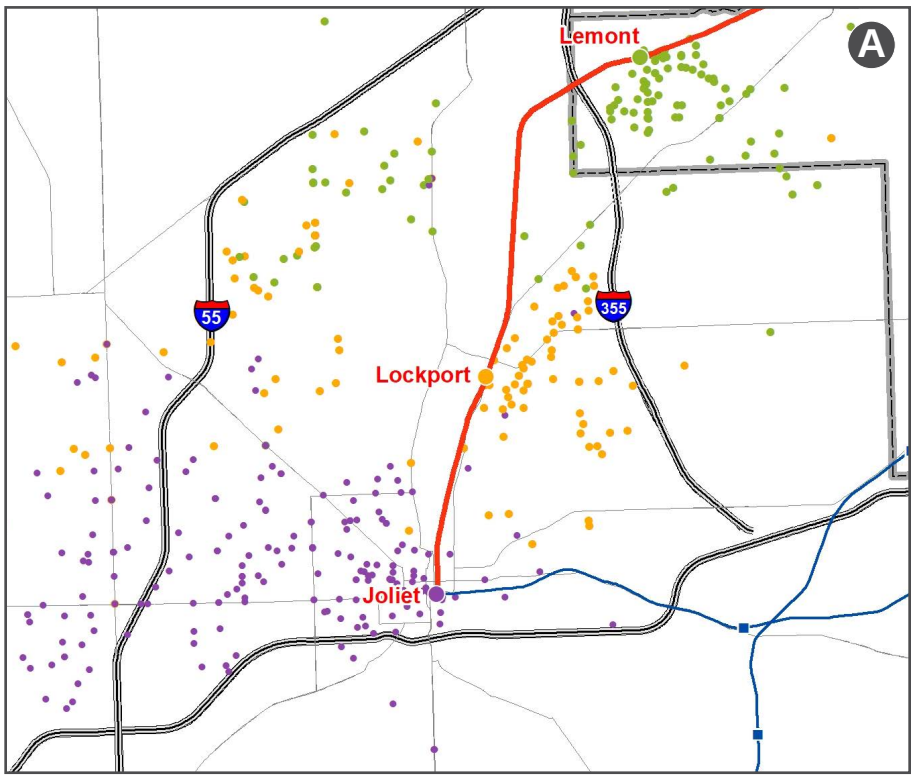
Since 1985, Metra has completed access improvements at all of the non-downtown HC stations. As part of the ARRA-funded work mentioned above, HC platforms at Joliet were made accessible to disabled riders in 2011, and all HC stations, including the new Romeoville station, are compliant with the accessibility requirements of the Americans with Disabilities Act (ADA).

PRESENT AND FUTURE DEMAND

In 2016, over 2,500 boardings took place each weekday on the HC, an increase of 155% since 1983 (see Table 1c). At the three southernmost stations (Joliet, Lockport, and Lemont) boardings increased 281% between 1983 and 2016, which reflects the population and employment growth that has taken place in this area. Ridership increased 68% in the same time period at the Willow Springs and Summit Stations, an example of the ridership growth that has been experienced at many of Metra's stations close to the Central Business District (CBD). Overall passenger ridership on the HC totaled 727,000 in 2017.

A number of indicators suggest that demand for commuter rail service will

FIGURE 2A: ORIGINS OF RIDERS USING NON-CBD HC STATIONS



continue to rise in the HC corridor. The corridor has been growing rapidly in recent decades, and demographic forecasts anticipate continued growth in population and employment. The Chicago Metropolitan Agency for Planning (CMAP) forecasts that all HC station marketsheds will increase in population, households, and employment, as shown in Tables 3, 4, and 5. The HC corridor is projected to attract 281,000 new residents between 2010 and 2040, a 52% increase. Projected population growth is especially significant near the southwest portion of the HC in Will County. Over 131,000 jobs are projected to be added in the corridor by 2040, a 63% rise.

With improved service frequencies, as well as midday and reverse-commute trains, the HC would be better able to serve the transportation needs of the growing market in the corridor. An upgraded HC would also be able to attract riders living near the HC who currently drive to more distant stations on the BNSF, SouthWest Service, or Rock Island Line in order to take advantage of improved service levels. (This phenomenon is visible in Figure 2 of the chapters associated with these three lines.) Increasing the utility of the HC would reduce travel times for these riders and reduce congestion on adjacent Metra lines. In addition, those traveling to the Illinois & Michigan Canal area to enjoy its recreational and historical attractions would be able to utilize HC service. (See Table 6 for a list of major trip generators in the HC corridor.)

FIGURE 2B: ORIGINS OF RIDERS USING NON-CBD HC STATIONS

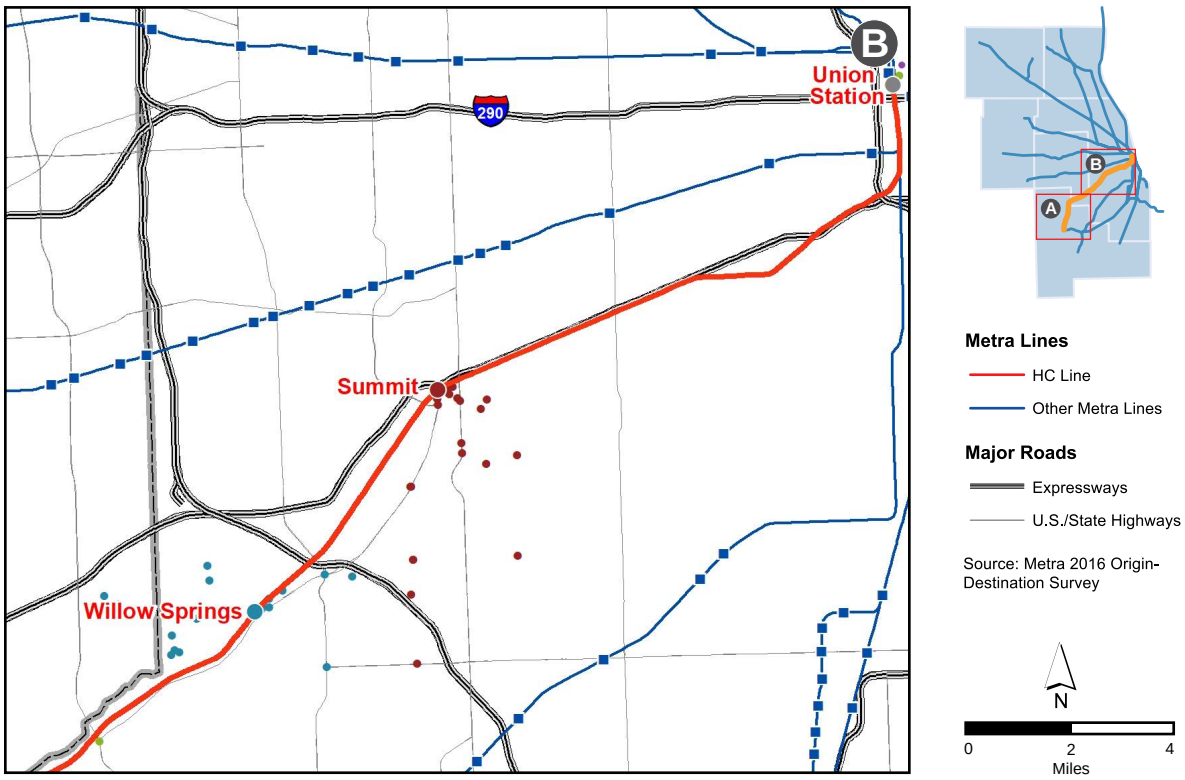


TABLE 3: HC CORRIDOR POPULATION

Station	Fare Zone	Area Sq. Mi.	Population in Zone			Percent Change	
			2000	2010	2040	2000 vs 2010	2010 vs 2040
Union Station	A	0.3	4,156	5,507	4,804	32.5%	-12.8%
Summit	C	18.4	67,159	68,574	73,815	2.1%	7.6%
Willow Springs	D	32.1	45,709	45,747	62,253	0.1%	36.1%
Lemont	E	63.7	81,722	94,814	139,067	16.0%	46.7%
Lockport	G	77.3	72,690	128,799	213,824	77.2%	66.0%
Joliet	H	120.3	152,991	194,444	325,326	27.1%	67.3%
HC TOTAL		**312.1**	**424,427**	**537,885**	**819,089**	**26.7%**	**52.3%**
REGION TOTAL		**3,748.0**	**8,091,717**	**8,456,762**	**11,717,936**	**4.5%**	**38.6%**

TABLE 4: HC CORRIDOR HOUSEHOLDS

Station	Fare Zone	Area Sq. Mi.	Households in Zone			Percent Change	
			2000	2010	2040	2000 vs 2010	2010 vs 2040
Union Station	A	0.3	2,663	3,576	2,923	34.3%	-18.3%
Summit	C	18.4	25,137	24,480	27,308	-2.6%	11.6%
Willow Springs	D	32.1	17,579	17,807	23,381	1.3%	31.3%
Lemont	E	63.7	26,352	30,876	45,359	17.2%	46.9%
Lockport	G	77.3	24,432	40,378	74,893	65.3%	85.5%
Joliet	H	120.3	53,102	65,212	114,648	22.8%	75.8%
HC TOTAL		**312.1**	**149,265**	**182,329**	**288,512**	**22.2%**	**58.2%**
REGION TOTAL		**3,748.0**	**2,906,924**	**3,050,134**	**4,224,349**	**4.9%**	**38.5%**

TABLE 5: HC CORRIDOR EMPLOYMENT

Station	Fare Zone	Area Sq. Mi.	Employment in Zone			Percent Change	
			2000	2010	2040	2000 vs 2010	2010 vs 2040
Union Station	A	0.3	30,742	22,956	32,106	-25.3%	39.9%
Summit	C	18.4	52,914	22,431	29,355	-57.6%	30.9%
Willow Springs	D	32.1	23,841	24,988	27,680	4.8%	10.8%
Lemont	E	63.7	45,064	50,001	73,074	11.0%	46.1%
Lockport	G	77.3	17,906	26,772	53,604	49.5%	100.2%
Joliet	H	120.3	57,272	62,695	125,108	9.5%	99.6%
HC TOTAL		**312.1**	**227,739**	**209,843**	**340,927**	**-7.9%**	**62.5%**
REGION TOTAL		**3,748.0**	**4,340,215**	**3,786,224**	**5,267,696**	**-12.8%**	**39.1%**

Currently, close to 1,900 parking spaces serve the riders of the HC. According to parking counts conducted in 2017, the average rate of effective utilization at all stations on the line is 70%. Parking utilization at the Lemont and Willow Springs stations is 100%, which indicates a demand for increased parking.

REVERSE COMMUTE AND NON-DOWNTOWN MARKETS

Although Metra's primary market involves commuters who follow the traditional suburb-to-CBD trip pattern, on many lines Metra has seen a demand for city-to-suburb reverse-commute options (Metra's primary commuter market is discussed in the Central Business District Market chapter). However, due to the limited schedule of the HC, reverse-commute trips are not possible and the number of riders alighting at suburban stations in the morning is extremely small.

Factors that increase reverse-commute trip patterns are the growth of employment in the suburbs as well as growth of population in the city and inner ring suburbs (see Tables 3, 4, and 5). While forecasts indicate a moderate decline by 2040 in population and households in the HC's CBD marketshed, employment growth in the suburbs along the line is projected to be strong during this period. These opportunities are likely to draw commuters from beyond the immediate downtown Chicago station area. Employment along the entire HC is expected to increase 63% between 2010 and 2040, with the most substantial growth projected in station marketsheds near the southern end of the HC, particularly following completion of the I-355 South extension in 2007. The data suggests that with connecting bus service and a more robust train schedule, the HC may be able to attract commuters traveling from the city and inner suburbs to employment centers in outlying suburbs. Major trip generators along the HC, including large employers, are shown in Table 6.

FIGURE 3: AM ALIGHTINGS AT NON-CBD HC STATIONS

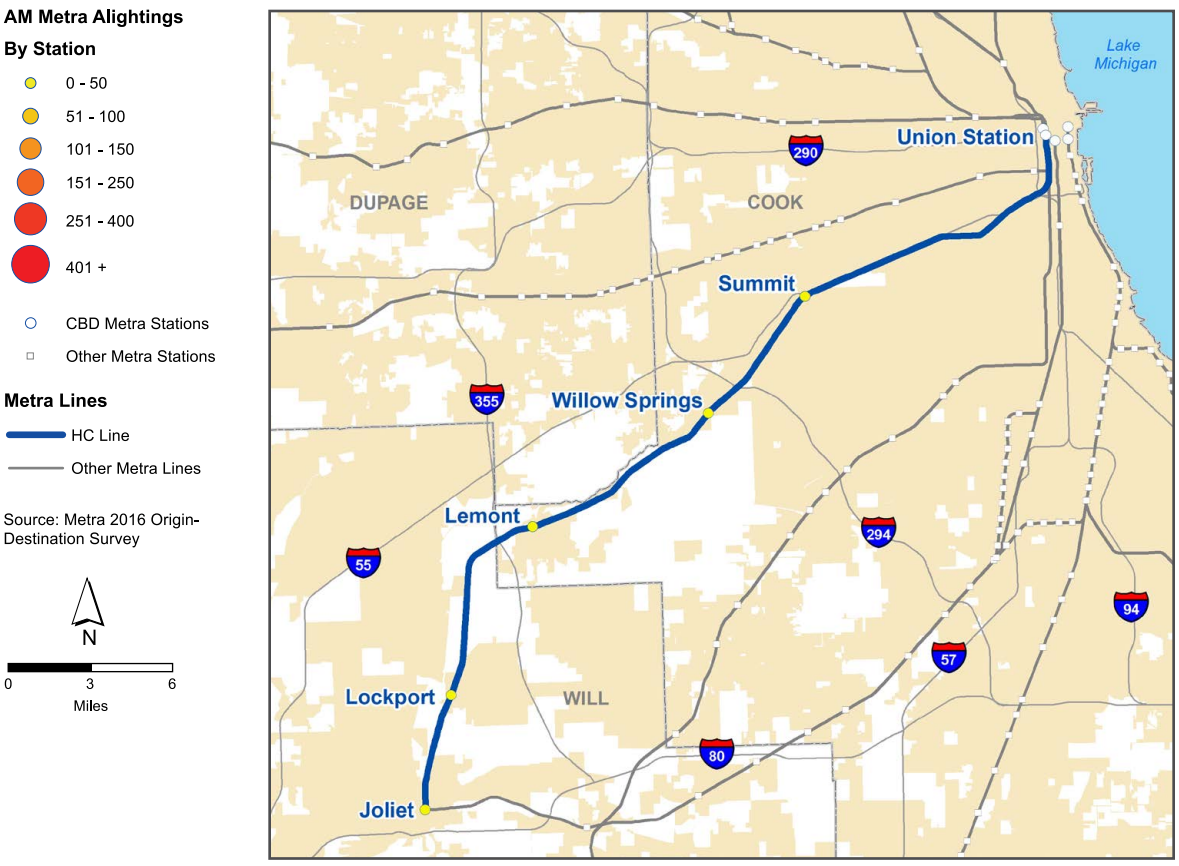


TABLE 6: MAJOR TRIP GENERATORS ACCESSIBLE FROM HC CORRIDOR

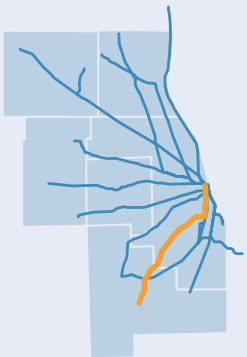
Generator Type	Name	Comments	Municipality
Airports	Lewis University Airport	General aviation	Romeoville
	Joliet Regional Airport	General aviation	Joliet
Colleges and Universities	Joliet Junior College	15,000 students	Joliet
	University of St. Francis	1,700 students	Joliet
Culture and Entertainment	Chicagoland Speedway/Route 66 Raceway	NASCAR racetrack; cap. 55,000	Joliet
	Harrah's Joliet Hotel & Casino	Riverboat casino & hotel; 200 rooms	Joliet
	Rialto Square Theatre	Performing arts venue; cap. 2,000	Joliet
	Silver Cross Field	Home of the Joliet Slammers minor-league baseball team; cap. 6,000	Joliet
Shopping	Louis Joliet Mall	120 stores, 4 anchors	Joliet
Government	Argonne National Laboratory	Science and engineering research center; 3,200 employees, plus scholars and students	Argonne
	Stateville Correctional Center		Joliet
	City of Joliet	City adminstrative offices	Joliet
	Will County Government/ Courthouse	County adminstrative offices and courthouse	Joliet
Hospitals	Silver Cross Hospital	289 beds	New Lenox
	Presence St. Joseph Medical Center	480 beds	Joliet
Large Private Employers	UPS	Package sorting facility	Hodgkins

Metra SWS train in New Lenox

Photo: Mark Llanuza

SOUTHWEST SERVICE LINE

EXISTING SERVICE AND CONDITIONS



Metra's SouthWest Service (SWS) Line extends 40.8 miles southwest from Chicago Union Station (CUS, or "Union Station") in downtown Chicago to Manhattan in Will County, and currently serves 11 intermediate stations in southwest Cook County and north central Will County (see Figure 1). The service is operated by Metra personnel under a trackage lease agreement with Norfolk Southern (NS), which owns and dispatches the railroad south of 74th Street in Chicago. Metra maintains the tracks, signals, and rights-of-way and owns and operates the yards in this section. Metra, NS, and Amtrak each own and control various short segments between 74th Street in Chicago and CUS, and freight traffic operates over the line from 74th Street to 23rd Place. Daytime storage and servicing of trains takes place at the BNSF 14th Street Coach Yard, one mile south of the downtown terminal. Most SWS trains are stored overnight at 179th Street in Orland Park, with a smaller yard in Manhattan also providing overnight storage. In 2017, passenger trips on the SWS totaled 2.5 million, ranking ninth among the eleven Metra lines (based on ticket sales).

Prior to the creation of Metra, NS (known as Norfolk and Western until 1982) operated a single commuter train to Chicago in the morning and back to 143rd Street in Orland Park in the evening. This service was based in and dispatched from Decatur, where train and crew returned on weekends. While NS operated commuter service on the line, it was known as the Norfolk Southern Line; when Metra assumed operation of the service in 1993, the line was given its present name. Since then, Metra has gradually expanded service. The line was extended to 153rd Street in Orland Park in 1990, and on to 179th Street in 1995. In 2006, the line was extended to its current terminus in Manhattan (with a new intermediate station at Laraway Road). Fourteen trains per day were added as a part of this project, increasing service to 30 trains each weekday. In March 2009, Metra initiated Saturday service on the SWS and improved weekday service to the outermost stations on the line, at Laraway Road and Manhattan.

Two segments of single track limit the operation of more trains on the SWS: a two-mile segment between the Forest Hill interlocking and the Canadian National crossing near Ashburn Station, and a 17-mile segment between the 143rd Street/Orland Park Station and the Manhattan Station.

