



# 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 8.3 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 September 11, 2001, terrorist attacks on the World Trade Center, 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 I 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 improvements, and electronic

security and surveillance. Each of the projects 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 fourth 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 second report, issued in October 2006, found that while most capital security projects had fallen further behind their scheduled completion dates, the MTA was making progress. Compared with six months earlier, nearly twice as many projects had progressed to the construction phase and most security improvements were on or ahead of the schedules that were established at the time the construction contracts were awarded.

The third report, issued in June 2007, found that in spite of growing delays the regional mass transit system was becoming incrementally more secure as construction tasks were completed.

Our current review finds that the number of completed security improvements has accelerated during 2007, but the capital security program has encountered additional delays and unplanned costs, and the electronic security program has encountered difficulties. Despite these setbacks, the overall security environment has been enhanced with the completion of capital security improvements and the implementation of 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 release of 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 individual construction tasks against the schedules that were set at the time the construction contracts were awarded.

## Findings

Our findings—outlined below—focus on the status, as of December 2007, of the 16 capital construction projects that comprised 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.

- Since January 1, 2007, the MTA has completed 12 of the 40 construction tasks planned for Phase 1, bringing the total number of completed construction tasks to 17. Importantly, the MTA has hardened 11 critical transportation facilities and has installed

perimeter protection around a major transportation facility.

- By contrast, the MTA will need considerably more time than originally anticipated to complete Phase 1 of the capital security program. As of December 2007, 12 of the 16 projects were one year or more behind the schedules established by the MTA in late 2003 and early 2004, including four projects that were three years or more behind schedule. On a positive note, the MTA has completed three of its top six priority projects, with the exception of one construction task that was eliminated due to technical issues but later restored when those obstacles were overcome.
- Construction tasks are falling further behind the schedules established at the time the construction contracts were awarded. As of December 2007, 30 of the 40 construction tasks in Phase I had progressed out of the design phase and were either in the construction phase or had been completed. Of those 30 tasks, 67 percent were behind schedule, compared with 27 percent in July 2006. The number of tasks that were seven or more months behind the contract schedule had tripled—from three in March 2007 to nine by December 2007.
- The integrated electronic security program has experienced significant setbacks. The program, previously expected to be completed in August 2008, is now scheduled to be completed in December 2009—although the MTA hopes to gain some beneficial use beginning in August 2008. Moreover, the capability of the program has been scaled back because the contractor had difficulty tailoring software to conditions in the MTA environment.
- The cost of the electronic security program has grown from \$265 million to \$450 million—an increase of \$185 million or 70 percent. (Nearly half of the increase is due to the inclusion of additional facilities). This estimate excludes \$51 million in costs associated with a claim from the contractor for acceleration of the contract and for additional work orders that may be reflected in future budget estimates.

- The expected cost of Phase 1 of the capital security program is now far greater than the MTA originally anticipated. According to the MTA, the cost has grown from \$591 million to \$743 million, which is \$152 million (26 percent) higher than the original estimate and \$22 million higher than forecast by the MTA in March 2007. These estimates exclude 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 this cost is included, the expected cost of Phase 1 grows to \$837 million, or \$246 million (42 percent) more than the original estimate.
- The MTA’s Executive Director has taken a number of steps to minimize additional delays and costs. These include consolidating responsibility for the program, establishing milestones, instituting weekly meetings of senior managers to track the program’s progress, and increasing internal oversight.
- 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 the coordination among security agencies, implemented a public relations campaign to alert the public to suspicious activity, and has taken other steps to improve the overall security environment.

## Adherence to Project Schedules

As of December 2007, 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 Status

In August 2005, the MTA began providing us with monthly reports on the status of the capital security program. As of December 2007, the MTA

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

had completed more than two years of reporting, and in that time span only three of the 16 projects were fully completed (see Figure 1). Two projects were finished by December 31, 2006, and one was finished in November 2007. All three were completed later than expected based on the schedules developed by the MTA in late 2003 and early 2004: the first by nine months, the second by ten months, and the third by 22 months. For one other project, eight major construction tasks have been completed, but the one remaining task is a year away from completion. Figure 1 shows that since December 2006, only two projects have progressed from design to construction.

