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MEMORANDUM

To: **Regional Transportation Operations Coalition**

From: CMAP Staff

Date: June 15, 2017

Re: Review of the FFY 2018-2022 CMAQ Project Applications related to Traffic Flow Improvements

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As part of the FFY 2018-2022 Congestion Mitigation and Air Quality Improvement program development process, CMAP staff is seeking feedback from the RTOC members on the traffic flow improvement projects submitted and on the project rankings developed by staff, including the air quality rankings. The feedback can include input on technical aspects of the projects, particularly whether there are any "fatal flaws," as well as qualitative information not captured in the project rankings. Information collected from the RTOC participants will be used to refine the staff-recommended program for the Project Selection Committee to consider on July 20th.

To aid in reviewing the applications, several pieces of information are being provided.

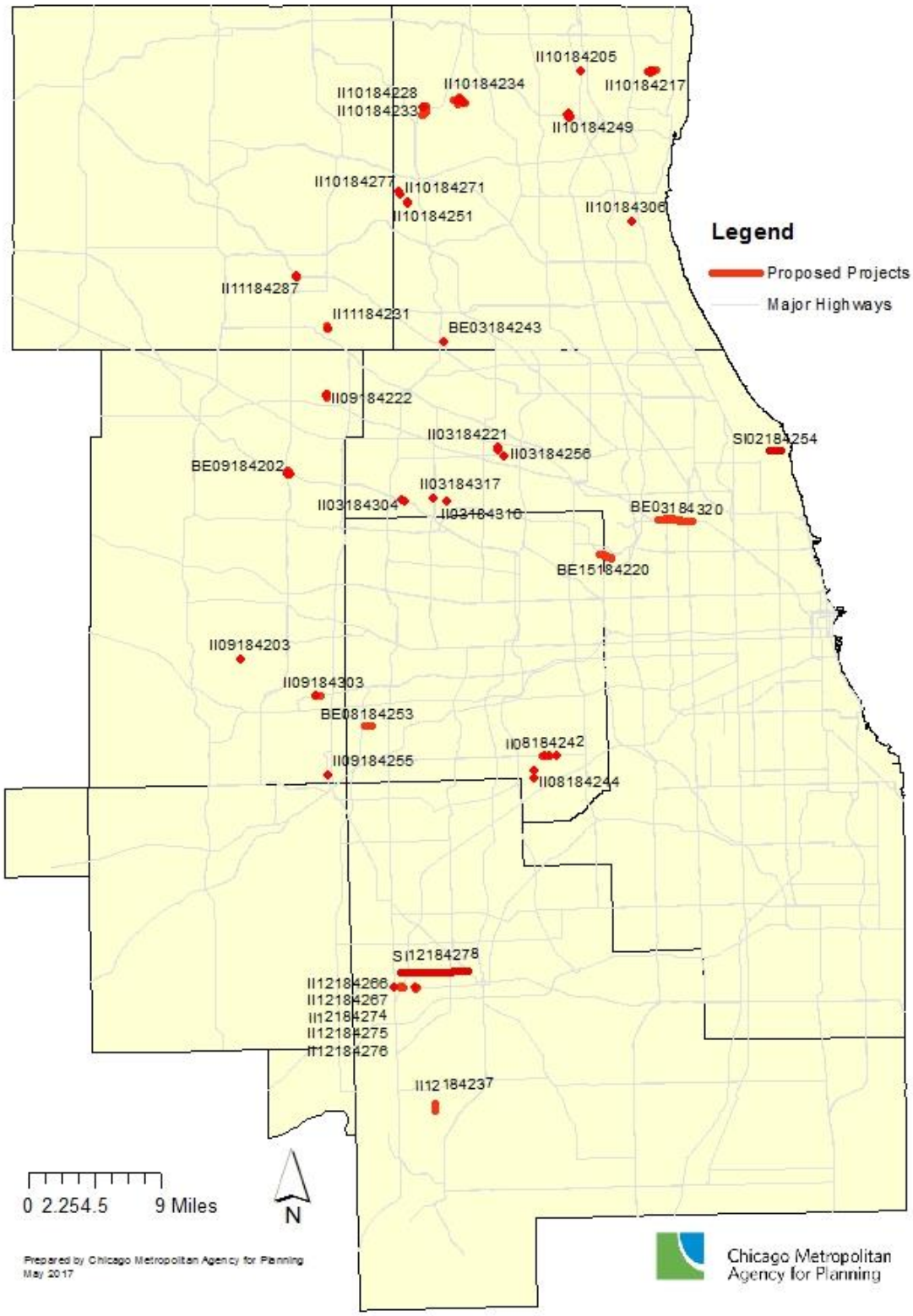
1. A description of the CMAQ project ranking methodology
2. A descriptive summary of the projects and rankings sorted by cost per kilogram of volatile organic compounds eliminated.