2017 Average trip length:
19.1 miles

2017 Average fare paid:
$4.41

Source: Ridership Trends Report, Dec. 2017

Number of stations:
13

Route length:
40.8 miles

Number of weekday trains (May 2018):
30

2017 On-time performance*:
94.9%

** On-time Performance Report, Dec. 2017*

FIGURE 1: METRA STATIONS ON THE SWS LINE

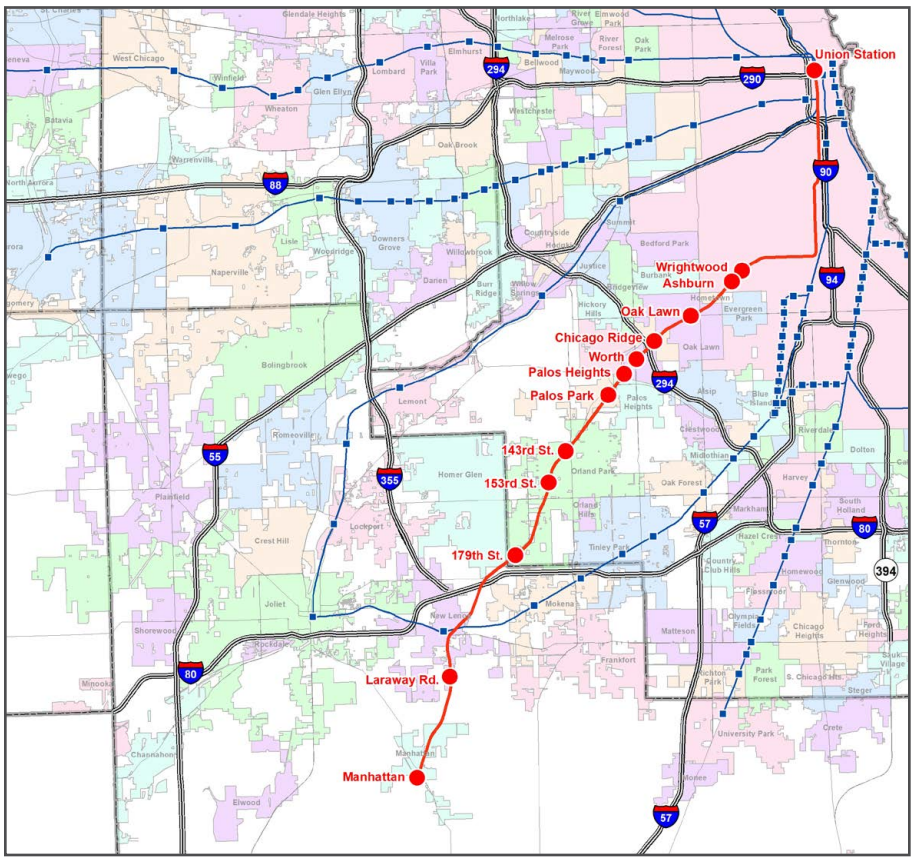
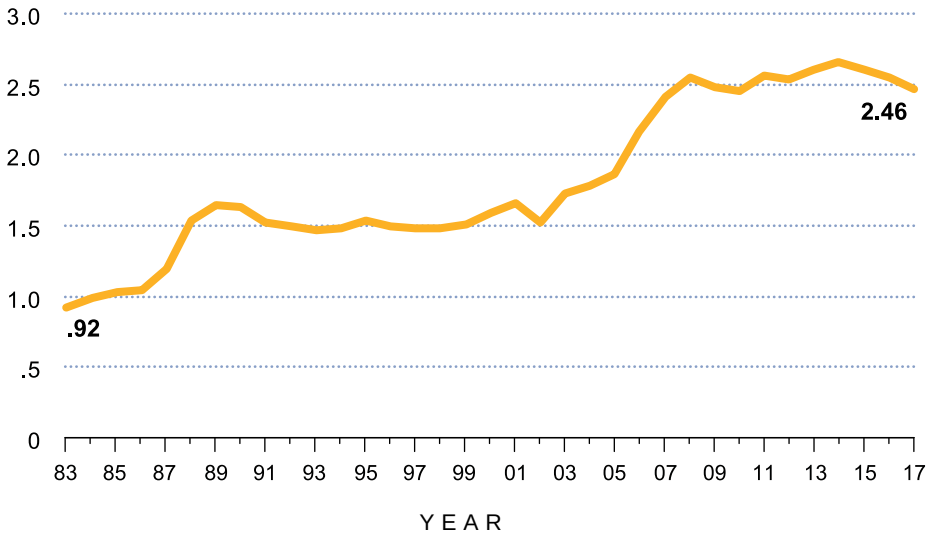


TABLE 1A: 2016 SWS WEEKDAY BOARDINGS

Time of Day	Inbound	Outbound
AM Peak	4,040	37
Midday	405	386
PM Peak	83	3,761
Evening	22	369
TOTAL	**4,550**	**4,553**

Source: Metra Weekday Station Boardings and Alightings by Time-of-Day and Direction, 2016

TABLE 1B: SWS ANNUAL PASSENGER TRIPS
1983 — 2017, in millions



Note: from 2008, figures include free Circuit Permit trips. 2008-2011 figures include free senior trips; this program ended September 2011.

TABLE 1C: SWS STATION CHARACTERISTICS

Station	Fare Zone	Mile Post	Accessibility[1]	Boardings		Station Parking (2017)			Time to Chicago (minutes)[1]	
				1983[2]	2016[3]	Capacity (Spaces)[4]	Effective Use[5]	Observed Use[6]	Shortest Trip	Longest Trip
Union Station	A	0.0	Full	1,437	4,503	0	n/a	n/a	--	--
Wrightwood	C	11.9	Full	130	226	181	69%	69%	25	33
Ashburn	C	12.6	Full	244	218	140	64%	64%	27	36
Oak Lawn	D	15.2	Full	443	1,329	819	94%	87%	29	42
Chicago Ridge	D	16.8	Full	227	339	419	47%	29%	33	47
Worth	D	18.2	Full	204	419	467	61%	61%	36	50
Palos Heights[7]	D	19.2	Full	--	238	500	37%	37%	38	52
Palos Park	E	20.3	Full	63	432	350	49%	49%	41	55
143rd St./Orland Park	E	23.6	Full	135	548	412	77%	77%	50	61
153rd St./Orland Park[8]	E	25.2	Full	--	604	1,368	32%	29%	54	64
179th St./Orland Park[9]	F	28.9	Full	--	201	318	34%	34%	60	69
Laraway Road[10]	H	35.8	Full	--	24	288	6%	6%	70	78
Manhattan[10]	I	40.8	Full	--	22	250	4%	4%	72	87
TOTAL SWS		**40.8**		**2,883**	**9,103**	**5,512**	**49%**	**46%**		

[1] SouthWest Service Schedule
[2] Metra's 1983 Boarding/Alighting Counts
[3] Metra, "Commuter Rail System Station Boarding/Alighting Counts," Fall 2016
[4] Metra Station Parking Capacity and Use, 2017
[5] Effective use: all sold permit spaces are assumed to be used, even if unoccupied during parking survey
[6] Observed use: spaces physically occupied during parking survey
[7] Station opened in 2004
[8] Station opened in 1990
[9] Station opened in 1995
[10] Stations opened in 2006

TABLE 1D: MODE OF ACCESS AT SWS METRA STATIONS

Station Name	Walk/Bike	Drive/Carpool Driver	Carpool Passenger/ Dropped Off	Transit	Other
Union Station[1]	42%	3%	7%	32%	16%
Wrightwood	22%	61%	13%	5%	0%
Ashburn	40%	48%	12%	0%	0%
Oak Lawn	16%	65%	17%	1%	0%
Chicago Ridge	32%	41%	26%	0%	1%
Worth	19%	67%	12%	1%	1%
Palos Heights	3%	78%	19%	0%	0%
Palos Park	10%	71%	19%	0%	0%
143rd St./Orland Park	11%	71%	17%	1%	0%
153rd St./Orland Park	9%	75%	15%	0%	1%
179th St./Orland Park	22%	56%	22%	0%	0%
Laraway Road[2]	0%	75%	25%	0%	0%
Manhattan[2]	10%	55%	35%	0%	0%
TOTAL SWS[3]	**16%**	**65%**	**17%**	**1%**	**0%**
SYSTEM TOTAL	**26%**	**53%**	**16%**	**4%**	**1%**

[1] Includes riders boarding on all Metra lines departing from station

[2] Data not statistically significant due to number of survey responses received

[3] Line total does not include downtown terminal

Source: Metra, "Commuter Rail System Station Boarding/Alighting Counts," Fall 2016

TABLE 2: METRA CAPITAL INVESTMENT HISTORY
1985 — December 2017, in millions of dollars

Asset	SWS	System
Rolling stock	$78	$2,757
Track and structure	32	1,432
Signal, electrical, and mechanical	36	1,002
Facilities and equipment	21	613
Stations and parking	32	1,055
Acquisitions, extensions, and expansions	152	599
Support activities	18	395
TOTAL	**$370**	**$7,854**
PERCENTAGE	**4.7%**	**100.0%**

Notes: 1) Excludes South Shore, preventative maintenance, new lines, and pending grants. 2) Prior expenses are not adjusted for subsequent inflation. 3) Data is subject to budget revisions, audit adjustments, etc. at any time. 4) For many projects, work locations and associated costs have not been identified, so budget amounts are allocated among lines by various criteria. Better, more specific cost information is continually sought to improve data applicability; this will adjust the line-by-line results.

IMPROVEMENTS SINCE THE START OF METRA

Since 1985, Metra has invested $370 million (in year of expenditure dollars) in improvements to the SWS corridor. Table 2 indicates the amount of investment in different asset categories. This amount includes the 1990 and 1995 extensions, as well as the 2006 line upgrade and extension to Manhattan. Metra has completed improvements at a number of SWS stations since 1985 (see right), and over a dozen bridges have been repaired or replaced. Over the years, Metra has partnered with Amtrak, owner of CUS, to complete a number of upgrades to the terminal's commuter facilities. For more information on proposed CUS improvements, see the CBD chapter of this report.

The 2006 upgrade project, which cost a total of $198 million, was funded in large part with a New Starts grant from the Federal Transit Administration. The project included extension of the route to Manhattan with an intermediate station at Laraway Road/New Lenox, doubling of service to 30 trains per day, a new coach yard in Manhattan to supplement the existing yard at 179th Street in Orland Park, installation of a second track between Palos Park and 143rd Street in Orland Park, and other track and signal improvements. The project also included the extension of station platforms with significant improvements at several stations, major parking expansion, and two new trainsets. As part of the project, 143rd Street, 153rd Street, Ashburn, Oak Lawn, and Palos Park Stations were rehabilitated and expanded to accommodate the ridership growth projected to follow the doubling in service.

In March 2009, Metra initiated Saturday service on the SWS, with three inbound and three outbound trains serving the line that day. Weekday service to the Laraway Road and Manhattan Stations was also improved, with a midday trip now serving both stations.

All SWS stations comply with the accessibility requirements of the Americans with Disabilities Act (ADA). Metra's station compliance program started with designating four of the busiest SWS stations, including CUS in downtown Chicago, as "key stations", all of which were made fully accessible by 2001.

All of the stations and platforms outside of downtown Chicago along the SWS Line were improved before or in 2006, so there are no plans at this time for improvements at these locations. However, additional facility expansions at these stations are possible in the long term, as ridership growth warrants.

Depots and warming houses constructed since 1985 at:

143rd Street/Orland Park
153rd St./Orland Park (new station)
179th St./Orland Park (new station)
Ashburn
Chicago Ridge
Laraway Rd./New Lenox (new station)
Manhattan (new station)
Oak Lawn
Palos Heights (new station)
Palos Park
Worth
Wrightwood

Improvements planned for:

Union Station

PRESENT AND FUTURE DEMAND

In 2016, over 9,100 boardings took place each weekday on the SWS, with 86% of boardings occurring on peak-period, peak-direction trains. On the SWS, ridership has increased 214% since 1983 (see Table 1c). Significant ridership gains have occurred at nearly every station along the line since 1983 with the exception of Ashburn, which has stayed level. At the two stations built in the 1990s, 153rd Street and 179th Street, boardings increased 125% between 1995 and 2016, a reflection of the population growth that has taken place in this area.

A number of indicators suggest that demand for commuter rail service will continue to rise in the SWS corridor. The burgeoning southwest suburbs, and in particular, suburbs in Will County, have seen phenomenal growth in population and employment. As shown in Tables 3, 4, and 5, Chicago Metropolitan Agency for Planning (CMAP) forecasts for 2040 illustrate this trend continuing. All SWS station marketsheds are forecasted to see increases in population, households and employment, with a 26% increase in population from 2010 to 2040 throughout the entire line. In the southernmost SWS marketsheds, from 179th Street/Orland Park to Manhattan, CMAP projects a 135% increase in population.

FIGURE 2A: ORIGINS OF RIDERS USING NON-CBD SWS STATIONS

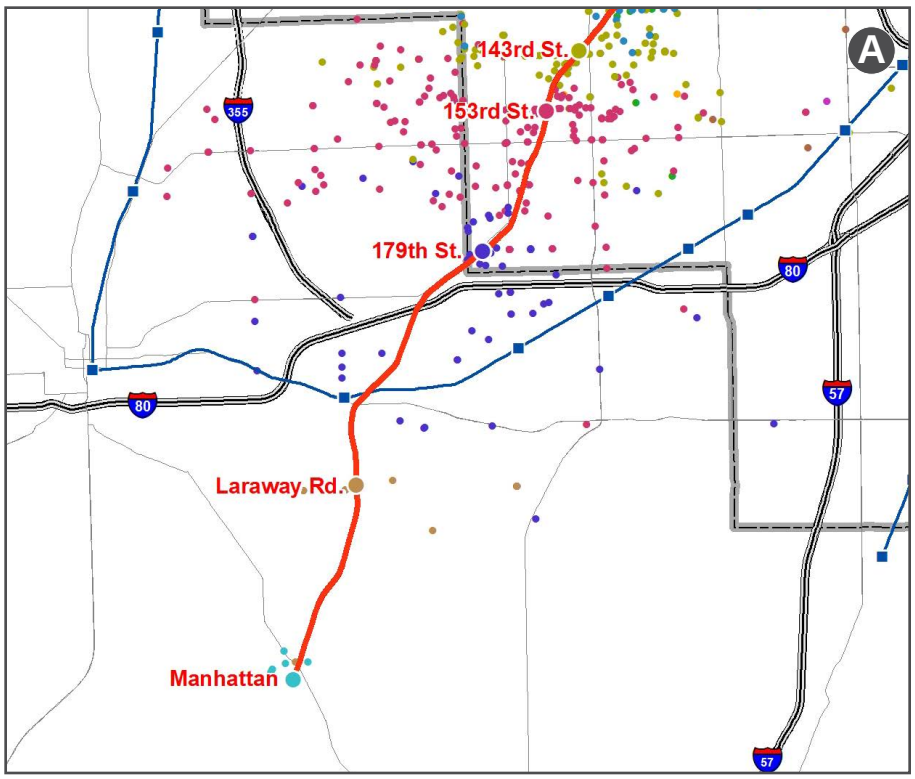


Figure 2 shows the origins of SWS riders boarding at stations outside of downtown Chicago. Overall passenger ridership on the SWS totaled 2.5 million in 2017.

Approximately 5,500 parking spaces serve the riders of the SWS. According to parking counts conducted in 2017, the effective parking utilization rate on the SWS is 49%. Given the significant expansion in parking as part of the 2006 New Starts project, much of the anticipated growth in parking demand has been satisfied.

REVERSE COMMUTE AND NON-DOWNTOWN MARKETS

Although Metra's primary market involves commuters who follow the traditional suburb-to-CBD trip pattern, on many lines Metra has seen a demand for city-to-suburb reverse-commute options (Metra's primary commuter market is discussed in the Central Business District Market chapter). However, the SWS retains the traditional suburb-to-CBD trip pattern and has not experienced the volume of reverse-commute ridership seen on

FIGURE 2B: ORIGINS OF RIDERS USING NON-CBD SWS STATIONS

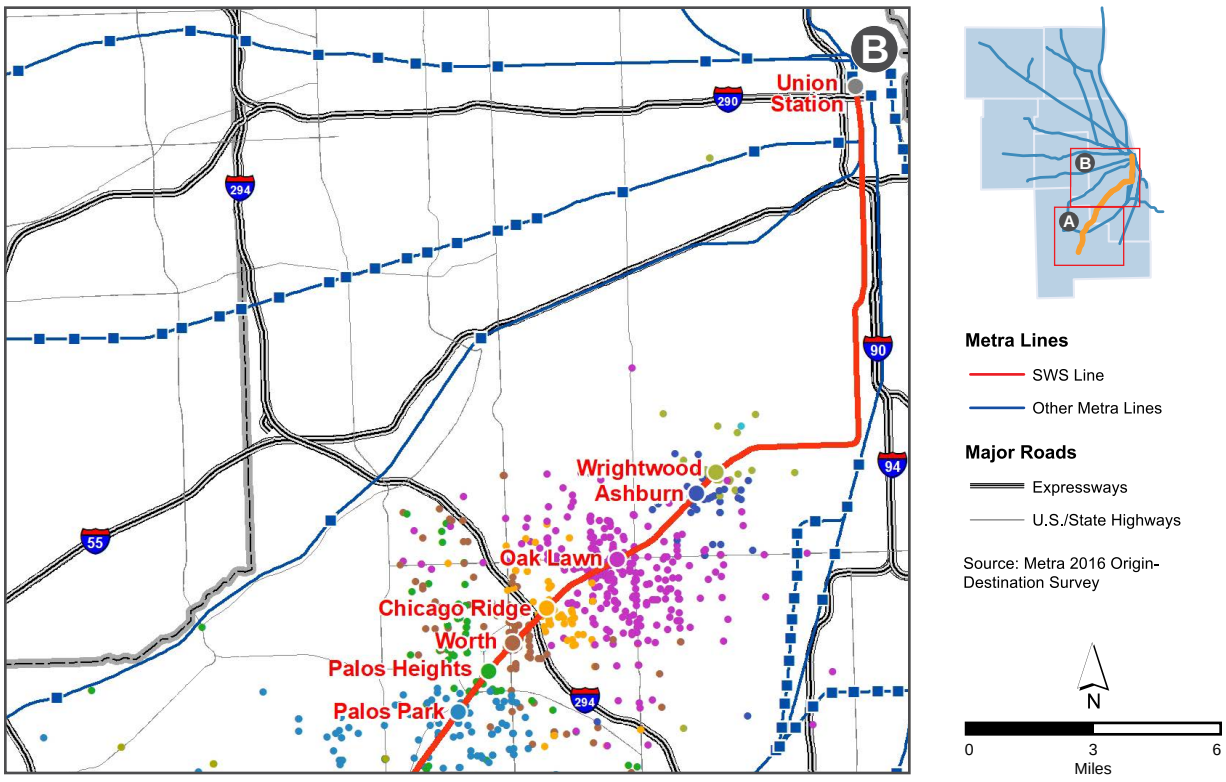


TABLE 3: SWS CORRIDOR POPULATION

Station	Fare Zone	Area Sq. Mi.	Population in Zone			Percent Change	
			2000	2010	2040	2000 vs 2010	2010 vs 2040
Union Station	A	0.3	4,156	5,507	4,804	32.5%	-12.8%
Wrightwood, Ashburn	C	20.3	229,396	226,013	244,488	-1.5%	8.2%
Oak Lawn, Chicago Ridge, Worth, Palos Heights	D	33.2	163,881	171,402	176,907	4.6%	3.2%
Palos Park, 143rd St., 153rd St.	E	47.6	75,658	81,380	107,495	7.6%	32.1%
179th St.	F	19.4	15,810	21,710	43,473	37.3%	100.2%
Laraway Road	H	31.2	9,714	15,020	51,572	54.6%	243.4%
Manhattan	I	276.2	25,970	31,353	64,694	20.7%	106.3%
SWS TOTAL		**428.2**	**524,585**	**552,385**	**693,433**	**5.3%**	**25.5%**
REGION TOTAL		**3,748.0**	**8,091,717**	**8,456,762**	**11,717,936**	**4.5%**	**38.6%**

TABLE 4: SWS CORRIDOR HOUSEHOLDS

Station	Fare Zone	Area Sq. Mi.	Households in Zone			Percent Change	
			2000	2010	2040	2000 vs 2010	2010 vs 2040
Union Station	A	0.3	2,663	3,576	2,923	34.3%	-18.3%
Wrightwood, Ashburn	C	20.3	66,890	63,042	70,956	-5.8%	12.6%
Oak Lawn, Chicago Ridge, Worth, Palos Heights	D	33.2	62,762	62,911	69,588	0.2%	10.6%
Palos Park, 143rd St., 153rd St.	E	47.6	26,765	30,176	38,177	12.7%	26.5%
179th St.	F	19.4	5,430	7,770	14,611	43.1%	88.0%
Laraway Road	H	31.2	3,023	4,663	16,966	54.3%	263.8%
Manhattan	I	276.2	9,293	11,506	22,539	23.8%	95.9%
SWS TOTAL		**428.2**	**176,826**	**183,644**	**235,760**	**3.9%**	**28.4%**
REGION TOTAL		**3,748.0**	**2,906,924**	**3,050,134**	**4,224,349**	**4.9%**	**38.5%**

TABLE 5: SWS CORRIDOR EMPLOYMENT

Station	Fare Zone	Area Sq. Mi.	Employment in Zone			Percent Change	
			2000	2010	2040	2000 vs 2010	2010 vs 2040
Union Station	A	0.3	30,742	22,956	32,106	-25.3%	39.9%
Wrightwood, Ashburn	C	20.3	45,902	32,292	46,567	-29.7%	44.2%
Oak Lawn, Chicago Ridge, Worth, Palos Heights	D	33.2	62,072	54,284	63,456	-12.5%	16.9%
Palos Park, 143rd St., 153rd St.	E	47.6	29,897	31,847	43,583	6.5%	36.9%
179th St.	F	19.4	652	3,636	11,504	457.7%	216.4%
Laraway Road	H	31.2	1,937	2,145	7,482	10.7%	248.8%
Manhattan	I	276.2	2,480	5,351	31,817	115.8%	494.6%
SWS TOTAL		**428.2**	**173,682**	**152,511**	**236,515**	**-12.2%**	**55.1%**
REGION TOTAL		**3,748.0**	**4,340,215**	**3,786,224**	**5,267,696**	**-12.8%**	**39.1%**

some other Metra lines. According to Metra's 2016 Boarding and Alighting Count, 1% of AM peak boardings on the SWS are in the reverse (outbound) direction, far below the system average of 6.2%. Very few AM alightings take place at non-CBD SWS stations, as shown in Figure 3.

Factors that increase reverse-commute trip patterns are the growth of population in the city and inner suburbs as well as the growth of employment in the suburbs (see Tables 3, 4, and 5). While forecasts indicate a moderate decline between 2010 and 2040 in population and households in the marketshed near CUS, employment growth in the suburbs along the SWS is projected to be strong during this period. These opportunities are likely to draw commuters from beyond the immediate downtown Chicago station area. Employment along the entire SWS is expected to increase 55% by 2040, with the most substantial growth concentrated near the southern end of the corridor. In SWS station marketsheds from 179th Street/Orland Park to Manhattan, CMAP projects a 356% increase in employment by 2040. Business expansion is already visible throughout the corridor, following completion of the I-355 South extension in 2007. Major trip generators along the SWS, including large employers, are shown in Table 6.

