

The Road Less Traveled: Exploring Congestion Pricing in Chicagoland



Table of Contents

What is Congestion Pricing	2
About the Study	6
Outreach	7
Modeling and Assumptions.....	13
Results	14
Final Thoughts	17

Problem Statement

Stuck in Traffic; a costly problem

In 2008, the Metropolitan Planning Council's *Moving at the Speed of Congestion* study found the region was losing at least \$7.3 billion every year in wasted time, fuel, and environmental damages — enough money to fund a Red Line southern extension on the CTA, the Elgin-O'Hare and West O'Hare Bypass, a new West Loop Transportation Center, and new lanes on Interstate 80. MPC's study also showed every driver spends an average of an extra two-and-a-half days stuck in traffic each year and the average "congestion tax" in the region is \$1.58¹ per person.

Across the country, people are tired of wasting time and money, sitting behind the wheel with no real alternatives to driving. Recognizing the severity of the problem, the U.S. Dept. of Transportation's Federal Highway Administration (FHWA) is funding projects to study the potential of new and innovative strategies to alleviate traffic congestion, improve the environment, and provide better mobility.

Congestion pricing is one of those strategies.

Figures and findings from *Moving at the Speed of Congestion*

\$7.3 billion

Cost of congestion to the Chicago region per year

87,000

Number of jobs the region would add by eliminating excess congestion

22%

Percent increase in peak travel time as a result of congested traffic conditions

ONLINE RESOURCE

For more information on this report, visit metroplanning.org/congestion

¹ Moving at the Speed of Congestion report, 2005 estimates.

A tool, a strategy, a solution

What is congestion pricing?

CONGESTION PRICING, a form of transportation demand management, is an efficient and equitable way to re-balance traffic conditions on the road. Successful only if complemented with enhanced transit, it creates incentives for people to travel during less congested times, encourages the use of carpooling and transit, and reduces the enormous waste resulting from traffic congestion. Congestion pricing has helped several U.S. and international cities address pressing mobility concerns and generate clean, healthy, and financially sustainable ways for people to get where they need to go. With a congestion pricing system in place to allow traffic to flow more efficiently, if only 5 percent of drivers change their travel behavior by either shifting mode or time of day, many more cars would be able to move through the same exact physical space in less time. In other words, congestion pricing delays the “tipping point” at which traffic gridlock becomes unbearable.

Congestion pricing is not a new concept. Flights during Thanksgiving weekend are more expensive than flights in October. Movie theaters charge more on a Friday night than on a Tuesday afternoon. Cell phone providers often give discounts during weeknights or on weekends. Electricity providers charge higher prices during peak periods like weekday afternoons, than weekend evenings. All of these are examples of managing demand. When traffic is at its worst, people need reliable choices.

Types of congestion pricing

Congestion pricing is not one size-fits-all. Cities around the world have used different congestion pricing techniques to better manage their traffic flow. For example, with **CORDON PRICING**, as in Stockholm and London, tolls are charged to enter a city center. With **VARIABLE PRICING**, as in Lee County, Fla., tolls vary by congestion. In systems with **FIXED PRICING**, tolls vary by time of day. Based on initial outreach around the Chicago region, the study team determined a “fixed” model would be most appropriate here.

Case study: SR-91 Express Lanes, California

SR-91 Express Lanes in Orange County, Calif., have been in operation since 1995. There are two express lanes in each direction, along a 10-mile corridor on SR-91's eight-lane highway. Connecting the major employment centers of Orange and Los Angeles counties to the residential developments of Riverside and San Bernardino counties, the SR-91 Express Lanes accommodate more than 40,000 vehicles every day. Express lanes are always operational, and tolls are adjusted on an hourly basis based on congestion. While tolls range anywhere from \$1.25 to \$10 (depending on traffic), the average driver pays \$3.13.

