

# Making the Connection: Moving Forward on Regional Rail

## Panel One - The Case for Regional Rail

**Four railway operators**—Amtrak, plus the LIRR, Metro-North and NJ Transit commuter rail lines—host a network of priceless, but underperforming assets for regional mobility. **Three states**, which provide funding to operate and preserve these lines, are guided by their own needs and perspectives, and find it difficult to reach a consensus on common plans to make better use of these railway lines. **Two great railway stations** in Manhattan, one splendidly restored and the other soon to be, are the hubs of these rail lines, yet traveling between them is a real challenge. **One comprehensive Regional Rail system**, operated in a way that reaches a host of new travel markets, could ease the burden on the region's overcrowded highways, bridges and tunnels. To make this work a new mindset must be put into place that extends beyond the current focus of these rail lines, which they do reasonably well, of carrying suburban commuters to the Manhattan business district.

Advocates for better transit, reduced car use, and more sustainable and economically viable development call this expanded mission **Regional Rail**. Key features are more frequent service, fully integrated fares and thru running.

**Frequent service** is critical to attracting riders who now choose to drive, or who avoid traveling to denser parts of the region. When intervals between trains drop to 20 minutes or less, passengers can avoid consulting timetables and just head to the station. This should be the standard for all main routes. On the very busiest lines, ten minute headways are desirable.

**Integrated fares** permit travelers to choose the routes that are in their best interest. When MTA permitted travelers in New York City to use buses and subways without paying a second fare, ridership skyrocketed. Further increases occurred with the introduction of unlimited ride passes. Similar gains can be expected if city residents could use regional rail lines, and if suburban riders could transfer to buses and subways without paying extra fares.

**Thru running** at major stations avoids conflicts between arriving and departing trains, increasing capacity and improving efficiency. Thru running could begin quickly at Penn Station, where the layout already permits this operation. Making a connection between existing platforms and tracks at Penn Station and Grand Central, and operating trains from the new Hudson River rail tunnel through this link, will not only facilitate train flow, it will open a wealth of new travel opportunities.

## Panel Two—Why Connect Penn Station and Grand Central?

A plan for connecting Penn Station and Grand Central was developed by regional transportation agencies in the final phase of planning for a new rail tunnel across the

Hudson River. The plan called for using existing tracks and platforms at the two stations—taking advantage of unique elements that were incorporated into their design when they were built nearly a century ago—to permit their extension. To go the last mile and make this connection work, transit agencies on both sides of the Hudson must fashion a plan for thru-running. This hasn't happened yet, but it could with new leadership in state government.

### Key gains from the connection are:

#### 1. Make it much easier for West of Hudson commuters to reach East Midtown

Bringing rail service directly to Manhattan's East Side—the largest concentration of office space in the U.S.—means that West of Hudson commuters could avoid the inconvenient and time-consuming transfers on overcrowded stairways and passageways leading to the two subways required to complete this trip. Instead, after a brief stop at Penn Station, their trains would continue to Grand Central Terminal where commuters could easily walk to their destinations.

#### 2. Avoid time-consuming access to Deep Cavern station under 34th Street and Macy's

Routing trains from the new Hudson River tunnel directly into existing platforms and tracks at Penn Station—instead of sending them into a Deep Cavern terminal station currently proposed to be constructed under 34th Street and Macy's—would save travelers time and avoid placing them in harm's way.

#### 3. Increase train capacity at Grand Central

The connection transforms a key portion of Grand Central Terminal into a thru station, increasing capacity and improving operating efficiency.

#### 4. Improve access to West Midtown for Westchester and Connecticut commuters

The connection allows trains from Westchester and Connecticut to operate directly to Penn Station, reaching the many new workplaces planned for West Midtown. Passengers heading downtown can avoid the overcrowded Lexington subway and instead can select from four north-south subway lines that serve Penn Station directly, or are only a block away at Herald Square.

#### 5. Ease travel between West of Hudson communities and those in the Bronx, Westchester and Connecticut.

West-of-Hudson residents face a daunting challenge using public transportation to reach destinations in Northern Manhattan, the Bronx, Westchester and Connecticut. The reverse is true as well. Time consuming station changes in Manhattan, along with multiple fares,

leave most non-Manhattan travelers with only one choice—crowded highways and river crossings. Thru regional rail service opens up many new travel options.