PROPOSED LINE IMPROVEMENTS

The 75th Street Corridor Improvement Project (CIP) is the largest project in the Chicago Region Environmental and Transportation Efficiency (CREATE) Program, a package of 70 projects designed to improve the efficiency of passenger and freight rail operations in the region. Using a combination of bridges and embankment, a new track segment would be built, beginning west of Belt Junction (Belt Railway of Chicago, BRC) near 75th and Ashland Streets in Chicago, crossing above BRC and NS tracks, and linking the SWS with Rock Island Line (RI) tracks near 73rd and Wallace. The installation of two rail-rail grade separations will reduce operating conflicts between Metra and freight traffic and improve reliability for both types of rail service.

Rerouting the SWS onto the RI Line would allow SWS trains to utilize LaSalle Street Station rather than CUS, relieving congestion at CUS and releasing capacity for expanded intercity rail service (including high-speed rail). The project will also reduce travel times for SWS riders by more than 10 minutes. If this work continues to be delayed, Metra will need to upgrade infrastructure in the existing SWS corridor between 75th Street and CUS, which will require a substantial investment.

Metra, along with its CREATE Program partners, have prioritized the 75th Street CIP as next in line among the remaining projects seeking funding. In 2018, the project received a $132 million federal grant, but additional funding will be required to complete the project.

FIGURE 3: AM ALIGHTINGS AT NON-CBD SWS STATIONS

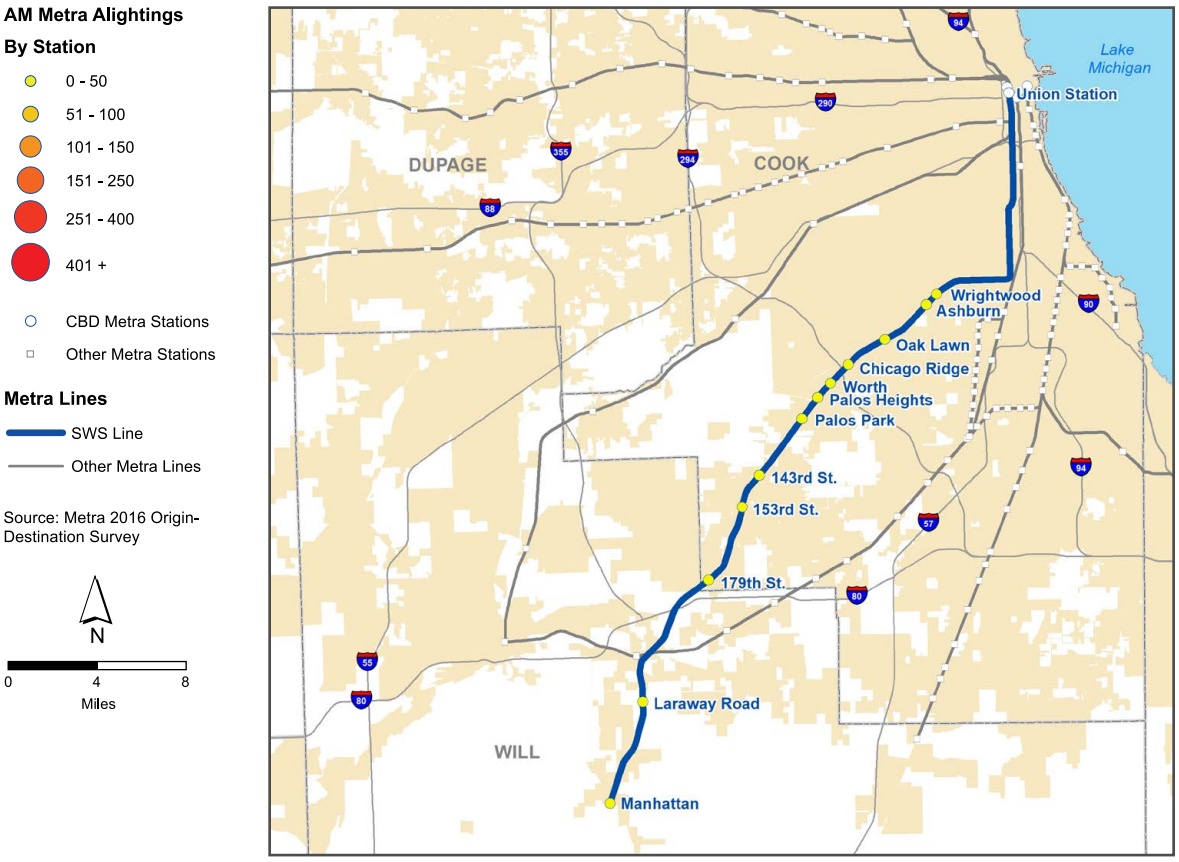


TABLE 6: MAJOR TRIP GENERATORS ACCESSIBLE FROM THE SWS CORRIDOR

Generator Type	Name	Comments	Municipality
Airports	Midway Airport	Commercial aviation; second-busiest airport in Illinois	Chicago
Colleges and Universities	Moraine Valley Community College	15,000 students	Palos Hills
	Robert Morris University	One of seven Illinois campuses	Orland Park
Culture and Entertainment	Children's Museum in Oak Lawn	Children's museum	Oak Lawn
	Toyota Park	Hosts Chicago Fire soccer games and other events	Bridgeview
Shopping	Ford City Mall	Super-regional mall	Chicago
	Chicago Ridge Mall	Super-regional mall	Chicago Ridge
	Orland Square Mall	Super-regional mall	Orland Park
Government	Cook Co. District 5 Courthouse	Cook County courthouse and administrative offices	Bridgeview
Hospitals	Little Company of Mary Hospital	244 beds	Evergreen Park
	Advocate Christ Medical Center	750 beds	Oak Lawn
	Palos Community Hospital	351 beds	Palos Heights
Large Private Employers	Eastco International	Electrical component manufacturer	Oak Lawn
	Executive Mailing	Commercial mail sorting	Palos Hills

Outbound train at Laraway Road Station

Photo: Mark Llanuza

115th Street/Morgan Park Station

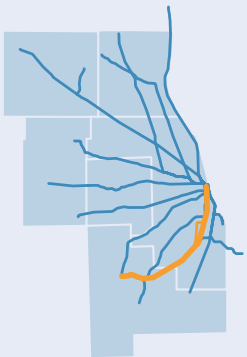
Photo: Mark Llanuza

ROCK ISLAND LINE

EXISTING SERVICE AND CONDITIONS

Metra's Rock Island (RI) Line extends 40.2 miles southwest from Chicago's LaSalle Street Station to Joliet. The RI Line provides service to 24 intermediate stations between LaSalle Street Station and Joliet with service to the south side of Chicago, southern Cook County, and Will County. The RI Beverly Branch serves portions of the south side of Chicago west of the main line (see Figure 1). In 2016, passenger trips on the RI Line totaled 8.0 million, ranking sixth among the eleven Metra lines (based on ticket sales).

Like other passenger railroads that historically served Chicago, the RI Line predates Metra. The RI was acquired by the Regional Transportation Authority (RTA) in 1982—prior to Metra's formation—following the bankruptcy of the line's owner, the Chicago, Rock Island & Pacific Railroad (CRI&P). At this time, passenger service on the line was slightly more frequent than today with 77 daily trains (51 on the Beverly Branch). Metra now operates 67 weekday trains over the line. Most of these trains operate on the branch line, except for express trains during the weekday peak periods. Table 1 describes the service, station and ridership characteristics of the RI.



The double-track main line of the RI extends southwest from LaSalle Street Station, serving stations in Chicago's south side communities and the suburbs of Cook and Will Counties. About four miles south of LaSalle Street Station, the 47th Street Yard provides daytime storage for much of the RI fleet, and a heavy duty locomotive repair shop is located onsite. Further south, at Gresham Junction, the double-track Beverly Branch splits from

the main line to serve Chicago's Beverly and Morgan Park neighborhoods. The branch line has 11 stations located approximately every half mile. The segment of the main line between Gresham Junction and Blue Island—with stations at 95th Street/Longwood, 103rd Street/Washington Heights—is used only for peak-period express trains that also serve stations south of Blue Island. At Vermont Street in Blue Island, the Beverly Branch reconnects with the main line. Trainsets that do not provide service south of Blue Island are kept overnight in a yard just north of the Vermont Street Station. The RI operates on a single track between the Joliet Coach Yard and Joliet Station, located a half mile west of the yard.

Both the RI and Metra's Heritage Corridor Line terminate at Joliet Station, which is also a stop for Amtrak's Texas Eagle and Lincoln Service. Joliet is the only suburban transfer station serving multiple Metra lines and Amtrak routes. Since the RI is part of the high-speed rail corridor from Chicago to St. Louis as proposed in the Final Environmental Impact Statement in 2012, passenger traffic on the RI is expected to increase in the future. The Chicago Rail Link, CSX, and Iowa Interstate Railroad operate freight service over portions of the RI.

2017 Average trip length:
21.3 miles

2017 Average fare paid:
$4.43

Source: Ridership Trends Report, Dec. 2017

Number of stations:
26

Route length*:
46.6 miles

Number of weekday trains (May 2018):
67

2017 On-time performance**:
95.7%

**40-mile main line to Joliet and 6.6-mile Beverly Branch*

*** On-time Performance Report, Dec. 2017*

FIGURE 1: METRA STATIONS ON THE RI LINE

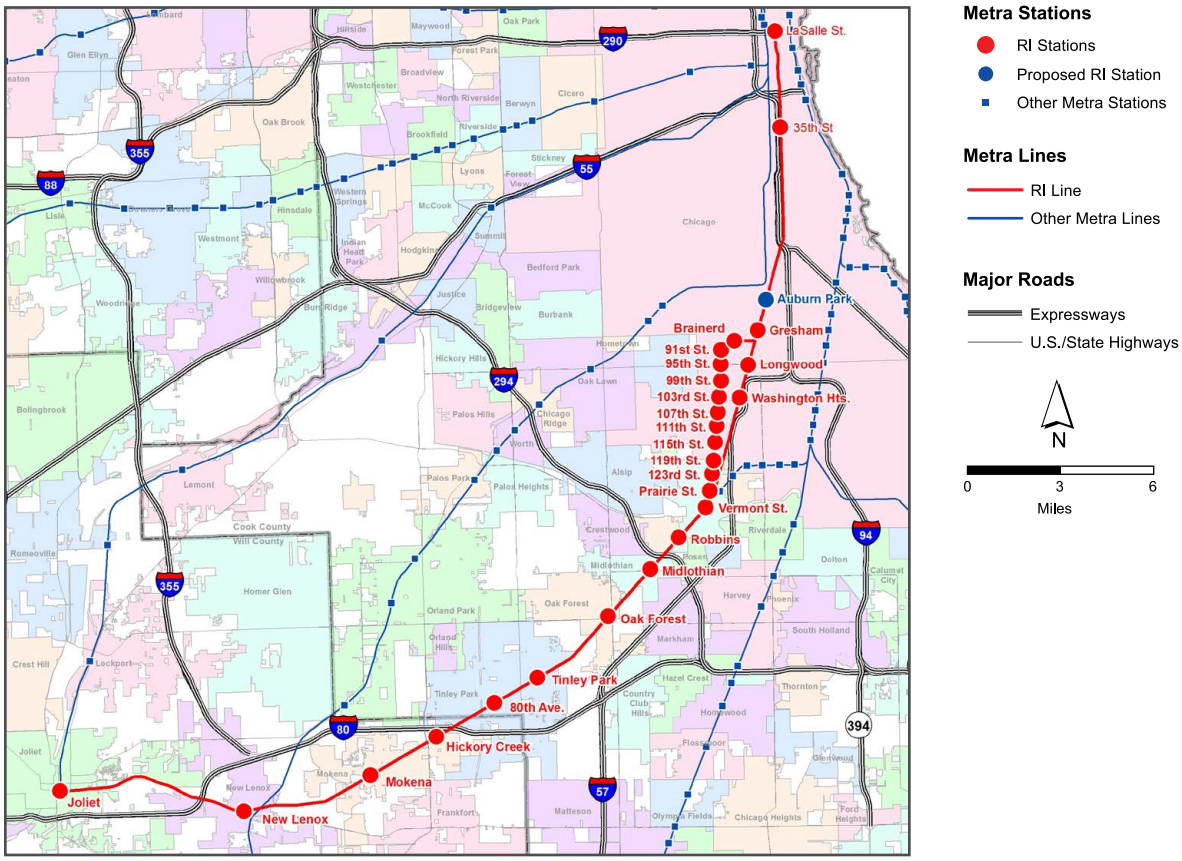
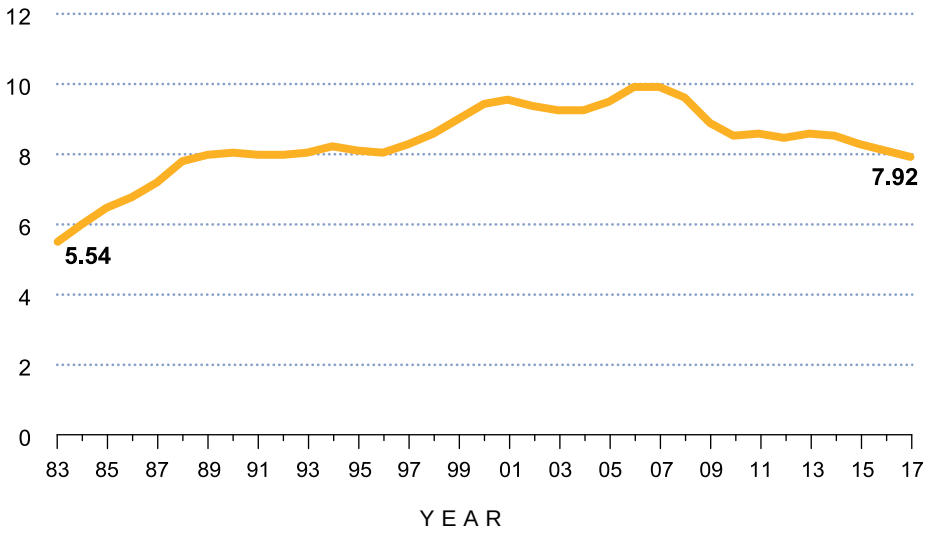


TABLE 1A: 2016 RI WEEKDAY BOARDINGS

Time of Day	Inbound	Outbound
AM Peak	12,442	169
Midday	1,030	1,398
PM Peak	340	10,899
Evening	98	642
TOTAL	**13,910**	**13,108**

Source: Metra Weekday Station Boardings and Alightings by Time-of-Day and Direction, 2016

TABLE 1B: ANNUAL PASSENGER TRIPS
1983 — 2017, in millions



Note: from 2008, figures include free Circuit Permit trips. 2008-2011 figures include free senior trips; this program ended September 2011.

TABLE 1C: RI STATION CHARACTERISTICS

Station	Fare Zone	Mile Post	Accessibility[1]	Boardings		Station Parking (2017)			Time to Chicago (minutes)[1]	
				1983[2]	2016[3]	Capacity (Spaces)[4]	Effective Use[5]	Observed Use[6]	Shortest Trip	Longest Trip
LaSalle St.	A	0.0	Full	10,286	12,656	0	n/a	n/a	--	--
35th St./"Lou" Jones[7]	A	3.2	Full	--	227	0	n/a	n/a	7	7
Gresham	B	9.8	None	49	318	281	46%	46%	14	16
Brainerd	C	10.6	Full	123	303	263	53%	53%	17	20
91st St./Beverly	C	11.3	Partial	478	364	185	70%	70%	19	22
95th St./Beverly	C	11.7	Full	722	423	189	100%	44%	21	24
99th St./Beverly	C	12.3	Full	614	725	99	98%	98%	23	26
103rd St./Beverly	C	12.8	Full	1,085	759	265	91%	91%	25	29
107th St./Beverly	C	13.3	Partial	435	451	331	44%	44%	27	31
111th St./Morgan Park	C	13.8	Full	766	587	395	72%	42%	29	33
115th St./Morgan Park	C	14.3	Partial	215	170	104	60%	60%	31	35
119th St.	C	14.8	Partial	424	279	241	59%	59%	33	37
123rd St.	D	15.2	None	65	45	0	n/a	n/a	34	39
Prairie St.	D	15.8	None	79	20	7	14%	14%	36	41
95th St./Longwood	C	10.9	Partial	27	60	101	81%	81%	17	20
103rd St./Washington Hts.	C	12.0	Full	80	107	267	20%	20%	20	23
Vermont St.	D	15.7	Full	679	688	797	41%	41%	19	45
Robbins	D	17.2	Full	27	89	151	5%	5%	26	46
Midlothian	D	18.4	Full	864	1,015	643	87%	82%	25	47
Oak Forest	E	20.4	Full	1,019	1,136	975	38%	38%	28	53
Tinley Park	E	23.5	Full	910	1,060	782	93%	66%	33	58
80th Ave./Tinley Park	E	25.1	Full	632	2,050	2,124	73%	73%	30	62
Hickory Creek[8]	F	27.0	Full	--	999	1,111	72%	72%	35	66
Mokena	F	29.6	Full	382	604	492	73%	62%	40	70
New Lenox	G	34.0	Full	301	1,115	1,076	80%	80%	46	77
Joliet	H	40.0	Full	193	768	949	57%	57%	60	92
TOTAL RI				**20,455**	**27,018**	**11,828**	**66%**	**62%**		

[1] Rock Island District Line Schedule
[2] Metra 1983 Boarding/Alighting Counts
[3] Metra, "Commuter Rail System Station Boarding/Alighting Counts," Fall 2016
[4] Metra Station Parking Capacity and Use, 2017
[5] Effective Use: all sold permit spaces are assumed to be used, even if unoccupied during parking survey
[6] Observed Use: spaces physically occupied during parking survey
[7] Station opened in 2011
[8] Station opened in 1993

TABLE 1D: MODE OF ACCESS AT RI METRA STATIONS

Station Name	Walk/Bike	Drive/Carpool Driver	Carpool Passenger/ Dropped Off	Transit	Other
LaSalle St.	41%	3%	9%	37%	10%
35th St./Jones[1]	0%	14%	29%	57%	0%
Gresham	11%	69%	14%	6%	0%
Brainerd	31%	56%	11%	3%	0%
91st St./Beverly	38%	47%	14%	0%	0%
95th St./Beverly	32%	35%	23%	8%	2%
99th St./Beverly	39%	40%	19%	1%	1%
103rd St./Beverly	35%	47%	14%	4%	0%
107th St./Beverly	41%	47%	12%	0%	0%
111th St./Morgan Park	24%	53%	20%	3%	0%
115th St./Morgan Park	30%	50%	20%	0%	0%
119th St.	21%	63%	16%	1%	0%
123rd St.	89%	0%	5%	5%	0%
Prairie St.	87%	7%	7%	0%	0%
95th St./Longwood[1]	39%	50%	11%	0%	0%
103rd St./Washington Hts.	33%	63%	2%	0%	2%
Vermont St.	15%	63%	20%	1%	1%
Robbins[1]	33%	33%	29%	0%	5%
Midlothian	12%	69%	19%	0%	0%
Oak Forest	8%	70%	21%	1%	1%
Tinley Park	15%	69%	15%	0%	0%
80th Ave./Tinley Park	5%	81%	14%	0%	0%
Hickory Creek	3%	85%	12%	0%	0%
Mokena	12%	68%	19%	0%	1%
New Lenox	3%	83%	14%	0%	0%
Joliet[2]	7%	64%	25%	2%	3%
TOTAL RI[3]	**16%**	**65%**	**17%**	**1%**	**1%**
SYSTEM TOTAL	**26%**	**53%**	**16%**	**4%**	**1%**

[1] Data not statistically significant due to number of survey responses received.
[2] Includes riders boarding on all Metra lines departing from station
[3] Line total does not include downtown terminal

Source: Metra, Fall 2016 Origin-Destination Survey

TABLE 2: METRA CAPITAL INVESTMENT HISTORY
1985 — December 2017, in millions of dollars

Asset	RI	System
Rolling stock	$268	$2,757
Track and structure	432	1,432
Signal, electrical, and mechanical	95	1,002
Facilities and equipment	132	613
Stations and parking	159	1,055
Acquisitions, extensions, and expansions	2	599
Support activities	56	395
TOTAL	**$1,144**	**$7,854**
PERCENTAGE	**14.6%**	**100.0%**

Notes: 1) Excludes South Shore, preventative maintenance, new lines, and pending grants. 2) Prior expenses are not adjusted for subsequent inflation. 3) Data is subject to budget revisions, audit adjustments, etc. at any time. 4) For many projects, work locations and associated costs have not been identified, so budget amounts are allocated among lines by various criteria. Better, more specific cost information is continually sought to improve data applicability; this will adjust the line-by-line results.

