



# Progress Report: The MTA Capital Security Program

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The Metropolitan Transportation Authority (MTA) operates the largest and most diverse transportation system in the nation, and keeping it secure entails significant challenges. Each weekday, the MTA provides 8.2 million subway, commuter rail, and bus trips in a 5,000-square-mile area that extends from New York City through Long Island, southeastern New York State, and Connecticut.

The MTA operates a total of 734 subway and commuter rail stations—many of which are open 24 hours a day, 7 days a week. The MTA also operates a network of bridges and tunnels that are a vital component of New York City's transportation infrastructure. The strength of the mass transit system—its ability to move large numbers of people quickly through numerous entry points—also makes it difficult to secure.

In the wake of the terrorist attacks of September 11, 2001, the MTA initiated intense planning efforts to determine how to best protect its customers and key assets from a terrorist incident. These efforts culminated in a multifaceted strategy that included operational initiatives and 57 security-related projects funded through the capital program to harden and control access to vulnerable facilities.

The MTA's 2000-2004 capital program allocated \$591 million to fund the 24 highest-priority projects of the capital security program (i.e., Phase 1). These were subsequently reconfigured (primarily for contracting purposes) into 16 construction projects that entail 40 separate security improvements.

The projects in Phase 1 target the MTA's most vulnerable and heavily used assets, such as stations, transit hubs, bridges, and tunnels. Security improvements include perimeter protection; structural hardening; fire, life, safety, and evacuation enhancements; and electronic security and surveillance. Each project involves one or more facilities and security improvements. For example, a bridge project could include a single bridge or multiple bridges and any of several types of

security improvements, such as hardening or video surveillance.

This report is the fifth in a series of progress reports on the MTA's capital security program. The first report, issued in March 2006, found that while Phase 1 of the program got off to a fast start, it quickly fell behind schedule, and the delays were systemic. Still, the first report concluded that the transit system was more secure than it was before September 11, 2001, because the MTA had implemented—often with the cooperation of other stakeholders—a number of operational and other initiatives that mitigated inherent security risks.

The next two reports found that despite growing delays and costs, the transit system was becoming incrementally more secure as security improvements were completed. To minimize future delays and unplanned costs, the MTA's Executive Director took a number of steps, including consolidating responsibility for the program, establishing milestones, increasing oversight, and instituting weekly meetings of senior managers to track the program's progress.

The most recent report, issued in January 2008, found that the pace at which security improvements were completed—particularly facility hardening—had accelerated during 2007. The program, however, continued to encounter delays and unplanned costs, and the electronic security program had encountered difficulties.

Our current review finds that although construction continues to progress, only two security improvements have been completed so far in 2008, far fewer than last year. In addition, the electronic security program continues to face significant challenges. Despite the delays and problems, the security of the mass transit system has been enhanced by the completion of a number of important capital security improvements and other security initiatives.

## Scope and Methodology

As in our previous reports, the findings in this report were developed with the cooperation of the MTA and are based on a review of MTA documents and interviews with MTA officials. We did not audit the accuracy of the documents provided to us or independently verify the statements of MTA officials.

The public has a right to know how well the MTA is progressing with the implementation of planned capital security projects, but that right must be balanced against the risks of releasing information that could compromise security. For this reason, our report does not reveal the details of individual security projects.

We determined the progress of the capital security program by using three quantitative measures.

- The first measure tracks the number of projects in the design and construction phases, and the number of completed projects.
- The second measure tracks each project's progress toward its scheduled completion date by comparing the MTA's actual completion date or latest projected completion date against "baseline" schedules that were developed by the MTA in late 2003 and early 2004. According to the MTA, these baseline schedules were the earliest schedules that included both start and completion dates.
- The third measure tracks the status of the individual construction tasks within each project against the schedules that were set at the time construction contracts were awarded.

## Findings

Our findings—outlined below—focus on the status, as of September 15, 2008, of the 16 capital construction projects that encompassed Phase 1 of the MTA's capital security program when we first began monitoring it, in August 2005. These 16 projects currently consist of 40 separate construction tasks.

