ACCESS TO THE REGION'S CORE

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A joint venture of The Port Authority of NY & NJ, the Metropolitan Transportation Authority and NJ Transit

TECHNICAL ADVISORY COMMITTEE MEETING HIGHLIGHTS

TUESDAY, APRIL 23, 2002

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The Technical Advisory Committee meeting of the Access to The Region's Core (ARC) study was held at 1:30 PM on Tuesday, April 23, 2002, in Conference Room 2E at the offices of Parsons Brinckerhoff, One Penn Plaza, in Manhattan.

Welcome and Introductions

David Widawsky, ARC Project Director, welcomed everyone and thanked them for their attendance and their interest in the ARC Study. He stated that although the tragedy of September 11 had destroyed the offices of ARC, the study work continues on and that the events of that day affirm the need for new trans-Hudson capacity and the importance of ARC.

Project History and Background

David began by updating everyone on the history and background of the ARC project. ARC is a planning partnership sponsored by the Port Authority of New York & New Jersey, NJ TRANSIT, and the Metropolitan Transportation Authority. A Project Oversight Committee (POC), made up of representatives from the three agencies, guides the policy and direction of the ARC study.

David gave a brief overview of ARC's Phases 1 and 2. At the end of Phase 2, several conclusions were reached. There is a need to increase trans-Hudson commuter capacity and commuter rail is the best mode to achieve the gain. Penn Station New York is in need of capacity relief, which will be addressed in three time frames. Immediate needs are being handled by the Tri-Venture Council, a working group made up of representatives from the 3 railroads that operate into and out of Penn Station: Amtrak, NJ TRANSIT, and the Long Island Rail Road (LIRR). The ARC study team has been examining Near Term (5-10 Years) and Long Term needs.

The Three Near Term Improvements

To address the Near Term requirements, the ARC team had studied several possible alternatives, which yielded three Near Term Improvements, all focused on relieving

congestion at Penn Station. David reviewed these, reminding everyone that they were essentially unchanged since the last TAC meeting.

David briefly described the first Near Term Improvement, the Linear Storage Yard under 31st Street. This would be achieved by breaking through the wall east of Penn Station Tracks 1-4 and extending Tracks 1-5 eastward into a 3 track yard, allowing daytime storage of 6 NJ TRANSIT trains. A provision for such an extension was left in place in the basement of 11 Penn Plaza, which is located across 7th Avenue from Penn Station. The yard would extend as far as Lexington Avenue. As part of this scheme Platforms 1 and 2 can be lengthened to accommodate longer trains. The extension of the platforms opens up the possibility of building direct connections to the 34th Street Station of the 7th Avenue Subway, and to the street, adding additional passenger access/egress capabilities to Penn Station. The Linear Yard allows for a same direction move, where trains arrive, disembark passengers, and then move into the yard, clearing the track for succeeding trains. The elimination of the reverse move and the crossing of other tracks will improve throughput and increase capacity. In addition, a bellmouth can be incorporated into the track layout, which can facilitate a future connection to Grand Central Terminal. The estimated construction cost for Near Term Improvement #1 is $500 million.

The second Near Term Improvement is the "C" Yard Extension. At the present time, "C" Yard consists of a number of short length tracks that extend west of the LIRR zone in the northwest quadrant of Penn Station. These tracks cannot accommodate the full length trains that the LIRR is currently utilizing. The extension would lengthen the tracks westward towards 10th Avenue to accommodate six 12-car trains. Access to the yard would be from Tracks 19-21. Like the Linear Yard, the "C" Yard Extension would allow a same direction move, where the trains arrive, disembark passengers, and then move into the yard, clearing the track for succeeding trains. The elimination of the reverse move and the crossing of other tracks will improve throughput and increase capacity. The estimated construction cost for Near Term Improvement #2 is $200 million.

The third Near Term Improvement is the building of the 12th Avenue Yard. This yard would be built between 10th and 12th Avenues, just south of the existing LIRR West Side Yard. Access to this yard would be from Tracks 1-9. The estimated construction cost for Near Term Improvement #3 is $300 million.

David emphasized that the Near Term Improvements have independent utility and can be built as separate, stand alone projects, or together as a group. The work performed so far represents a conceptual analysis to establish constructibility. A detailed operational analysis had not been performed, so it is not possible to precisely determine the amount of additional capacity that could become available.