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

	Dec. 2005	Dec. 2006	Dec. 2007
Completed	1	2	3
Construction Phase	4	8	9
Design Phase	<u>11</u>	<u>6</u>	<u>4</u>
<b>Total</b>	<b>16</b>	<b>16</b>	<b>16</b>

Sources: Metropolitan Transportation Authority; OSC analysis

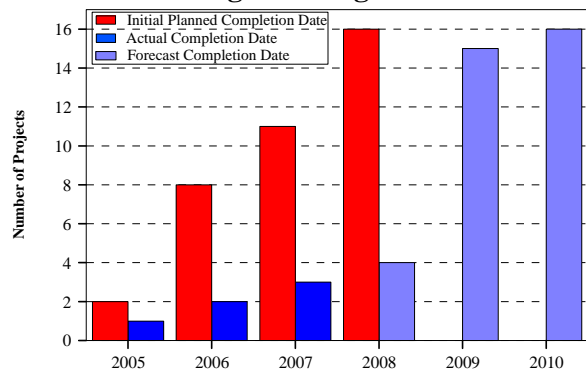
### Progress Toward Completion Dates

As of December 2007, 12 of the 16 projects in Phase 1 (or 75 percent) were a year or more behind the schedules set by the MTA in late 2003 and early 2004, including four projects that were three years or more behind schedule.<sup>2</sup> Although the majority of the delays stem from problems encountered prior to the start of construction, we are also finding increased delays during the construction phase.

As shown in Figure 2, the MTA had planned to complete a total of eight projects by December 31, 2006, but only two were actually finished by that time. Moreover, the MTA had planned to complete 11 projects by the end of 2007, but only three were completed by that time. If the MTA keeps to the current schedule, Phase 1 will be completed by May 2010—more than a year and a half later than the original estimate of September 2008.

<sup>2</sup> In June 2007, we reported that as of March 2007 eight projects were a year or more behind schedule and only one project was three years or more behind schedule.

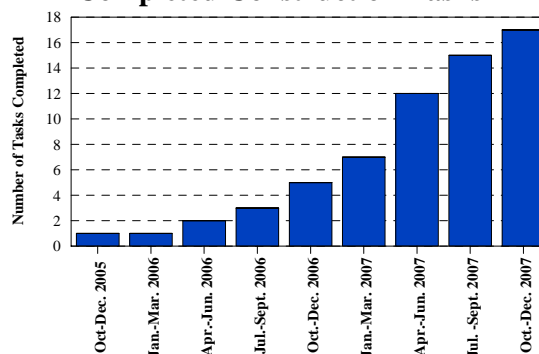
**Figure 2**  
**Program Progress**



Sources: Metropolitan Transportation Authority; OSC analysis

**Figure 3**

**Completed Construction Tasks**



Sources: Metropolitan Transportation Authority; OSC analysis

### Construction Phase

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 construction 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.

For seven of the 16 projects planned for Phase 1—nearly half—construction has begun on all planned construction tasks. For five additional projects, construction has begun on at least one task. Thus, in total, construction has begun on 12 of the 16 projects planned for Phase 1, and 30 of the 40 planned construction tasks (75 percent) were in progress or complete as of December 2007.<sup>3</sup>

As Figure 3 illustrates, 12 construction tasks have been completed since December 31, 2006, bringing the number of completed tasks to 17. As of December 2007, another 13 tasks were in some phase of construction, including two that were more than 85 percent complete.

<sup>3</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 with concern that the percentage of construction tasks behind schedule had nearly doubled, rising from 27 percent to 52 percent, between July 2006 and March 2007. In our current review, we found that 20 of the 30 construction tasks that were in progress or completed—67 percent—were behind schedule (see Figure 4). Moreover, there has been a threefold increase in the number of construction tasks that were behind schedule by at least seven months, from three in March 2007 to nine in December 2007.

**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
10 Tasks	7 Tasks	4 Tasks	9 Tasks

Sources: Metropolitan Transportation Authority; OSC analysis

### Reasons for Delay

Many of the delays in the capital security program have occurred before the start of construction work. Although design work began for 11 of the 16 construction projects within three months of their 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 giving preference to the top six priorities at the expense of the other projects.

Seven of the 16 projects—nearly half—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 assessment did not adequately define projects; some proposed mitigations were more complicated than first envisioned; a second opinion was sought during the conceptual design stage on some projects; and the scope was broadened on others.

