

Congestion Pricing for New York City: Past Failure, Future Success?

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Author's note

This document was written as one chapter of a book-length Chinese-language report on congestion pricing progress around the globe, growing out of the International Forum on Economic Policies for Traffic Congestion and Vehicle Emissions Control in Hangzhou on Dec. 12-13, 2013, organized by the Urban Transport Research Center, China Academy of Transport Sciences, Ministry of Transport with the assistance of the Zhejiang Provincial Department of Transport and the Energy Foundation China, and hosted by the China Academy of Transport Sciences, Ministry of Transport and the Vehicle Emission Control Center, Ministry of Environmental Protection.

Companion chapters cover congestion pricing in Singapore, London, Stockholm and Milan. Accordingly, those cities' experiences are not discussed in detail in this document. The book's international focus further dictated a somewhat didactic treatment of New York City politics and geography, while also militating against in-depth descriptions of the transportation infrastructure improvements that are envisioned in the Move NY plan discussed here. Finally, the Hangzhou forum's emphasis on congestion charging required us to adopt that term in our narrative, notwithstanding that the Move NY plan is best characterized as an integrated package of measures to improve transportation in the New York region in which congestion charging is just one of many elements alongside toll reform, a taxi surcharge, new transit options, and investment to maintain roads, bridges and public transit in a state of good repair.

Information about the Move NY plan may be found at <http://iheartmoveny.org/>.

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The author presenting at the International Forum on Economic Policies for Traffic Congestion and Tailpipe Emissions in Hangzhou, China, on Dec. 12, 2013.



The author at a bike-share station in Guangzhou in March 2010, during a break from the International Symposium on Analysis and Countermeasures of Traffic Congestion in Urban Centers in that city, sponsored by South China University of Technology.



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1. Introduction

Of all the world's cities, New York would seem the best suited for congestion pricing. Consider these powerful "drivers" for tolling vehicle entry to the Manhattan Central Business District (CBD):

- Both the CBD and the roads and bridges leading to it are famously congested, costing businesses and commuters billions of dollars in time and uncertainty year in and year out.¹
- The CBD is clearly demarcated by natural and man-made boundaries, making tolling of entry and exit points straightforward technically and conceptually. (See New York City map on next page.)
- The "radial" configuration of commuter-rail and subway routes ensures that most trips by car to the CBD have viable transit alternatives. Indeed, over the course of an average weekday, four out of every five people entering the CBD already do so on a subway, commuter train or bus rather than in a car, truck or taxi.²
- Nevertheless, the city and regional public transportation network is chronically under-financed, making revenue provision a perennial concern.
- People's attraction to the CBD for commerce, entertainment or sheer human contact is so great, and many drivers' attachment to their cars is so strong, that most vehicle trips to the CBD will likely continue even in the face of a new toll, thus ensuring that congestion charging can generate significant revenue to invest in maintaining and upgrading the transport system.

These factors would appear to make congestion-charging of the Manhattan CBD a classic "win-win" proposition. With a congestion toll, drivers save valuable highway time, first as some car trips are "priced off" the roads, and again as investment of toll revenues to improve public transportation draws off more trips. Transit users gain as their rail, subway and bus trips are made faster and more reliable. Businesses benefit as New York solidifies its status as a "world city" and attracts economic activity.

2. The Bloomberg Congestion Pricing Attempt (2007-08)

These considerations motivated then-mayor Michael Bloomberg in 2007, when he unveiled a plan to charge an \$8.00 fee for each car trip entering the heart of Manhattan between 6 am and 6 pm on weekdays. The proposal, which was patterned after London's congestion charging scheme begun four years earlier, would have applied to vehicles entering Manhattan's central area via any of the four free bridges that cross the East River from Brooklyn and Queens, or by crossing 86th Street from northern Manhattan or the Bronx. Trips to the CBD via the two tunnels under the Hudson River from New Jersey and one tunnel each from Brooklyn and Queens, all of which were already tolled, wouldn't be additionally charged. Trips *within* the charging zone would be tolled at \$4.00, half the full rate, to ensure that Manhattan residents who drove on the district's jam-packed streets paid for adding to congestion.

¹ The city's premier business association, Partnership for New York City, placed the cost of traffic congestion in the New York City region at \$13 billion/yr in a 2006 report, "Growth or Gridlock? The Economic Case for Traffic Relief and Transit Improvement for a Greater New York." <www.pfnyc.org/reports/Growth%20or%20Gridlock.pdf>.

² See BTA spreadsheet, "Travel" tab. The BTA is summarized, and a Web link is provided for it, in the Appendix.

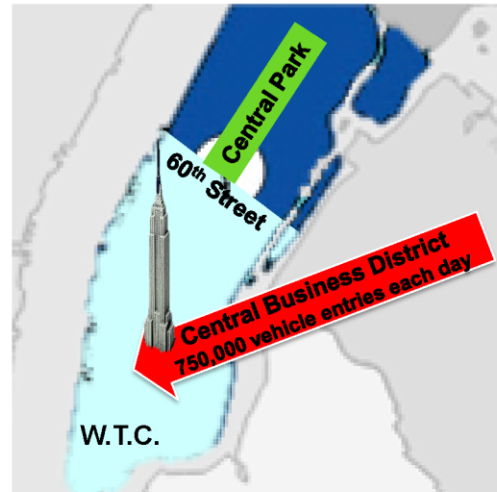
New York City Map

Populations

Manhattan: 1.6 million

New York City: 8.3 million

NYC Metro Region: 20 million



The Bloomberg plan was intended as a departure from past proposals to toll the East River bridges, none of which had won political approval. First, the Bloomberg plan would toll vehicles entering the CBD from the north as well as via the East River bridges, thus mitigating the sense of drivers from Brooklyn, Queens and Long Island that they were being singled out to solve what was actually a multi-directional congestion problem.³ Second, the plan would transact tolling largely via digital means, thus obviating the need for toll plazas and dispelling the idea that tolling would *add* to congestion and pollution by causing idling vehicles to queue at toll plazas.