IMPROVEMENTS SINCE THE START OF METRA

Service quality and number of passenger trips on the RI declined rapidly throughout the 1970's and into the early 1980's as a result of deficient maintenance of the RI's physical plant by the CRI&P. When RTA purchased the RI's assets from the CRI&P, much of the line's facilities and right-of-way were in poor condition. Because the RI's service quality was inferior to other commuter rail lines serving the region, RTA (and later Metra) prioritized the line for major capital investment.

Since 1985, Metra has invested $1.1 billion (in year of expenditure dollars) in improvements to the RI corridor. Table 2 indicates the amount of investment in different asset categories.

One of the first major improvements to the RI was a complete reconstruction of the Beverly Branch, which included the replacement of all rail, ties, and ballast. These improvements allowed the branch line to operate more efficient service at a significantly greater speed. Over the years, dozens of RI main line bridges have been reconstructed and now much of the line can maintain speeds of up to 79 miles per hour. A concerted program of improvements has provided new equipment, track, storage yards and Centralized Traffic Control (CTC) which has resulted in significant efficiency, ridership, and safety enhancements.

Depots and warming houses constructed since 1985 at:

80th Avenue
Brainerd
Gresham
Hickory Creek (new station)
Midlothian
Robbins
Tinley Park

Other significant improvements completed since 1985 at:

91st Street/Beverly
95th Street/Beverly
99th Street/Beverly
103rd Street/Beverly
111th Street/Morgan Park
115th Street/Morgan Park
Joliet
LaSalle Street
Mokena
New Lenox
Oak Forest
Vermont Street

Station Improvements are planned for:

91st Street/Beverly
95th Street/Beverly
115th Street/Morgan Park
Auburn Park (new station)
Blue Island/Vermont St.
Hickory Creek
Joliet
New Lenox

In 2011, a new station, formally named the 35th Street/"Lou" Jones Station, opened at 35th and Federal Streets in Chicago. This station serves U.S. Guaranteed Rate Field, the Illinois Institute of Technology, and the Bronzeville neighborhood. Additionally, the 35th Street Station serves as a multi-modal access point: it provides transit connections to the Chicago Transit Authority's (CTA) Red Line station at 35th Street (one-half block west), Green Line station at 35th Street (two blocks east), and bus service along 35th Street. An American Recovery and Reinvestment Act (ARRA) grant contributed funding for construction of the station.

A rail-rail grade separation known as the Englewood Flyover opened for service in 2014. Each weekday, 76 revenue and non-revenue RI trains and approximately 60 freight and Amtrak trains pass through the Englewood interlocking near 63rd and State Streets in Chicago, and this project eliminated conflicts at the crossing by elevating the RI over track owned by Norfolk Southern. The project received $133 million in ARRA high-speed rail grant funds, and was part of the Chicago Region Environmental and Transportation Efficiency Program (CREATE), a package of projects designed to improve the efficiency of passenger and freight rail operations in the region.

FIGURE 2A: ORIGINS OF RIDERS USING NON-CBD RI STATIONS

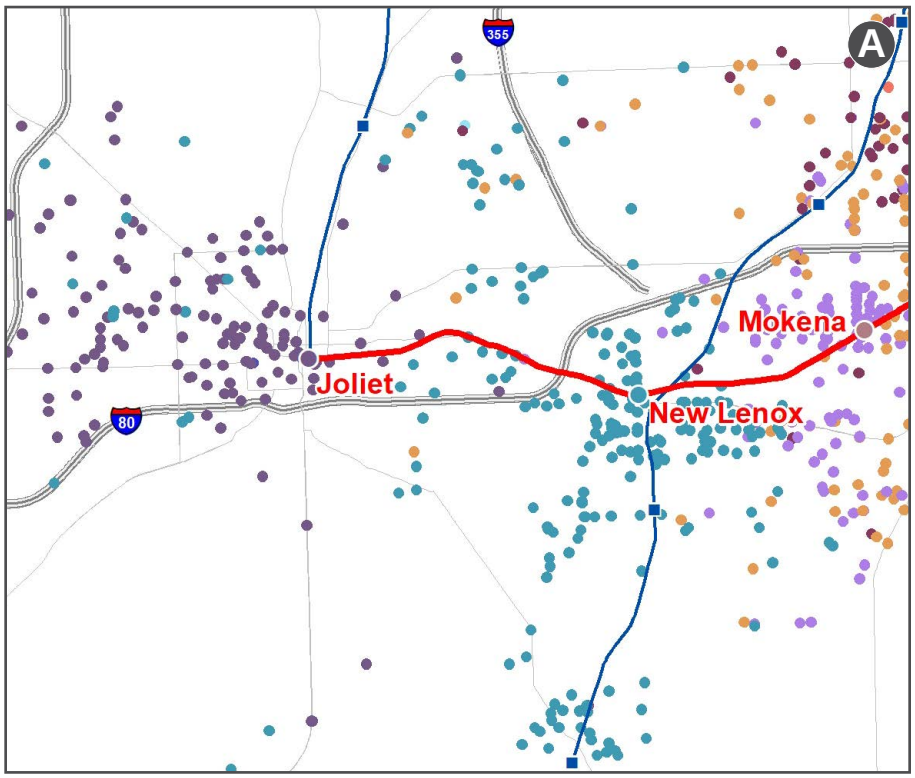


FIGURE 2B: ORIGINS OF RIDERS USING NON-CBD RI STATIONS

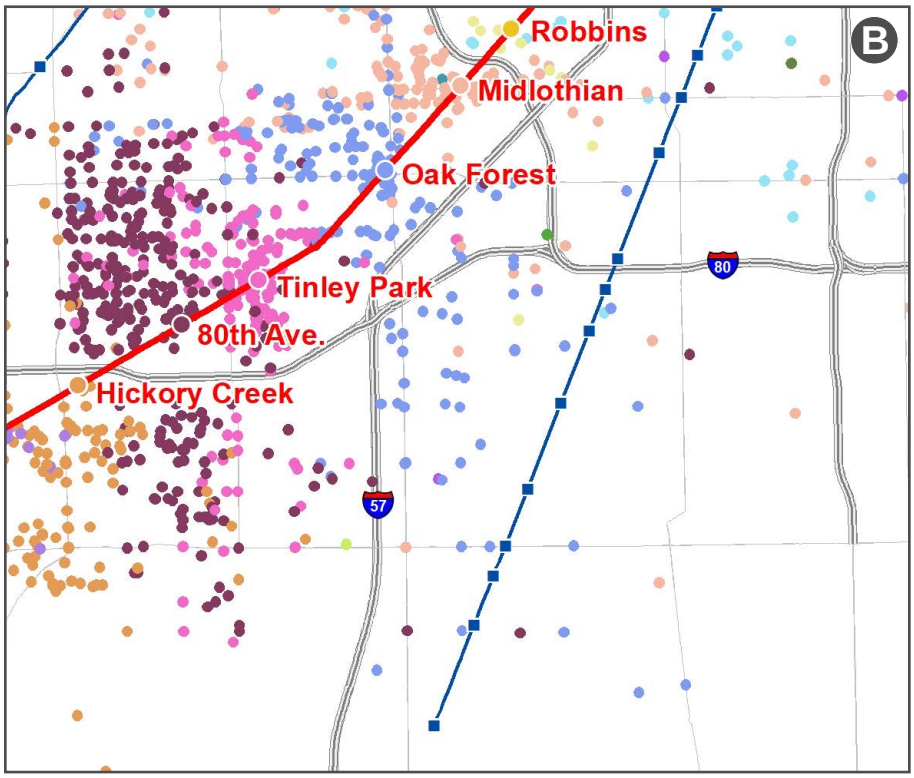
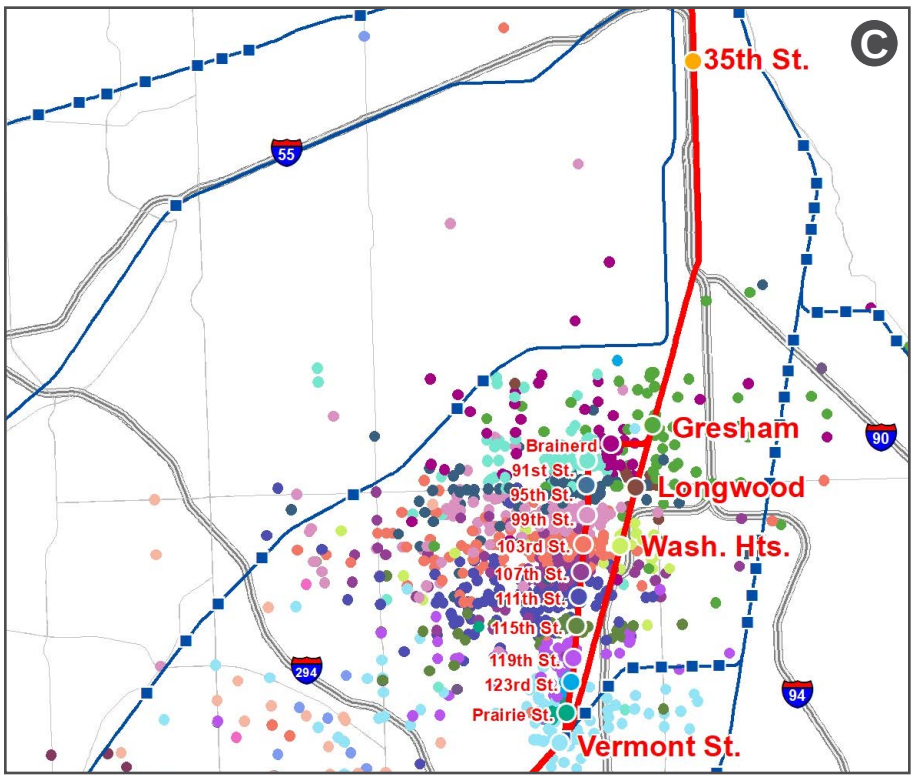
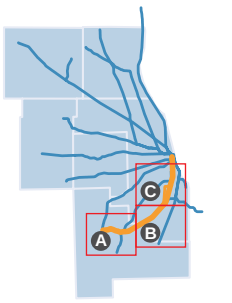


FIGURE 2C: ORIGINS OF RIDERS USING NON-CBD RI STATIONS





Metra Lines

RI Line

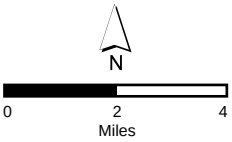
Other Metra Lines

Major Roads

Expressways

U.S./State Highways

Source: Metra 2016 Origin-Destination Survey



Improvements at a number of RI stations have been completed since 1985 (see page 156).

Over the next few years, the 47th Street Yard will undergo significant renovation to increase capacity for railcar and locomotive rehabilitation. The yard will also receive replacement ties, crosswalks and platforms. The investment will allow Metra to increase railcar rehabilitations from 40 to 60 per year. Planned bridge projects include rehabilitation of the bridge at Vincennes Avenue, and rehabilitation of the west embankments of the 37th, 39th, 51st and 57th Street bridges will soon begin.

Signal system upgrades at four interlockings and three road crossings were completed in 2017, bringing antiquated, inherited systems up to date and compatible with Positive Train Control (PTC). In addition, fiber optic cable will be installed on the entire line for the transmission of voice, signal data, corporate data, and video. Fiber optic cable will also enable the transmission of PTC data over the entire line, which necessitates the investment.

Most RI stations now comply with the accessibility requirements of the Americans with Disabilities Act (ADA), and approximately 92% of RI weekday boardings take place at these accessible stations. Metra's station compliance program started with designating eight of the busiest RI stations, including LaSalle Street Station in downtown Chicago, as "key stations," all of which were made fully accessible by 2007. Since 1985, Metra has completed access improvements at a number of non-downtown RI stations, and 16 outlying stations on the line are fully accessible to disabled riders. Metra will bring the remaining stations into full ADA compliance as they are rehabilitated so that eventually all will be accessible.

In 2018, a new multimodal transportation center opened in Joliet, to accommodate Metra, Amtrak, Pace, intercity and shuttle buses, bicycles, taxis, and intercity passenger rail (existing Amtrak service, as well as planned high-speed rail service between Chicago and St. Louis) and streamline transfers between the services. A new bus station is planned to be added to the transportation center, and will be built once funding is available. The former depot, built in 1912, has been closed to passengers and will be converted to other uses. Major funding for the transportation center was provided by the State of Illinois, with additional funding from the City of Joliet and BNSF.

PRESENT AND FUTURE DEMAND

Due to substantial increases in population along the RI corridor, demand for commuter rail service is expected to grow. Figure 2 shows the origins of RI riders outside the Central Business District (CBD).

TABLE 3: RI CORRIDOR POPULATION

Station	Fare Zone	Area Sq. Mi.	Population in Zone			Percent Change	
			2000	2010	2040	2000 vs 2010	2010 vs 2040
LaSalle St., 35th St./"Lou" Jones	A	11.6	153,492	133,871	171,907	-12.8%	28.4%
Gresham	B	5.8	75,146	63,542	78,289	-15.4%	23.2%
Brainerd, 91st, 95th, 95th/Longwood, 99th, 103rd, 103rd/Washington Hts.,107th, 111th, 115th, 119th	C	15.2	127,173	116,366	131,885	-8.5%	13.3%
123rd, Prairie St.,Vermont St., Robbins, Midlothian	D	20.8	77,122	78,567	90,847	1.9%	15.6%
Oak Forest, Tinley Park, 80th Ave.	E	37.7	90,159	94,832	125,030	5.2%	31.8%
Hickory Creek, Mokena	F	36.8	42,159	57,150	88,358	35.6%	54.6%
New Lenox	G	20.7	19,410	22,735	37,789	17.1%	66.2%
Joliet	H	120.3	152,991	194,444	325,326	27.1%	67.3%
RI TOTAL		**268.9**	**737,652**	**761,507**	**1,049,431**	**3.2%**	**37.8%**
REGION TOTAL		**3,748.0**	**8,091,717**	**8,456,762**	**11,717,936**	**4.5%**	**38.6%**

TABLE 4: RI CORRIDOR HOUSEHOLDS

Station	Fare Zone	Area Sq. Mi.	Households in Zone			Percent Change	
			2000	2010	2040	2000 vs 2010	2010 vs 2040
LaSalle St., 35th St./"Lou" Jones	A	11.6	50,214	46,481	57,345	-7.4%	23.4%
Gresham	B	5.8	23,861	21,803	26,313	-8.6%	20.7%
Brainerd, 91st, 95th, 95th/Longwood, 99th, 103rd, 103rd/Washington Hts.,107th, 111th, 115th, 119th	C	15.2	43,810	41,869	47,251	-4.4%	12.9%
123rd, Prairie St.,Vermont St., Robbins, Midlothian	D	20.8	27,671	27,603	33,326	-0.2%	20.7%
Oak Forest, Tinley Park, 80th Ave.	E	37.7	32,056	35,661	45,338	11.2%	27.1%
Hickory Creek, Mokena	F	36.8	13,486	19,258	28,832	42.8%	49.7%
New Lenox	G	20.7	6,396	7,663	12,757	19.8%	66.5%
Joliet	H	120.3	53,102	65,212	114,648	22.8%	75.8%
RI TOTAL		**268.9**	**250,596**	**265,550**	**365,810**	**6.0%**	**37.8%**
REGION TOTAL		**3,748.0**	**2,906,924**	**3,050,134**	**4,224,349**	**4.9%**	**38.5%**

TABLE 5: RI CORRIDOR EMPLOYMENT

Station	Fare Zone	Area Sq. Mi.	Employment in Zone			Percent Change	
			2000	2010	2040	2000 vs 2010	2010 vs 2040
LaSalle St., 35th St./"Lou" Jones	A	11.6	178,408	208,518	251,480	16.9%	20.6%
Gresham	B	5.8	3,942	4,022	5,870	2.0%	45.9%
Brainerd, 91st, 95th, 95th/Longwood, 99th, 103rd, 103rd/Washington Hts.,107th, 111th, 115th, 119th	C	15.2	14,473	16,231	22,952	-3.5%	9.4%
123rd, Prairie St.,Vermont St., Robbins, Midlothian	D	20.8	31,668	26,827	31,902	1.5%	17.8%
Oak Forest, Tinley Park, 80th Ave.	E	37.7	34,827	33,945	61,184	37.2%	52.7%
Hickory Creek, Mokena	F	36.8	19,740	24,571	54,502	238.4%	122.1%
New Lenox	G	20.7	7,709	6,756	24,589	-12.4%	264.0%
Joliet	H	120.3	57,272	62,695	125,108	9.5%	99.6%
RI TOTAL		**268.9**	**348,039**	**383,565**	**577,587**	**10.2%**	**50.6%**
REGION TOTAL		**3,748.0**	**3,786,224**	**3,786,224**	**5,267,696**	**0.0%**	**39.1%**

According to Metra's 2016 Metra Boarding and Alighting Count, the RI had over 27,000 boardings on 67 trains serving 25 stations between Joliet and Chicago, with 86% of boardings on peak-period, peak-direction trains. Overall, the RI has seen a 32% increase in boardings since 1983 (see Table 1c). Ridership has grown most significantly at stations nearest downtown Chicago (Gresham, 549%; Brainerd, 146%) as well as in the burgeoning suburbs of Will County (New Lenox, 270%; Joliet, 298%). Except for Brainerd, 107th Street/Beverly Hills and 99th Street/Beverly Hills, however, ridership at Beverly Branch stations has remained even or diminished, with a decline of 22% at Beverly Branch stations south of Brainerd. Meanwhile, 95th Street/Longwood, and 103rd Street/Washington Heights—on the RI main line directly east of the Beverly Branch—have seen increases in ridership (an average increase of 56%). These trends suggest a shift in ridership towards the main line, which provides express service on the south side of Chicago, and an increase in passengers from the suburban stations. The largest increases in ridership on the southwest end of the RI have occurred at Robbins, 80th Avenue, New Lenox, and Joliet. Overall passenger ridership on the RI totaled 8.0 million in 2016.

Approximately 11,800 parking spaces serve riders on the RI. According to parking counts conducted in 2017, the effective utilization rate on the RI is 66%. When utilization of station parking areas exceeds 85%, Metra considers that they are approaching full capacity. Five RI stations exceed this threshold, indicating a demand for increased parking at these stations.

RI ridership is likely to see ridership gains in the future. The south suburbs, and suburbs in Will County in particular, have seen phenomenal growth in population and employment. Chicago Metropolitan Agency for Planning (CMAP) forecasts for 2040 show this trend continuing, and all station marketsheds on the RI are forecasted to see increases in population, households and employment. In fact, CMAP forecasts suggest a 38% increase in population from 2010 to 2040 throughout the entire corridor.

Employment growth will be a significant factor in ridership. A 51% increase in employment is projected for marketsheds in the RI corridor from 2010 to 2040. Projections indicate that the RI marketsheds with the biggest percentage increases in population, households and employment in the RI corridor will continue to be in Will County. Tables 3, 4 and 5 describe the demographics in the RI corridor.

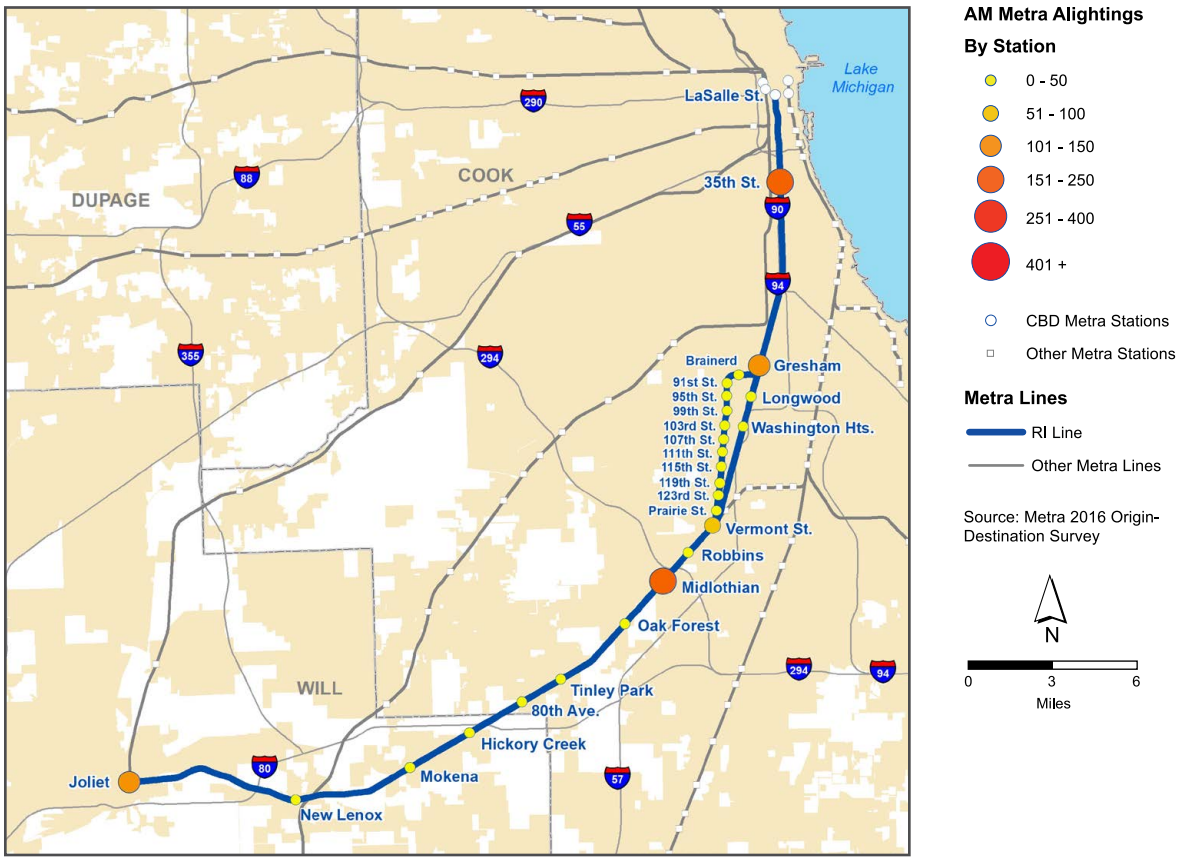
REVERSE COMMUTE AND NON-DOWNTOWN MARKETS

Although Metra's primary market involves commuters who follow the traditional suburb-to-CBD trip pattern, in recent years Metra has seen a

demand for city-to-suburb reverse-commute options (Metra's primary commuter market is discussed in the Central Business District Market chapter). This market is not as significant for the RI, which still retains the traditional suburb-to-CBD trip pattern. According to Metra's 2016 Boarding and Alighting Count, only 1.3% of AM peak-period boardings on the RI are in the reverse (outbound) direction, significantly lower than the system average of 6.2%. However, the 35th/"Lou Jones" station, which opened in 2011, is one of only 15 outlying stations in Metra's system where alightings exceed boardings during the AM peak. The station experiences significant traffic from riders traveling to nearby destinations such as the Illinois Institute of Technology or Guaranteed Rate Field, or those transferring to or from the CTA Red Line station located one block away. Figure 3 shows AM alightings at non-CBD RI stations.