The Three Build Alternatives

David moved on to describe the three build alternatives. The alternatives all share common features with regards to West of Hudson infrastructure. This includes the Secaucus Loop, and a fifth track and additional platform at the Secaucus Transfer Station. This will facilitate the ability of NJ TRANSIT trains from the Main/Bergen/ Pascack Valley/Port Jervis Lines to access the Northeast Corridor without impacting through service. East of the Secaucus Transfer Station, the Northeast Corridor is expanded to four tracks, with the two new tracks leading to a new Hudson River Tunnel.

Alternative G

David described Alternative G, so named for its connection to Grand Central. Under this alternative, some NJ TRANSIT services would be extended from Penn Station to Grand Central and some Metro-North Railroad services would continue through to Penn Station after stopping at Grand Central.

David reviewed the key infrastructure changes that would take place at Penn Station under Alternative G. As previously described in the first Near Term Improvement, the wall that is currently east of Tracks 1-4 would be penetrated and Tracks 1-5 would be extended east through the basement of 11 Penn Plaza. A two-track line would be built to Grand Central. Platforms 1 and 2 would be extended in both directions to accommodate 12 car trains. The eastward platform extension would provide a passenger connection to the 34th Street Station of the 7th Avenue Subway. The westward platform extension would necessitate the removal of the Diagonal Platform, as well as the reconfiguration of the "U" and "M" Ladder Tracks, both of which would be cut back to Track 6. In addition, "A" Interlocking would require modification. The new Hudson River Tunnel would be able to access Tracks 1-9.

To accommodate the increase in passenger circulation, and to satisfy fire-life safety guidelines, some work would also be necessary within Penn Station's concourse spaces, such as new staircases, and the expansion of existing and proposed concourses.

Several infrastructure changes are necessary at Grand Central as well. The connection to the tracks coming from Penn Station would be achieved by a break through of Lower Level Tracks 105-112 and an extension of these tracks southward. Platforms F, G, H, and I would be extended to the south while Platforms F and I would also be extended north. The extension of Grand Central tracks to the south would require the relocation of the southbound local track of New York City Transit's Lexington Avenue Line. David illustrated this complicated procedure with a plan view and a cross section. For the increase in passenger circulation that ARC would bring to Grand Central, a new Cross Passageway under 46th Street would be required, as well as modifications to the existing 45th Street Cross Passageway. Furthermore, new stairs and elevators would be built at the south end of the extended platforms, providing additional access/egress into the south end of Grand Central.

To meet the midday train storage requirements of Alternative G, the ARC study team identified two locations. On the West Side of Manhattan, the 12th Avenue Yard location previously identified as Near Term Improvement #3 would be used to store Metro-North trains during the day following their service to Grand Central and Penn Station. For the daytime storage of NJ TRANSIT trains that would not continue north of Grand Central, a location in New Jersey has been identified, referred to as the Boonton Yard. This yard would be located near the Secaucus Transfer station, with connections to both the Northeast Corridor and the Main/Bergen Lines to and from Hoboken Terminal. The storage capacity of the Boonton Yard is estimated to be approximately 240 cars, which is the equivalent of 20-25 trainsets.

The estimated construction cost of Alternative G, exclusive of real estate acquisition and rolling stock, is between $2.9 Billion and $3.1 Billion, in 2000 dollars.

The Tri-Venture Council has developed an operating service plan for Penn Station that will take effect following the opening of the Secaucus Transfer Station, referred to as the Post Secaucus Service Plan. Under the Post Secaucus Service Plan, there are 23 trains inbound to Penn Station in the AM Peak Hour. This figure includes Amtrak trains. Using the Post Secaucus Service Plan as a baseline, an ARC Conceptual Service Plan has been developed that will permit 13 additional NJ TRANSIT trains into Penn Station in the AM Peak Hour, for a total of 36 trains. Of these, 20 trains continue on to Grand Central. Of the 20 NJ TRANSIT trains entering Grand Central's lower level, 13 turn back to Penn Station and the remaining 7 continue heading north, either in reverse peak revenue service in Metro-North territory or to storage at a yet to be specified location north of Grand Central. Using the Metro-North 2020 Service Plan as a baseline, the ARC Conceptual Service Plan schedules 11 Metro-North trains inbound to the Lower Level in the AM Peak Hour, of which 2 trains turn back and head north and 9 continue in revenue service to Penn Station.