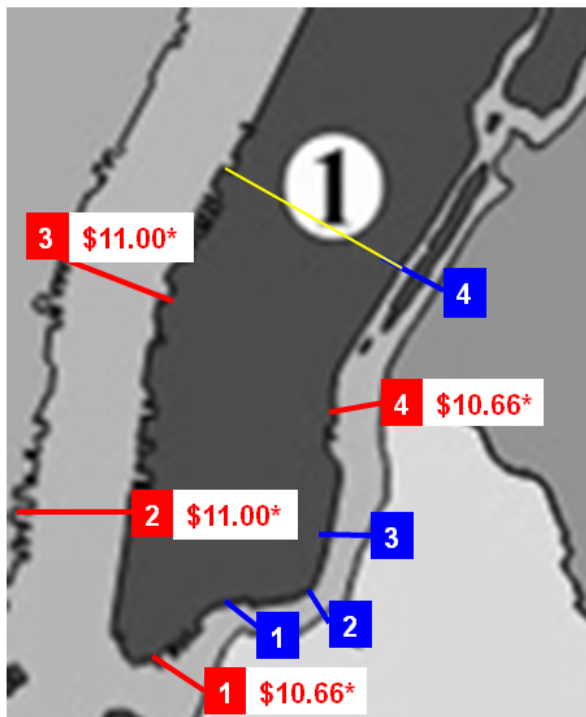
Rather, Mayor Bloomberg insisted, his toll plan would make New York City “greener” by curbing vehicular traffic and, thus, improving air quality and reducing carbon emissions. Indeed, the mayor made his congestion pricing plan the centerpiece of an ambitious set of environmental initiatives grouped under the rubric “PlaNYC” which he rolled out during Earth Day observances, in April 2007, at a time of heightened environmental awareness and concern. The title of the mayor’s PlaNYC report, “A Greener, Greater New York,” embodied his philosophy that the city had to become green in order for it to prosper

³ Motor vehicles enter the Manhattan CBD via three “portals,” with the East River bridges and tunnels accounting for 39 percent, the two Hudson River tunnels accounting for 13 percent, and the remaining 48 percent entering from the north. These figures are available in the BTA spreadsheet, “Hub-Bound” tab.

and grow.⁴ Moreover, Bloomberg was riding a tide of popularity and good feeling as a visionary yet business-minded mayor who was looking out for the city's — and the world's — long-term interests.

Yet the plan did not pass, and seven years later, New York City still has no congestion pricing. Instead it is saddled with what it has had almost as far back as the end of World War II: a toll patchwork in which most routes to the CBD are un-tolled while drivers pay ever-increasing tolls to use bridges in outlying parts of the city; a chronically underfunded public transportation system that struggles to pay for “state-of-good-repair” maintenance and sorely-needed upgrades; and endemic traffic congestion.⁵

Bridges & Tunnels to the CBD



Bridges (FREE)

1. Brooklyn Bridge
2. Manhattan Bridge
3. Williamsburg Bridge
4. Queensboro Bridge

Tunnels

1. Brooklyn Battery Tunnel
2. Holland Tunnel
3. Lincoln Tunnel
4. Queens Midtown Tunnel

** Fee is based on round-trip.*

Of late, these conditions have inspired advocates outside of government to develop a new proposal to embed congestion pricing within a more holistic “rebalancing” of the city’s byzantine toll system — an approach that, they hope, can win over many of the naysayers who derailed the 2007 plan. I’m a

⁴ The full PlaNYC report, “A Greener, Greater New York,” is available at http://nytelecom.vo.llnwd.net/o15/agencies/planyc2030/pdf/full_report_2007.pdf.

⁵ Compounding congestion in neighborhoods within or en route to the Central Business District is a phenomenon known as “toll shopping,” in which drivers detour around tolled entrances and gravitate instead toward free ones. This practice is pronounced among drivers of heavy-goods vehicles — the very traffic that should be minimized in the CBD — since their toll rates are especially high.

participant in that initiative and will describe it in Section 3, below. To set the table, let's summarize the factors that contributed to the defeat of Mayor Bloomberg's congestion pricing plan in 2007-08:

- New York City's municipal authority to impose congestion tolls is not settled in law. The Bloomberg administration was therefore forced to seek approval for its plan from the New York State Legislature, a more conservative, suburban-rural and automobile-oriented body than the New York City Council.
- Included in the mayor's initial plan was a network of nearly 400 tolling cameras within the CBD to charge car trips wholly within the charging zone. The intent was laudable, but the scheme's complexity undercut the elegance of tolling only the several dozen entrances to the CBD. Moreover, the cameras seemed invasive to some New Yorkers and contributed to a sense that congestion pricing was an alien intruder into the cityscape.
- The Bloomberg plan was further complicated by a host of exemptions: rebates for tolls paid "upstream" en route to the CBD, free passage for chauffeured "radio cars" used primarily by the affluent elites, and steep discounts for trucks that met low-emission standards, among others. Though each exception was meant to assuage an important constituency, the combination seemed to make the tolling scheme more convoluted and to convey a whiff of favoritism.
- Over the years, the intended recipient of the Bloomberg plan's net revenues, the Metropolitan Transportation Authority (MTA), had continually been derided as inefficient and incompetent by elements of the media and certain politicians, often the very officials whose budgetary decisions starved the authority of needed funds. This negative aura persisted even in the face of steady gains in ridership and reliability for the MTA's subways, buses and commuter rail lines. Much of the public didn't trust that the plan's prospective transit benefits would actually materialize.
- The very idea of tolling vehicular access to the Manhattan CBD fed a gnawing sense that the interests of the 80 percent of New Yorkers from the "outer boroughs" were being subverted to a scheme that would largely benefit "gilded" Manhattan. This was felt especially by residents of Brooklyn and Queens, the city's two most populous boroughs, whose representatives seemed bound by tradition to defend the "right" to drive into the CBD on the East River bridges without paying a toll.
- Closely connected to "borough resentment" was the notion that congestion pricing ran counter to New York's democratic grain by rationing car access to the CBD on the basis of ability to pay. The idea that rich drivers would have the public roads and bridges all to themselves quickly took hold and was never effectively rebutted.
- In retrospect, it may have been unwise to unveil the congestion pricing proposal at an Earth Day celebration. Shifting the city's transportation balance incrementally away from cars and toward transit was good enough for environmental-minded New Yorkers, without explicit green branding. But some car-dependent "outer-borough" and suburban residents with less-attuned environmental sensibilities reacted negatively to what appeared to be City Hall's green messaging. Moreover, the administration never quantified the prospective gains in air quality, undercutting not only its messaging but its overall credibility in selling the plan.
- Also working against congestion pricing was its novelty. Efforts to cite its success in Singapore, London and Stockholm fell flat among New Yorkers who jealously guard the idea of their city as

one-of-a-kind. Instead of picturing quieter and less-congested “upstream” streets and tolls collected electronically “at speed,” many residents envisaged traffic-jams at “toll booths” and around transit stops in outlying neighborhoods (the latter as CBD-bound drivers seeking to avoid the new toll cruised for parking). Machiavelli’s dictum that the inherent difficulty of imagining innovation’s fruits makes it hard to muster supporters applied dearly to this first-ever U.S. effort to rationalize vehicular access to a city through tolling.