Factors that increase reverse-commute trip patterns are the growth of employment in the suburbs as well as the growth of population in the city and inner ring suburbs (Tables 3, 4, and 5). As mentioned earlier, employment along the RI corridor is expected to increase 51% between 2010 and 2040. However, projected employment growth is not evenly distributed. While

FIGURE 3: AM ALIGHTINGS AT NON-CBD RI STATIONS



expected in all Metra station marketsheds, projected employment growth is greatest in far southwest Cook County and Will County communities. Joliet, at the end of the RI Line, is Illinois' fourth-largest city and was one of the fastest growing cities in the state between 2000 and 2010. Areas near the New Lenox, Hickory Creek and Mokena Stations, just east of Joliet, also expect significant gains in employment and population. Meanwhile, population growth of 28% is forecast for the marketshed zone closest to downtown Chicago (Fare Zone A). Though employment in these marketsheds is projected to increase 21%, some residents may need to commute to suburban job centers near the RI.

TABLE 6: MAJOR TRIP GENERATORS ACCESSIBLE FROM THE RI CORRIDOR

Generator Type	Name	Comments	Municipality
Airports	Joliet Regional Airport	General aviation	Joliet
Colleges and Universities	Illinois College of Optometry	650 students	Chicago
	Illinois Institute of Technology	7,700 students	Chicago
	St. Xavier University	3,900 students	Chicago
	South Suburban College - Oak Forest Center	Branch of 2-year college	Oak Forest
	DeVry University/Chamberlain College of Nursing	1,500 students	Tinley Park
	Moraine Valley Community College	Southwest Education Center auxiliary campus	Tinley Park
	Joliet Junior College	22,000 students	Joliet
	University of St. Francis	1,300 students	Joliet
Culture and Entertainment	Guaranteed Rate Field	Chicago White Sox ballpark; cap. 41,000	Chicago
	Chicagoland Speedway/Route 66 Raceway	NASCAR racetrack; cap. 75,000	Joliet
	Harrah's Joliet Hotel & Casino		Joliet
	Rialto Square Theater	Performing arts venue; cap. 2,000	Joliet
	Silver Cross Field	Joliet Slammers baseball stadium; cap. 6,900	Joliet
Shopping	Louis Joliet Mall	Regional mall; 100 stores, 4 anchors; 947K sq. ft.	Joliet
Government	Cook County District 6 Courthouse	Cook County circuit court suburban location	Markham
	Stateville Correctional Center	1,300 employees	Crest Hill
	City of Joliet	Adminstrative offices	Joliet
	Will County Government/ Courthouse	Adminstrative offices and courthouse	Joliet
Hospitals	Little Company of Mary Hospital	244 beds	Evergreen Park
	MetroSouth Medical Center	314 beds	Blue Island
	Cook Co. Oak Forest Health Ctr.	Outpatient facility on 340-acre campus	Oak Forest
	Silver Cross Hospital	296 beds	New Lenox
	Presence St. Joseph Medical Ctr.	473 beds	Joliet
Large Private Employers	Modern Drop Forge Company	Headquarters of forged parts manufacturer	Blue Island
	Panduit Corporation	HQ of electrical component manufacturer	Tinley Park
	V.J. Mattson Company	Steel fabricator	Mokena

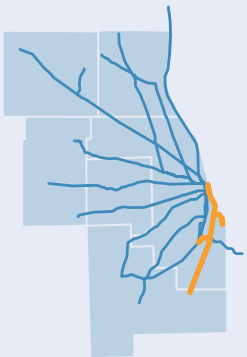
LaSalle Street Station

Millennium Station
Photo: David Wilson

METRA ELECTRIC LINE

EXISTING SERVICE AND CONDITIONS

The **Metra Electric (ME) Line** extends nearly 32 miles south from Millennium Station in downtown Chicago to Chicago's south side and southern suburbs in Cook and Will Counties (see Figure 1), terminating in University Park. A 4.7-mile double-track branch leaves the main line at 67th Street in Chicago, extending east and south to serve the South Shore and South Chicago neighborhoods, terminating at the 93rd Street Station. For much of its length, the South Chicago Branch runs in a street median, and the branch is the only segment of Metra's system to terminate within the city limits of Chicago. In addition, a 4.4-mile single-track branch extends west from 121st Street to Blue Island.



Both the Blue Island and South Chicago Branches are served by through trains to Millennium Station, which run during morning and afternoon peak periods as well as midday. On a handful of inbound trains, passengers on the Blue Island Branch have the option to transfer to main line express trains at the Kensington/115th Street Station to reach downtown sooner. Train schedules are coordinated to facilitate these transfers. The 59th Street and

55th-56th-57th Street Stations in Hyde Park are also frequent transfer points for main line riders who need to transfer between express and local trains. An additional transfer point is the Blue Island Station, where riders can transfer to or from the Rock Island Line at the adjacent Vermont Street Station. Service on the ME is offered seven days a week, except for the Blue Island Branch, which is not served on Sundays.

From Millennium Station to 115th Street, ME tracks are shared with South Shore Line commuter trains operated by the Northern Indiana Commuter Transportation District (NICTD), and South Shore trains stop at six ME stations in this portion of the route. However, to avoid competition with ME service, passengers may not board inbound South Shore trains from 63rd Street to Millennium Station, and outbound South Shore passengers may not disembark at these stations. South of 115th Street, the South Shore Line diverges from the ME onto its own tracks, traveling to Chicago's Hegewisch neighborhood and through northern Indiana, terminating in South Bend, Indiana.

2017 Average trip length:
19.8 miles

2017 Average fare paid:
$4.28

Source: Ridership Trends Report, Dec. 2017

Number of stations:
49

Route length*:
40.6 miles

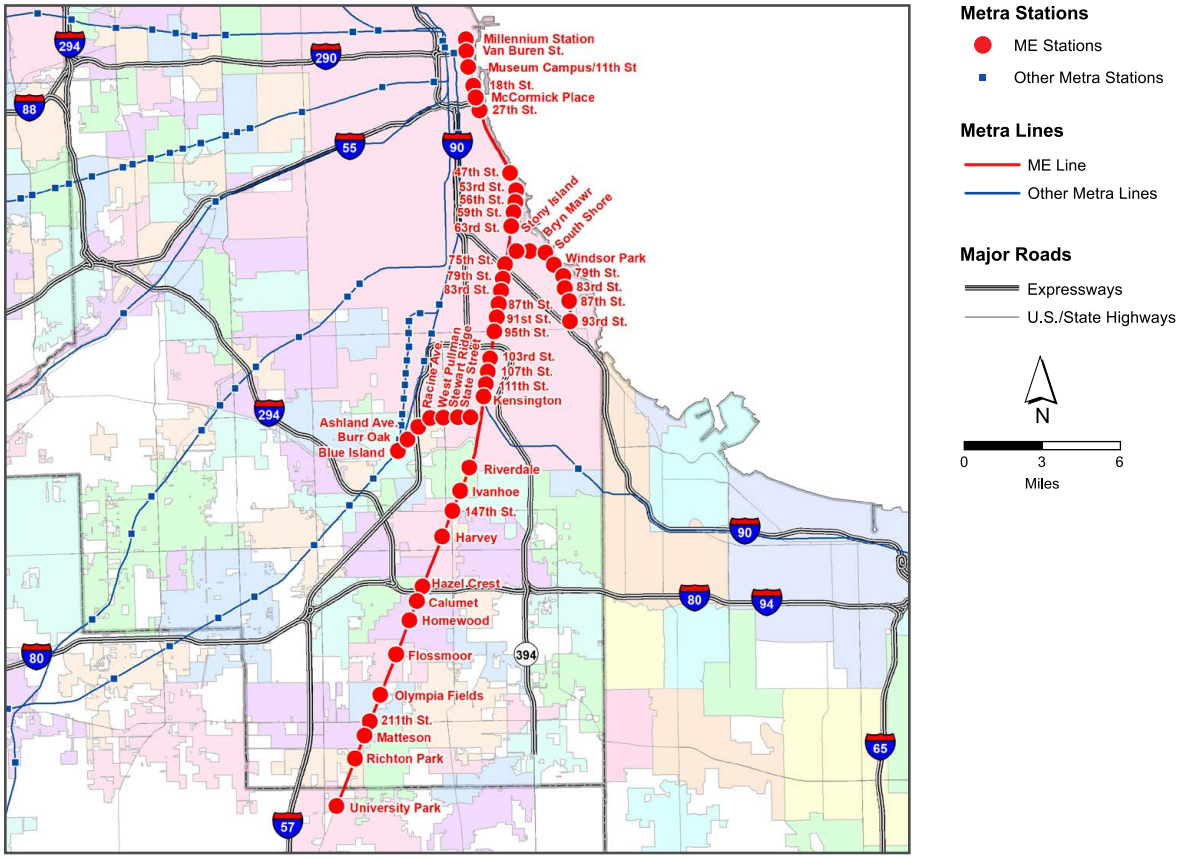
Number of weekday trains (May 2018):
155

2017 On-time performance**:
98.1%

**31.5-mile Main Line, 4.4-mile Blue Island Branch, and 4.7-mile South Chicago Branch*

*** On-time Performance Report, Dec. 2017*

FIGURE 1: METRA STATIONS ON THE ME LINE



Unique among Metra lines, the ME is served by two downtown stations: Millennium Station, located between Randolph Street and South Water Street, and Van Buren Street Station, less than a mile to the south. Among riders utilizing the two stations, approximately three-quarters use Millennium Station, with the remainder using Van Buren Street. The ME has the highest number of stations of any line in the Metra system, and is served by the highest number of trains. In 2017, passenger trips on the ME totaled 8.1 million, ranking fifth among all Metra lines (based on ticket sales).

Table 1 details the service, station, and ridership characteristics of the ME.

Some unique features distinguish the ME from Metra's ten other lines:

1. ME trainsets consist of bi-level electric self-propelled coaches, called electric-multiple units (EMUs), that draw power from a dedicated overhead catenary wire system. Because of this, ME trains accelerate faster and run more quietly than the diesel locomotives and unpowered coaches used elsewhere in Metra's system.
2. The ME main line is grade-separated from intersecting streets and highways and its tracks are segregated from freight and Amtrak service on adjacent track. This increases safety and reduces delays.
3. All stations are built with high-level platforms. This means that passengers do not climb steps from the platform to board train cars, which reduces station dwell time.
4. Most stations are unstaffed and tickets are purchased from vending machines.

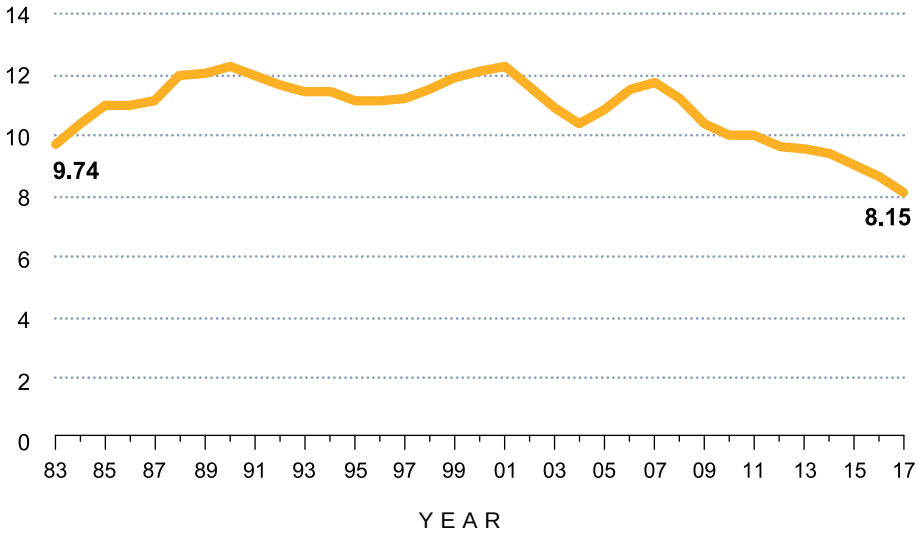
In 1856, the Illinois Central Railroad (IC) initiated commuter rail service on what is now the ME main line. The success of this service led to the construction of the South Chicago and Blue Island Branches in 1883 and 1892, respectively. The main line and both branches were converted to electric power in 1926 after passage of a City of Chicago ordinance requiring IC to electrify its operations in order to eliminate coal emissions from steam engines along the lakefront. Grade separation of the main line from Richton Park to the Chicago terminal coincided with electrification. The line was extended to its current terminus at University Park in 1977, one year after RTA began subsidizing IC commuter service. In 2001, the South Chicago Branch terminus at 91st Street was relocated to 93rd Street so that commuter parking could be provided. IC—then known as Illinois Central Gulf—sold its commuter rail operations, equipment, and right-of-way to Metra in 1987. The freight tracks that parallel the ME main line between McCormick Place and University Park are now owned by Canadian National (CN). Although CN has trackage rights to serve industries located on Metra's corridor, no freight trains currently operate on the ME itself. The CN tracks are also used by Amtrak trains to Carbondale and New Orleans, and passengers can transfer

TABLE 1A: 2016 ME WEEKDAY BOARDINGS

Time of Day	Inbound	Outbound
AM Peak	11,892	543
Midday	2,066	2,063
PM Peak	925	10,788
Evening	398	1,311
TOTAL	**15,281**	**14,705**

Source: Metra Weekday Station Boardings and Alightings by Time-of-Day and Direction, 2016

TABLE 1B: ME ANNUAL PASSENGER TRIPS
1983 — 2016, in millions



Note: Excludes South Shore. From 2008, figures include free Circuit Permit trips. 2008-2011 figures include free senior trips; this program ended September 2011.

TABLE 1C: ME STATION CHARACTERISTICS

Station	Fare Zone	Mile Post	Accessibility[1]	Boardings		Station Parking (2017)			Time to Chicago (minutes)[1]	
				1983[2]	2016[3]	Capacity (Spaces)[4]	Effective Use[5]	Observed Use[6]	Shortest Trip	Longest Trip
MAIN LINE										
Millennium Station	A	0.0	Full	12,112	9,798	0	n/a	n/a	--	--
Van Buren St.	A	0.8	Full	5,151	3,141	0	n/a	n/a	2	6
Museum Campus/11th	A	1.4	Full	365	484	0	n/a	n/a	3	6
18th St.	A	2.2	None	19	42	0	n/a	n/a	6	8
McCormick Place	A	2.7	Full	171	108	0	n/a	n/a	7	10
27th St.	A	3.2	None	77	30	0	n/a	n/a	9	12
47th St./Kenwood	B	5.9	None	18	82	0	n/a	n/a	11	15
51st/53rd Hyde Park	B	6.5	Full	427	642	0	n/a	n/a	11	17
55th-56th-57th St.	B	7.0	Full	533	1,542	53	85%	85%	12	19
59th/Univ. of Chicago	B	7.4	None	513	674	131	88%	88%	15	21
63rd St.	B	7.9	None	109	299	0	n/a	n/a	14	20
75th/Grand Crossing	B	9.3	None	61	28	0	n/a	n/a	18	23
79th St./Chatham	B	10.0	None	70	59	7	0%	0%	19	25
83rd St./Avalon Park	C	10.4	None	46	40	0	n/a	n/a	20	26
87th St./Woodruff	C	10.9	None	41	41	15	40%	40%	21	27
91st St./Chesterfield	C	11.4	None	30	27	0	n/a	n/a	23	29
95th/Chicago St. Univ.	C	12.0	None	17	26	0	n/a	n/a	23	31
103rd St./Rosemoor	C	13.0	None	17	37	18	61%	61%	26	33
107th St.	C	13.5	None	18	19	0	n/a	n/a	27	35
111th St./Pullman	C	14.0	None	46	24	0	n/a	n/a	28	37
Kensington/115th St.	C	14.5	Full	840	1,120	343	81%	81%	23	39
Riverdale	D	17.3	None	747	180	221	36%	36%	27	42
Ivanhoe	D	18.2	Full	1,529	628	462	85%	48%	30	44
147th St./Sibley Blvd.	D	19.0	None	990	984	1,122	48%	48%	32	46
Harvey	D	20.0	Full	1,229	542	885	28%	28%	32	48
Hazel Crest	E	22.3	None	610	412	140	92%	67%	32	51
Calumet	E	22.8	Full	764	989	1,120	79%	60%	35	53
Homewood	E	23.5	Full	1,602	1,308	516	93%	82%	38	55
Flossmoor	E	24.9	Full	1,273	824	275	100%	75%	38	58
Olympia Fields	F	26.6	None	265	643	504	79%	79%	38	60
211th St./Lincoln Hwy.	F	27.6	Full	796	727	695	58%	58%	41	62
Matteson	F	28.2	None	1,080	507	755	39%	39%	43	64
Richton Park	F	29.3	Full	1,140	1,179	1,043	66%	50%	46	67
University Park	G	31.5	Full	411	907	1,070	63%	57%	51	74

TABLE 1C: ME STATION CHARACTERISTICS (continued)

Station	Fare Zone	Mile Post	Accessibility[1]	Boardings		Station Parking (2017)			Time to Chicago (minutes)[1]	
				1983[2]	2016[3]	Capacity (Spaces)[4]	Effective Use[5]	Observed Use[6]	Shortest Trip	Longest Trip
SOUTH CHICAGO BRANCH										
Stony Island	B	9.1	Full	175	109	0	n/a	n/a	19	26
Bryn Mawr	B	9.7	Full	153	112	0	n/a	n/a	21	28
South Shore	B	10.3	Full	349	182	12	100%	100%	23	30
Windsor Park	B	10.9	Full	266	95	27	41%	41%	25	32
Cheltenham/79th St.	B	11.5	Full	232	55	72	22%	22%	27	34
83rd St.	B	12.0	Full	417	103	33	48%	48%	29	36
87th St.	B	12.5	Full	211	90	40	65%	65%	31	38
93rd/South Chicago	B	13.2	Full	635	619	694	19%	19%	34	42
BLUE ISLAND BRANCH										
State St.	D	15.6	None	51	30	0	n/a	n/a	28	41
Stewart Ridge	D	16.0	None	48	36	0	n/a	n/a	30	43
West Pullman	D	16.7	None	57	22	27	0%	0%	32	49
Racine Ave.	D	17.0	None	41	31	29	38%	38%	34	50
Ashland Ave.	D	17.9	None	166	111	78	54%	54%	36	51
Burr Oak	D	18.4	None	350	117	63	81%	81%	38	52
Blue Island	D	18.9	Full	393	181	39	95%	95%	40	54
ME TOTAL				**36,661**	**29,986**	**10,489**	**60%**	**53%**		

[1] Metra Electric Line Schedule
[2] Metra 1983 Boarding/Alighting Counts
[3] Metra, "Commuter Rail System Station Boarding/Alighting Counts," Fall 2017.
[4] Metra Station Parking Capacity and Use, 2017
[5] Effective use: all sold permit spaces are assumed to be used, even if unoccupied during parking survey
[6] Observed use: spaces physically occupied during parking survey