- As of September 2008, 13 of the 16 projects (including two completed projects) were one year or more behind the baseline schedules established by the MTA in late 2003 and early 2004, including two projects that were behind schedule by more than five years. Phase 1 will not be completed until September 2011—three years later than the original estimate.

- The MTA has completed 19 of 40 planned construction tasks, or nearly 50 percent, and another 17 tasks are in construction. More than 60 percent of these 36 construction tasks, however, were behind the schedules established at the time contracts were awarded, including 14 tasks that were behind by at least seven months.
- The integrated electronic security program has encountered serious problems, which has created delays, increased costs, and reduced the planned functionality. The program was scheduled for completion in August 2008, but the MTA now expects to achieve only limited functionality beginning in early 2009. Full functionality is scheduled for December 2009, but that date may be overly optimistic given the challenges that still need to be overcome.
- In April 2008, the MTA and the primary contractor for the electronic security program tested the software that will manage video and access control as well as records management for the MTA Police Department. Of the 1,400 software elements tested, 400 failed.
- The cost of the electronic security program has grown to \$453 million—an increase of \$188 million, or 71 percent. (Nearly half of the increase is due to the inclusion of additional facilities). This estimate *excludes* \$63 million in potential costs that may be reflected in future budget estimates.
- The cost of Phase 1 (including two facilities that were deferred from Phase 1 to Phase 2 of the program) has grown from \$591 million to \$837 million—an increase of 42 percent.
- Ten critical infrastructure facilities have been hardened, and perimeter protection has been installed around three major transportation facilities. Fire, life, and safety improvements, however, are far behind schedule.
- The MTA has implemented, often with the cooperation of other stakeholders, a multifaceted approach to securing the transit system. In addition to the capital security program, the MTA has increased its security personnel, enhanced its coordination with security agencies, implemented a public relations campaign to encourage the public to report suspicious activity, and taken other steps to improve the overall security environment.

## Adherence to Project Schedules

As of September 2008, Phase 1 of the MTA’s capital security program encompassed 16 projects, divided into 40 construction tasks.<sup>1</sup> We determined the progress of the program by using the three quantitative measures described in the “Scope and Methodology” section of this report.

### Project Phases

In August 2005, the MTA began providing us with monthly reports on the status of the capital security program. As of September 2008, when the MTA had completed three years of reporting, only four of the 16 projects were fully completed (see Figure 1), but 11 other projects were in construction. In the past year, three projects progressed from the design to the construction phase.

**Figure 1**  
**Construction Projects by Phase**

	Aug. 2005	Sept. 2006	Sept. 2007	Sept. 2008
Completed	0	1	2	4
Construction Phase	11	10	10	11
Design Phase	5	5	4	1
<b>Total</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>

Sources: Metropolitan Transportation Authority; OSC analysis

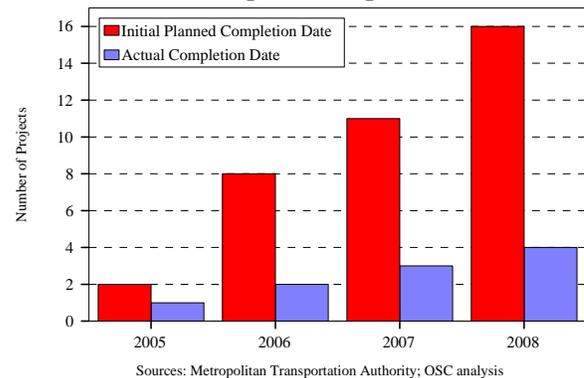
### Progress Toward Completion Dates

As of September 2008, 13 of the 16 projects in Phase 1 were a year or more behind the baseline schedules set by the MTA in late 2003 and early 2004, including eight projects that were delayed by more than two years (two projects were delayed by more than five years). In January 2008, we reported that the majority of delays stemmed from problems encountered prior to the start of construction; however, we are finding that the construction phase is an increasing contributor to the long delays.

