



The Economic Benefits of the Second Avenue Subway

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Regional ^{NJ CT}_{NY} **Plan** Association

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The Economic Benefits of the Second Avenue Subway

Nearly three decades after construction was halted on the Second Avenue Subway (SAS), a groundswell of public and political support for the project resulted in its inclusion in the 2000-2004 capital plan of the Metropolitan Transportation Authority (MTA). Just over a billion dollars was allocated for a full-length subway from 125th Street to Lower Manhattan, and the MTA has pushed ahead with planning and engineering to begin construction in late 2004. However, with the MTA facing considerable financial difficulties as it gears up for a new capital plan, the project is once again faced with the prospect of interruption and delay. The region's business and civic leaders have demanded that the region prioritize its transportation projects. As described below, the benefits that the SAS will bring to the city and the region more than justify the billions of dollars that still need to be allocated to complete the project¹. Based on this analysis, it must be the region's top priority.

Criteria for Evaluating Transportation Projects

Capital projects to improve the transportation system need to be evaluated on different levels. Even before larger impacts are considered, any project needs to show that it will address an important transportation need and significantly improve service levels. By relieving one of the most congested transportation corridors in the world and improving mobility in much of Manhattan's Central Business District, the SAS has no difficulty in meeting this threshold. However, transportation is not an end in itself. Not unreasonably, skeptics of the SAS have asked whether economic and other benefits, primarily for New York City but also for the larger metropolitan region, really justify the costs. The focus of this paper is to articulate the economic benefits that will result from the mobility improvements of the SAS. While the focus here is economic value, it is important to note that there are several criteria for evaluating transportation improvements, not all of which can be reduced to quantifiable economic terms:

- **Economic Growth:** What is the payoff in terms of increased jobs and income?
- **Economic Stability:** Will the project help the city keep jobs in weak economic times as well as in periods of expansion?
- **Environmental Benefits:** How much will it improve air quality and other environmental conditions?
- **Social Equity:** What are the relative benefits for those who have the fewest transportation and economic choices compared to those who have greater affluence and choice?
- **Sustainable Development:** Will it promote land use patterns that make the most efficient use of existing infrastructure and promote city and regional development goals over the long term?
- **Quality of Life:** Will it improve comfort, safety, leisure time or other things that citizens value, irrespective of its economic payoff?

Even these categories cannot be easily segregated. Economic and quality of life benefits, for example, are highly interdependent, as New York competes with other regions for the talented workforce that drives its economy. Environment and equity are also intertwined in that both positive and negative environmental impacts can vary widely for different communities. Transportation and economic theory have developed several tools to help quantify and compare benefits on a level playing field, but it remains an inexact science. This becomes even more difficult in a region this size with an extremely complex transportation network. In the end, weighing costs and benefits requires some assignment of value to these categories, as well as estimating their magnitude.

New York's Economic Priorities

Assigning value to transportation projects also requires an understanding of the economic needs and priorities of New York City and its metropolitan region. Projects may be valued differently depending on how competitive the economy is with other cities and regions, whether the main competitive factors are cost, labor, productivity or other variables, how rapidly the economy is expected to expand and where growth is expected and desired. In New York, transportation projects need to address three priority issues:

1. **The primary economic driver for New York is its ability to attract and retain a diverse, talented workforce.** No other theme has dominated economic development theory in the last two decades as much as the importance of a quality workforce for regions with high-value service economies. New York has the largest and one of the most diverse and educated populations in the country, and it continues to attract immigrants and young adults seeking economic opportunity. However, it is also losing domestic population and families to outmigration, and must compete with places that offer better climate, lower stress and other quality of life advantages. With its high density resulting in congestion and long and crowded commutes, transportation projects that relieve these conditions can substantially improve regional competitiveness.
2. **In addition to maximizing opportunities for economic expansion, New York must also improve its competitiveness in both upswings and downswings in the business cycle.** New York has a highly cyclical economy that, with the exception of the recession in the early 1980s and late 1990s expansion, has underperformed the nation in both recessions and expansions. In the coming decades, it can expect increasing competition for many of its core industries, including financial services, media and business services. Transportation improvements can be valued both for their ability to attract new economic activity and their importance for retaining businesses and workers that are already here.
3. **Growth in the outer boroughs and the suburbs depends on maintaining a dynamic Central Business District in**

Manhattan. As shown in the table below, nearly two-thirds of the city's jobs and over 80% of its wages are earned in Manhattan. For the tri-state region, Manhattan represents nearly a quarter of its jobs and over a third of its wages. Even though jobs have decentralized, Manhattan has actually increased its share of earnings over the last two decades as its jobs have become increasingly concentrated in high-value industries. These industries provide the engine which drives growth throughout the region, and Manhattan's appeal to global businesses will continue to be a necessary condition for the city's success².