Studies have shown only half of the drivers using SR-91 Express Lanes do so more than once a week, and women are more likely to use the lanes than men. FHWA analysis showed during the afternoon rush hour, two express lanes carried almost the same number of drivers as the four "free" lanes because drivers were able to move faster. Those who choose the "free" lanes also benefit because the addition of four new lanes helped alleviate the traffic problems along the corridor. The express lanes can offer up to a 20-minute travel time savings and provide drivers an alternative when time is of the essence. As a result, SR-91 Express Lanes have gained popularity, with traffic volume on the lanes increasing by 67 percent in the first 10 years of operation, serving as a model for cities nationwide.



SR-91 express lanes, California

Photo: Michael Green

Case study: MnPass, Minnesota

In 2005, nine miles of carpool lanes along Minnesota's I-394 corridor were converted into toll lanes. The Minnesota Dept. of Transportation employed this strategy to maximize the use of underutilized carpool lanes in the region. The most recent data shows approximately 940,000 vehicles use I-394's toll lanes every year. Tolls are adjusted hourly based on the level of congestion, and the average toll cost drivers \$1 to \$4 during rush hour.

Since the implementation of the I-394 toll lanes, drivers can travel about 45 mph in the toll lanes nearly 95 percent of the time. Those in the non-tolled lanes also experienced an increase in speed by about 6 percent. More than 60 percent of residents living in the Twin Cities area support the program, and more than 90 percent of toll lane users maintain a very high level of satisfaction. Because of the success of I-394's conversion, the federal government provided Minnesota with a \$133 million grant to expand the program.



MnPass, Minnesota

Photo Courtesy of Minnesota Dept. of Transportation



About the study

IN 2007, FHWA awarded the Illinois Tollway a grant to study the potential of congestion pricing in the Chicago region. The Tollway selected **WILBUR SMITH ASSOCIATES, INC.**, as the technical consultant for the study. The **METROPOLITAN PLANNING COUNCIL (MPC)**, a policy research and advocacy nonprofit, joined the team to conduct public and stakeholder outreach. The study was guided by mayors and other elected officials from across the region, and monitored by the **CHICAGO METROPOLITAN AGENCY FOR PLANNING (CMAP)** Transportation Committee.

The primary goal of the study was to evaluate the potential of congestion pricing to improve mobility, and thereby the competitiveness of the Chicago metropolitan region.