#### **6. Attract more travelers to the Northeast Corridor High Speed service**

Routing Boston-Washington corridor train service thru the connection gives business travelers from East Midtown a better rail option, reducing dependence on air shuttles.

#### **7. Route upstate intercity trains through Grand Central to Philadelphia or Washington**

With the connection, trains from Albany and points north and west can be routed through both stations and are aligned to continue to Philadelphia or Washington.

#### **8. Improve access to Newark Airport**

Travelers from the East Midtown office concentration, and from White Plains and other business and residential locations in Westchester, can more easily reach Newark Airport using the connection.

#### **9. Reduce capital and operating costs of the new Hudson River tunnel plan**

Using existing tracks and platforms at Penn Station and Grand Central, and building the connection to Grand Central, cuts construction cost by 20%. Thru-running via the connection uses crew and equipment more efficiently, significantly reducing operating cost.

### **Panel Three – Up from the Depths**

Bringing the LIRR into existing tracks and platforms that connect to the Upper Level loop at Grand Central Terminal is a far better option than sending them into a new "Deep Cavern" terminal station to be constructed some 150 feet below Park Avenue. Asking commuters to climb the equivalent of the height from the base to the torch of the Statue of Liberty is not in anyone's interest. The Upper Level option was explored in great detail by the Delcan Corporation, a well-regarded Canadian engineering firm, and found to be feasible and to meet LIRR operating requirements for its East Side Access project. The study found that there would be no significant impact on Metro-North commuters if five of the railroad's 46 platform tracks at Grand Central – the world's largest railway station – were reallocated to the LIRR.

### **It's A Matter of Time**

The Delcan study estimated that LIRR commuters will save three to four minutes per trip, each way, if the LIRR uses the upper level instead of the Deep Cavern. MTA is asking LIRR commuters to donate nearly a full work week each year to advance its subterranean terminal. While about half of LIRR commuters would benefit if their trains came directly to Grand Central, saving about 15 minutes, MTA is giving away 20 to 25% of this gain by driving passengers deep underground. The MTA plan will take three years longer to build, postponing even the

diminished benefit of bringing LIRR passengers to East Midtown. Changing course now, and moving forward on the Upper Level plan, will speed—not delay—completion of the project.

### **It's A Matter of Cost**

The Upper Level option would save at least \$1.2 billion in construction cost compared with the Deep Cavern. With construction costs skyrocketing in New York, MTA's Deep Cavern plan could easily reach, or exceed, \$8 to 10 billion to complete. With only a limited amount of Federal dollars available, New York's taxpayers will be asked to dig more deeply into their pockets to pay the rest of its cost.

### **It's A Matter of Safety**

In this age of concern about terrorism and security, designing a facility that unnecessarily places as many as 8,000 passengers in harm's way, some 150 feet below Park Avenue, is particularly worrisome. The risks associated with a Deep Cavern station far exceed those of a station just twenty feet below the surface. Transit advocates have requested that appropriate federal and City fire and public safety officials make a detailed comparison of the relative risk of each option.

### **It's A Matter of Scale**

The main concourse of Grand Central Terminal is one of New York's most magnificent public rooms. With MTA's Deep Cavern plan, LIRR commuters are forced downstairs to a low-ceilinged basement-like space. The ride up 90 feet on a bank of 17 escalators will be grueling. Ask subway riders who just came up an escalator at 53rd and Lexington how pleased they would be if MTA more than doubled the length of their ascent! Furthermore, escalators might have to be stopped in the event of a fire or attack, to avoid an electrical flash. Many commuters would have great difficulty climbing up steep escalator treads.