The MTA also 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 anticipated.

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 years because the owner of a building that adjoins an MTA facility had not agreed to fund needed security improvements. (The delay affected another project that was to be part of the same contract.) At the time of our last report, the MTA intended to fund the improvements itself; now, however, the MTA plans to focus solely on securing its own facility although this does not fully address security concerns. Approvals are still needed from the New York City Department of Transportation and the New York City Police Department (NYPD) before the MTA can proceed.

The MTA has extended the construction phase on four projects (including two projects from the electronic security program) by ten months or more, because the projects were more complicated than originally contemplated. Two of these projects encountered delays because site conditions differed from expectations.

A number of factors have contributed to delays in the electronic security program. According to the operating agencies, designs submitted by the contractor were insufficiently detailed for the agencies to complete their reviews. In addition, since the MTA never imposed uniform standards on the operating agencies for software, hardware, and other equipment that is integral to the success of the electronic security program, the operating

agencies had to overcome their reluctance to adopt new standards.

## Compliance with Budget Targets

Following the London subway bombings on July 7, 2005, the MTA revealed that it had committed only \$54 million of the \$591 million budgeted for security projects—and that most of the commitments were for design work. Subsequently, the MTA said it planned to “accelerate” the design and construction of the security program, and that it would commit the balance by December 31, 2005.

By the end of 2005, however, the MTA had committed \$428 million—a shortfall of 27 percent. Moreover, the amount that was committed represented only 59 percent of the anticipated cost of Phase 1 at that time, because cost expectations had increased. As of December 2007, the MTA had committed \$620 million—83 percent of the current expected cost. The shortfall is indicative of sustained delays in the entire program.

In September 2005, the Office of the State Comptroller reported that the projected cost of the capital security program had grown from \$591 million to \$721 million, an increase of \$130 million or 22 percent.

At the time, MTA officials explained that costs had 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 were unprecedented in the construction field, and therefore accurate cost estimates were difficult to obtain before the design processes were completed. Also, as the program progressed, additional facilities were added and the scope of some security improvements was broadened.

As of December 2007, Phase 1 of the capital security program was projected by the MTA to cost \$742.8 million, which is \$151.8 million more than originally planned. To help fund these unplanned costs, the MTA drew upon \$119.4 million in resources that could have benefited the MTA’s operating budget.

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. Including these facilities, the cost of Phase 1 has grown to \$837 million, an increase of \$246 million or 42 percent. In addition, the MTA has identified \$51 million in budget risks associated with the electronic security program.

The current estimates for Phase 1 also 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.

Figure 5 shows the allocation of resources by type of remediation. Slightly more than 92 percent of the resources (\$681 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	Dec. 2007 Estimate	Change Inc./ (Dec.)
Electronic Security	\$ 265.0	\$ 450.4	\$ 185.4
Structural Hardening	221.0	151.1	(69.9)
Fire/Life/Safety	80.0	75.4	(4.6)
Perimeter Protection	25.0	41.2	16.2
Other	---	24.7	24.7
<b>Total</b>	<b>\$ 591.0</b>	<b>\$ 742.8</b>	<b>\$ 151.8</b>

Sources: Metropolitan Transportation Authority; OSC analysis

## Status of Program Elements

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

**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 more than 1,000 cameras and 3,000 sensors throughout the system, including motion sensors, intrusion detection devices, and intelligent video. These devices will be monitored at various command, control, and communication centers throughout

the MTA region that will be linked to a central command center. Currently, four separate projects comprise the integrated electronic security program.

The electronic security program has begun to experience mounting delays. In March 2007, the MTA reported to us that the program was experiencing minimal construction delays of two months—the first delays in this project since we began monitoring in August 2005. As of December 2007, three projects (the original scope of work) were delayed by seven months, and the fourth project (additional facilities) was 16 months behind schedule. While the MTA hopes to achieve some beneficial use of the electronic security system in August 2008, the completion of the original scope of work is now scheduled for March 2009 and completion of the additional facilities is scheduled for December 2009.

Moreover, while the MTA is proceeding with the intelligent video program, one particular element could not be advanced at this time due to difficulties tailoring the software to conditions in the MTA environment. The MTA provided extensive briefings to the media on the electronic security program in August 2005, shortly after the London bombings, creating expectations for this program that now may not be fulfilled.

