

2005 Transit Strike

Transportation Impacts and Analysis



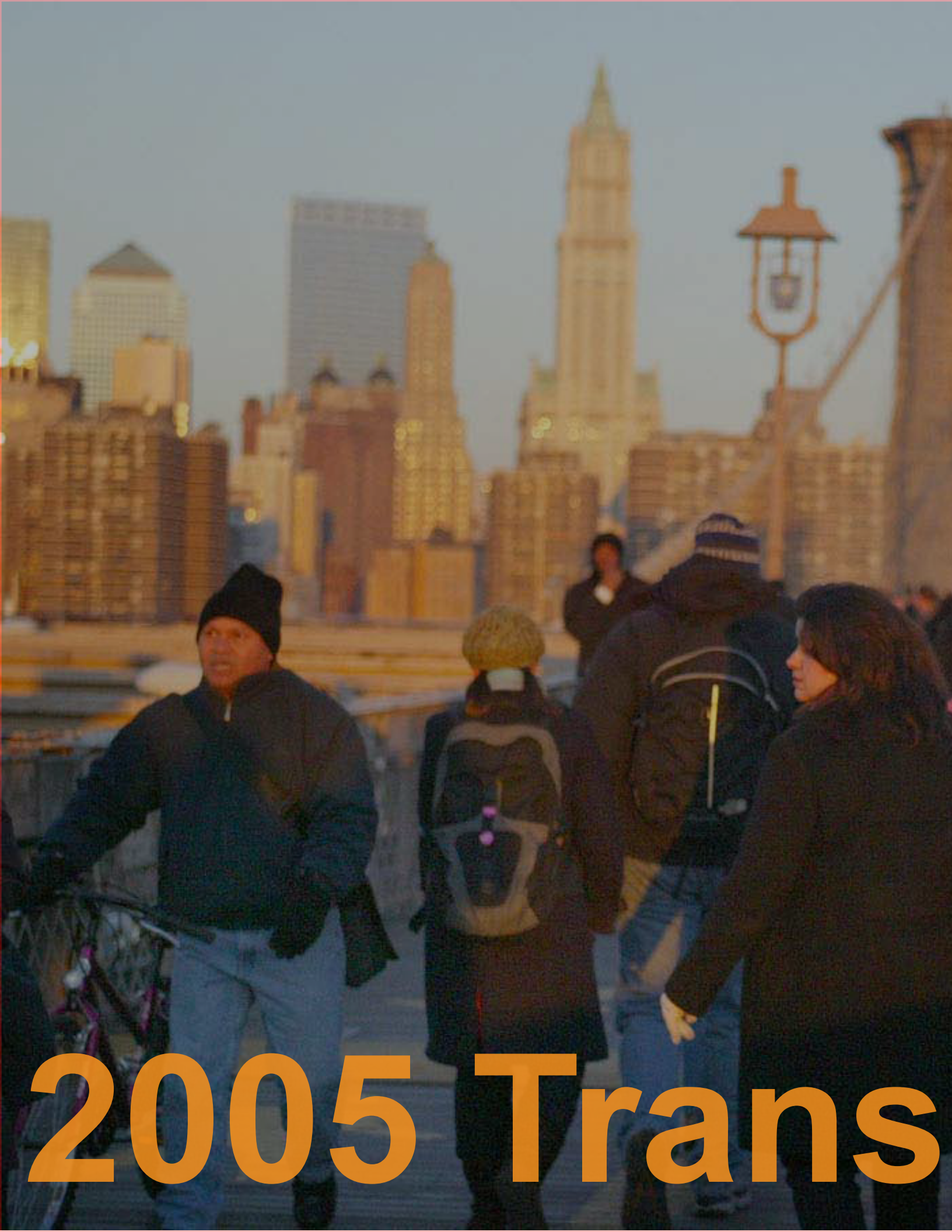
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2005 Trans

Introduction

At midnight, December 15, 2005, the contract representing the 38,000 subway and bus workers of the Transportation Workers Union (TWU) Local 100 and the 1,500 workers of the Amalgamated Transit Union (ATU) Local 728 expired. Combined, these workers operate the city's 6,000 subway cars and 4,500 buses that comprise the New York City Transit system. On an average weekday, over 7,500,000 million riders depend on these buses and subways for their transportation needs.

Over the course of the next three days, unable to come to a contractual agreement, the threat of labor actions became increasingly real and at 12:01 am on Monday, December 19, 2005, drivers from the Jamaica and Triboro Bus Companies, private bus franchises that are not under the MTA control, walked off the job in a precursor to the larger transit strike. This action stranded approximately 50,000 passengers in central and eastern Queens.

Still unable to reach a contract settlement, at 3am, December 20, 2005, the TWU called a strike by its membership, bringing the mass transit system to a halt and leaving New York City residents without their primary mode of transportation for the next three days. Advance planning and transportation management enabled the City to continue functioning during the strike.

it Strike

Executive Summary

The 2005 Transit Strike presented daunting challenges in maintaining mobility and access for City residents, businesses and visitors. The City has undergone considerable growth since the previous transit strike in 1980, as its population increased by over 15% (to 8.2 million from 7.1 million in 1980) and employment increased to 3.6 million from 3.3 in 1980. These factors have contributed to increased dependence on the transit system (7.5 million people use the subway and bus system today compared to 6.2 million in 1980). In addition, the 2005 strike occurred during the holiday season, when the City experiences colder weather as well as an influx of visitors and shoppers.

The increased demands on the remaining operating transportation systems required a comprehensive and coordinated plan. The City's Transit Strike Plan included High Occupancy Vehicle (HOV) restrictions, bridge and tunnel lane reversals to increase capacity in the peak direction, group riding and the introduction of zone fares in taxis, suspension of all non-emergency roadway construction, commercial vehicle entry restrictions, the provision of additional ferry service, encouraging bicycling and walking, providing additional carpool staging areas, and the maintenance of emergency routes. The following describes how the plan succeeded in maintaining mobility within the City.

Summary of Findings

CBD Traffic Patterns

- Private passenger vehicles were the primary mode of transportation during the transit strike.
- The HOV-4 restrictions were successful in maximizing the person-carrying efficiency of automobile travel into Manhattan. During the strike, the average occupancy of motor vehicles entering Manhattan south of 96th Street between 5-11am was 3.53 passengers per vehicle (ppv), well over twice the usual occupancy of approximately 1.5 ppv. These occupancy rates were major improvements compared to both the 1966 strike (2.20 ppv) and the 1980 strike (3.19 ppv).
- Between 5-11am, 68% of all vehicles entering the restricted area were in compliance with the occupancy requirement.
- The average number of vehicles entering the Central Business District (CBD) between 5-11am declined by 45%, to 151,211 from 275,292, while the number of occupants in these vehicles increased by 27%, to 488,121 from 383,491. The highest volume occurred on Day Three, when 544,809 persons entered, 42% higher than a normal day.
- The number of persons entering the CBD generally increased on the third day of the strike for all modes, as travelers adjusted to “strike conditions.” On the first day of the strike, many people may not have formalized travel plans as there was uncertainty as to whether or not a strike would be called.
- More motorists started their commute much earlier than normal. Increases in volume began as early as the 2-3am hour, with the greatest increase occurring between 4-5am when CBD entries more than tripled to 33,720 from 10,445 vehicles per hour.
- Peak hour entries shifted dramatically from 8-9am on a normal day to 11am-noon during the strike, the hour immediately following the lifting of the HOV-4 restrictions. Normally, the maximum hourly inbound flow occurs between 8-9am, but during the strike, 8-9am entries decreased 44%, to 31,154 from 55,195. Between 11am-noon, CBD entries increased 15%, to 46,795 during the strike, from 40,642 under normal conditions. In contrast, during the 1980 strike, the inbound peak hour shifted by only one hour (to 7-8am from 8-9am).
- During the six-hour period, 5-11am, with the HOV-4 restriction in effect, the number of vehicles entering the CBD was reduced by nearly half, to 151,211 from 275,292

(-45%). This significant decrease in volume was not due to lack of demand, but to the operation of checkpoints established for enforcement of the HOV regulations, which had the effect of metering the flow of vehicles into Manhattan.