To view a full project application, visit the **CMAQ/TAP Program Development** webpage or the **eTIP Project Report** sorted by CMAQ project ID. CMAP staff requests that RTOC members be prepared to give their feedback at the coalition's June 20th meeting. Feedback can also be given to staff in writing by sending an email to Doug Ferguson, dferguson@cmap.illinois.gov.

Overview of FFY 18-22 Highway Projects

For this CMAQ cycle, 105 applications were received. Of these, 40 are highway-focused (five bottleneck eliminations, 29 intersection improvements, four signal interconnect projects, and two other projects), coming to approximately $214 million. The locations of the projects can be seen in the map in Figure 1.

Figure 1. Locations of FFY 18-22 CMAQ highway projects



CMAQ Project Ranking Process

The primary consideration for CMAQ projects is the cost-effectiveness of their air emissions reductions. Additional criteria are also taken into consideration when evaluating projects for potential funding. These are referred to as Transportation Impact Criteria and are scored on a 30-point scale by project type category. The Transportation Impact Criteria and their weights are as follows:

Project type	**Criteria and Weights**			
Highway	Reliability 15	Safety 5	On CMP* network 5	Transit Benefit 5
Transit	Ridership 15	Reliability (transit service) or asset condition (transit facilities) 15		
Bicycle	Safety & attractiveness 10	Transit accessibility 10	Facility connectivity 10	
Direct Emissions Reduction	Benefits sensitive population 20	Annual health benefits 5	Improves public fleets 5	

Projects are given additional consideration equal to another 10 points if they meet certain Regional Priorities:

1. Project is a component of a GO TO 2040 major capital project.
2. Project is for parking management, including parking pricing.
3. The zoning and urban design requirements in the area around a proposed transit project are supportive of transit.

Air Quality Cost-Effectiveness

The cost-effectiveness of emissions reductions for intersection improvements is based on the speed change associated with the project, with higher speeds associated with lower emissions rates per mile traveled. Speed change for the intersection improvement projects was estimated by CMAP staff using microsimulation software. The cost-effectiveness of bottleneck eliminations is based on the sponsor's estimate of delay reduced by the project or the reduction in VMT from out of direction travel, verified by CMAP staff, with the exception that CMAP staff computed the benefits of the City of Naperville and Kane County projects by microsimulation. Speed change for the signal interconnect projects was estimated by CMAP staff using accepted benefits found from the implementation of interconnected signals. Emissions reductions are computed using future emissions rates as a function of speed estimated from the Motor Vehicle Emission Simulator (MOVES) software.

All cost-effectiveness values are annualized by multiplying by the capital recovery factor assuming a 3% discount rate. An air quality cost-effectiveness score is generated by taking 60 as

the maximum (90 for projects classified as "other") and scaling the project scores so that a middle score of 30 corresponds to the median cost-effectiveness of the projects submitted.

Travel Time Reliability

A project's ability to address travel time reliability is evaluated with a quantitative and a qualitative component. The quantitative portion is based on the planning time index (95th percentile travel time divided by free flow travel time) and has a maximum of **10 points**. The score is calculated based on the percentile shown in the middle column in the table below. Points are assigned for each project as follows:

Maximum Approach PTI*	Percentile	Score
<= 1.40	0 - 50th	2
1.41 to 1.81	51st to 75th	4
1.82 to 2.55	76th to 90th	6
2.56 to 3.35	91st to 95th	8
3.36 and greater	>95th	10

* Maximum corridor PTI for signal interconnects and for bottleneck eliminations; maximum intersection leg PTI for intersection improvements.