TABLE 1D: MODE OF ACCESS AT ME METRA STATIONS

Station Name	Walk/Bike	Drive/Carpool Driver	Carpool Passenger/ Dropped Off	Transit	Other
MAIN LINE					
Millennium Station	74%	3%	4%	16%	3%
Van Buren St.	57%	2%	4%	29%	9%
Museum Campus/11th St.	85%	2%	7%	7%	0%
18th St.	100%	0%	0%	0%	0%
McCormick Place[1]	82%	9%	9%	0%	0%
27th St.	100%	0%	0%	0%	0%
47th St./Kenwood	76%	16%	4%	2%	2%
51st/53rd St. Hyde Park	92%	3%	4%	2%	0%
55th-56th-57th St.	78%	15%	4%	4%	0%
59th St./Univ. of Chicago	45%	42%	7%	6%	0%
63rd St.	48%	45%	1%	5%	0%
75th St./Grand Crossing[1]	67%	11%	22%	0%	0%
79th St./Chatham[1]	36%	39%	11%	14%	0%
83rd St./Avalon Park	63%	19%	19%	0%	0%
87th St./Woodruff[1]	40%	40%	16%	4%	0%
91st St./Chesterfield[1]	42%	25%	33%	0%	0%
95th St./Chicago State Univ.[1]	25%	8%	33%	33%	0%
103rd St./Rosemoor[1]	50%	30%	20%	0%	0%
107th St.	80%	13%	7%	0%	0%
111th St./Pullman[1]	64%	21%	7%	7%	0%
Kensington/115th St.	13%	67%	14%	5%	1%
Riverdale	31%	51%	16%	1%	1%
Ivanhoe	26%	54%	19%	0%	1%
147th St./Sibley Blvd.	3%	72%	17%	8%	1%
Harvey	9%	62%	20%	8%	2%
Hazel Crest	6%	76%	16%	1%	1%
Calumet	6%	80%	15%	0%	0%
Homewood	22%	49%	27%	2%	1%
Flossmoor	30%	40%	28%	0%	2%
Olympia Fields	5%	83%	11%	0%	0%
211th St./Lincoln Hwy.	8%	71%	19%	2%	1%
Matteson	17%	68%	13%	0%	1%
Richton Park	19%	57%	22%	1%	1%
University Park	3%	77%	14%	4%	2%

TABLE 1D: MODE OF ACCESS AT ME METRA STATIONS (continued)

Station Name	Walk/Bike	Drive/Carpool Driver	Carpool Passenger/ Dropped Off	Transit	Other
SOUTH CHICAGO BRANCH					
Stony Island	65%	26%	6%	3%	0%
Bryn Mawr	74%	10%	10%	5%	0%
South Shore	80%	11%	7%	2%	0%
Windsor Park	92%	8%	0%	0%	0%
Cheltenham/79th St.	71%	18%	11%	0%	0%
83rd St.	44%	41%	10%	5%	0%
87th St.	46%	32%	22%	0%	0%
93rd/South Chicago	10%	60%	28%	2%	0%
BLUE ISLAND BRANCH					
State St.[1]	26%	35%	26%	13%	0%
Stewart Ridge	73%	9%	18%	0%	0%
West Pullman[1]	86%	0%	0%	14%	0%
Racine Ave.[1]	60%	28%	12%	0%	0%
Ashland Ave.	37%	44%	18%	0%	2%
Burr Oak	26%	64%	10%	0%	0%
Blue Island	9%	49%	18%	24%	1%
ME TOTAL[2]	**25%**	**55%**	**17%**	**3%**	**1%**
SYSTEM TOTAL	**26%**	**53%**	**16%**	**4%**	**1%**

[1] Data not statistically significant due to number of survey responses received

[2] Line total does not include downtown terminals (Millennium and Van Buren Street)

Source: Metra, Fall 2016 Origin-Destination Survey

between ME and Amtrak trains at Homewood Station. (However, passengers not transferring to other Amtrak trains in Chicago cannot board northbound Amtrak trains at Homewood, to avoid competition with Metra service.)

Most midday servicing of the ME fleet takes place at the 18th Street MU Facility (also known as Weldon Yard), located near Soldier Field. Inspections and mechanical work are performed at Kensington Yard (also known as "KYD"), located south of the Kensington/115th Station, or at 18th Street. Most main line trainsets are stored overnight at Richton Yard with a small number of additional trainsets held at the end of the line in University Park. Rolling stock serving the Blue Island Branch is stored at the Vermont Street terminal, and South Chicago Branch trainsets are stored at Millennium Station.

TABLE 2: METRA CAPITAL INVESTMENT HISTORY
1985 — December 2017, in millions of dollars

Asset	ME	System
Rolling stock	$893	$2,757
Track and structure	102	1,432
Signal, electrical, and mechanical	206	1,002
Facilities and equipment	138	613
Stations and parking	223	1,055
Acquisitions, extensions, and expansions	17	599
Support activities	95	395
TOTAL	**$1,675**	**$7,854**
PERCENTAGE	**21.3%**	**100.0%**

Notes: 1) Excludes South Shore, preventative maintenance, new lines, and pending grants. 2) Prior expenses are not adjusted for subsequent inflation. 3) Data is subject to budget revisions, audit adjustments, etc. at any time. 4) For many projects, work locations and associated costs have not been identified, so budget amounts are allocated among lines by various criteria. Better, more specific cost information is continually sought to improve data applicability; this will adjust the line-by-line results.

IMPROVEMENTS SINCE THE START OF METRA

Since 1985, Metra has invested $1.7 billion (in year of expenditure dollars) in improvements to the ME corridor. The ME consumed 21% of Metra's total capital spending during that time. In addition to the track, signal, and other components found on Metra's diesel lines, operation of the ME depends on an extensive electrical infrastructure, which accounts for the line's increased capital needs. Indeed, the overhead catenary and other elements of the ME's power supply have been likened to a "second railroad" requiring ongoing investment.

Table 2 indicates the amount of investment in different asset categories. The amounts shown reflect the cost of replacing interlockings at 67th Street, Kensington, and the Millennium Station terminal, upgrading customer and operations communications systems, and replacing the entire ME railcar fleet. In addition, Metra has completed improvements at a number of ME stations since 1985 (see right).

Until 2006, when 26 new EMUs entered service, the entire ME fleet dated from the 1970s, and had been inherited from the IC. Replacing the ME fleet was a long-time agency priority, and in 2010, the State of Illinois committed $585 million in Bond Program funds to purchase 160 new EMUs. From fall of 2012 until early 2016, four to six new EMUs arrived from the Rochelle, Illinois plant each month, and old cars were retired.

The 2016 rehabilitation of the 111th/Pullman Station included replacement of the warming houses, which were painted to thematically represent the historic Pullman district and celebrate the Pullman National Monument designation by the National Park Service. In 2017, Metra replaced the crossing at Stony Island Ave and the South Chicago Branch, rehabilitated the 63rd and 64th Street bridges, upgraded the signal system at the 11th Place interlocking in service of Positive Train Control (PTC), and replaced six switches at the Richton Park Yard. Fiber optic cable will be installed for conducting voice and signal data. Another noteworthy improvement is the increase in electrical power through installation of new substations, which will allow the new EMUs to accelerate faster and increase maximum operating speed.

In the last 20 years, numerous adjustments have been made to the ME's schedule, increasing midday service on the main line, reducing crowding during peaks, adding through-trains to Millennium Station from the branch lines, improving transfer opportunities, and improving efficiency. In an effort to reverse ridership decline on the line and better serve demand, Metra revised the ME schedule in the fall of 2017 to improve midday, weekday service to Hyde Park with inbound and outbound train arrivals every 20 minutes. In addition, midday service frequency to mainline stops from 75th to 111th Streets improved to every one hour (instead of every two). The

Depots and warming houses constructed since 1985 at:

47th/Kenwood
53rd/Hyde Park
55th-56th-57th Street
83rd Street (South Chicago)
87th Street (South Chicago)
93rd/South Chicago
111th/Pullman
Blue Island
Bryn Mawr
Calumet
Cheltenham/79th
Flossmoor
Harvey
Hazel Crest
Homewood
Ivanhoe
Kensington/115th
Matteson
McCormick Place
Millennium Station
Museum Campus/11th
Olympia Fields
Richton Park
Riverdale
South Shore
Stony Island
University Park
Van Buren Street
West Pullman
Windsor Park

Other significant improvements completed since 1985 at:

63rd Street
95th/Chicago State University
211th/Lincoln Highway
Ashland Avenue
Burr Oak
Racine Avenue
State Street
Stewart Ridge

Improvements planned for:

59th/Univ. of Chicago
63rd Street
Ashland Avenue
Burr Oak
Hazel Crest
Homewood
McCormick Place
Racine

changes to the schedule also addressed other gaps in service and simplified the schedule and stop patterns. Lightly used trains on the branch lines were eliminated, and Saturday service was scaled back for the mainline and both branches. However, the line will continue to have more Saturday trains than any other Metra line.

Approximately 85% of ME boardings take place at stations that are in compliance with the accessibility requirements of the Americans with Disabilities Act (ADA). Metra's station compliance program started with designating nine of the busiest ME stations, including Millennium Station (formerly Randolph Street Station) in downtown Chicago, as "key stations," all of which were made fully accessible by 2007. Since 1985, Metra has completed access improvements at a number of non-downtown ME stations, and 22 non-downtown stations on the line are fully accessible to disabled riders. In 2017, Metra awarded a contract for the renovation of the Hazel Crest station that will include the addition of an elevator on the north end of the station, which will make the station fully ADA-compliant. Construction is expected to be complete by fall 2018. Modest improvements to station access were recently completed for the Homewood station. In partnership with Amtrak, the Homewood station will receive a larger overhaul for greater accessibility and convenience. The project is currently in design.

FIGURE 2A: ORIGINS OF RIDERS USING NON-CBD ME STATIONS

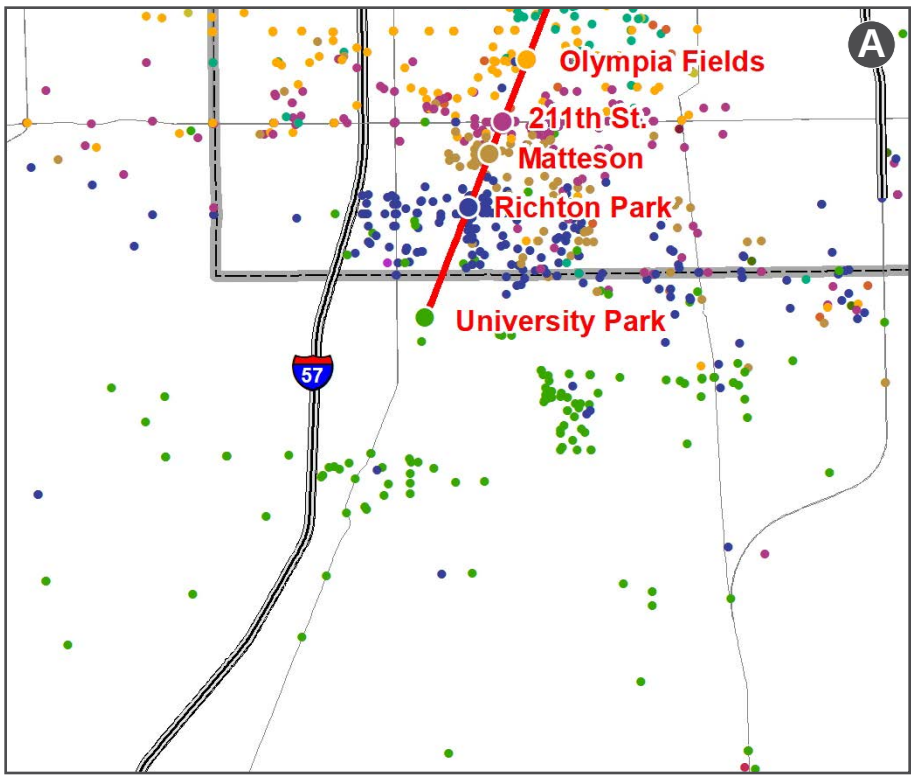


FIGURE 2B: ORIGINS OF RIDERS USING NON-CBD ME STATIONS

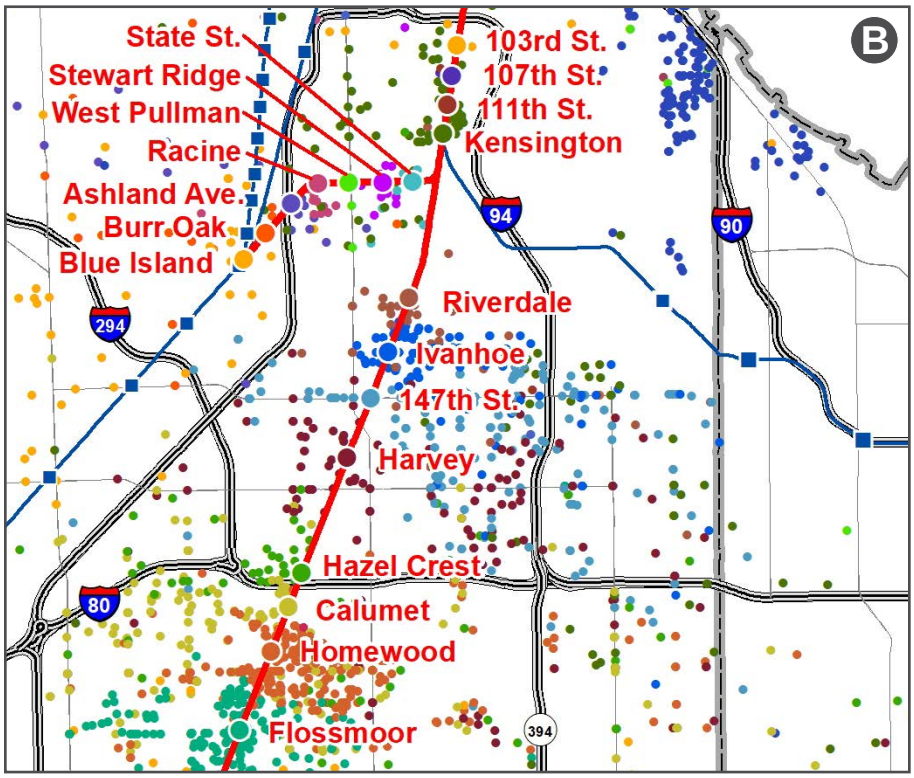
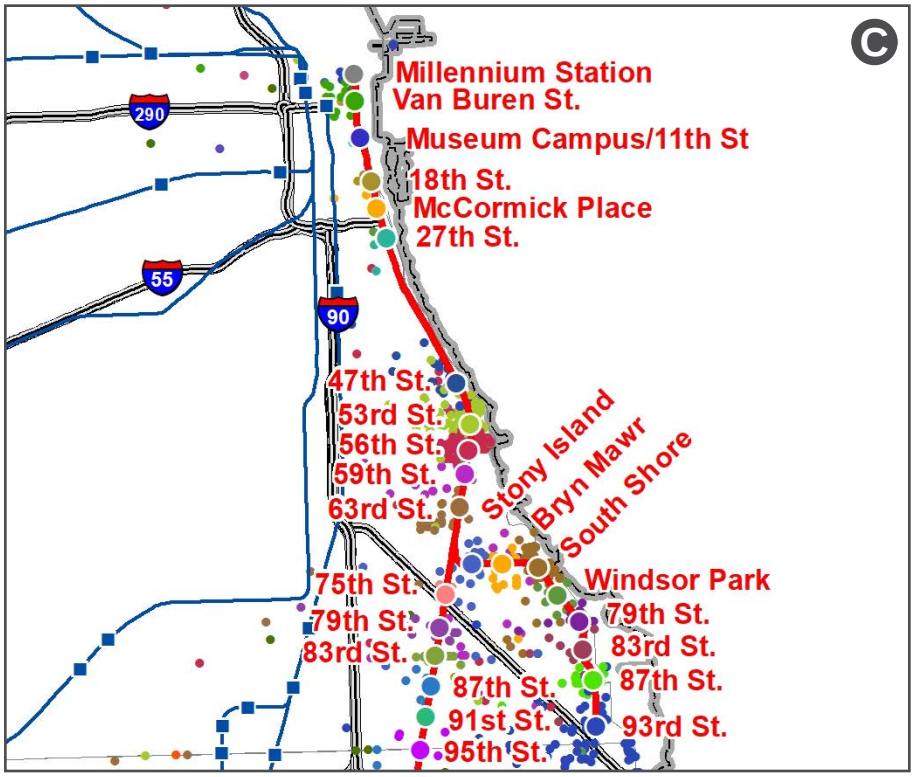
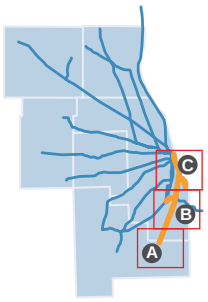


FIGURE 2C: ORIGINS OF RIDERS USING NON-CBD ME STATIONS





Metra Lines

ME Line

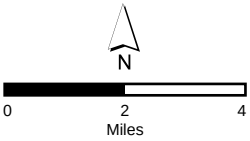
Other Metra Lines

Major Roads

Expressways

U.S./State Highways

Source: Metra 2016 Origin-Destination Survey



Metra will bring the remaining stations into full ADA compliance as they are rehabilitated, so that eventually all will be accessible. It should be noted that although the high-level platforms and grade-separated right-of-way on the ME facilitate speed and reliability, these features complicate track maintenance and station improvement projects, resulting in higher costs.

PRESENT AND FUTURE DEMAND

In 2016, just under 30,000 boardings took place each weekday on the ME, with nearly 76% of boardings occurring on peak-period, peak-direction trains. ME ridership has decreased 18% since 1983 (see Table 1c). Of outlying stations within the City of Chicago, 42% of boardings occur at the three Hyde Park Stations (51st/53rd Street, 55th-56th-57th Street, and 59th Street), which serve as both origin and destination stations due to nearby residential development and institutional complexes. An additional 16% occurs at Kensington/115th, where express service provides a sub-regional draw, and another 9% of boardings at outlying Chicago stations occur at the 93rd Street endpoint of the South Chicago Branch, which serves a portion of Chicago isolated from Chicago Transit Authority rail alternatives and has ample commuter parking available to serve a larger area. While many areas along the ME have struggled to maintain the levels of ridership levels experienced in previous decades, the ME riders still represent a significant portion of Metra's customer base. Overall passenger ridership on the ME Line totaled 8.1 million in 2017, dropping to the fifth-highest of Metra's 11 lines, down from third-highest in 2014. Figure 2 shows the origins of ME riders using stations outside the Central Business District (CBD).

Of all Metra lines, the ME has the greatest number of stations located within the City of Chicago, and many of these stations have no identified commuter parking (see Table 1c). Still, nearly 10,500 parking spaces serve the riders of the ME. According to parking counts conducted in 2017, the average effective rate of utilization at all stations on the line is 60%. At seven stations, effective occupancy exceeds 85%, Metra's threshold to determine if a station is in need of additional parking.

Due to anticipated residential growth in the ME corridor, the demand for commuter parking—and Metra service in general—is expected to grow. Tables 3, 4, and 5 show that although population and employment has declined in much of the corridor in recent years, demographic forecasts anticipate significant growth along the line by 2040. The Chicago Metropolitan Agency for Planning (CMAP) forecasts that the ME corridor will attract nearly 285,000 new residents between 2010 and 2040, a 32% increase. Over 167,000 jobs will be added, a 43% rise.