The Economic Roles of the Second Avenue Subway: Capacity, Connectivity and Growth

Because Manhattan's East Side is already densely developed, the role of the Second Avenue Subway as a catalyst for future economic prosperity tends to be undervalued. This extends partly from an under appreciation of how much capacity the subway will create for new development throughout Manhattan, and partly from a failure to consider its importance in maintaining the competitiveness of both the Midtown and Downtown Central Business Districts.

The area served by the Second Avenue Subway is the densest, highest value commercial corridor in the nation. Midtown and Lower Manhattan are America's first- and third-largest central business districts. Second Avenue itself was zoned over three decades ago assuming construction of the Subway, and development has proceeded accordingly. Because the project will also shorten commutes to the West Side for many riders, its service area is both large and diverse.

As described in the April 2003 Supplemental Draft Environmental Impact Statement (SDEIS), the project area includes 1.9 million jobs and 850,000 residents in the following districts (Ch1: Project Purpose and Needs, S-2 – S-4):

- East Midtown
- West Midtown and Clinton (east of 10th Avenue)
- Much of Lower Manhattan, Tribeca, SoHo and Greenwich Village
- East Harlem
- Upper East Side
- Lower East Side
- Chelsea, east of 8th Avenue

The economic importance of this area is without question. However, both its competitiveness and growth potential are constrained by a lack of transit capacity into the Central Business District and poor connections that limit internal mobility. The reliance of the entire East Side on the severely crowded Lexington Avenue Subway for north-south mobility is not merely an inconvenience for today's commuters, it is a critical economic problem that only the Second Avenue Subway can relieve. With the Lexington Line operating at full capacity during peak periods, there is no ability for the transit system to support additional growth

Manhattan's Share of Jobs and Wages in New York City & the Tri-State Region

	Jobs		Wages	
	1980	2002	1980	2002
Share of NYC	66.1%	64.0%	73.8%	81.0%
Share of Region	26.8%	23.2%	32.6%	35.7%

Source: economy.com

in the corridor. In addition, the SAS creates the potential for and value of other transit expansion improvements, including:

- the Long Island Rail Road connection into Grand Central Terminal by easing the transfer to the crowding on the Lexington Avenue line;
- the extension of the SAS to Brooklyn making LIRR and JFK services possible and expanding service to the east side from many areas in Brooklyn;
- the #7 Flushing Line extension by easing the added crowding on the Lexington Line and the transfer at Grand Central that this line extension would create.

A mobility impact of this magnitude rises to the level of strategic importance for the city and the region, not only in periods of expansion, but in periods of contraction and consolidation as well, when the ability of Manhattan to retain its competitive edge is paramount. The transportation benefits of the service, the size of the workforce affected, and the high value of the businesses served combine to produce numbers that overshadow any other project under consideration:

- **600,000 riders, including as many as one out of eight New York City jobholders, would directly benefit from shorter commutes, improved reliability or reduced crowding.** Nearly 300,000 riders who switch to Second Avenue Subway service would experience shorter trips. As shown in the Appendix, time savings would average 20 minutes per day per person (10 minutes in each direction), but many would experience much larger time savings. Another 300,000 riders on the Lexington Avenue line would have substantial relief from severely overcrowded conditions and see a marked improvement in on-time performance.
- **Service would improve for city residents and suburban commuters, and for Midtown, Downtown and East and West Side destinations.** Upwards of 10,000 Metro North commuters would benefit from the construction of the Second Avenue Subway by the improved Lexington Avenue service, about 15 percent of all Metro North commuters to Manhattan. In addition to service to Midtown and Downtown on the East Side, the Second Avenue Subway would provide a service to West Midtown, making it possible to avoid unnecessary and complicated transfers at crowded stations on the east side at 59th, 51st or 42nd Streets. An estimated 125,000 daily riders would avoid these transfers, while those subway riders who continue to use these transfer locations would find them less crowded.
- **The East Side Access Project will increase East Side subway demand by 60,000 daily riders, making the capacity and distribution improvements provided by the Second Avenue Subway even more essential.** The long-term economic competitiveness of Times Square, East Midtown, and the East Side as a whole depends on the synergy provided by both projects.
- **Auto trips will be reduced by about 30,000 trips per day, resulting in significant benefits for pedestrians and auto, bus and taxi riders.** The diversion of more auto users to the subway will reduce above ground congestion and improve travel times for non-subway riders. Even small reductions in traffic can result in substantial time savings. In London, for example, a reduction in traffic entering Central London of 16 percent resulting from the recent congestion charge has reduced delays by 30 percent, speeding up bus service and truck deliveries and travel for the remaining car traffic.