### **Panel Four – Ticket to Anywhere**

Regional Rail operations at Penn Station in Manhattan will be greatly improved with the completion of the new rail tunnel under the Hudson River, and the construction of a relatively simple two-track connection from Amtrak's West Side line, into existing platforms and tracks at Penn Station. Penn Station becomes three side-by-side thru stations. The southern part of the station would be the thru route for Regional Rail and Northeast Corridor trains using the new Hudson River tunnel and continuing to Grand Central Terminal and beyond to the Bronx, Westchester and Connecticut. The central part of the station is the existing thru route from New Jersey to Long Island City. The northern part of the station is the route of thru trains from the West Side line to Long Island City.

profile container trains and rail freight cars designed for the limited clearances available through the existing Hudson River and East River tunnels passing through Penn Station could be operated off-peak. The new Hudson River tunnel and its link to Grand Central will divert considerable traffic from the existing route permitting some additional rail freight service through the existing tunnel midday, and more extensively late at night. Carload freight that cannot fit in the tunnel can use an enhanced carfloat operation using the newly reconstructed facility in Bay Ridge, Brooklyn.

### **Panel Five – One City, One Fare**

With the integration of bus and subway fares, all of New York City has become a "one fare zone". This zone is roughly a fifteen mile radius from Penn Station. West of the Hudson River, fares become more complex. Initially, the Regional Rail plan suggests extending the central fare zone west to include Hudson County and the City of Newark, since these places are already accessible with a single PATH fare.

Integrating the Regional Rail system into the central zone, and providing frequent service, will produce dramatic changes in use of the system. Many passengers can be expected to shift from slow, overcrowded subway lines to the Regional Rail lines. Including the airports in the central zone, and eliminating extra fares for use of the AirTrain services at Newark and JFK Airports, will open up new travel markets.

### **Focusing Community Development at Regional Rail Stations**

With frequent service and integrated fares, Regional Rail service can be a force for major economic development at stations throughout the region. The impact will be greatest in New York City, where many of these stations see little use because of a paucity of service and high fares. In total, some 60 new and existing stations can be hubs for locally planned, community-sensitive development within the central zone. Opportunities for transit-oriented housing and economic development at these stations are significant. The challenge is to involve the community in a creative process that will assure sustainable and neighborhood friendly initiatives.

### **Environmentally-friendly Station Access**

Many of the existing and proposed Regional Rail stations are already in densely developed areas, and walking is an important access mode. But for the tributary areas beyond the stations, other access modes are needed. With integrated fares, local bus and light rail service can be especially useful. Some reconfiguration of routes may be appropriate and the design of bus-rail interfaces must be made as passenger friendly as possible. Bike access is also important, and safe, well-crafted bike routes leading to the stations should be planned. Within the central NYC zone, parking lots and garages should not be encouraged. Where they do exist, free-market pricing should be required, so spaces are available for essential travelers.

### **Carrots and Sticks**

The very successful congestion pricing experiment in Central London has drawn many admirers in NYC. Charging motorists who crossed the boundary in Central London, using an automated system of vehicle identification, produced very positive results, reducing traffic volumes by 16% and congestion by 30%. The London central pricing zone is approximately the same area as the nearly nine square mile Manhattan Business District, south of Central Park. The Regional Rail plan, with its significant service gains and fare innovations, could become an important component of a comprehensive "carrot and stick" plan for New York that would include congestion pricing.

This carrot-and-stick principle could be extended to the two major airports that would be served by the initial Regional Rail plan – Newark Liberty and JFK. By using an automated pricing system at the gateways to the terminal areas many motorists would be diverted from the crowded roadways in the terminal areas to the enhanced Regional Rail services to the airports.

### **One Seat Ride to JFK Airport**

A convenient one-seat ride rail service between the core of the city and JFK Airport has long been the dream of New Yorkers. The key is to restore the weed-strewn right of way once used by LIRR trains heading to the Rockaway Peninsula. This high quality alignment—the Rockaway Cut-off—remains virtually intact, and could be brought back to life with a relatively modest investment. Some 4.2 mile of rail line would need to be restored and a track connection made just north of the Howard Beach Station, so that trains could use the on-airport AirTrain loop. A small fleet of specially-designed rail cars that could operate on both the Regional Rail system and the on-airport system would be needed. At Aqueduct Racetrack a cross-platform transfer with the subway is possible. Service would be at 10 minute intervals days, evenings and weekends.

### **Panel Six—Regional Rail and Real Estate**

With frequent service and thru operation for Regional Rail, the need for close-in real estate to store railcars, midday, diminishes. High levels of service mean that many railcars will be used all day long. The remainder can be sent back to more remote rail yards. With thru service, rail cars are more efficiently deployed, and the size of the fleet is reduced accordingly. The cost of maintaining two yards for each rail car is substantial and must be compared with the incremental cost of running rail cars longer distances to return to more outlying yards.

