

1. "Making the Case" Essay

1.1 Project Goal

The goal of the project is to relieve crowding and improve reliability on the Lexington Avenue line and to improve mobility for commuters on Manhattan's East Side and throughout New York City and the metropolitan area.

1.2 Alternatives Considered

A 1999 Major Investment Study/Draft Environmental Impact Statement (MIS/DEIS) evaluated a wide range of alternatives to address crowded conditions on the Lexington Avenue line. The MIS/DEIS found that light rail and bus options would not carry enough riders to adequately reduce crowding on the Lexington Avenue line and would exacerbate Manhattan's already severe traffic congestion. It subsequently analyzed a subway line under Second Avenue from 125th Street to 63rd Street, tying into the existing Broadway line. The full length Second Avenue Subway was selected as the preferred alternative following the public hearing on the MIS/DEIS, where members of the public, community groups, and elected officials voiced their support for a full-length subway line on Second Avenue.

1.3 Selected Project and Phasing Plan

The Supplemental and Final Draft Environmental Impact Statements (SDEIS and FEIS) analyzed the full-length Second Avenue Subway. The new ADA-accessible line will create two new routes starting at 125th Street in Harlem: the **Ⓣ** full-length Second Avenue line will run parallel to the Lexington Avenue line for 8.5 miles, and the Broadway line **Ⓞ** extension will provide direct service from southern East Harlem and the Upper East Side to West Midtown via Second Avenue and an existing connection to the Broadway line at 63rd Street.

Given the Second Avenue Subway project's total capital cost and requested New Starts share, FTA has indicated that a minimum operable segment (MOS) will be required. The MOS must be fully operable, with access to maintenance and storage facilities, so that it offers transportation benefits even if no further federal investment in the larger project is made. In addition to responding to public comments on the construction schedule, the phasing plan incorporates information obtained through ongoing engineering and achieves the best balance between constructability, operability, and the availability of funding. The four phases, which could potentially overlap, are as follows:

- Phase 1: Extended **Ⓞ** Broadway line service to 96th Street, with new stations at 96th, 86th, and 72nd Streets and new entrances at Third Avenue to the existing Lexington Avenue/63rd Street station; tunnel from 105th Street to 62nd Street, with a connection to the 63rd Street/Broadway Line and to Brooklyn;
- Phase 2: Extended **Ⓞ** Broadway line service to 125 Street, with new stations at 125th, 116th, and 106th Streets and new tunnel from 125th Street to 105th Street;
- Phase 3: New **Ⓣ** service on Second Avenue from 125th Street to Houston Street, with new stations at 55th, 42nd, 34th, 23rd, 14th, and Houston Streets; new tunnels from 62nd Street to Houston Street; and a connection at 63rd Street to Queens for non-passenger service; and
- Phase 4: New **Ⓣ** service extended to Lower Manhattan, with new stations at Grand Street, Chatham Square, Seaport, and Hanover Square, and new tunnels between Houston Street and the Hanover Square tail tracks.

1.4 Current and Future Transportation System

The Upper East Side and southern East Harlem, new areas served by Phase 1, are together among the nation's most densely populated neighborhoods. Almost 237,000 people live within a half mile of the three stations to be served by Phase 1. This area has a population density of more than 111,000 people per square mile and is home to more than 146,000 jobs. Employment in this area is forecast to increase by 8 percent by 2025.

Transit ridership in New York City has increased by 44 percent over the last 10 years and is expected to increase another 15 percent by 2025.

1.5 Problems

Overcrowded Trains and Stations

The East Side, once served by three rail lines, today is served only by the Lexington Avenue line, which carried approximately 1.3 million passengers per day in Manhattan in 2000, making it the busiest rail line in North America (carrying more than the total subway ridership in Chicago, San Francisco, and Boston combined) and one of the busiest in the world. Lexington Avenue line service operates significantly above guideline capacity (set as equal to the number of seats plus 3 square feet per standing passenger) during the peak hours, resulting in overcrowded trains, congested stations, and delays for customers.

In the AM peak hour, southbound Lexington Avenue line express trains leaving the Grand Central–42nd Street station were 18 percent above guideline capacity in 2000. In the shoulders and off-peak hours, trains are also over NYCT's loading guidelines, indicating that riders shift their time of travel to avoid extremely crowded conditions during the peak hours, and that there is a significant midday and weekend market in the corridor as well.

