Draft ON TO 2050 Regionally Significant Projects Benefits Report

September 2017

Contents

Introduction

A key role of the ON TO 2050 comprehensive regional plan is to establish a list of regionally significant projects (RSPs) to fit within the plan's expected "fiscal constraint," meaning that the costs of the selected projects can be covered through existing or reasonably expected revenue sources. These must be identified in ON TO 2050 to be eligible to receive federal transportation funds or obtain certain federal approvals. Since the region has limited funds available to expand or improve the system, the RSP evaluation process is intended to generate a list of prioritized projects that help the region meet its goals. Identifying such a prioritized, fiscally constrained list of capital projects is one of the primary purposes of a metropolitan planning organization's (MPO) long-range transportation plan. More than 100 regionally significant projects have been identified, totaling more than $140 billion in 2018 dollars.

Given the tight fiscal climate, evidently only a small number of these projects can be included in ON TO 2050. CMAP staff estimates that the expenditures for operating and maintaining the transportation system to its current state of repair will exceed the core revenues forecasted to be available over the planning horizon 2019 to 2050 by $24 billion. After adding reasonably expected revenues, the region is forecasted to have approximately $30.9 billion to allocate toward reaching a state of good repair, enhancing, or expanding the system. This highly constrained environment generates the need for strong understanding and evaluation of the tradeoffs between projects, policies, and revenue recommendations.

In order to be included in the plan, RSPs are also evaluated for air quality conformity. A transportation system including these projects must not produce pollutants exceeding a pre-set budget. The mobile source budget is established to help the region meet national air quality standards and is one part of an overall air pollution reduction strategy. When these conditions are met, the plan is considered to be in air quality conformity. While this document reports changes in air pollution emissions associated with each project individually, the conformity analysis will ultimately be based on all the projects fiscally constrained in the plan (and transportation improvement program) as a whole.

This document describes the RSPs and their expected performance as well as providing background on the process CMAP employed to identify and evaluate them. It is an interim product of ON TO 2050. Through committee and stakeholder discussion in fall 2017 and spring 2018, CMAP will select a recommended set of the projects analyzed in this document to include under fiscal constraint in ON TO 2050. Note that the types of projects considered in ON TO 2050 differs from those considered in GO TO 2040 and previous plans. As discussed below, in addition to expressway and rail capacity projects, the plan considers bus rapid transit, arterial capacity, and large state of good repair projects.

Process

Definition change from previous plans

Since it is not practical to itemize all projects expected over a multi-decade planning horizon, MPOs typically list only projects of a certain size or type. The previous plan GO TO 2040 defined "major capital projects" as capacity additions to the expressway system – new lanes, new interchanges between interstates, or entirely new expressways – or comparable changes to the transit system, generally meaning a rail extension. The result was a relatively small universe of candidate capital projects which were then evaluated across multiple criteria and prioritized for inclusion in the plan.

In its 2014 MPO certification review, however, the U.S. DOT recommended that the "identification of Major Capital Projects should be based on impact, not scope, of projects." For example, bus rapid transit (BRT) systems may have similar service characteristics and travel benefits to rail transit, and should be included along with more traditional heavy rail and commuter rail projects. Similarly, large reconstruction projects may have regionally significant impacts even if they add little or no capacity to the network. Furthermore, a more holistic definition would also be thought to better capture true regional priorities. Ultimately, the planning process allows for considerable flexibility in the types of projects considered.

After extensive discussion with the CMAP committees and governing board, the definition of a regionally significant project (RSP) for ON TO 2050 is a project that:

1. Costs at least $100 million and (a) changes capacity on the National Highway System (NHS) or is a new expressway or principal arterial, or (b) changes capacity on transit services with some separate rights-of-way or shared right-of-way where transit has priority over other traffic; or

2. Costs at least $250 million, regardless of the facility type or work type.

Candidate projects are compared to the cost thresholds based on current dollars (any conversion to year-of-expenditure cost is carried out by CMAP when necessary to meet federal rules). The entire project cost, not just the cost of the added capacity, is used to determine whether the project is regionally significant. Note that sponsors may develop a project proposal comprising a program of similar projects if individual projects would not meet the proposed thresholds. Projects that change capacity are those with **non-exempt TIP work types**, in other words those that are already considered under federal rules to demonstrate air quality conformity. The non-capacity projects that the certification review encouraged the plan to contain are captured in the second threshold of $250 million.

Solicitation of projects

In spring 2016, staff met with implementers to develop a list of projects that fell within the revised regionally significant project thresholds. In summer 2016, staff coordinated with implementers to ensure that this initial list of regionally significant projects reflected all projects that should be considered for ON TO 2050. Implementers were given the opportunity to suggest projects that were not within their jurisdictional control – for instance, a county could nominate a project on an NHS route controlled by the state. Staff then brought the draft list of capital projects to the Transportation Committee for review in September 2016.

CMAP then sought public input on the list through a 45-day public comment period. The public was provided with information on the projects already proposed and given an opportunity to recommend additional projects for consideration in ON TO 2050. A total of 18 projects[1] were submitted by the public using an online portal. The submittals are **compiled here**. After review, 15 projects submitted by the public met the RSP thresholds and had sufficient information to be considered, while three did not.[2]

The 15 publicly submitted projects included two circumferential monorail routes submitted by researchers affiliated with the Illinois Institute of Technology, three commuter rail conversions to rapid transit and the CrossRail project by Midwest High Speed Rail, eight streetcar/light rail projects submitted by Chicago Streetcar Renaissance, a conversion of Metra Electric service to rapid transit by the Coalition for a Modern Metra Electric and Cook County, and a new cross-town tollway and transit route submitted by an individual citizen.

The draft final universe of projects to be considered for inclusion in ON TO 2050 is shown in Figures 1 through 7 and listed under "Project Descriptions" in this report. The list includes the projects originally identified by implementers, the 15 projects submitted via public comment, an additional add-lanes project along Vollmer Rd submitted by Cook County[3], and seven additional expressway reconstruction and/ or capacity addition projects identified by the Illinois Department of Transportation.

---

[1] In addition to the project submittals, staff received a letter in support of the CrossRail Chicago proposal, and a letter from a consortium of 20 organizations and individuals requesting that staff remove the Illiana Expressway project from the list of projects being considered.

[2] The Tango Ultra-Narrow Commuter Car project is a vehicle purchase for a new car sharing program, not a highway or transit capacity project. The Skytech Transportation proposal is for a concept of combining freight and commuter transportation systems into one system that operates over existing freight rail lines. The proposal does not provide location-specific information or other project details. The South Side Express Bus is estimated to cost less than $100 million.

[3] This project was submitted through the public comment process but is being treated as an implementer-submitted project.

Figure 1. Proposed regionally significant projects -- expressways

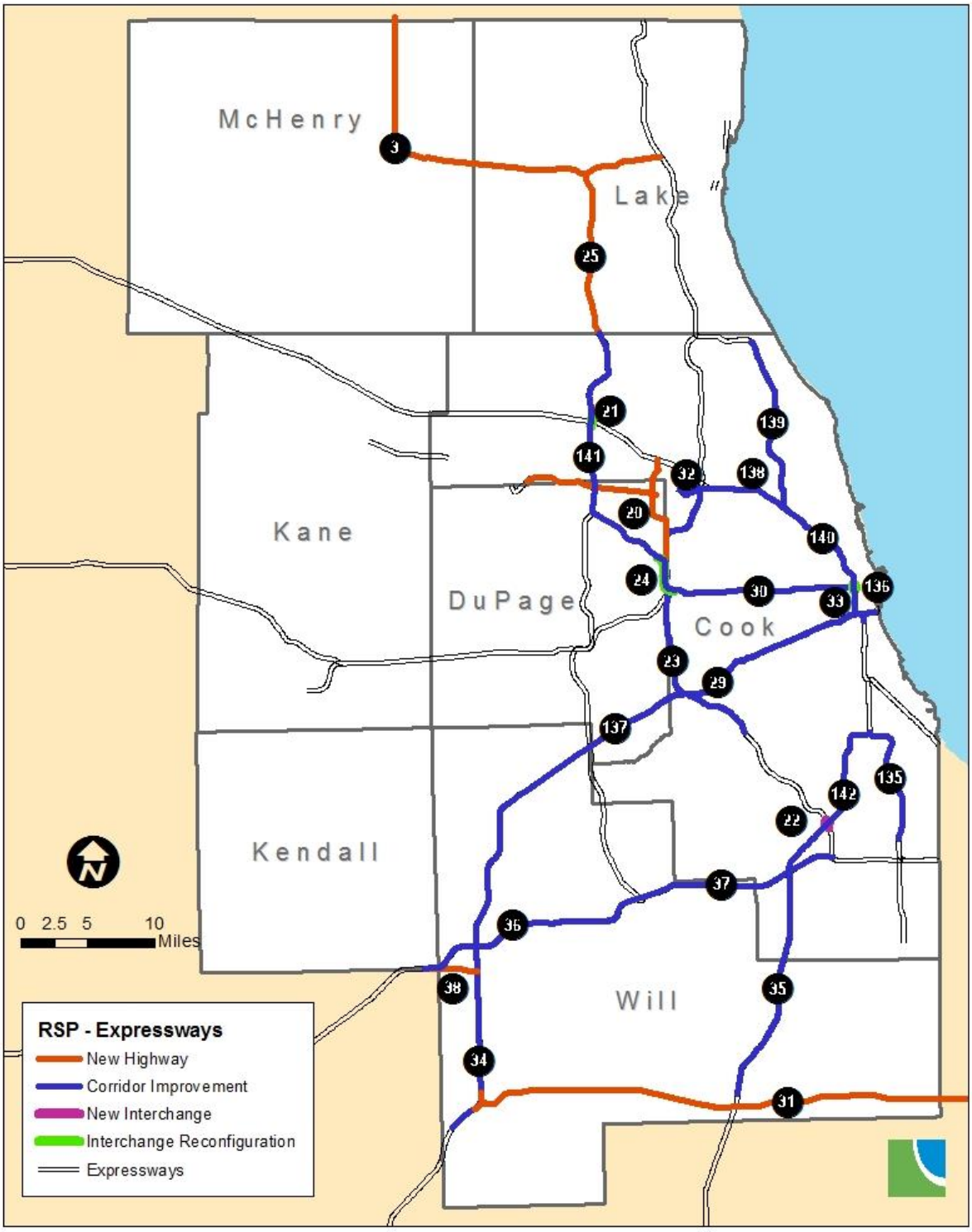


Figure 2. Proposed regionally significant projects – arterials

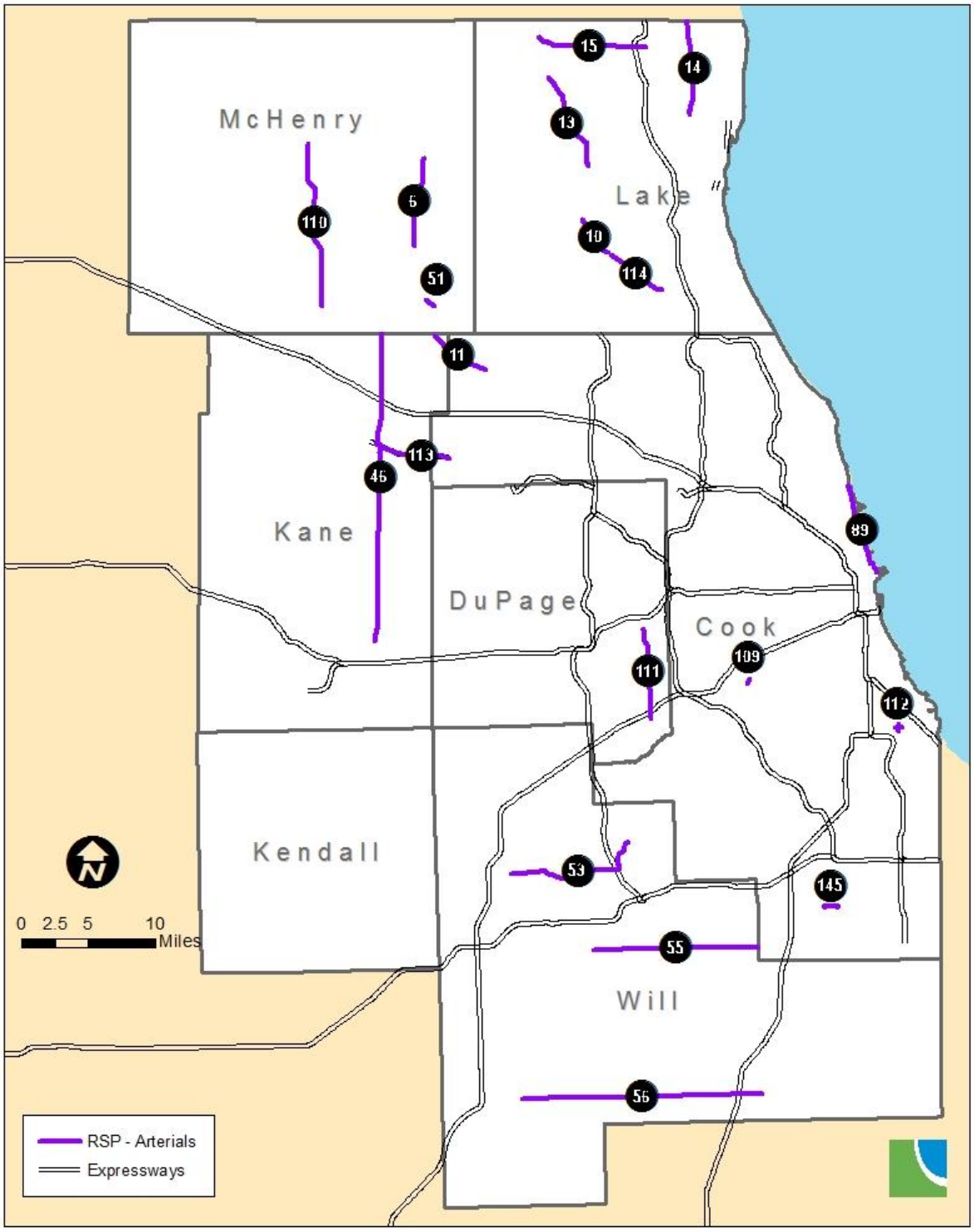


Figure 3. Proposed regionally significant projects -- Metra commuter rail

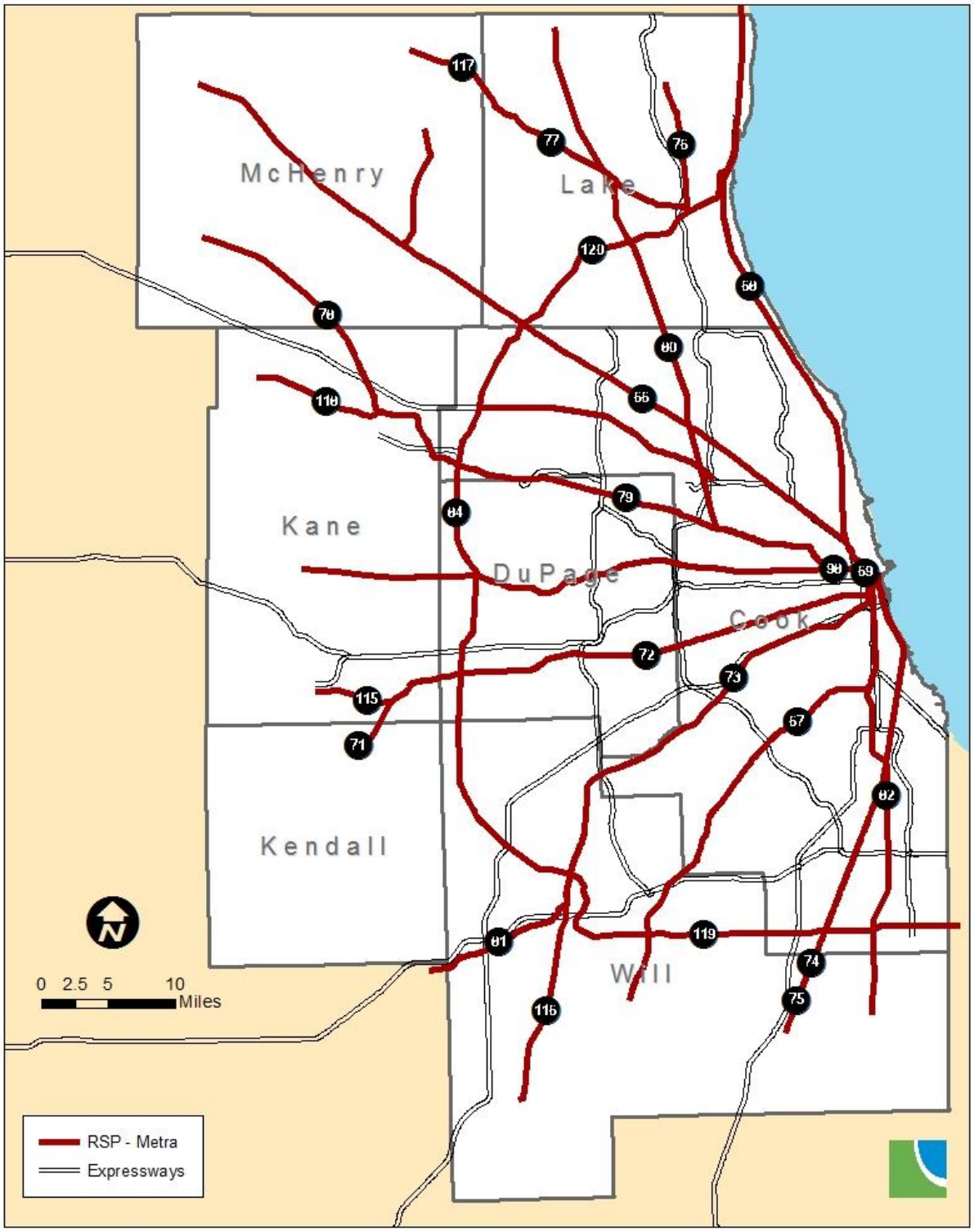


Figure 4. Proposed regionally significant projects -- Pace Suburban Bus

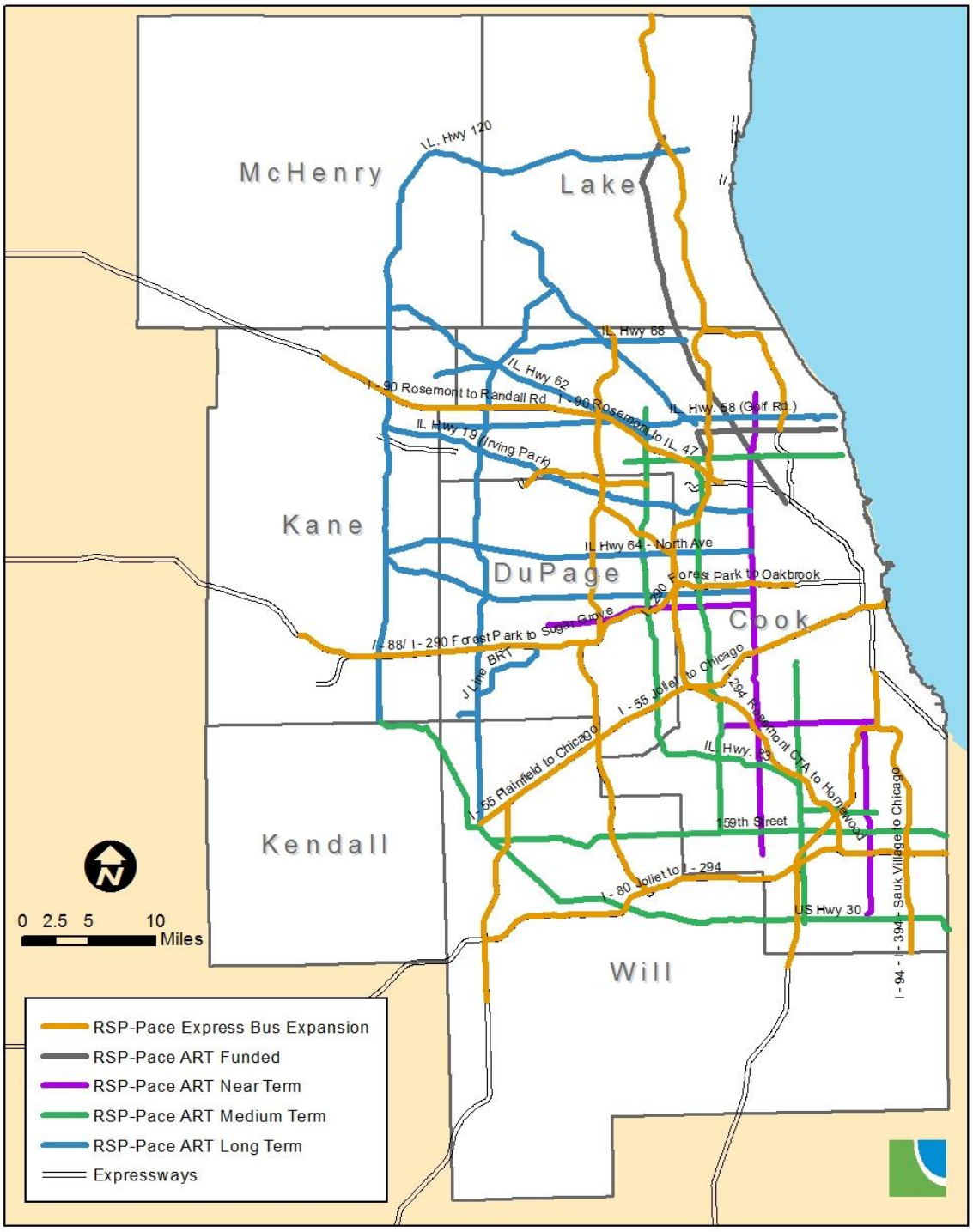


Figure 5. Proposed regionally significant projects -- CTA and City of Chicago urban rail and bus

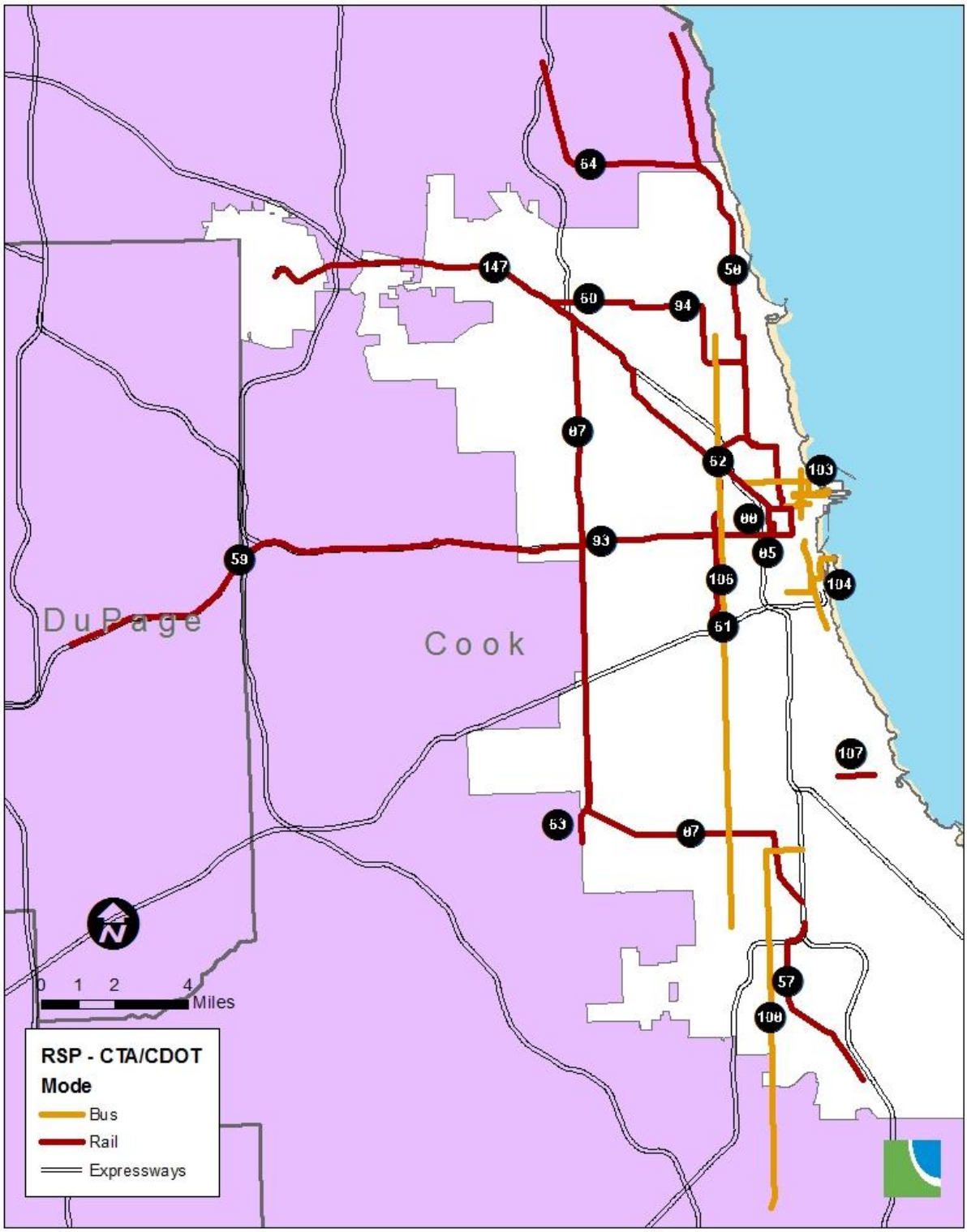


Figure 6. Proposed regionally significant projects -- publicly submitted projects in Chicago