Outreach

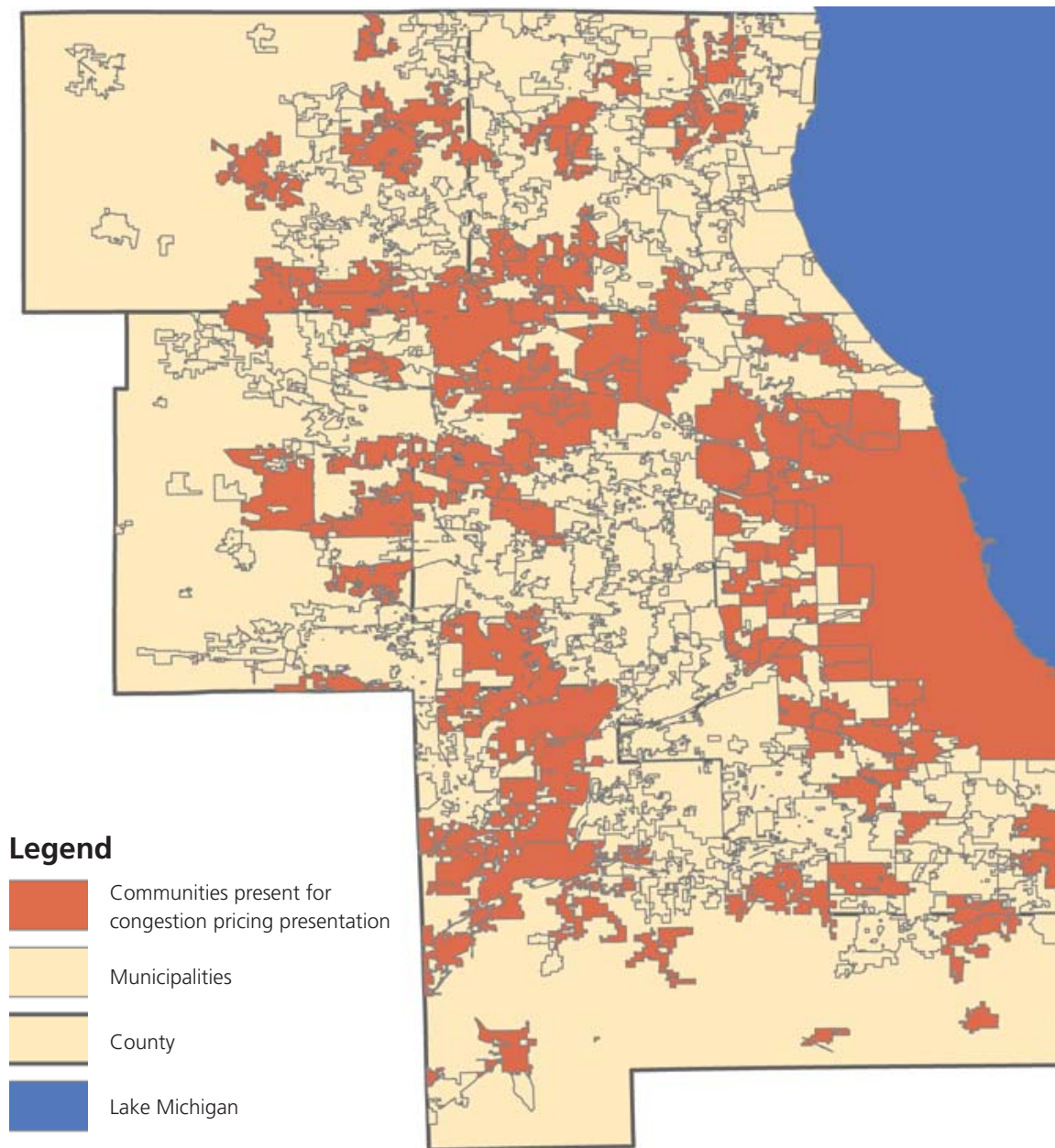
THE STUDY TEAM used several outreach tools to capture public perceptions, understand potential obstacles, and gauge acceptable parameters to guide and inform future implementation of congestion pricing.

Step one: “About the Study” briefings

As part of the initial outreach for the congestion pricing study, the study team made presentations to all nine councils of government (COGs). More than 350 elected officials, trustees, and municipal and county staff were engaged in the presentations, which highlighted best practices in congestion pricing strategies and discussed the goals of the regional study. The primary concerns expressed were providing an alternative to those who may not be able to afford the congestion pricing fee, and defining the impact congestion pricing on highways may have on local roads. Questions were also raised regarding the allocation and use of revenues.

In these initial presentations, the study team introduced local and regional stakeholders to the many types of demand-based pricing strategies used around the world.

Congestion pricing outreach efforts



Step two: Elected official and stakeholder workshops

The study team organized three workshops with 41 participants to discuss study parameters and develop overall goals of a congestion pricing system. They sought input from elected officials, COG representatives, and transportation agency professionals on the benefits and obstacles of introducing congestion pricing to the region.

The consensus among workshop participants was to establish a primary set of goals focused on congestion reduction, shift to transit, and increased travel options; revenue generation was deemed less important. Therefore, instead of maximizing the revenue potential of a congestion pricing system as part of the study, the team set parameters to maximize the number of vehicles that could travel through a corridor safely, quickly, and more efficiently.

Based on workshop outreach, the study team determined reducing the region's bottlenecks, providing new travel alternatives, and reinvesting any revenues into transit infrastructure and operations were the most important benefits of a congestion pricing system. Regional and local stakeholders were most concerned with the lack of current transportation options, affordability, public acceptance, and traffic diversion from highways to local roads.