- The city’s media culture, always eager for controversy, handed a megaphone, as it were, to detractors who played their moment in the limelight to the hilt. Incidental flaws were cast as fatal ones, and an innovative proposal intended to help New York grow and prosper became caricaturized as a cynical ploy by the billionaire mayor to crush hardworking drivers and squeeze the soul from the city.
- City officials blundered by failing to consult beforehand with the myriad “stakeholders” — civic leaders, labor unions, local business groups, motorist and trucker associations, and lesser elected officials — who shape public opinion and hold sway over state legislators who would vote on the plan. Especially for a novel idea such as congestion pricing, the lack of preparatory groundwork guaranteed that the initial reaction would be puzzlement rather than enthusiasm.

In July 2007, three months after the Bloomberg plan was made public, the state governor appointed a blue-ribbon study commission which in January 2008 recommended a half-dozen important changes. One was to move the charging zone’s northern boundary some 2 km south to the generally accepted northern boundary of the CBD, at 60th Street. Another change eliminated the intra-CBD toll and thus dispensed with the 400 cameras, but at a cost of reducing the toll “incidence” of Manhattan residents who were now seen as getting a free ride.

As the debate wore on, the plan never gained traction. The confluence of its problems came to have greater political weight than support from business, environmental and “good-government” constituencies. Moreover, the reduced impact on traffic was viewed skeptically, with the single-digit gains in travel speeds forecast within the CBD (and far lesser reductions outside it) dismissed as marginal. And in a classic instance of “aspiration” trumping direct self-interest, many among the city’s non-car-owning majority (55 percent of households) appeared to resent the *idea* of paying a toll to drive to the CBD more than they welcomed the promised dip in traffic and boost in transit service.

The Bloomberg proposal passed the City Council in March 2008, though not decisively and only after much arm-twisting by the mayor. In the same month, the plan lost momentum in the state capital when the governor resigned in a sex scandal that pushed congestion pricing into the shadows. In April, the powerful and cagy leader of the lower legislative house, claiming the bill lacked a majority, declined to bring the measure to a vote. Congestion pricing for New York City, and the mayor who championed it, had suffered a stinging defeat.⁶

⁶ For an excellent account of the genesis and demise of the Bloomberg plan, see “New York City’s Congestion Pricing Experience and Implications for Road Pricing Acceptance in the United States,” *Transport Policy* 17 (2010) 266-273, http://www.nyc.gov/html/dot/downloads/pdf/schaller_paper_2010trb.pdf. Its author, Bruce Schaller, a NYC Deputy Transportation Commissioner since 2007, participated in designing and advocating for the plan.

3. A New Traffic-Pricing Proposal: “Move NY”

That was six years ago. In the interim, a confederation of transportation planners, transit proponents and what have come to be called “livable streets” advocates have fashioned an alternative proposal. The new plan is variously known as the “Move NY” plan, for the coalition that is gathering support for it; the “Sam Schwartz” plan, for its progenitor, a former high-ranking city traffic engineer who is held in broad esteem in New York City; and the “fair plan” or “toll rebalancing plan,” because its most striking element is a wholesale reconfiguration of the city’s bridge and road tolling system to make it more equitable and efficient.

The plan’s proponents, of whom I am one, set as their fundamental precept that vehicles should be tolled most heavily on travel corridors that are badly congested and that also offer robust transit alternatives to driving; and that tolls should be lighter where congestion is less severe and where non-driving options aren’t so readily available. From the standpoint of political acceptability, it would also be essential that tolling’s costs and benefits be shared among the city’s five boroughs, between the city and its suburbs, and between transit riders and drivers.

Moreover, to make congestion charging appear less arbitrary and more a logical extension of policies already in place, the tolls and other plan features should use “default” values that duplicate current practice. The Move NY plan does precisely this by setting its proposed level for the CBD fee to match the \$5.33 toll (charged in both directions, i.e., \$10.66 round-trip) that drivers currently pay to enter the CBD on the two Metropolitan Transportation Authority tunnels under the East River from Brooklyn and Queens.

Moreover, since the MTA collects tolls on its bridges and tunnels 24 hours a day and on weekends as well as weekdays, the new congestion charge to enter (and exit) the CBD should also apply round-the-clock and every day of the week. Both features — the price, which, even adjusted for inflation, exceeds somewhat the \$8.00 round-trip toll in the Bloomberg plan, and, more importantly, “24-7” collection (rather than just 12 hours for 5 days) — have the important corollary benefit of maximizing toll revenue, which, as we shall see, is another linchpin of the Move NY plan.