- **The subway will improve the security of the transit network by providing redundant service on the East Side of Manhattan and improving connections between business centers.** For increasingly security-conscious businesses, this could be a major selling point. Both normal, temporary service disruptions and extraordinary damage to either the Lexington or Second Avenue line would be less damaging with an alternative service available.

While it is difficult to estimate how many people or businesses will choose to locate elsewhere if conditions on the subways remain unimproved, even losing a very small fraction of potential beneficiaries would have a substantial impact on the economy of the city and region. Over time, this erosion could seriously impair New York's ability to compete with regions that are investing to improve quality of life and transportation efficiency.

Job, Income and Productivity Benefits

The economic value of the Second Avenue Subway will depend to some extent on the rate of growth in economic demand, the values that future riders will place on shorter commutes, greater reliability and increased comfort, and the interaction of mobility improvements with opportunities for commercial and residential development. Estimates for all of these are subject to error. However, some reasonable projections can be made based on a growing body of both theoretical and empirical research and knowledge. In general, there are three categories of benefits that the SAS will support: construction benefits in the form of jobs, wages and economic activity that will be created by capital expenditures during the period the subway is constructed; productivity and labor cost benefits that accrue from the savings in time and other service benefits; and development benefits that result from increased capacity and enhanced mobility.

- **Building the subway could create the equivalent of up to 70,000 full-time jobs during its construction.** These include both construction-related jobs and the service, retail and manufacturing jobs that are stimulated by the increased spending of workers and businesses involved in the construction. A more precise estimate can be made using input-output analysis and should also take into account the negative impacts of construction on retail and other businesses in the vicinity of the construction.³
- **The monetary value of time savings, reliability improvements and overcrowding avoided amounts to an estimated \$1.26 billion per year.** As shown in the Appendix, this estimate was derived by estimating number of riders and the value to each rider of different service improvements. A value was assigned to riders using the Second Avenue Subway, and those benefiting on other lines who would experience time savings, overcrowding relief, reliability gains, and transfer avoidance. These benefits improve the economy by giving workers more time for productive activity and reducing the amount that employers need to compensate for difficult commutes. These productivity and labor cost benefits translate into greater profitability and job and income growth as Manhattan businesses become more competitive. However, the longer the line goes without being built, the more these "savings" and productivity is foregone.
- **The Second Avenue Subway will increase peak period capacity by 86,000 people daily, raising job growth capacity throughout the Central Business District.⁴** While the economic benefits of the service improvements occur in both weak and strong economic periods, the additional capacity that the SAS creates for peak period travel is particularly important for Manhattan's ability to create additional jobs and development. Over time, this capacity should result in an equivalent number of new jobs in the CBD. At 2002 wage and output levels for Manhattan, this would add \$7.0 billion in wages and \$14.4 billion to the Gross City Product, which would stimulate additional growth in the outer boroughs and other parts of the region.⁵ These effects would be felt most strongly along the East Side, where job growth could occur both through intensified use of existing development and new developments in Midtown, Lower Manhattan and neighborhoods in the Second Avenue corridor. However, it also adds capacity for growth on the West Side by eliminating transfers for many riders bound for West Midtown. The following section describes the

particular development opportunities that could be supported by this additional capacity.

Development Opportunities in the Second Avenue Corridor

The Second Avenue Subway would double north-south capacity along the East Side, dramatically improve connections to the rest of the four-borough subway system, and extend the transit presence eastward by two avenue blocks. Even in New York, a short walk to transit is more supportive of real estate values than a long one.

