

Scope of Services and Schedule

■ 1.0 Task 1 – External and Internal Scan

Objectives

The objectives of this task are to assess the planning activities, construction projects, and freight-related programs that would affect, or contribute to, the development of a comprehensive regional freight plan. Subtasks include:

- **Internal Scan** – Identify ongoing and recently completed efforts within the region, including sponsor name, conclusions and recommendations, the interrelationship among these efforts, and gaps in data, trends, and geography;
- **Development of a Freight GIS** – Geocode each of the internal projects so as to be useful in a GIS that is compatible with NYMTC Central Staff software and GIS mapping; and
- **External Scan** – Provide NYMTC with examples of best freight-planning practices and lessons learned from other metropolitan areas, both in the United States and abroad. NYMTC will be building both a freight plan and a freight planning approach as it works through the Regional Freight Plan Project. This subtask will provide information that NYMTC can use in developing its overall program for freight planning.

■ 1.1 Internal Scan

The CONSULTANT will draw on its extensive knowledge and reach out to the various agencies to add to that knowledge as needed, particularly to ensure that the latest information about the progress of certain studies or designs is obtained. The CONSULTANT will add to the list of projects in the RFP to document new projects that are just getting underway. The activities of the private sector, especially the freight railroads, airlines, marine shipping lines, and terminal operators also will be catalogued. A major focus of this effort will be to determine the end result(s) that are expected from each project that would improve goods movement while addressing other regional concerns, such as environmental impacts or benefits of the projects.

The CONSULTANT will comment on the relationship between the projects and fast-changing logistics patterns and business needs. The CONSULTANT will set a broad context, examine market needs, and focus on goals and objectives, network connectivity, flexibility, and reliability. For example, the railroad industry may experience another round of major mergers, influenced by the announcement of the Canadian National (CN) merger with the Burlington Northern-Santa Fe Railroad (BNSF). What does that mean to

our region and which projects now progressing are affected? This context setting is important in gaining a complete strategic picture of why the region is investing in freight infrastructure and what results can be anticipated. The CONSULTANT will interview a select group of these major transportation businesses to ensure that it captures their needs and projects.

Issues to be addressed by the CONSULTANT include planned capacity, anticipated demand, physical constraints, environmental impacts, costs and financing, and technology applications. In order to make the most efficient use of the CONSULTANT team's budget, and because public agency requests are more likely to be honored in a timely fashion, NYMTC staff take primary responsibility for acquiring documentation as identified by NYMTC and the CONSULTANT team which is not already in the possession of one or the other.

■ 1.2 Development of a Freight GIS

The CONSULTANT will combine several available geographic transportation coverages to form a multimodal freight transportation network that can be used for recording potential project data, for project mapping, and for freight demand forecasting. To ensure consistency with ongoing NYMTC planning and modeling activities, the freight GIS will be based in Caliper Corporation's TRANSCAD software.

The initial freight GIS will be developed by combining and reconciling several sources, including:

- NYMTC's Best Practices Highway Network Line Layer;
- PANYNJ Regional Truck Freight Network coverage developed by Cambridge Systematics, EWT, and others;
- The Federal Railroad Administration (FRA) rail network available in the Bureau of Transportation Statistics (BTS) National Transportation Atlas Database;
- Inventory of rail infrastructure in the region assembled by our project team for the Cross-Harbor MIS;
- The spatial port and airport data available in the BTS National Transportation Atlas Database;
- Inventories of port facilities, terminals, and distribution centers compiled by our project team members as part of the Strategic Plan for the Redevelopment of the Port of New York; and
- Commercial directories of freight-related facilities, such as the IATA intermodal freight terminal directory.

The freight GIS will be very detailed within the NYMTC region and in northern New Jersey, but will extend well beyond the region so that the effects of national and international trends in logistics may be reflected in NYMTC's future freight plans.

To develop the freight GIS, the CONSULTANT will begin with the Best Practices highway line layer and augment it in two ways. First, the CONSULTANT will add new geographic information, including rail lines and several types of "point" data, reflecting the locations of ports, airports, transportation terminals, intermodal transfer points, and concentrations of warehousing facilities. Second, the CONSULTANT will add freight-related attribute data to the geographic database. For the highway portion of the database, additional attributes not already included in the highway network data will include information on truck restrictions, size and weight limitations, clearances over rail lines, hazardous materials restrictions, and truck prioritization elements. The data for rail lines could include track classification, capacity, travel times, track ownership, and railcar size and weight limitations.

Air shipments will be reflected in the freight GIS by attaching airport air cargo attributes to the airport portion of the point database. The initial intermodal freight GIS may or may not include an explicit waterborne freight network. Most characteristics of access waterways, such as maximum vessel sizes, can be attached directly to the port data in the database, as for the airport air cargo data.