- As a result of the above, the additional capacity provided by the morning bridge and tunnel lane reversals was less essential than during the 1980 strike. Comparing the four-hour 6-10am time period, entries during the 2005 strike were dramatically lower than during the 1980 strike. In 2005, entries totaled 110,445, 41% fewer than the 187,000 entries during the same period of the 1980 strike.
- During the 7-10am period, the percentage of trucks and commercial vans entering the restricted zone via the four East River bridges was reduced from 19.4% under normal conditions to just 1.8% during the strike. The number of trucks and commercial vans entering via these four bridges decreased by 94%, to 515 from 9,275.
- The PM outbound peak period, normally 3-7pm, occurred much later (between 7-11pm) during the strike. Under normal conditions, 199,275 vehicles exit the CBD between 3-7pm. During the strike, this volume decreased 24% (to 150,761) which was 9% fewer than the 165,568 exits between 7-11pm.
- A major element of the Strike Plan was to control vehicle entries into the CBD in order to prevent the accumulation of vehicles (all vehicles in the zone, both in use and parked) from reaching critical levels. With the HOV-4 restriction, CBD vehicular accumulation during the strike was reduced to about 8-12% below normal. The maximum accumulation of 170,500 vehicles was reached at 2pm.
- This reduced vehicle accumulation compares very favorably with the levels recorded during the previous transit strikes in 1966 and 1980. During the 1966 strike, accumulation reached nearly 260,000, the highest level ever recorded. During the 1980 strike, accumulation was held to about 219,000, but that was still about 25% greater than the normal level of 175,000 at that time.
- Similar to the 1980 strike, carpool staging areas were under utilized, except for those facilities which provided a viable transportation connection into Manhattan such as ferry service, commuter rail and functioning bus service.

Other Modes of Transportation

- Walking was the predominant mode of non-motorized transportation during the 2005 transit strike, as pedestrian volumes exceeded 1980 strike levels. Between 6-10am, pedestrian entries were 14% higher than those recorded in 1980. In contrast, bicycle volume decreased significantly (-44%) from 1980 strike levels despite the availability of additional bicycle facilities and the expansion of the bicycle network.

- The MTA reported significantly higher than average ridership on both the Long Island Rail Road (LIRR) and Metro North Railroad (MNR) during the strike. For trains arriving between 6am and noon, the Penn Station inbound passenger volume on the LIRR averaged 146,000 during the strike, 60% above the average daily ridership of 91,000. For Metro-North trains stopping at Bronx stations between 5am and 11am ridership increased by over 40% - an additional 30,000 passengers a day to 103,570 from 73,370. These ridership increases exceeded the 21% increases during the 1980 strike.
- Daily PATH ridership increased 40% (to 286,000 from 205,000 on a normal business day). In 1980, there was a 33% increase in daily ridership.
- Ridership on the Green Bus Lines express routes increased by approximately 150%, and ridership on the Q 60 local bus (which connects Queens and Manhattan) increased by 45%. Ridership on the other local bus routes declined by nearly 50%.
- Private ferries played a relatively minor role during the strike. Daily inbound private ferry ridership increased by a modest 9,000 (or about 50%), to approximately 26,000 from 17,000 on a normal day. By comparison, pedestrian entries on the four East River Bridges alone were more than 34,000, which is 31% more than the private ferries.
- Ridership on the Staten Island Ferry decreased slightly during the 6-10am peak period. In contrast, during the 1980 strike, peak period ridership increased by nearly 75%.
- In general, the Taxi and Limousine Commission (TLC) reported that the licensee and passenger response to the zone fare system was a success with widespread reports from both the media and field staff, that taxis, for-hire vehicles (FHVs) and commuter vans were operating across the entire City and filling up with the maximum number of passengers.

Travel Time/Speed

- Travel speeds within the CBD were better on the reserved arterials than on other streets and avenues. Between 5-11am, southbound average speed on three non-restricted roadways (Second Avenue, Park Avenue, Broadway/7th Avenue) was 6.6 mph. On the reserved arterial, Fifth Avenue, speed was 11.9 mph, which is 80% faster than on the non-restricted avenues.

- Average speed on crosstown reserved arterials (49th/50th Streets) was 4.6 mph, only 10% better than that recorded on the non-restricted streets.
- In general, traffic flowed well on the priority roadways approaching the CBD while the non-priority roadways experienced congestion.

Preparing for the Transit Strike

The Evolution and Implementation of the Contingency Plan

On an average weekday, the New York City Transit System (subway and bus) moves 7.5 million passengers, including over 600,000 students who depend on mass transit. The labor actions taken by the TWU effectively shut down three critical components of the overall regional transit system. These included the NYC Subway system with an average daily ridership of 4,926,000, the NYC Transit Bus system, with a daily ridership of 2,553,000 and most of the lines that comprise the MTA Bus Company, which is made up of the former NYCDOT franchised bus operations.

Mass transit systems that would remain operational during the strike included the MTA's LIRR, MNR, the Staten Island Railway, Long Island Bus, Green Bus Lines, the Command Bus Company, and the rest of the regional transit system. However, by contrast, the combined average weekday ridership of these systems is about 1.7 million passengers. A profile of the overall system is illustrated below:

Operator	Total Lines or Routes	Total Trains or Buses	Total Track or Route Miles	Average Weekday Passengers
NYC Transit - Subway	26	6,220	660	4,926,000
Staten Island Railway	1	64	14	13,000
Long Island Railroad	11	1,118	594	288,000
Metro-North Railroad	6	731	775	252,000
PATH	4	343	8	200,000
Air Train	1	32	8	30,000
NJ Transit - Rail	11	711	545	140,000
NYC Transit - Bus	219	4,566	2,109	2,553,000
MTA Bus / DOT Franchise Buses	82	1,245		400,000
Long Island Bus	54	421	950	105,000
NJ Transit - Bus	240	2,982		164,000
Westchester Co. Bee-Line	57	368		100,000
Total Ridership				9,171,000

In order to accommodate all of these mass transit users on the remaining modes of transportation, the City of New York developed a Transit Strike Contingency Plan in the weeks preceding the strike. In order to anticipate what might occur in the event of a transit stoppage, the impacts of the last transit strike in 1980 were examined. Prior to 1980, the City also experienced a transit strike in January 1966.

During the 1980 strike, the City's philosophy in preparing for a possible strike focused on ***moving people rather than vehicles***. This was in stark contrast to the 1966 strike, when the City struggled with extreme congestion largely due to the fact that no restrictions were placed on the movement of motor vehicles within the City. During

the 1980 strike, entry restrictions were implemented to encourage carpooling, dedicated provisions were made for bicyclists and pedestrians, lane reversals on bridges and tunnels were established to provide extra capacity during peak hours, and certain arterials were reserved to assure that emergency services would be maintained.

In preparing for the 2005 strike, the City of New York built upon the experiences of the last two transit strikes, and developed a contingency plan that sought to reduce the transportation effects of a disruption by:

- Ensuring continuity of essential government services, such as public safety;
- Implementing traffic management measures to promote carpooling;
- Implementing restrictions on vehicles to reduce congestion on key roadways and in the central business district;
- Maximizing the use of operating mass transit systems;
- Promoting bicycling and walking;
- Promoting staggered work hours, telecommuting, and alternate work sites; and
- Sharing information with commuters and the private sector.

In addition, three primary planning considerations were taken into account in planning for a shutdown of the NYC Transit subway and bus service. The first was the expected dramatic increase in the number of private vehicles entering New York City, making the Manhattan Central Business District (CBD) most at-risk for congestion. Second, most commuters would attempt to come to work and seek alternative modes of transportation. Finally, winter weather could further disrupt transportation modes and discourage pedestrian/bicycle commuting.

Overall, the City's emergency response to the Transit Strike was coordinated through the Emergency Operations Center (EOC) at the Office of Emergency Management (OEM), where a unified command center was implemented to manage citywide operations. City agencies at the EOC:

- Implemented the Transit Strike Contingency Plan;
- Monitored transit and roadway conditions;
- Developed and implemented supplemental plans as needed;
- Provided situational updates to City officials;
- Staffed the Joint Information Center (JIC), providing timely, coordinated information to the public, and
- Coordinated with State officials and with the adjoining jurisdictions in the New York City region.

In addition, many City agencies activated their own departmental operation centers to facilitate the implementation of their response activities.