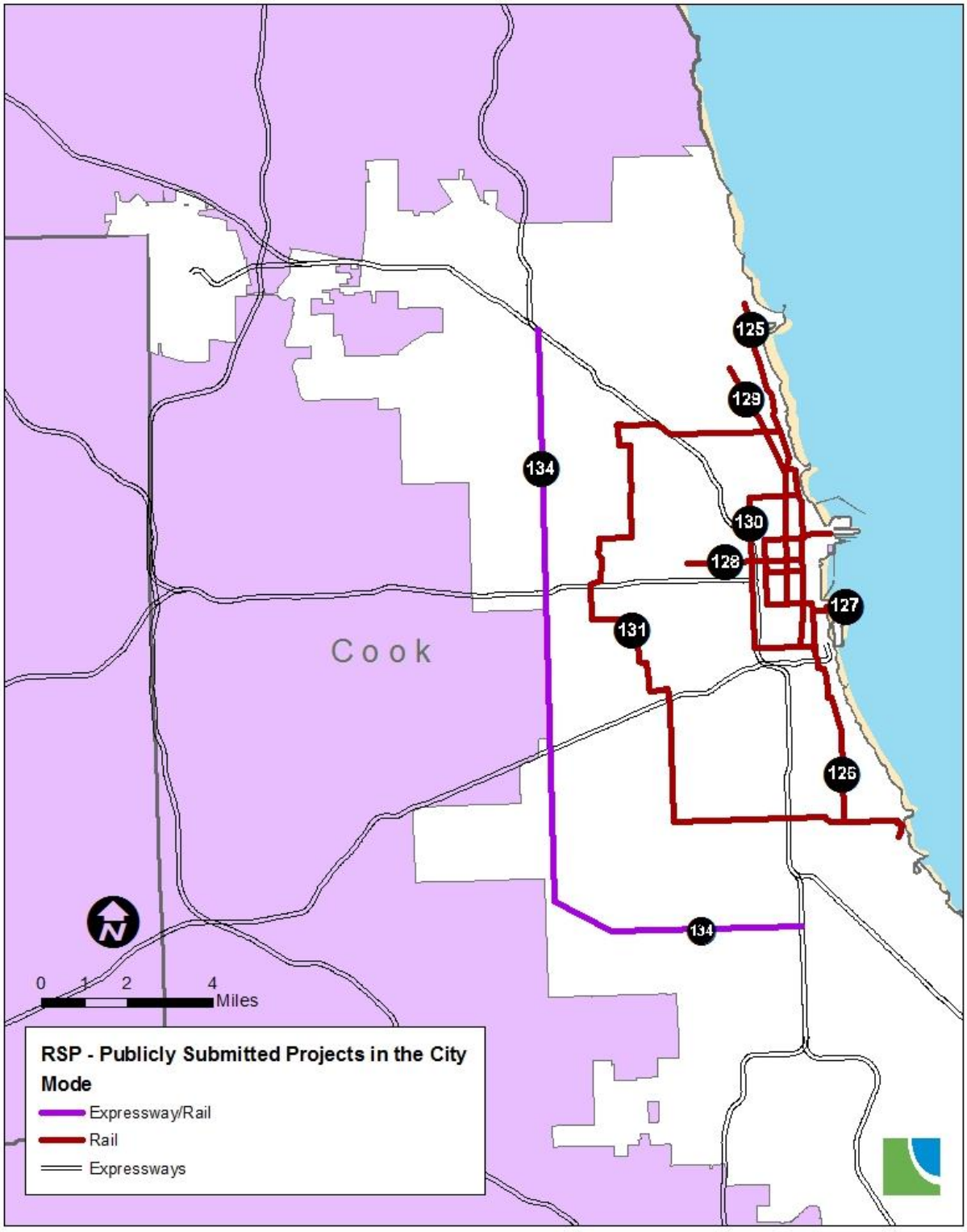
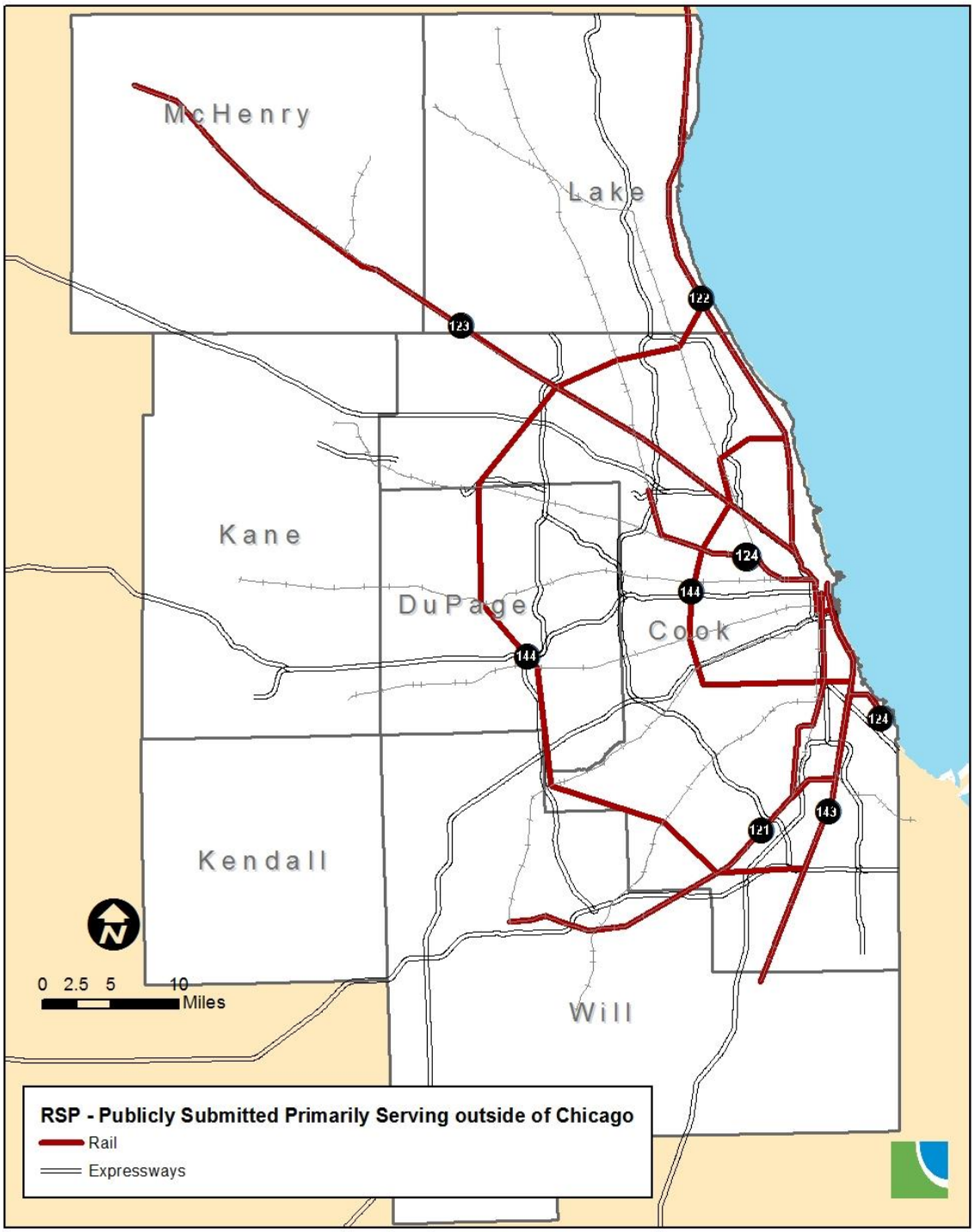


Figure 7. Proposed regionally significant projects -- publicly submitted projects primarily serving area outside Chicago



Evaluation framework

Two forums were held before Transportation Committee meetings -- in July 2016 on highway projects and in November 2016 on transit projects -- to discuss the evaluation measures to be used in the analysis. The outcomes from those forums were then discussed at the following Transportation Committee meeting.[4]

Project evaluation

Project cost estimates

This section presents the estimated cost of all the major capital projects considered and documents the estimation methodology. Federal rules on fiscal constraint require costs to be in year-of-expenditure dollars (YOE$) and to include both capital and operations and maintenance (O&M) costs. Thus, estimates are needed of both types of costs as well as the years in which these expenditures are expected to take place. CMAP staff worked with implementers to update project information including scope, costs, phasing plans, and the portion of the project cost that would involve the addition of new capacity. Understanding the project cost dedicated to adding capacity versus the amount needed for maintenance is important in this process because the two cost categories have different budgetary constraints within the planning process.

Capital costs

In most cases, capital costs were provided by the project sponsor. For publicly submitted projects, the cost provided by the submitter was used. When no cost was provided, CMAP staff estimated the cost based on unit costs from comparable projects. When provided in current or earlier year dollars, costs were escalated to YOE$ by assuming 2.5 percent annual cost inflation, the same assumption used in the ON TO 2050 financial plan for capital maintenance expenditures. Project phasing was taken into account when that information was available. When the sponsor provided costs in YOE$ but used a different cost escalation factor, costs were deflated to the base year and then escalated at 2.5 percent.

In CMAP's financial plan, the constrained cost of RSPs is only the amount needed to build and operate new capacity. However, many RSPs include elements of reconstruction as well as capacity addition. For example, add-lanes projects frequently include reconstruction of the existing facility along with addition of the new lane. The proportion of capital costs required for new capacity and reconstruction was provided directly by the project sponsor. The ON TO 2050 financial plan separately includes the cost to reconstruct existing facilities under the operations and maintenance allocation category.

[4] The presentation materials and recommendations from the highway forum are available from the September 2016 meeting. The presentation materials and recommendations from the transit forum are available from the November 2016 meeting.

Operating costs

Operating costs for highway projects were estimated by applying costs per year per lane-mile to the amount of new capacity, then inflating the cost each year by 2.5 percent. The unit cost estimate for non-tolled highways was derived from IDOT District 1 costs for FY09 – FY13 operations on the interstate and arterial system. The estimate for Tollway projects was derived from Illinois Tollway developed operating costs for the Elgin-O'Hare Western Access project. Illiana Expressway operating costs were taken from back-up material for the Illiana Expressway project study.

Annual operating costs for transit projects relied on relevant project studies when available. When a plan was unavailable, operating costs were estimated using the revenue service hours calculated from service plans provided by the project sponsor, and unit costs from taken from the National Transit Database (NTD) for 2015. Again, operating costs were inflated by 2.5 percent each year. In a few cases, improvements to existing lines are expected to decrease operating costs, generally by making service faster and thus reducing revenue hours required for a given number of runs. Anticipated fares associated with a project – calculated as the service board-specific average fare from the 2015 NTD times the annual number of new riders on the project – were subtracted from the operating cost.

Cost summary for projects

The full list of projects with costs is presented in Table 2. The table below contains the new capacity costs considered for fiscal constraint, while the last column contains the project reconstruction costs. Costs in YOE$ are calculated from sponsor information. Where no implementation year is available, the year of construction is assumed to be 2034, the midpoint of the planning period. Note that, ultimately, some projects will have revenues associated with them from tolling and value capture that help offset their costs in the ON TO 2050 financial plan.

Table 2. Costs of regionally significant projects

Project	Project Information					Cost for new capacity			Reconstruction costs, YOE$b
	RSP ID	Sponsor	Year of construction	Capital cost, 2018$b	Percent of cost for new capacity	Capital cost, YOE$b	Operating costs to 2050, YOE$b	Total project cost, YOE$b	
West Loop Transportation Center Ph I	85	CDOT	2020	0.61	100%	0.66	0.05	0.71	-
Mid-City Transitway	87	CDOT	2041	6.73	100%	12.24	0.59	12.83	-
West Loop Transportation Center Ph II	88	CDOT	2034	2.04	100%	3.12	0.15	3.27	-
River North-Streeterville Transit Improvements	103	CDOT	2020	0.41	100%	0.44	0.50	0.94	-

Project	Project Information					Cost for new capacity			Reconstruction costs, YOE$b
	RSP ID	Sponsor	Year of construction	Capital cost, 2018$b	Percent of cost for new capacity	Capital cost, YOE$b	Operating costs to 2050, YOE$b	Total project cost, YOE$b	
South Lakefront-Museum Campus Access Improvement	104	CDOT	2020	0.41	100%	0.44	0.11	0.55	-
North Lakefront Light Rail Line	125	PS*	2034	0.54	100%	0.83	(0.46)	0.37	-
South Lakefront Light Rail Line	126	PS*	2034	0.80	100%	1.23	0.40	1.63	-
Superloop Light Rail Line	127	PS*	2034	0.49	100%	0.75	0.35	1.10	-
Madison St & Jackson St Light Rail Lines	128	PS*	2034	0.25	100%	0.39	0.33	0.72	-
Clark Street Light Rail Line	129	PS*	2034	0.44	100%	0.67	0.26	0.94	-
Downtown Ring Light Rail Line	130	PS*	2034	0.66	100%	1.01	0.52	1.53	-
The Burnham Ring Light Rail Line	131	PS*	2034	1.64	100%	2.50	1.13	3.63	-
Vollmer Rd	145	Cook	2022	0.10	5%	0.01	0.00	0.01	0.11
Red Line Extension (South)	57	CTA	2022	2.07	95%	2.19	0.81	3.00	0.12
Red Purple Modernization Phase I	58A	CTA	2020	2.14	62%	1.44	0.30	1.74	0.88
Red Purple Modernization Future Phases	58B	CTA	2026	4.28	60%	3.23	0.25	3.48	2.15
Blue Line West Extension	59	CTA	2051	1.30	94%	2.93	0.02	2.95	0.19
Brown Line Extension	60	CTA	2051	4.72	98%	11.44	0.01	11.46	0.23
Circle Line South (Phase II)	61	CTA	2051	1.14	75%	2.12	0.02	2.13	0.71
Circle Line North (Phase III)	62	CTA	2051	2.55	75%	4.73	0.01	4.74	1.58
Orange Line Extension	63	CTA	2051	0.57	100%	1.40	0.00	1.41	-
Yellow Line Enhancements and Extension	64	CTA	2051	0.34	100%	0.83	0.00	0.83	-
Blue Line Forest Park Br Reconstruction	93	CTA	2022	1.73	16%	0.32	(0.04)	0.27	1.66
Brown Line Capacity Expansion	94	CTA	2025	1.73	30%	0.63	0.02	0.65	1.48
Ashland Ave BRT	106	CTA	2022	0.17	75%	0.15	0.04	0.18	0.05
Green Line Extension	107	CTA	2051	1.03	92%	2.24	0.00	2.24	0.19
South Halsted BRT	108	CTA	2020	0.15	75%	0.12	0.04	0.16	0.04
Blue Line Capacity Project	147	CTA	2022	0.83	39%	0.37	0.18	0.00	-
IL-31 Front St	6	IDOT	2022	0.12	100%	0.13	0.00	0.14	-
IL-60	10	IDOT	2022	0.13	100%	0.14	0.00	0.15	-
IL-62/Algonquin Rd	11	IDOT	2022	0.12	100%	0.14	0.00	0.14	-
IL-83/Barron Blvd	13	IDOT	2022	0.12	100%	0.14	0.01	0.14	-
IL-131/Greenbay Rd	14	IDOT	2022	0.16	100%	0.19	0.01	0.19	-
IL-173/Rosecrans Rd	15	IDOT	2022	0.12	100%	0.14	0.01	0.15	-
I-55 Managed Lane	29	IDOT	2019	0.56	80%	0.48	0.03	0.51	0.12
I-290 Managed Lane	30	IDOT	2025	2.07	20%	0.52	0.00	0.52	2.06

Project	Project Information					Cost for new capacity			Reconstruction costs, YOE$b
	RSP ID	Sponsor	Year of construction	Capital cost, 2018$b	Percent of cost for new capacity	Capital cost, YOE$b	Operating costs to 2050, YOE$b	Total project cost, YOE$b	
Illiana Expressway	31	IDOT	2034	1.03	100%	1.60	0.10	1.70	-
I-190 Access Improvements	32	IDOT	2025	0.24	20%	0.06	0.00	0.06	0.24
Jane Byrne Interchange	33	IDOT	2020	0.42	20%	0.09	0.00	0.09	0.37
I-55 Add Lanes and Reconstruction	34	IDOT	2041	0.86	20%	0.32	0.00	0.32	1.28
I-57 Add Lanes	35	IDOT	2045	0.83	20%	0.34	0.00	0.34	1.36
I-80 Add / Managed Lanes	36	IDOT	2025	1.40	20%	0.35	0.00	0.35	1.40
I-80 Managed Lanes	37	IDOT	2025	0.46	80%	0.46	0.02	0.48	0.12
I-80 to I-55 Connector	38	IDOT	2025	0.10	100%	0.13	0.01	0.14	-
Lake Shore Drive Reconstruction	89	IDOT	2020	0.93	0%	-	-	0.00	1.01
IL-43/Harlem Ave	109	IDOT	2020	0.22	0%	-	-	0.00	0.24
IL-47	110	IDOT	2020	0.31	50%	0.17	0.00	0.17	0.17
IL-83/Kingery Hwy	111	IDOT	2020	0.10	100%	0.11	0.01	0.12	-
US-12/95th St	112	IDOT	2020	0.16	0%	-	-	0.00	0.17
US-20/Lake St	113	IDOT	2020	0.11	0%	-	-	0.00	0.12
US-45/Olde Half Day Rd	114	IDOT	2020	0.11	100%	0.12	0.00	0.12	-
I-94 Bishop Ford Expressway	135	IDOT	2025	0.84	20%	0.21	0.00	0.21	0.83
I-90/1-94 Kennedy and Dan Ryan Expwy	136	IDOT	2025	3.74	20%	0.93	0.00	0.93	3.72
I-55 Stevenson Expressway	137	IDOT	2035	3.42	5%	0.27	-	0.27	5.17
I-90 Kennedy Expressway	138	IDOT	2035	1.84	20%	0.59	0.00	0.59	2.34
I-94 Edens Expressway	139	IDOT	2035	1.92	20%	0.61	0.00	0.61	2.44
I-90/I-94 Kennedy Expressway	140	IDOT	2045	1.66	20%	0.68	0.00	0.68	2.70
I-290/IL-53	141	IDOT	2045	3.02	20%	1.23	0.00	1.23	4.93
I-57	142	IDOT	2045	1.27	20%	0.52	0.00	0.52	2.06
Randall Rd	46	Kane	2034	0.30	100%	0.48	0.01	0.49	-
McHenry-Lake Corridor	3	McHenry	2040	1.22	100%	2.17	0.02	2.19	-
North Algonquin Fox River Crossing	51	McHenry	2040	0.04	100%	0.10	0.00	0.10	-
UP Northwest Extension	66	Metra	2020	0.72	50%	0.39	0.07	0.46	0.39
SouthWest Svc Imprvmnts / 75th St CIP	67	Metra	2030	1.70	25%	0.59	(0.02)	0.57	1.77
UP North Improvements	68	Metra	2020	0.98	25%	0.27	0.10	0.37	0.80
UP West Improvements	69	Metra	2020	0.39	25%	0.11	0.01	0.12	0.32
Rock Island Improvements	70	Metra	2025	0.57	25%	0.18	0.04	0.21	0.53
BNSF Extension-Oswego/Plano	71	Metra	2041	0.45	100%	0.81	0.02	0.83	-
BNSF Improvements	72	Metra	2041	0.27	25%	0.12	(0.00)	0.12	0.37
Heritage Corridor Improvements	73	Metra	2041	0.28	25%	0.13	0.05	0.18	0.38

Project	Project Information					Cost for new capacity			Reconstruction costs, YOE$b
	RSP ID	Sponsor	Year of construction	Capital cost, 2018$b	Percent of cost for new capacity	Capital cost, YOE$b	Operating costs to 2050, YOE$b	Total project cost, YOE$b	
Metra Electric Improvements	74	Metra	2041	0.46	25%	0.21	0.05	0.26	0.62
Metra Electric Extension	75	Metra	2020	1.18	50%	0.64	0.29	0.93	0.64
Milwaukee Distr North Ext-Wadsworth	76	Metra	2020	0.47	75%	0.38	0.44	0.82	0.13
Milwaukee District North Improvements	77	Metra	2020	0.69	25%	0.19	0.08	0.26	0.56
Milwaukee District West Ext-Marengo	78	Metra	2020	0.67	25%	0.18	0.02	0.20	0.55
Milwaukee District West Improvements	79	Metra	2041	0.64	25%	0.29	0.01	0.30	0.87
North Central Service Improvements	80	Metra	2041	0.51	50%	0.46	0.15	0.62	0.46
Rock Island Extension	81	Metra	2041	0.50	100%	0.90	(0.00)	0.90	-
SouthEast Service	82	Metra	2041	4.98	75%	6.80	0.66	7.46	2.27
STAR Line	84	Metra	2041	3.13	100%	5.69	0.64	6.33	-
A-2 Crossing Rebuild	98	Metra	2020	0.72	25%	0.19	(0.06)	0.14	0.58
BNSF Extension-Sugar Grove	115	Metra	2041	0.38	100%	0.68	0.02	0.71	-
Heritage Corridor Extension	116	Metra	2041	0.17	100%	0.31	0.01	0.32	-
Milwaukee District North Ext-Richmond	117	Metra	2041	0.37	100%	0.66	0.07	0.73	-
Milwaukee District West Ext-Hampshire	118	Metra	2041	0.44	100%	0.81	0.11	0.91	-
STAR Line Eastern Segment	119	Metra	2041	1.72	100%	3.14	0.43	3.57	-
STAR Line Northern Segment	120	Metra	2041	1.41	100%	2.55	0.33	2.89	-
Rock Island RER Service	121	PS*	2034	0.57	100%	0.90	1.02	1.92	-
UP North RER Service	122	PS*	2034	1.87	100%	2.95	1.58	4.53	-
UP Northwest RER Service	123	PS*	2034	2.30	100%	3.62	1.30	4.92	-
CrossRail Chicago	124	PS*	2034	3.98	50%	3.04	0.82	3.86	3.04
Modern Metra Electric	143	PS*	2034	1.02	20%	0.31	0.43	0.74	1.25
Pulse-ART Expansion Near Term	102A	Pace	2021	0.17	100%	0.13	0.95	1.08	-
Pulse-ART Expansion Mid Term	102B	Pace	2028	0.42	100%	0.37	1.31	1.68	-
Pulse-ART Expansion Far Term	102C	Pace	2035	0.82	100%	0.86	2.76	3.61	-
Express Bus Expansion	105	Pace	2034	1.81	100%	1.85	1.73	3.57	-
Suburban Metro Area Rapid Transit	144	PS*	2034	15.30	100%	23.39	0.99	24.38	-
Elgin O'Hare Western Access	20	Tollway	2024	1.84	100%	2.17	0.08	2.24	-
I-290/IL 53 Interchange Improvement	21	Tollway	2030	0.30	0%	-	-	0.00	0.45
I-294/I-57 Interchange Addition	22	Tollway	2024	0.36	100%	0.42	0.00	0.42	-
I-294 Central Tri-State Mobility Imprv	23	Tollway	2022	1.52	10%	0.17	0.00	0.17	1.52
I-290/I-294 Interchange Improvement	24	Tollway	2021	0.51	0%	-	-	0.00	0.55
Central Lake County Corridor: IL 53/120	25	Tollway	2030	2.52	100%	3.39	0.06	3.45	-
Cross-Town Tollway and CTA Route	134	PS*	2034	10.20	100%	15.60	0.06	15.66	-

Project	Project Information					Cost for new capacity			Reconstruction costs, YOE$b
	RSP ID	Sponsor	Year of construction	Capital cost, 2018$b	Percent of cost for new capacity	Capital cost, YOE$b	Operating costs to 2050, YOE$b	Total project cost, YOE$b	
Caton Farm-Bruce Rd Corridor	53	Will Co	2034	0.41	59%	0.39	0.01	0.40	0.27
Laraway Rd	55	Will Co	2025	0.21	50%	0.13	0.00	0.13	0.13
Wilmington-Peotone Rd	56	Will Co	2025	0.26	50%	0.16	0.01	0.17	0.16

*PS – Public Submittal

Evaluation measures

Identifying projects that help the region meet its transportation, economic, land use, environmental, and quality of life goals is an objective of the planning process. The evaluation framework classes performance into three categories: 1) addressing today's needs, 2) improving 2050 travel, and 3) implementing ON TO 2050 planning priorities. The following discussion describes the project evaluation measures within those categories.

Addressing today's needs

Given the region's scarce resources and the significant deficiencies on the system, ranging from safety problems on highways to capacity constraints on the rail system, ON TO 2050 evaluates projects based on the severity of the existing need at a project location. For example, if a proposed highway capacity project addresses an area with high congestion, that has a high crash rate, and has poor pavement condition, then it should be a higher priority than one where these needs are not as great. Different measures are used to evaluate the needs that transit (Table 3) and highway (Table 4) projects address. More details on the evaluation measures can be found in Appendix A.

Table 3. Current need measures for transit project evaluation

Average asset condition	The weighted average condition of each line's transit assets is developed using the RTA's Capital Optimization Support Tool and underlying asset inventories from the RTA's most recent **capital asset condition assessment**. Individual assets or groups of assets across the system have been assigned a numerical rating using based on age and FTA's asset condition scale where 5 is like new and 1 is in need of immediate repair. These conditions are averaged across each line, weighted by the estimated cost to replace them, in order to develop this measure. Low numbers indicate that a line has many old assets in need of replacement; high numbers indicate that a particular line is newer. A project that addresses assets in poorer condition is considered a higher priority.
Capacity constraint	Capacity constraints limit the amount of service that can be provided and lead to crowded conditions. Capacity is measured as the ratio of maximum passenger loads to capacity on CTA rail and, on Metra, the number of trains each day where 95% or more of the seats are occupied. Projects which address more significant capacity constraints are considered higher priority. Bus projects are not considered to address a capacity constraint.
Reliability	Reliability is measured as route on-time performance (Metra) or headway adherence (bus, CTA rail). The source is transit agency data.
ADA improvement	ADA compliance is a significant need on the existing transit system, and an area where the transit agencies will be making significant investments. This measure is "Yes" if a project significantly reduces or eliminates an existing ADA deficiency, otherwise the rating is "No."

Table 4. Current need measures for highway project evaluation

Structural deficiency of bridges	Measured as square feet of bridge deck on bridges along a project that are categorized as deficient. Projects that address more structurally deficient bridge deck area are considered higher priority.
Pavement condition	For arterials, a combination of Condition Rating System (CRS) and International Roughness Index (IRI) is used, scaled 1-100 from best to worst condition for the NHS system. For expressways, pavement condition is additionally evaluated by median pavement age of the project segments. Projects that address older pavements or pavements in worse condition are considered higher priority.
Safety	The severity of safety problems addressed by a project is measured by the rate of serious injury and fatal crashes occurring per VMT on the project segments, scaled 1-100. A project addressing a more severe safety problem is considered a higher priority.
Mobility	Mobility is measured as a combination of the intensity of congestion (measured with the travel time index, or TTI) and the duration of congestion (measured as hours of congestion throughout the day). The measures are weighted equally and rescaled 1-100. A capacity project addressing a more severe congestion problem is considered a higher priority.
Reliability	This measure rates the severity of existing travel time unreliability using the planning time index (PTI), scaled to a value 1-100. A capacity project addressing a more severe reliability problem is considered a higher priority.

2050 performance

Projects are also evaluated based on how they are expected to perform in 2050. For expressway projects, CMAP's four-step travel demand model was used to model each project and estimate reductions in congestion, changes in crash rates, and changes in other measures expected from implementing candidate projects. Arterial projects were not modeled on a project by project basis, but the evaluation was supported by more generic modeling on the National Highway System arterials using the four-step model. The Regional Transportation Authority (RTA) computed 2050 transit project performance using a combination of the FTA's Simplified Trips on Projects (STOPS) model developed and calibrated for northeastern Illinois and the RTA Access Tool created to measure the accessibility of jobs by transit.

Travel conditions in 2050 with and without the projects were compared. The change between no-build (without the project) and build (with the project) measures was calculated by using the difference between the appropriate scenarios. All projects were evaluated using region's existing and committed network, which includes the existing 2015 road and transit network plus projects from the Northeastern Illinois Transportation Improvement Program[5] (TIP) that are expected to exist in 2050. Each build scenario included the existing and committed network

[5] The TIP, available at https://etip.cmap.illinois.gov/, is a compendium of funded projects on which some phase of work is expected in the next five years.

plus the project in question. For phased transit projects (such as Circle Line, Red/Purple Modernization, etc.), later phases had their no-build scenarios adjusted to included earlier phases on top of the 2015 base network. The characteristics of individual projects were coded into the model based on information supplied by the project sponsors. More details on the evaluation measures are available in Appendix A.

In addition to reporting absolute project benefits, the cost-effectiveness of the projects was also computed. To do so, the current year (2018) capital cost of the project plus 10 years of operating cost was divided by each evaluation measure. This results in an estimated cost per unit of change, for example dollars per new rider or dollars per minute of travel time change.

Table 5. 2050 performance measures for transit project evaluation

Project ridership (daily)	The number of boardings on the project in 2050, reflecting the total number of users benefitted by the project.
Change in regional ridership (daily)	The incremental change in transit use, measured as transit person-trips per day, caused by the project in 2050. This shows how much a project increases overall regional ridership.
Change in work trip transit travel time (minutes)	This measure computes the difference in average commute time for workers region wide.
Change in project user commute time (minutes)	This measure computes the difference in average commute time for project users where transit could be used in both build and no-build scenarios. It excludes areas where transit was not available in the no-build scenario.
Change in job accessibility (count of jobs)	Measures the change in the average number of jobs each household in the region can reach by transit within both 60 and 90 minutes.

Table 6. 2050 performance measures for expressway project evaluation

Change in congested vehicle hours traveled (VHT) in region (hours daily)	Congested VHT measures the time all vehicles in total spend in congestion. If a project reduced a typical trip time in congested conditions by 5 minutes for 10,000 cars, then the change in congested VHT would be 5 minutes * 10,000 cars ÷ 60 minutes/hour = 833 hours saved.
Change in congested VHT in corridor (hours daily)	Since in some cases a project may have a modest impact on performance at the regional scale but a large impact in the vicinity of the project, this measure assesses the reduction in congested VHT for all vehicles within a 5-mile buffer around the project.
Change in regional work trip travel time (minutes)	Measures the change in the average travel time for commutes beginning anywhere in the CMAP area.
Change in work trip travel time within corridor (minutes)	Measures the change in the average travel time for commutes beginning only in the 5-mile buffer around the project.
Change in job accessibility (count of jobs)	Measures the change in the average number of jobs each household can reach by auto within 45 minutes.

Ten-year change in expected crashes	This measure estimates the change in all crashes resulting from the project.

Planning priorities

The projects were assessed for their contributions existing GO TO 2040 and emerging ON TO 2050 priorities. Given the important role of Inclusive Growth in ON TO 2050, the evaluation looks closely at how well projects benefit residents of economically disconnected areas, places with high concentrations of low income residents, persons of color, or residents with limited English language proficiency. To assess a project's ability to help the region grow economically, the analysis also examines aspects of the economic impact and support of freight movement of proposed projects. To support ON TO 2050's reinvestment recommendations, the analysis examines how well a project supports infill development in already-developed parts of the region. For highway investments, the analysis furthermore examines how projects might encourage development in priority conservation areas and sensitive water resources, or place additional burdens on areas with groundwater scarcity. More details on the evaluation measures are available in Appendix A.