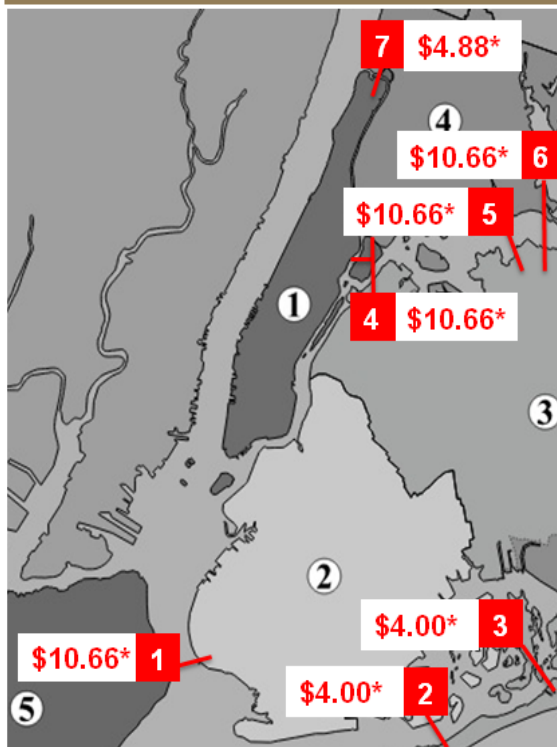
Here are the main elements of the Move NY plan (all results are derived from the BTA spreadsheet, which is discussed at length in the Appendix):

- *CBD toll* — All passenger vehicles will pay the same toll to enter and to exit the Manhattan Central Business District, \$5.33 in each direction, that is now charged on the MTA’s two tunnels under the East River between the CBD and Brooklyn and Queens.⁷ Commercial vehicles will pay more (according to the number of axles), but their toll will be limited to one round-trip per day in a concession to service vehicles making multiple daily trips. The toll will be charged every

⁷ The \$5.33 amount to be charged in each direction, and all toll figures in the text, pertains to trips by vehicles equipped with the regional digital toll-paying transponder known as E-ZPass. Non-equipped vehicles, which currently account for just 17 percent of tolled trips in and around New York City, pay either with cash at toll booths or via mail, and are surcharged \$2.17 per each one-way trip.

hour of the year. Accounting for toll attrition, which we estimate will remove from the roads one in six vehicle trips to the CBD, the new toll is expected to raise \$1,700 million per year.⁸

MTA Bridges (far from CBD)



1. Verrazano-Narrows Bridge
2. Marine Parkway-Gil Hodges Memorial Bridge
3. Cross Bay Veterans Memorial Bridge
4. Robert F. Kennedy-Triborough Bridge
5. Bronx-Whitestone Bridge
6. Throgs Neck Bridge
7. Henry Hudson Bridge

* Fee is based on round-trip.

- *Toll swap* — The MTA currently charges \$5.33 for travel in either direction on its four “major” bridges serving outlying parts of the city (one connecting Staten Island and Brooklyn, the other three connecting Queens and the Bronx, with one also having a spur to northern Manhattan, 5 km from the CBD).⁹ This toll will be reduced by \$2.50, under the Move NY plan. Analogous discounts will be applied to the lesser tolls on the MTA’s three “minor” bridges which also serve outlying precincts. These reductions will *reduce* current MTA toll collections by approximately

⁸ See BTA “Results” tab, Part 5, for estimate that vehicular trips to and through the CBD will fall by 17 percent; this figure is the result of an iterative calculation that incorporates the “rebound effect” by which improved vehicle speeds resulting from the initial drop in traffic re-attract some trips despite the toll. See pie chart below for breakout of the revenue components of the Move NY Plan; the same figures may be found in the BTA “Revenues” tab, though they are derived in two other tabs, “Motor Vs” and “Motor Vs Weekends,” each of which is more than 1,000 rows long, on account of the many “rebound” iterations required to reach equilibrium.

⁹ Actually, the Staten Island – Brooklyn span, known as the Verrazano-Narrows Bridge, departs from this pattern, charging the entire round-trip toll of \$10.66 westbound while eastbound passage is free. This anomaly contributes to the suboptimal “toll shopping” phenomenon mentioned in an earlier footnote.

\$600 million a year, although \$75 million of that lost revenue is expected to return as the toll reduction stimulates increased use of the MTA bridges.¹⁰

- *No change to tunnel tolls* — There are four vehicular tunnels to the CBD — two from Brooklyn and Queens, operated by the MTA, and two from New Jersey to Manhattan under the Hudson River, operated by the bi-state Port Authority. Current tolls on those tunnels will remain as is.
- *Yellow cabs* — The new CBD toll will *not* apply to the City’s fleet of some 13,000 yellow taxicabs, which, though relatively few in number, nevertheless account for 40 percent of vehicle kilometers traveled in the CBD. Although most yellow cab trips begin and end within the CBD, charging a \$5.33 toll for trips that enter or leave would lead to both “gaming” and a mismatch between the tolls and congestion causation. Instead, the Move NY plan envisions surcharging all three elements of the taxi fare structure, with the greatest percentage increase, 20 percent, applied to the “wait time” charge (which is a close proxy for traffic congestion), with lesser increases of 15 percent on the fare “drop” and the distance charge. A typical cab trip, with an average distance of 4.5 km, will be surcharged \$1.62, a rise of 14 percent, but only half as much, \$0.77, on weekends, when the surcharge rates will be reduced by 50% in recognition of less frequent transit availability and also lesser traffic congestion.¹¹ The resulting revenue, estimated at \$235 million a year, will be a major part of the revenue stream from the congestion charge.¹² As we point out below, the taxi surcharge is essential for ensuring that residents of Manhattan, who account for a large majority of taxi use, shoulder a fair share of the new tolls and charges.
- *Farebox windfall* — A further \$220 million is projected to be generated from a projected 7 percent increase in subway trips stemming from the combined “stick” of the congestion charge (as some priced-off car trips are converted to transit) and “carrot” of improved transit service brought about from investing toll revenues in transit maintenance, upgrades and expansions.
- *A garage fee* — Finally, an estimated \$10 million is raised by eliminating a decades-old entitlement by which Manhattan residents receive rebates of a citywide excise tax charged on garage storage of private autos. Though the amount is small, this step is symbolically important in signifying the intent of the Move NY plan proponents to charge Manhattan residents their fair share of the new charges.