Improving Roadway Performance

One of the most critical operational strategies implemented during the Transit Strike was improving roadway performance. Although the Contingency Plan sought to reduce demand on roadways by working with the private sector and government agencies to promote the use of alternative modes, carpools and altered work schedules, the influx of private vehicles was expected to result in a significant increase in congestion on the region's roadways.

Therefore, the thrust of the traffic management effort was to maximize the efficiency of the bridges and tunnels serving Manhattan and in turn, prevent the over-saturation of Manhattan's street system. As such, the City worked with regional law enforcement and transportation agencies to reduce congestion during peak commuting hours by:

- Placing high occupancy vehicle (HOV) requirements on major limited access highways and Manhattan bridge and tunnel crossings south of 96th Street which provide access to the CBD, as well as on vehicles entering the CBD at 96th Street (or at West 110th Street via Central Park Drive West). HOV-4 (four occupants or more) was required from 5am to 11am, weekdays;
- Prohibiting commercial vehicles from entering Manhattan south of 96th Street between the hours of 5am and 11am, weekdays;
- Reserving selected arterials for emergency and priority vehicles;
- Implementing lane reversals at selected river crossings to accommodate increased volume during the morning and afternoon commute;
- Prohibiting non-emergency construction citywide;
- Suspending street cleaning rules citywide;
- Extending "No Standing" rules on critical routes in all five boroughs;
- Opening and promoting the use of Park-and-Ride and Carpool Staging Areas and advertising such areas throughout the region.

In addition, the City worked with the functioning commuter rail, bus, ferry service and other transportation providers to enhance their service to better meet increased demand. Implemented measures included:

- Extending peak service hours to support staggered work schedules and increased ridership;
- Enhancing commuter rail service (e.g. MNR, LIRR) at stations near Park and Ride facilities, such as Yankee and Shea Stadiums;
- Amending taxi and for-hire vehicle regulations to increase taxi and livery capacity; and
- Using ITS elements coordinated via the City's Traffic Management Center (TMC) to improve traffic flow.

Monitoring Performance and Operation

The final measure listed above, the use of the City's TMC, would also prove to be one of the most important components of the 2005 Strike Management Program. The TMC, which is operated jointly by NYCDOT, New York State Department of Transportation (NYSDOT) and NYPD, monitored real-time traffic conditions on most of the region's streets, highways, bridges and tunnels. Technological advances and the advent of computer technology offered a high level of reconnaissance and a greater ability to monitor and adapt to changing traffic conditions.

Traffic engineers at the TMC were able to monitor the regional traffic conditions via the traffic surveillance cameras that the agency currently operates. These cameras provide real-time images of numerous critical intersections within Manhattan, as well the ability to monitor traffic conditions on numerous roadways throughout the region. On major roadways that are not instrumented by traffic monitoring equipment, TMC personnel relied upon observations by field personnel (both NYPD and NYCDOT), arterial surveillance teams and traffic media reports. A complete listing of the locations of the surveillance cameras is included in Appendix I.

In addition, a comprehensive data collection plan was implemented to provide critical data to assess the operation of the regions roadways. This program focused on providing the following key elements:

- Vehicle entries and exits into and out of Manhattan
- Vehicle volumes on key arterials and limited access highways
- Vehicle occupancy and classification
- Bicycle/pedestrian usage
- Vehicle Speeds

Overall, all this information was used to gauge the effectiveness of the City's Transit Strike Contingency Plan and to develop daily strategies to mitigate congestion caused by excessive volumes or unanticipated events.

Monitoring Locations

The Department collected occupancy and classification counts at screenlines established at both 60th and 96th Street, as well as at all river crossings south of 60th Street. In addition, traffic volumes and manual counts, travel time/speed surveys and pedestrian/bicycle counts were collected at critical locations. Finally, the usage of carpool staging areas was monitored. The overall Monitoring Plan can be found in Appendix II.

Traffic Management Strategies

Keeping New York City Moving

As outlined earlier, the City developed a comprehensive Traffic Management Program that reflected the existing transportation infrastructure, as well as the anticipated needs and demands in the event of the shutdown of the New York City Transit System. The following section details each component of the program and its effectiveness. Detailed information and traffic impacts are provided in the Data & Analysis Section.

Controlling Vehicle Entries Into and Within Manhattan

During the 1980 strike, the concept of controlling vehicle access into and within Manhattan proved to be an effective tool in maintaining the operation of the street network during all hours of the day. Given the fact that Manhattan is an island, the network of bridges, tunnels, and limited access arterials serve as the primary conduits for vehicles to enter and exit the city. In addition, with the elimination of the subway and bus network, the private passenger vehicle represented the most viable form of travel for those not able to walk or bicycle into Manhattan.

The City adapted these techniques during the 2005 Transit Strike to allow for the efficient management of vehicles into and out of Manhattan, and to prevent the over-saturation of the roadway network. These techniques, detailed below, were aimed at maximizing the people carrying, rather than vehicle carrying capacity of the roadway network.

Lane Reversals

To mitigate the anticipated increase of traffic into Manhattan, several lanes on the bridges and tunnels south of 96th Street were reversed to provide for additional peak hour capacity. Under regular operating conditions, several of these crossings implement peak direction lane reversals during the traditional peak period to accommodate for increased demand. During the 2005 strike, these lane reversals were expanded to provide for increased capacity through the provision of additional lanes during the expanded peak travel periods. Under the original 2005 plan, these morning roadway reversals were to begin no later than 5am and remain in effect until 11am, while the evening reversals were generally to begin at 2pm and remain in effect until 8pm.

The following represents the Lane Reversal schedule for each of the East River and Lower Hudson River crossings during the strike:

Manhattan Bridge (NYCDOT)

Time	Inbound Lanes		Outbound Lanes	
	Normal Operation	Strike Operation	Normal Operation	Strike Operation
5:00 AM to 11:00 AM	4 Lanes	5 Lanes	2 Lanes	2 Lanes
2:00 PM to 8:00 PM	2 Lanes	2 Lanes	4 Lanes	5 Lanes

Williamsburg Bridge (NYCDOT)

Time	Inbound Lanes		Outbound Lanes	
	Normal Operation	Strike Operation	Normal Operation	Strike Operation
5:00 AM to 11:00 AM	4 Lanes	6 Lanes	2 Lanes	2 Lanes
2:00 PM to 8:00 PM	4 Lanes	2 Lanes	4 Lanes	6 Lanes

Queensboro Bridge (NYCDOT)

Time	Inbound Lanes		Outbound Lanes	
	Normal Operation	Strike Operation	Normal Operation	Strike Operation
5:00 AM to 11:00 AM	6 Lanes	6 Lanes	3 Lanes	2 Lanes
2:00 PM to 8:00 PM	4 Lanes	2 Lanes	5 Lanes	6 Lanes

Note: One outbound lane was used exclusively by pedestrians

Queens - Midtown Tunnel (MTA B&T)

Time	Inbound Lanes		Outbound Lanes	
	Normal Operation	Strike Operation	Normal Operation	Strike Operation
5:00 AM to 11:00 AM	3 Lanes	3 Lanes	1 Lane	1 Lane
2:00 PM to 8:00 PM	2 Lanes	1 Lane	2 Lanes	3 Lanes

Brooklyn Battery Tunnel (MTA B&T)

Time	Inbound Lanes		Outbound Lanes	
	Normal Operation	Strike Operation	Normal Operation	Strike Operation
5:00 AM to 11:00 AM	3 Lanes	3 Lanes	1 Lane	1 Lane
2:00 PM to 8:00 PM	2 Lanes	1 Lane	2 Lanes	3 Lanes

Holland Tunnel (PA NY&NJ)

Time	Inbound Lanes		Outbound Lanes	
	Normal Operation	Strike Operation	Normal Operation	Strike Operation
5:00 AM to 11:00 AM	2 Lanes	2 Lanes	2 Lanes	2 Lanes
2:00 PM to 8:00 PM	2 Lanes	2 Lanes	2 Lanes	2 Lanes

Lincoln Tunnel (PA NY&NJ)

Time	Inbound Lanes		Outbound Lanes	
	Normal Operation	Strike Operation	Normal Operation	Strike Operation
5:00 AM to 11:00 AM	4 Lanes	4 Lanes	2 Lanes	2 Lanes
2:00 PM to 8:00 PM	2 Lanes	2 Lanes	4 Lanes	4 Lanes

However, during the course of the strike, especially during the six-hour morning period (5 -11am), when there were HOV-4 restrictions on these roadways, the number of vehicles utilizing the bridge and tunnel crossings were significantly reduced. This was not due to the lack of demand, but the operation of checkpoints established for enforcement of the HOV-4 regulations. This had the effect of metering the flow of vehicles into Manhattan.