Table 7. Planning priorities for transit projects

Project use by residents of economically disconnected areas	This is the proportion of project ridership estimated to come from economically disconnected areas and measures the degree to which a project directly benefits those areas.
Support for infill development	Captures the degree to which a project supports growth in areas that are appropriate for infill development based on a 1-100 index. Projects that serve areas that are highly supportive of infill receive up to 100, while projects that serve areas that minimally support infill score as little as 0.
Economic impact due to industry clustering	Dollar value of increased labor productivity by enhanced businesses-business interaction and access to larger labor pool brought about by a project's changes to transit travel times.
Access to low barrier to entry jobs for residents of economically disconnected areas	This measure assesses the average number of higher-wage jobs that do not require a college degree that are accessible to households living in economically disconnected areas within 60 and 90 minutes by transit.
Change in greenhouse gas emissions (kg/day in 2050)	By reducing auto VMT, transit projects tend to reduce greenhouse gas emissions.
Risk assessment	The Risk Assessment measure is used to capture the relative difficulty of delivering the project based on physical, political, and community constraints.
Freight improvement	Measures the impact the project will have on freight based on specific changes the project will include.

Table 8. Planning priorities for highway projects

Change in congested VHT for heavy trucks in region (hours daily)	To estimate project benefits to freight, this measure captures the change in congested VHT for heavy commercial vehicles.
Change in congested VHT for heavy trucks in corridor (hours daily)	Measures the change in congested VHT, but for heavy commercial vehicles only and within a 5-mile buffer around the project.
Freight improvement	Measures the impact the project will have on freight based on specific changes the project will include.
Change in greenhouse gas emissions (metric tons/day)	Emissions of GHGs by autos is sensitive both to total vehicle miles traveled and vehicle speed.
Development pressure in conservation areas (count of new households)	By increasing highway access, highway projects may encourage development in important conservation areas. For expressways, this measure estimates the potential increase in households in conservation areas. For arterials, the measure of impact is simply the number of acres of priority conservation area within the project's travel shed, converted to a 1-100 score.
Development pressure in areas at risk of groundwater desaturation (count of new households)	Similar to development pressure in conservation areas, this measure evaluates the potential increase in number of households in areas with groundwater desaturation.
Change in impervious area (acres)	Based on the projected spinoff development, this analysis estimates the increased coverage of impervious surface, which is a proxy for negative impacts on water resources. Does not include imperviousness associated with actual road facility.
Project use by residents of economically disconnected areas (percent of VMT)	This is the proportion of VMT on a project from trips originating in economically disconnected areas, and reflects the degree to which a project directly benefits those areas.
Change in fine particulate matter emissions in economically disconnected areas (g/day)	Fine particulate emissions have a negative impact on public health. This measure determines the degree to which a project would cause changes in fine particulate matter emissions in economically disconnected areas where health impacts are expected to be especially high.
Accessibility of low barrier to entry jobs for residents of economically disconnected areas (count of jobs)	This measure assesses the average number of higher-wage jobs that do not require a college degree that are accessible to households living in economically disconnected areas within 45 minutes by auto.
Economic impact due to industry clustering (dollars per year)	Dollar value of increased labor productivity by enhanced businesses-business interaction and access to larger labor pool brought about by a project's changes to transit travel times.
Support for infill development	Captures the degree to which a project supports growth in areas that are appropriate for infill development based on a 1-100 index. Projects that serve areas that are highly supportive of infill receive up to 100, while projects that serve areas that minimally support infill score as little as 0.

Benefit to key industries	This measure assesses the degree to which projects benefit key industries. Key industries were identified by the number of jobs in regionally specialized, export-oriented industries with higher than average in-region transportation costs.
Benefit to areas with industrial vacancy	This measure identifies the degree to which projects benefit distressed industrial areas. Distressed industrial areas were identified by current vacancy. Projects serving distressed industrial areas are considered to be higher priority because of their ability to improve these area's competitiveness.

Evaluation highlights

This section discusses highlights of the evaluation. It is important to emphasize that the evaluation is a planning-level comparison rather than the more detailed modeling required for project studies. Including an evaluation of existing system needs is new in ON TO 2050, and as a result certain projects which appear to have limited benefits based only on modeling have clearer value. For example, several projects with modest mobility benefits, such as the reconstruction and widening of I-80 from Ridge Road to US 30 (RSP 36), can be more readily justified on the basis of the need to rebuild the existing infrastructure. These projects also often support significant existing jobs and households.

Transit

The analysis of how well the proposed transit projects meet today's needs on the system indicates that a number of projects address significant capacity constraints as well as state of good repair issues. At the top of this list is Red Purple Modernization Future Phases (RSP 58B), which also has the best 2050 performance and relatively high cost-effectiveness for 2050 performance. The Blue Line Forest Park Branch reconstruction (RSP 93) also addresses a significant state of good repair need, but it is less capacity constrained and has lower 2050 performance benefits. A number of Metra improvement projects also address significant asset condition and capacity needs. Many of the same transit projects perform well in supporting planning priorities. For example, RPM Future Phases, the Pace express bus expansion, Pace Pulse, and the Forest Park Reconstruction, along with the Red Line South Extension, all perform well in this area.

The evaluation compares project performance on an absolute basis as well as based on cost-effectiveness (dollar per unit benefit). In terms of 2050 performance on mobility measures, the Arterial Rapid Transit (ART) and Bus Rapid Transit (BRT) projects and a handful of Metra improvements to existing lines perform well both on an absolute and on a cost-effectiveness basis. The Pace express bus expansion as well as the Pace Pulse networks perform well on either approach. Interestingly, the longer-term Pace Pulse routes perform better on growth in ridership and access to jobs than the short- and mid-term routes, partly because they serve areas not currently served well by transit, but which are expected to have significantly higher population and employment by 2050. Nevertheless, the short-term Pace Pulse routes perform better on a cost-effectiveness basis because the long-term routes add many more service hours.

In general, the largest and most expensive projects tend to have the highest mobility benefits. These projects are not always cost effective. For example, the $15 billion publicly-submitted SMART monorail project (RSP 144) would add 115 miles of track, over five times more mileage than the next largest project. Accordingly, it has high absolute impacts on transit ridership and access to jobs by transit in the region. However, it has low cost-effectiveness on these measures. The Crosstown Expressway plus rail (RSP 134) -- a project last considered four decades ago, before its federal funding was redirected to transit projects in the face of opposition over community impacts -- has the largest mobility benefits of any of the highway projects and is also the most expensive. Note, however, that the Crosstown still performs relatively well for mobility benefits on a cost-effectiveness basis.

Highway

As with transit, performance of highway projects is mixed, and results vary between the basic measures and cost-effectiveness measures. The Illinois 53/120 extension (RSP 25) – modeled as a 4-lane, 45-mph tolled roadway as recommended in 2012 by the Blue Ribbon Advisory Committee -- continues to demonstrate large improvements in congestion and commute time and performs relatively well on a cost-effectiveness basis. However, it also has significant negative environmental impacts and faces cost constraints. The managed lane on the Stevenson Expressway has the highest mobility benefits on a cost-effectiveness basis, but still performs very well on an absolute basis. The reconstruction of the Eisenhower Expressway with the addition of a managed lane performs relatively well on a mobility basis and addresses major existing congestion, reliability, and state of good repair needs. The Illiana Expressway performs moderately well at improving mobility on an absolute basis and very well on a cost-effectiveness basis, but does little to address current needs or meet planning priorities.

Other expressway projects that stand out include the Central Tri-State Mobility Improvements (RSP 23), which reconstructs the oldest pavement on the expressway system and would have large mobility, safety, and job access gains. The I-290/I-294 and I-290/I-90 interchange projects rank well at addressing today's needs in the mobility and reliability categories, given that many of the problems on the expressway system stem from interchange performance. While the regional model reflects some travel time improvements associated with large interchange projects, it is not well suited to measuring the operational improvements these projects provide.

CMAP's environmental analysis of expressway projects focuses on the connection between land use and transportation, evaluating not the direct impacts to natural resources in the project right-of-way, but instead how the project might reshape development patterns and thereby encourage (or discourage) development pressure in priority conservation areas. In turn, communities could help the region avoid induced development in sensitive areas through appropriate land use controls. In general, roadway extensions tend to have the largest potential negative effects on important conservation areas. From this standpoint, the Illinois 53/120 extension, the McHenry-Lake Corridor, and the Illiana Expressway all have large potential

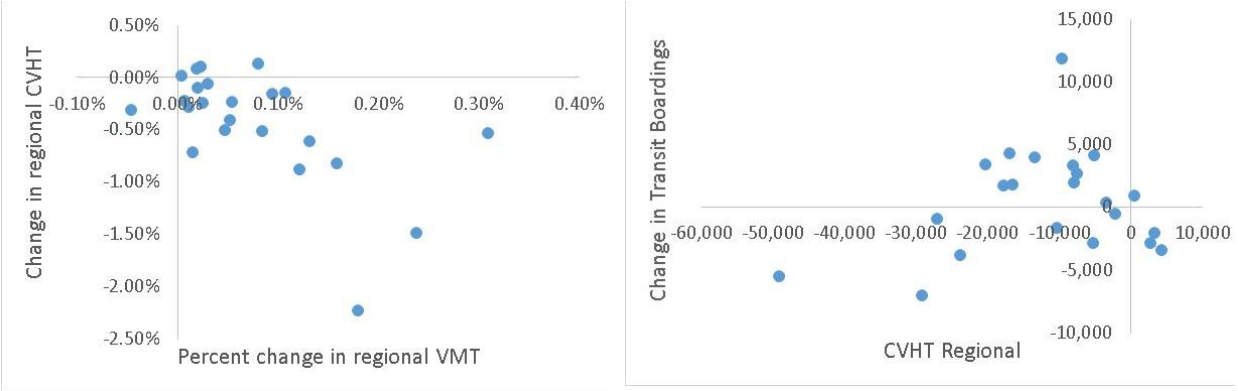
negative impacts, although the degree of potential impact is by far highest for Illinois 53/120. Among the reconstruction with added lanes projects, the Edens Expressway and I-55 south of I-80 (RSP 34) stand out for their potential impacts on priority conservation areas. This measure also has some counterintuitive results. For example, while the Crosstown Expressway right-of-way would be entirely within already-built areas, it would have mobility impacts extending well outside of existing built-up land and could stimulate additional development, particularly in Lake County.

Besides development pressure on priority conservation areas, CMAP also examined the potential to induce growth in areas with large aquifer drawdowns caused by reliance on groundwater for community use. Given that these areas are geographically concentrated in the west and southwest part of the region (see Appendix A), only a few projects tend to have this effect. The I-80 Add/Managed Lanes (RSP 36), I-55 Add Lanes and Reconstruction (RSP 34), and Illiana Expressway are the projects with the most significant potential to further stress groundwater resources.

One purpose of evaluating numerous performance measures is that no project can perform well in all aspects. Further, tradeoffs exist between several performance measures. For highway projects, in general, there is a modest tradeoff between reducing congestion (measured as congested vehicle hours traveled, or CVHT) and increasing auto miles traveled. Although not in every instance, projects that reduce regional CVHT (that is, increase speed) tend to also increase regional VMT (Figure 8). However, on a percentage basis the improvement in congestion is much greater than the increase in total auto usage.

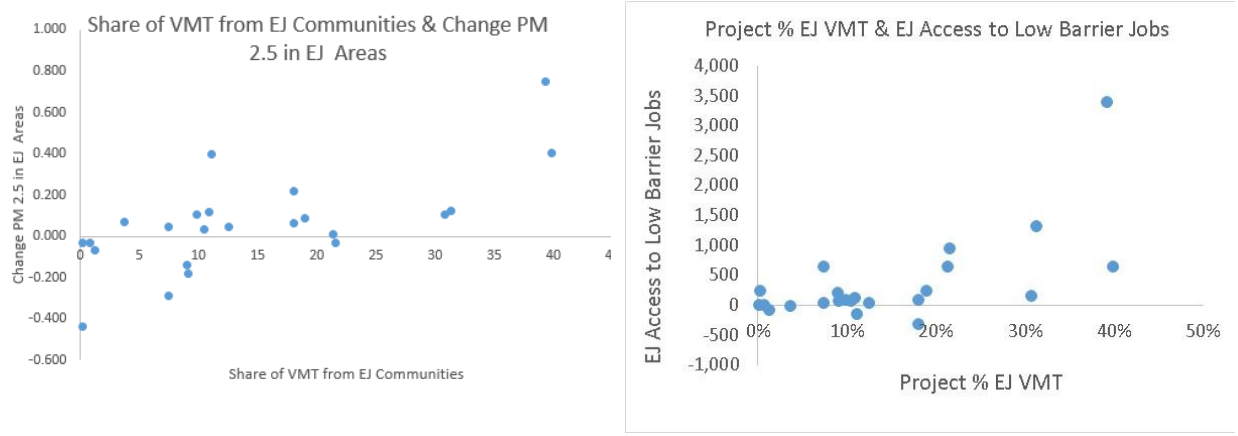
A tradeoff between congestion reduction and transit usage might also be expected, as reduced auto travel times could make auto travel a more attractive option relative to transit. However, the negative impact is very weak overall, and in some cases transit boardings are expected to increase with congestion reduction, presumably because either adding expressway capacity reduced arterial congestion, thus speeding up bus service, or because it provided better auto access to transit stations. Most new expressway capacity is also assumed to be tolled, which likely reduces negative impacts on transit ridership.

Figure 8. Correlation of congestion reduction vs. auto usage (left) and congestion reduction vs. transit usage (right)



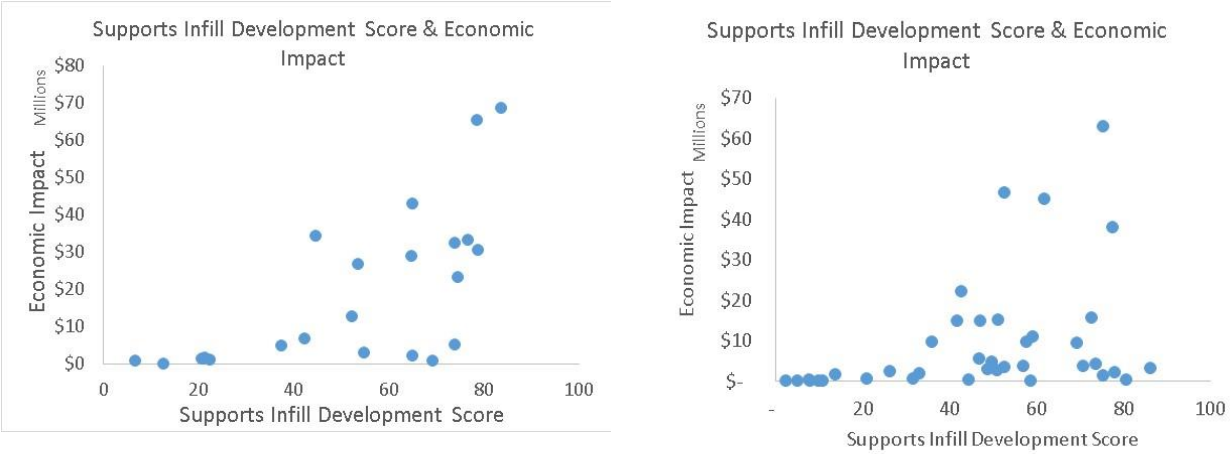
The benefits and burdens of candidate projects can also be distributed in surprising ways. The share of VMT from economically disconnected areas indicates the degree to which residents of disadvantaged communities benefit from a proposed project because it provides a travel time savings. Change in fine particulate matter emissions in economically disconnected areas, on the other hand, can measure as either a benefit or a burden depending on its sign. As Figure 9 suggests, the projects that most directly benefit economically disconnected areas in terms of usage also tend to result in higher fine particulate emissions in economically disconnected areas. At the same time, there is also a strong correlation between anticipated use by residents of economically disconnected areas and access to quality jobs with low barriers to entry.

Figure 9. Correlation of expressway usage by residents of EDAs vs. fine particulate emissions (left) and usage by residents of EDAs vs. access to low-barrier jobs



The evaluation also suggests that a project's support for infill development, a planning priority for ON TO 2050, is connected to its economic impact (Figure 10). This is most likely because the estimate of economic impact is based on how a project affects spatial interaction between businesses as well as between businesses and potential employees. Projects that are better at reducing travel time between areas with high job densities have larger economic impacts, and such projects tend to be found in, or serve, infill areas.

Figure 10. Correlation of infill supportiveness vs. economic impact for highway (left) and transit (right) RSPs



While the arterial projects were not modeled individually, the needs analysis does suggest the priorities the region should address. At the top of the list is North Lake Shore Drive in Chicago, which has significant safety issues, relatively poor pavement condition, a number of structurally deficient bridges, and major congestion and reliability problems. Suburban arterial projects performing well on a current needs basis include those in southern Lake County, Cook County, and DuPage County. The rankings based on planning priorities are more variable and show significant economic benefits to businesses from arterial capacity investments in Kane, McHenry, and DuPage Counties as well as equity benefits from projects in Cook County.

Full evaluation results

The following tables present the performance data collected for each project.

Transit

Table 9. Transit project evaluation for today's needs

				Capacity constraint			
Implementer	RSP ID	Project	Asset condition	Raw**	Rescaled	Reliability	ADA Improvement
CDOT	85	West Loop Transportation Center Phase I	N/A	8	8	N/A	Yes
CDOT	87	Mid-City Transitway	N/A	N/A	N/A	N/A	No
CDOT	88	West Loop Transportation Center Phase II	N/A	0.99	6	N/A	No
CDOT	103	River North-Streeterville Transit Improvements	N/A	N/A	N/A	54.0	No
CDOT	104	South Lakefront-Museum Campus Access Improvement	N/A	N/A	N/A	57.9	No
PS*	125	North Lakefront Light Rail Line	N/A	N/A	N/A	N/A	No
PS*	126	South Lakefront Light Rail Line	N/A	N/A	N/A	N/A	No
PS*	127	Superloop Light Rail Line	N/A	N/A	N/A	N/A	No
PS*	128	Madison Street and Jackson Street Light Rail Lines	N/A	N/A	N/A	N/A	No
PS*	129	Clark Street Light Rail Line	N/A	N/A	6	N/A	No
PS*	130	Downtown Ring Light Rail Line	N/A	N/A	N/A	N/A	No
PS*	131	The Burnham Ring Light Rail Line	N/A	N/A	N/A	N/A	No
CTA	57	Red Line Extension (South)	N/A	0.99	6	98.1	No
CTA	58	Red Purple Modernization Future Phases	2.47	1.17	9	94.4	Yes
CTA	59	Blue Line West Extension	N/A	N/A	N/A	N/A	No
CTA	60	Brown Line Extension	N/A	1.12	8	N/A	No
CTA	61	Circle Line South (Phase II)	N/A	N/A	3	N/A	No
CTA	62	Circle Line North (Phase III)	N/A	N/A	3	N/A	No
CTA	63	Orange Line Extension	N/A	N/A	N/A	N/A	No
CTA	64	Yellow Line Enhancements and Extension	N/A	0.65	N/A	N/A	No
CTA	93	Blue Line Forest Park Branch Reconstruction	2.56	0.99	6	96.2	Yes
CTA	94	Brown Line Capacity Expansion	N/A	1.12	8	97.5	No

				Capacity constraint			
Implementer	RSP ID	Project	Asset condition	Raw**	Rescaled	Reliability	ADA Improvement
CTA	106	Ashland Ave BRT	N/A	N/A	N/A	54.0	No
CTA	107	Green Line Extension	N/A	N/A	N/A	N/A	No
CTA	108	South Halsted BRT	N/A	N/A	N/A	71.0	No
PS*	134	Cross-Town Tollway and CTA Route	N/A	N/A	N/A	N/A	No
CTA	147	Blue Line Capacity Project	2.87	0.99	6	96.2	Yes
Metra	66	UP Northwest Extension	N/A	5	5	96.3	No
Metra	67	SouthWest Service Improvements / 75th St CIP Elements	N/A	-	8	95.2	No
Metra	68	UP North Improvements	2.87	6	6	97.8	No
Metra	69	UP West Improvements	2.98	3	3	95.1	No
Metra	70	Rock Island Improvements	3.44	1	1	96.1	No
Metra	71	BNSF Extension-Oswego/Plano	N/A	N/A	N/A	N/A	No
Metra	72	BNSF Improvements	N/A	8	8	93.1	No
Metra	73	Heritage Corridor Improvements	2.60	-	-	94.2	No
Metra	74	Metra Electric Improvements	3.33	-	-	97.6	No
Metra	75	Metra Electric Extension	N/A	N/A	N/A	N/A	No
Metra	76	Milwaukee District North Extension-Wadsworth	N/A	N/A	N/A	N/A	No
Metra	77	Milwaukee District North Improvements	3.07	-	-	94.6	No
Metra	78	Milwaukee District West Extension-Marengo	N/A	N/A	N/A	N/A	No
Metra	79	Milwaukee District West Improvements	3.33	1	1	94.9	No
Metra	80	North Central Service Improvements	N/A	-	-	94.5	No
Metra	81	Rock Island Extension	N/A	N/A	N/A	N/A	No
Metra	82	SouthEast Service	N/A	N/A	N/A	N/A	No
Metra	84	STAR Line	N/A	N/A	N/A	N/A	No
Metra	98	A-2 Crossing Rebuild	N/A	3	3	94.8	No
Metra	115	BNSF Extension-Sugar Grove	N/A	N/A	N/A	N/A	No

				Capacity constraint			
Implementer	RSP ID	Project	Asset condition	Raw**	Rescaled	Reliability	ADA Improvement
Metra	116	Heritage Corridor Extension	N/A	N/A	N/A	N/A	No
Metra	117	Milwaukee District North Extension-Richmond	N/A	N/A	N/A	N/A	No
Metra	118	Milwaukee District West Extension-Hampshire	N/A	N/A	N/A	N/A	No
Metra	119	STAR Line Eastern Segment	N/A	N/A	N/A	N/A	No
Metra	120	STAR Line Northern Segment	N/A	N/A	N/A	N/A	No
PS*	121	Rock Island RER Service	N/A	1	3	97.1	Yes
PS*	122	UP North RER Service	N/A	6	6	97.5	Yes
PS*	123	UP Northwest RER Service	N/A	5	5	96.2	Yes
PS*	124	CrossRail Chicago	N/A	1	1	No	Yes
PS*	143	Modern Metra Electric	3.33	-	-	97.6	No
Pace	105	Express Bus Expansion	N/A	N/A	N/A	N/A	No
Pace	102A	Pace Short Term ART	N/A	N/A	N/A	71.1	No
Pace	102B	Pace Mid Term ART	N/A	N/A	N/A	69.7	No
Pace	102C	Pace Long Term ART	N/A	N/A	N/A	74.8	No
PS*	144	Suburban Metropolitan Area Rapid Transit	N/A	N/A	N/A	N/A	No

* Publicly submitted

** Ratio of passenger utilization to capacity for CTA; number of trains per day with more than 95 percent of seats occupied for Metra

Table 10. Transit project 2050 performance

			Modeled Project Characteristics		2050 Performance					
Implementer	RSP ID	Project	Change in annual bus revenue hours	Change in annual rail revenue hours	Project ridership (daily)	Change in regional ridership (daily)	Change in work trip travel time (minutes)	Change in project user commute time (minutes)	Change in # of jobs accessible within 90-min, for avg. resident	Change in # of jobs accessible within 60-min. for avg. resident
CDOT	85	West Loop Transportation Center Phase I	x	x	x	x	x	x	x	x
CDOT	87	Mid-City Transitway	0	13,369,729	37,795	13,490	-0.096	-8.84	31,466	12,475
CDOT	88	West Loop Transportation Center Phase II	x	x	x	x	x	x	x	x
CDOT	103	River North-Streeterville Transit Imprvmts	0	1,945,438	32,954	7,737	-0.074	-1.5	1,039	998
CDOT	104	South Lakefront-Museum Campus Access Improvement	317,504	0	80,853	5,971	-0.164	-3.98	1,039	2,404
PS*	125	North Lakefront Light Rail Line	-2,650,360	1,046,095	42,552	-4,161	0.049	-0.97	584	408
PS*	126	South Lakefront Light Rail Line	-908,386	1,364,701	61,557	7,603	-0.111	-1.94	991	790
PS*	127	Superloop Light Rail Line	0	682,664	54,024	9,852	0.01	-3.18	10,924	3,953
PS*	128	Madison St and Jackson St Light Rail Lines	0	388,136	20,421	4,189	0.063	-1.67	2,538	1,478
PS*	129	Clark Street Light Rail Line	-518,496	1,099,709	55,924	2,593	-0.138	-2.18	1,511	1,490
PS*	130	Downtown Ring Light Rail Line	0	723,805	17,777	3,301	-0.031	-1.3	1,102	584
PS*	131	The Burnham Ring Light Rail Line	0	1,428,258	23,178	5,419	-0.042	-0.51	232	327
CTA	57	Red Line Extension (South)	17,813	7,598,877	31,222	7,193	-0.068	-6.99	11,354	6,471
CTA	58	Red Purple Modernization Future Phases	0	7,503,320	626,686	27,268	-0.604	-1.83	9,274	9,173
CTA	59	Blue Line West Extension	0	3,708,472	12,338	5,682	-0.009	-15.32	5,714	8,144
CTA	60	Brown Line Extension	0	2,939,216	16,563	3,241	-0.044	-5.52	3,339	2,738

			Modeled Project Characteristics		2050 Performance					
Implementer	RSP ID	Project	Change in annual bus revenue hours	Change in annual rail revenue hours	Project ridership (daily)	Change in regional ridership (daily)	Change in work trip travel time (minutes)	Change in project user commute time (minutes)	Change in # of jobs accessible within 90-min, for avg. resident	Change in # of jobs accessible within 60-min. for avg. resident
CTA	61	Circle Line South (Phase II)	0	4,854,010	23,439	3,407	-0.141	-4.1	2,961	2,693
CTA	62	Circle Line North (Phase III)	0	2,346,939	61,869	3,551	-0.064	-4.46	10,061	7,797
CTA	63	Orange Line Extension	-197,621	1,698,082	10,244	2,265	-0.019	-7.14	6,942	7,915
CTA	64	Yellow Line Enhancements and Extension	0	451,549	5,753	1,584	-0.013	-7.77	1,445	2,143
CTA	93	Blue Line Forest Park Branch Reconstruction	0	-1,230,037	71,809	4,222	-0.115	-2.86	5,035	4,206
CTA	94	Brown Line Capacity Expansion	0	933,768	176,067	4,996	-0.108	-0.78	1,118	954
CTA	106	Ashland Ave BRT	-944,663	1,829,245	58,961	11,757	-0.123	-3.54	12,909	8,555
CTA	107	Green Line Extension	0	397,577	3,135	450	-0.003	-1.43	120	48
CTA	108	South Halsted BRT	139,391	0	6,959	449	-0.006	-3.91	235	364
PS*	134	Cross-Town Tollway and CTA Route	0	15,253,462	49,579	16,103	-0.461	-8.62	31,279	13,041
CTA	147	Blue Line Capacity Project	0	3,980,695	61,257	466	-0.017	-0.22	1,175	970
Metra	66	UP Northwest Extension	0	1,415,929	41,171	2,683	-0.051	-4.4	3,317	1,868
Metra	67	SouthWest Service Improvements / 75th St CIP Elements	0	910,276	27,712	6,235	-0.174	-13.77	14,527	2,214
Metra	68	UP North Improvements	0	2,001,339	58,614	4,154	-0.029	-4.69	2,507	991
Metra	69	UP West Improvements	0	1,631,338	44,507	7,393	-0.173	-11.23	15,473	9,695
Metra	70	Rock Island Improvements	0	778,092	35,932	1,222	0.011	-2.88	12,954	6,175
Metra	71	BNSF Extension-Oswego/Plano	0	385,789	11,531	2,007	0.094	-8.71	340	-181

			Modeled Project Characteristics		2050 Performance					
Implementer	RSP ID	Project	Change in annual bus revenue hours	Change in annual rail revenue hours	Project ridership (daily)	Change in regional ridership (daily)	Change in work trip travel time (minutes)	Change in project user commute time (minutes)	Change in # of jobs accessible within 90-min, for avg. resident	Change in # of jobs accessible within 60-min. for avg. resident
Metra	72	BNSF Improvements	0	1,261,160	77,357	8,047	-0.061	-9.15	4,420	238
Metra	73	Heritage Corridor Improvements	0	2,373,995	8,612	2,528	-0.002	-13.63	7,490	359
Metra	74	Metra Electric Improvements	0	2,489,611	92,791	6,096	-0.089	-4.42	10,061	7,797
Metra	75	Metra Electric Extension	0	2,595,634	4,220	3,869	0.011	-2.57	1,802	351
Metra	76	Milwaukee District North Ext-Wadsworth	0	946,773	1,155	427	0.012	-16.78	1,989	2,047
Metra	77	Milwaukee District North Improvements	0	1,157,368	33,298	368	-0.063	-2.3	3,673	2,149
Metra	78	Milwaukee District West Ext-Marengo	0	302,351	3,256	844	0.129	2.41	355	108
Metra	79	Milwaukee District West Improvements	0	554,860	28,461	1,136	-0.019	-3.16	8,858	2,400
Metra	80	North Central Service Improvements	0	3,052,365	13,475	1,674	-0.009	-8.5	1,222	967
Metra	81	Rock Island Extension	0	140,361	3,216	2,785	0.037	-6.85	473	103
Metra	82	SouthEast Service	0	2,288,752	22,323	8,046	0.094	-9.77	2,470	2,275
Metra	84	STAR Line	0	8,303,070	27,804	20,503	-0.008	-26.41	13,960	4,412
Metra	98	A-2 Crossing Rebuild	0	-25,842	108,798	3,892	-0.208	-2.41	10,164	5,434
Metra	115	BNSF Extension-Sugar Grove	0	368,726	9,243	1,150	0.033	-7.01	-127	-207
Metra	116	Heritage Corridor Extension	0	148,361	1,151	1,148	0.048	-8.57	299	91
Metra	117	Milwaukee District North Ext-Richmond	0	140,290	2,106	399	0.009	-3.48	117	257
Metra	118	Milwaukee District West Ext-Hampshire	0	1,049,610	272	266	0.034	8.92	83	1
Metra	119	STAR Line Eastern Segment	0	3,412,454	3,407	3,422	0.042	-0.88	1,821	698

			Modeled Project Characteristics		2050 Performance					
Implementer	RSP ID	Project	Change in annual bus revenue hours	Change in annual rail revenue hours	Project ridership (daily)	Change in regional ridership (daily)	Change in work trip travel time (minutes)	Change in project user commute time (minutes)	Change in # of jobs accessible within 90-min, for avg. resident	Change in # of jobs accessible within 60-min. for avg. resident
Metra	120	STAR Line Northern Segment	0	3,322,502	2,870	2,598	0.078	-19.34	4,583	972
PS*	121	Rock Island RER Service	0	6,034,638	42,293	1,970	0.049	-4.5	12,954	6,175
PS*	122	UP North RER Service	0	10,618,442	70,827	10,306	-0.059	-8.89	16,227	5,469
PS*	123	UP Northwest RER Service	0	9,611,277	68,907	9,913	-0.157	-9.36	45,589	15,734
PS*	124	CrossRail Chicago	0	10,218,387	19,201	3,362	-0.029	-9.73	11,214	6,637
PS*	143	Modern Metra Electric	0	10,916,298	135,430	11,558	0.199	-0.72	-9,922	-1,116
Pace	105	Express Bus Expansion	21,786,617	0	70,839	34,223	-0.339	-24.3	120,470	21,672
Pace	102A	Pace Short Term ART	3,058,826	0	45,362	10,887	-0.072	-9.01	13,928	3,927
Pace	102B	Pace Mid Term ART	5,749,609	0	68,938	21,433	-0.045	-15.41	44,447	11,669
Pace	102C	Pace Long Term ART	14,920,994	0	51,830	25,159	0.376	-14.83	87,372	19,999
RTA	144	Suburban Metropolitan Area Rapid Transit	0	12,043,464	46,311	25,288	0.236	-17.43	58,762	11,576

* Publicly submitted

x = not modeled: STOPS model does not simulate improvements in station operations.