<sup>1</sup> Our analysis includes one security project (consisting of two construction tasks) that the MTA had originally planned to complete as part of Phase 1, but has since deferred until Phase 2.

As shown in Figure 2, the MTA had planned to complete all 16 projects that comprise Phase 1 by September 2008. As of September 15, 2008, only four projects had been completed, and only one project had been completed since December 2007. Based on the current schedule, Phase 1 will not be completed until September 2011—three years later than the original estimate.

**Figure 2**  
**Program Progress**



### Construction Task Status

When construction contracts are awarded, the MTA and the contractor agree on a schedule to complete the specified work. Each construction task has its own contractually specified end date. (Some contracts involve more than one task.) If a contractor fails to fulfill its obligations, it can incur financial penalties. Alternatively, the MTA risks incurring additional costs if it is unable to fulfill its obligations under the contract.

Since our last review (December 2007), three new construction tasks have been started, but all three began two years later than initially planned. Four projects are now complete and construction has begun on all planned construction tasks for eight of the remaining 12 projects in Phase 1. In total, 36 of the 40 planned construction tasks (90 percent) were in progress or completed as of September 2008.<sup>2</sup>

<sup>2</sup> One other construction task was complete, but the MTA did not provide data that would have permitted us to measure progress against the schedule established at the time the contract was awarded.

In our last review, we noted that from the end of December 2006 to the end of December 2007, 12 construction tasks were reported to us as completed, which brought the total number of completed tasks to 17 (see Figure 3).<sup>3</sup> In the nine months since our last review, only two additional construction tasks have been completed, bringing the total number of completed tasks to 19, or nearly half of the total number planned.



In our last review, we found that 20 of the 30 construction tasks that were either in progress or completed were behind schedule. In our current review, 22 of 36 construction tasks (61 percent) were behind schedule (see Figure 4). The number of construction tasks that were behind schedule by at least seven months has continued to rise, from 9 in December 2007 to 14 in September 2008.

**Figure 4**  
**Progress of Construction Tasks**

On or Ahead of Schedule	1 to 3 Months Behind Schedule	4 to 6 Months Behind Schedule	7 Months or More Behind Schedule
14 Tasks	5 Tasks	3 Tasks	14 Tasks

Sources: Metropolitan Transportation Authority; OSC analysis

<sup>3</sup> The MTA had reported to us that an asbestos removal task had been completed in December 2007, but it later determined that additional work was needed. The additional work was completed on May 29, 2008.

### *Reasons for Delay*

Many of the delays in the capital security program occurred before the start of construction work. Although the design work for 11 of the 16 construction projects began within three months of the scheduled start dates, design work for three other projects was delayed by one year or more. The MTA explained that the delays were caused by favoring the top six priorities at the expense of the other projects.

Eight of the 16 projects were delayed by six months or more during the design stage. In response to one of our prior reports, MTA officials stated that design tasks took longer than planned because the initial risk assessments did not adequately define projects; some proposed mitigations were more complicated than first envisioned; second opinions were sought during the conceptual design stage for some projects; and scopes were broadened for some projects.

The MTA informed us that it has taken longer than expected to obtain permits from federal, State, and City agencies. We were told that while agencies had expedited the process because of the importance of these projects, the process still took longer than the MTA had expected.

The MTA delayed the start of two projects by about a year because it did not receive approval of federal funds until August 2007. The MTA now expects these projects to be completed in 2009.

The start of construction on one project was delayed by more than two and a half years because the owner of a building that adjoins an MTA facility had not agreed to fund needed security improvements. (The delay also affected another project that was to be part of the same contract.)

A number of factors have contributed to delays in the electronic security program. According to the MTA's operating agencies, the initial designs submitted by the contractor were not detailed enough to allow the agencies to complete their reviews. In addition, since the MTA never imposed uniform standards on its operating agencies for software, hardware, and other equipment that is integral to the success of the electronic security program, the operating agencies have had to overcome their reluctance to adopt new standards.

More recently, the contractor has experienced difficulties developing the software that will operate and integrate the electronic security system. The MTA recently established an interagency task force, which includes representatives from the information technology division and the operating agencies, to address these issues.