As a result, the additional capacity provided by the morning bridge and tunnel lane reversals was less essential than during the 1980 strike, when more vehicles were entering Manhattan due to the less restrictive (HOV-2) regulations.

As such, the actual timing of the lane reversals and reversion back to normal operation varied on each crossing based upon the volume and flow of traffic each morning and afternoon. While the morning reversals remained fairly constant, during the evening period, each of the East River Bridges implemented varying reversal schedules, either being implemented later in the afternoon, extending past 8pm, or ending the reversal early based upon traffic conditions.

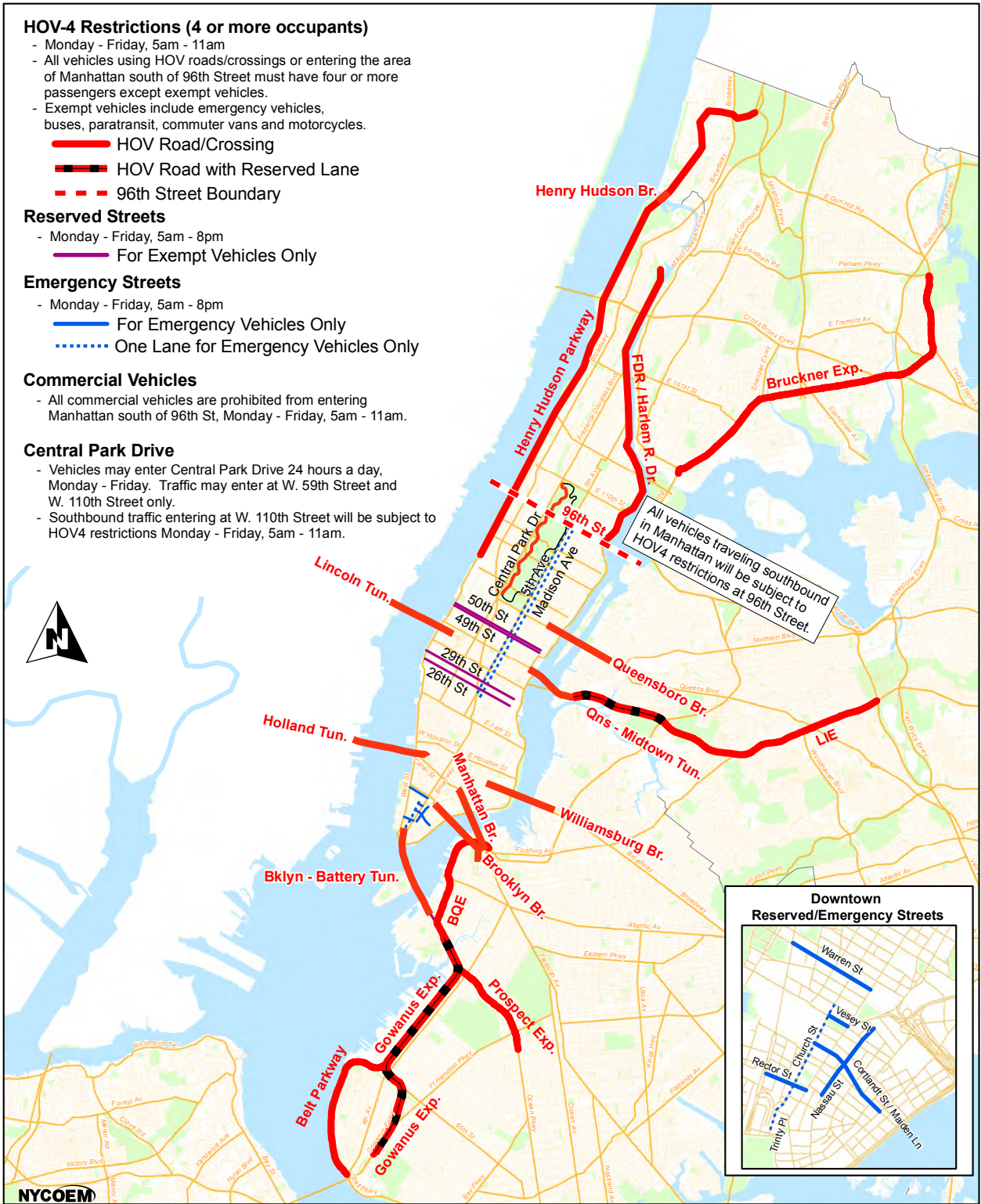
Restrictions on Vehicle Entries into Manhattan

During the 1980 strike, the Department imposed an HOV-2 requirement on all private passenger vehicles entering Manhattan south of 96th Street between the hours of 6am and 10am. This restriction encompassed all southbound avenues and the East and Hudson River Crossings south of 96th Street. In addition, there was an HOV-3 requirement on selected limited access or “priority” roadways approaching Manhattan.

The 2005 Plan broadened the program to optimize the efficiency of motor vehicles entering Manhattan. During the AM peak period (5 – 11am), all vehicles entering Manhattan were required to have four or more passengers (HOV-4).

This restriction included several highways approaching or leading into the Manhattan Central Business District, all southbound avenues intersecting 96th Street, the northern entrances to the Central Park West Drive, and all bridge and tunnel crossings south of 60th Street. The prohibition excluded authorized emergency vehicles, buses, para transit, full commuter vans and motorcycles. An extensive signage plan was implemented to enforce the new HOV-4 regulation. This included the use of static and Variable Message Signs (VMS) on the City’s roadways. A listing of the permanent VMS locations can be found in Appendix III.

These restrictions covered the following river crossings, limited access roadways and local streets in Manhattan and the surrounding boroughs:



NYCOEM

HOV-4 Restrictions

The inbound lanes of the following Manhattan bridges and tunnels had an HOV-4 requirement between 5am and 11am:

HOV Crossing	Operator
Brooklyn-Battery Tunnel	MTA Bridges and Tunnels
Brooklyn Bridge	NYC Department of Transportation
Manhattan Bridge	NYC Department of Transportation
Williamsburg Bridge	NYC Department of Transportation
Queens Midtown Tunnel	MTA Bridges and Tunnels
Queensboro Bridge	NYC Department of Transportation
Lincoln Tunnel	Port Authority of NY& NJ
Holland Tunnel	Port Authority of NY& NJ

The inbound lanes of the following Limited Access arterials had an HOV-4 requirement between 5am and 11am:

HOV Road	From-To
Long Island Expressway	Grand Central Parkway to the Queens-Midtown Tunnel
Bruckner Expressway	Bruckner Interchange to the Triboro Bridge
Harlem River Drive	Dyckman Street to the FDR Drive at East 125th Street
FDR Drive	Harlem River Drive at East 125th Street to East 96th Street
Henry Hudson Parkway	Mosholu Parkway to West 72nd Street
Belt Parkway	Fourth Avenue to the Gowanus Expressway/East 60th Street merge
Gowanus Expressway	92nd Street to the interchange with the Brooklyn-Queens Expressway
Brooklyn-Queens Expressway	Gowanus Expressway to the Manhattan Bridge
Prospect Expressway	Church Avenue to the Gowanus Expressway
Central Park Drive West	East 110th Street to Central Park South