Four existing Regional Rail yards—in or near the Manhattan business district—can be closed entirely, and plans for a fifth yard to be constructed can be scrapped. The real estate that is released can be sold at full market value. Costly decks over these yards can be avoided. Sensible new development at these yards can be advanced.

## **Designing a new Penn Station and a Regional Rail Operating Plan**

With frequent service, integrated fares and thru operation, many passengers passing through Manhattan will find it more attractive to use Regional Rail service rather than to stick with crowded highways and river crossings. Penn Station becomes a "hub" with many passengers using thru services or finding it convenient to transfer at Penn Station. Virtually all Regional Rail stations in the three state area will be connected to each other, opening many new travel possibilities. As plans are advanced for an upgraded Penn Station, it is important to consider designs that make it easier to change trains. For example, an expanded concourse immediately above track level would reduce vertical movements needed for transfers.

In addition to the thru services operating at Penn Station, two other rail routes are part of the overall Regional Rail plan - LIRR service to Grand Central and to the Flatbush Terminal in Brooklyn. While LIRR trains using the Upper Level at Grand Central gain some of the capacity benefits of thru operation, all passengers would transfer or walk to their destinations at these terminals.

While a variety of service plans are possible within these channels, a representative plan is described to illustrate the possibilities for Regional Rail. A baseline service pattern that would run all day, and during evenings and weekends, would make Regional Rail service more understandable, particularly to less frequent, discretionary riders. For this "base" service, thru routes would be selected taking into account technology limitations, like the availability and type of electrification and the layout of transfer stations and track connections. Even with frequent service, it will not be possible to operate thru service from each branch to each terminal. Cross-platform transfers will be needed in some cases.

Even with expanded off-peak service, the Regional Rail system will be called upon to handle large volumes of peak hour passengers heading to the Manhattan business district. Special peak hour trains would be added to handle the overflow, and these could be designed to reduce transfers during the peak on some of the busiest routes.

To help understand the base service plan, five color-coded routes are shown on the main map in the next panel. The four routes serving Manhattan are shown in special maps on this panel.

### **(1) Penn Station thru service**

Several key routes in New Jersey and Long Island are not electrified. While in the long term it would be desirable to electrify these routes, initially these services could use "dual mode" diesel-electric locomotives. Frequent, 20 minute interval service on the Boonton, Raritan and Bay Head lines in New Jersey would be coupled with the

Oyster Bay, Port Jefferson and Montauk lines on Long Island.

### **(2) Hoboken-Penn Station-Grand Central thru service**

This route becomes the centerpiece of Regional Rail thru service. For this route to function at a high level of capacity, all trains that use the connection must be thru trains. Because of steeper grades in this connection, high-powered electric multiple unit trains would work best. Electrified lines in New Jersey would be thru-routed with electrified lines in Westchester and Connecticut. A baseline frequency of 20 minutes would be planned for each route, with several of the busiest—like the White Plains and Stamford local lines—offering a ten minute headway all day long. West of the Hudson, to make the routing via Hoboken more useful, one or more of the Bergen County routes might be electrified.

### **(3) Penn Station-West Side Line-Hell Gate thru service**

A frequent, ten-minute headway "urban" Regional Rail service would operate between Yonkers and New Rochelle using the new two-track West Side connection and the Hell Gate Bridge. Four new stations in Manhattan, two in Queens and four in the East Bronx would be served by this new thru service. Some trains would continue beyond Yonkers or New Rochelle particular during peak periods. Port Washington line trains would also use this route with ten minute midday headways between Great Neck and the new Lincoln Center station on the West Side.

### **(4) Long Island - Grand Central Service**

The Babylon-Grand Central link would offer ten minute headway base service all day long, evenings and weekends. The Ronkonkoma-Grand Central link would operate at twenty minute base headway. At the Jamaica Station, Long Island - Grand Central train services would offer cross-platform connections to Penn Station and Brooklyn services. The unique design of this station, with two island platforms and three tracks in each direction, makes it possible to schedule triple-meets, with the train on the center track serving as a connecting bridge. Direct one-seat ride service between Grand Central and JFK Airport—at ten minute intervals—would also be provided all day, evenings and weekends.