Stations on the Lexington Avenue line, among NYCT's oldest, generally have lower passenger capacity than newer stations. During a 15-minute period in the AM peak hour at the 86th Street station, over 2,900 riders enter and exit southbound trains, causing excessive crowding on platforms and queuing on stairs.

Unreliable and Slow Subway Service

Under current conditions, delays increase as crowded trains wait in stations while large numbers of passengers enter and exit. This reduces the number of trains able to get through on the line and exacerbates crowding. The congestion increases travel times and reduces reliability. During the AM peak hour, 29 southbound trains per hour are scheduled on the Lexington Avenue express line. However, due to the frequent congestion south of 125th Street, only 25 or fewer trains depart Grand Central–42nd Street during the peak hour.

Because of the excessive congestion, travel times are markedly longer during peak periods than at other times, reducing service levels. For example, travel time on the Lexington Avenue express between 125th Street and Bowling Green is 9 minutes longer in the peak than in the off-peak period.

Lack of Mobility and Long Travel Times

Over 60,000 commuters traveling to or from destinations on the Upper East Side and southern East Harlem must walk more than a half mile to the nearest subway stop. Currently, trips between the Upper East Side and southern East Harlem and West Midtown require either a walk of up to a mile to the Lexington Avenue line and a subway transfer or a long walk to and from the Lexington Avenue line on both ends of the trip. In addition, many riders traveling from the Bronx to Lower Manhattan and Brooklyn take less-direct West Side subway lines to avoid congested conditions on the Lexington Avenue line.

Crowded Buses and Traffic Congestion

The nine bus routes that provide parallel service to the Lexington Avenue line are also crowded and prone to delays due to traffic congestion. The M15 route carries over 56,000 customers daily along congested First and Second Avenues, making it one of the busiest routes in the country. Traffic congestion makes vehicular travel through Manhattan time-consuming and inefficient and contributes to a deterioration of air quality.

Inability to Meet Current and Future Demand

If capacity on the Lexington Avenue line were unlimited, 34,000 more riders would take the Lexington Avenue express during the AM peak period. However, crowded conditions deter customers from taking the most direct route. Instead, riders select more time-consuming travel options, such as less-direct subway routes, buses, cars, and taxis. If the Second Avenue Subway existed today, it would carry 510,000 average weekday riders, indicating the immediate need for the new line. Phase 1 alone would carry 187,000 daily riders if it existed today.

The projected increases in Manhattan population and employment, 121,000 and 327,000, respectively, by 2025, will compound crowded conditions on the Lexington Avenue line, causing southbound AM peak hour trains to be 27 percent above guideline capacity leaving Grand Central–42nd Street if the Second Avenue Subway is not built.

With the Lexington Avenue line and most East Side bus routes operating at or above system capacity, there is little flexibility to absorb service interruptions such as passenger illness or mechanical failures. Even brief stoppages can exacerbate the already overburdened system, resulting in lengthy delays. Without improvements to the capacity of the system, MTA NYCT will be unable to meet future ridership demand.

1.6 Benefits of the Project

Phase 1 of the Second Avenue Subway will provide a one-seat ride between the Upper East Side and southern East Harlem and West Midtown. It will also improve mobility between the Upper East Side and southern East Harlem and the Sixth Avenue Corridor by providing a cross-platform transfer at the Lexington Av/63rd Street station to **F** service. Phase 1 is expected to carry almost 202,000 riders on the average weekday in 2025.

Alleviated Crowding and Improved Reliability on the Lexington Avenue Line

With Phase 1, crowding on the Lexington Avenue line will decrease by as much as 13 percent with 23,500 fewer riders entering the CBD on the southbound express and local on the average weekday. This translates into 58 fewer riders per train in the AM peak hour. In addition, AM peak hour passenger boardings on the southbound Lexington Avenue line will decrease by 48 percent at 86th Street, improving passenger circulation at the station.

Improved Mobility and Travel Time Savings

Phase 1 of the Second Avenue Subway will allow 2.6 million daily transit riders to experience an average Transportation System User Benefit of 1.5 minutes per passenger. These benefits are derived from reduced crowding and improved train operations on the Lexington Avenue line as well as from improved access and enhanced mobility for riders on the Second Avenue line. With Phase 1, 93 percent of Upper East Side and southern East Harlem riders who live or work more than a half mile from the Lexington Avenue line will be brought to within a half mile of a subway line. These improvements have effects that ripple across Manhattan to the West Side and ultimately provide benefits to more than 11 percent of the regional transit customers.