TABLE 3: ME CORRIDOR POPULATION

Station	Fare Zone	Area Sq. Mi.	Population in Zone			Percent Change	
			2000	2010	2040	2000 vs 2010	2010 vs 2040
Millennium Station, Van Buren St., Museum Campus/11th, 18th St., McCormick Place, 27th St.	A	8.6	90,081	117,733	125,207	23.5%	6.3%
47th/Kenwood, 51st/53rd Hyde Park, 55th-56th-57th, 59th/Univ. of Chicago, 63rd St., 75th/Grand Crossing, 79th/Chatham *(Main Line)*	B	14.6	177,630	159,209	193,767	-11.6%	21.7%
Stony Island, Bryn Mawr, South Shore, Windsor Park, Cheltenham/79th, 83rd St., 87th St., 93rd/ South Chicago *(South Chicago Branch)*	B	14.8	137,725	120,021	150,979	-14.8%	25.8%
ZONE SUBTOTAL	**B**	**29.4**	**315,355**	**279,230**	**344,746**	**-12.9%**	**23.5%**
83rd/Avalon Park, 87th/Woodruff, 91st/ Chesterfield, 95th/Chicago St. Univ., 103rd/ Rosemoor, 107th St., 111th/ Pullman, Kensington/115th	C	15.5	95,196	80,935	93,728	-17.6%	15.8%
Riverdale, Ivanhoe, 147th St./Sibley Blvd., Harvey *(Main Line)*	D	24.4	106,224	94,450	118,910	-12.5%	25.9%
State St., Stewart Ridge, West Pullman, Racine Ave., Ashland Ave., Burr Oak, Blue Island *(Blue Island Branch)*	D	7.4	50,282	42,683	52,695	-17.8%	23.5%
ZONE SUBTOTAL	**D**	**31.8**	**156,506**	**137,133**	**171,605**	**-14.1%**	**25.1%**
Hazel Crest, Calumet, Homewood, Flossmoor	E	48.4	104,568	103,410	124,245	-1.1%	20.1%
Olympia Fields, 211th St./Lincoln Hwy., Matteson, Richton Park	F	59.3	112,176	116,187	164,774	3.5%	41.8%
University Park	G	179.4	32,888	41,632	136,059	21.0%	226.8%
ME TOTAL		**372.4**	**906,770**	**876,260**	**1,160,364**	**-3.4%**	**32.4%**
REGION TOTAL		**3,748.0**	**8,091,717**	**8,456,762**	**11,717,936**	**4.5%**	**38.6%**

TABLE 4: ME CORRIDOR HOUSEHOLDS

Station	Fare Zone	Area Sq. Mi.	Households in Zone			Percent Change	
			2000	2010	2040	2000 vs 2010	2010 vs 2040
Millennium Station, Van Buren St., Museum Campus/11th, 18th St., McCormick Place, 27th St.	A	8.6	54,602	67,408	74,036	23.5%	9.8%
47th/Kenwood, 51st/53rd Hyde Park, 55th-56th-57th, 59th/Univ. of Chicago, 63rd St., 75th/Grand Crossing, 79th/Chatham *(Main Line)*	B	14.6	70,700	65,137	82,742	-7.9%	27.0%
Stony Island, Bryn Mawr, South Shore, Windsor Park, Cheltenham/79th, 83rd St., 87th St., 93rd/ South Chicago *(South Chicago Branch)*	B	14.8	49,853	45,695	54,881	-8.3%	20.1%
ZONE SUBTOTAL	**B**	**29.4**	**120,553**	**110,832**	**137,623**	**-8.1%**	**24.2%**
83rd/Avalon Park, 87th/Woodruff, 91st/ Chesterfield, 95th/Chicago St. Univ., 103rd/ Rosemoor, 107th St., 111th/ Pullman, Kensington/115th	C	15.5	34,436	31,541	34,655	-8.4%	9.9%
Riverdale, Ivanhoe, 147th St./Sibley Blvd., Harvey *(Main Line)*	D	24.4	34,802	31,344	39,597	-9.9%	26.3%
State St., Stewart Ridge, West Pullman, Racine Ave., Ashland Ave., Burr Oak, Blue Island *(Blue Island Branch)*	D	7.4	15,597	14,251	16,697	-8.6%	17.2%
ZONE SUBTOTAL	**D**	**31.8**	**50,399**	**45,595**	**56,294**	**-9.5%**	**23.5%**
Hazel Crest, Calumet, Homewood, Flossmoor	E	48.4	37,231	36,925	44,687	-0.8%	21.0%
Olympia Fields, 211th St./Lincoln Hwy., Matteson, Richton Park	F	59.3	40,472	41,549	60,395	2.7%	45.4%
University Park	G	179.4	11,901	15,305	48,215	28.6%	215.0%
ME TOTAL		**372.4**	**349,594**	**349,155**	**455,905**	**-0.1%**	**30.6%**
REGION TOTAL		**3,748.0**	**2,906,924**	**3,050,134**	**4,224,349**	**4.9%**	**38.5%**

TABLE 3: ME CORRIDOR EMPLOYMENT

Station	Fare Zone	Area Sq. Mi.	Employment in Zone			Percent Change	
			2000	2010	2040	2000 vs 2010	2010 vs 2040
Millennium Station, Van Buren St., Museum Campus/11th, 18th St., McCormick Place, 27th St.	A	8.6	323,244	221,457	270,786	-31.5%	22.3%
47th/Kenwood, 51st/53rd Hyde Park, 55th-56th-57th, 59th/Univ. of Chicago, 63rd St., 75th/Grand Crossing, 79th/Chatham *(Main Line)*	B	14.6	20,231	41,750	45,992	106.4%	10.2%
Stony Island, Bryn Mawr, South Shore, Windsor Park, Cheltenham/79th, 83rd St., 87th St., 93rd/ South Chicago *(South Chicago Branch)*	B	14.8	7,666	8,612	19,923	12.3%	131.3%
ZONE SUBTOTAL	**B**	**29.4**	**27,897**	**50,362**	**65,915**	**80.5%**	**30.9%**
83rd/Avalon Park, 87th/Woodruff, 91st/ Chesterfield, 95th/Chicago St. Univ., 103rd/ Rosemoor, 107th St., 111th/ Pullman, Kensington/115th	C	15.5	13,622	9,889	19,412	-27.4%	96.3%
Riverdale, Ivanhoe, 147th St./Sibley Blvd., Harvey *(Main Line)*	D	24.4	32,400	25,517	35,873	-21.2%	40.6%
State St., Stewart Ridge, West Pullman, Racine Ave., Ashland Ave., Burr Oak, Blue Island *(Blue Island Branch)*	D	7.4	5,198	5,436	11,169	4.6%	105.5%
ZONE SUBTOTAL	**D**	**31.8**	**37,598**	**30,953**	**47,042**	**-17.7%**	**52.0%**
Hazel Crest, Calumet, Homewood, Flossmoor	E	48.4	41,149	32,153	49,394	-21.9%	53.6%
Olympia Fields, 211th St./Lincoln Hwy., Matteson, Richton Park	F	59.3	31,669	30,268	52,293	-4.4%	72.8%
University Park	G	179.4	10,551	11,069	48,921	4.9%	342.0%
ME TOTAL		**372.4**	**485,730**	**386,151**	**553,763**	**-20.5%**	**43.4%**
REGION TOTAL		**3,748.0**	**4,340,215**	**3,786,224**	**5,267,696**	**-12.8%**	**39.1%**

Population and household growth in the ME marketshed zone closest to the CBD (Fare Zone A), which was rapid between 2000 and 2010, is expected to taper off, though employment growth is expected to remain strong until 2040. By 2040, employment is expected to increase substantially from the far South Side of Chicago to University Park. However, CMAP forecasts that, by 2040, the number of jobs in the ME marketshed zone closest to the CBD will be close to the number in all other ME marketsheds combined. Population and household growth is expected to be strongest in the marketsheds near the southern end of the ME, from Olympia Fields to University Park.

REVERSE COMMUTE AND NON-DOWNTOWN MARKETS

Although Metra's primary market involves commuters who follow the traditional suburb-to-CBD trip pattern, in recent years Metra has seen a demand for city-to-suburb reverse-commute options (Metra's primary commuter market is discussed in the Central Business District Market chapter). The shift of employment to suburban locations has left many commuters with

limited transit accessibility to jobs. Figure 3 shows AM alightings at non-CBD ME stations.

According to Metra's 2016 Boarding and Alighting Count, 12% of AM peak-period ME riders alight at stations outside central Chicago (i.e., south of Millennium, Van Buren Street, and Museum Campus/11th). The three Hyde Park stations (51st/53rd Street, 55th-56th-57th Street, and 59th Street) account for 62.8% of ME AM peak-period alightings outside central Chicago, as riders travel to the University of Chicago and other destinations in the area. Approximately a third of these riders boarded at stations closer to the CBD, and traveled in the reverse-commute (outbound) direction. At 59th Street, a greater number of passengers using the station during the morning peak alight rather than board.

Metra's McCormick Place Station, located inside the convention center, is another ME station with non-traditional ridership, most notably that generated by major tradeshows staged at the center. To promote Metra as an alternative to shuttle buses and taxis for travel to downtown Chicago, select conventions contract with Metra to allow their attendees to ride between

ME train crosses 70th Street on the South Chicago Branch

Photo: Mark Llanuza

downtown and McCormick Place with the event manager billed for service. According to Metra's 2016 Boarding/Alighting Count, only nine riders boarded at the station on a weekday before noon (when boardings at non-downtown stations are typically highest), while 82 riders alighted at the station during that period. Metra's last weekend counts, performed in 2010, indicate that the McCormick Place Station attracts a similar or greater number of riders during the weekend than on weekdays.

Factors that increase reverse-commute trip patterns are the growth of employment in the suburbs as well as the growth of population in the city and inner ring suburbs (see Tables 3, 4, and 5). While only modest population growth in ME marketshed zone closest to the CBD is expected by 2040, from 2000 and 2010 these marketsheds increased rapidly in population (by 24%, or 28,000) and lost over 100,000 jobs. According to projections, this area is expected to regain only about half of these jobs by 2040. Residents of the CBD marketsheds have convenient access to employment opportunities in downtown Chicago, but the substantial number of jobs expected to be added further south along the ME are likely to attract CBD residents, as well as others living along the ME corridor, and potentially increase reverse-commute trips.

FIGURE 3: AM ALIGHTINGS AT NON-CBD ME STATIONS

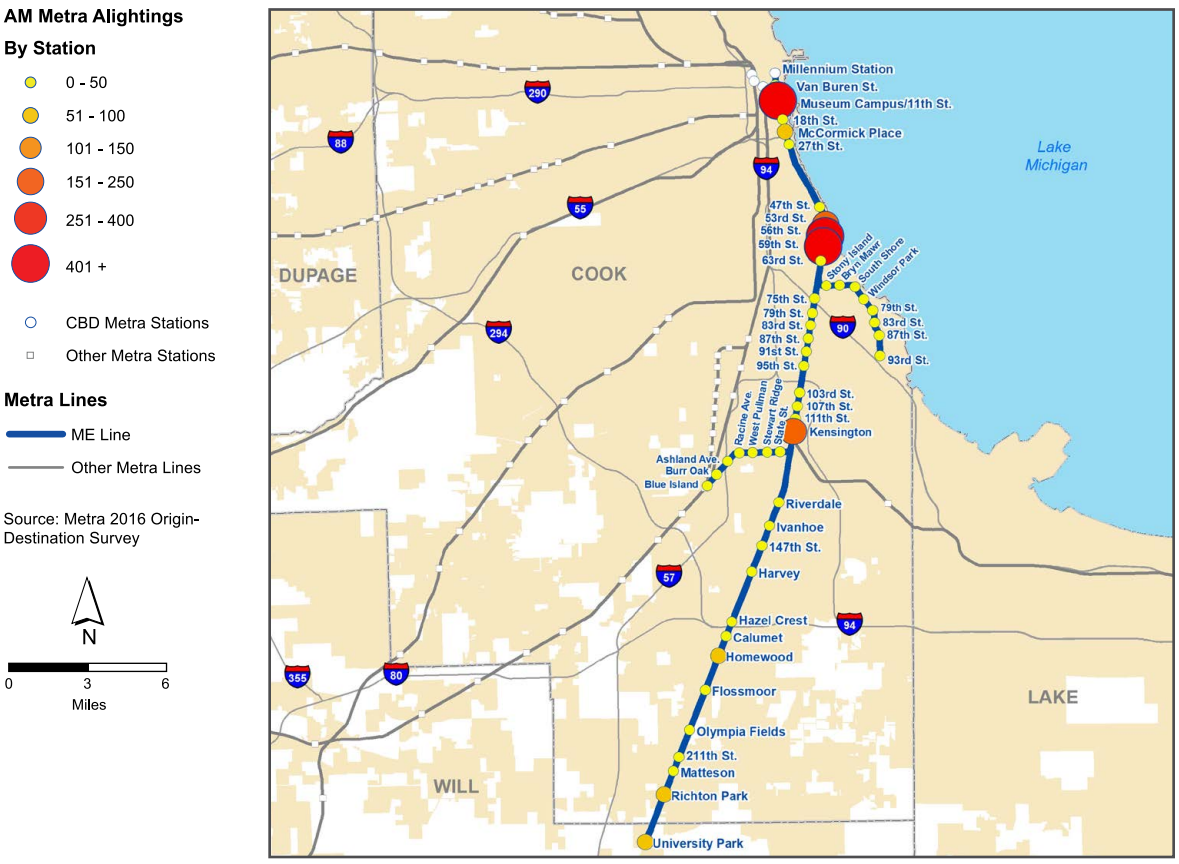


TABLE 6: MAJOR TRIP GENERATORS ACCESSIBLE FROM THE ME CORRIDOR

Generator Type	Name	Comments	Municipality
Colleges and Universities	University of Chicago	15,800 students; museums and other cultural attractions on campus	Chicago
	Chicago State University	3,600 students	Chicago
	Olive-Harvey College	A City College of Chicago; 3,000 students	Chicago
	South Suburban College	Community college main campus	South Holland
	Prairie State College	Community college main campus	Chicago Heights
	Governors State University	5,800 students	University Park
Culture and Entertainment	Museum Campus	2016 visitors - Shedd Aquarium: 1.93M, Field Museum: 1.65M, Adler Planetarium: 578K	Chicago
	Northerly Island	91-acre park; site of Huntington Bank Pavilion concert venue	Chicago
	Soldier Field	Hosts Chicago Bears football games and other events	Chicago
	McCormick Place	Convention facility; 2.4M visitors (2015)	Chicago
	DuSable Museum of African-American History	Located in Washington Park; 115K visitors (2016)	Chicago
	Museum of Science and Industry	1.5M visitors (2016)	Chicago
	Obama Presidential Center	Planned site, located in Jackson Park	Chicago
	Bronzeville Children's Museum	Only African-American children's museum in US	Chicago
	Big Marsh Park	278-acre bike park and nature preserve	Chicago
	Pullman Porter Museum	Honors African-American contributions in US labor history	Chicago
	Pullman National Monument	Designated 2015; new visitor's center and other improvements planned	Chicago
	Calumet Country Club		Homewood
	Ravisloe Golf Club		Homewood
	Olympia Fields Country Club		Olympia Fields
Shopping	River Oaks Center	Regional mall; 2 anchors, 140 stores; 1.3M sq. ft.	Calumet City
Government	Cook County District 6 Courthouse	Cook County circuit court suburban location	Markham
Hospitals	Mercy Hospital	284 beds	Chicago
	Provident Hospital of Cook County	25 beds	Chicago
	University of Chicago Hospitals		Chicago
	Jackson Park Hospital	201 beds	Chicago
	Advocate Trinity Hospital	193 beds	Chicago
	Roseland Community Hospital	134 beds	Chicago
	Ingalls Memorial Hospital	326 beds	Harvey
	Advocate South Suburban Hospital	284 beds	Hazel Crest
	MetroSouth Medical Center	314 beds	Blue Island
Large Private Employers	Pullman Crossings	Proposed distribution ctr. complex, with up to 1.2M sq. ft. of space on 50-acre site (announced 9/2017)	Chicago
	Consolidated Medical Transport	Local passenger transportation; 800 employees	Dolton
	Allied Tube and Conduit Corp.	Welded pipe and tube manufacturing; 750 employees	Harvey
	Applied Acoustics International	Automotive parts manufacturer; 200 employees	Chicago Heights
	Ford Chicago Stamping Plant	Ford Chicago Stamping Plant; 1920 employees	Chicago Heights
	Applied Systems, Inc.	HQ of insurance technology firm; 500 employees	University Park
	Modern Drop Forge Co.	Headquarters of forged parts manufacturer	Blue Island

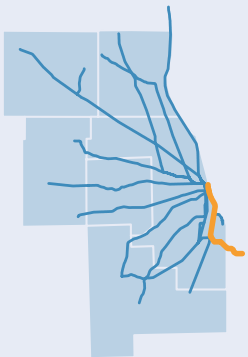
South Shore riders alight at Museum Campus/11th Street Station in Chicago's South Loop

Photo: David Wilson

SOUTH SHORE LINE

EXISTING SERVICE AND CONDITIONS

Commuter rail service on the **South Shore Line (SS)** between downtown Chicago and South Bend, Indiana is operated by the Northern Indiana Commuter Transportation District (NICTD). Like the Metra Electric (ME) Line, the SS is powered by an overhead catenary wire system, and the two services operate on ME track from Millennium Station to Kensington Interlocking at 115th Street in Chicago. The SS then diverges onto its own tracks, extending across northern Indiana to the line's eastern terminal at South Bend International Airport. In 2017, passenger trips on the SS totaled 3.5 million.



Implementation of commuter service on the present-day SS route took place in the early 1900s, as various segments of the line were completed. The Chicago, South Shore and South Bend Railroad (CSS&SB), incorporated in 1925, operated commuter and freight service on the line for nearly 60 years. In 1977, the Indiana General Assembly created NICTD to partially subsidize the CSS&SB for its passenger service. The agency's administrative offices are located in Chesterton, Indiana, with the SS's dispatching office and main rail yard in Michigan City. NICTD took over operation of the commuter rail service

after the CSS&SB declared bankruptcy in 1989, and the agency purchased the railroad's assets the following year. Anacostia & Pacific assumed operation of the diesel-powered freight service on the line, under the name "Chicago, SouthShore and South Bend Railroad."

Under a purchase of service agreement (PSA), Metra reimburses NICTD a flat-rate amount based on historic portion of net operating losses (operating and maintenance costs less operating revenues) associated with commuter rail service provided by NICTD to the Hegewisch station. The Hegewisch station is located in Illinois, but situated on the NICTD corridor. Metra's portion of net operating losses is based on the proportion of Hegewisch ridership compared to overall NICTD ridership. NICTD is responsible for all operating and capital-related costs associated with maintenance and improvements of NICTD right-of-way and facilities located within the State of Illinois that are used exclusively by the SS (i.e., the portion of the SS between Kensington Interlocking and the Indiana border). Under a separate trackage rights agreement, NICTD pays Metra for the right to operate its SS service on the ME between Millennium and Kensington stations. This agreement also governs NICTD's use of a portion of Millennium Station.

2016 Average trip length:
32.3 miles

2016 Average fare paid:
$6.10

Source: National Transit Database

Number of stations:
19

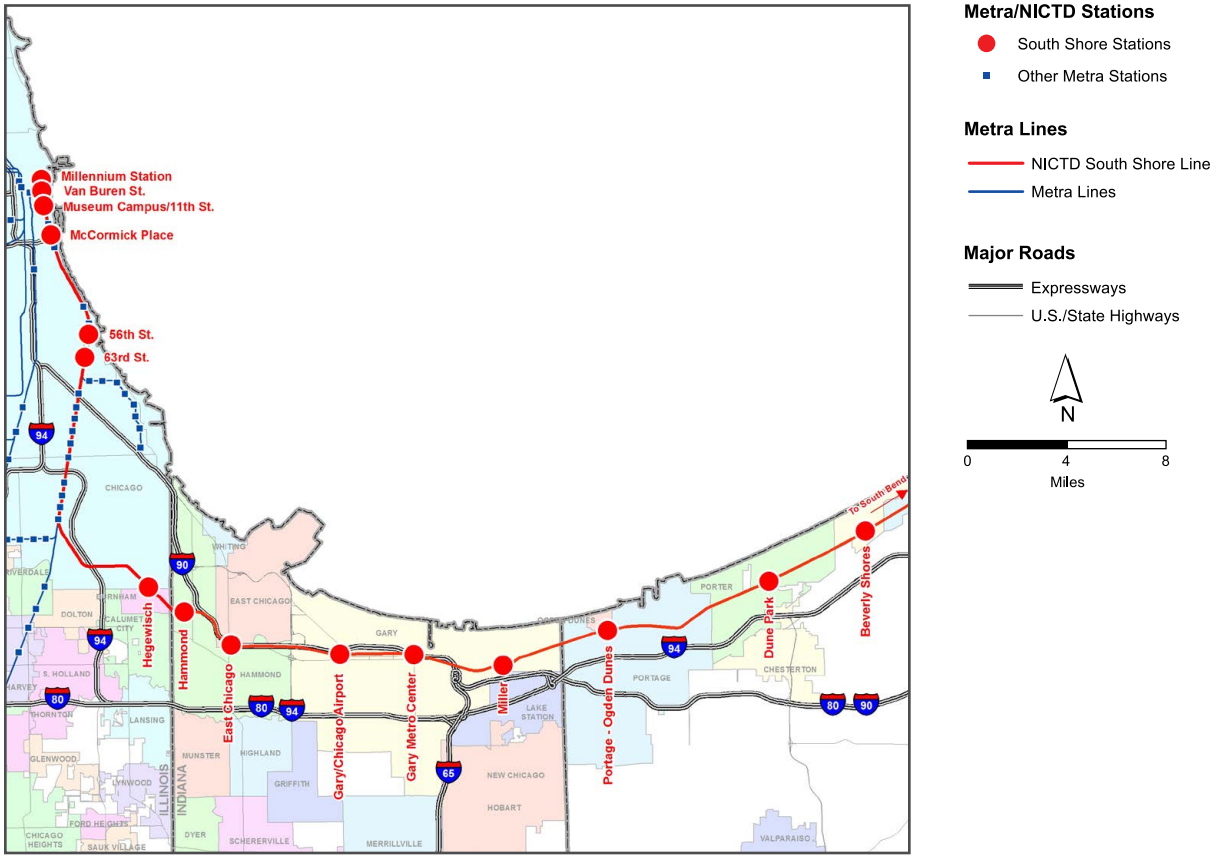
Route length:
90.1 miles

Number of weekday trains (May 2018):
43

2017 On-time performance*:
76.3%

Source: NICTD 2017 Year-End Performance Report

FIGURE 1: STATIONS ON THE SS LINE



The SS Line serves 19 stations along its 90-mile route, including six stations on the 14.5-mile segment shared with the ME. To avoid competition with Metra service, passengers may not board inbound SS trains from 63rd Street to Millennium Station, and outbound SS passengers may not disembark at these stations. The SS station located in Chicago's Hegewisch neighborhood is the only non-ME station in Illinois served by SS trains. Since the station is located within the Regional Transportation Authority's (RTA) service area, Metra funded construction of new station buildings and a parking lot at Hegewisch in 1992, and retains ownership of these facilities. Meanwhile, NICTD owns the land and other parking lots at the station, and is responsible for platform maintenance.1 Passengers traveling between Hegewisch and other stations in Chicago are charged based on Metra's fare structure rather than NICTD's.