The qualitative dimension of the score has a maximum of **5 points** and is developed by determining whether the project has any of the following characteristics or helps implement any of the following as part of a larger program:

Systematic Improvements	**Score**
Integrated Corridor Management	5
Work zone management (traveler information improvements)	5
Truck travel information systems	4
Strategies to improve transit on-time performance	4
Ramp metering	4
Road weather management systems	2
Special event management	3
Traffic signal interconnect	4
Adaptive signal control	5
Spot improvements:	
Highway-rail grade separation with more than 10K AADT and more than 10K annual minutes of delay lasting > 10 minutes	5
Implementation of effective crash reduction strategy as part of highway improvement	3
Highway-rail grade separation in ICC top 20 delay list	3
Highway-rail grade separation with more than 5K AADT and >5K annual minutes of delays lasting > 10 minutes	2
Implementation of an access management strategy	2
Other highway-rail grade separation	1

Incident Detection:	
Traffic Management Center (TMC) to TMC Communications	4
Computer-aided dispatch (911 call center) to (TMC) communications	4
Extension or improvement of real-time traffic surveillance on regional expressways and tollways, including video and detectors	3
Integration of real-time probe data into incident detection procedures	3
Establishment of detector health program	3
Incident Response:	
Expansion of response operations capabilities (e.g., minutemen)	5
Dispatch improvements, including center-to-operator and supervisor-to-operator communications (including supervisor-bus communications)	4
Response equipment (e.g., minuteman vehicles)	4
Incident Recovery:	
Expediting coroner's/medical examiner's accident investigation process	5
Dynamic message signs (DMS, multiple, including arterial DMS)	3
Incident-responsive ramp meters	3
Speed Management Systems	2
On-scene communication, coordination, and cooperation	2
Development and improvement of highway closure detour routes	2

Safety

Safety is a consideration for all highway projects, so if a project addresses a location with significant safety problems, it should be treated as a higher funding priority, other things being equal. Higher crash rates also are associated with nonrecurring congestion. Thus, a proposal receives **5** points if the project addresses an IDOT 5 percent report location (local or state system) and **0** if it does not.

Congestion Management Process Highway System

The regional Congestion Management Process (CMP) has identified a set of roadways on which it is particularly critical to minimize congestion. The score is **10** if the project is on the CMP network and **0** if not.

Benefiting Transit Service

In an effort to encourage highway improvements that can also benefit transit, points will be awarded to projects that benefit bus or rail service. The score is 5 if the project has existing bus service that is along the highway improvement or the highway improvement also provides access to a rail station.