The cost of the electronic security program has grown from \$265 million to \$450 million, an increase of \$185 million or 70 percent. Nearly half of the increase is due to the inclusion of additional facilities (\$89 million), with most of the balance due to upgrading computer networks (\$40 million) and purchasing properties for command and control centers (\$50 million). These estimates exclude another \$51 million in costs associated with a claim from the contractor for acceleration of the contract and for additional work orders that may be reflected in future budget estimates.

The MTA identified new funding needs associated with the electronic security program in its July 2007 financial plan—which show that beginning in 2008 the operational, technical, and maintenance needs associated with the program will cost more than \$100 million over the next four years. The MTA has not yet identified any other operational costs associated with the capital security program.

The MTA hired a consultant in November 2006 to perform a top-down review of the electronic security program and assess how it will fit within the overall security program, but the report has not been finalized. The absence of a final report, rising costs, and scaling back of functionality, raises questions about the overall cost-effectiveness of the electronic security program.

**Structural Hardening:** The MTA intends to spend \$151 million to harden bridges, tunnels, and other structures to make them better able to withstand the impact of explosive devices. The allocation of resources is 20 percent of the total value of Phase 1 and represents \$70 million less than initially planned, because the MTA cancelled a number of planned structural improvements. To date, the MTA has hardened 11 critical transportation facilities.

**Fire, Life, and Safety Improvements:** The MTA plans to spend \$75 million on fire, life, and safety improvements to its tunnels and stations. These investments include improved lighting, signage, ventilation, and communication equipment, which are critically important to accelerate emergency response time and expedite evacuation. The MTA has begun 70 percent of the construction tasks associated with this element of the capital security program. This program element has had to overcome a number of challenges, including coordination among stakeholders, higher costs, delays in the receipt of federal funding, and problems with the introduction of new technologies.

**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. These projects are expected to cost \$41 million, which is 65 percent more than originally planned. Although completed more than one year later than expected, perimeter protection has been installed around one major transportation facility; in addition, installation is underway at another facility and is about to begin at a third facility after a long delay. Another perimeter initiative, which has been repeatedly delayed and was scheduled to begin in February 2008, has now been pushed back to June 2008.

## 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. Two years later, the MTA still has not identified the projects that will comprise Phase 2 of the capital security program.

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 and on another facility of a similar type.

## 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 guaranteed 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) 2008, which is far more than past appropriations but still much less than the \$5 billion appropriated annually for aviation security. Last summer the President signed a bill that would substantially increase funding for homeland security beginning in FFY 2008, but the administration is reportedly considering reducing security grants to \$1.4 billion in 2009—less than half the amount appropriated in 2008.

## 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). In October 2007, the MTAPD totaled 681 officers—201 employees, or 42 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.
- The MTA has added 261 additional Bridge and Tunnel officers, and 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 response time in the event of an emergency
- To coordinate and oversee the MTA’s 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.
- Multiple layers of security 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 on commuter trains, platforms, stations, and parking lots. The program enhances the visibility of the MTA police, in close coordination with local law enforcement. Each week, 1,800 directed patrols perform 6,500 “step-ons” and ride more than 1,000 trains.
- In March 2003, the MTA initiated a public relations campaign that features the slogan “If You See Something, Say Something” to alert the public to 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.
- Federal grants and operating budget resources have also been used to fund security improvements. For example, federal grants have funded access controls, purchased explosive and chemical detection equipment, improved perimeter protection, and installed closed-circuit television (CCTV) cameras in the transit system. 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. As of November 2007, the MTA had installed 1,936 CCTV cameras at 73 stations, and it plans to install another 400 cameras. The CCTV bus program has encountered problems during software development, which has delayed the program by 14 months.
- The MTA has allocated \$25 million over a four-year period to provide enhanced security training. In September 2007, the MTA began training 28,000 of its front-line employees, beginning with employees in customer service positions such as motormen, engineers, conductors, and station attendants.
- The MTA allocated \$150 million of the 2006 operating budget surplus for security initiatives. The MTA has spent \$43 million to provide support for the electronic security program, install subway car door releases, and secure tunnel access points. In addition, the MTA intends to install intercoms in 75 subway cars and to purchase new radios for the MTAPD.

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