By 2020, the East Side is projected, in the aggregate, to produce some 30,000 new residential units, 18.4 million square feet of office space (excluding the WTC reconstruction), 2.7 million square feet of retail, 5 million square feet of medical-related space, and a variety of other urban development.⁶ The Second Avenue Subway would significantly influence the degree to which these investments actually occur, the pace at which they occur, and the extent to which they reinforce the principles of sustainability and economic justice.

In addition to supporting high-rise residential and office construction, the Second Avenue Subway would promote three long-term development strategies specific to its surroundings:

1. **The emergence of the East Side waterfront as a continuous public amenity and economic generator for the East Side.** For the Harlem and East River shorelines and their adjoining blocks, long-term development requires the transit capacity and proximity that only the Second Avenue Subway can bring.
2. **The retention, expansion, and diversification of the East Side medical institutions, particularly those situated east of Third Avenue.** World-wide recognition, not simply of a collection of hospitals but of an integrated medical and life sciences corridor, is of strategic importance to New York. Over time, the capacity and synergy of this corridor is inexorably tied to north-south mobility.
3. **The creation of vibrant, mixed-use urban neighborhoods, especially in East Harlem, Gramercy Park, and the Lower East Side.** New subway stations would promote infill development on vacant or underutilized lots and renovation of existing buildings. These station areas would enjoy the fine-grained mixture of housing, commercial development, and pedestrian amenities typical of "transit villages".

The Second Avenue Corridor consists of six "neighborhood zones". Without exception, their future development will be enhanced by a commitment to build the Second Avenue Subway.⁷

- **East Harlem.** The Subway would reinforce and

expand the on-going revitalization of East Harlem, in accordance with the specific neighborhood development goals of the Upper Manhattan Empowerment Zone (UMEZ), the 125th Street Business Improvement District (BID), and the City. With 113,000 residents—36% of them below the poverty line—and only 23,000 private sector jobs, East Harlem needs the Second Avenue Subway.

The re-emergence of 125th Street as a regional retail center would be anchored by the terminal station and its intermodal connection to the Lex, Metro North, and crosstown bus routes. The station's commercial influence would extend to the blocks just north of 125th between Second and Third Avenues, a priority site for commercial development.

The other East Harlem Stations—at 116th, 106th, and 96th Streets—would promote the renovation of existing buildings and redevelopment of vacant lots. Much of this station-area development would consist of new and rehabilitated housing units, a priority for long-term growth and stability.

The medical corridor begins in East Harlem, with Mount Sinai and Metropolitan Hospital Center. So does the future of the East Side waterfront, with plans to extend the pedestrian life of East 125th Street across Second Avenue to the Harlem River and the proposed East River Plaza development along FDR Drive.

- **Upper East Side.** The Upper East Side contains one of Manhattan's two principal clusters of medical institutions, with Lenox Hill, New York Cornell, Memorial Sloan Kettering, the Hospital for Special Surgery, Beth Israel, and Rockefeller University Hospital.

With the highest-density residential zoning in the City, the Upper East Side is also characterized by apartment and condominium towers. While continued, modest growth is anticipated in this sector, it is highly transit-dependent and can only be strengthened by the Second Avenue Subway.

- **East Midtown.** With over a half-million jobs, the portion of Midtown between Fifth Avenue and the East River is as dense a commercial district as one could find, anchored by Grand Central Terminal and the cluster of landmark hotel and office buildings that surround it. Yet 66,000 people also live in East Midtown; most of the district's side streets remain residential, and east of Second Avenue, housing is the predominant use. Of all the neighborhood zones in the Second Avenue Corridor, East Midtown is projected to add the most new housing units over the next two decades.

East Midtown includes two of the region's most important riverfront development sites. One is the United Nations, which is planning a major new office building at 42nd and First, a block from the Second Avenue Subway. Beyond the fate of this one new building, it is no secret that the UN's physical plant has deteriorated badly over the years. The

world body's commitment to invest in modernization and expansion surely depends in part on the proximity, capacity, and connectivity of transit.

Even more significant is the long-term redevelopment of Con Edison's First Avenue properties, which extend along the River from 35th to 31st Streets. Today, these facilities are a wall between East Midtown and its waterfront. Turning them into a five million square-foot, mixed-use urban center, with thousands of new residents and a street-level public realm that embraces the shoreline, would be a transformative change in the City. But this is transit-oriented development at a very large scale, and it will not happen simply because a plan exists; it needs the transit.