96th Street Screenline

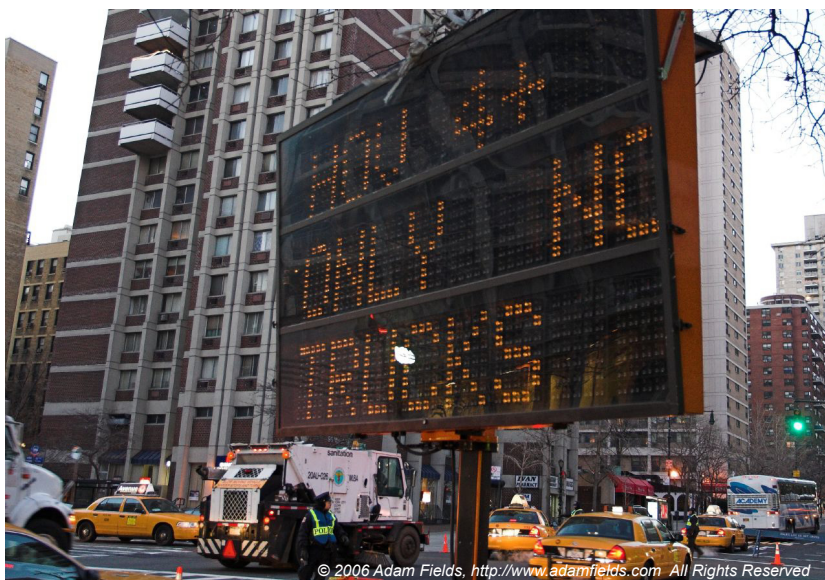
At 96th Street, the southbound lanes of the following avenues had an HOV-4 requirement between 5am and 11am:

Avenue	Avenue
Riverside Drive	Columbus Avenue
West End Avenue	Central Park West
Broadway	Park Avenue
Lexington Avenue	Second Avenue
FDR Service Road	

Interdiction and monitoring for compliance of the HOV-4 regulation was accomplished through the use of police checkpoints at locations approaching the HOV-4 corridors. Vehicles were inspected for occupancy and allowed to proceed if they meet the requirements. Overall compliance rates for the entire strike were 68% for all vehicles entering the restricted zones south of 96th Street. Non-compliant vehicles were forced to turn around or exit from the arterial. In Manhattan, these inspections were done on the southbound corridors just north of 96th Street and the locations remained consistent throughout the strike. On select arterials and bridge approaches, the interdiction points changed based upon the corresponding delays or backups. This was especially true on the Gowanus Expressway, which saw delays that impacted the Verrazano Bridge. As a result, the interdiction point was moved from 92nd Street farther inbound. Similar instances occurred on the Long Island Expressway and at several bridge approaches.

Overall, the HOV-4 restrictions were very successful, both in their operation and impacts. Throughout the strike, they served as an effective means of maximizing the person-carrying efficiency of automobile travel into Manhattan, greatly improving the occupancy rate of motor vehicles entering Manhattan.

Truck and Commercial Vehicle Restrictions



The second major strategy for restricting vehicle entries into Manhattan during the AM peak period was a complete ban on the entry of commercial vehicles and trucks into Manhattan south of 96th Street during the extended morning rush hour. The 2005 Transit Strike represented the first time this traffic management strategy was utilized. These restrictions, in place between 5am and 11am, prohibited the entry of all trucks with two axles and six tires or three or more axles and vans and/or passenger vehicles with commercial registration from entering the Manhattan core. These restrictions were in place at all checkpoints

where the HOV-4 restrictions were in place, including the East River and Lower Hudson River (Lincoln and Holland Tunnel) crossings and all southbound 96th Street screenline locations. Operators were encouraged to stagger delivery schedules and trucks that entered before 5am were allowed to travel throughout Manhattan.

Overall, this strategy proved to be highly successful in improving the overall management of vehicles into Manhattan during the morning peak period, especially on the regions crossings, as they allowed for the efficient movement of passenger vehicles through these facilities. At many of the crossings, post 9/11 security measures such as truck inspections and street closures have compromised the processing capacity of these roadways. By diverting the commercial traffic to off-peak hours, these facilities were able to maintain an efficient movement of passenger vehicles without compromising the number of lanes available and delays due to these inspections.

Reserved, Emergency and Express Streets

In addition to the HOV restrictions on southbound streets during the morning, the Contingency Plan also designated Reserved Streets to be used only by exempt vehicles. Such vehicles included: emergency vehicles; scheduled, school, and chartered busses; full commercial vans; para transit vehicles; and motorcycles. Restrictions on these streets were in place between 5am and 8pm. Motorists wishing to enter or exit garages located on these local streets were allowed to enter the arterial by using the nearest cross street. In addition, all authorized parking privileges and truck loading zones on the reserved corridors were suspended during the duration of the strike.

Reserved Street	From-To
Fifth Avenue	East 23rd Street to East 96th Street
Madison Avenue	East 23rd Street to East 96th Street
26th Street	First Avenue to Twelfth Avenue
29th Street	First Avenue to Twelfth Avenue
49th Street	First Avenue to Twelfth Avenue
50th Street	First Avenue to Twelfth Avenue

However, based upon daily monitoring and the need for additional southbound capacity, Fifth Avenue was re-opened (two travel lanes) to all traffic with the exception of one reserved lane for use by emergency vehicles on Day Three of the strike.

In lower Manhattan, the restriction on the reserved and emergency streets was more stringent. With the exception of Trinity Place/ Church Street south of Barclay Street (which only allowed Exempt Vehicles), the following streets were only open to emergency vehicles between 5am and 8pm daily.

Reserved Street	From-To
Trinity Place / Church Street	South of Barclay Street
Rector Street	West Street to Broadway
Maiden Lane / Cortlandt Street	Water Street to Church Street
Vesey Street	Church Street to Park Row
Warren Street	Broadway to West Street
Nassau Street	Wall Street to Spruce Street

Upper Manhattan Express Streets

Unlike the regular north-south arterial roadway system, the Central Park Drives were able to provide express service for vehicles traveling into and out of the CBD. On the West Side, the Central Park West Drive from West 110th Street to Central Park South, which normally operates with an HOV-2 restriction during the AM peak period, operated as an HOV-4 roadway between the hours of 5am and 11am, and remained open to all vehicles from 11am to 5am the following day. Vehicles were permitted to enter only at 110th Street.

On the East Side, the Central Park East Drive from Central Park South to 110th Street was accessible to all vehicles 24 hours a day. Vehicles were permitted to enter only at 59th Street.

Maximizing the Efficiency of the Arterial Roadways

Due to the grid nature of the street network in Manhattan, the potential for the “locking” or “gridlock” of traffic exists. As the accumulation of vehicles builds and vehicles block intersections, the potential for intersecting streets to come to a halt increases. For example, during the Holiday season, the Department of Transportation issues “Gridlock Alert Days”, whereby the Department promotes the use of mass transit or alternative modes of travel to mitigate the high volume of vehicles accumulating in the city. However, with the lack of viable transit options and the potential for Manhattan’s one-way network to become congested with cars, the City implemented a program to improve the efficiency of vehicles traveling on the arterial system. The following components comprise the primary management techniques used to accomplish this goal:

Traffic Signal Modification

Traffic Signal modification is normally employed citywide to accommodate changes in traffic flows. These signal timing schemes assist in optimizing the peak hour traffic flows, though improved signal progression and greater green time for the peak hour movement. While NYCDOT had some of this operational capability during the 1980 strike, overall improvements to the computerized traffic signal control system provide increased flexibility to adapt different timing schemes, as well as increased ability to accommodate the extended peak hour patterns encountered as part of the strike. Today more than 6,000 intersections are currently under computer control.

These signals were calibrated to accommodate the traffic flow patterns during the strike. This included an AM timing pattern and a PM timing pattern to improve peak direction flow. While the AM timing pattern remained constant throughout the strike, primarily due to the decrease in volume and traffic during this period, the Department modified the PM timing pattern due to the increased demand on the roadways during the extended evening period. This included an extension of the patterns on the second and third days of the strike from 8pm to 10pm. On Day One, the PM timing patterns were implemented between 1pm and 8pm, on Day Two between 1pm and 10pm, and on Day Three between 2pm and 10pm.

Traveler information, mainly through the use of Variable Message Signs (VMS) controlled by the Traffic Management Center also allowed for the immediate dissemination of accurate traffic information.

Priority Roadways

As described earlier, in order to optimize the efficiency of the feeder routes into Manhattan, the Contingency Plan established several priority roadways. These roadways limited access during the expanded AM peak period (5am to 11am) to high occupancy vehicles, effectively maximizing the efficiency of these arterials and focusing on carrying

the greatest number of passengers, rather than vehicles.