### **(5) Brooklyn Service**

Thru service at 20 minute base headways between Long Beach and Brooklyn and between Far Rockaway and Brooklyn would combine to form a ten-minute headway Regional Rail service between Valley Stream, Southeast Queens, Jamaica and Brooklyn. Cross-platform transfers would be available at Jamaica for Penn Station and Grand Central services.

## **Rail Freight Service**

Two opportunities for new rail freight service across the Hudson River can be put into place in the near term. Low

## Long Island City Yard

Located near the Queens waterfront, this yard is used primarily to store rail cars used on non-electrified lines in Long Island. By using dual mode locomotives—and operating frequent service with thru-running at Penn Station—the yard becomes redundant. The site is adjacent to major new residential developments at Queens West and elsewhere along the East River.

## Yard A at Sunnyside

This yard is proposed to be constructed as part of the LIRR East Side Access Project. Already cleared of the freight tracks, this yard would be constructed to house trains that would not be needed for reverse peak service. With the Regional Rail service proposed, a much higher level of service all day would be expected. By routing the remaining trains back to existing yards in Queens and Long Island, this yard would not be needed. Including the separate track connection from the tunnel, this new yard could cost \$1.0 billion or more to construct. Since this parcel is immediately adjacent to the proposed Long Island City business district Regional Rail station at Sunnyside, its value as raw real estate would be much higher. This sizable parcel could be developed as a campus for a university or some other institution requiring high quality regional access.

## Vanderbilt Yard in Downtown Brooklyn

MTA maintains a midday rail car storage facility just south of the Flatbush LIRR Terminal at Atlantic Avenue in Brooklyn. Adjacent to the passenger yard is a disused rail freight yard. The developer of the Brooklyn arena proposes to buy the passenger yard and replace it with a new yard, further to the east, at this site. With a higher service level on the Brooklyn Regional Rail line, a midday storage yard at this location is not needed. Both the freight and passenger yard can be sold at full market value, and costly air rights construction can be avoided.

## West Side Yard in Manhattan

By far the most valuable of these yards, the West Side yard was opened to service in 1987. For 77 years, the LIRR operated to Penn Station without this yard. Trains were sent back to Jamaica or other yards further east. With the completion of East Side Access, half of the rail cars stored in the West Side Yard will be relocated. With thru running between New York and New Jersey, even fewer cars would reach the West Side Yard. A proposed two-track connection to the Amtrak West Side line would permit the complete abandonment of this facility. The value of the yard was recently appraised at \$1.5 billion.

## Hoboken Yard

As detailed planning for the new Hudson River tunnel advanced, it became clear that additional clearance was needed between the top of the new tunnel and the river bottom. Instead of following an almost arrow-straight shot beneath the Hudson River as the original 1910 tunnel did, it became necessary to consider an alignment

that bowed south through the northern edge of Hoboken. Instead of bowing back north again as in the current plan, the curving alignment could be continued further south, and then west, linking up with existing rail tracks just west of the Hoboken Terminal. The route to Newark via Hoboken would be the same distance as the existing route via Secaucus. Routing the new Hudson River tunnel thru Hoboken allows it to connect to existing high capacity infrastructure, including the four-track tunnel through the Palisades, the three-track Hackensack River lift bridge and the four-track connection to Secaucus. All become useful elements of the new tunnels. The connecting loop to the Bergen lines, passing through Secaucus station twice, can thus be avoided, saving over a mile and half of distance, and perhaps three to four minutes of running time. No new capacity is needed across the Hackensack River.

With service running thru Hoboken, the yard tracks at this terminal will no longer be needed. A substantial amount of waterfront land becomes available for other purposes. The historic terminal and train sheds could be adapted to some other use, such as a new convention center or museum. The Hoboken-Penn Station-Grand Central routing enhances the value of released real estate at Hoboken. This large parcel would then be more easily reached by commuters from Westchester and Connecticut, making it a uniquely accessible location for new development. Existing and planned office properties just to the south, in Jersey City, are also enhanced with this new access.