The study team also asked participants a series of questions that would help limit the scope of the study. Because Chicagoland's traffic problems are regional in scope, participants overwhelmingly supported **consideration of tollways and Ill. Dept. of Transportation (IDOT) expressways** as a combined network to be studied. There was minimal support for having all lanes in the network under a congestion pricing system, but **strong support for one lane in either direction**. (Whether these would be 'new' or 'existing' lanes provoked significant discussion depending on current budget constraints.) Nearly 90 percent of elected officials **preferred a fixed schedule** (rather than one that fluctuates by traffic volumes) because they believed it would be an easier system for the general public to understand.

Step three: Focus groups

For the third piece of the outreach strategy, the study team conducted four focus groups, each with eight to ten participants, to assess current perceptions of congestion pricing and determine preferences for pricing strategies in the Chicago region.

Each focus group was comprised of a different segment of travelers: I-PASS Tollway users, cash Tollway users, infrequent Tollway users, and trucking professionals.

Passenger vehicles – automobile users (summary of three focus groups)

OBSERVATIONS:

- Almost all participants found roads to be more congested during peak travel periods and some found roads surprisingly congested during off-peak travel times.
- I-PASS customers are very satisfied with the program and could give only approximate estimates of their toll expenditures.
- Illinois Tollway routes are better maintained than IDOT expressways.
- The majority of participants were concerned about low-income people being able to afford congestion pricing fees.

SUGGESTIONS:

- Add signs along the roadways encouraging slower traffic and commercial vehicles to travel in the right lanes.
- Expand transit service to growing suburban areas and increase the frequency of existing Metra services.

FEEDBACK:

- Vaguely aware of congestion pricing strategies in other cities.
- Raising toll costs during peak periods would be perceived as “punishment” for those without flexible work schedules.
- Unsure if pricing would reduce congestion in the greater Chicago area, and should be tested first.
- Participants liked the idea of having a choice to reach a destination with an increased degree of on-time reliability.
- Revenue generated by congestion pricing should be used for roadway improvement and maintenance.



Trucking industry representatives (summary of one focus group)

OBSERVATIONS:

- Tollway and IDOT roadways are very congested, particularly during peak periods.
- Commercial vehicles' schedules are not determined by peak or off-peak travel flow.
- Driver schedules are dictated by delivery times and by noise ordinances that are regulated and enforced by local municipalities.
- Exit and entrance ramps are not capable of handling current traffic.
- Congestion is primarily a result of high volumes of automobile traffic and automobile driver behavior.

SUGGESTIONS:

- Add lanes on existing interstate and tollway systems to help alleviate congestion.
- Maintenance and construction should be carried out during later evening/earlier morning hours, before peak travel times begin.
- Loosen regulations on vehicle size, and add tollway and expressway facilities to allow vehicles to park while waiting for a determined delivery time.
- Eliminate municipal restrictions. Customers and local municipality ordinances frequently prohibit deliveries during non-peak hours.
- Support an increase in the gas tax, but oppose increase in tolls.

POTENTIAL OPTIONS:

- Strongly opposed to varied tolls depending on traffic conditions, and advocate for the simplest toll pricing structure possible to allow companies to invoice customers for toll costs.
- Prefer two lanes for congestion pricing in each direction instead of one to help maneuver around a traffic incident.
- Should not convert existing lanes but rather use pricing approach on new lanes.



Step four: Stated preference survey

Finally, the study team captured additional input from the general public through an internet-based, interactive questionnaire. This survey gathered information about which specific highways or tollways were most frequently used, time of travel, frequency of use, and perceptions of door-to-door travel time. The survey was posted in MPC's bi-weekly *Talking Transit* e-newsletter and on several organizational web sites, distributed to registered I-PASS users, and advertised via post-cards passed out throughout the system. A total of 1,976 respondents completed the survey.

Half of the respondents used a combination of tollway and expressway trips. Approximately 44 percent of respondents traveled on the system for their daily commutes to work and 19 percent for social or recreational trips. About half of the people who took the survey reported it takes more than an hour to arrive at their destinations. Not surprisingly, 70 percent of drivers are traveling alone. In general, people supported increased tolls if it would provide benefits such as reduced travel times or lessened congestion.