Project Rankings and Analysis - Traffic Flow Improvements

	CMAQ ID	Project	Project Summary	Project Total Cost	CMAQ Request	Air Quality		Transportation Impact Criteria				Regional Priority	Composite Priority Index
						Annualized $ per Kg VOC Eliminated	AQ Cost Effectiveness Score	Travel Time Reliability Score	CMP Score	Safety Score	Transit Benefit		
1	SI08184245	DuPage Co DOT-Central Signal System Expansion 1	Add/interconnect 75 traffic signals and 34 PTZ cameras to existing DuPage County and City of Naperville Transportation Management Center networks; modernization of traffic signal hardware and software to support/prepare for future transit signal priority and connected vehicle technology, at the arterial and collector road network level.	$ 3,128,820	$ 2,503,056	$272	57.8	10	5	0	5	0	77.8
2	SI08184247	DuPage Co DOT-Central Signal System Expansion 2	Add/interconnect 22 traffic signals and 7 PTZ cameras to existing DuPage County and City of Naperville Transportation Management Center networks; modernization of traffic signal hardware and software to support/prepare for future transit signal priority and connected vehicle technology, at the arterial and collector road network level.	$ 1,315,429	$ 1,052,343	$706	54.6	11	0	0	5	0	70.6
3	SI12184278	Joliet-Black Road Traffic Signal Interconnection Project	Traffic signal interconnects of nine signalized intersections along Black Road between Raynor Avenue and Bronk Road in the City of Joliet.	$ 1,200,000	$ 904,800	$778	54.0	10	0	5	0	0	69.0
4	OT01184295	CDOT-Chicago Citywide Wireless Signal Interconnect	Install wireless modems at 2012 signals for interconnected citywide grid.	$ 14,330,000	$ 11,464,000	$821	80.6	-	-	-	-	-	80.6
5	BE03184320	IDOT-I-90 WB Improvements from Ill 43 to I-190	Add Auxiliary Lanes, Ramp Repair, Resurfacing (3R), Retaining Wall, Drainage, Lighting, Signing (New), Resurfacing (3P), ADA Improvements, Noise Barriers	$ 44,938,000	$ 31,746,400	$1,471	49.2	15	5	0	5	10	84.2
6	II03184316	IDOT D1 Hwys-IL 19 (Irving Park Rd.) at Wise Rd.	Construction of dual left turn lanes along the west leg IL Rte 19 at Wise Road along with traffic signal modification, signing, pavement marking improvements, possible utility adjustments, and sidewalk and ADA ramp improvements. Sidewalks are proposed on the north side of IL Rte 19.	$ 1,918,000	$ 1,346,000	$1,944	46.2	6	0	0	0	0	52.2
7	OT13184307	IDOT D1 Hwys-IDOT Central Traffic Management System	Creation of a centralized traffic management system that would cover 90 traffic signals under the jurisdiction of IDOT and CCDOTH in the northwest section of Cook County.	$ 7,982,000	$ 6,386,000	$2,907	60.8	-	-	-	-	-	60.8
8	BE15184220	Cook Co DOTH-I-294 to and from Franklin Avenue/Green Street	Construction of new service ramps from I-294 to and from Franklin Avenue/Green Street, and intersection improvements at the service ramp terminals and Franklin Avenue/Green Street, Podlin Drive and Franklin Avenue, Dominic Court and Franklin Avenue, as well as County Line Road and Green Street. Add turn lanes, channelization, modernize traffic signal, new traffic signal, traffic signal synchronization, improved pedestrian facilities and new service ramps.	$ 31,225,020	$ 19,076,416	$3,952	35.2	9	5	0	5	10	64.2
9	II12184276	Joliet-Jefferson Street Intersection Safety and Congestion Reduction Project - US Route 52 & Houbolt Road (Location 5)	Add an eastbound right turn lane on US 52/Jefferson Street, and modify the northbound approach on Houbolt Road to the following lane configuration: left turn lane, left/through lane and a right turn lane. Traffic signal phasing on the northbound and southbound approaches would remain split phased because the north leg of the intersection has minimal traffic volumes and the signal phase is often skipped.	$ 861,770	$ 657,416	$4,078	34.6	11	5	0	5	0	55.6
10	II03184317	IDOT D1 Hwys-IL 19 (Irving Park Rd.) at Barrington Rd.	Constructing dual left turn lanes along the north and south legs of Barrington Road and right turn lane along west leg of IL Rte 19, along with traffic signal modification, signing, pavement marking improvements, possible utility adjustments, and sidewalk and ADA ramp improvements.	$ 3,071,000	$ 2,177,000	$4,785	31.5	6	0	5	5	0	47.5

