

CMAP FY 2016-2020 CMAQ PROJECT APPLICATION TRANSIT PROJECTS

I. PROJECT IDENTIFICATION					
Project Sponsor Chicago Transit Authority			Contact Information – Name, Title, Agency, Address, Phone, e-mail (e-mail required)		
Other Agencies Participating In Project Chicago Department of Transportation			Laura Fedak 567 W. Lake Street Chgo, IL 60661 Phone 312-681-4108 Fax 312-681-4197 E-mail lfedak@transitchicago.com		
<input checked="" type="checkbox"/> New Project	<input type="checkbox"/> New Project		(Project Manager Jennifer Henry/Jonathan Czerwinski)		
<input type="checkbox"/> Existing CMAQ Project	<input type="checkbox"/> Existing CMAQ Project				
<input type="checkbox"/> Add CMAQ to Existing Project	<input type="checkbox"/> Add CMAQ to Existing Project				
II. PROJECT LOCATION					
<ul style="list-style-type: none"> • Projects not readily identified by location must provide a title on the last line of this section • Attach a map sufficient to accurately locate this project in a GIS system 					
Name Of Street Or Facility To Be Improved: Segments of Multiple bus routes; please see Phase I Final Report (attached) for initial concepts.			Marked Routes: Belmont Ave., 79th St., Chicago Ave., Ashland Ave., Western Ave.		
Project Limits: North/West Reference Point/Cross St/Intersection Multiple; please see Phase I Final Report (attached) for initial concepts.			Marked Routes: Belmont Ave., 79th St., Chicago Ave., Ashland Ave., Western Ave.		Municipality & County Chicago, Cook
Project Limits: South/East Reference Point/Cross St/Intersection Multiple; please see Phase I Final Report (attached) for initial concepts.			Marked Routes: Belmont Ave., 79th St., Chicago Ave., Ashland Ave., Western Ave.		Municipality & County Chicago, Cook
Other Project Location Information Or Project Title: Bus Slow Zone Elimination Program					
III. PROJECT FINANCING & CMAQ FUNDING REQUEST					
Please review the instructions .					
	Starting Federal Fiscal Year*	Total Phase Costs	(New) CMAQ Funds Requested	Other Federal Funds Including prior CMAQ awards	
				Fund Type	Fund Amount
Engineering Phase 1	2014	\$41,420	\$0		\$
Engineering Phase 2		\$	\$		\$
Right-Of-Way Acquisition		\$	\$		\$
Construction (Including Construction Engineering)		\$	\$		\$
Engineering (For Implementation Projects)		\$	\$		\$
Implementation	2016	\$24,958,580	\$20,000,000		\$
Alternatives Analysis		\$	\$		\$
*Phase must be accomplished within 3 years		\$25,000,000	\$20,000,000		
Total Project Costs					
Source Of Local Matching Funds		\$41,420 of CTA Operating Funds has been expended to complete the Phase I Report. An additional \$4,958,580 of CTA Operating Funds will be expended to reach the 20% local match of \$5,000,000.			
If Soft Matching Funds Are Intended To Be Used, Please Contact CMAP Staff.					

Have the Matching Funds Been Secured? (Provide Details):