If ARC were not built, in 2020 there would be 28,500 NJ TRANSIT passengers inbound to Penn Station in the AM Peak Hour. This demand would exceed the one-hour West of Hudson capacity into Penn Station, which is approximately 23,000-24,000 passengers per hour. However, if Alternative G were built, there would be 37,700 passengers inbound in the AM Peak Hour in 2020, which could be accommodated by the new capacity created by ARC. Of those, 24,300 passengers would disembark at Penn Station and the remaining 13,400 would continue on to Grand Central. Of the 44,300 Metro-North passengers arriving at Grand Central in the AM Peak Hour, 41,700 would disembark at Grand Central and the remaining 2,600 would continue onto Penn Station.

In addition, the ridership forecast projects that Alternative G would divert passengers from other modes; 22,200 daily bus trips would be diverted to commuter rail and 9,400 daily trips would come from automobiles.

David concluded his presentation on Alternative G by summarizing its benefits and related issues. Among the benefits of Alternative G are that it accommodates the entire

Forecast Passenger Demand within Penn Station and Grand Central in 2020, and it brings NJ TRANSIT customers to the East Midtown area and Metro-North customers to West Midtown. The additional tunnels under the Hudson River increase the operational flexibility of Penn Station, while the capacity of Penn Station Tracks 1-4 and Platforms 1 and 2 is increased as well. Furthermore, if the 31st Street Linear Yard and/or the 12th Avenue Yard are built as Near Term Improvements, they can represent the initial phase of Alternative G.

As for issues, Alternative G offers the lowest new trans-Hudson capacity in comparison to the other long term build alternatives. The feasibility of joint Metro-North/NJ TRANSIT operations at Grand Central and Penn Station needs to be studied further. The constructibility of the Grand Central breakout and the relocation of the Lexington Avenue Line southbound local track, while feasible, require further detailed analysis. The loss of the Penn Station Diagonal Platform also presents an issue, having been identified by Amtrak for potential use for small package freight and for Empire Corridor service. The staging of construction at the west end of Penn Station presents challenges to working around daily rail operations, and would need to be carefully planned out. Finally, the proposed Boonton Yard has some local impacts in Secaucus that require further study.

Barry Hecht from the New York State Department of Transportation expressed concern over the presented cost of Alternative G, feeling that it was too low. David answered that the cost is only for construction, and did not factor in real estate and rolling stock requirements. Barry followed up by also asking about the precise location of the Grand Central breakout and its relation to the rest of the terminal. David replied that the breakout is just to the south and under the elevation of the food court on Grand Central's Lower Level.

Naomi Klein from the Westchester County Department of Transportation asked if the full impact of increased pedestrian circulation at Grand Central had been assessed. David replied that the proposed new exits, modifications to the existing 45th Cross Passageway, and the new 46th Street Cross Passageway satisfy the strict requirements for fire-life safety under the National Fire Protection Association (NFPA) 130 standard for fixed guideway transit systems.

Beverly Dolinsky from the Permanent Citizens Advisory Committee to the MTA expressed surprise that there was no mention of the LIRR East Side Access project, as well as concern over the cost estimate, which she felt was underestimated, and the complexity of the Grand Central breakout. David replied that the LIRR East Side Access project was proceeding towards final design with its own deep level station under Grand Central's Lower Level and that there is complete separation between the two projects. He acknowledged that the ARC Grand Central breakout is complicated, however it was very carefully and thoroughly studied with field surveys, and the ARC study team is confident that it can be built. As far as the cost is concerned, David expressed assurance that it is an accurate estimate at this stage of planning.

Ken Wedeen from the Somerset County Planning Department asked if there was a timeframe for Alternative G. David replied that there was no timeframe and that there was still much work to be done, including the completion of the Major Investment Study, followed by the preparation of a Draft Environmental Impact Statement.

Erik Seims from the New York City Department of City Planning asked about the requirements for rolling stock due to the difference in traction power voltages and conveyance methods between NJ TRANSIT and Metro-North. David answered that NJ TRANSIT would need to procure new locomotives that are capable of operating in diesel mode and also equipped with a transitional third rail shoe to draw traction power from the two different types of third rail systems found in Penn Station and Grand Central.