## Panel Seven—Berlin, London, Philadelphia— Why not here?

Regional Rail systems have been put into place in cities around the globe. While much attention has been focused on the construction of new subway and surface light rail lines, the concept of transforming commuter rail lines into Regional Rail systems with frequent service and integrated fares is accepted in many European and Asian cities. In some cases, thru stations already existed, as in Amsterdam and Cologne, and thru running was readily accomplished. Elsewhere, new tunnel links were needed to create fully operational systems.

A few examples are shown here to illustrate the resourcefulness of other cities in meeting growing demand for public transit service. Keeping an eye on its global competitors is essential if New York is to maintain its core base of economic activities.

### Berlin

Perhaps the most spectacular railway station completed in recent times, Berlin's central railway station and connecting tunnels show how a once-divided city and country can re-connect their railway system. The new Central Railway Station, which opened in time for the World Cup this spring, has drawn wide acclaim.

The concepts of thru running and regional rail service were pioneered in Germany more than a century ago, when the elevated four-track railway running east and

west through the core of Berlin, was completed. This line now passes through the new station, crossing over a new four track north-south tunnel linking disused rail lines that once led to several other terminals.

Elsewhere in Berlin, wide rights of way for intercity passenger and freight lines also host suburban rapid transit lines. These lines have been connected with tunnel segments in the core of the city, forming a more compact regional rail system. Other large cities in Germany have fashioned similar systems.

Berlin's metropolitan population is only a sixth that of the New York area. The scale of rail investments in central Berlin may reflect national pride following the reunification as well as the need to meet present and future demand levels.

### **London**

London's commuter rail terminals ring the perimeter of its business district. Passengers rely on subways or buses for distribution within the core. Plans for creating new cross-city rail links have been debated for many years.

However, one north-south line - Thameslink - was created in 1990, taking advantage of a short track segment in central London that was disused for many years. Building on this existing infrastructure, two separate lines on the north and south, using different electric propulsion systems, were thru-routed to create a whole new Cross-Thames connecting line, with airport access as well. The new link has been quite successful and plans are moving forward to add other lines thru the connection.

### **Philadelphia**

As private railways shed their money-losing commuter rail lines, public ownership evolved throughout the U.S. In Philadelphia, two separate commuter rail companies provided the bulk of the service. Each railway maintained its own stub terminal in Center City Philadelphia. These systems were merged into a single publicly-owned entity in 1983. The lines approaching Center City from the west were placed into an underground terminal some 70 years ago, with a provision for its extension to the east. In 1989 the tunnel was finally extended to a second underground station built on the east side of Center City, where additional economic development was sought. The tunnel continued north where it joined the existing mainline from the north.

Regional Rail trains now run thru the center of Philadelphia, improving mobility options and enhancing the viability of the core. A total of 13 lines are operated thru the connection. In 1985 the system was extended to Philadelphia's airport. Partial fare integration was put into place, and in-city rail lines have become more useful, but service frequencies have not been significantly expanded to take advantage of the sizable investment in the connection.

## **The next show - Regional Rail for Lower Manhattan**

The transformation of the New York area's commuter rail lines into a Regional Rail system sets the stage for introducing direct rail service from the suburbs to Lower Manhattan. Downtown business interests have long argued that, while the subways do a good job of reaching city's workforce, those in the suburbs face difficult commutes requiring transfers to crowded subway lines to reach Lower Manhattan. The result is that office space rents for 30 to 40% less than in Midtown. With Regional Rail in place, the difference between urban transit lines and commuter rail lines is greatly diminished. It then becomes possible to consider rail options that convert one or more of Manhattan's north-south subway lines into distributors for Regional Rail lines--bringing trains directly from the suburbs to Lower Manhattan.

### **About this exhibit**

This exhibit is sponsored by the Institute for Rational Urban Mobility, Inc. (IRUM), a New York City-based not-for-profit corporation concerned with advancing urban transport concepts that will reduce motor vehicle congestion in dense urban areas. A key measure for improving public transportation in the NY-NJ-CT region is described in this exhibit: transforming the region's commuter rail lines into a comprehensive interconnected Regional Rail system, with frequent service, integrated fares and thru-running operation, with a new connection between Penn Station & Grand Central Terminal. IRUM hosts the Regional Rail Working Group, an informal collaboration of transit advocates in the region who have guided the development of many of the concepts described in the exhibit.

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