Table 11. Transit project 2050 cost effectiveness

			Project Cost Characteristics		Cost-Effectiveness of 2050 Performance				
Implementer	RSP ID	Project Name	2018 Capital Cost $M	10 Years Incremental Operating Cost $M, constant dollars	Dollars per Project Rider 1000s	Dollars per Change in Regional Ridership 1000s	Dollars per Change in Work Trip Transit Travel Time $M	Dollars per Change in Jobs Accessible in 60 minutes 1000s	Dollars per Change in Jobs Accessible in 90 Minutes 1000s
CDOT	85	West Loop Transportation Center Phase I	x	x	x	x	x	x	x
CDOT	87	Mid-City Transitway	6,732	307	186	522	73,477	564	224
CDOT	88	West Loop Transportation Center Phase II	x	x	x	x	x	x	x
CDOT	103	River North-Streeterville Transit Improvements	408	107	16	67	6,928	516	496
CDOT	104	South Lakefront-Museum Campus Access Improvement	408	23	5	72	2,630	179	415
PS*	125	North Lakefront Light Rail Line	545	-153	9	NB	NB	962	672
PS*	126	South Lakefront Light Rail Line	804	132	15	123	8,459	1,184	945
PS*	127	Superloop Light Rail Line	492	114	11	62	NB	153	55
PS*	128	Madison St and Jackson St Light Rail Lines	253	110	18	87	NB	246	143
PS*	129	Clark Street Light Rail Line	440	87	9	203	3,826	354	349
PS*	130	Downtown Ring Light Rail Line	663	171	47	253	26,808	1,427	756
PS*	131	The Burnham Ring Light Rail Line	1,638	373	87	371	48,348	6,142	8,677
CTA	57	Red Line Extension (South)	2,070	190	72	314	33,330	349	199
CTA	58	Red Purple Modernization Future Phases	2,142	103	4	82	3,719	245	242
CTA	59	Blue Line West Extension	1,300	75	111	242	156,195	169	241
CTA	60	Brown Line Extension	4,718	60	288	1,474	108,595	1,745	1,431

			Project Cost Characteristics		Cost-Effectiveness of 2050 Performance				
Implementer	RSP ID	Project Name	2018 Capital Cost $M	10 Years Incremental Operating Cost $M, constant dollars	Dollars per Project Rider 1000s	Dollars per Change in Regional Ridership 1000s	Dollars per Change in Work Trip Transit Travel Time $M	Dollars per Change in Jobs Accessible in 60 minutes 1000s	Dollars per Change in Jobs Accessible in 90 Minutes 1000s
CTA	61	Circle Line South (Phase II)	1,140	112	53	367	8,853	465	423
CTA	62	Circle Line North (Phase III)	2,550	51	42	733	40,454	334	259
CTA	63	Orange Line Extension	568	11	56	255	30,611	73	83
CTA	64	Yellow Line Enhancements and Extension	335	8	60	217	26,828	160	238
CTA	93	Blue Line Forest Park Branch Reconstruction	1,734	-62	23	396	14,540	398	332
CTA	94	Brown Line Capacity Expansion	1,731	12	10	349	16,216	1,827	1,559
CTA	106	Ashland Ave BRT	166	11	3	15	1,446	21	14
CTA	107	Green Line Extension	1,030	8	331	2,308	305,435	21,709	8,687
CTA	108	South Halsted BRT	149	12	23	358	26,754	441	682
CTA	147	Cross-Town Tollway and CTA Route	830	101	15	1,998	54,447	959	792
PS*	134	Blue Line Capacity Project	10,200	20	206	635	22,169	784	327
Metra	66	UP Northwest Extension	717	28	18	278	14,646	399	225
Metra	67	SouthWest Svc Improvements / 75th St CIP Elements	1,702	-18	61	270	9,661	761	116
Metra	68	UP North Improvements	980	86	18	257	36,652	1,077	425
Metra	69	UP West Improvements	393	12	9	55	2,344	42	26
Metra	70	Rock Island Improvements	574	36	17	499	NB	99	47
Metra	71	BNSF Extension-Oswego/Plano	448	10	40	228	NB	NB	1,345
Metra	72	BNSF Improvements	273	-7	3	33	4,384	1,122	60
Metra	73	Heritage Corridor Improvements	276	111	45	153	176,041	1,078	52

			Project Cost Characteristics		Cost-Effectiveness of 2050 Performance				
Implementer	RSP ID	Project Name	2018 Capital Cost $M	10 Years Incremental Operating Cost $M, constant dollars	Dollars per Project Rider 1000s	Dollars per Change in Regional Ridership 1000s	Dollars per Change in Work Trip Transit Travel Time $M	Dollars per Change in Jobs Accessible in 60 minutes 1000s	Dollars per Change in Jobs Accessible in 90 Minutes 1000s
Metra	74	Metra Electric Improvements	456	105	6	92	6,307	72	56
Metra	75	Metra Electric Extension	1,176	124	308	336	NB	3,701	722
Metra	76	Milwaukee District North Ext-Wadsworth	466	125	511	1,384	NB	289	297
Metra	77	Milwaukee District North Improvements	695	65	23	2,065	12,080	353	207
Metra	78	Milwaukee District West Ext-Marengo	673	18	212	819	-5,364	6,392	1,947
Metra	79	Milwaukee District West Improvements	642	20	23	583	34,295	276	75
Metra	80	North Central Service Improvements	511	160	50	401	71,343	693	549
Metra	81	Rock Island Extension	497	-2	154	178	NB	4,816	1,045
Metra	82	SouthEast Service	4,985	459	244	677	NB	2,393	2,204
Metra	84	STAR Line	3,132	331	125	169	438,378	785	248
Metra	98	A-2 Crossing Rebuild	717	-50	6	171	3,207	123	66
Metra	115	BNSF Extension-Sugar Grove	375	12	42	337	NB	NB	NB
Metra	116	Heritage Corridor Extension	171	5	153	154	NB	1,943	590
Metra	117	Milwaukee District North Ext-Richmond	365	36	190	1,005	NB	1,559	3,419
Metra	118	Milwaukee District West Ext-Hampshire	445	55	1,837	1,878	NB	0	6,046
Metra	119	STAR Line Eastern Segment	1,725	224	572	569	NB	2,791	1,070
Metra	120	STAR Line Northern Segment	1,406	173	550	608	NB	1,624	344
PS*	121	Rock Island RER Service	571	338	22	462	NB	147	70
PS*	122	UP North RER Service	1,875	522	34	233	40,697	438	148

			Project Cost Characteristics		Cost-Effectiveness of 2050 Performance				
Implementer	RSP ID	Project Name	2018 Capital Cost $M	10 Years Incremental Operating Cost $M, constant dollars	Dollars per Project Rider 1000s	Dollars per Change in Regional Ridership 1000s	Dollars per Change in Work Trip Transit Travel Time $M	Dollars per Change in Jobs Accessible in 60 minutes 1000s	Dollars per Change in Jobs Accessible in 90 Minutes 1000s
PS*	123	UP Northwest RER Service	2,297	430	40	275	17,376	173	60
PS*	124	CrossRail Chicago	3,982	540	236	1,345	156,476	681	403
PS*	143	Modern Metra Electric	1,020	715	13	150	NB	NB	NB
Pace	105	Express Bus Expansion	1,811	572	34	70	7,024	110	20
Pace	102A	Pace Short Term ART	167	240	9	37	5,645	104	29
Pace	102B	Pace Mid Term ART	344	506	12	40	18,887	73	19
Pace	102C	Pace Long Term ART	803	994	35	71	NB	90	21
PS*	144	Suburban Metropolitan Area Rapid Transit	15,300	326	337	618	NB	1,350	266

NB = no benefit

* Publicly submitted

x = not modeled: STOPS model does not simulate improvements in station operations.

Table 12. Transit project planning priorities

Implementer	RSP ID	Project	Project use by residents of economically disconnected areas	Support for infill development	Economic impact due to industry clustering ($M annually)	Freight Improvement	Δ # of low barrier to entry jobs accessible for residents of economically disconnected areas in 90 minutes.	Δ access to low barrier to entry jobs for residents of economically disconnected areas in 60 minutes.	Δ Greenhouse gas emissions (kg/day in 2050)
CDOT	85	West Loop Transportation Center Phase I	x	x	x	-	x	x	x
CDOT	87	Mid-City Transitway	77%	76	$6.3	-	2,685	1,166	-35,720
CDOT	88	West Loop Transportation Center Phase II	x	x	x	-	x	x	x
CDOT	103	River North-Streeterville Transit Improvements	15%	54	$26.9	-	5	10	-7,941
PS	104	South Lakefront-Museum Campus Access Improvement	55%	66	$10.7	-	115	200	-17,678
PS	125	North Lakefront Light Rail Line	10%	56	$19.1	-	6	8	-16,442
PS	126	South Lakefront Light Rail Line	24%	59	$19.5	-	8	NB	-7,812
PS	127	Superloop Light Rail Line	22%	47	$38.5	-	239	83	-36,212
PS	128	Madison Street and Jackson Street Light Rail Lines	21%	45	$9.6	-	67	80	-18,748
PS	129	Clark Street Light Rail Line	6%	59	$19.9	-	8	15	-1,572
PS	130	Downtown Ring Light Rail Line	39%	78	$2.8	-	49	13	-2,556
PS	131	The Burnham Ring Light Rail Line	65%	58	$1.4	-	10	8	-8,967
CTA	57	Red Line Extension (South)	61%	71	$3.6	-	449	390	-23,070
CTA	58	Red Purple Modernization Future Phases	42%	75	$62.9	-	381	238	-70,549
CTA	59	Blue Line West Extension	28%	86	$3.2	-	239	300	-17,001
CTA	60	Brown Line Extension	46%	74	$4.1	-	250	81	-6,457
CTA	61	Circle Line South (Phase II)	63%	80	$13.5	-	193	187	-6,113

Implementer	RSP ID	Project	Project use by residents of economically disconnected areas	Support for infill development	Economic impact due to industry clustering ($M annually)	Freight Improvement	Δ # of low barrier to entry jobs accessible for residents of economically disconnected areas in 90 minutes.	Δ access to low barrier to entry jobs for residents of economically disconnected areas in 60 minutes.	Δ Greenhouse gas emissions (kg/day in 2050)
CTA	62	Circle Line North (Phase III)	47%	79	$5.8	-	524	345	-8,101
CTA	63	Orange Line Extension	44%	78	$2.1	-	294	459	-6,046
CTA	64	Yellow Line Enhancements and Extension	27%	75	$1.4	-	37	30	-4,869
CTA	93	Blue Line Forest Park Branch Reconstruction	58%	73	$15.8	-	214	146	-8,528
CTA	94	Brown Line Capacity Expansion	24%	69	$9.5	-	49	32	-12,227
CTA	106	Ashland Ave BRT	59%	59	$11.0	-	529	352	-27,343
CTA	107	Green Line Extension	70%	81	$0.3	-	9	2	-800
CTA	108	South Halsted BRT	71%	59	$0.2	-	22	40	-1,563
PS	134	Blue Line Capacity Project	78%	79	$6.1	**	2,637	1,177	-43,492
CTA	147	Cross-Town Tollway and CTA Route	38%	72	$3.8	-	38	64	-1,058
Metra	66	UP Northwest Extension	5%	36	$9.8	-	246	35	-19,591
Metra	67	SouthWest Svc Improvements / 75th St CIP Elements	14%	51	$15.3	100	171	64	-27,979
Metra	68	UP North Improvements	21%	58	$9.7	-	123	29	-18,902
Metra	69	UP West Improvements	13%	42	$14.9	25	425	431	-35,970
Metra	70	Rock Island Improvements	22%	51	$2.8	50	564	179	-7,568
Metra	71	BNSF Extension-Oswego/Plano	8%	14	$1.6	-25	4	6	-36,683
Metra	72	BNSF Improvements	10%	57	$3.8	25	2	3	-40,246
Metra	73	Heritage Corridor Improvements	12%	49	$2.8	25	185	43	-12,150
Metra	74	Metra Electric Improvements	50%	37	$3.4	-	524	345	-29,050
Metra	75	Metra Electric Extension	3%	5	$0.1	-	80	14	-23,515

Implementer	RSP ID	Project	Project use by residents of economically disconnected areas	Support for infill development	Economic impact due to industry clustering ($M annually)	Freight Improvement	Δ # of low barrier to entry jobs accessible for residents of economically disconnected areas in 90 minutes.	Δ access to low barrier to entry jobs for residents of economically disconnected areas in 60 minutes.	Δ Greenhouse gas emissions (kg/day in 2050)
Metra	76	Milwaukee District North Extension-Wadsworth	27%	32	$0.5	-25	7	23	-2,002
Metra	77	Milwaukee District North Improvements	13%	47	$5.5	-	218	120	-2,547
Metra	78	Milwaukee District West Extension-Marengo	0%	8	$0.3	-	10	7	-11,387
Metra	79	Milwaukee District West Improvements	26%	53	$3.4	-	614	241	-7,300
Metra	80	North Central Service Improvements	13%	44	$0.4	-25	54	26	-9,561
Metra	81	Rock Island Extension	0%	11	$0.1	-	16	NB	-22,626
Metra	82	SouthEast Service	55%	26	$2.4	-25	180	165	-37,327
Metra	84	STAR Line	19%	43	$22.1	-25	669	160	-106,702
Metra	98	A-2 Crossing Rebuild	16%	47	$15.0	-	655	261	-24,709
Metra	115	BNSF Extension-Sugar Grove	9%	21	$0.7	-25	5	7	-23,970
Metra	116	Heritage Corridor Extension	0%	8	$0.2	-	2	1	-12,775
Metra	117	Milwaukee District North Extension-Richmond	0%	10	$0.0	-	NB	NB	-7,056
Metra	118	Milwaukee District West Extension-Hampshire	0%	2	$0.1	-	3	NB	-2,042
Metra	119	STAR Line Eastern Segment	24%	33	$2.0	-25	42	NB	-14,050
Metra	120	STAR Line Northern Segment	26%	50	$4.7	-	117	24	-11,237
PS	121	Rock Island RER Service	29%	55	$1.9	-	564	179	-7,532
PS	122	UP North RER Service	20%	59	$9.8	-	535	83	-49,106
PS	123	UP Northwest RER Service	6%	37	$12.3	-	1,445	232	-63,153
PS	124	CrossRail Chicago	36%	33	$5.0	-	411	394	-15,335
PS	143	Modern Metra Electric	57%	35	$8.6	-	NB	NB	-9,148

Implementer	RSP ID	Project	Project use by residents of economically disconnected areas	Support for infill development	Economic impact due to industry clustering ($M annually)	Freight Improvement	Δ # of low barrier to entry jobs accessible for residents of economically disconnected areas in 90 minutes.	Δ access to low barrier to entry jobs for residents of economically disconnected areas in 60 minutes.	Δ Greenhouse gas emissions (kg/day in 2050)
Pace	105	Express Bus Expansion	20%	50	$50.8	-	4,057	647	-152,888
Pace	102A	Pulse-ART Expansion Near Term	35%	78	$38.0	-	927	226	-26,635
Pace	102B	Pulse-ART Expansion Mid Term	29%	62	$45.1	-	2,625	441	-66,331
Pace	102C	Pulse-ART Expansion Far Term	23%	53	$46.5	-	3,449	672	-77,328
PS	144	Suburban Metropolitan Area Rapid Transit	28%	52	$38.8	-	2,548	408	-73,068

NB = no benefit

* Publicly submitted

** Freight benefit is rated for the Crosstown Expressway under the expressway projects

x = not modeled: STOPS model does not simulate improvements in station operations.

Expressways

Table 13. Expressway project evaluation for today's needs

RSP ID	Project	Structural Deficiency of Bridges (thousands of square feet)	Pavement Age	Pavement Condition	Safety	Mobility	Reliability
3	McHenry-Lake Corridor	0	0	0	28	46	46
21	I-290/IL 53 Interchange Improvement	0	21	18	6	72	100
22	I-294/I-57 Interchange Addition	0	21	18	20	39	17
23	I-294 Central Tri-State Mobility Improvements	23	58	31	1	77	58
24	I-290/I-294 Interchange Improvement	0	30	27	4	94	91
25	Central Lake County Corridor: IL 53 North and IL 120	0	0	0	10	57	63
29	I-55 Managed Lane	355	20	30	18	86	76
30	I-290 Managed Lane	65	56	18	4	96	99
31	Illiana Corridor	0	0	0	28	36	43
32	I-190 Access Improvements	11	26	22	1	64	57
34	I-55 Add Lanes and Reconstruction	10	17	18	10	33	15
35	I-57 Add Lanes	38	48	23	5	39	19
36	I-80 Add / Managed Lanes	344	48	28	29	41	34
37	I-80 Managed Lanes	49	19	15	8	37	34
38	I-80 to I-55 Connector	0	0	0	3	33	15
134	Cross-Town Tollway and CTA Route	0	0	42	43	78	58
135	I-94 Bishop Ford Expressway	35	18	31	31	63	53
136	I-90/1-94 Kennedy and Dan Ryan Expressways	45	27	22	15	99	100
137	I-55 Stevenson Expressway	355	20	31	13	70	61
138	I-90 Kennedy Expressway	70	22	42	2	100	94
139	I-94 Edens Expressway	32	36	15	5	86	77
140	I-90/I-94 Kennedy Expressway	0	32	29	2	100	100
141	I-290/IL-53	66	30	21	13	67	58

Table 14. Expressway project 2050 performance

RSP ID	Project	Δ Congested Vehicle Hours Traveled (VHT) in Region (100's daily hours)	Δ Congested VHT in Corridor (100's daily hours)	Δ Regional Work Trip Travel Time (minutes)	Δ Work Trip Travel Time in Corridor (minutes)	Δ Job Accessibility 100's	Δ 10 Year Total Crashes 100's
3	McHenry-Lake Corridor	-169	-75	-0.03	0.08	-6	-31
21	I-290/IL 53 Interchange Improvement	5	5	-0.01	0.00	11	1
22	I-294/I-57 Interchange Addition	33	18	-0.03	-0.17	17	2
23	I-294 Central Tri-State Mobility Imprvmnts	-291	-140	-0.16	-0.28	124	-7
24	I-290/I-294 Interchange Improvement	-75	-38	-0.01	-0.07	10	1
25	Central Lake County Corridor: IL 53 North and IL 120	-490	-301	-0.27	-1.08	60	-94
29	I-55 Managed Lane	-202	-162	-0.17	-0.35	114	6
30	I-290 Managed Lane	-50	18	-0.20	-0.48	173	2
31	Illiana Corridor	-178	-7	-0.06	-0.54	41	4
32	I-190 Access Improvements	28	1	0.00	-0.01	-1	1
34	I-55 Add Lanes and Reconstruction	-79	-74	-0.02	0.08	0	4
35	I-57 Add Lanes	-134	-72	-0.05	-0.23	-1	-2
36	I-80 Add / Managed Lanes	-165	-66	-0.07	-0.21	21	-12
37	I-80 Managed Lanes	-52	-58	-0.01	-0.05	32	-2
38	I-80 to I-55 Connector	4	-11	-0.01	0.05	0	4
134	Cross-Town Tollway and CTA Route	-735	-464	-0.43	-1.01	427	-146
135	I-94 Bishop Ford Expressway	-21	-24	-0.04	-0.22	27	-6
136	I-90/1-94 Kennedy and Dan Ryan Expwys	43	31	-0.06	-0.27	48	-6
137	I-55 Stevenson Expressway	19	-3	-0.01	-0.03	-5	3
138	I-90 Kennedy Expressway	-81	-13	-0.13	-0.33	69	-2
139	I-94 Edens Expressway	-169	-96	-0.12	-0.31	43	-1
140	I-90/I-94 Kennedy Expressway	-95	-46	-0.04	-0.05	-97	2
141	I-290/IL-53	-34	-25	-0.05	-0.03	12	0

Table 15. Expressway project 2050 performance cost-effectiveness

		Project cost		Cost-Effectiveness of 2050 Performance				
RSP ID	Project	2018 Capital Cost $M	10 years Incremental Operating Cost $M	Dollars per Δ Congested VHT in Region 1000s	Dollars per Δ Congested VHT in Corridor 1000s	Dollars per Δ Regional Work Trip Travel Time $B	Dollars per Δ Work Trip Travel Time in Corridor $B	Dollars Δ Job Accessible in 45 Minutes 1000s
3	McHenry-Lake Corridor	1,224	11	73	164	36	NB	NB
21	I-290/IL 53 Interchange Improvement	302	1	NB	NB	26	NB	284
22	I-294/I-57 Interchange Addition	357	0	NB	NB	11	2	207
23	I-294 Central Tri-State Mobility Imprvmnts	1,525	8	53	110	10	5	123
24	I-290/I-294 Interchange Improvement	513	1	68	135	41	7	520
25	Central Lake County Corridor: IL 53 North and IL 120	2,518	16	52	84	10	2	420
29	I-55 Managed Lane	561	8	28	35	3	2	50
30	I-290 Managed Lane	2,073	4	414	NB	10	4	120
31	Illiana Corridor	1,030	33	60	1,465	19	2	260
32	I-190 Access Improvements	238	1	NB	NB	62	19	NB
34	I-55 Add Lanes and Reconstruction	864	7	110	118	36	NB	NB
35	I-57 Add Lanes	834	18	64	118	17	4	NB
36	I-80 Add / Managed Lanes	1,404	5	85	214	19	7	672
37	I-80 Managed Lanes	464	6	91	82	50	10	146
38	I-80 to I-55 Connector	103	3	NB	99	9	NB	NB
134	Cross-Town Tollway and CTA Route	10,200	20	139	220	24	10	239
135	I-94 Bishop Ford Expressway	837	3	404	355	21	4	309
136	I-90/1-94 Kennedy & Dan Ryan Expwys	3,741	1	NB	NB	63	14	783
137	I-55 Stevenson Expressway	3,418	0	NB	13,633	309	125	NB
138	I-90 Kennedy Expressway	1,841	2	228	1,419	14	6	268
139	I-94 Edens Expressway	1,917	4	113	199	16	6	443
140	I-90/I-94 Kennedy Expressway	1,659	2	175	364	38	31	NB
141	I-290/IL-53	3,024	4	889	1,221	62	103	2,629

.