### Compliance with Budget Targets

As of September 2008, the MTA projected that Phase 1 of the capital security program would cost \$151.8 million more than originally planned, increasing the total cost to \$742.8 million. The current estimates for Phase 1 reflect the cancellation of one entire project (which had an estimated cost of \$33 million) and four additional security improvements. If these plans were still intact, the growth in the cost of the program would have been even higher.<sup>4</sup> In addition, the MTA's estimate excludes the cost of renovating two high-priority facilities that were planned as part of Phase 1 but have since been deferred to Phase 2. When the cost of these two facilities is included, the cost of Phase 1 has effectively grown to \$837 million, an increase of \$246 million or 42 percent. Moreover, the MTA has identified \$63 million in budget risks associated with the electronic security program.

MTA officials have stated that costs have grown because the original \$591 million budget was based on project plans that were very conceptual, and that additional design work was still needed to further define the projects. Officials also stated that many of the security projects are unprecedented in the construction field, and therefore accurate cost estimates were difficult to obtain before the design processes were completed. Also, as the program has progressed, additional facilities have been added and the scope of some security improvements has been broadened.

Figure 5 shows the allocation of resources by type of remediation. Slightly more than 90 percent of the resources (\$756.2 million) has been allocated to fund construction tasks, while the remainder has been allocated to fund design.

**Figure 5**  
**Security Project Cost**  
**By Type of Remediation**  
(in millions)

Remediation	Original Estimate	September 2008 Estimate	Change Inc./.(Dec.)
Electronic Security	\$ 265.0	\$ 452.6	\$ 187.6
Structural Hardening	221.0	248.4	27.4
Fire/Life/Safety	80.0	70.4	(9.6)
Perimeter Protection	25.0	37.8	12.8
Other	---	28.0	28.0
<b>Total</b>	<b>\$ 591.0</b>	<b>\$ 837.0</b>	<b>\$ 246.0</b>

Notes: Estimates include two projects that were originally part of Phase 1 but have been deferred to Phase 2.

Sources: Metropolitan Transportation Authority; OSC analysis

### Status of Program Elements

Each major type of remediation in the MTA capital security program is discussed below.

**Structural Hardening:** The MTA intends to spend \$248.4 million to harden bridges, tunnels, stations and other structures to make them better able to withstand the impact of explosive devices. The allocation of resources is 30 percent of the total value of Phase 1 and represents \$27.4 million more than initially planned, even though the MTA cancelled a number of planned structural improvements. As of September 2008, the MTA has hardened 10 critical infrastructure facilities and has begun hardening four others.

**Electronic Security:** The MTA announced in August 2005 that it had awarded a \$212 million contract to Lockheed Martin for a state-of-the-art integrated electronic security program to enhance security throughout its transportation network. The contract called for the installation of video cameras and electronic sensors, including motion sensors, intrusion detection devices, swipe access devices, and intelligent video. These devices will be monitored at command, control, and communication centers throughout the MTA region.

<sup>4</sup> To help fund the unplanned costs, the MTA drew upon \$119.4 million in resources that could have benefited its operating budget.

While the physical structures (i.e., buildings, cameras, sensors, and fiber-optic cable) are expected to be completed by June 2009, additional time will be needed to integrate the systems fully, test the software, and train personnel. The program, which was scheduled for completion in August 2008, is not expected to be completed before December 2009—16 months later than planned.

Although the electronic security program has fallen behind schedule and has encountered numerous problems, the MTA is making progress. As of August 2008, the MTA had installed about half of the planned 2,166 video cameras and 33 percent of the planned 1,283 access and control sensors. In addition, the central command center is more than 90 percent complete, and the three local command centers and two of the four regional command centers are scheduled for completion by December 2008.

The MTA had planned to piggyback the electronic security program onto the same fiber-optic cables used by New York City Transit (NYCT), but some 84,000 feet of cable has deteriorated prematurely or contains broken segments. To avoid delay, the MTA leased fiber-optic lines from Verizon at a cost of nearly \$1 million while NYCT remedies its cable problem.