Yes

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IV. PROJECT EMISSIONS BENEFIT DATA		
Project Type (Check One): <input type="checkbox"/> Facility Improvement <input checked="" type="checkbox"/> Service And Equipment <input type="checkbox"/> Access to Transit		
Auto Trips Eliminated Per Day (Round Trips): <u>2,026</u>		
In addition to the 2,026 auto trips eliminated, it is estimated that the project would result in aggregate travel time savings for existing bus riders of 3,184 hours/day.		
Length Of Auto Trips Eliminated (One-Way Miles To The Nearest Tenth): <u>Ashland Ave.: 2.8 miles; Western Ave.: 3.0 miles; Belmont Ave.: 2.2 miles; 79th St.: 2.2 miles; Chicago Ave. 1.9 miles</u>		
Auto Trips Diverted Per Day (Round Trips): <u>N/A</u>		
Line-Haul Length Of Diverted Trips (One-Way Miles To The Nearest Tenth): <u>N/A</u>		
Project Life (Years): <u>20</u>		
Provide basis for parameters used to estimate benefits (e.g., new ridership, auto occupancy, trip length. See instructions): Please see Bus Slow Zone Emissions Benefit Calculations (attached).		
SERVICE IMPROVEMENTS		
On-Time Performance - Route to be Improved: Percent on-time 2014: #9 Ashland Ave. - 61% #49 Western Ave. - 60% #77 Belmont Ave. - 64% #79 79 th St. - 60% #66 Chicago Ave. - 61%		
System-Wide: _____		
Reliability Enhancements (Check All that Apply):		
Rail <input type="checkbox"/> New Vehicles <input type="checkbox"/> Upgraded Switches <input type="checkbox"/> Upgraded Power Supply <input type="checkbox"/> Positive Train Control <input type="checkbox"/> Station Consolidation <input type="checkbox"/> Track Improvements <input type="checkbox"/> Reduction of Freight/Vehicle/Pedestrian Interference	Bus <input type="checkbox"/> New Vehicles <input checked="" type="checkbox"/> Queue Jump/Bypass Lanes <input checked="" type="checkbox"/> Off-board Fare Collection <input checked="" type="checkbox"/> Reduced Stops/Express Service <input type="checkbox"/> New Dispatching/Decision Support Systems <input checked="" type="checkbox"/> Passenger Vehicle Movement Restrictions	<input checked="" type="checkbox"/> Transit signal priority <input checked="" type="checkbox"/> Multi-Door Boarding with Off-board Fare Collection <input type="checkbox"/> Bus-on-Shoulders <input type="checkbox"/> Managed Lanes <input checked="" type="checkbox"/> Dedicated Bus Way <input checked="" type="checkbox"/> Far-side Stops <input checked="" type="checkbox"/> Bus Stop Upgrades <input checked="" type="checkbox"/> Near Level Boarding
FACILITIES/CAPITAL IMPROVEMENTS		
Existing Asset Condition (1-5 scale used by RTA): <u>N/A; the asset is the City of Chicago roadway network and is not evaluated under RTA's rating system.</u>		
Description and Location of Service (For Equipment Purchases): <u>N/A</u>		
Net Number Of New Vehicle Parking Spaces: 0 Net Number Of New Bicycle Parking Spaces: 0		
V. PROGRAM MANAGEMENT INFORMATION		
Is right-of-way acquisition required for this project? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
If so, has right-of-way been acquired? <input type="checkbox"/> Yes <input type="checkbox"/> No		
Engineering Status: <input type="checkbox"/> N.A <input type="checkbox"/> Not Begun <input checked="" type="checkbox"/> Engineering Underway (provide details below) <input type="checkbox"/> Engineering Completed Date completion is anticipated: <u>Phase I Report complete 2/3/2015</u>		

Estimated Completion Year/Start Of Service: **2018**

VI. PROJECT DESCRIPTION

Please describe project.

The proposed Bus Slow Zone Elimination Program is a set of targeted solutions for key chokepoints and problem areas along a network of five high ridership bus routes throughout the city. These five routes (#49, #9, #77, #79, #66) currently experience low speeds and unreliable travel times due to congestion and roadway conditions. Together they serve approximately 135,000 boardings with 1,700 trips per weekday. About half of this ridership occurs during peak hours, when congestion is at its worst. The project would improve transit service for these bus riders, resulting in an estimated aggregate transit travel time savings of 3,184 hours per day. It is also estimated to attract an additional 3,633 roundtrip transit rides through higher speeds and better reliability.

A Phase I analysis was conducted by CTA Planning staff in late 2014 and completed in January 2015. This included analysis of speed and reliability data to identify problem "slow zone" segments of the routes, and this was supplemented by field observations on all five routes to confirm the data and identify the source(s) of delay for each slow zone. CTA Planning staff then developed a set of potential solutions tailored specifically to each slow zone, depending on the street and traffic conditions impacting the performance of these routes.