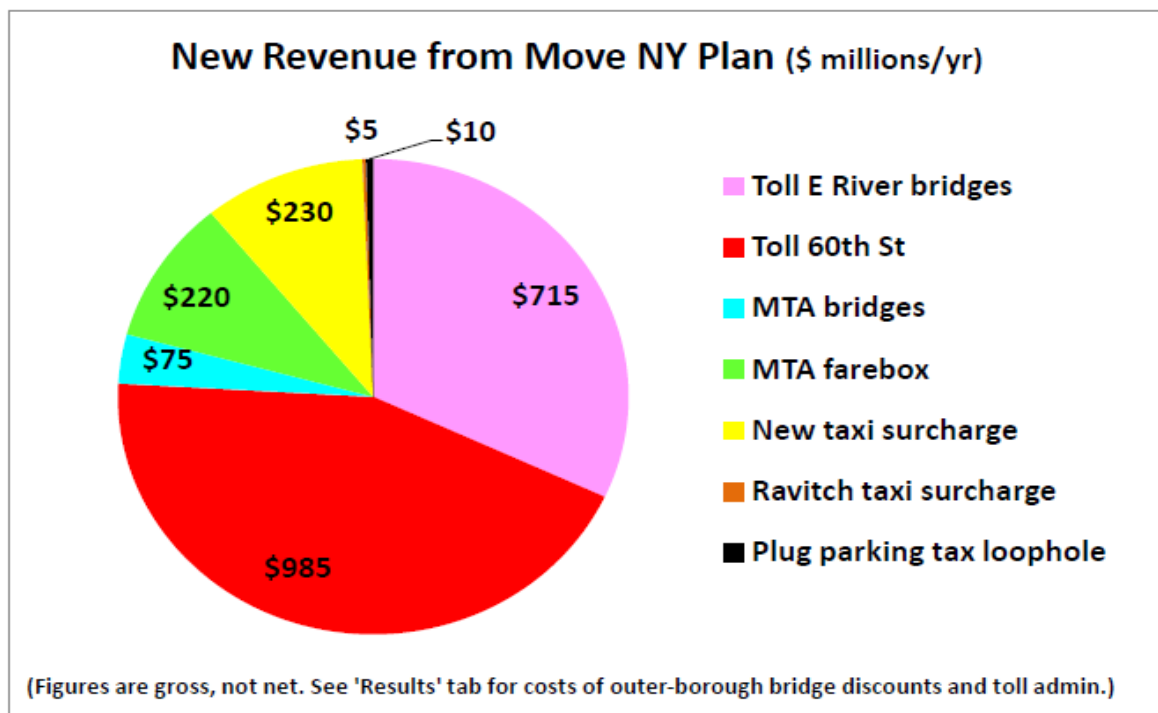
Total revenues are estimated at \$2,240 million a year, though this reduces to a net of \$1,465 million after accounting for the “toll swap” (bridge toll discounts) as well as the estimated \$170 million annual cost to administer the tolling system. Even with the swap, which will cost on the order of \$600 million a year, the \$1,465 million annual net revenue is nearly triple the \$500 million per year that was anticipated to be raised through the Bloomberg plan. The primary reasons for the difference are, first, the Move NY toll is charged all 168 hours a week instead of just 60; second, the toll level, \$10.66 round-

¹⁰ The revenue cost of discounting current tolls on the MTA bridges is estimated in the BTA tab, “MTA Crossings.”

¹¹ The overall taxi fare hike from the surcharges is less in percentage terms than the rises in the three fare components because the improvement in travel speeds reduces the wait-time charge.

¹² Included in the \$235 million figure is an anticipated \$5 million rise in a prior taxi surcharge fund. Note also that the proposed Move NY taxi surcharges on distance driven and wait time will apply only to travel in the portion of Manhattan Island south of 96th Street.

trip, is higher than Mayor Bloomberg's \$8.00; third, the Move NY plan does not rebate upstream tolls; fourth, the Move NY taxi surcharge is several times larger than that in the Bloomberg plan.



4. Investing the Move NY Toll Revenues

How the nearly \$1.5 billion in available annual revenue is to be spent will obviously be a matter of intense interest to the public and policy-makers. Under the Bloomberg plan, all of the net revenue was to be allocated to transit service improvements and enhancements. Move NY is proposing a somewhat different approach, with roughly one-fourth of the revenues to be made available to maintain and upgrade area roads and bridges, and the remaining three-fourths applied to transit. Even with this split allocation, the expected amount available for transit, roughly \$1.1 billion a year, is easily double what would have been available under the Bloomberg plan — demonstrating the importance of maximizing the total revenue realized under the Move NY plan.

A key strategy of the Move NY plan is to win over motorist interest groups that have become inured to the argument that toll hikes benefit them by enabling transit upgrades that lure “other drivers” to public transportation. To the extent that this idea ever had traction with NY-area drivers, it has been overtaken by resentment against ever-rising toll increases on bridges used largely for trips that do *not* access the CBD and thus cannot easily be shifted by improvements to the primarily radial transit network. Instead, the Move NY plan can be said to benefit drivers in two ways that are new to congestion pricing in New York City, and perhaps elsewhere as well: by financing improvements in roads and bridges, and by cutting tolls on the outlying bridges nearly in half.

Assuming that net toll revenues are split roughly 75/25 between transit and roads, the Move NY plan is expected to change travel in and around New York City in the following ways:¹³

- The number of daily motor vehicle trips into the Manhattan CBD will decline by around 17 percent.
- Vehicle speeds within the CBD will increase by 18 to 20 percent, on average. Speeds on roads and bridges leading to and from the CBD will increase by an average of 5 to 6 percent.
- Total driving within the CBD will decline, of course, but only by 7 to 8 percent. This modest decline reflects the prevalence of taxis in CBD traffic (around 40 percent). It nevertheless triggers a double-digit improvement in average travel speeds because under current hyper-congested conditions, even a small pullback in traffic levels evokes a sizeable reduction in paralyzing gridlock.
- Subway use is expected to increase by 7 percent, though bus usage rises much less, just 1 percent. (Subway trips already outnumber bus trips by two-and-a-half to one, making the gain in subway usage more significant.) The number of taxi trips is expected to grow by 4 percent, since time-sensitive taxi users are expected to be more attracted by the improved CBD travel speeds than they will be deterred by the fare surcharge. The average number of fares per a taxi driver's 10-hour shift rises by 16 percent, raising incomes for drivers and fleet owners alike — an important selling point to this influential (and iconic) sector of the city's transportation network.
- Dividing up the total net revenue according to the borough or county of residence of drivers and taxi takers who will pay the new tolls and surcharges (some of whom will also pocket the savings from the discounts on the outlying bridges), the largest cost share, 23 percent, will be borne by residents of Manhattan. Residents of the city's four other boroughs will contribute 43 percent, and the remaining 34 percent will be paid by residents of the surrounding suburbs along with travelers and tourists (many of whom use taxicabs) from more distant areas. This is a sharp reversal of the incidence under the Bloomberg plan, in which Manhattan residents would have contributed just 13 percent of total revenues.¹⁴