Also, software development has encountered problems and has missed deadlines. As we previously reported, an important element of the intelligent video program will not be advanced because of difficulties tailoring the software to conditions in the MTA environment. In April 2008, the MTA and the primary contractor for the program tested the software that will manage video and access control as well as records management for the MTA Police Department. Of the 1,400 software elements tested, 400 failed. MTA officials determined that four of those elements needed to be corrected before the program could proceed. The contractor proposed corrective measures, and has since demonstrated one measure to the MTA's satisfaction.

Given the challenges associated with the integrated electronic security system, the MTA established, in March 2008, an interagency task force of personnel from information technology, security, and maintenance to determine the level of functionality of the access and control devices and other record-management systems.

The MTA now intends to integrate the various local and regional command centers with the central command center sequentially. The MTA plans to have one major facility operating by the end of the first quarter of 2009. This facility would be fully integrated with the local and regional command center and the central command center. Until all of the other facilities and command centers are functioning, and training is complete, interagency situational awareness will be limited.

The contractor is still developing the software that will coordinate the software that controls the video cameras and access control sensors with the software that controls the record-management system. According to Gartner Inc.—one of the MTA's security consultants—integration of these two software packages has never been attempted before. The MTA plans to test the software during the first quarter of 2009.

The cost of the electronic security program has grown from \$265 million to \$453 million, an increase of \$188 million or 71 percent. Nearly half of the increase is due to the inclusion of additional facilities (\$91 million), with most of the balance due to the upgrade of computer networks (\$34 million) and the purchase and renovation of facilities to house the command and control centers (\$51 million).

These estimates exclude \$63 million in costs associated with a claim from the contractor for acceleration of the contract and with additional work orders that may be reflected in future budget estimates. In addition, the electronic security program will increase operating budget costs by \$124 million over the next four years for the operational, technical, and maintenance needs associated with the program.

**Fire, Life, and Safety Improvements:** The MTA plans to spend \$70 million on fire, life, and safety improvements to its tunnels and stations. These include improved lighting, signs, ventilation, and communication equipment, all of which are critically important to accelerate emergency response times and expedite evacuation. These improvements, however, have encountered significant delays.

For example, one project involves 14 separate infrastructure facilities. While the MTA had hoped to complete this work by September 2007, the current forecast calls for completion by the end of December 2009. While work on four of these facilities is more than 70 percent complete (including one facility that has been finished), work on ten others is no more than 30 percent complete.

Another project, which is encountering difficulties during the construction phase as a result of a stakeholder's in-house labor issues, is 16 months behind its construction schedule.

One additional project, which has encountered design problems stemming from the size, age, and historical features of the property, is 21 months behind its construction schedule.

**Perimeter Protection:** Perimeter protection entails the installation of bollards (i.e., metal or concrete posts) and other devices that are designed to expand the security perimeter around a facility. The perimeter protection element of the capital security program entails five projects that include six separate facilities. The cost of these projects is expected to total \$38 million, which is 51 percent more than originally planned.

Perimeter protection has been installed around two major transportation facilities. Construction at the first facility was completed in May 2007—more than one year later than called for under the construction contract and 21 months later than initially planned. Work at another major facility was completed in July 2008—seven months earlier than planned under the construction contract, but 30 months later than initially planned.

In addition, installation is underway at two more facilities. One facility is more than 80 percent complete, but 20 months behind the schedule set at the time the construction contract was awarded. The other facility has just begun construction after a five-year delay because of a stalemate between property owners and MTA officials that was only resolved after a letter from the Police Commissioner of the City of New York, which emphasized the importance of protecting the facility, was made public.

For the remaining facility, perimeter protection is still in the design phase. This project has been repeatedly delayed, and is now scheduled to begin in the third quarter of 2009 and is not expected to be completed until July 2010.

## Phase 2

Phase 2 of the capital security program was originally expected to cover the remaining 33 security projects on the initial list of 57, and to cost \$495 million. In November 2005, the MTA hired Kroll (a security consulting firm) to determine if the terrorist threat had changed since September 11, 2001, and how to adjust Phase 2 to reflect any new security priorities.