Table 16. Expressway project planning priorities

RSP ID	Project	Δ Congested VHT for Heavy Trucks in Region (100's daily hours)	Δ Congested VHT for Heavy Trucks in Corridor (100's daily hours)	Freight Needs	Δ Greenhouse Gas Emissions (metric tons/day in 2050)	Δ Development Pressure in Conservation Areas (count of new households)	Δ Development Pressure in Scarce Groundwater Areas (# of households)	Δ Impervious Area (acres)	Project Use by Residents of EDAs (% of VMT)	Δ Fine Particulate Matter Emissions in EDAs (g/day in 2050)	Δ in Access to Low Barrier Jobs for Economically Disconnected Areas	Economic Impact Due to Industry Clustering ($M)	Support of Infill Development	Benefit to Key Industries	Benefits to Areas with Industrial Vacancy
3	McHenry-Lake Corridor	-8	-4	35	5.7	285	0	556	2	146	NB	$1.6	21	7	6
21	I-290/IL 53 Interchange Improvement	-2	0	94	-0.2	0	0	0	7	250	37	$0.8	69	72	50
22	I-294/I-57 Interchange Addition	4	3	100	10.7	0	0	0	11	678	122	$1.1	22	36	31
23	I-294 Central Tri-State Mobility Improvements	-35	-23	100	-4.1	0	0	3	7	-1,673	634	$26.7	53	95	95
24	I-290/I-294 Interchange Improvement	-1	-6	100	-1.4	0	0	0	11	2,276	NB	$12.8	52	100	100
25	Central Lake County Corridor: IL 53 North and IL 120	-23	-12	31	24.3	1,458	0	1,285	9	-795	191	$34.4	45	18	9
29	I-55 Managed Lane	-6	-9	100	37.7	9	14	9	21	56	640	$28.9	65	45	77
30	I-290 Managed Lane	-2	0	86	19.8	83	0	19	31	719	1,316	$68.5	84	68	63
31	Illiana Corridor	-12	-2	41	78.3	151	668	200	0	-2,517	233	$0.9	7	13	40
32	I-190 Access Improvements	-2	0	71	3.0	0	0	0	13	271	24	$2.9	55	90	90
34	I-55 Add Lanes and Reconstruction	-16	-17	89	34.0	103	949	81	1	-171	NB	$1.7	21	4	18

RSP ID	Project	Δ Congested VHT for Heavy Trucks in Region (100's daily hours)	Δ Congested VHT for Heavy Trucks in Corridor (100's daily hours)	Freight Needs	Δ Greenhouse Gas Emissions (metric tons/day in 2050)	Δ Development Pressure in Conservation Areas (count of new households)	Δ Development Pressure in Scarce Groundwater Areas (# of households)	Δ Impervious Area (acres)	Project Use by Residents of EDAs (% of VMT)	Δ Fine Particulate Matter Emissions in EDAs (g/day in 2050)	Δ in Access to Low Barrier Jobs for Economically Disconnected Areas	Economic Impact Due to Industry Clustering ($M)	Support of Infill Development	Benefit to Key Industries	Benefits to Areas with Industrial Vacancy
35	I-57 Add Lanes	-12	-12	85	58.9	2	0	16	4	398	NB	$1.4	21	27	13
36	I-80 Add / Managed Lanes	-23	-13	100	8.0	62	1,294	68	9	-1,047	67	$5.0	37	9	22
37	I-80 Managed Lanes	-15	-8	98	23.1	10	72	14	10	620	79	$6.8	42	22	45
38	I-80 to I-55 Connector	-1	-4	0	-13.9	3	23	1	0	138	NB	$0.0	13	0	0
134	Cross-Town Tollway and CTA Route	-38	-22	53	-2.7	395	-996	35	39	4,657	3391	$65.4	79	59	68
135	I-94 Bishop Ford Expressway	-6	-6	86	-15.3	0	0	0	31	616	152	$2.1	65	31	4
136	I-90/1-94 Kennedy and Dan Ryan Expressways	-4	-1	100	22.2	0	0	0	40	2,309	639	$23.3	75	63	54
137	I-55 Stevenson Expressway	0	-1	100	5.1	0	0	0	14	628	NB	$3.0	53	77	86
138	I-90 Kennedy Expressway	-2	1	79	12.0	34	0	2	19	502	233	$32.5	74	86	59
139	I-94 Edens Expressway	-12	-7	81	15.4	125	0	25	18	1,258	82	$33.4	77	40	27
140	I-90/I-94 Kennedy Expressway	-6	2	97	7.5	26	0	4	18	350	NB	$30.6	79	50	36
141	I-290/IL-53	-2	-1	100	-7.8	0	0	0	10	204	61	$5.2	74	81	72

Arterials

Table 17. Arterial project evaluation for today's needs

RSP ID	Project	Structural Deficiency of Bridges (1000 ft2)	Pavement Condition	Safety	Mobility	Reliability
6	IL-31 Front St	0	44	45	60	50
10	IL-60	0	44	8	74	76
11	IL-62/Algonquin Rd	0	54	35	61	57
13	IL-83/Barron Blvd	0	39	20	50	66
14	IL-131/Greenbay Rd	0	35	18	38	61
15	IL-173/Rosecrans Rd	0	36	24	49	53
46	Randall Rd	0	25	22	66	48
51	North Algonquin Fox River Crossing	0	56	5	59	49
53	Caton Farm-Bruce Rd Corridor	0	23	29	56	61
55	Laraway Rd	0	26	15	33	47
56	Wilmington-Peotone Rd	0	27	26	34	39
89	Lake Shore Drive Reconstruction	25	49	68	74	86
109	IL-43/Harlem Ave	0	29	25	75	34
110	IL-47	0	44	34	56	43
111	IL-83/Kingery Hwy	0	33	7	68	60
112	US-12/95th St	0	30	44	63	67
113	US-20/Lake St	64	28	33	49	42
114	US-45/Olde Half Day Rd	0	32	10	67	63
145	Vollmer Rd	0	73	8	60	57

Table 18. Arterial project planning priorities

RSP ID	Project	GIV Impact Index	Expected Traffic Growth (percent)	Project Use by Residents of Economically Disconnected Areas (percent VMT)	Economic Impact Due to Industry Clustering	Benefits to Key Industries	Benefits to Areas with Industrial Vacancy	Freight Benefit
6	IL-31 Front St	64	30	1	5	24	46	29
10	IL-60	41	7	8	6	29	23	26
11	IL-62/Algonquin Rd	29	13	10	3	0	11	30
13	IL-83/Barron Blvd	52	21	6	6	47	17	32
14	IL-131/Greenbay Rd	5	18	22	10	41	5	29
15	IL-173/Rosecrans Rd	70	24	4	2	58	29	29
46	Randall Rd	94	15	11	12	70	82	31
51	North Algonquin Fox River Crossing	0	0	1	17	0	0	0
53	Caton Farm-Bruce Rd Corridor	87	28	7	10	23	64	27
55	Laraway Rd	47	0	1	15	5	35	1
56	Wilmington-Peotone Rd	100	1	1	10	76	70	41
89	Lake Shore Drive Reconstruction	0	2	27	37	35	0	0
109	IL-43/Harlem Ave	11	1	30	44	88	94	77
110	IL-47	88	37	1	3	64	52	27
111	IL-83/Kingery Hwy	76	6	5	69	82	88	42
112	US-12/95th St	23	26	50	4	17	41	29
113	US-20/Lake St	64	22	23	9	52	76	35
114	US-45/Olde Half Day Rd	58	0	7	35	94	58	26
145	Vollmer Rd	17	0	29	10	11	47	1

Project descriptions

Projects are sorted first by Transit, Expressway and Arterial and then by sponsor and RSP ID number.

Transit

West Loop Transportation Center Phase I (CDOT, RSP ID# 85)

Project description

This project would improve the existing facilities east of and within Union Station which includes increaing the capacity within the existing footprint of the station by creating new platforms and tracks and by repurposing currently inactive tracks and platforms. It also expands the passenger-carrying capacity of existing platforms, reconfiguring the station's internal spaces to increase passenger capacity and create the capability to through-route some intercity trains.

Project status

Completed a Union Station 2012 Master Plan. Project Partners are currently engange in design work for Phase I.

Mid-City Transitway (CDOT, RSP ID# 87)

Project description

This project would create a new north-south transit corridor in the vicinity of Cicero Avenue in central Cook County, and also connecting east to the CTA Red Line. The mode of this project is not yet certain, ranging from an on-street BRT service to rail service.

Project status

In the early stages of planning, and was evaluated further as part of the continuation of the Cook-DuPage corridor study.

West Loop Transportation Center Phase II (CDOT, RSP ID# 88)

Project description

This project would construct the West Loop Subway component of the West Loop Transportation Center. A new underground transitway along Clinton and/or Canal Streets with key transfer stations located between the Eisenhower Expressway and Lake Street in Chicago. The subway may also include multiple levels or alignments within the West Loop area to accommodate additional tracks and platforms for inter-city and or commuter trains.

Project status

No project planning activities or studies are scheduled in the near future.

River North-Streeterville Transit Improvements (CDOT, RSP ID# 103)

Project description

This project includes a number of elements meant to improve circulation between Chicago's Loop - West Loop and the River North – Streeterville area, including exclusive busways, bus rapid transit, and/or priority lanes on city streets. Improvements may allow future upgrade to light rail transit.

Project status

Detailed corridor simulations are beign finalized and a technical advisory committee and a community advisory committee are scheduled to meet in September and October 2017.

South Lakefront-Museum Campus Access Improvement (CDOT, RSP ID# 104)

Project description

This project would add new access points and stations to the existing McCormick Place Busway, transforming it into the South Lakefront Busway. The project also considers alternatives for linking Museum Campus institutions with each other, CTA's Red and Green Lines, the proposed South Lakefront Busway, and the rapidly redeveloping Cermak Road corridor extending from McCormick Place to Motor Row and Chinatown.

Project status

Currently an access improvement study is underway.

North Lakefront Light Rail Line (Public Submittal, RSP ID# 125)

Project description

This project would construct a rapid streetcar/light rail line to replace several CTA bus routes, running along the north lakefront from Lawrence Ave to North Ave, and through downtown on Michigan Ave to McCormick Place (8.9 miles). Runs in a dedicated lane with signal priority and long articulated vehicles.

Project status

Project submitted by public for consideration.

South Lakefront Light Rail Line (Public Submittal, RSP ID# 126)

Project description

This project would construct a rapid streetcar/light rail line running from the future site of the Obama Presidential Library and the University of Chicago through Bronzeville to McCormick Place, and through downtown on Michigan Ave to the History Museum (10.8 miles). Runs in a dedicated lane with signal priority and long articulated vehicles.

Project status
Project submitted by public for consideration.

Superloop Light Rail Line (Public Submittal, RSP ID# 127)

Project description
This project would construct a rapid streetcar/light rail line running from Navy Pier across River North, past the West Loop train stations, and through the Museum Campus to McCormick Place (6.1 miles of track). Runs in a dedicated lane with signal priority and long articulated vehicles.

Project status
Project submitted by public for consideration.

Madison Street and Jackson Street Light Rail Lines (Public Submittal, RSP ID# 128)

Project description
This project would construct a rapid streetcar/light rail line running in both directions on Madison from the United Center to Millennium Park (2.6 miles) and in both directions on Jackson from Union Station to Grant Park (0.8 miles). Runs in a dedicated lane with signal priority and long articulated vehicles.

Project status
Project submitted by public for consideration.

Clark Street Light Rail Line (Public Submittal, RSP ID# 129)

Project description
This project would construct a rapid streetcar/light rail line running from Wrigley Field to the History Museum, and through the heart of the Loop to Roosevelt Road (5.9 miles). Runs in a dedicated lane with signal priority and long articulated vehicles.

Project status
Project submitted by public for consideration.

Downtown Ring Light Rail Line (Public Submittal, RSP ID# 130)

Project description
This project would construct a rapid streetcar/light rail line running in a ring around downtown on Division, Halsted, and Cermak from Oak Street Beach to McCormick Place (6.3 miles). Runs in a dedicated lane with signal priority and long articulated vehicles.

Project status
Project submitted by public for consideration.

The Burnham Ring Light Rail Line (Public Submittal, RSP ID# 131)

Project description

This project would construct a rapid streetcar/light rail line running in a ring through Daniel Burnham's system of parks and boulevards, and linking Chicago neighborhoods together and to the lakefront from Lincoln Park to Jackson Park (22.1 miles). Runs in a dedicated lane with signal priority and long articulated vehicles.

Project status

Project submitted by public for consideration.

Red Line Extension (South) (CTA, RSP ID# 57)

Project description

This project would construct a southern extension of the Red Line for approximately 5.3 miles and add new stations at 103rd Street, 111th Street, and Michigan Avenue (116th) before terminating at 130th Street.

Project status

A Draft Environmental Impact Statement (EIS) that evaluates the environmental impacts of constructing and operating the proposed project was completed in October 2016.

Red Purple Modernization Phase I (CTA, RSP ID# 58)

Project description

This project would modernize the Red and Purple lines serving the north side of Chicago and near north suburban communities. This phase of the project would include advance system work, modernizing and expansion of the stations between Lawrence and Bryn Mawr, reconstruction of the tracks and viaducts between Lawrence and Bryn Mawr, construction of a bypass for the Brown Line at Clark Junction, corridor signal improvements, and upgrades to the Broadway power station.

Project status

A Full Funding Grant Agreement was signed with the Federal Transit Administration (FTA) in January 2017 which is the final step in securing the funding needed for the first phase of the RPM project.

Red Purple Modernization Future Phases (CTA, RSP ID# 58)

Project description

This project would continue the modernization and expansion of the Red and Purple Lines from Addison to Sheridan, Thorndale to Jarvis and from South Blvd to Linden. Work would include the reconstruction of track, structures and viaducts, expanded stations and platforms within and between these station areas. This phase may also include reconstruction of Howard Yard,

construction of infill substations (based on power needs) and other related infrastructure improvements in this corridor.

Project status
No status update at this time.

Blue Line West Extension (CTA, RSP ID# 59)

Project description
This project would extend the CTA Blue Line to the west along the I-290 and I-88 corridors, with a western endpoint as far west as Lombard; an interim Mannheim Road terminus is currently under review as part of the I-290 corridor study.

Project status
A larger vision study to document existing conditions, evaluate transit markets around the stations and potential station areas, and develop station concepts and service recommendations along the Forest Park Branch has been undertaken which included an e

Brown Line Extension (CTA, RSP ID# 60)

Project description
This project would extend the CTA Brown Line from its current terminus near Kimball Avenue along Lawrence Avenue to connect with the CTA Blue Line at the Jefferson Park station. Intermediate stations would be provided at or near Pulaski Road and Cicero Ave.

Project status
The project is in early stages of development, and further investigation of the feasibility of this project, as well as alternative bus-based service such as ART or BRT, is needed.

Circle Line South (Phase II) (CTA, RSP ID# 61)

Project description
This project would construct a new rail line that connects several existing CTA rail lines. The southern portion would travel south from the Ashland station of the Green and Pink Lines, have a transfer connecting to the Blue Line (Forest Pak Branch) at Congress and continue to the Orange Line. After this, the route would use the Orange Line alignment to travel into the Loop, with a transfer connection to the Red Line near 18th/Clark. Other intermediate stations would be provided at Madison, Roosevelt, and Blue Island/Cermak.

Project status
An Alternatives Analysis study was completed in 2009.

Circle Line North (Phase III) (CTA, RSP ID# 62)

Project description

The project would construct a new rail line that connects several existing CTA rail lines. The northern portion would connect the Ashland station of the Green and Pink Lines to the Red, Brown, and Purple Lines in the vicinity of North/Clybourn, with a transfer connection to the Blue Line (O'Hare Branch) at Division/Milwaukee. Other intermediate stations would be provided at Chicago and North/Ashland.

Project status

An Alternatives Analysis study was completed in 2009.

Orange Line Extension (CTA, RSP ID# 63)

Project description

This project would extend the CTA Orange Line from its current terminus at Midway airport to the Ford City shopping center.

Project status

A Project Scoping Report was prepared in May 2010.

Yellow Line Enhancements and Extension (CTA, RSP ID# 64)

Project description

This project would extend the Yellow Line from its current terminus at Dempster St Station to Old Orchard Mall.

Project status

A Project Scoping Report was prepared in April 2010.

Blue Line Forest Park Branch Reconstruction (CTA, RSP ID# 93)

Project description

This project would reconstruction the Forest Park Branch of the Blue Line. It includes full modernization of existing infrastructure and upgrades for future capacity increases.

Project status

A vision study to document existing conditions, evaluate transit markets around the stations and potential station areas, and develop station concepts and service recommendations has been undertaken.

Brown Line Capacity Expansion (CTA, RSP ID# 94)

Project description

This project would construct potential project elements to enhance the Brown Line's capacity and improve its overall transit service.

Project status
Project is in early stages of planning. CTA has a UWP grant to conduct a vision study for the Brown Line.

Ashland Ave BRT (CTA, RSP ID# 106)

Project description
This project would construct a Bus Rapid Transit (BRT) line in the Ashland Avenue corridor between Irving Park Rd and 95th St.

Project status
Conducted Alternatives Analysis in 2012, and began working on an Environmental Analysis in 2013.
In 2014 the Federal Transit Administration authorized CTA to enter into Project Development for this project.

Green Line Extension (CTA, RSP ID# 107)

Project description
The CTA Green Line currently terminates at the Cottage Grove Station. This project would extending the Green Line east from the terminis at Cottage Grove to Stony Island Avenue. New stations would be added at University, Woodlawn, Dorchester and Stony Island Ave.

Project status
Currently in early stages of planning.

South Halsted BRT (CTA, RSP ID# 108)

Project description
This project would add Bus Rapid Transit (BRT) service to the Halsted corridor bewteen the 79th St Red Line Station and the Harvey Transportation Center.

Project status
Currently in early stages of planning.

Blue Line Capacity Project (CTA, RSP ID# 147)

Project description
This project would make improvements to the traction power system between O'Hare and Clinton Stations to enable increased capacity. It may include infill wayside energy storage systems, infill tie houses, third rail replacement and/or new infill substations and installation of auxiliary negative rail.

Project status
Project is in early stages of planning.

UP Northwest Extension (Metra, RSP ID# 66)

Project description

This project would construct a extension of the Union Pacific Northwest line to Johnsburg along with making signal and track improvements and adding two additional infill stations at Prairie Grove and East Woodstock.

Project status

Preliminary engineering work has been completed.

SouthWest Service Improvements / 75th St CIP Elements (Metra, RSP ID# 67)

Project description

This project which is part of the CREATE 75th Steet Corridor Improvement Project would allow the SouthWest Service to move from Union Station to the LaSalle Street station and therby increase frequency of service on the SouthWest Service line. The project would also construct a new track that improves reliability and reduces operational conflicts.

Project status

The CREATE Program partners and the Federal Highway Administration completed a combined Final Environmental Impact Statement (EIS) and Record of Decision (ROD) for the 75th Street Corridor Improvement Project (75th Street CIP).

UP North Improvements (Metra, RSP ID# 68)

Project description

This project would install additional crossovers and track improvements, construct an outlying coach yard, upgrade existing stations for increase capacity, construct a new station at Peterson Ave and make improvements to the existing Hubbard Woods station.

Project status

Engineering and right-of-way have been completed on the new Peterson station.
The second half of the bridge replacements between Balmoral and Grace which includes track replacement and the inbound Ravenswood Station reconstruction is scheduled to start in

UP West Improvements (Metra, RSP ID# 69)

Project description

This project would construct third mainline track for the segments currently double tracked along with upgrading signal system, new crossovers, and a variety of safety enhancements.

Project status

The upgraded signal system, new crossovers and safety enhancements have been completed. Work is scheduled to begin on the third mainline track starting in 2017.

Rock Island Improvements (Metra, RSP ID# 70)

Project description

This project would construct a third mainline track to the nine-mile double-track portion between Gresham Junction and a point north of 16th Street Junction. The project includes the CREATE P1 Project, a rail flyover which eliminates the conflict between Metra trains and freight and Amtrak trains, new bi-directional signals, centralized traffic control to integrate with existing RID operations, several new or rehabilitated bridges over city streets, and an expanded and modernized 47th Street Yard.

Project status

The CREATE P1-the Englewood Flyover has been completed.

BNSF Extension-Oswego/Plano (Metra, RSP ID# 71)

Project description

This project would extend Metra BNSF service from its current terminus in Aurora to Oswego or Plano in Kendall County.

Project status

Preliminary engineering and Environmental Analysis have been initiated.

BNSF Improvements (Metra, RSP ID# 72)

Project description

This project would make track, signal, and other improvements to the BNSF Line to support growth in ridership and upgrades to the core capacity of the line.

Project status

No status update at this time.

Heritage Corridor Improvements (Metra, RSP ID# 73)

Project description

This project would reduce freight conlficts, upgrade infrastructure, increase service levels, and add stations. Some elements of this project are associated with CREATE.

Project status

Currently in early stages of planning.

Metra Electric Improvements (Metra, RSP ID# 74)

Project description

This project would include making track, signal, and other improvements to the Metra Electric District to support growth in ridership and upgrades to the core capacity of the line.

Project status
No status update at this time.

Metra Electric Extension (Metra, RSP ID# 75)

Project description
This project would extend Metra Electric service to the proposed South Suburban Airport in Will County from its current terminus in University Park, as well as create a new rail yard facility.

Project status
No project planning activities or studies are scheduled in the near future.

Milwaukee District North Extension-Wadsworth (Metra, RSP ID# 76)

Project description
This project would extend the Metra Milwaukee District North line to Wadsworth in Lake County from the Rondout junction.

Project status
A feasibility study for this project has been completed.

Milwaukee District North Improvements (Metra, RSP ID# 77)

Project description
This project would improve service along the Metra Milwaukee District North line between Fox Lake and the Rondout junction in Lake County by making track, signal, and other improvements.

Project status
Project is in early stages of planning.

Milwaukee District West Extension-Marengo (Metra, RSP ID# 78)

Project description
This project would extend the Metra Milwaukee District West line from Elgin to Marengo.

Project status
A feasibility study for this project was completed in 2010.

Milwaukee District West Improvements (Metra, RSP ID# 79)

Project description
This project would making track, signal, and other improvements to the Milwaukee District West Line to support increased capacity.

Project status
The Fox River Bridge is currently finishing design engieering and expects to start construction in 2018.

North Central Service Improvements (Metra, RSP ID# 80)

Project description
This project would upgrade Metra North Central Service to allow for full service levels.

Project status
Project is in early stages of planning.

Rock Island Extension (Metra, RSP ID# 81)

Project description
This project would extend the Metra Rock Island District line from Joliet to Minooka.

Project status
Project is in early stages of planning.

SouthEast Service (Metra, RSP ID# 82)

Project description
This project would create a new rail line that provides service to communities in southern Cook and northern Will Counties.

Project status
Project is undergoing Alternatives Analysis and the identification of a Locally Preferred Alternative (LPA) is in process.

STAR Line (Metra, RSP ID# 84)

Project description
This project would create a new rail service from Joliet to Hoffman Estates through western Will, DuPage, and Cook Counties, and also connect from Hoffman Estates to O'Hare airport along I-90.

Project status
Alternatives Analysis completed in 2012 for the project.

A-2 Crossing Rebuild (Metra, RSP ID# 98)

Project description
This project would reconstruct the A2 Crossing (Western Ave and Kinzie St) between Union Pacific and Milwaukee District tracks. The rebuild will help reduce conflicts between Milwaukee District North, Milwaukee District West, North Central Service and Union Pacific West trains and provide a travel time savings to passengers.

Project status
No status update at this time.

BNSF Extension-Sugar Grove (Metra, RSP ID# 115)

Project description
This project would extend Metra's BNSF Railway Line from Aurora to Sugar Grove.

Project status
Project is in early stages of planning.

Heritage Corridor Extension (Metra, RSP ID# 116)

Project description
This project would extend Metra's Heritage Corridor Line from Joliet to Wilmington.

Project status
Project is in early stages of planning.

Milwaukee District North Extension-Richmond (Metra, RSP ID# 117)

Project description
This project would extend Metra's Milwaukee North Line from Fox Lake to Richmond.

Project status
Project is in early stages of planning.

Milwaukee District West Extension-Hampshire (Metra, RSP ID# 118)

Project description
This project would extend Metra's Milwaukee West Line from Elgin/Big Timber to Hampshire.

Project status
Project is in early stages of planning.

STAR Line Eastern Segment (Metra, RSP ID# 119)

Project description
This project would extend the proposed Metra STAR Line from Joliet to Lynnwood.

Project status
Project is in early stages of planning.

STAR Line Northern Segment (Metra, RSP ID# 120)

Project description
This project would extend the proposed Metra STAR Line from Hoffman Estates to Waukegan.

Project status
Project is in early stages of planning.

Rock Island RER Service (Public Submittal, RSP ID# 121)

Project description
This project would upgrade the existing commuter rail service on the Rock Island District Line from LaSalle St Station to Blue Island and Joliet with frequent service and high-performance vehicles.

Project status
Project submitted by public for consideration.

UP North RER Service (Public Submittal, RSP ID# 122)

Project description
This project would upgrade the existing commuter rail service on the Union Pacific North Line from Kenosha to Ogilvie Station with frequent service and high-performance vehicles.

Project status
Project submitted by public for consideration.

UP Northwest RER Service (Public Submittal, RSP ID# 123)

Project description
This project would upgrade the existing commuter rail service on the Union Pacific Northwest Line from Harvard to Ogilvie Station with frequent service and high-performance vehicles.

Project status
Project submitted by public for consideration.

CrossRail Chicago (Public Submittal, RSP ID# 124)

Project description
This project would create new rail service from the University Park to downtown Chicago and then to O'Hare Airport. Metra Electric trackage from University Park to downtown and Milawuakee District West trackage from Union Station to Franklin Park would be upgraded and modernized. New trackage would be constructed to connect the services between the Metra Electric Line and Union Station. Candianian National trackage would be modernized and upgraded to complete the connection from Franklin Park to O'Hare Airport.

Project status
Project submitted by public for consideration.

Modern Metra Electric (Public Submittal, RSP ID# 143)

Project description

This project would convert the existing commuter rail service on the Metra Electric Line to a rapid transit line, stopping at all stops from Millennium Park Station to the southern terminuses.

Project status

Project submitted by public for consideration.

Pulse-ART Expansion (Pace, RSP ID# 102)

Project description

This project would expand the Pulse Network (Arterial Rapid Transit) with near, mid and far term groups of projects. It includes service along sections of 159th St, 95th St, Cicero Ave, Golf Rd, Dempster St, Halsted St, Harlem Ave, IL-19, IL-64, IL-120, IL-62, IL-68, IL-83, Manheim Rd/LaGrange Rd, Milwaukee Rd, Butterfield, 22nd St, Cermak Rd, Randall Rd, Roosevelt Rd, IL-59, Touhy Ave, US-12, US-30, Ogden Ave, Naper Blvd, I-355, I-88.

Project status

Implementation has begun on Milwaukee Ave and engineering on the Dempster St route. Preliminary planning has started on various other near term routes.

Express Bus Expansion (Pace, RSP ID# 105)

Project description

This project would expand the express bus network on I-55, I-57, I-80, I-88, I-90, I-94, I-290, I-294, I-355, I-390, I-394.

Project status

Preliminary planning has started on various near term routes.

S.M.A.R.T. - Suburban Metropolitan Area Rapid Transit (Public Submittal, RSP ID# 144)

Project description

This project would constrct two new circumferential monorail routes from Highland Park to East Hazel Crest and Evanston to Hyde Park in Chicago.

Project status

Project submitted by public for consideration.

Expressway

I-55 Managed Lane (IDOT, RSP ID# 29)

Project description

The project is for the addition of managed lanes within the existing median of I-55 between I-90/I-94 and I-355. The corridor is anticipated to include the practice of Intelligent Transportation Systems (ITS) which would support congestion management strategies.

Project status

Construction engineering overversight funds are programmed in the State's Multi-Year Program for 2018.
In January 2016 IDOT advertised for a Public-Private Partnership advisor to assist in the procurement for the managed lane study for the purpose of leve

I-290 Managed Lane (IDOT, RSP ID# 30)

Project description

This project would reconstruct and modernized the I-290 (Eisenhower Expressway) from the I-88 interchange to Racine Ave. The project includes an express toll lane from Mannheim Rd to Racine Ave.

Project status

The project is currently enganged in preliminary engineering work.
IDOT has completed a Draft Environmental Impact Statement and a Section 106 Effects Assessment Report.

Illiana Corridor (IDOT, RSP ID# 31)

Project description

This project would construct a new four-lane expressway from I-55 just south of I-80 to I-65 in Indiana.

Project status

The project has been suspended by the State of Illinois.

I-190 Access Improvements (IDOT, RSP ID# 32)

Project description

This project consists of reconfiguring arterial access to I-190 and O'Hare International Airport to improve mobility and reduce collisions, as well as ultimately reconstructing and adding capacity to mainline I-190.

Project status

Construction of this project is underway.

Jane Byrne Interchange (IDOT, RSP ID# 33)

Project description

This project would reconstruct and modernize the Jane Byrne Interchange (interchange of I-90/I-94 with I-290). While it is mostly a reconstruction project, new capacity will be added in the form of an additional lane on the east-north and north-west ramps, as well as three new flyovers. A new through-lane will also be added on I-90/I-94 through the interchange.

Project status

The project is currently under construction.

I-55 Add Lanes and Reconstruction (IDOT, RSP ID# 34)

Project description

This project would reconstruct I-55, add a lane in each direction, and improve interchanges through western Will County, from the I-80 interchange south to Coal City Rd.

Project status

Phase II engineering work is listed in 2018 of the IDOT FY 2018-2023 Proprosed Highway Improvement Program for I-55 between Illinois Route 129 and Lorenzo Rd.
Construction work is listed in the IDOT FY 2018-2023 Proprosed Highway Improvement Program for I

I-57 Add Lanes (IDOT, RSP ID# 35)

Project description

This project would reconstruct I-57 from I-80 to Kankakee County border with interchange reconstruction.

Project status

No status update at this time.

I-80 Add / Managed Lanes (IDOT, RSP ID# 36)

Project description

This project would add a lane to I-80 through southwestern Cook and Will Counties, from Ridge Road to US 30. This may be considered as a managed lane over some or all of its length.

Project status

Advanced bridge work is included in the IDOT FY 2018-2023 Proposed Highway Improvement Program with funds in 2018 for 1.1 miles of eastbound reconstruction, bridge work, unitility adjustments, and miscellaneous work from IL-53 to Rowell Ave.

I-80 Managed Lanes (IDOT, RSP ID# 37)

Project description

This project would add a managed lane to the existing six lane cross section between US 30 and I-294 by adding a lane in each direction.

Project status

No status update at this time.

I-80 to I-55 Connector (IDOT, RSP ID# 38)

Project description

This project would connect the Illiana Expressway (which has a western terminus at I-55) and I-80. It is contingent on the completion of the Illiana Expressway.

Project status

The project has been suspended by the State of Illinois.

I-94 Bishop Ford Expressway (IDOT, RSP ID# 135)

Project description

This project would reconstruct the Bishop Ford Expressway (I-94) from I-57 to US Route 6 and includes reconstruction interchanges, the addition of bus on shoulders implementation, and the addition of auxilliary lanes from I-57 to Stoney Island.

Project status

No status update at this time.

I-90/1-94 Kennedy and Dan Ryan Expressways (IDOT, RSP ID# 136)

Project description

This project would reconstruct the Kennedy and Dan Ryan Expressways (I-90/I-94) from Hubbard St to 31st St and includes road widening for managed lanes, Hubbards Cave reconstruction and widdening, bridge replacement and iterchange reconstruction.

Project status

No status update at this time.