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11	II09184255	Aurora-City of Aurora - Hill Avenue at Montgomery Road Intersection	Addition of dedicated right turn lanes and the lengthening of existing dedicated left turn lanes along Montgomery Road. Along Hill Avenue, dedicated left turn lanes are being lengthened, and an additional through lane in each direction at the intersection is proposed. Pedestrian accommodations included as a future phased implementation.	$ 5,441,500	$ 4,353,200	$5,717	27.8	6	0	0	5	0	38.8
12	II12184267	Joliet-Jefferson Street Intersection Safety and Congestion Reduction Project - US Route 52 & I-55 Southbound Ramps (Location 2)	Widen the ramp from southbound I-55 to US 52/Jefferson street approach to provide dual left turn and dual right turn lanes.	$ 2,695,700	$ 2,068,560	$6,151	26.2	11	5	0	5	0	47.2
13	BE09184202	Kane Co DOT-Randall Road at Weld Road/US 20	Construct new EB ramp from NB Randall Road at Weld Road to US 20, as well as reconfiguration of Randall Road SB north of bridge over US Rt. 20. This includes removal of the east leg of Weld Road at Randall Road and installation of a cul-de-sac terminus approximately 500 feet east of Randall Road. Signal phasing modifications included.	$ 6,801,553	$ 4,956,245	$6,219	26.0	13	5	5	0	0	49.0
14	II11184287	Crystal Lake-Intersection improvements at US Rte 14 and Virginia Rd	Modify intersection to add a left turn lane on Virginia Rd, add an eastbound right turn lane on US 14, add pedestrian/bicycle accommodations/paths.	$ 2,005,131	$ 1,450,505	$6,526	24.9	11	5	0	0	0	40.9
15	II10184217	Lake Co DOT-Wadsworth Road at Lewis Avenue Intersection Improvement	Add right turn lanes on Wadsworth Road at Lewis Avenue, increase left turn storage lengths, signal modernization, and potential access consolidation near the intersection. Construct new pedestrian and bicycle facilities along Wadsworth Road and Lewis Avenue connecting to the Robert McClory Bike Path.	$ 4,262,750	$ 2,596,940	$6,619	24.6	15	0	0	0	0	39.6
16	SI02184254	Evanston-Emerson Street Traffic Signal Modernization and Interconnect	Traffic signal modernization of four existing signals and installation of a signal interconnect to an existing interconnect.	$ 1,152,000	$ 838,000	$6,702	24.3	8	0	5	0	0	37.3
17	II03184304	IDOT D1 Hwys-US 20 at Oak Ave and at Bartlett Rd.	Intersection Improvement, Traffic Signal Modernization, Traffic Signal Interconnect	$ 3,123,000	$ 2,188,000	$9,260	17.2	15	5	5	0	0	42.2
18	II09184303	IDOT D1 Hwys-IL 56 at Hart/Mitchell Rd.	Intersection Improvement, Traffic Signal Modernization , Multi-use paths	$ 1,159,000	$ 808,000	$13,707	9.5	4	5	0	0	0	18.5
19	II12184266	Joliet-Jefferson Street Intersection Safety and Congestion Reduction Project - US Route 52 & IL Route 59 (Location 1)	Add right turn lanes on all four approaches, and dual left turns on the northbound and southbound approaches.	$ 6,391,615	$ 4,833,292	$14,173	8.9	15	5	0	5	0	33.9
20	II08184242	DuPage Co DOT-75th St. at Fairmount Avenue, at Fairview Avenue and at Exner Road/Williams Street including a bike path from Lyman Avenue to Fairview Avenue	The 75th Street intersections with Fairmount Avenue, Fairview Avenue and Exner Road / Williams Street will be improved to include additional or modified turning lanes. Signals will be modernized and a new bike path will be added.	$ 4,416,371	$ 3,396,920	$17,477	5.7	6	5	5	5	0	26.7
21	II12184274	Joliet-Jefferson Street Intersection Safety and Congestion Reduction Project - US Route 52 & I-55 Northbound Ramps (Location 3)	Provide a westbound right turn lane (auxiliary lane) between the I-55 northbound ramp and the east frontage road intersections.	$ 677,040	$ 501,632	$23,440	2.6	11	5	0	5	0	23.6
22	II09184203	Kane Co DOT-Bliss Main Fabyan Intersection	Realign Bliss Road at Main Street to create new 4 way intersection at Fabyan Parkway. Proposed intersection control is roundabout.	$ 12,581,103	$ 8,292,283	$29,813	1.1	2	0	5	0	0	8.1
23	II10184271	Lake Co DOT-Darrell Road at Dowell Road Intersection Improvement	Reconstruction of intersection of Darrell Road and Dowell Road as a roundabout, add shared-use path.	$ 4,688,394	$ 2,948,800	$52,740	0.0	2	0	0	0	0	2.0
24	II08184244	DuPage Co DOT-Lemont Road at 87th Street and at 83rd Street	The Lemont Road intersections with 87th Street and 83rd Street will be improved to include additional or modified turning lanes.	$ 5,697,367	$ 4,205,183	$57,999	0.0	8	0	5	0	0	13.0