Two examples of typical trips on Phase 1 of the Second Avenue line illustrate how the project will improve travel for large numbers of transit riders, many of whom are from low-income households:

- A trip from First Avenue and 100th Street to Times Square will be 10 minutes faster with Phase 1 of the Second Avenue Subway, a 27 percent decrease in travel time as compared with the baseline, and would entail a quarter-mile shorter walk, a 39 percent decrease. With Phase 1, the approximately 72,000 daily riders traveling between the Upper East Side or East Harlem and the employment centers in West Midtown will experience 4,300 hours of benefits (6,800 hours with congestion-relief benefits), for an average user benefit of 4 minutes per rider (6 minutes per rider with congestion relief). The passengers in the two lowest income groups will experience user benefits worth 1,500 hours (2,500 hours with congestion-relief benefits).
- A trip from First Avenue and 100th Street to Union Square in Lower Manhattan will be 5 minutes faster, a 12 percent decrease in travel time. In aggregate terms, 46,000 daily transit customers travel between the Upper East Side or East Harlem and Lower Manhattan. With the introduction of Phase 1, these customers will experience 1,100 hours of benefits (4,100 hours with congestion-relief benefits). Of this total, 400 hours (1,500 hours with congestion-relief benefits) accrue to the lowest two income groups with a household income less than \$25,000. The average benefit per passenger in this market is almost 1.5 minutes without congestion relief and greater than 5 minutes with congestion relief.

Similar benefits accrue in neighborhoods throughout Manhattan and the region, as a whole as illustrated in the tables below. The trips benefiting from the project include:

- Trips within the Second Avenue corridor.

- Trips within Manhattan and New York City. (Riders will benefit from new connectivity between the **F**, Queens Boulevard Express, and the extended **C** at the 63rd Street/Lexington Avenue station. For example, a trip from 100th Street and First Avenue to Rockefeller Center will be 10 minutes faster, a 26 percent decrease in travel time. Riders traveling to employment centers in downtown Brooklyn on the extended **C** service will also benefit from decreased travel times. A trip from York Avenue and 92nd Street to MetroTech Center in Brooklyn will be 12 minutes faster. Riders traveling to and from the two major hospitals on York Avenue on the Upper East Side will also benefit; a trip between New York Hospital and Forest Hills in Queens will be 9 minutes faster, a 15 percent decrease in travel time.)
- Travel between the corridor and all other locations within the New York metropolitan area. (Commuter rail customers will benefit from reduced crowding on the Lexington Avenue line.)
- Travel from the Upper West Side and the Bronx to Lower Manhattan and Brooklyn. (Riders will benefit from reduced crowding on north-south lines through Manhattan, as they take advantage of available capacity on both the Lexington and Second Avenue lines.)

The primary areas benefiting are highly transit dependent; 78 percent of the households on Manhattan's East Side and 63 percent of the households in the portion of the Bronx served by the Lexington Avenue line do not have a vehicle.

Decreased Congestion

Phase 1 will attract 1,547,000 annual new transit riders, and result in a decrease of 5,000 daily vehicular trips with a subsequent decrease in auto emissions.

Ability to Accommodate Existing and Future Demand

The full-length Second Avenue Subway will support emerging growth in several areas, including East Harlem, the Lower East Side, and Chinatown, three of Manhattan's lowest income neighborhoods. It will also improve the link between these communities and employment centers throughout the East Side and West Midtown. The addition of a second subway line on Manhattan's East Side will provide important flexibility in the event of an emergency.