Alternative P

Alternative P, so named for Penn Station lower level, consists of building the previously described West of Hudson infrastructure, and a new Hudson River Tunnel leading to a new bi-level station underneath existing Penn Station. The station is configured with 8 tracks and 4 platforms arranged in two caverns, each cavern containing 4 tracks and two platforms with a connecting mezzanine. Passenger access/egress would be provided at several locations with escalators and elevators connecting the mezzanine to the street and to the existing Penn Station concourses. Access/egress points include the existing Penn Station Exit Concourse, the existing West End Concourse, the proposed Farley Concourse, the 7th Avenue Subway, the 8th Avenue Subway, and to the street on 7th Avenue, 8th Avenue, 31st Street (through the Amtrak Service Building), and 34th Street. The Boonton Yard, identical to that presented in Alternative G, is also a key feature of Alternative P.

David presented a schematic transverse section of the station, as well as an illustration depicting the approach tracks flexing from one level to two between the Hudson River Tunnel and the new station. He emphasized that the approach is accomplished entirely in rock, in a span of 3 blocks.

The new lower level station would have 8 platform tracks, which can be stub-ended or with tail tracks. When the ARC study team was examining the possible configuration of the new lower level station, they also explored adding tail tracks beyond the eastern end of the platforms. In a stub-ended station trains simply pull in and then pull out. With a tail track design, trains pull in, and following the disembarkation of passengers, continue beyond the station into the tail tracks. Once there, a train can make a reverse move back into service or stay in storage. The tail track design offers several favorable features such as added capacity, operational flexibility, and enhances service from a reliability and performance standpoint. It also allows for the disposition of disabled trains, as well as staging for PM peak trains. Furthermore, tail tracks can be the initial stage of a future extension to either Sunnyside Yard or East Midtown.

The construction cost estimate for Alternative P (stub-ended), exclusive of real estate requirements and rolling stock, ranges from $2.9 Billion to $3.2 Billion, in 2000 dollars. Tail tracks add about $350 Million.

Alternative P adds the most trans-Hudson capacity. Using the Post Secaucus Service Plan of 23 trans-Hudson trains in the AM Peak Hour as a baseline, the Conceptual Service Plan adds 21 additional NJ TRANSIT trains, for a total of 44 inbound trains in the AM Peak Hour. David reminded the committee that if ARC were not to be built, in 2020 there would be 28,500 NJ TRANSIT passengers inbound to Penn Station in the AM Peak Hour, which exceeds the West of Hudson one-hour capacity into Penn Station, which is approximately 23,000-24,000 passengers per hour. The ridership forecast shows that if Alternative P were built, in 2020 there would be 35,800 NJ TRANSIT passengers arriving at Penn Station in the AM Peak Hour, easily accommodated by the new capacity created by ARC. Alternative P would divert 14,600 daily bus trips to commuter rail, as well as 4,600 daily auto trips.

Among the benefits of Alternative P with the new level beneath Penn Station is that it also accommodates the entire 2020 Forecast Passenger Demand. The new station can be built to 21st Century standards, with seven points of access/egress. Alternative P adds the most capacity of the three build alternatives. The new station's two levels operate independently; if there is a service disruption on one level, service can continue on the other level. A connection to East Midtown or to Sunnyside Yard is possible as a future phase. Alternative P also offers the possibility of improving overall train operations for all railroads using the existing Penn Station.

Among the issues for Alternative P is that it does not bring NJ TRANSIT passengers to East Midtown. Nor does it bring Metro-North passengers to West Midtown. The new trans-Hudson tunnel does not connect to Penn Station's existing tracks, which limits operational flexibility. The depth of the station and its complexity requires additional attention to passenger circulation and access/egress during design. As stated previously in Alternative G, the Boonton Yard in Secaucus has local impacts that require further study. Furthermore, Alternative P cannot be phased with any of the Near Term Improvements.

George Ververides from the Middlesex County Department of Planning asked if the construction of Alternative P causes disruption to commuters. David replied that there would be minimal impact since the building of Alternative P takes place entirely underground, and is self-contained underneath Penn Station.

Joan McDonnell from Amtrak asked if there were disruptions to area subways. David replied that there would be none.

Barry Hecht from the New York State Department of Transportation asked if any of the Near Term Improvements can still be implemented before the building of Alternative P. David responded that they can. Barry followed up by asking what happened to the idea of a station under 34th Street that was being examined during the earlier phase of work

on Alternative P – he thought it would be cheaper. Marvin Gersten, the ARC Project Manager for Parsons Brinckerhoff, replied that the 34th Street Station was considered but eliminated from further consideration.