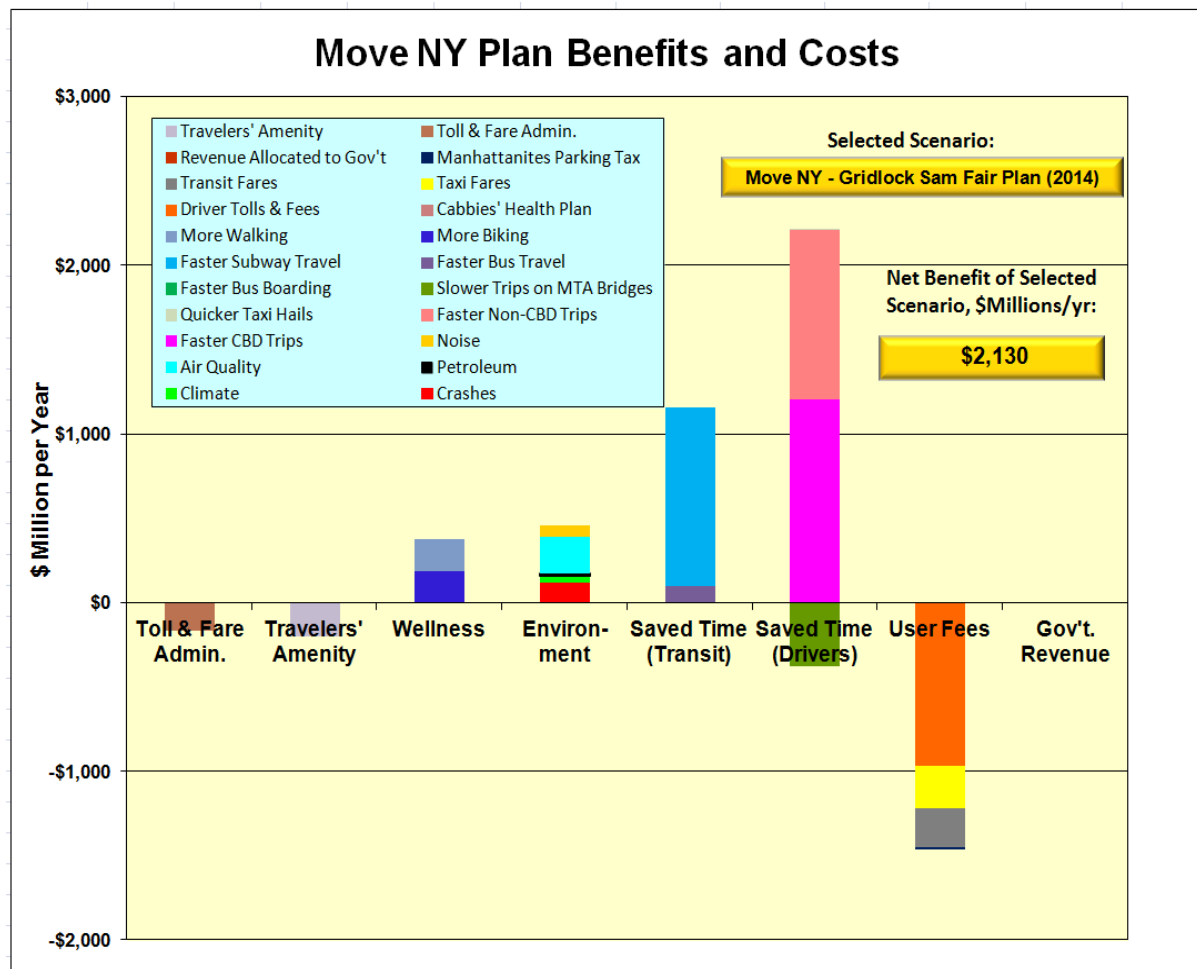
5. Cost-Benefit Analysis of the Move NY Plan

A cost-benefit analysis of the Move NY plan, in which the various benefits are monetized so they can be fairly compared, reveals a number of important findings. First, traveler time savings (a proxy for transportation efficiency) dominate the anticipated benefits, far outweighing the environmental benefits. This underscores the importance of representing traffic pricing for New York City as an efficiency plan rather than a green program. (Of course, any measure that improves New York's economic viability can fairly be said to be "green" insofar as it allows the city to retain or attract residents and businesses that might otherwise locate in the neighboring or distant suburbs, where the

¹³ All modeling results are shown in the BTA's "Results" tab.

¹⁴ The various borough or county shares of the new tolls are shown in the BTA's "Incidence" tab. The alternative shares under the Bloomberg congestion pricing plan may be seen by substituting that plan's parameters for those of the Move NY plan, which may be done with a single keystroke in the BTA's "Results" tab.

relative absence of mass transit, the prevalence of single-family homes, and the general substitution of sprawl for proximity all cause per capita energy use to be several times greater than in denser cities.)



Second, the societal benefit from the expected increase in “wellness” via active transportation (cycling and walking) rivals the aggregate environmental benefits from lower air and carbon emissions, fewer traffic crashes, less traffic noise, and reduced petroleum requirements. This would not have been the case forty or even twenty years ago, when per-km car and truck tailpipe emissions were an order of magnitude greater than they are today.¹⁵ In countries that have not yet reduced vehicle emission rates to the same extent, the relative environmental benefits from congestion pricing, due to both the reduction in vehicle use and the improved combustion efficiencies for the cars that continue to be driven, would be far greater than shown here.¹⁶

¹⁵ This comparison is the author’s rough estimate of the extraordinary progress in reducing emissions from on-road vehicles in the United States since circa 1970.

¹⁶ The dual impacts of congestion pricing on total tailpipe emissions — at the individual vehicle level and the “system” level — point to a dilemma for proposals to exempt electric or other clean-fuel vehicles from congestion charges. The concern is that while a zero-emission vehicle will not directly add exhaust to the local airshed, its incremental contribution to traffic congestion will cause a reduction in combustion efficiency, with a

Third, much of the anticipated travel time savings from the Move NY plan accrues to trips that do not cross into the Manhattan CBD and, thus, will not face the new toll, but will nevertheless be made faster because traffic streams on the same roads have been thinned somewhat. Harnessing these “free riders” to support the Move NY plan presents an important political opportunity, though a challenging one because they are geographically dispersed and because of the inherent difficulty of framing avoidance of a cost as a benefit.