In December 2006, the MTA Board amended its capital program to reflect plans to borrow up to \$141 million to fund security improvements on the two facilities that were deferred from Phase 1, another facility of a similar type, and a pilot program for laser intrusion devices. Construction has begun on both of the facilities that were deferred from Phase 1, and the other two projects are still in the design stage. Nearly three years later, the MTA still has not identified any additional projects that will comprise Phase 2 of the capital security program.

## Federal Funding

Passenger rail systems in the United States carry 16 times more passengers daily than commercial airlines do. Despite this high passenger volume, the federal government has spent much more on aviation security than on rail transit security. In addition, most federal homeland security funds have used a statutory formula that guarantees each state a minimum amount of funding. Mayor Bloomberg and others, including U.S. Senators Clinton and Schumer, have called for threat-based funding criteria to replace the statutory formula.

Congress has appropriated \$400 million for transit security for federal fiscal year (FFY) 2009, which is unchanged from the year before but more than what the President requested. This appropriation is still much less than the \$6 billion appropriated annually for aviation security.

## Other Initiatives

The MTA has implemented, often with the cooperation of other stakeholders, a multifaceted approach to making the transit system more secure. These initiatives include, but are not limited to, the following.

- Since 2001, the MTA has increased the size of the MTA Police Department (MTAPD). At the end of July 2008, the MTAPD totaled 705 officers—215 employees, or 44 percent, more than the level prior to September 11, 2001. The MTAPD has assigned 75 officers to counterterrorism operations, including a ten-person Emergency Services Unit and a Canine Unit with 50 bomb-sniffing dogs.
- MTA Bridges and Tunnels hired 261 additional security officers shortly after September 11, 2001, and has instituted checkpoints at bridge and tunnel entrances to check for suspicious packages. The Triborough Bridge and Tunnel Authority has also upgraded its command center in order to improve emergency response time.
- To coordinate and oversee security activities, the MTA created the Office of Public Safety and the Interagency Counterterrorism Task Force (ICTF). The ICTF engages in outreach to local police and emergency service providers, and produces a daily intelligence briefing on transit-related threats and terrorist activities that is shared worldwide. Recently, the ICTF established an office in Connecticut and extended its reach to include the Staten Island Railway.
- Multiple layers of security agencies, including the National Guard, State Police, and federal agencies, work to protect the transit network, and are particularly prominent in transit hubs such as Grand Central Station, Pennsylvania Station, and the Jamaica Terminal. For example, the NYPD patrols the entire subway system, and the Directed Patrol Program enhances the visibility of uniformed personnel in commuter trains, platforms, stations, and

parking lots. Each week, 1,800 directed patrols perform 6,500 “step-ons” and ride more than 1,000 trains; and several times a week they conduct bag screenings that are coordinated with other agencies, such as the Port Authority.

- In March 2003, the MTA initiated a public relations campaign that features the slogan “If You See Something, Say Something” to increase public awareness of suspicious activity. The marketing campaign is periodically updated, and ran on television from July 2007 to November 2007.
- The MTA’s operating agencies each coordinate at least four emergency drills annually. These drills include local law enforcement agencies and first responders, and usually cover communications, rescue, extrication, and first aid. At the end of July 2008, the MTA hosted an international conference, sponsored by the federal government, on sharing best practices to protect against terrorism.
- Federal grants have been used to fund security improvements beyond the capital security program. For example, federal grants have funded access controls, purchased explosive and chemical detection equipment, improved perimeter protection, installed closed-circuit television (CCTV) cameras in the transit system, and purchased two mobile command vehicles. Operating budget resources have been used to fund subway car seat locks, subway station emergency exit bars, and additional CCTV cameras in subway stations and buses.
- In September 2007, the MTA allocated \$25 million to begin security training for 28,000 of its frontline employees (i.e., motormen, engineers, conductors, and station attendants) over a four-year period. As of August 2008, more than 19,000 employees have received the training.

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