I-55 Stevenson Expressway (IDOT, RSP ID# 137)

Project description

This project on I-55 would reconstruct all general purpose lanes from Lake Shore Drive to I-80, conduct pavement rehabilitation on managed lanes, add lanes from Lake Shore Drive to I-90/I-94, add an auxilery lane on westbond from I355 to Illinois Route 53, reconstruct I-90 and I-294 interchanges, add bus on shoulders south of I-355 to Illinois Route 126 and conduct preservation activities on various other interchanges.

Project status
No project planning activities or studies are scheduled in the near future.

I-90 Kennedy Expressway (IDOT, RSP ID# 138)

Project description
This project on I-90 from Jane Adams tollway to I-94 merge would add managed lanes, reconstruct the roadway, conduct interchange reconstruction and preservation, and bridge reconstruction.

Project status
No project planning activities or studies are scheduled in the near future.

I-94 Edens Expressway (IDOT, RSP ID# 139)

Project description
This project on I-94 from tollway spur to Lawrence Ave would reconstruct the roadway, widen the road to convert from bus on shoulder to managed lanes, bridge reconstruction and replacement and service interchange reconstruction and preservation.

Project status
No project planning activities or studies are scheduled in the near future.

I-90/I-94 Kennedy Expressway (IDOT, RSP ID# 140)

Project description
This project on I-90/I-94 from Edens Junction to Hubbard St would convert express lanes to managed lanes, reconstruct the roadway and service interchanges.

Project status
No project planning activities or studies are scheduled in the near future.

I-290/IL-53 (IDOT, RSP ID# 141)

Project description
This project would reconstruct I-290 and IL 53 from I-88 to Lake Cook Rd and includes widening for auxiliary lanes southbound from IL 390 t o I-355 and IL 56 to S York St, interchange reconstruction and bridge reconstruction.

Project status
No status update at this time.

I-57 (IDOT, RSP ID# 142)

Project description
This project would reconstruct I-57 from I-94 to I-80 with the addition of lanes from 95th St to 111th St, bus on shoulder implementation and interchange reconstruction.

Project status
No status update at this time.

I-55 Dual Managed Lane (IDOT, RSP ID# 146)

Project description
The project is for the addition of two managed lanes between I-90/I-94 and I-355. The corridor is anticipated to include the practice of Intelligent Transportation Systems (ITS) which support congestion management strategies.

Project status
Construction engineering overversight funds are programmed in the State's Multi-Year Program for 2018. In January 2016 IDOT advertised for a Public-Private Partnership advisor to assist in the procurement for the managed lane study for the purpose of leve

McHenry-Lake Corridor (McHenry Co, RSP ID# 3)

Project description
This project would create a new expressway through McHenry and western Lake Counties, from the terminus of the US 12 freeway at the Wisconsin border to the upgraded IL 120 roadway that is part of Central Lake County Corridor project.

Project status
This project is in early stages of planning and relies on the completion of the Central Lake County corridor.

Elgin O'Hare Western Access (Tollway, RSP ID# 20)

Project description
This project would provide a new, limited-access facility to reduce congestion and improve access to the airport. The project includes three main components: reconstructing and widening the existing Elgin O'Hare Expressway (Illinois Route 390), extending the expressway east to O'Hare International Airport, and adding an expressway around the western side of O'Hare from I-90 to I-294 (the western bypass). All three components would be tolled.

Project status
Work to reconstruct and repair the western segment of Illinois Route 390 has been completed and is currently being tolled.
Construction of the new section of Illinois Route 390 from I-290 Interchange to Illinois Route 83 along Throndale Ave is currently u

I-290/IL 53 Interchange Improvement (Tollway, RSP ID# 21)

Project description
This project would reconfigure the existing system interchange to alleviate the bottleneck between I-290/IL-53 and I-90.

Project status
No project planning activities or studies are scheduled in the near future.

I-294 Interchange Addition (Tollway, RSP ID# 22)

Project description
This project would construct a full interchange between I-294 and I-57 improving accessibility to and from the south suburbs and for improved north-south regional travel. The project has been divided into two phases. The first phase involves construction of new ramps to connect northbound I-57 to northbound I-294 and southbound I-294 to southbound I-57, as well as an entrance and exit ramp from I-294 to 147th Street. Phase 2 involves the remaining interchange connections.

Project status
Phase 1 of the project has been completed. Phase 2 of the project is currently engaged in engineering work.

I-294 Central Tri-State Mobility Improvements (Tollway, RSP ID# 23)

Project description
This project would reconstruct and improve the Central Tri-State from Balmoral Avenue to 95th Street. Proposed aspects include updated and upgraded pavement, integrated flex lanes, implementation of SmartRoad technology, widening where needed, reconfiguration and improvements to the interstate interchanges, potential new local access interchanges, noise remidiation and strormwater improvements, truck and frieght accomodations and bringing the corridor into a state of good repair.

Project status
Completed the planning phase of the project which includes alternative analysis and advanced design studies. Project is funded in the Move Illinois program, including capacity elements.

I-290/I-294 Interchange Improvement (Tollway, RSP ID# 24)

Project description
This project would reconfigure the existing system interchange between I-290 and I-294.

Project status
Project is in early stages of planning.

Central Lake County Corridor: IL 53 North and IL 120 (Tollway, RSP ID# 25)

Project description
The project would extend the existing, limited-access Illinois Route 53 from its terminus at Lake-Cook Road to join Illinois Route 120 to the north. Additionally, the project would include an extension of the limited-access portion of Illinois Route 120.

Project status
The Illinois Tollway is conducting an enviromental impact study of proposed extension which is expected to last 3 to 5 years.

Cross-Town Tollway and CTA Route (Public Submittal, RSP ID# 134)

Project description
This project would construct a new toll road along Cicero Ave starting at the split of I-94 and I-90 just north of Montrose Ave and traveling south to Midway Airport. Just south of Midway Airport, the toll road would head east along frieght and Metra tracks to the intersection of 75th St and I-94. In addition to the toll road a transit rail line would be built in parrellel and start at Montrose Blue Line station and terminate at a new Red Line 75th St station.

Project status
Project submitted by public for consideration.

Arterial

Vollmer Rd (Cook County, RSP ID# 145)

Project description
This project includes bridge reconstruction and increased vertical clearance by lowering the profile of Vollmer Road, pavement reconstruction, provision of compensatory storage at Butterfield Creek Floodplain, road widening from two lane rural section with no pedestrian facilities to four-lane urban section with pedestrian facilities, improvements at Kedzie Avenue and Western Avenue signalized intersections, addition of warranted turn lanes at Vollmer Road & Western Avenue Intersection, and minimizing the impact on properties within project limits.

Project status
Currently engaged in phase I engineering.

IL-31 Front St (IDOT, RSP ID# 6)

Project description
This project would add lanes to IL-31/Front St from IL-120 to IL-176.

Project status
Phase II engineering work is listed in the IDOT FY 2018-2023 Proposed Highway Improvement Program

IL-60 (IDOT, RSP ID# 10)

Project description

This project would add lanes to IL-60 from IL-176 to CN RR tracks and grade separate IL-60 and the CN RR tracks.

Project status

No status update at this time.

IL-62/Algonquin Rd (IDOT, RSP ID# 11)

Project description

This project would add lanes to IL-62/Algonquin Rd from IL-25 to IL-68.

Project status

No status update at this time.

IL-83/Barron Blvd (IDOT, RSP ID# 13)

Project description

This project would add lanes to IL-83/Barron Blvd from Petite Lake Rd to IL-120/Belvidere Rd.

Project status

Phase II engineering work is listed in the IDOT FY 2018-2023 Proposed Highway Improvement Program

IL-131/Greenbay Rd (IDOT, RSP ID# 14)

Project description

This project would add lanes to IL-131/Greenbay Rd from Russell Rd to Sunset Ave.

Project status

No status update at this time.

IL-173/Rosecrans Rd (IDOT, RSP ID# 15)

Project description

This project would add lanes to IL-173/Rosecrans Rd from IL-59 to US-41/Skokie Hwy.

Project status

Phase II engineering work is listed in the IDOT FY 2018-2023 Proposed Highway Improvement Program

Lake Shore Drive Reconstruction (IDOT, RSP ID# 89)

Project description

This project would reconstruct US-14/Lake Shore Drive from Hollywood Ave to Grand Ave. Besides reconstruction work the project will also try to improve safety, improve mobility of people, and improve accessibility to and from the adjacent communities for all users.

Project status

Currently enganged in Phase I Study.

IL-43/Harlem Ave (IDOT, RSP ID# 109)

Project description

This project would grade separate IL-43 and the BRC tracks at 65th St.

Project status

No status update at this time.

IL-47 (IDOT, RSP ID# 110)

Project description

This project would add lanes to IL-47 from north of Charles Rd to Reed Rd with intersection improvements and replacement of the UP Railroad bridge.

Project status

Phase II engineering work is listed in the IDOT FY 2018-2023 Proposed Highway Improvement Program

IL-83/Kingery Hwy (IDOT, RSP ID# 111)

Project description

This project would add lanes to IL-83 from 31st St to 55th St and from south of 63rd St to south of Central Ave.

Project status

No status update at this time.

US-12/95th St (IDOT, RSP ID# 112)

Project description

This project would improve the intersection of US-12/95th St and Stony Island Ave and involves bridge and railroad relocation.

Project status

No status update at this time.

US-20/Lake St (IDOT, RSP ID# 113)

Project description

This project would reconstruct US-20/Lake St from west of Randall Rd to east of Shales Pkwy. The project involves bridge replacements, safety improvements, and intersection improvements.

Project status

No status update at this time.

US-45/Olde Half Day Rd (IDOT, RSP ID# 114)

Project description

This project would add lanes to US-45/Olde Half Day Rd from IL-60/Townline Rd to IL-22/Half Day Rd.

Project status

Phase II engineering work is listed in the IDOT FY 2018-2023 Proposed Highway Improvement Program

Randall Rd (Kane County, RSP ID# 46)

Project description

This project would construct a 6-lane cross section in areas not previously improved, including intersection improvements at I-90, US 20 and Stearns Road.

Project status

Construction on various components include, adaptive signal control for the northern portion, signal interconnect, intersection improvements at Longmeadow Pkwy and Stearns Rd, safety improvements along mid and southern portion and transit infrastructure e

North Algonquin Fox River Crossing (McHenry County, RSP ID# 51)

Project description

This project would construct a new bridge and road that would provide an alternate route to IL 62 for motorists traveling to and from Crystal Lake. It is anticipated that the new Fox River bridge would be tolled.

Project sstatus

Project is listed in McHenry Co Long Range Plan

Caton Farm-Bruce Rd Corridor (Will County, RSP ID# 53)

Project description

This project would construct a new road and realign exiting roads to create a new Caton Farm-Bruce Road corridor from intersection of Canton Farm Rd with US-30 and Gaylord Rd to the

intersection of IL-7/159th St and Cedar Rd. The project would include a new bridge crossing the Des Plaines River and be two lanes in each direction with pedestrian and bicycle accomodations.

Project status
Currently engaged in phase I engineering.

Laraway Rd (Will County, RSP ID# 55)

Project description
This project would add lanes to Laraway Rd from US-52 to Harlen Ave.

Project status
Project is split into 3 segments:
US-52 to Cedar Rd is finishing up phase I engineering and anticipates starting construction upon the completion of the Cedar Rd and Laraway Rd intersection improvement which is scheduled to start construction in 2018.

Wilmington-Peotone Rd (Will County, RSP ID# 56)

Project description
This project would add lanes to Wilmington-Peotone Road between IL-53 and Drecksler Rd.

Project status
No project planning activities or studies are scheduled in the near future.

Appendix A. Evaluation measure details

Addressing today's needs -- Transit

Asset condition

Transit asset condition is measured using FTA's asset condition scale (Table A1). The score for a project is the value-weighted average for the assets that will be improved or replaced as part of the project. RTA developed this information using the Capital Optimization Support Tool (COST). COST bases asset condition on the age of the asset when no inspection information is available. Projects that do not have a state of good repair element receive a score of "N/A."

Table A1. FTA condition scale

Rating	Condition	Description
Excellent	4.8—5.0	No visible defects, near-new condition
Good	4.0—4.7	Some slight defective or deteriorated components
Adequate	3.0—3.9	Moderately defective or deteriorated components
Marginal	2.0—2.9	Defective or deteriorated components in need of replacement
Poor	1.0—1.9	Seriously damaged components in need of immediate repair

Capacity constraint

There are several ways to measure capacity, including line capacity, signal capacity, electrical system capacity, etc. While all of these measures are important, passenger capacity utilization is the most straightforward to estimate and aligns with FTA Core Capacity requirements. Capacity is only considered for rail projects in the context of ON TO 2050. Bus route capacity tends to be more limited by roadway capacity, which is addressed through roadway improvements projects such as adding-lanes or operational treatments such as transit signal priority, and thus is not a driver of major transit capital project selection.

FTA considers commuter rail to be over capacity when cars are 95% full. Consequently, rail lines that frequently have trains over 95% full are considered to have the highest need for capacity improvements. For example, in the table below the BNSF has 8 trains a day with over 95% of capacity utilization. Based on the 2014 information below, Metra lines were ranked based on relative capacity need. This should be updated using more current information if available.

Figure A1. Metra capacity utilization

TABLE 2
Capacity Utilization of Peak Period/Peak Direction Trains

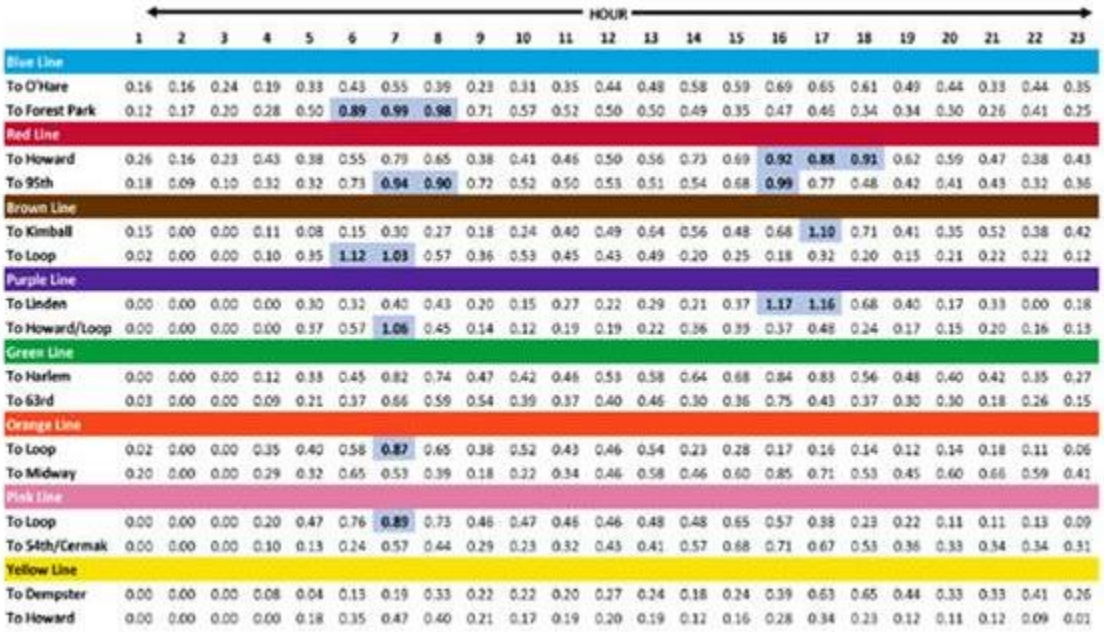
	% CAP UTIL		Distribution of April 2014 Trains by Capacity Utilization					
	2013	2014	0-49.9	50-74.9	75-89.9	90-94.9	95+	TOTAL
BNSF	81.7%	78.4%	3	22	13	8	8	54
Elec-Main	56.7%	57.7%	11	31	1	2	0	45
Elec-Blue Island	32.0%	30.8%	12	2	0	0	0	14
Elec-So. Chicago	30.6%	29.7%	17	0	0	0	0	17
Heritage	61.6%	57.2%	2	4	0	0	0	6
Milw-N	65.2%	67.2%	7	10	7	1	0	25
Milw-W	72.4%	71.5%	5	9	11	1	1	27
NCS	64.9%	66.9%	0	8	3	0	0	11
Rock Island	64.1%	65.8%	7	21	7	0	1	36
SWS	71.8%	72.5%	1	4	6	0	0	11
UP-N	85.0%	81.0%	1	9	13	1	6	30
UP-NW	80.5%	81.2%	0	10	14	4	5	33
UP-W	79.4%	78.0%	0	13	10	1	3	27
SYSTEM*	71.0%	70.4%	66	143	85	18	24	336
% OF TOTAL			19.6%	42.6%	25.3%	5.4%	7.1%	100%

Source: *Capacity Utilization of Trains: Commuter Rail System* (April 2014).

Heavy rail utilization is measured by the FTA based on usable space per passenger. Table 21 of the CTA's System Wide Rail Utilization and Capacity Analysis[6] provides the number of passengers relative to vehicle capacity, which is similar to usable space per passenger, at each hour of the day. The most congested period for each train was used to rank the magnitude of capacity constraint on CTA rail.

[6] "System Wide Rail Capacity Study," Chicago Transit Authority, 2017, http://www.transitchicago.com/assets/1/planning/RP_CDMSMITH_RCM_Task2AExecutiveSummary_20170628_FINAL_(002).pdf.

Figure A1. CTA rail capacity utilization



	HOUR																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Blue Line																							
To O'Hare	0.16	0.16	0.24	0.19	0.33	0.43	0.55	0.39	0.23	0.31	0.35	0.44	0.48	0.58	0.59	0.69	0.65	0.61	0.49	0.44	0.33	0.44	0.35
To Forest Park	0.12	0.17	0.20	0.28	0.50	0.89	0.99	0.98	0.71	0.57	0.52	0.50	0.50	0.49	0.35	0.47	0.46	0.34	0.34	0.30	0.26	0.41	0.25
Red Line																							
To Howard	0.26	0.16	0.23	0.43	0.38	0.55	0.79	0.65	0.38	0.41	0.46	0.50	0.56	0.73	0.69	0.92	0.88	0.91	0.62	0.59	0.47	0.38	0.43
To 95th	0.18	0.09	0.10	0.32	0.32	0.73	0.94	0.90	0.72	0.52	0.50	0.53	0.51	0.54	0.68	0.99	0.77	0.48	0.42	0.41	0.43	0.32	0.36
Brown Line																							
To Kimball	0.15	0.00	0.00	0.11	0.08	0.15	0.30	0.27	0.18	0.24	0.40	0.49	0.64	0.56	0.48	0.68	1.10	0.71	0.41	0.35	0.52	0.38	0.42
To Loop	0.02	0.00	0.00	0.10	0.35	1.12	1.03	0.57	0.36	0.53	0.45	0.43	0.49	0.20	0.25	0.18	0.32	0.20	0.15	0.21	0.22	0.22	0.12
Purple Line																							
To Linden	0.00	0.00	0.00	0.00	0.30	0.32	0.40	0.43	0.20	0.15	0.27	0.22	0.29	0.21	0.37	1.17	1.16	0.68	0.40	0.17	0.33	0.00	0.18
To Howard/Loop	0.00	0.00	0.00	0.00	0.37	0.57	1.06	0.45	0.14	0.12	0.19	0.19	0.22	0.36	0.39	0.37	0.48	0.24	0.17	0.15	0.20	0.16	0.13
Green Line																							
To Harlem	0.00	0.00	0.00	0.12	0.38	0.45	0.82	0.74	0.47	0.42	0.46	0.53	0.58	0.64	0.68	0.84	0.83	0.56	0.48	0.40	0.42	0.35	0.27
To 63rd	0.03	0.00	0.00	0.09	0.21	0.37	0.66	0.59	0.54	0.39	0.37	0.40	0.46	0.30	0.36	0.75	0.43	0.37	0.30	0.30	0.18	0.26	0.15
Orange Line																							
To Loop	0.02	0.00	0.00	0.35	0.40	0.58	0.87	0.65	0.38	0.52	0.43	0.46	0.54	0.23	0.28	0.17	0.16	0.14	0.12	0.14	0.18	0.11	0.06
To Midway	0.20	0.00	0.00	0.29	0.32	0.65	0.53	0.39	0.18	0.22	0.34	0.46	0.58	0.46	0.60	0.85	0.71	0.53	0.45	0.60	0.66	0.59	0.41
Pink Line																							
To Loop	0.00	0.00	0.00	0.20	0.47	0.76	0.89	0.73	0.48	0.47	0.46	0.46	0.48	0.48	0.65	0.57	0.38	0.23	0.22	0.11	0.11	0.13	0.09
To 54th/Cermak	0.00	0.00	0.00	0.10	0.13	0.24	0.57	0.44	0.29	0.23	0.32	0.43	0.41	0.57	0.68	0.71	0.67	0.53	0.36	0.33	0.34	0.34	0.31
Yellow Line																							
To Dempster	0.00	0.00	0.00	0.08	0.04	0.13	0.19	0.33	0.22	0.22	0.20	0.27	0.24	0.18	0.24	0.39	0.63	0.65	0.44	0.33	0.33	0.41	0.26
To Howard	0.00	0.00	0.00	0.00	0.18	0.35	0.47	0.40	0.21	0.17	0.19	0.20	0.19	0.12	0.16	0.28	0.34	0.23	0.12	0.11	0.12	0.09	0.01

Source: CTA *System Wide Rail Utilization and Capacity Analysis* (November 2016)

Note that projects are matched to the utilization of the line with the maximum capacity constraint. For example moving the Metra SouthWest Service to LaSalle Street station would impact all trains on the congested south concourse of Union Station. While this project is on the SWS infrastructure, it would receive a higher value for its impact on the capacity of the BNSF.

In the project evaluation, the capacity utilization on the line is provided both in raw form (ratio of passenger utilization to capacity for CTA and number of trains per day with more than 95 percent of seats occupied for Metra) as well as in rescaled form, as follows. The data available for each mode was used to set relative need on a ten-point scale, with 10 having the highest passenger capacity utilization and 0 having no capacity issues. Most lines with current capacity issues would be scored between 1 and 9 as shown in the table below. No line received a score of ten, in order to accommodate future ridership growth or revised data from the operators. Rail lines not listed would receive a score of zero indicating that they do not have passenger utilization issues.

	Metra		CTA	
Score	# Trains with >95% seats occupied per day	Lines	Passenger Utilization Ratio	Lines
10	10		1.20	
9	9		1.15	Purple
8	8	BNSF	1.10	Brown
7	7		1.05	

	Metra		CTA	
Score	# Trains with >95% seats occupied per day	Lines	Passenger Utilization Ratio	Lines
6	6	UPN	1.00	Red, Blue
5	5	UPNW	0.95	
4	4		0.90	
3	3	UPW	0.85	Pink, Orange
2	2		0.80	Green
1	1	MDW, RI	0.75	
0	0	All other	<0.75	All other

Reliability

For Metra rail, the latest published on-time report is used. For CTA rail, agency information on headway adherence is used. Pace Suburban Bus also provided on-time route statistics which were referenced for locations where projects were proposed.

Addressing existing ADA deficiency

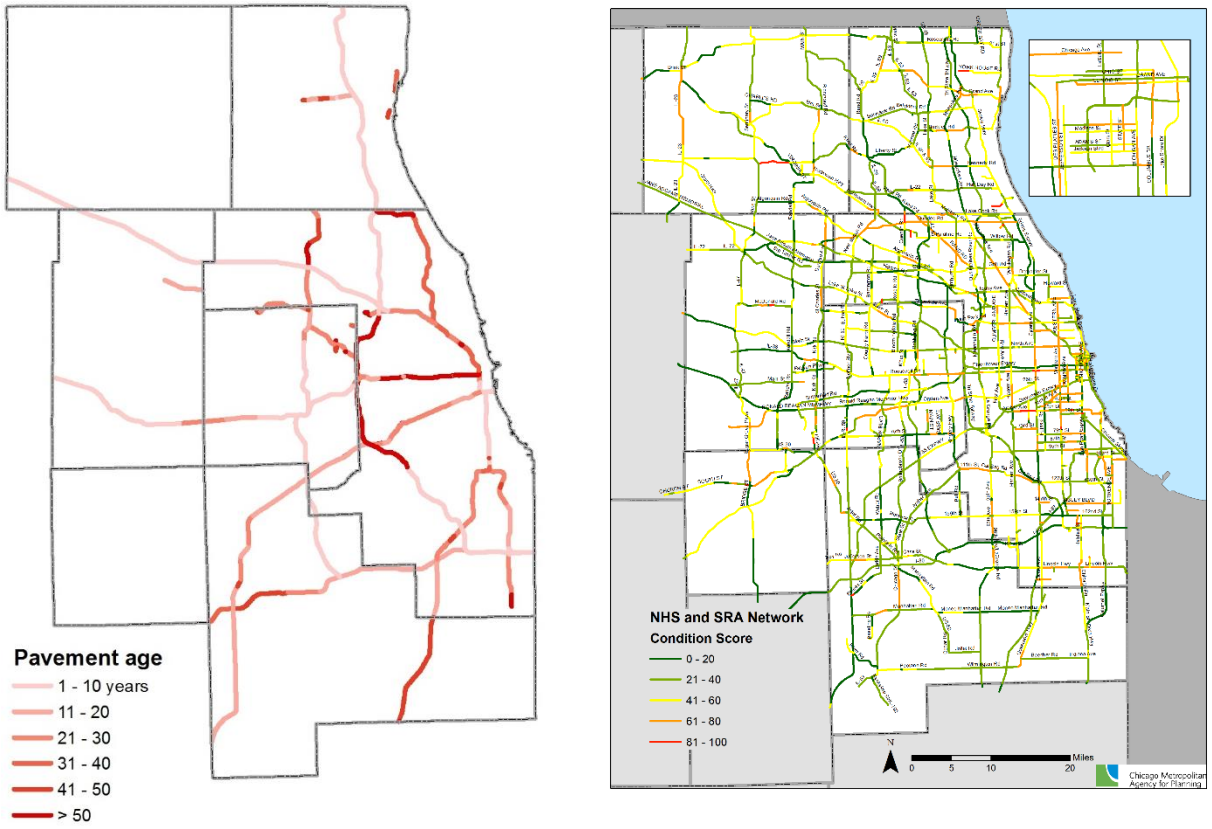
This measure indicates if an existing ADA deficiency is significantly reduced or resolved as a result of a project. The measure is either "Yes" or "No". For example, a reconstruction project that rebuilt a rail line and several stations would be rated as "Yes," since ADA non-compliant stations would be upgraded during the reconstruction with improvements such elevators. Extension projects and new service do not address an existing deficiency regardless of their design, and are categorized as "No".

Addressing today's needs – Highways

Pavement condition

For expressways, pavement age is determined by the time elapsed since original construction or last reconstruction, and is used as the main measure of the need for reconstruction. On arterials, the age of pavement is not systematically available. Instead, condition is assessed based on information about the International Roughness Index (IRI) and the Condition Rating System (CRS) available from the Illinois Roadway Information System (IRIS). IRI measures ride quality while CRS is a more holistic measure of condition. CRS was rescaled from 1 – 9 to 100 – 0, while IRI was rescaled 100 – 0 using the 95th percentile as the maximum. The resulting condition need score is weighted as 0.8 * CRS score + 0.2 * IRI score. The project score is the lane-mileage weighted average of the scores of the segments included in the project. A higher number indicates worse condition and more need. Both the expressway and arterial measures are shown in Figure A3.

Figure A3. Expressway pavement age (left) and arterial pavement condition score (right)



Source: IRIS, Illinois Tollway data, and CMAP analysis.

Bridge condition

For both expressways and arterials, bridge condition is measured by the area of bridge deck that is structurally deficient. For projects with reconstruction elements, the total deck area of the structurally deficient bridges on the project segment is reported. In other words, a project that addresses more structural deficiency is better than one that addresses less, other things being equal.