Expansion of No Standing Regulations

Along with the HOV-4 restrictions, the City also implemented several other schemes along major arterial roadways. During the Strike, the peak period “No Standing” regulations were expanded to between 5am and 11am and 2pm and 8pm (from 7am to 10 am and 4pm to 7pm) to provide additional roadway capacity in the peak direction of travel. A listing of each of the corridors and their limits is included in Appendix IV.

Additional Regulatory Action

During the strike, there were additional measures that were implemented to improve traffic flow, as well as increase the availability of on-street parking. During all three days of the strike, the Department suspended street cleaning regulations. Because of this, the Department of Sanitation altered its trash collection schedules to coincide with off-peak hours. All other traffic regulations and stipulations remained in effect throughout the strike.

In addition, all authorized parking privileges (with the exception of those conveyed by the NYC Special Parking Identification (SPI) permit) and truck loading areas on the reserved streets were suspended for the duration of the transit strike. All other traffic regulations remained in effect.

Additionally, the City suspended all non-essential roadway construction in order to maintain the efficient and unimpeded movement of traffic on city streets. This included efforts by the Department to ensure that all non-emergency utility cover openings were plated over and travel lanes maintained. These regulations were enforced on priority streets and Highway Inspections/Quality Assurance (HIQA) inspectors ensured compliance. In addition, all capital reconstruction efforts were coordinated with the Office of Construction Mitigation and Coordination (OCMC) to ensure that ongoing construction projects did not create undue traffic delays.

Parking Management Strategies

Although the public was urged to make use of the available public transportation services and alternative modes of transportation the private passenger vehicle was the most viable transportation option for many commuters. Accordingly, a number of measures were implemented to provide for the effective management of these vehicles.

Carpool Staging Areas and Park and Rides

As evidenced during the 1980 strike, carpooling became one of the most critical modes of transportation for commuters trying to get into the City. During the 1980 strike, although carpooling was extremely widespread due to the HOV restrictions, the carpool

staging areas were underutilized. Most carpool trips originated on a pre-arranged basis, whereby individuals trip-chained or went from house to house to meet the HOV requirements. This better ensured a return trip by the passengers and was strongly recommended. Otherwise, all passengers within the carpool would be required to drive to a central location, whereby they would travel in one car to meet the HOV requirements. This may be difficult for co-workers who do not live near each other, or for individuals who may not be guaranteed they would be able pick up enough passengers to meet the HOV requirement.

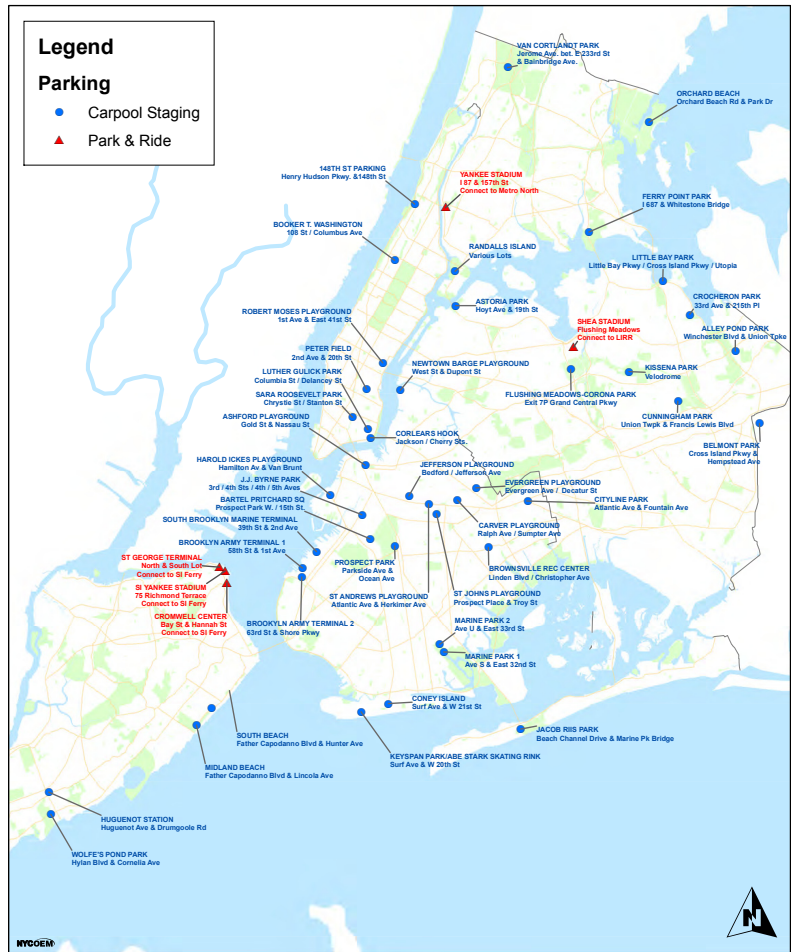
As part of the 2005 Contingency Program, carpool staging areas were identified throughout the city. These areas were used for the following purposes:

- Parking spaces for pre-arranged carpools
- Assembly points for “ad hoc” carpools
- Parking for individuals desiring to use taxicabs, livery vehicles, NYS authorized vans or other available public transportation.

A complete list of the Carpool Staging areas and Park and Rides in New York City is depicted to the right.

These Carpool and Park and Ride Facilities were heavily promoted through all media channels as part of the City’s public awareness campaign for the Transit Strike. Maps were provided in all regional newspapers and media outlets, and commuters were encouraged to utilize sites where there was an opportunity to transfer to another mode of transportation (e.g. Commuter Rail or Ferry Service). This was one of the primary recommendations that came out of the 1980 Strike.

In addition, as evidenced by the 1980 strike and accounts of the 2005 strike, at many of the screenline locations and bridge and tunnel approaches, individuals “hitched” a ride with strangers in order to meet the HOV requirements.



Overall, the carpool staging areas were sparsely utilized citywide. This can be attributed to the difficulties in forming carpools at designated locations as specified above. However, some lots experienced increased usage due to private companies establishing satellite lots by which employees were able to park their vehicles and board a chartered bus to take them to their work place.

However, the designated Park and Ride facilities generally had higher levels of occupancy, due to the fact that they presented a viable option for commuters, as they provided a guaranteed trip on the functioning mass transit system. This included locations such as Yankee Stadium and Shea Stadium, which provided significant capacity and centralized location for borough residents to access Commuter Rail. Another location that experienced high occupancy levels was the Brooklyn Army Terminal which offered expanded ferry service to Lower Manhattan.

Bus Layover Provisions

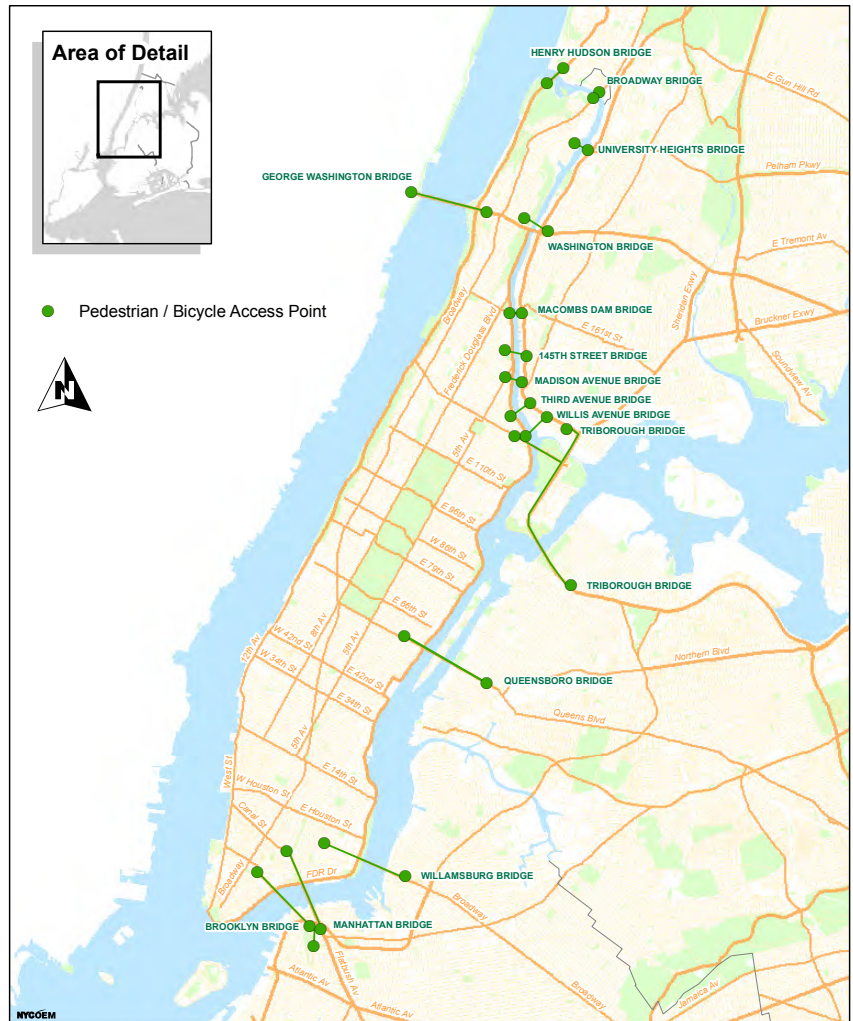
Unlike the 1980 Strike, it was anticipated that more than 1,500 charter buses (utilized by Manhattan employers) would be operating within the City limits. In order to provide for routing and off-peak storage in Manhattan, an instruction sheet and a limited number of bus layover sites were developed. Most of these private buses were hired by financial institutions within the CBD and in Lower Manhattan.