Stated Preference Survey Results

85%

I will pay an extra toll it assures me my travel won't be slowed by traffic conditions

40%

I'm able to access a sufficient number of transit routes from my neighborhood

82%

I support using tolls to pay for highway improvements that relieve congestion

97%

I'll use a toll route if the tolls are reasonable and I save time



Modeling and study assumptions

TO DETERMINE THE FEASIBILITY of congestion pricing along each of the corridors being analyzed, researchers assessed the demand along the corridor, forecasted increased demand, determined the amount motorists would be willing to pay to use congestion pricing lanes, and identified how congestion pricing would affect other travel lanes and corridors.

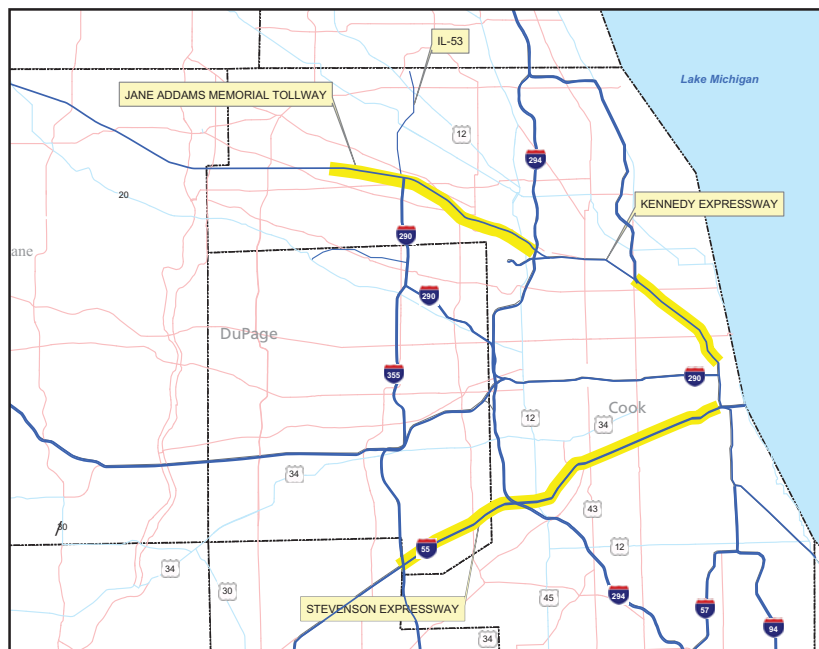
First stage of analysis

The study examined all tollways and IDOT expressways in the seven-county region. All segments were ranked based on 2007 weekday congestion¹, constructability, revenue potential, and peak period traffic management potential. Each of the 27 segments were scored and ranked. More than one-third of the segments analyzed in this first stage had a medium to high score, which meant that they were top candidates for the study.

The study team presented the preliminary results to the CMAP Transportation Committee at the end of 2009. At this meeting, representatives from around the region were asked to select three routes that would receive a second round of detailed analysis. After much discussion, the **I-55 STEVENSON EXPRESSWAY**, **I-90 JANE ADDAMS TOLLWAY**, and **I-90/94 KENNEDY REVERSIBLE LANES** advanced to the second round of the study.

Following the identification of the three routes to study, the project team met with affected councils of government to ensure consistent communication.

¹ When the study began, 2007 was the most recent full year of data available.



Key assumptions used to evaluate the corridors:

- Fixed pricing (price is known based on time of day.)
- Only passenger vehicles (no trucks) could use the lanes.
- Lanes could be accessed approximately every five miles.
- Speed limit would be 55 mph.
- Congestion pricing lanes would operate from 5 a.m. to 8 p.m., with no tolling on weekends.
- Congestion pricing lanes would consist of a single lane in each direction, separated by a painted "buffer zone."
- Tolls would be assessed for all users and collected electronically.
- Time frame of the study reflects 2020 volumes and roadway conditions.