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25	II12184237	Elwood-Village of Elwood - Elwood International Port Road Signalization Project	Install and interconnect two new traffic signals along Elwood International Port Road (EIP) at Mississippi Street and at Walter Strawn Drive to replace the all way stops to increase intersection efficiency and safety and decrease congestion.	$ 724,520	$ 36,515	$77,874	0.0	6	5	0	5	0	16.0
26	BE03184243	Barrington-Village of Barrington - US Route 14 Underpass	New Rail-Highway Grade Crossing Separation at CN/EJ&E Freight Rail Line.	$ 62,808,500	$ 34,926,800	$78,238	0.0	11	5	0	0	0	16.0
27	II10184306	IDOT D1 Hwys-IL 43 (Waukegan Rd.) at IL 176 (Rockland Rd.)	Intersection Reconstruction, Traffic Signal Modernization	$ 9,084,000	$ 6,451,000	$79,497	0.0	13	0	0	0	0	13.0
28	II09184222	Carpentersville-Main Street at Washington Street Roundabout	Reconstructing a four legged intersection to a single lane modern roundabout with ADA improvements. Improvement includes a bike path connection to the Fox River Trail.	$ 6,224,207	$ 4,491,300	$84,985	0.0	2	0	5	0	0	7.0
29	II10184234	Lake Co DOT-Fairfield Road at Monaville Road Intersection Improvement	Improve the safety and efficiency by installing a roundabout.	$ 3,013,162	$ 1,832,208	$105,567	0.0	4	0	0	0	0	4.0
30	II03184256	Schaumburg-Village of Schaumburg - National Parkway at American Lane Roundabout	Convert a multi-lane all way stop to a single lane modern roundabout at National Parkway and American Lane, along with bicycle and pedestrian improvements.	$ 3,246,456	$ 2,485,164	$127,820	0.0	2	0	0	5	0	7.0
31	II10184205	Lake Co DOT-Wadsworth Road at Dilleys Road Roundabout	Reconstruct the existing two-way stop controlled intersection with a roundabout.	$ 4,627,696	$ 3,034,457	$156,618	0.0	7	0	5	0	0	12.0
32	II11184231	Algonquin-Roundabout at Main St, Cary Rd and Arrowhead Dr	Installation of a roundabout with a multi-use path and sidewalk.	$ 2,987,500	$ 1,914,000	$170,380	0.0	7	0	5	0	0	12.0
33	II10184249	Lake Co DOT-Hunt Club Road at IL Route 132 Intersection Improvements	Intersection channelization and pedestrian improvements	$ 5,156,784	$ 3,460,310	$185,744	0.0	11	5	5	5	0	26.0
34	II10184277	Lake Co DOT-Darrell Road at Fisher Road Intersection Improvement	Reconstruction of intersection of Darrell Road and Fisher Road as a roundabout, add shared-use path.	$ 4,935,394	$ 3,124,000	$190,220	0.0	2	0	0	0	0	2.0
35	BE08184253	Naperville-North Aurora Road Underpass Bottleneck Elimination	Reconstruct a section of North Aurora Road beneath the Canadian National Railway and replace the railroad bridge to eliminate a bottleneck restriction.	$ 36,265,000	$ 14,899,000	$203,073	0.0	10	5	0	0	0	15.0
36	II10184251	Lake Co DOT-Darrell Road at Case Road/Neville Road Intersection Improvement	Realign Case Road/Neville Road to create 4 legged intersection, construct roundabout, add shared-use path.	$ 6,889,394	$ 4,251,200	$231,605	0.0	2	0	0	0	0	2.0
37	II03184221	Schaumburg-Village of Schaumburg - Plum Grove Road Roundabouts at Remington Road and State Parkway	Reconstruct the existing all-way stop-controlled intersections with roundabouts and reconstruct existing shared-use path and existing sidewalk.	$ 5,724,753	$ 3,875,227	$732,629	0.0	2	0	0	0	0	2.0
38	II10184228	Lake Co DOT-IL 59 and Grand Avenue Intersection Improvement	Improve safety and traffic operations at the intersection of IL 59 and Grand Avenue/Washington Avenue by rerouting the east leg of the intersection to intersect at a new interconnected signalized intersection to the south, adding turn lanes, modernizing traffic signals, adding a shared use path, adding sidewalk connections, and providing ADA improvements.	$ 6,088,694	$ 3,856,872	No Benefit	0.0	10	0	0	0	0	10.0
39	II10184233	Lake Co DOT-Grand Avenue and IL 59 Intersection Improvement and Connection	Improve safety and traffic operations at the intersection of IL 59 and Grand Avenue/Washington Avenue by rerouting the east leg of the intersection to create a new interconnected signalized intersection to the south (allowing for improved signal phasing and efficiency), adding turn lanes, modernizing traffic signals, adding a shared use path, adding sidewalk connections, and providing ADA improvements while widening the south leg of IL 59 to provide a continuous three lane section.	$ 6,956,644	$ 4,291,648	No Benefit	0.0	10	0	0	0	0	10.0
40	II12184275	Joliet-Jefferson Street Intersection Safety and Congestion Reduction Project - US Route 52 & I-55 East Frontage Road (Location 4)	Add a northbound and southbound left turn lane and revise the left turn signal phasing from permissive only to permissive/protected on the East Frontage Road approaches.	$ 1,082,560	$ 818,048	No Benefit	0.0	11	5	0	5	0	21.0