*Second Avenue Subway
Final Design Application and Section 5309 New Starts Update*

Table 1-1 Average Weekday Second Avenue Subway Without Congestion Benefits

Region	Baseline Transit Trips		New Transit Trips		User Benefit (hrs)		Benefits per Trip (min.)		Low Income Benefits	
	Full Length	Phase 1	Full Length	Phase 1	Full Length	Phase 1	Full Length	Phase 1	Full Length	Phase 1
East Harlem (East of 3rd) to Corridor, Manhattan (S. 60th) & Brooklyn	26,907	26,907	532	186	2,898	993	6.5	2.2	2,111.0	711
Upper East Side (East of 3rd) to Corridor, Manhattan (S. 60th) & Brooklyn	160,763	160,763	2,971	1,919	9,092	5,735	3.4	2.1	2,802	1,761
East Harlem (West of 3rd) to Corridor, Manhattan (S. 60th) & Brooklyn	42,516	42,516	72	2	369	22	0.5	0.0	253	12
Upper East Side (West of 3rd) to Corridor, Manhattan (S. 60th) & Brooklyn	48,960	48,960	94	19	240	37	0.3	0.0	39	6
Queens to Corridor	652,701	652,701	1,925	919	5,542	2,002	0.5	0.2	2,448	921
Bronx to Corridor	254,462	254,462	585	25	2,076	75	0.5	0.0	1,280	42
Bronx to Other Manhattan & Brooklyn	223,851	223,851	139	25	533	100	0.1	0.0	308	60
Brooklyn to Corridor	647,061	647,061	1,406	156	5,099	624	0.5	0.1	2,709	319
Upper West Side & West Harlem to Manhattan	510,193	510,193	231	112	1,008	431	0.1	0.1	579	222
Other Trips within Corridor	172,154	172,154	958	27	2,596	57	0.9	0.0	1,281	29
Other Trips within NYC (except Staten Island)	3,298,265	3,298,265	1,914	1,063	5,200	2,582	0.1	0.0	2,519	1,269
Other Region to Corridor	761,080	761,080	1,543	457	4,145	1,060	0.3	0.1	1,293	296
All Other	1,316,124	1,316,124	192	102	671	444	0.0	0.0	305	192
Total Region	8,115,037	8,115,037	12,562	5,012	39,478	14,174	0.3	0.1	17,927	5,840

Table 1-2 Average Weekday Second Avenue Subway with Congestion Benefits

Region	Baseline Transit Trips		New Transit Trips		User Benefit (hrs)		Benefits per Trip (min.)		Low Income Benefits	
	Full Length	Phase 1	Full Length	Phase 1	Full Length	Phase 1	Full Length	Phase 1	Full Length	Phase 1
East Harlem (East of 3rd) to Corridor, Manhattan (S. 60th) & Brooklyn	26,311	26,667	1,129	426	5,748	2,246	13.1	5.1	4,247	1,647
Upper East Side (East of 3rd) to Corridor, Manhattan (S. 60th) & Brooklyn	156,348	158,766	7,388	3,915	21,233	11,560	8.1	4.4	6,642	3,558
East Harlem (West of 3rd) to Corridor, Manhattan (S. 60th) & Brooklyn	41,758	42,224	830	293	4,372	1,683	6.3	2.4	3,017	1,153
Upper East Side (West of 3rd) to Corridor, Manhattan (S. 60th) & Brooklyn	47,219	48,175	1,834	803	4,032	1,844	5.1	2.3	768	345
Queens to Corridor	652,452	652,378	2,175	1,244	6,850	3,627	0.6	0.3	3,043	1,616
Bronx to Corridor	248,537	251,913	6,510	2,574	27,756	11,793	6.7	2.8	16,909	6,994
Bronx to Other Manhattan & Brooklyn	219,614	222,157	4,377	1,719	18,305	7,551	5.0	2.0	11,218	4,547
Brooklyn to Corridor	646,689	647,001	1,778	215	6,727	877	0.6	0.1	3,512	444
Upper West Side & West Harlem to Manhattan	503,438	507,998	6,985	2,309	29,085	10,237	3.5	1.2	15,789	5,570
Other Trips within Corridor	171,987	172,063	1,122	115	3,158	402	1.1	0.1	1,482	129
Other Trips within NYC (except Staten Island)	3,296,283	3,297,277	3,896	2,055	11,131	5,414	0.2	0.1	6,038	2,898
Other Region to Corridor	759,439	760,088	3,186	1,449	9,400	4,472	0.7	0.4	3,639	1,289
All Other	1,314,783	1,315,529	1,537	699	3,822	1,836	0.2	0.1	2,160	912
Total Region	8,084,856	8,102,237	42,747	17,818	151,619	63,560	1.1	0.5	78,463	31,104

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