Results

Impact of priced lane on travel times
2020 modeling results

Stevenson Expressway (I-55)

From I-355 to downtown Chicago

	Travel time, in 2020, no build	Travel time, with congestion priced lane	
		priced lane	free lane*
Inbound, A.M. Rush			
From I-355 To I-294 8.2 miles	12 minutes 42 mph	9 minutes 55 mph, \$1.40*	10 minutes 48 mph
From I-294 To Cicero 9.1 miles	12 minutes 45 mph	10 minutes 55 mph, \$2.28*	11.6 minutes 47 mph
From Cicero To I-90/94 5.7 miles	23 minutes 15 mph	6 minutes 55 mph, \$1.71*	9 minutes 38 mph
Outbound, P.M. Rush			
From I-355 To I-294 8.2 miles	11 minutes 43 mph	9 minutes 55 mph, \$1.65*	9.6 minutes 51 mph
From I-294 To Cicero 9.1 miles	12 minutes 47 mph	10 minutes 55 mph, \$1.37*	12 minutes 46 mph
From Cicero To I-90/94 5.7 miles	14 minutes 24 mph	6 minutes 55 mph, \$1.42*	8 minutes 42 mph

* Toll price

* Because a lane would be added to accommodate the congestion pricing lane, drivers in the "free" lanes also benefit.

The study assumed one lane would be built on the left side of the expressway in each direction of the I-55 corridor. This new lane (built on the current shoulder but still accommodating for safe design) would be priced to allow drivers to travel at 55 mph. Because travel conditions vary along the 23-mile corridor, the study examined three separate but contiguous sections: I-355 – I-294; I-294 – Cicero Ave.; and Cicero Ave. – I-90/94.

Diversions to local roads

The study found local roads would not experience increased traffic with congestion pricing lanes in place because the model accounts for new lanes being added to the Stevenson.

Transit impacts

The study found the congestion pricing lanes would have a negligible impact on transit usage in the corridor, in either gains or losses.

Stevenson Tollway revenue in 2020

From I-355 To I-294	\$6,981,000
+	
From I-294 To Cicero	\$9,511,000
+	
From Cicero To I-90/94	\$8,004,000
	<hr/>
	\$24,495,000

Annual toll revenues that would be generated by each section of the study area along the Stevenson Expressway. All toll revenues are estimated in 2010 dollars.

Impact of priced lane on travel times
2020 modeling results

Jane Addams Tollway (I-90)

From IL-31 and the Tri-State Tollway (I-294)

	Travel time, in 2020, no build	Travel time, with congestion priced lane	
		priced lane	regularly tolled*
Inbound, A.M. Rush			
From IL 31 To IL 53/ I-290 12 miles	59 minutes 12 mph	12 minutes 59 mph, \$3.27*	22.6 minutes 32 mph
From IL 53/I-290 To I-294 9.1 miles	10 minutes 57.6 mph	9 minutes 62 mph, \$2.62*	14 minutes 41 mph
Outbound, P.M. Rush			
From IL 31 To IL 53/ I-290 12 miles	40 minutes 18 mph	13 minutes 57 mph, \$2.06*	15 minutes 48 mph
From IL 53/I-290 To I-294 9.1 miles	11 minutes 51 mph	11 minutes 55 mph, \$2.91*	16 minutes 37 mph

* Toll price

* Because a lane would be added to accommodate the congestion pricing lane, drivers in the regularly tolled lanes also benefit.

The study assumed one lane would be built on the left side of the tollway in each direction of the I-90 corridor. This new lane would be priced to allow for drivers to travel between 55 and 62 mph. Because travel conditions vary along the 21.8-mile corridor, the study examined two separate but contiguous sections: IL-31 – IL53/I-290; and IL53/I-290 – I-294.

Diversions to local roads

The study found local roads would not experience increased traffic with congestion pricing lanes in place because the model accounts for new lanes being added to the Jane Addams Tollway.