Mobility

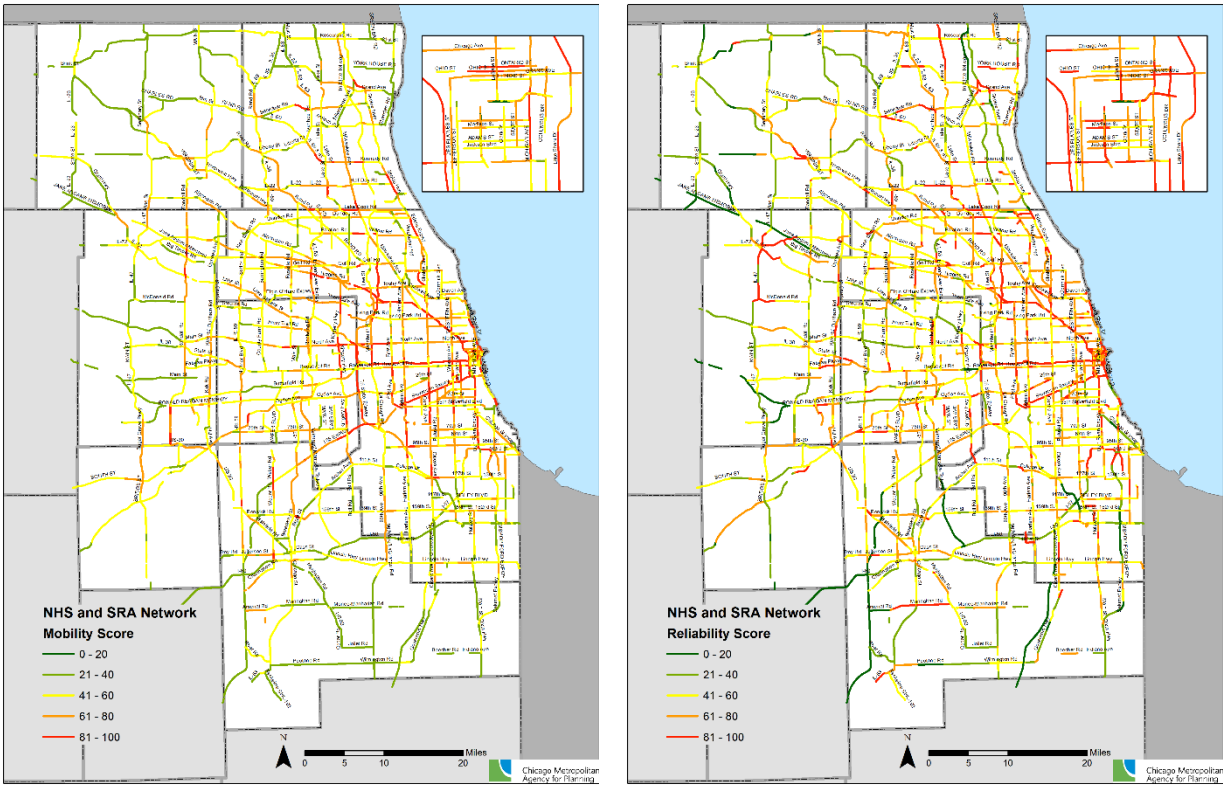
This category is a composite of the travel time index (TTI) and the congested hours on a segment that represents the intensity and duration of congestion. TTI is the congested travel time divided by the free flow travel time while congested hours is the number of hours each day that a segment is at least lightly congested (i.e., has a TTI ≥ 1.1). Both measures result from the HERE probe-based travel time data. The score is based on the worst road direction and the worse of the AM or PM peak. To convert the TTI and congested hours segment measurements into scores, the segment measurement was divided by the 95th percentile value of all the observations and multiplied by 100. Any measurement above the 95th percentile received a score of 100. The final mobility need score is equal to 0.5 * TTI score + 0.5 * congested hours score. The

project score was the lane-mileage weighted average of the scores of the segments included in the project. A higher score indicates more need, and therefore a higher priority location.

Reliability

Reliability is based on the planning time index (PTI), or 95th percentile travel time divided by uncongested travel time. The planning time index also results from the HERE probe-based speed data. Segment scores were developed using the same assumptions as for the mobility score (i.e., using the worst road direction and the worst of the AM or PM peak index). The reliability need is equal to the planning time index score indexed 1-100. The project score is the lane-mileage weighted average of the scores of the segments included in the project. A higher score indicates more need and a higher priority location.

Figure A4. Mobility score (left) and reliability score (right)



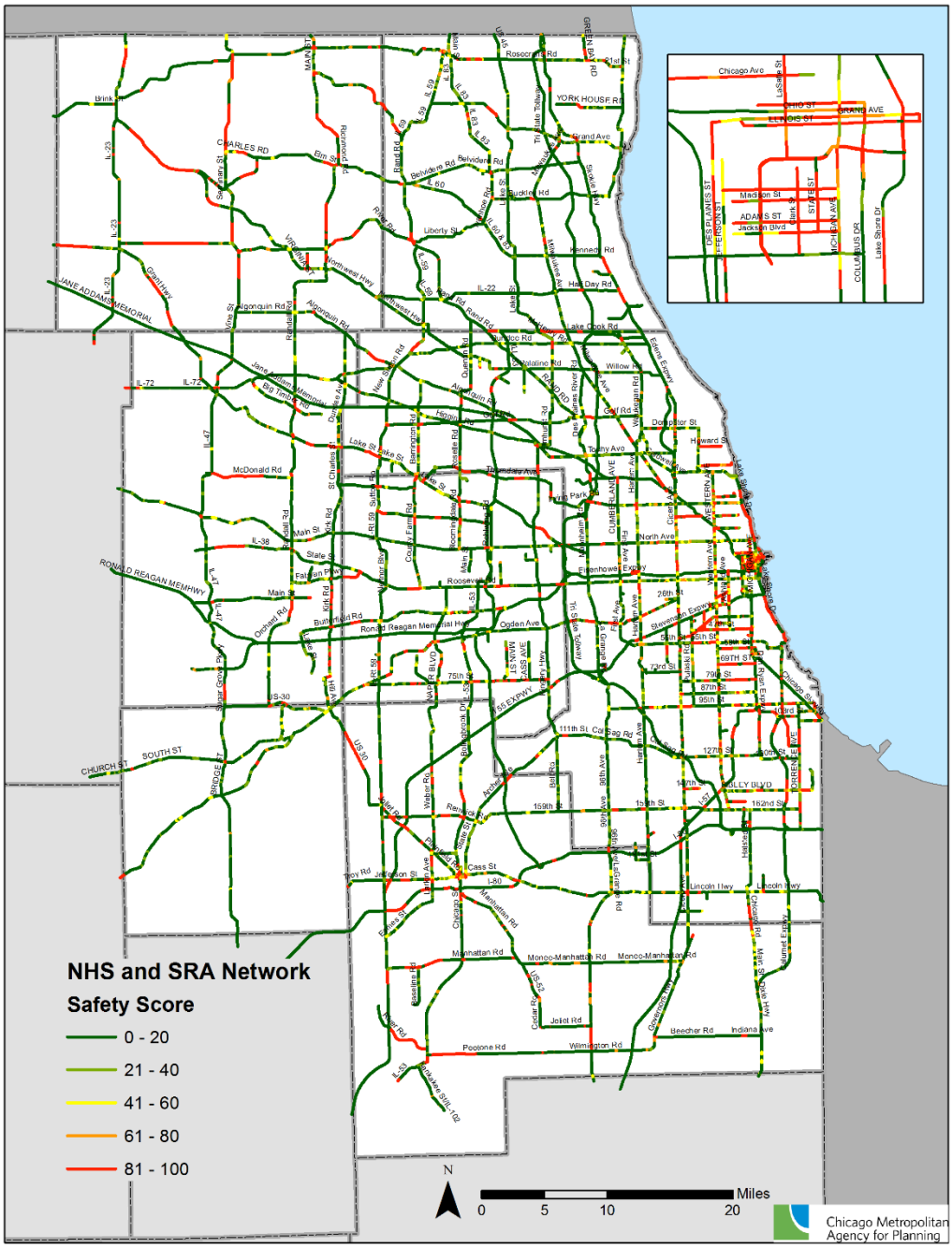
Source: IRIS, HERE, and CMAP analysis.

Safety

The degree to which a project addresses safety needs is based on the severity of the safety problems on the project segments, as measured by the 2015 total crash serious injury and fatality rate per VMT. It is assumed that safety issues will be addressed during the design process. Rates for each segment were rescaled by dividing the segment measurement by the 95th

percentile value of all the observations and multiplying by 100. Any measurement above the 95th percentile received a score of 100. The project score was the lane-mileage weighted average of the scores of the segments included in the project. A higher score indicates more need and a higher priority at the location.

Figure A5. Safety score



Source: IRIS, IDOT Safety Portal, and CMAP analysis.

2050 Performance – Transit

Travel benefits are estimated using either the FTA STOPS model, as calibrated to the region by RTA, as well as the RTA's Transit Access tool, a GIS-based tool that estimates how many opportunities (typically jobs) can be reached within a set travel time. Travel benefits are reported for the seven-county CMAP region only, not the larger modeling region. The measures are as follows.

Project ridership (daily)

This measure is the STOPS model estimate of the total number of daily boardings expected for the project. Every passenger using a project will get some benefit from the project.

Change in regional ridership (daily)

This measure is the STOPS estimate of new regional transit trips expected as a result of the project. This is a measure of regional travelers who switch to the transit mode.

Change in VMT (daily)

This measure is the expected increase or decrease in auto vehicle miles traveled (VMT) each day as a result of the project, as estimated by the STOPS model. It considers the change in auto person miles traveled (PMT) converted to auto vehicle miles traveled based on a regional average vehicle occupancy. This may decrease when a transit project attracts former auto drivers, but may occasionally increase in circumstances when a new transit project induces park-and-ride customers to travel longer distances to access an improved service.

Change in average regional work trip transit travel time (minutes)

This measure is average build time minus average no-build times where the times are calculated by multiplying transit work trips by access type (walk, kiss and ride, park and ride) by the corresponding access type transit trip times and then divided by total transit trips. Travel time includes both the line-haul portion of the trip as well as access time (park and ride, kiss and ride, walk, bike, transit transfer). Work trip travel time is estimated by processing STOPS outputs.

Change in project user commute time (minutes)

For work trips using the project, average transit trip time is calculated for the build and no-build scenarios only including trip interchanges where making a transit trip was possible in both scenarios. Newly served areas which did not allow a transit trip under the no build condition are excluded from the calculation as "new markets." Travel time includes both the line-haul portion of the trip as well as access time (park and ride, kiss and ride, walk, bike, transit transfer). Work trip travel time is estimated by processing STOPS outputs.

Change in jobs accessible within 90 minutes and 60 minutes for average resident

RTA calculated measure using the Access Tool to determine the average number of jobs that can be reached by a household from anywhere in the region within both a 90- and a 60-minute

transit travel time. To estimate change in jobs accessible, the average number of jobs accessible to a household in the no-build condition is subtracted from the average number of jobs accessible to a household in the build condition. The difference measures the regional improvement in accessibility the transit project provides based on improved travel times.

2050 Performance – Expressways

2050 travel conditions with and without the project are compared to estimate project travel benefits. All projects were evaluated using an "existing and committed" network, which includes the 2015 network with Northeastern Illinois Transportation Improvement Program (TIP) projects expected to be existing in 2050. Most TIP projects are small arterial improvements. However, the Elgin-O'Hare Western Access is under construction today and is expected to be completed in the near future. The project is tested by adding it to the existing and committed network, running the regional four-step model and extracting desired results. The change between no-build and build measures was calculated accordingly by using the difference between the appropriate scenarios. The characteristics of individual projects were coded into the model based on information supplied by the project sponsors.

Congestion reduction

Congestion reduction is measured by change in daily vehicle-hours traveled in congested conditions ("congested VHT"), both in the CMAP region and in a five-mile corridor around the facility. It includes all network traffic occurring within the CMAP area, even if it originates or is destined to areas outside the CMAP area. Congested highway links were identified with a volume/capacity ratio exceeding 0.9 and located within the CMAP area. Total volume was multiplied by the congested travel time for each of eight time periods of the day. This calculation includes all vehicles, both autos and trucks. The change between build and no-build was calculated by simple subtraction of one total from the other.

For the corridor congested VHT, only links within the five mile buffer of the project were considered. These links were identified through a GIS exercise for both build and no-build conditions. The total for the corridor includes traffic on the new project. For the heavy truck regional and corridor congested VHT, the calculations were carried out in the same way, but only heavy truck vehicles were multiplied by link travel time.

Change in work trip travel time

Average work travel time is calculated for both the build and no build scenarios by multiplying home based work auto person trips originating within the CMAP area by the A.M. peak congested highway time and then divided by total CMAP area home based work person trips. The no-build average is subtracted from build average.

Job access

To estimate the number of jobs per household that can be reached by auto within 45 minutes, the A.M. Peak auto travel time was used. This measure is a weighted average per household, so the households at the origin are multiplied by the employment accessible within 45 minutes at the destination. These zonal origin values are summed, the divided by the total number of

CMAP area households. The measure is the build average minus the no-build average number of jobs.

Total Crashes

A project's effect on crashes is estimated by calculating the total VMT on expressways, arterials, and collectors and multiplying those values by total crash rate for each of those facility types. The crash rates include K, A, B, C and property damage only crashes. On average, arterials are the most dangerous facility per vehicle mile of travel and expressways are the least dangerous. Typically speaking, building additional expressway capacity will draw motorists off the arterial system and on the safer expressway system, reducing crashes. The measure was build minus the no-build expected number of crashes over 10 years.

Planning priorities

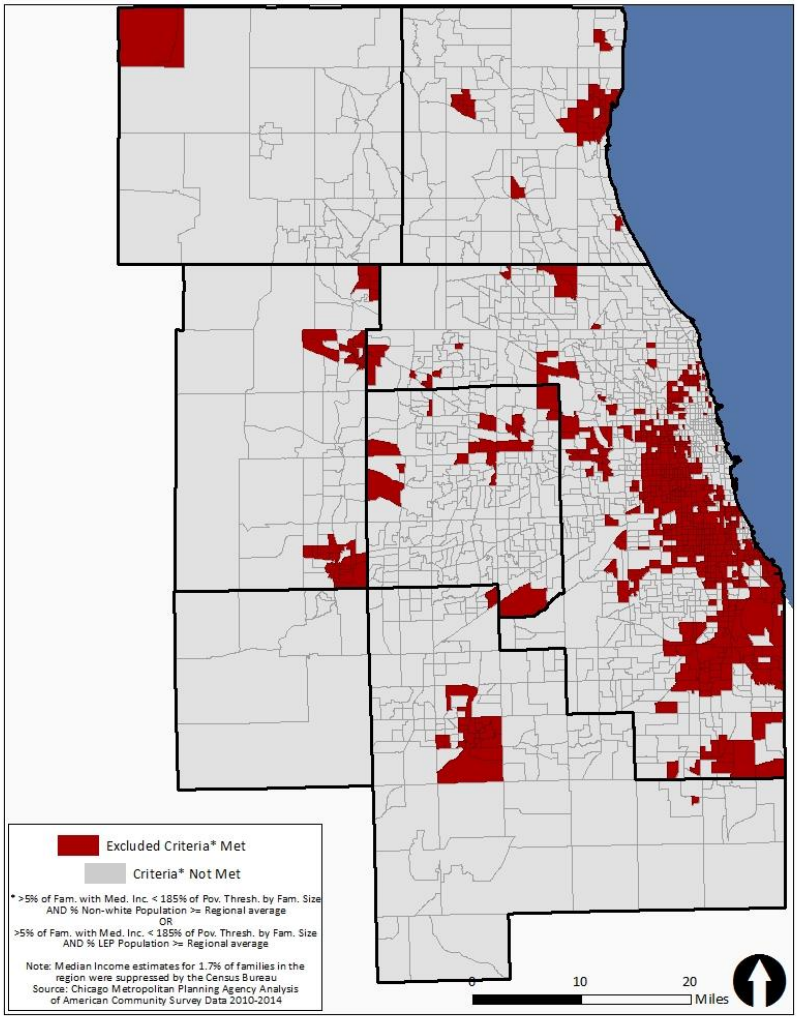
Equity impact (project use by economically disconnected areas)

As part of ON TO 2050, CMAP is pursuing an inclusive growth strategy that is meant to help the Chicago region achieve stronger, more sustained economic growth by decreasing inequality. This emphasis on improving equity is being carried through to regionally significant project evaluation. In northeastern Illinois, as in many regions across the nation, people of color and poverty are often geographically concentrated. Segregation by race and income has a deleterious impact on the residents that are secluded within these geographies, but also a negative impact on the entire region.[7] CMAP has identified these areas within the region, calling them "economically disconnected areas" (EDAs).

To be considered an EDA, a census tract must have a concentration of either low-income population AND persons of color, OR low-income population AND Limited-English speaking population. The inclusive growth strategy paper explores this methodology in more detail, and provides analysis of the differential outcomes for residents of EDAs.

[7] "Fair Housing and Equity Assessment: Metropolitan Chicago," Chicago Metropolitan Agency for Planning, 2013, http://www.cmap.illinois.gov/livability/housing/fair-housing.

Figure A6. Economically disconnected areas in Chicago region.

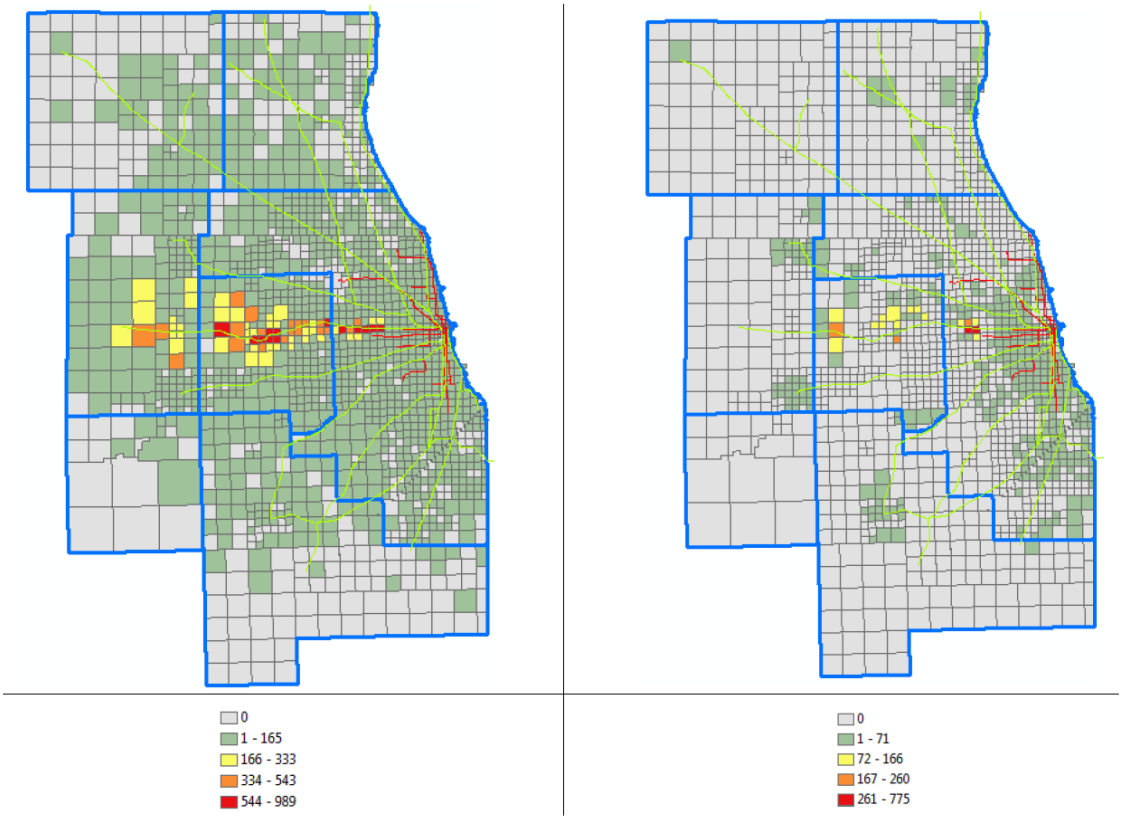


Source: CMAP analysis.

Transit project benefits to economically disconnected areas ("equity impact") are measured as the estimated percent of trips on a project that originate from a model zone within the economically disconnected areas layer. This layer is based on census tracts, which is are then apportioned to travel model subzones and then summed to the traffic analysis zone level. The STOPS model matrices containing trips that use the project are then read in and summed for total project trips by origin. The zonal proportion of economically disconnected area population is applied to the project trip table by origin. The origin zone values are summed, resulting in an estimate of the total number of such community trips using the project. This number is divided by total project ridership to arrive at the percent of ridership from economically disconnected areas. This is the evaluation measure. For highway projects, the analogous evaluation measure is the percent of VMT on the project that originates in an economically disconnected area.

The map in Figure A7 shows an example analysis for the UP-W improvements project. The map on the left shows the number of total trips using the project by origin zone, while the map on the right shows just the trips expected to originate within economically disconnected areas. Reported values are for the percentage of trips and percentage of VMT, not the absolute number of trips or VMT.

Figure A7. Total trips (left) and trips from economically disconnected areas (right) using UP-W Improvements project



Source: RTA and CMAP analysis.

Low barrier to entry jobs accessible to economically disconnected areas

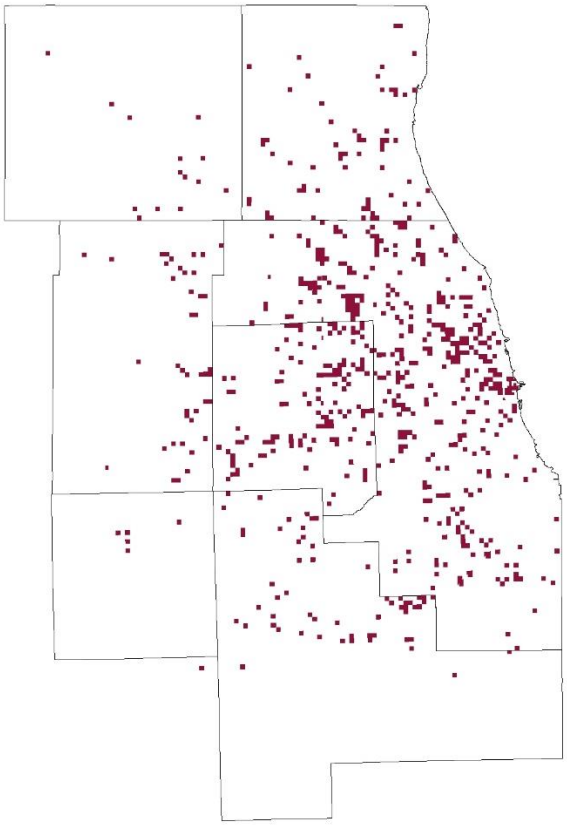
While the percent of trips or percent of VMT on a project originating in economically disconnected areas is one measure of benefit to these communities, another important question is the degree to which a project provides these communities with access to jobs. This gives rise to the secondary question of whether residents of disadvantaged communities are able to take advantage of accessible jobs given their education and training. These questions were analyzed in combination by determining the number of low-barrier but relatively high-paying jobs accessible to economically disconnected areas within 60/90 minutes (transit projects) or 45 minutes (highway projects) with and without a candidate project.

The starting point for this analysis is occupational employment and job openings data (2014 and projected 2024) and worker characteristics (2014) data from the Table 1.7 of the Employment Projections program of the U.S. Bureau of Labor Statistics. The table was filtered to identify jobs with:

- Positive projected growth 2014-2024
- Median annual wage higher than the national median ($36,200)
- Educational requirements for entry:
    i. no formal educational credential,
    ii. high school diploma or equivalent, or
    iii. postsecondary nondegree award
- Less than 5 years of work experience required

Next, using a crosswalk between occupations and industries from the National Crosswalk Service Center, the percent of jobs for each 6-digit North American Industrial Classification System (NAICS) code that fall into the middle-skill category was calculated. Then Dun and Bradstreet point GIS data were used to identify the locations and counts of jobs by industry. The map in Figure A8 shows subzones expected to have 50 or more jobs in low-barrier industries.

Figure A8. Concentrations of jobs with low barriers to entry by subzone



Source: CMAP analysis of BLS and Dun and Bradstreet data.

A transit project's ability to improve access to low-barrier jobs for economically disconnected areas is estimated by first running the RTA's access tool for each candidate project to determine the change in total jobs accessible to households in the region in aggregate. In these results, the subset of origin-destination (O-D) pairs with origins in excluded community subzones is flagged. The number of low-barrier jobs by destination subzone is also appended to the table. Finally, the table is queried to determine the change in the number of low-barrier jobs accessible within 60/90 minutes for workers living in economically disconnected area model zones.

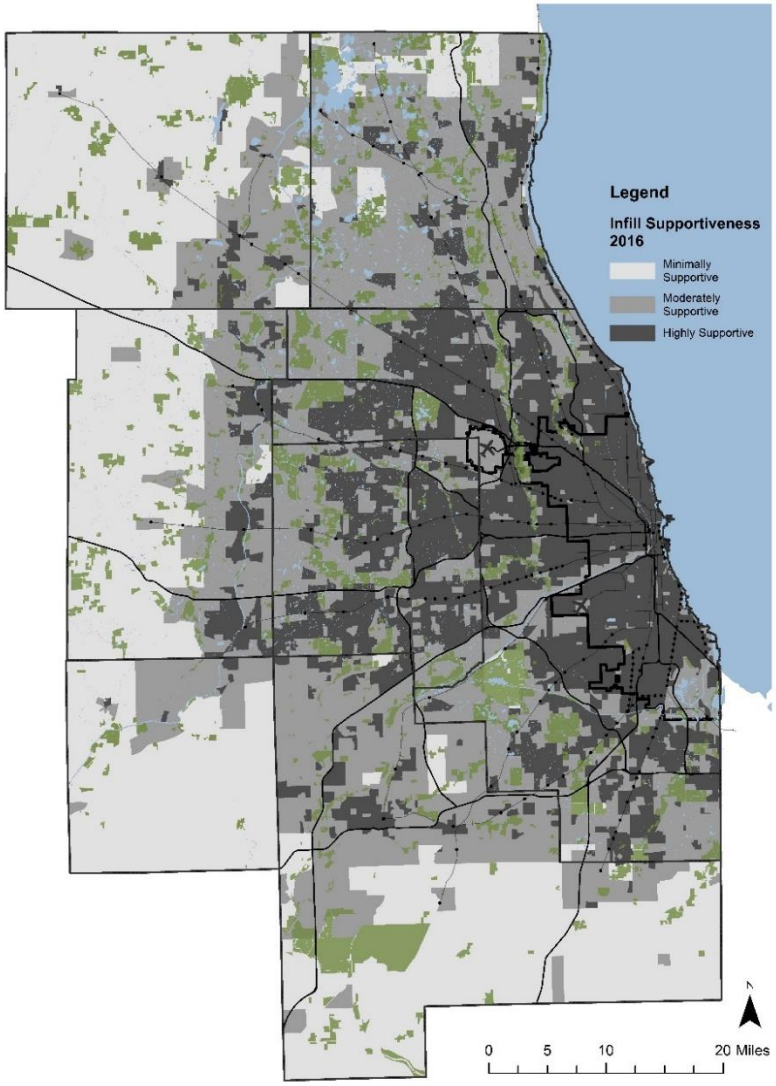
A highway project's ability to improve access to low-barrier jobs for economically disconnected areas is estimated by an analogous method based on the CMAP regional travel model, only using a 45-minute travel time.

Infill support

This measure captures the degree to which a project supports growth in areas that are appropriate for infill development. Based on work done for the CMAP Infill and TOD Strategy Paper, the region is divided into three categories -- minimal, moderate, and highly supportive of infill development – as shown in the map below. The zonal acres in each category are calculated in GIS based on four inputs: housing density, road density, employment density, and land cover:

- Housing unit density: Housing units per square mile (2010-14 ACS)
- Employment density: Employment per square mile (2015 Illinois Department of Employment Security)
- Road density: Road miles per square mile (2016 Navteq)
- Land cover: Percent of a block group that is not agriculture or natural land (2011 National Land Cover Data set and 2010-15 data CMAP's Northeastern Illinois Development Database)

Figure A9. Infill supportiveness



Source: CMAP analysis.