NICTD and Metra have a history of assisting each other during service disruptions. In order to minimize passenger delays, the two agencies have accepted each other's fare media and used their equipment to move the other operator's disabled rolling stock.

[1] NICTD completed installation of high-level platforms at Hegewisch in 2006.

TABLE 1A: SS ANNUAL PASSENGER TRIPS
1983 — 2017, in millions

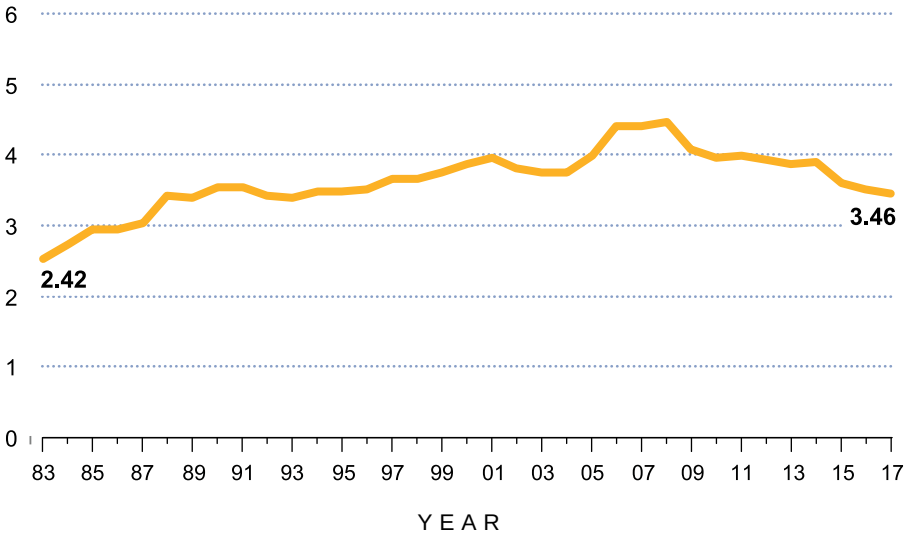


TABLE 1B: 2015 SS WEEKDAY BOARDINGS

Time of Day	Inbound	Outbound
AM Peak	4,735	135
Midday	881	600
PM Peak	297	4,658
Evening	94	644
TOTAL	**6,007**	**6,037**

Source: NICTD, 2015 South Shore Passenger Count

TABLE 1C: SS STATION CHARACTERISTICS

Station	Fare Zone	Mile Post	Accessibility[1]	Boardings		Time to Chicago (minutes)[1]	
				1983[2]	2015[3]	Shortest Trip	Longest Trip
Millennium Station[4]	1	0.0	Full	3,180	4,072	--	--
Van Buren Street[4]	1	0.8	Full	715	1,431	2	6
Museum Campus/11th St.[4]	1	1.4	Full	45	119	5	9
McCormick Place[4]	1	2.7	Full	171	0[5]	--	--
55th-56th-57th St.[4]	2	7.0	Full	143	234	9	18
63rd St.[4]	2	7.9	None	30	3	30	38
Kensington/115th St.[6]	--	--	--	38[4]	--	--	--
Hegewisch	3	19.0	Full	1,042	1,029	33	41
Hammond	4	20.9	Full	n/a	1,157	36	48
East Chicago	4	23.4	Full	n/a	1,698	35	53
Gary/Chicago Airport	5	28.0	None	n/a	129	49	61
Gary Metro Center	5	30.9	Full	n/a	412	54	66
Miller	5	34.7	None	n/a	463	61	74
Portage/Ogden Dunes	6	38.9	Full	n/a	234	69	80
Dune Park	6	46.0	Full	n/a	520	62	88
Beverly Shores	7	50.4	None	n/a	33	83	95
11th St. (Michigan City)	8	55.8	None	n/a	83	93	105
Carroll Ave. (Mich. City)	8	57.5	Full	n/a	241	88	111
Hudson Lake	10	74.6	None	n/a	5	119	136
South Bend Airport	11	90.1	Full	n/a	186	55	91
TOTAL SS				**5,364**	**12,049**		

[1] South Shore Line Schedule
[2] Metra, 1983 Boarding/Alighting Counts; Indiana SS stations not counted in 1983.
[3] NICTD, 2015 South Shore Passenger Count
[4] Station shared with Metra service; inbound SS trains stop to discharge passengers only and outbound SS trains stop to pick up passengers only.
[5] SS does not serve McCormick Place on weekdays, when 2015 South Shore count was conducted.
[6] South Shore service to Kensington/115th ended in February 2012, following completion of the Kensington Interlocking bypass project.

IMPROVEMENTS SINCE THE START OF NICTD

Since its creation, NICTD has invested hundreds of millions of dollars in maintaining and upgrading the SS Line. Among NICTD's first activities was the acquisition of new rolling stock in the early 1980s, which allowed the line's oldest vehicles—dating from the 1920s—to be retired. The RTA contributed funding towards the purchase, and eight single-level cars used on the SS are still owned by Metra, though they are operated, stored, and maintained by NICTD. Other rolling stock purchases have been made in the following years. The SS fleet consists of approximately 70 electric self-propelled coaches and a small number of unpowered trailer cars that are placed between cab cars in a trainset. Most SS cars are single-level, but 14 bi-level gallery cars—similar to the new ME cars—entered service in 2009.

In 1992, the SS was extended 3.2 miles to the airport in South Bend. Since the 1990s, NICTD has rebuilt a number of SS stations with high-level platforms, giving passengers step-free access to train cars and reducing dwell time. At these stations, gauntlet tracks allow SS trains to align with the platform while providing freight trains the extra width needed to clear the platform edge.

NICTD completed installation of Centralized Traffic Control (CTC) signaling from Michigan City to South Bend in 2007, and in 2011 finished replacement of nearly 70 miles of catenary from Kensington to Michigan City. In 2012, NICTD and Metra completed a new bypass track for SS trains through Kensington Interlocking (funded by NICTD). The project streamlines the SS connection with ME tracks, cutting travel times and improving on-time performance on the SS, and adding operational flexibility on the high-volume portion of the ME north of Kensington. As a result of this project, SS trains no longer serve the Kensington/115th Street Station on the ME.

NICTD completed a preliminary engineering study that considered options for realignment of the SS through Michigan City, where the SS currently runs on a single track embedded in the middle of a roadway, which is shared with other traffic. The selected alternative retains the existing route, but the roadway would be narrowed to a one-way, single-lane street, while the SS would be expanded to two tracks. Relocation of the terminal station at the South Bend Airport has been proposed in order to accommodate runway expansion and cut travel times for SS passengers. The study is currently on hold while the City of South Bend considers five alternatives for the realignment of the rail line through the city. NICTD is currently pursuing funding for two expansion projects, Double Track Northwest Indiana (NWI) and the West Lake Corridor and. In September 2017, NICTD completed an Environmental Assessment for the Double Track NWI Project, which would add a second track to a 25-mile segment between Gary and Michigan City to allow for express trains and expanded service. In March 2018, NICTD completed a Final Environmental Impact Statement and received a Record

of Decision for the West Lake Project, a proposed nine-mile extension of the SS from Hammond to Dyer, Indiana. NICTD is applying to the Federal Transit Administration (FTA) for funding for both projects through the Capital Improvement Grant program.

In 2015, the SS launched a pair of weekday limited-stop trains (morning inbound and afternoon outbound), cutting the travel time between South Bend and Millennium Station about 45 minutes compared to all-stop trains. The service began as a pilot program, and was continued based on rider demand.

South Shore Line commuters

APPENDIX

TABLE A1: METRA OPERATING AND SERVICE CHARACTERISTICS

Carrier/Line		Revenue Trains (Sept17)			Train Miles	Car Miles	Average Scheduled Speeds			On-Time Performance	
		Weekday	Sat	Sun/Hol	Jul16-Jun17	Jul16-Jun17	Weekday Peak	Weekday Off-Peak	Weekend/ Holiday	2016 Average	Jan-Jun17 Average
BNSF Railway		94	28	18	949,811	6,981,862	34.9	30.5	28.0	94.0%	95.5%
Union Pacific	North	70	26	18	758,726	4,359,931	30.5	28.9	30.1	97.8%	97.4%
	Northwest	65	24	15	942,188	6,299,320	33.9	32.7	34.0	96.3%	96.0%
	West	59	20	18	700,244	4,768,691	31.9	30.8	30.6	95.1%	94.4%
Total		**194**	**70**	**51**	**2,401,158**	**15,427,941**				**96.5%**	**96.0%**
Electric District	Main Line	84	40	20	727,381	3,909,723	22.5	22.1	23.6	97.5%	97.7%
	Blue Island	27	8	0	154,635	516,124	32.5	28.4	28.1	98.7%	97.8%
	South Chicago	45	32	20	229,104	867,975	20.1	20.2	21.4	98.5%	98.2%
Total		**156**	**80**	**40**	**1,111,121**	**5,293,822**				**98.1%**	**97.9%**
Heritage Corridor		7	0	0	76,055	326,785	34.3	34.3	--	94.2%	94.1%
Milwaukee District	North	60	24	20	760,131	4,703,906	32.1	30.3	31.1	94.6%	95.5%
	West	58	24	18	660,881	4,495,660	29.5	29.3	29.0	94.9%	96.0%
Total		**118**	**48**	**38**	**1,421,012**	**9,199,565**				**94.8%**	**95.8%**
North Central Service		22	0	0	295,594	1,343,587	34.2	33.9	--	94.5%	94.3%
SouthWest Service		30	6	0	249,465	1,816,726	27.0	27.4	28.8	95.2%	95.6%
Rock Island District		70	32	28	740,386	5,329,914	28.9	28.6	29.3	96.1%	96.5%
System Totals/ Averages*		**691**	**264**	**175**	**7,244,601**	**45,720,203**	**31.3**	**29.4**	**29.5**	**96.1%**	**96.4%**

** South Shore (NICTD) is not included*

TABLE A2: METRA PHYSICAL DESCRIPTION (2017)

				Number of Stations			Accessible Stations		Rolling Stock					
Carrier/Line		**Location of Outlying Terminal**	**Downtown Terminal**	**Illinois**	**Out of State**	**Total**	**Partial**	**Full**	**Loco-motives**	**Trailer Cars**	**Cab Cars**	**Electric Propelled**	**Track Miles**	**Route Miles**
BNSF Railway		Aurora, IL (Kane Co.)	Chicago Union Station	25	0	25	5	17	35	171	37	0	144.0	37.5
Union Pacific	North Line	Kenosha, WI (Kenosha Co.)	Ogilvie Trans. Ctr.	24	1	25	1	20					107.5	51.6
	Northwest Line	Harvard, IL (McHenry Co.)	Ogilvie Trans. Ctr.	21	0	21	0	18					161.1	63.1
	McHenry Branch	McHenry, IL (McHenry Co.)	Ogilvie Trans. Ctr.	1	0	1	0	1					8.0	7.4
	West Line	Elburn, IL (Kane Co.)	Ogilvie Trans. Ctr.	18	0	18	2	14					144.2	43.6
Total				**64**	**1**	**65**	**3**	**53**	**53**	**265**	**65**	**0**	**418.2**	**162.3**
Electric Line	Main Line	University Park, IL (Will Co.)	Millennium Station	32	0	32	0	13					86.0	31.5
	Blue Island Branch	Blue Island, IL (Cook Co.)	Millennium Station	7	0	7	0	1					5.0	4.4
	S. Chicago Branch	Chicago, IL (Cook Co.)	Millennium Station	8	0	8	0	8					11.3	4.7
Total				**47**	**0**	**47**	**0**	**22**	**0**	**0**	**0**	**186**	**102.3**	**40.6**
Heritage Corridor**		Joliet, IL (Will Co.)	Chicago Union Station	5	0	5	0	5	**	**	**	**	78.0	37.2
Milwaukee District***	North Line	Fox Lake, IL (Lake Co.)	Chicago Union Station	20	0	20	0	17					97.0	49.5
	West Line	Elgin, IL (Kane Co.)	Chicago Union Station	21	0	21	0	20					102.8	39.8
Total* **				**41**	**0**	**41**	**0**	**37**	**41**	**143**	**53**	**0**	**186.4**	**83.9**
North Central Service***		Antioch, IL (Lake Co.)	Chicago Union Station	15	0	15	0	15	***	***	***	***	85.0	52.8
SouthWest Service**		Manhattan, IL (Will Co.)	Chicago Union Station	12	0	12	0	12	**	**	**	**	59.3	40.8
Rock Island Line**	Main Line	Joliet, IL (Will Co.)	LaSalle St. Station	14	0	14	1	12					83.8	40.0
	Beverly Branch	Blue Island, IL (Cook Co.)	LaSalle St. Station	12	0	12	4	6					13.3	6.6
Total**				**26**	**0**	**26**	**5**	**18**	**21**	**82**	**32**	**0**	**96.9**	**46.6**
Downtown Stations				5	0	5	0	5						
System Totals*				**240**	**1**	**241**	**13**	**184**	**150**	**661**	**187**	**186**	**1,154.9**	**487.5**

** South Shore (NICTD) is not included*
*** Rolling stock is allocated by District, not line. HC, SWS, RI are combined.*
**** Rolling stock is allocated by District, not line. NCS and MD are combined.*

TABLE A3: METRA COMMUTER RAIL STATIONS BY FARE ZONE (2017)

ZONE (mile post)	BNSF		ELECTRIC MAIN LINE		ELECTRIC BLUE ISLAND		ELECTRIC S. CHICAGO		HERITAGE		MILWAUKEE NORTH		MILWAUKEE WEST	
A (0.0-5.0)	Union Station	0.0	Millennium	0.0					Union Station	0.0	Union Station	0.0	Union Station	0.0
	Halsted St	1.8	Van Buren	0.8							Western Ave	2.9	Western Ave	2.9
	Western Ave	3.8	Museum Campus/11th St	1.4										
			18th St	2.2										
			McCormick Pl.	2.7										
			27th St	3.2										
B (5.1-10.0)	Cicero	7.0	47th St	5.9			Stony Island	9.1			Healy	6.4	Grand/Cicero	6.5
	LaVergne	9.1	53rd St	6.5			Bryn Mawr	9.7			Grayland	8.2	Hanson Park	7.7
	Berwyn	9.6	56th St	7.0			South Shore	10.3			Mayfair	9.0	Galewood	8.6
	Harlem Ave	10.1	59th St	7.4			Windsor Park	10.9					Mars	9.1
			63rd St	7.9			79th St	11.5					Mont Clare	9.5
			75th St	9.3			83rd St	12.0						
			79th St	10.0			87th St	12.5						
							93rd St	13.2						
C (10.1-15.0)	Riverside	11.1	83rd St	10.4					Summit	11.9	Forest Glen	10.2	Elmwood Park	10.2
	Hollywood	11.8	87th St	10.9							Edgebrook	11.6	River Grove	11.4
	Brookfield	12.3	91st St	11.4							Morton Grove	14.3	Franklin Park	13.2
	Congress Park	13.1	95th St	12.0									Mannheim	14.0
	LaGrange Rd	13.8	103rd St	13.0										
	Stone Ave	14.2	107th St	13.5										
			111th St	14.0										
			Kensington	14.5										
D (15.1-20.0)	Western Springs	15.5	Riverdale	17.3	State St	15.6			Willow Springs	17.5	Golf	16.2	Bensenville	17.2
	Highlands	16.4	Ivanhoe	18.2	Stewart Ridge	16.0					Glenview	17.4	Wood Dale	19.1
	Hinsdale	16.9	147th St	19.0	W. Pullman	16.7					Glen/N.Glenview	18.8		
	W. Hinsdale	17.8	Harvey	20.0	Racine Ave	17.0								
	Clarendon Hills	18.3			Ashland Ave	17.9								
	Westmont	19.5			Burr Oak	18.4								
					Blue Island	18.9								
E (20.1-25.0)	Fairview Ave	20.4	Hazel Crest	22.3					Lemont	25.3	Northbrook	21.1	Itasca	21.1
	Main St	21.2	Calumet	22.8							Lake Cook Road	23.0	Medinah	23.0
	Belmont	22.6	Homewood	23.5							Deerfield	24.2	Roselle	23.9
	Lisle	24.5	Flossmoor	24.9										
F (25.1-30.0)	Naperville	28.5	Olympia Fields	26.6							Lake Forest	28.4	Schaumburg	26.5
			211th St	27.6									Hanover Park	28.4
			Matteson	28.2									Bartlett	30.1
			Richton Park	29.3										
G (30.1-35.0)	Route 59	31.6	University Park	31.5					Lockport	32.9				
H (35.1-40.0)	Aurora	37.5							Joliet	37.2	Libertyville	35.5	National St	36.0
											Prairie Crossing/ Libertyville	39.2	Elgin	36.6
													Big Timber	39.8
I (40.1-45.0)											Grayslake	41.0		
											Round Lake	44.0		
J (45.1-50.0)											Long Lake	46.0		
											Ingleside	47.8		
											Fox Lake	49.5		
K (50.1-55.0)														
M (60.1-65.0)														

NORTH CENTRAL SERVICE		ROCK ISLAND MAIN		ROCK ISLAND BRANCH		SOUTHWEST SERVICE		UNION PACIFIC NORTH		UNION PACIFIC NORTHWEST		UNION PACIFIC WEST	
Union Station	0.0	LaSalle St.	0.0			Union Station	0.0	Ogilvie	0.0	Ogilvie	0.0	Ogilvie	0.0
Western Ave	2.9	35th St./"Lou" Jones	3.1					Clybourn	2.9	Clybourn	2.9	Kedzie	3.6
		Gresham	9.8					Ravenswood	6.5	Irving Park	7.0	Oak Park	8.5
								Rogers Park	9.4	Jefferson Park	9.1	River Forest	9.7
										Gladstone Park	10.1		
River Grove	11.4	95th St	10.9	Brainerd	10.6	Wrightwood	11.2	Main St	11.0	Norwood Park	11.4	Maywood	10.5
Belmont Ave	13.0	Washington Hts	12.0	91st St	11.3	Ashburn	12.6	Davis St	12.0	Edison Park	12.6	Melrose Park	11.3
Schiller Park	14.8			95th St	11.7			Central St	13.3	Park Ridge	13.5	Bellwood	12.6
				99th St	12.3			Wilmette	14.4	Dee Road	15.0	Berkeley	14.3
				103rd St	12.8								
				107th St	13.3								
				111th St	13.8								
				115th St	14.3								
				119th St	14.8								
Rosemont	15.6	Vermont St	15.7	123rd St	15.2	Oak Lawn	15.2	Kenilworth	15.2	Des Plaines	17.1	Elmhurst	15.7
O'Hare Transfer	17.1	Robbins	17.2	Prairie St	15.8	Chicago Ridge	16.8	Indian Hill	15.8	Cumberland	18.6	Villa Park	17.8
		Midlothian	18.4	Vermont St	16.5	Worth	18.2	Winnetka	16.6	Mt Prospect	20.0	Lombard	19.9
						Palos Heights	18.7	Hubbard Woods	17.7				
								Glencoe	19.2				
Prospect Heights	24.0	Oak Forest	20.4			Palos Park	20.3	Braeside	20.5	Arlington Hts.	22.8	Glen Ellyn	22.4
		Tinley Park	23.5			143rd St	23.6	Ravinia	21.5	Arlington Park	24.4	College Ave	23.8
		80th Ave	25.1			153rd St	25.2	Highland Park	23.0			Wheaton	25.0
								Highwood	24.5				
Wheeling	27.2	Hickory Creek	27.5			179th St	28.9	Fort Sheridan	25.7	Palatine	26.8	Winfield	27.5
Buffalo Grove	29.5	Mokena	29.6					Lake Forest	28.3			West Chicago	29.8
Prairie View	31.6	New Lenox	34.0					Lake Bluff	30.2	Barrington	31.9		
Vernon Hills	33.0							Great Lakes	32.2				
								North Chicago	33.7				
Mundelein	36.9	Joliet	40.0			Laraway Road	35.8	Waukegan	35.9	Fox River Grove	37.3	Geneva	35.5
Prairie Crossing/ Libertyville	40.7									Cary	38.6		
Washington St	43.9					Manhattan	40.8	Zion	42.1	Pingree Road	41.7	La Fox	40.9
								Winthrop Harbor	44.5	Crystal Lake	43.2	Elburn	43.6
Round Lk Beach	45.9												
Lake Villa	48.2												
Antioch	52.8							Kenosha	51.5	McHenry	50.6		
										Woodstock	51.6		
										Harvard	63.1		