6. Potential Political Advantages of the Move NY Plan

Will the Move NY plan be more attractive politically than the Bloomberg plan that was unable to be enacted in 2007-08? Here are some potential advantages:

- The toll swap (reducing tolls on the “outer” Metropolitan Transportation Authority bridges while instituting them on the “inner” East River bridges and at 60th Street) could appeal powerfully to car-dependent New Yorkers who are heavily represented in large parts of the outer boroughs and the neighboring inner suburbs and whose elected representatives lined up against the Bloomberg plan. The persistent increase in tolls on the MTA bridges has reached a flash point, and toll relief would be both a monetary boon and an important gesture for many area residents who bristle at having their toll dollars support a transit system they regard as benefiting others at their expense.
- The taxi surcharge will ensure that residents of Manhattan, who account for 70 percent of yellow-cab trips, collectively contribute the most to the new tolls and fees, helping neutralize the resentment of the Bloomberg congestion pricing plan as a giveaway to wealthy Manhattanites.
- Move NY is building support for the plan in hundreds of individual and small-group conversations with leading stakeholders, a process that emphasizes inclusion rather than reliance on expert authority or government fiat.
- The plan is being branded as an efficiency plan rather than an environmental one, thus keeping the focus on infrastructure and economy and making it possible for organizations and office-holders to support it without having to identify as greens.
- Sam Schwartz, the public face of the Move NY plan, is a well-known and respected traffic engineer with genuine New York “street cred.” This is a marked difference from having congestion pricing fronted by a fabulously wealthy mayor who in theory could pay one CBD toll every second in perpetuity without blinking an eye.
- The nearly billion-and-a-half dollars that the new revenues will make available each year for transit and other transportation improvements is a large enough sum to attract support from contractors, construction unions, transportation officials and other stakeholders who customarily resist major changes from the status quo.

corresponding increase in emissions, among other fuel-burning vehicles in its vicinity. The author speculates that where traffic congestion is prevalent, which is precisely where congestion pricing is most recommended, this system-level increase in emissions could be considerable — an hypothesis that is ripe for modeling.

A Comparison

Bloomberg 2007-08: Summary	Move NY 2014-15: Summary
Vision <ul style="list-style-type: none"> • Environmental Main Proponent <ul style="list-style-type: none"> • Billionaire Mayor Features <ul style="list-style-type: none"> • \$8.00 round-trip, 12 x 5 • Small taxi surcharge • MTA bridges unchanged Results <ul style="list-style-type: none"> • CBD Speed gain: 8% • Net revenue: \$520M/year • Manhattan pays: 13% of total • MV share to CBD: 17% (now 19%) 	Vision <ul style="list-style-type: none"> • Transport/Economy Main Proponents <ul style="list-style-type: none"> • Business + Labor + Community Features <ul style="list-style-type: none"> • \$10.66 round-trip, 24 x 7 • Large taxi surcharge • MTA bridges \$5.00 less Results <ul style="list-style-type: none"> • CBD Speed gain: 18-20% • Net revenue: \$1,465M/year • Manhattan pays: 23% of total • MV share to CBD: 16% (now 19%)

- The Move NY plan is simpler and more straightforward than the Bloomberg plan: no night-time or weekend exemptions, no rebates for upstream tolls, no exceptions for various classes of vehicles or drivers. The toll corresponds to the current toll paid on MTA bridges and tunnels rather than being pegged to an arbitrary level. The only intellectually complicating factor is the toll swap, and that provides the “honey” that is turning many opponents into adherents.

7. Problems the Move NY Plan Must Overcome

On the other side of the ledger is the provision in the Move NY plan to toll off-peak trips to the CBD, even those made during the “graveyard” shift or on weekends, at the same rate as daytime peak trips. While this has a clear precedent in the unvarying 24-hour nature of the MTA’s bridge and tunnel tolls, it does impose the new toll on trips that would have avoided the Bloomberg toll. On the other hand, the adage “in for a penny, in for a pound” could be said to apply to congestion pricing: if New York is going to toll car trips to the Manhattan CBD, it may as well go all the way and raise truly large sums that can produce transformative gains in the region’s transportation network. (At a later date, once the CBD toll has been established, all city bridge and tunnel tolls could be switched to a time-varied regime.¹⁷)

¹⁷ Charging CBD entry and exit tolls (with E-ZPass) of \$7.50 each way during weekdays 6 am – 8 pm, \$5.00 during weekdays noon – 10 pm, and \$2.50-\$3.00 at all other times could generate the same toll revenue as Move NY’s proposed flat toll of \$5.33 each way. See BTA’s “User Inputs” tab.

A further issue for Move NY is the decline in traffic levels since 2007-2008, with a nearly 7 percent drop in the benchmark estimate of vehicles entering the Manhattan CBD on a typical weekday.¹⁸ While this decrease is relatively modest, it appears to have lessened the specter of ever-worsening gridlock. This change has contributed to the Move NY campaign's emphasis on creating a robust new revenue source to pay for better transportation infrastructure, in contrast to the Bloomberg focus on congestion relief and environmental improvement.

Most problematic, perhaps, is the persistence of the MTA's reputation for inefficiency. Hearteningly, the Metropolitan Transportation Authority gained wide praise for speedily restoring service after Hurricane Sandy inundated much of the city in 2012, for service innovations such as real-time train-arrival information via "countdown clocks" on subway platforms, and for more open and responsive management. Yet the Authority continues to be defined more by perennial delays and escalating costs for its two "mega-projects" — a new Manhattan subway line and a tunnel to expand commuter-rail access to the heart of the CBD. Start dates for both projects have been pushed back numerous times, feeding the popular notion that new funding for the MTA is money poured down a rat-hole.