To calculate the infill support score, the project travelshed is identified. This is a table of all the trips using the project based on STOPS (transit projects) or CMAP travel model (highway projects) analyses. To determine how well the project serves an origin or destination, the proportion of trips using the project/total trips is calculated. A zone with a high proportion of trips using the project is better served than one with a small proportion. This proportion is applied separately to the acres of high, medium, and low supportive land use acres by origin and destination. Finally, a weighted score is calculated based on the fraction of the acreage in each category, where minimally supportive = 0 points, moderately supportive = 50 points, and highly supportive = 100 points. A table showing five example projects is below. For instance, the score for the Red Line Extension is (0*0) + (.24*50) + (.76* 100) = 88. The mix of land uses is the

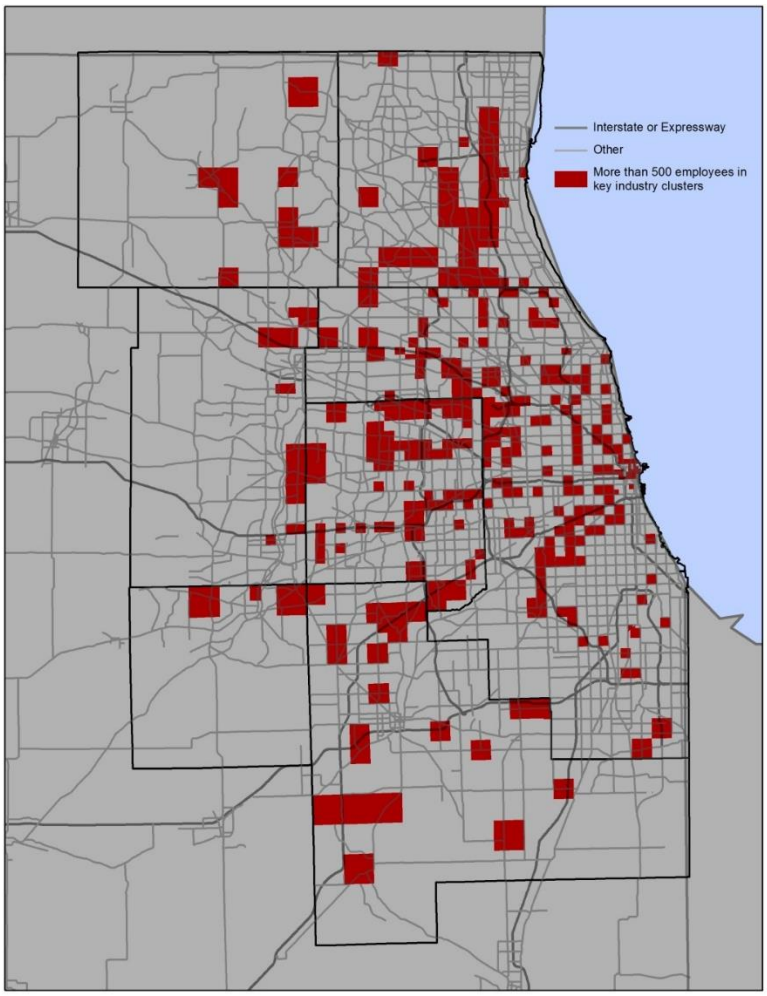
critical characteristic, thereby eliminating the risk that a large project gets a better score merely because it has a larger market.

Benefits to key industries and addressing disinvested industrial areas

While direct mobility benefits of transportation projects are widely understood to have positive economic impacts, the broader changes in economic productivity triggered by transportation investments are a newer direction in transportation and economic research. New or improved transportation in an area means that those who live there can access more destinations in a shorter amount of time, and people from other parts of the region can access the area more quickly and easily. In areas where transportation projects increase access to new customers or labor pools, land values may increase, previously-vacant properties may be developed for new use, and existing businesses may become more profitable.

To evaluate the potential economic impact of arterial transportation projects, CMAP identified the travelshed for each project and calculated the number of jobs in "key industries" within each travelshed. Key industries are industries that are export-oriented, regionally-specialized, and sensitive to changes in in-region road transportation costs. Export-oriented industries bring money into the region from national and international markets and have been identified through prior CMAP analysis on traded clusters. Regionally-specialized industries are clusters with special strength and prominence in the Chicago region as compared to the nation as a whole, measured as a location quotient greater than 1.0. Industries that spend a higher than average percent of their expenditures on in-region transportation are most likely to see profitability and productivity gains from transportation improvements. CMAP also calculated the square footage of vacant flex and industrial rentable building area (RBA) in each project's travelshed as a measure of a project's potential to generate new economic activity. Key industry employment and industrial vacancy are each indexed 1-100, with 100 being the best score for a project.

Figure A10. Concentrations of jobs in key industry clusters



Economic impact from industry clustering

As documented by CMAP and others, there are widely known benefits to geographical clustering by industry. For instance, industries requiring specialized skills benefit from having a large common labor pool. Not only are individual businesses able to draw from a larger supply of labor, but the labor pool itself is more productive because of "knowledge spillovers" as workers interact and move from firm to firm, introducing improvements to business processes. In another example, businesses in an industry cluster may serve as suppliers to one another.

The connection to transportation infrastructure is that roads and transit help encourage this clustering or agglomeration effect. For instance, a new road or new transit line that shaves a few minutes off typical travel times in an area where a particular industry cluster is located has effectively expanded the common labor pool by making more workers available within a certain drive time. It has also increased the possibility of knowledge spillovers, making workers more productive. These changes in the business landscape can be measured, first, as the change in available workers within a certain travel time and, second, through the "effective density" of employment – that is, the number of jobs in a zone plus the number of jobs located in nearby zones, scaled by the travel time between these zones. As the travel time decreases because of a transportation investment, effective density increases. The change in effective density is then translated into an increase in economic output through a method refined by researchers in the U.S. with the second Strategic Highway Research Program.

Effective density, again, is the number of jobs in a zone plus the number of jobs located in nearby zones, scaled by the travel time between these zones. In other words:

$$D = \frac{E_i}{t_{ii}^{\alpha}} + \sum_{j}^{i \neq j} \frac{E_j}{t_{ij}^{\alpha}}$$

In this equation, D is effective density, E_i is the employment in zone i (the analysis zone), E_j is the employment in each zone j, t_{ij} is the travel time between zones i and j, and α is a factor that measures "decay" in the importance of changes in travel time as travel times get shorter. Travel time between zones is taken from the STOPS model for transit projects and the CMAP travel demand model for highway projects. The first term of the equation is referred to as the scale factor and represents travel time within a model zone. Travel times within a zone used in the

scale factor are determined by averaging the travel times to the neighboring zones and dividing the average by two. The effective density is calculated for the build and no-build condition.

Once the change in effective density resulting from a project is calculated, the next step is to estimate how this affects productivity. Numerous studies have estimated how productivity increases with effective density in various industries. CMAP's review of the literature suggests that the general categories of production, construction, consumer services, and producer services had different responses to industry clustering mediated by transportation, as measured by the elasticity of productivity – the percent change in productivity resulting from a 1% change in effective density—shown below:

Industry group	NAICS codes	Elasticity of productivity
Production	11, 21, 31, 32, 33	0.021
Construction	23	0.034
Consumer Services	42, 44, 45, 48, 71, 81	0.024
Producer Services	51, 52, 53, 54, 55, 56	0.083
General	All others	0.040

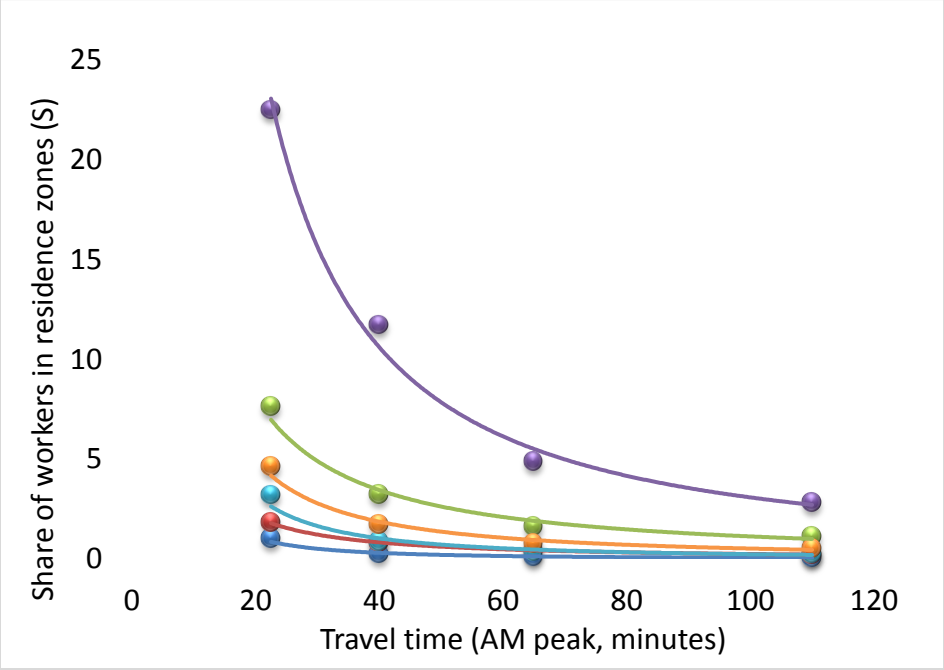
The total increase in economic output is calculated from the change in productivity resulting from the transportation project and the regional average output per worker, as follows:

$$\Delta Y = \sum_i \sum_k \left(\frac{D_{b,k}}{D_{nb,k}} - 1 \right) \mu_k \, w_k Z E_{i,k}$$

In this equation, ΔY is change in gross regional product, $D_{b,k}$ is effective density in industry group k with the project and $D_{nb,k}$ is without the project, μ_k is the elasticity of productivity for industry group k, $E_{i,k}$ is the number of employees of industry group k in the zone i, w_k is the wages per worker in the industry, and Z is a factor that relates wages to gross regional product. Wages are a proxy for economic output, as GRP has additional factors included that are missed by the simple aggregation of wages. In order to estimate the total effect on GRP a multiplier is used. In the CMAP region, $Z = 3.11$. The data on employment are from the unemployment insurance file (ES-202) from Illinois Department of Employment Security, 1st quarter 2015. Each zone is processed five times using the five elasticities of productivity in the table above.

In addition to increasing the productivity of the labor force through effective density, a second effect from a transportation project is to increase economic output because the total supply of workers available to businesses in a zone has increased. In other words, if commute times are reduced for the workforce, business may be able to attract workers at a lower cost. The lower commute times will increase the labor pool who might work at a location. The concept behind the estimate of economic impact due to transportation projects is that, by shortening commutes, employers in a zone will be able to capture more of these potential workers, increasing the labor supply.

To estimate this effect, CMAP used a method based on techniques developed originally by the Department for Transport in Britain. Using data from the Census Longitudinal Employer-Household Dynamics (LEHD) dataset, the first step is to determine the zones of residence for the employees in each zone in the region. Then, based on the no-build travel times between these zones (the morning peak period (7:00 AM to 9:00 AM) was used), the fraction of the workers in each residence zone who travel to a given employment zone was plotted against the travel time between these zones. As in the graph below, six groups were determined empirically to represent varying degrees of sensitivity to commute time.



The points in the chart above were fit with curves of the form $S = at^{\beta}$ where S is the share of workers in residence zones who work in an employment zone, t is travel time, a is a constant used to fit the curve, and β is a curve-fitting parameter that measures sensitivity to travel time savings. The parameters for each group are as follows:

Group	a	β	Group	a	β
1	1542.6	-1.35	4	326.88	-1.401
2	315.45	-1.224	5	117.45	-1.344
3	421.97	-1.631	6	249.48	-1.823

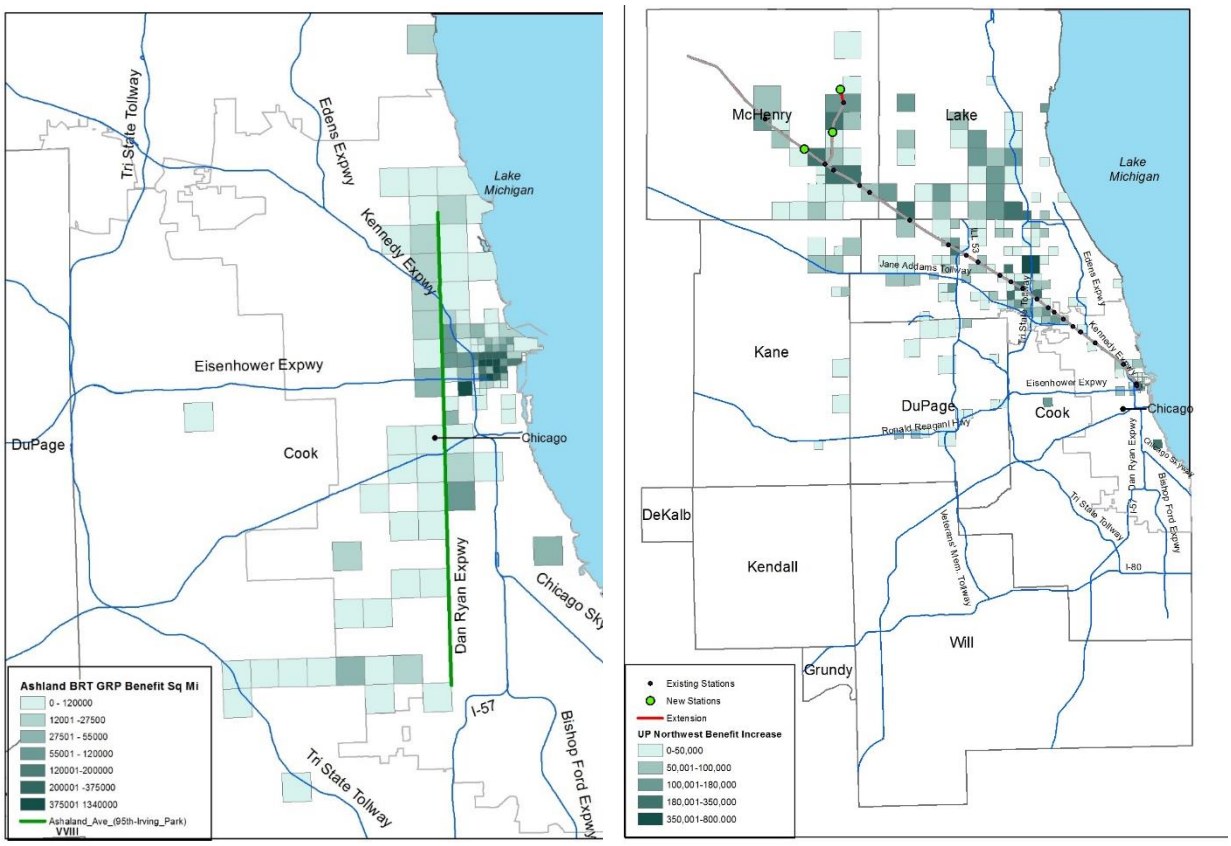
To translate this into economic output, for each O-D pair, the travel time is put into the formula for employment share sensitivity to commute time (one of the 6 versions) for the build and no-build conditions. If the travel time decreases, a greater share of a residential zone's workers would be attracted to working in an employment zone. The potential workers for each employment zone from all zones containing households was summed, and then the resulting values for all employment zones were summed.

$$\Delta Y = \sum_i \sum_k \left(\frac{S_b}{S_{nb}} - 1\right) \mu_k \, w_k Z E_{i,k}$$

In this formula, S_{nb} is the share of workers in all residence zones who work in an employment zone i in the no-build condition, S_b is the share who potentially would work in employment zone i given improved commute times, and the other symbols are as defined previously. The elasticity of productivity was applied to the ratio of potential workers with the project and without the project to translate the increase in labor supply into an increase in economic output.

The results of analyzing two projects – Ashland Bus Rapid Transit and the Union Pacific Northwest Improvements – are shown in Figure A11. As expected, increased economic output tends to be clustered most near the project itself because travel time savings are greatest there – improvements tend to "wash out" further away from the project. But the results also depend on the industry mix and the existing output per worker in the area as well as the number of employees nearby.

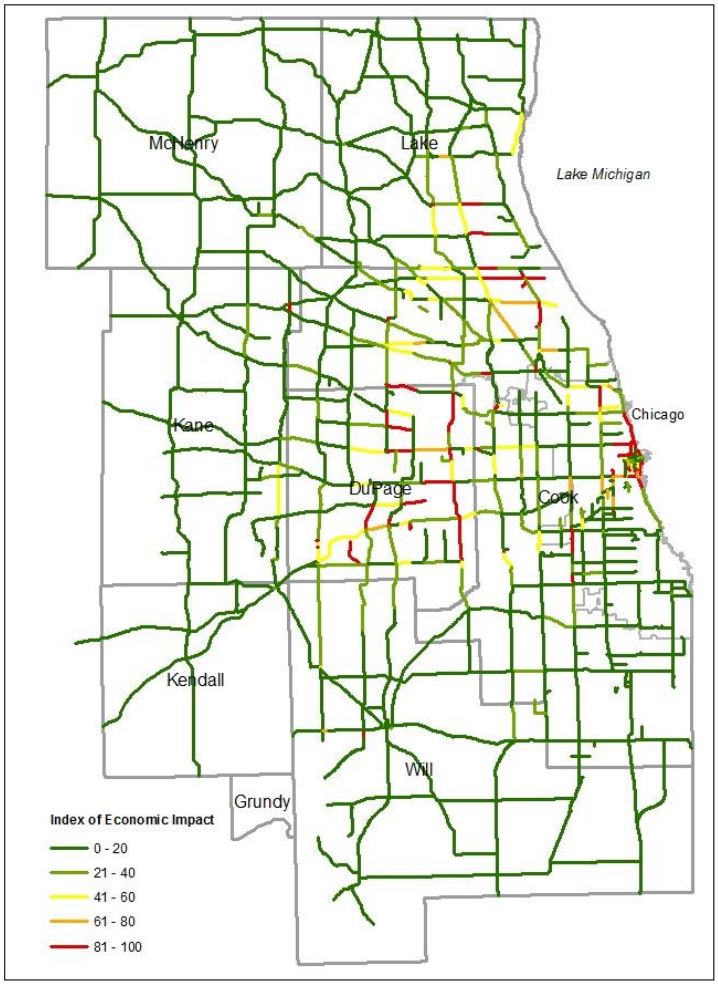
Figure A11. Example economic impacts for Ashland BRT (left) and UP-NW (right)



Source: CMAP analysis of STOPS model outputs.

Since arterial projects were not modeled directly, instead the economic impacts of added capacity were modeled indirectly based on a network analysis. All segments of the NHS were coded in the CMAP travel demand model with a 10-percent increase in capacity, then the traffic assignment portion of the model was run for each segment sequentially. The resulting changes in zone-to-zone travel times within the travelshed of that segment were then used to estimate economic impact as described above. The economic impact for each segment was then converted to a 0 – 100 proportional score and mapped as in Figure A12. Individual RSPs were evaluated by overlaying the proposed project. New arterials were scored based on the parallel routes.

Figure A12. Economic impact network scoring for arterial projects.



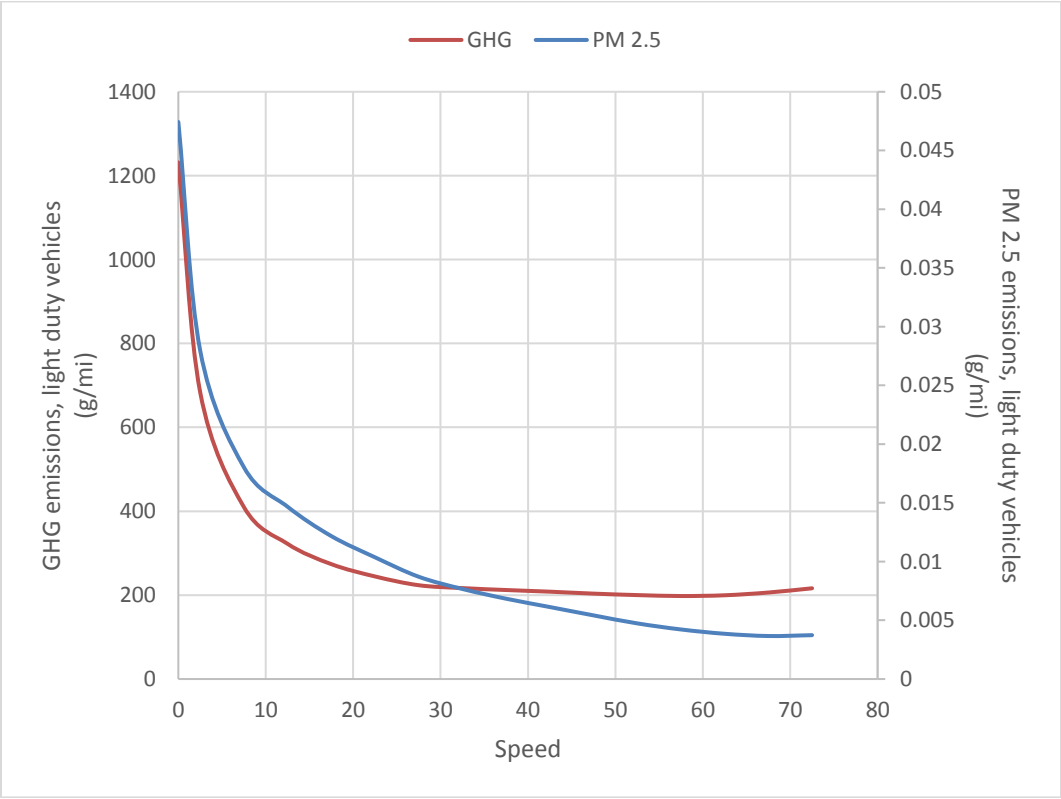
In general, the technique provides a reasonable way to estimate the comparative economic impacts of candidate transportation projects by their effects on labor productivity that ties well to CMAP's policy work in industry clustering. It does not capture benefits to shippers, the benefits of having a larger customer base within a certain area, or the macroeconomic effects of reduced household and business transportation costs. In project evaluations for GO TO 2040,

CMAP had used the commercial economic impact software TREDIS, which does attempt to account for these additional benefits. As a result, economic impact estimates for projects in ON TO 2050 are considered partial estimates and are generally smaller than estimated in GO TO 2040.

Greenhouse gas and particulate matter emissions

Greenhouse gas and particulate matter emissions estimates are based on changes in regional VMT and vehicle speed caused by the project. The VMT change is multiplied by an emissions factor for vehicles in grams per mile derived from the US Environmental Protection Agency's Motor Vehicle Emissions Simulator (MOVES) model, which is the model used in air quality conformity analysis. The GHG emissions reduction benefit of reducing VMT depends on the speed of the vehicles comprising the eliminated VMT; a chart depicting the influence of speed on emissions rates is shown below.

Figure A13. GHG and PM2.5 emissions rates by speed



Source: Rate table developed by CMAP from U.S. EPA MOVES model.

For highway projects, the CMAP travel model is used to tabulate VMT by speed bin and vehicle type, then VMT is multiplied by the appropriate emissions factor from a rate table. CMAP applied this method to estimate the effect of highway and arterial projects on PM 2.5 emissions within excluded communities and the region as a whole. For transit projects, the VMT reduction is multiplied by the emissions factor for light duty vehicles. Because STOPS does not

model highway network effects, auto speed changes resulting from a transit project are unknown. Thus, for the regionally significant project evaluation, vehicle speed is assumed to be 15 mph for projects in the City of Chicago and 20 mph for projects in suburban locations, which are the same assumptions used in evaluating projects in CMAP's Congestion Mitigation and Air Quality Improvement program.

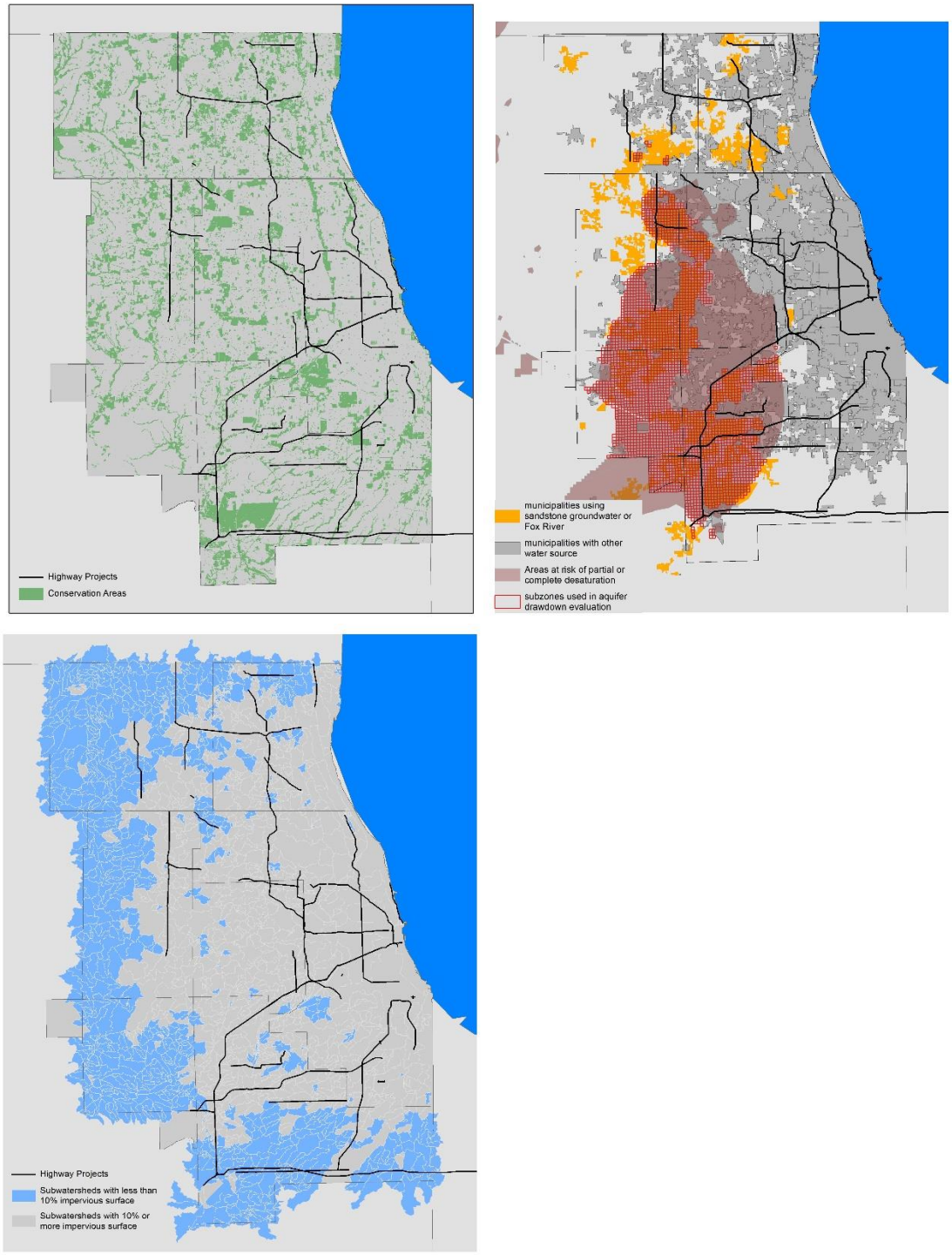
Natural resource impact

To estimate the impact of transportation projects on critical natural resources, CMAP calculates the potential spinoff household and employment development caused by changing accessibility. This information is used to estimate the potential additional impervious surface caused by the project. This does not include the project itself. CMAP then compares the location of new development with important natural resources, including conservation areas, high quality watersheds, and aquifers experiencing unsustainable rates of groundwater drawdown, areas identified as the Conservation Areas Layer.

CMAP uses the regional travel demand model to estimate a project's potential impact to the transportation network; specifically the change in the relative accessibility of each model subzone, quarter-section sized geographies that CMAP uses for household and employment forecasting. For each project, the difference in composite transit and auto commute travel costs between build and no-build is calculated for each zone-to-zone trip interchange. The logsum of these costs was then calculated, which serves as the measure of accessibility. The probability of household change was based on the change in cost logsums. For all projects, the ON TO 2050 draft household and employment forecasts for 2050 are the no build forecast. The accessibility is increased by adding the project to the network to represent the build condition. The resulting probability of increase in households is applied to the ON TO 2050 households or employment. The difference between build and no build households is included in a GIS file for comparison with conservation areas and aquifers at risk of partial or complete desaturation.

Measures of impervious cover change are a proxy measure of water pollution, erosion, and the urban heat island effect. Impervious surface creation is estimated from a subzone-level statistical relationship between imperviousness in the 2006 National Land Cover Dataset and the density of households and jobs. This statistical relationship is applied to the change in potential households and jobs in 2050 resulting from the project's accessibility improvement, as previously described. The total acres of impervious surface created as a result of each project is tallied, as is the number of acres of impervious surface created in high quality sub-watersheds, those with less than 10% existing impervious cover.

Figure A14. Natural resource impact layers used in project evaluation



Source: Chicago Metropolitan Agency for Planning.

Freight impact

The freight impact measure captures potential positive and negative impacts on the region's freight capacity. For highway projects, we consider whether the project improves the National Highway Freight System (including proposed Critical Urban Freight Corridors), the truck volume on the highway to be improved, and whether the highway improvement is on a Class I/Class II designated truck route. For transit projects, we considered the implementation of CREATE, operations or infrastructure improvements on rail lines with substantial freight use (more than 12 freight trains per day), and how the project might potentially increase or decrease freight-passenger conflicts on the region's rail system. For both transit and highway projects, the benefits to freight are rated on a -25 to 100 scale, with -25 representing potential disbenefits and 100 representing significant improvements to freight movement.