The proposed solutions generally include one or more of the following components: short segments of dedicated bus lanes; queue jumps; traffic signal retiming; additional turn phase signals; TSP; improved striping and/or signage for traffic flow and parking restrictions; optimization of stop placement (farside/nearside); stop space standardization; and expedited boarding strategies for high volume stops. The scope of the request includes detailed engineering and implementation of these components, which would be performed in close coordination with CDOT.

Similar to CTA's strategy of eliminating rail slow zones, this project has the potential to be phased in as a series of incremental and cost-effective improvements. The approach would minimize impacts to general traffic, demonstrate successful strategies that can be scaled up and considered for other routes, and can be forwarded even under constrained fiscal conditions. As service is improved and ridership grows, additional improvements can be added.

CTA has reviewed the CMAQ scoring criteria and estimates that this project earns 38.5 points. This includes 15 points for ridership increase, 13.5 points for reliability (6 points for current on-time performance and 7.5 points for reliability-enhancing features), and 10 points for transit-supportive land use.

Estimation of Project Impacts/Benefits Description

It is estimated that the implementation of the proposed bus improvements will result in a ridership increase of 2,633 daily transit roundtrips across the five routes. This calculation is based on travel time elasticity factors related to the proposed bus improvements. Midpoint arc elasticity formulas were used in this calculation, which yielded similar results to other elasticity-based methods. Next, based on the occupancy figure of 1.3 occupants/auto vehicle, this 3.9% increase in daily roundtrip ridership corresponds to a diversion of 2,026 auto trips to transit. Additional findings include an aggregate average passenger travel time savings of 3,183.6 hours/day based on existing ridership and average trip distances for the five routes.

Based on existing CTA ridership (November 2014) and route characteristics, these impacts were calculated using industry standard estimation methods and metrics. Using bus travel time savings metrics published in TCRP Report 118 (Bus Rapid Transit Practitioners Guide, 2007), travel time savings directly related to the implementation of each of the proposed bus improvements (transit priority treatments, stop consolidation, and right-of-way improvements) were calculated for each route. Next, the aggregate of each improvement's impact on base ridership was estimated using travel time elasticities, allowing for an evaluation of changes in ridership and, ultimately, the number of auto trips diverted as a result of improved bus service for each of the five routes.

SUMMARY OF ESTIMATED IMPACTS/BENEFITS (see Calculation of Benefits tab for more details and calculations)

Route	Route Travel Time (min.)			Route speeds (mph)			Average passenger travel time (min.)*			Aggregate travel time savings (hours)**	Ridership			Auto trips diverted***
	Existing	w/ Improvements	% Change	Existing	w/ Improvements	% Change	Existing	w/ Improvements	Change		Existing	w/ Improvements	% Change	
49	103.4	87.8	-15.1%	9.4	11.1	17.8%	18.0	15.3	-2.7	1,191.9	13,165	14,054	6.8%	684
66	79.5	76.2	-4.1%	7.3	7.6	4.3%	13.8	13.3	-0.6	257.4	13,563	13,793	1.7%	177
77	70.8	67.0	-5.3%	9.7	10.2	5.6%	12.4	11.8	-0.7	273.2	12,370	12,644	2.2%	211
79	76.5	72.0	-5.9%	8.5	9.0	6.3%	14.0	13.1	-0.8	382.9	13,876	14,219	2.5%	264
9	109.3	94.2	-13.8%	9.6	11.1	16.1%	16.0	13.8	-2.2	1,078.2	14,628	15,525	6.1%	690
Total										3,183.6	67,602	70,235	3.9%	2,026

* Calculated using average trip distances (provided)