Overall, the management of these vehicles and the locations of the bus layovers did have some negative effects, especially during the evening period. Many of the buses parked on the Lower East Side impeding traffic flow at times.

Promoting Non-Vehicular and Alternative Transportation Modes

Bicycle and Pedestrian Commuting

Walking and cycling to work, for those that were physically able, were heavily promoted as part of the 2005 Strike Contingency Plan. Walking was particularly encouraged, as pedestrians occupy the least amount of space on the road network. The City highly publicized the available pedestrian and bicycle crossings into Manhattan. These crossings are shown in illustration to the right and a complete listing can be found in Appendix IV. When compared to the bicycle and pedestrian environment during the 1980 strike, pedestrians and cyclists had a greater range of routing options available. Since the last strike, the City has built an extensive bike route network, including several miles of Class I dedicated bike lanes throughout the city. In addition, numerous improvements have been made to improve accessibility to existing infrastructure, especially on the River crossings.



Today, dedicated access and paths, all in pristine condition, are provided on all four East River Bridges, plus many of the Harlem River bridges. On the Queensboro Bridge, the Department provided additional capacity for cyclists and pedestrians by dedicating the South Outer Roadway (one vehicle lane) for pedestrian use, while maintaining the multi-use path on the North Outer Roadway for cyclists.

On the arterial street network in Manhattan, the existing Class II bike lanes and the curb lane adjacent to these lanes provided dedicated access for cyclists to Midtown and Lower Manhattan. A listing of these lanes is included in Appendix V. Nearly 5,000



traffic cones were used citywide to separate bicycle and vehicular traffic and a “No Standing” regulation was placed on each of the abutting curbsides. Between the hours of 5am and 8pm, two shifts of personnel monitored the cones. However, there was a high incident of illegal parking and non-compliance on the extended bike lanes due to vehicles parking along the curb or vehicles using it as a through lane. The bicycle network in the other boroughs was also promoted (also included in Appendix

V) and marked by existing bikeway signage. Cyclists were encouraged to refer to the Department Citywide Bicycle Map for all available routes throughout the City. In addition to the dedicated routes, cyclists were also encouraged to use any of the reserved streets outlined previously in this report.

Finally, the City worked with both city agencies and private sector employers and building managers to provide for secure bicycle storage for employees. Guarded bicycle parking was provided by the NYC Parks Department at selected facilities throughout the City. A complete list of secure bicycle parking locations is included in Appendix V.

Waterborne Transportation

The 1980 Strike Plan made provisions for increases in waterborne transportation. During that strike, the Staten Island Ferry emerged as one of the most viable modes of travel into Manhattan for Staten Islanders, nearly doubling its ridership versus regular ridership numbers at the time. However, there were limited additional waterborne options for commuters to utilize during the 1980 strike. The waterborne transportation system that exists in 2005 is greatly expanded for a variety of commuters in both the boroughs and in New Jersey through the significant increase in private ferry operators. This presented commuters with far more waterborne options than were available during the 1980 Strike.

Overall, the 2005 Strike Plan encouraged the existing ferry operators to expand their services to the extent that extra capacity could be provided and was warranted by demand, especially along many of the Trans-Hudson Routes, as were intra-city services between the Brooklyn and Queens waterfronts.

Staten Island Ferry

During the 1980 strike, the Staten Island Ferry operated on 10 minute headways during all peak hours. In addition, private vehicles were prohibited on the ferry between 7am and 7pm to provide for quicker headways. The service adjustments were very successful and effectively allowed this mode to meet the ridership demands. Similar adjustments in scheduling were made during the 2005 strike. During the expanded morning peak period, the ferry ran on 15 minute headways from St. George Terminal to Whitehall Terminal from 6am to 10am. Evening rush hour service from Whitehall Terminal was expanded to 15 minute headways from 2:30pm to 8pm. Additionally, parking lots at the St. George Ferry Terminal in Staten Island were restricted to HOV-4 vehicles, although these restrictions were relaxed during the last day of the strike.

In addition, the Department of Transportation also prepared to provide ancillary service from Whitehall to both 39th Street and the Brooklyn Army Terminal, which was used on an as needed basis to supplement demand,

Overall, there was a slight decline in ridership compared to normal conditions on the Staten Island Ferry throughout the strike, a stark contrast to the experience in 1980 when Ridership during the 6-10am peak period increased by 75%. This could be attributed to the fact that the use of the ferry leaves many workers in Lower Manhattan without a viable option to travel into midtown or points north.

Private Ferry Operations

In one of the more stark differences between the 1980 and 2005 strikes, the emergence of private ferries on New York Waterways played an increasingly integral part in the movement of people into and out of Manhattan. This was evident during both the events of 9/11 and the 2004 blackout, when traditional transit options were compromised.

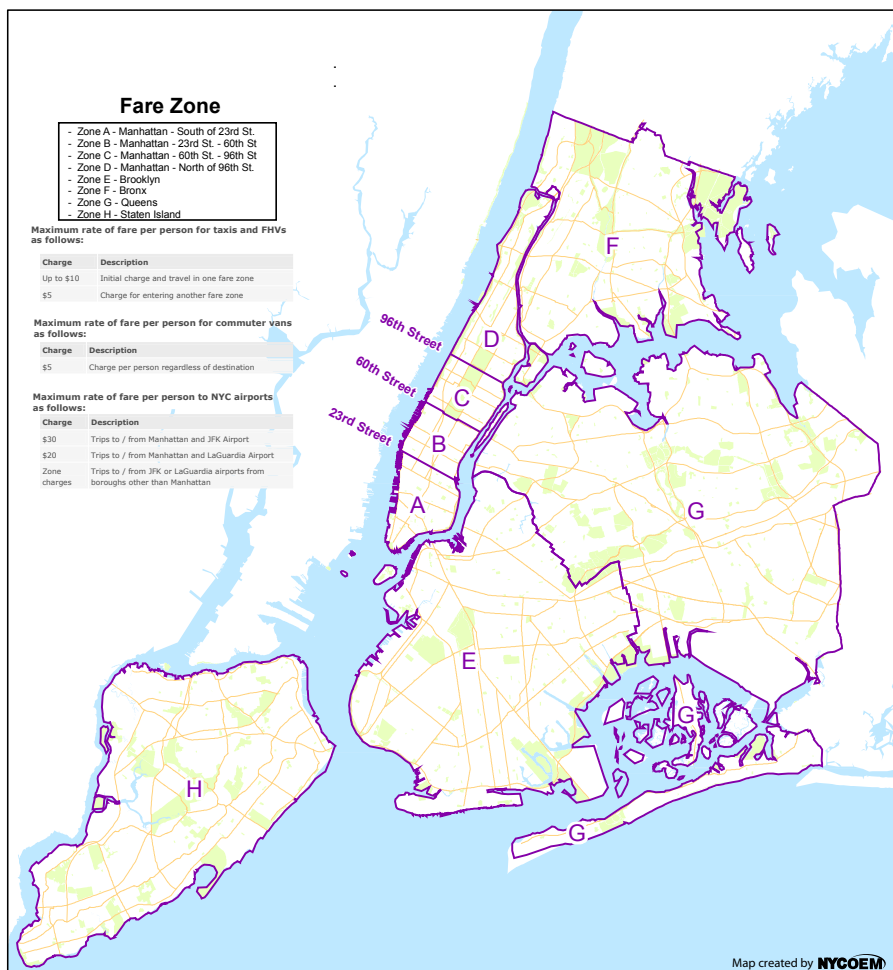


During the 1980 strike, approximately 12,000 individuals arrived by private boat, almost always privately chartered by an employer. On a normal workday, no such service, private or chartered existed and these trips were accommodated by other modes.