Erik Seims from the New York City Department of City Planning asked if potential conflicts with subways and other infrastructure were taken into account when considering future extensions. David responded that any easterly extension of Alternative P could be designed to avoid existing infrastructure.

Alternative S

In Alternative S, so named for its extension to Sunnyside Yard in Queens, the West of Hudson infrastructure remains the same as in the other alternatives. Key Penn Station infrastructure changes are identical to those presented in Alternative G.

Alternative S requires adequate train storage space in order to be a viable alternative. The ARC study team examined the entire Sunnyside Yard complex in an attempt to identify such space. The current configuration of the yard consists of the Joint Use Yard, the main yard that is used by Amtrak and NJ TRANSIT services, and Yard A, previously used as a freight yard but currently subscribed for use as a storage yard for LIRR trains that will be serving Grand Central as part of the East Side Access project. ARC examined the unused Amtrak property located east of the Joint Use Yard and north of the Amtrak/LIRR through tracks, and the General Motors property, south of the unused Amtrak property and the Amtrak/LIRR through tracks.

The General Motors property was previously owned by Amtrak, but was sold to General Motors in the 1980s. If the General Motors property were available, it could provide midday storage space for approximately 11 trainsets. It would be very costly to purchase this property and find another suitable location for General Motors to replace the facility. These factors make the General Motors property less than optimal as a location for an Alternative S yard.

The unused Amtrak property is a very suitable location for a new yard. In addition to connecting to the new East River Tunnel, it can also be connected to existing East River Tunnel Lines 2 and 4 via existing Sunnyside Yard, and Lines 1 and 3 via the Loop Tracks. It would have a capacity of 394 cars, stored on 30 stub-ended tracks with a 3-track service facility and a bi-directional car wash. There are some existing service buildings as well as a substation on the parcel that would require relocation.

This parcel had previously been identified by New York City Transit as a site for a new subway car storage yard. New York City Transit has been negotiating with Amtrak for the purchase of the parcel. The ARC study team studied the concept of a bi-level yard that can simultaneously accommodate a New York City Transit yard and an ARC yard on this property and found this to be unworkable. David emphasized again that without adequate yard facilities, Alternative S would not work. David reviewed the construction

cost estimate for Alternative S, which has a low end of $3.2 to $3.4 billion in 2000 dollars, exclusive of real estate needs and rolling stock.

The operations analysis of the Alternative S Conceptual Service Plan indicates that an additional 17 NJ TRANSIT trains can be inbound to Penn Station in the AM Peak Hour, for a total of 40 trains, including Amtrak trains. David continued to describe the allocation of the AM Peak Hour trains, showing 16 trains utilizing the existing Hudson River Tunnel to Penn Station Tracks 6-12. Of these, 6 trains turn in the station and reverse move back to NJ, while 10 trains continue on via East River Tunnel Lines 1 and 2 to the existing Joint Use Yard in Sunnyside. There 7 trains lay up for daytime storage and 3 trains are turned back to Penn Station, joining the previously mentioned 6 trains for a total of 9 trains moving back to NJ. The new ARC Hudson River Tunnel carries 24 AM Peak Hour trains to Penn Station Tracks 1-5, where 3 turn back to NJ and 21 continue on via the new ARC East River Tunnel to the new yard in Sunnyside. There, 15 trains lay up for daytime storage and 6 trains turn back to Penn Station, joining the 3 trains from the existing tunnel for a total of 9 trains moving back to New Jersey.

The ridership forecast for Alternative S shows the same previously reviewed 28,500 NJ TRANSIT passenger arrivals in the AM Peak Hour for the 2020 No Build, exceeding the one-hour West of Hudson capacity into Penn Station, which is approximately 23,000-24,000 passengers per hour. If Alternative S were to be built, 35,400 NJ TRANSIT passengers would be arriving at Penn Station in the AM Peak Hour, well within the capacity of the new ARC infrastructure.

For the 2020 Trans-Hudson Daily Trips results, 18,900 new trips are attracted to NJ TRANSIT services offered by the ARC infrastructure, 13,200 of which are diverted from buses. Another 4,200 trips are diverted from autos.