** Based on existing daily ridership for entire route

*** Based on new roundtrip transit riders added and 1.3 occupants/auto

EXISTING CONDITIONS

Route	Avg. Route Run Time (min.)	Route Length (mi.)	Average Speed (mph)	Total stops	Stops/mile	Base Ridership (daily Oct14)	Base Ridership (roundtrips)	Average Trip Length (mi.)	Trip length inc. walking approach (mi) ¹	Existing average travel time (min.)
49	103.4	16.3	9.4	123	7.5	8	26,329	13,165	2.8	18.0
66	79.5	9.6	7.3	72	7.5	7	27,128	13,563	1.7	13.8
77	70.8	11.4	9.7	86	7.5	8	24,740	12,370	2.0	12.4
79	76.5	10.9	8.5	96	8.8	9	27,752	13,876	2.2	14.0
9	109.3	17.4	9.6	142	8.2	8	29,256	14,628	2.6	16.0
TOTAL							135,203	67,602		

¹ Added 0.1 miles for walking approach on each end of all one way trips (0.2 miles total per trip, 0.4 miles per roundtrip. According to the 2014 Customer Satisfaction Survey, 88% of customers walk to get to their first CTA bus stop or train station, while 94% walk from their last CTA stop or train station to get to their final destination.

INPUTS/ASSUMPTIONS FOR BENEFITS/IMPACTS ESTIMATION

Travel time reduction from queue jump(s) (min/mile) [*]	0.1
Travel time reduction from TSP (%) reduction ^{**}	10%
Travel time reduction curb bus lanes (min/mile) ^{***}	1.1
Travel time elasticity factor ^{****}	-0.4
Occupants per Vehicle	1.3

^{*} TCRP Report 118 p. S-9 Exhibit S-2

^{**} TCRP Report 118 p. 4-32

^{***} TCRP Report 118 p. S-9 Exhibit S-2

^{****} TCRP Report 118 p. 3-19 Exhibit 3-19

BENEFITS/IMPACTS ESTIMATES (see inputs/assumptions)

Route	From Improvements (min.)			Route-wide			Average Passenger			Ridership Estimates			Trips Diverted	
	queue jumps [*]	TSP ^{**}	Bus Lanes ^{***}	Stops ^{****}	Travel Time Savings (min.)	New Travel Time (min.)	New Bus Speed (mph)	New average travel time (min.) [^]	Average travel time savings (min.)	Aggregate travel time savings (hrs.) ^{^^}	New Ridership (roundtrips) ^{^^}	New (added) Roundtrips		Ridership Change
49	1.6	10.3	1.8	1.9	15.6	87.8	11.1	15.3	2.7	1,191.9	14,054	889	6.8%	684
66	1.0	8.0	1.1	1.2	3.3	76.2	7.6	13.3	0.6	257.4	13,793	230	1.7%	177
77	1.1	7.1	1.3	1.4	3.8	67.0	10.2	11.8	0.7	273.2	12,644	274	2.2%	211
79	1.1	7.7	1.2	2.3	4.5	72.0	9.0	13.1	0.8	382.9	14,219	343	2.5%	264
9	1.7	10.9	1.9	0.5	15.1	94.2	11.1	13.8	2.2	1,078.2	15,525	897	6.1%	890
Total										3,183.6	70,235	2,633	3.9%	2,026

^{*} Assumes one queue jump/bypass per mile of corridor

^{**} Only counted for Ashland and Western

^{***} Average bus lane implementation of 10% of corridor

^{****} Represents consolidating stops to every 1/8 mile (from average of 1/8-mile). Assumes original average dwell time of 15 seconds and new dwell time of 20 seconds to account for additional passengers at boarding.

^{^^} Midpoint Arc Elasticity formula used

[^] Calculated using average trip distances (provided)

^{^^} Based on existing daily oneway ridership for entire route

^{^^^} Based on 1.3 occupants per vehicle assumption

CTA On-time Performance Metrics (DEFINITION)

On-time is defined as: the actual departure of a bus from a stop is no more than 1 minute early than the scheduled departure time and no more than 5 minutes late than the scheduled departure time for non-terminal stops, and no more than 2 minutes late than the scheduled departure time for terminal stops.