During the 2005 Transit Strike, all ferry landing facilities (piers and barges) supporting existing commercial or city-operated ferry services were reserved for the exclusive use of regular service providers. In addition, the NYCDOT Private Ferry Operations coordinated the scheduling and queuing of ferry service operating from ferry landing facilities.

Although private ferries played a relatively minor role during the strike, daily inbound ridership increased by a modest 9,000 or 50% from regular inbound volumes. Much of this can be attributed to the expansion of service to and from the Brooklyn Army Terminal by the city through the use of Staten Island Ferry Boats and later private operators, the operation of a Hunter's Point Ferry to East 34th Street, and the popularity of midtown ferry service from New Jersey, which may have been influenced by the provision of NY Waterways bus service to lower and midtown Manhattan.

Taxi and For-Hire Vehicle Services



In theory, Taxi and For-Hire Vehicles (FHVs) provide a viable option for commuters to travel during the strike. Although yellow-cabs (taxis which pick-up street hails), comprise of the bulk of taxi operations within Manhattan especially in the Midtown core, the availability of yellow-cab service is sparse in the other boroughs. FHVs, on the other hand, provide the bulk of livery service in these boroughs and traditionally provide dispatch service. In addition, licensed and unlicensed dollar van services provide options for commuters in several communities throughout the city.

During the 1980 strike, one of the primary strategies to optimize the efficiency of livery vehicles was the ability for cabs to pick up group rides to maximize the occupancy of the vehicles.

This program was updated for the 2005 Strike and included the following components:

- Street hails by TLC – licensed vehicles were permitted at bus stops where regularly scheduled service was not in operation and at Park-and-Ride and Carpool Staging Areas;
- Group rides were permitted and encouraged. However, TLC-licensed vehicles were subject to all HOV requirements;
- A fare structure was established based upon a zone system. This set a maximum initial charge of up to \$10 per person for travel in one fare zone and an additional \$5 for entering another fare zone.
- A maximum charge of \$5 per person regardless of destination for commuter vans
- Amended fare structure for trips to/from Manhattan and JFK Airport (\$30) and LaGuardia Airport (\$20).

Functioning Mass Transit System

Although the New York City Transit system accounts for a significant portion of daily trips on the mass transit system, the regional mass transit system continued to operate. It is important to understand that the New York City Transit component is one cog in the larger transportation system. In many cases, the city's subways and buses represent just one of the various modes of travel an individual may use on their commute to work.

Commuter Rail

In preparing for the 2005 Transit Strike, the Contingency Plan focused on improving the operation of the functioning mass transit system to provide enhanced services to commuters. There were numerous lessons learned as part of the previous two transit strikes. During both instances, ridership on both the Commuter Rail lines experienced substantial increases in ridership, especially from regional hub stations.

During the previous strikes in 1966 and 1980, MNR sought to provide for additional demand at inner suburban and city stations. While there was significant demand for this service during the 1966 strike (nearly 200 additional Bronx trains on MNR), there was minimal demand for this local service in 1980, due in large part to changing demographics and the prevalence and rise of express bus service.

The LIRR Contingency Plan during past strikes called for the suspension and/or reduction of peak hour service at stations within the city. Ridership increased dramatically during the both strikes. It should be noted that the LIRR also went out on strike in 1980 for the first two days of the 11-day transit strike, and did not resume service until the third day. As the strike progressed, the Long Island Railroad made some provisions to stop at local Queens stations should there be space available within the train. However, for the most part, the overall serviced limited stops at city stations.

Building upon these experiences, both the LIRR and MNR, now both under MTA control, developed individual Contingency Plans to reflect service capabilities and anticipated demand. A summary of each railroad's Strike Plans can be found in Appendix VI. Similar to the previous strikes, this program called for expanded service at select Queens's hub stations from 6-9am and 4-7pm. At all other times, dedicated shuttle trains and/or regular trains provided service to all stations in Queens.

MNR, on the other hand, modified service to provide for a greater amount of intra-city service, especially on the New Haven Line. The expanded peak service was implemented between 5-11am and 3:30 - 8:30pm. In addition, dedicated shuttle trains operated between the Grand Central Terminal and Fordham Road, with a temporary platform constructed at Yankee Stadium.

In addition, it took nearly 24 hours for both the LIRR and MNR to fully implement their contingency plans, so it was not until 4am Wednesday (Day 2) that both railroads were operating under this program.

During the course of the Transit Strike, increased demand for LIRR and MNR put increased pressures on several major transit hubs within New York City, most notably at Penn Station and Jamaica Station for LIRR service, and Grand Central Station and the 125th Street Terminal for MNR service, although crowding was evidenced at surrounding rail stations in Queens. At the major hubs, especially Penn Station, Jamaica Station and Grand Central, severe overcrowding necessitated corralling the large crowds of commuters that were trying to access these facilities. As

was the case during the previous strikes, both railroads effectively utilized pedestrian management strategies to safely and efficiently manage the influx of passengers. This included pedestrian barriers, street closures, and other techniques to prevent overcrowding. However, in some cases, especially along the LIRR, this contributed to significant wait times to access the rail facilities and delays in rail service. In certain instances, the facility would be shut down to prevent overcrowding within the station or passengers were not required to buy a ticket to speed up loading. These problems were more acute on Day One of the strike, as the railroads had not fully implemented their contingency plans. In addition, as was the case at Jamaica Station, all LIRR trains flow through this central pinch-point, so many of the trains are already full from the suburban stations. On the MNR, three individual lines all flow independently into Grand Central Station.

The other regional rail transit providers -- New Jersey Transit, PATH and Amtrak -- also provided some increased service to adapt to the expanded commuting hours and



pressures. This included the implementation of PATH Service from West 33rd Street to the World Trade Center station. During the three day strike, PATH saw significant increases in Ridership, due to the above mentioned Midtown to World Trade Center service. On the third day of the strike, PATH experienced its highest one-day ridership ever.

Bus Service

Although the lines that comprise the bus component of New York City Transit carry the majority of bus passengers in New York City, there are numerous additional bus service providers in the region. During the 1980 strike, several bus lines connecting Manhattan with the other boroughs remained in operation throughout the strike. At that time, the average daily ridership on the five lines in operation was 130,000 passengers, which increased by nearly 35% during the 1980 Transit Strike. The heaviest demand during

that strike was on the express routes between Brooklyn and Queens and Manhattan. Bus operations from New Jersey also remained in operation during the previous transit strikes, and also experienced substantial increases in ridership.

The provision of bus service is one of the biggest contrasts between the 1980 and 2005 Strike. Over the past several years, many of the private franchised bus companies have been incorporated into the MTA system, operating under a new division of the MTA, commonly referred to as MTA Bus Company. The lines that have been incorporated under the MTA include the lines formerly referred to as the New York Bus Service, Liberty Lines Express, and Queens Surface Corporation. Two additional lines, Triboro Coach and Jamaica Bus, which staged a work action the day prior to the

overall transit strike, are on the verge of being acquired by the MTA. In addition to Staten Island Bus operations, these encompassed the lines that were not operating during the strike. During the 2005 transit strike, two bus operators provided service. Green Bus



Lines operated under the control of the City while Command Bus operated as part of the MTA Bus Company.

In addition, several other private bus operators continued to provide service to Manhattan, including operations such as Atlantic Express service from Staten Island, and other private or charter operations.

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A large, rectangular orange sign is suspended over the road. It features the 'VER-MAC' logo in the top left and right corners, with '23M1' printed below the left logo. In the center, there are two smaller logos: one for 'NEW YORK CITY' and another for 'VER-MAC'.

ROSS