- **Gramercy Park / Union Square.** Most of this district is characterized by residential, commercial, and civic uses, organized around its two iconic urban parks. The long-term plans for Gramercy Park / Union Square are reflected in its zoning, which is largely preservative in nature. The goals are modest growth in the residential, retail, and office sectors, and an extension of the civic realm to the riverfront.

Gramercy Park / Union Square is also home to the other major cluster of medical institutions—among them, NYU Medical Center-Tisch Hospital, Bellevue, Veterans' Hospital, Cabrini Medical Center, the Orthopedic Institute, and New York Eye & Ear Infirmary, and Beth Israel Medical Center. Much of the projected growth in the district's housing and office sectors is medical-related, and NYU is preparing to build a new medical and biotech campus on the East River. The decision to build this campus will precede construction of the Second Avenue Subway, but a generation of subsequent institutional decisions will not.

- **East Village / Lower East Side / Chinatown.** This diverse collection of residential neighborhoods shares many of the characteristics of East Harlem. There are 160,000 residents, 27% of them living below the poverty line, and only 14,000 private sector jobs. There are underutilized properties in need of redevelopment. Two important academic institutions—NYU and Cooper Union—employ a substantial number of neighborhood residents and add to the district's vitality.

The development goals of the community and the City, as reflected in the Cooper Union and Seward Park Urban Renewal Plans, emphasize the production of affordable housing; the creation of accessible jobs; a significant expansion of retail, to generate both income and street life; and the accommodation of NYU and Cooper Union's long-term growth. This is the kind of urban neighborhood development classically served by convenient transit.

- **Lower Manhattan.** Without question, the long-term redevelopment of Lower Manhattan will be dominated statistically by office space—at the World Trade Center, at 55 Water Street (steps from a Second Avenue Subway station), and elsewhere. But the direction of Lower Manhattan is changing, toward a more balanced, 24-hour community. Long before 9/11, this change was the overarching goal of public planning for the district, and the master plan for the reconstruction begins with this premise. Of the six neighborhood zones that make up the Second Avenue Subway corridor, Lower Manhattan is second only to East Midtown in projected housing growth.

Lower Manhattan also provides one of the City's best opportunities to integrate the waterfront, the public realm, the interior blocks of the district, and public transit. This segment of the waterfront is also a tourist destination, adding an important economic dimension. The presence of new Subway stations at South Street Seaport and Hanover Square is essential to the full realization of this opportunity.

Joint Development

Virtually any development in the Second Avenue corridor will be transit-oriented, but the opportunity exists, at locations throughout the corridor, to create a particularly close integration between development and the subway. Over time, three strategies are available.

- **Integration of station entrances.** Under Special Transit Land Use zoning adopted in 1973, any new construction or major building modification project on Second Avenue must be reviewed by NYCT to see if a potential station entrance is a relevant consideration. If so, the developer must dedicate a permanent, three-dimensional easement for a future, off-street transit entrance. Such easements have in fact been executed over the years with respect to the 15 stations in the original 1970 alignment, and these connections are expected to be utilized in the final design of the subway.
- **Development Rights.** MTA has the legal ability to acquire properties for construction and then make surplus portions available for development. This authority includes surface, subsurface, and air rights. For the most part, Manhattan's subway stations are absorbed into the street and building fabric and are not accompanied by large joint development parcels. Nonetheless, passenger entrances at some stations will involve off-street excavation and construction and a subsequent opportunity for joint development. So will ancillary facilities (such as vent shafts) at some stations, as well as certain construction features like mine shafts and staging areas. Whether surplus properties are retained by MTA or transferred to the City, the joint development rights can be used to create high-density construction with immediate access to transit.
- **Zoning Bonuses and Requirements.** In certain sections of the City, development projects undertaken near existing subway stations are affected by two special provisions. At the developer's option, a 15% bonus in floor-area ratio may be pursued, subject to the negotiated contribution of a new transit access way built and maintained by the developer. An important East Side example is Citibank's entry mall, connecting to the Lexington Avenue Subway. Even without the 15% bonus, development projects are required, wherever applicable, to relocate an adjoining subway entrance from the street to within the building. While not currently in effect on Second Avenue north of Water Street, these special provisions could, at the City's discretion, be applied to the entire corridor.