Transit impacts

The study found the congestion pricing lanes would have a negligible impact on transit usage in the corridor, in either gains or losses.

Jane Addams Tollway revenue in 2020

From IL 31 To IL 53/ I-290
\$11,951,000

+
From IL 53/I-290 To I-294
\$17,305,000

\$29,256,000

Additional annual toll revenues that would be generated only by the congestion pricing lanes in each section of the study area along the Jane Addams Tollway. All toll revenues are estimated in 2010 dollars. Current Tollway revenue not reflected here.

Impact of priced lane on travel times
2020 modeling results

Kennedy Expressway Reversibles (I-90/94)

From I-94 to Ohio Street

	Travel time, in 2020, no build	Travel time, current reversibles lane	Travel time, with congestion priced lane	
			priced reversible lane	free lane*
Inbound, A.M. Rush				
From I-94 To Calif. Ave. 3.5 miles	7 minutes 28.3 mph	6 minutes 38.3 mph	4 minutes 53 mph, \$1.05*	8 minutes 25.5 mph
From Calif. Ave. To Ohio 3.8 miles	11 minutes 21.2 mph	7 minutes 34 mph	5 minutes 44 mph, \$1.14*	12 minutes 19 mph
Outbound, P.M. Rush				
From I-94 To Calif. Ave. 3.5 miles	9 minutes 23.5 mph	7 minutes 32 mph	4 minutes 55 mph, \$1.05*	10 minutes 21.2 mph
From Calif. Ave. To Ohio 3.8 miles	11 minutes 20.0 mph	9 minutes 25.5 mph	4.5 minutes 51 mph, \$1.14*	13 minutes 18 mph

* Toll price

The study took into account that both reversible lanes would be converted into congestion pricing lanes along 7.3 miles of the I-90/94 corridor. Separated by concrete barrier walls, the lanes would be priced to allow drivers to travel between 45 and 55 mph. The study examined two separate segments along the corridor based on access to the reversible lanes: I-94 – California Avenue; and California Avenue – Ohio Street.

Diversions to local roads

The study found local roads would experience a 6 percent increase in traffic with congestion pricing lanes in place during the morning rush hour and a 10 percent increase during the afternoon rush hour.

Transit impacts

The study found, with the congestion pricing lanes in place, approximately 500 of the diverted trips during both rush hours would shift to transit.

Kennedy Reversibles Toll revenues in 2020

From I-94 To California Ave.
\$9,450,000
+
From California Ave. To Ohio
\$13,690,000

\$23,140,000

Annual toll revenues that would be generated by each section of the study area along the Kennedy reversibles. All toll revenues are estimated in 2010 dollars.

Final thoughts



THE REGION'S CONGESTION problem is a costly and serious one — at least \$7.3 billion annually. Strategies that better manage existing infrastructure and guide policies for future infrastructure investment are essential if the region is to grow and prosper. The results of this study provide an analytical quantification of the impacts of congestion pricing on three of the region's most congested corridors. Aided by several stakeholder meetings, presentations, workshops, and a survey of nearly 2,000 tollway users, it became clear that both elected officials and residents in the Chicagoland region are looking for solutions to address pressing congestion challenges.

The data suggest that by better managing new highway capacity, the region may be able to curb its congestion problem and generate additional revenue that can be reinvested into the transportation network. While further study is needed before pursuing any implementation of congestion pricing, this study provides a comprehensive understanding of the potential effects of such a system in the region.

Illinois Tollway

The Illinois State Toll Highway Authority is dedicated to providing and promoting a safe and efficient system of toll supported highways while ensuring the highest possible level of service to our customers.

Metropolitan Planning Council

Since 1934, the Metropolitan Planning Council (MPC) has been dedicated to shaping a more sustainable and prosperous greater Chicago region. As an independent, nonprofit, nonpartisan organization, MPC serves communities and residents by developing, promoting and implementing solutions for sound regional growth.

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