Alternative S has several benefits. It easily accommodates the 2020 Forecast Passenger Demand within Penn Station. The capacity of Penn Station Tracks 1-4 and Platforms 1-2 are increased. The new river tunnels increase overall operational flexibility. If a Linear Yard under 31st Street is built as a Near Term Improvement, it can serve as an initial phase of Alternative S.

As for issues, Alternative S does not bring NJ TRANSIT customers to East Midtown, or Metro-North customers to West Midtown. The availability of space at Sunnyside Yard is a critical issue. The new East River Tunnel represents a large investment for the use of non-revenue moves. The loss of the Diagonal Platform is an issue for Amtrak, and the staging of construction at the west end of Penn Station and the associated maintenance of daily rail operations requires careful planning.

Next Steps

David informed the committee that after completion of the Major Investment Study, the next step of the ARC study is to begin work on a Draft Environmental Impact Statement; scoping has begun. Identifying funding for construction will follow.

David reminded everyone of ARC's website which can be accessed at www.accesstotheregionscore.com. The site has been updated to reflect the latest status of the project and contains all of the descriptions and graphics presented today.

Questions and Answers

Jan Khan from the New York Metropolitan Transportation Council asked about the freight possibilities that can be offered by ARC. David responded that freight trains can share a new, larger dimension Hudson River Tunnel with passenger trains, but a single track tunnel for the freight trains would diverge east of the Hudson River and continue across Manhattan in a separate, deeper alignment. The freight tunnel would continue on to Queens as a freight-only facility in Alternative G or P, or as a shared use passenger/freight tunnel in Alternative S. In Queens, the alignment would connect to existing freight rail infrastructure via the LIRR Montauk Branch.

Joan McDonnell from Amtrak asked about the feasibility of an effective sharing arrangement between a freight provider and a passenger railroad. David responded that it is possible that a passenger railroad may not be interested in sharing their facility with freight trains.

The meeting adjourned at 3:00 PM.

Access To The Region's Core – Technical Advisory Committee Meeting Attendees, April 23, 2002

Name	Organization
George Ververides	Middlesex County Department of Planning
Jeff Vernick	Monmouth County Planning Board
Jan Khan	New York Metropolitan Transportation Council
Ashley Tyrell	New York Metropolitan Transportation Council
Chih-Wei Tony Jen	New Jersey Department of Transportation Planning
John Lane	Hudson County Engineering & Planning Department
Vincent Truncellito	NJ TRANSIT
Omar R. Rodriguez	New York City Economic Development Corporation
Ken Wedeen	Somerset County Planning Department
Lynn Brown	New York City Department of Transportation
Ian Francis	New York State Department of Transportation
Barry Hecht	New York State Department of Transportation
Marc Boucher	New York State Department of Transportation
Pam Burford	MTA Long Island Rail Road East Side Access
Jack Dean	Metropolitan Transportation Authority
Ken Ochab	NJMC
Drew Galloway	Amtrak
Walter Ernst	Amtrak
William Wheeler	Metropolitan Transportation Authority
Jack Kanarek	NJ TRANSIT
Lou Venech	Port Authority of New York & New Jersey
Naomi Klein	Westchester County Department of Transportation
Michael P. Donohue	New York State Department of Transportation
Nancy Bower Buchanan	New York City Department of Transportation
Fernando Rubio	Newark Department of Engineering
Beverly Dolinsky	Permanent Citizens Advisory Committee to the MTA
Ellyn Shannon	Permanent Citizens Advisory Committee to the MTA
Ann Weisbrod	Office of the Mayor of the City of New York
Brian Sterman	Federal Transit Administration
Bob Shinnick	Suffolk County Department of Public Works
John Prochera	New York State Department of Transportation
Rick Muller	Manhattan Borough President's Office
Linda LaSut	North Jersey Transportation Planning Authority
Jack Schmidt	New York City Department of City Planning
Erik Seims	New York City Department of City Planning
Joan McDonnell	Amtrak
P.T. Pyle	Amtrak
Rona Moyer	Nassau County Planning
David Jacobs	Staten Island Borough President's Office
LeRoi Armstead	New York State Department of Transportation
David Harris	North Jersey Transportation Planning Authority

Subutay Musluoglu	Interactive Elements
Gus Samaras	Parsons Brinckerhoff
Rick Cardentey	Parsons Brinckerhoff
Marvin Gersten	Parsons Brinckerhoff
David Widawsky	ARC