In response, the Move NY strategy is to ensure that the billion dollars a year or more to be made available to transit from the toll revenues don't feed the mega-projects but are directed instead to smaller, discrete investments that either fill chronic "gaps" in the transit system or that improve service delivery and reliability across the system, rather than only in selected corridors. (Many of these investments are already incorporated in the MTA's planning process but are perennially delayed due to the persistent funding shortfalls noted earlier.¹⁹) This is no easy task, insofar as Move NY does not control MTA capital budgeting, and given the public's limited grasp of the massive investments required simply to keep the region's extensive transit network in a state of good repair. Conveying the value of transit investments is thus a key piece of the hundreds of small-group meetings that the Move NY team has been holding with stakeholders across the region.

The fate of the Move NY plan may be determined in the next 12 months. As shown in the graphic, the political "window" to enact the necessary state legislation opens in late 2014, after the gubernatorial election, and extends only to April 2015, when the legislature adopts the state budget for the next fiscal year. Also in that interval, the MTA must have a funding plan in place for its next 5-year capital plan, and the alternatives — raising gasoline taxes, hiking sales taxes, increasing the unpopular regional payroll tax, or more borrowing which will lock in fare hikes in future years — appear less appetizing than a new toll plan that would correct tolling imbalances that have dogged New York City for decades.

Over the remainder of 2014, the Move NY campaigners will be gathering support among a wide variety of stakeholders, even (especially) including some opponents of the prior congestion pricing proposal, to

¹⁸ The annual "Hub-Bound Travel Reports" of the New York Metropolitan Transportation Council show 751,353 motor vehicles entering the CBD on a typical weekday in 2012 — a 6.7% drop from 805,738 reported for 2006.

¹⁹ Enumerating the specific transit investments and improvements targeted by the Move NY Campaign is beyond the scope of this paper, which is intended as a broad overview and largely addressed to a non-New York City audience. See <http://www.move-ny.org/pages/filling-transit-gaps> for details.

demonstrate to the governor that there is a broad political consensus in favor of the Move NY plan. In this scenario, the governor's endorsement caps a process that will have begun outside of government and that, patiently and collegially, marshaled the necessary support from the bottom up.

Move NY Campaign: Strategy + Schedule

- Emphasize:
 - Revenue (40%)
 - Efficiency (30%)
 - Toll Equity (20%)
 - Environment (10%)
- Quietly build public and political support.
- Late 2014-Early 2015 “window”:
 - After New York State elections (Nov. 2014)
 - Plug hole in MTA Capital Plan (starts 2015)

Appendix: The Balanced Transportation Analyzer (BTA) Spreadsheet Model

The analytical and quantitative foundation for the Move NY campaign is an Excel spreadsheet known as the “Balanced Transportation Analyzer,” or BTA. The BTA is a PC- or Mac-capable integrated spreadsheet model that estimates traffic speed improvements, revenue gains and other benefits from a wide range of congestion pricing proposals as well as from allied transportation measures such as transit investment of the toll revenues. The BTA incorporates current conditions of New York City traffic volumes, transit service and usage, taxi pricing and availability, and current toll rates on bridges and tunnels. I am the developer and programmer.

Development of the BTA began in 2007. The model now (February 2014) contains 63 interlocking worksheet “tabs” which are stocked with baseline travel data and connected by thousands of equations and algorithms. These tabs “communicate” with each other not only in the standard fashion of multi-tab spreadsheets, but interactively in that outputs from some tabs and cells are fed back as inputs to other tabs and cells whose changed values then change those outputs, in a recurring (recursive) process. Key data inputs have been gathered in one tab (“User Inputs”) so that changes to scenarios — e.g., higher

(or lower) tolls, different types of taxi surcharges, alternative allocations of the revenues among, say, commuter rail investment, subway investment or roads and bridges upgrades — can be implemented within seconds.

The BTA model has also been programmed to allow the user to toggle among half-a-dozen “packaged” scenarios, including the Move NY proposal, the 2007-08 Bloomberg plan, a “baseline” plan reflecting current conditions (which acts as a programming check, since it is expected to return values of zero for all results) and a version of the Move NY proposal with time-varying tolls that has been tailored to yield the same revenue as the constant-toll plan discussed here. The user can quickly switch among these scenarios using a pull-down menu provided in the “Results” tab.

Model outputs include predicted gross and net revenues from new tolls, changes in the number of trips via transit and the associated revenues, changes in vehicle volumes and travel speeds by time of day and between weekdays and weekends, traveler time savings (in hours and “monetized” as dollars), geographical incidence of toll payments (i.e., among the five boroughs of New York City and for the seven surrounding counties), and the monetized value of the estimated improvements in air quality, reductions in vehicle crashes, increases in active transportation (walking and cycling), etc.

A key attribute of the BTA is its ability to estimate the aggregate delays to all other vehicles caused by a single (“incremental”) vehicle trip to the CBD, as shown in the bar chart on the next page. The “delay cost” due to a single inbound trip ranges from a minuscule 0.01 hours for a trip made during the overnight period to nearly 3 hours for a trip made during the long afternoon-evening peak. (Note that the aggregate delay cost shown for the trip’s outbound leg, a constant 1.98 hours, is an average value reflecting the modeling assumption that the return trip could be made at any time period.)

The time values shown in the chart are particular to New York City, of course. Nonetheless, they underscore a critical phenomenon that forms the essential rationale for congestion pricing: when traffic is heavy, the time that any traveler takes from all other road users by slowing them down far surpasses the time he or she might have hoped to save by driving rather than using a different travel mode. Yet in the absence of congestion pricing, the traveler has no reason to factor this “social time cost” into his or her travel choice. A congestion charge eliminates (or, at least, shrinks) this “time externality” so that the individual’s choice is more closely aligned with the social outcome.

Notwithstanding its many capabilities, the BTA spreadsheet consumes only 4 megabytes (MB). It is continually updated to reflect changes in baseline data and new policy “wrinkles,” and the most current version is always available on the Internet via this link: http://www.nnyn.org/kheelplan/BTA_1.1.xls. (Alternatively, you can find the same link by Googling: BTA1.1. Note that the figures in the text of this paper reflect model parameters, assumptions and equations as of February 26, 2014.)

The work to modify the BTA’s inputs and relationships to reflect a city other than New York would be considerable, but manageable. The author would welcome the opportunity to participate in such an endeavor with researchers and officials in China, in order to provide an analytical tool to determine the merits of implementing congestion pricing in the People’s Republic.

Car trips to CBD impose enormous delays on other road users