These three strategies would provide an in-kind economic benefit to MTA, helping to offset the costs of building, improving, and maintaining the Second Avenue Subway. More important, they would help optimize the connection between transit and dense, sustainable development.

Creating Growth on the West Side and in the Outer Boroughs

In addition to development opportunities in the Second Avenue Corridor itself, the SAS will support development in West Midtown by making it easier to travel there from the Upper East Side. In addition, as stated earlier, the Second Avenue Subway also plays an important but largely unrecognized role in making it possible to develop the Far West Side and extend transportation service into the outer boroughs.

- **Development of the Far West Side requires concurrent construction of the Second Avenue Subway and the extension of the Number 7 Line.** Up to 30 million square feet of office development is projected in the city's plans for the Far West Side. The extension of the #7 Flushing Line to serve this market would add many more riders to the Lexington Avenue line. Without the Second Avenue subway this would further exacerbate an already intolerable crowding condition. Rough estimates suggest that as many as 15,000 riders could be added on the Lexington Avenue line in the peak period, if the Far West Side fully develops, swelling the crush loads by 20 percent or more.
- **A full-length Second Avenue Subway creates the opportunity for new services that would support new and expanded office centers in Brooklyn, Queens, upper Manhattan and the Bronx.** The most immediate prospect is the Mayor's proposal to connect Lower Manhattan to the Long Island Rail Road and John F. Kennedy airport. By connecting this service to the Second Avenue Subway, the service will connect Midtown as well as Downtown to hubs in Downtown Brooklyn and Jamaica, places that would receive substantial commercial development as result of improved access. In addition, as described in RPA's 1999 MetroLink proposal, extension of SAS into the Bronx and additional service into Queens would greatly enhance mobility throughout the boroughs and support the development of a multi-centered city with growing regional employment centers.

Endnotes

¹ This assumes the need for an additional \$11.6 billion: the \$12.6 billion cost cited in the project's Supplemental Draft Environmental Impact Statement (SDEIS) less the \$1.05 billion allocated in the 2000-2004 capital plan.

² For evidence that New York City's high-value industries spur growth throughout the region, see Lahr, Michael L., *Is New York Still Propelling Growth in its Suburbs? A Study of Economic Spillover Effects Through Spatial Contiguity*, Center for Urban Policy Research, Rutgers, The State University of New Jersey, April 2003

³ Estimate is based on a national study by Cambridge Systematics, Inc. which estimated that transit projects generate 570 direct and indirect jobs for every \$10 million in capital expenditures. Impacts in New York City may vary because of different local multipliers and the particular mix of expenditures for the SAS. The SDEIS estimated that construction would produce 22,500 direct construction-related jobs, but did not estimate the number of indirect jobs.

⁴ The 86,000 is based on the gains in capacity on the SAS of 36,000 per hour in each direction, plus the additional train capacity in each direction of 14,000 per hour that could be operated on the Lexington Avenue Line if crowding and dwell time at stations were relieved by the SAS.

⁵ Average wage and Gross Product for Manhattan from economy.com

⁶ Second Avenue Subway SDEIS, p. 6-21. The figures are those for the six "neighborhood zones" along the Second Avenue Corridor, excluding the West Side "secondary study area" associated with the Broadway service.

⁷ The neighborhood discussions which follow rely in part on information presented in Chapter 6 of the Second Avenue Subway SDEIS.

Appendix

Calculations of Second Avenue Subway Traveler Benefits					
Category of Benefit	Number of Trips per Day	Savings per trip, (minute equivalent)	Days per Year	Value of Time. \$	Value of Benefit (\$000,000)
Time savings for those who switch to SAS	591,000	10	300	30	887
Time savings for those who remain on Lex	214,000	5	250	30	134
Overcrowding avoidance for those who switch to SAS	110,000	2	250	30	28
Overcrowding avoidance for those who remain on Lex	214,000	2	250	30	54
Reliability gained for both SAS and Lex riders	81,000	5	250	30	51
Transfers avoided for trips to west side	142,000	5	300	30	107
Total Value of Benefits					1,261
					or
					\$1,261,000,000
					per year
<p><u>Notes</u> Minutes savings converted to hours for calculation purposes. All ridership data based on MTA SAS DEIS. Reliability gains assumed for 25% of 324,000 riders.</p>					

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