Once the base freight GIS is established, the CONSULTANT will code into the database regionally significant projects identified in its review of recent regional freight studies. The CONSULTANT will use TRANSCAD's mapping capabilities to display the proposed improvements. In addition, for those projects for which more detailed plans have been developed, the CONSULTANT will code the network improvements so that the projects can be included in freight demand modeling analyses.

■ 1.3 External Scan

The objective of the external scan is to identify the process, projects, and programs in freight planning in the United States and abroad. The CONSULTANT's approach will be to look at issues from four perspectives: mandate, organization, resources, and projects/programs.

Mandate

Mandate issues include the following:

- What are the freight-planning missions, visions, and goals of other MPOs?
- What are the statutory and other legal bases for these activities?

- How do these compare to the freight-planning mission, vision, and goals of NYMTC?
- What opportunities exist for NYMTC to redefine its freight-planning role and responsibilities?

The CONSULTANT will draw upon its national experience to ensure that NYMTC has access to the best ideas and practices in freight planning as it puts its regional freight plan together.

Organization

The second area that the CONSULTANT will look at is organization. Issues include the following:

- How do other MPOs allocate roles and responsibilities for freight planning within their organization?
- Among other local and regional agencies?
- Between local agencies and national agencies?

Resources

The third topic to be covered is resources, which includes funding, methods, and staffing. Issues include the following:

- What resources do MPOs have for freight planning?
- What resources are available through partnerships with the private sector?
- What freight planning databases and models do other MPOs use?
- Are they effective?
- Are they transferable to the NYMTC region?
- What staff resources and skills are required for effective metropolitan freight planning?
- How do other MPOs recruit, train, and fund staff freight planners?

As NYMTC develops its Regional Freight Plan and its longer-term freight planning program, it will have choices about what and how much data to collect, about the types of models that it develops or acquires, and about how to staff its program. What level of effort is appropriate? NYMTC will want to look at the experience and lessons-learned, both good and bad, of other metropolitan areas. The CONSULTANT will provide the background and contacts to help NYMTC make these decisions.

Projects and Programs

The fourth and final topic to be covered is projects and programs. The CONSULTANT will examine innovative projects and programs in other parts of North America to assess their applicability to the New York region. Issues include the following:

- Goals and objectives of the projects/programs;
- Costs and benefits; and
- Institutional and organizational strategies and issues.

■ 1.4 Work Steps

1.4.1 Internal Scan

- Identify, obtain, and review all relevant documentation on planned or under construction transportation infrastructure improvement projects in the broad New York/northern New Jersey region, including freight-specific projects and passenger projects which could affect freight movement.
- Work with NYMTC senior staff to review recent planning efforts by NYMTC and other regional agencies. The objective will be to understand current freight planning capabilities, approaches, and priorities of NYMTC and its partners. A key document will be the Council's Regional Transportation Plan Update - Mobility for the Millennium.

1.4.2 Freight GIS

- Establish a base freight GIS database using NYMTC's TRANSCAD mapping capability and building off of other existing data sources. Code into the database regionally significant projects identified in our review of recent regional freight studies.

1.4.3 External Scan

- Scan freight plans and programs from other metropolitan areas, in the United States and abroad. Make maximum use of information and comparative studies developed by Association of MPOs (AMPO), National Association of Regional Councils (NARC), American Association of State Highway and Transportation Officials (AASHTO), Transportation Research Board (TRB), the U.S. DOT, the I-95 Corridor Coalition, the European Union/European Commission (EU/EC), etc. The scan will focus on best practices and lessons learned.
- Outline strategy options that NYMTC may wish to consider in advancing its Regional Freight Plan and its longer-term freight planning program, including options that the

region may wish to advance in the reauthorization of the national surface transportation legislation.

■ 1.5 Draft Products

1.5.1 Internal Scan

- A Technical Memorandum will be prepared identifying and detailing all of the relevant transportation projects and initiatives impacting goods movement in the region. The technical memorandum will begin with a section that sets a broad context for viewing these projects in terms of trends in the region's economy, logistics, and global competition. This scan also will include projects and initiatives for the movement of people that could in some way significantly restrict/alter the flow of goods. Each project will be identified, its physical and/or operational attributes described, and its significance discussed in an appropriate context. The projects' costs and benefits will be highlighted along with any other specific quantitative or qualitative attributes significant to goods movement.

1.5.2 Freight GIS

- A database of projects will be developed, including sponsor, project type, status, location, benefits and costs. This database will be incorporated into a GIS which is compatible with NYMTC travel demand forecasting and mapping software.

1.5.3 External Scan

- A Technical Memorandum will be prepared summarizing projects, programs, and policies from metropolitan freight plans and program in the United States and abroad. The memo will outline strategic options that NYMTC may wish to consider in strengthening the region's mandate for freight planning; allocating roles and responsibilities for freight planning, including working with the private sector; obtaining funding; building databases and analytical models; and recruiting and training staff.

■ 1.6 Final Products

The draft Technical Memoranda and database submitted in Task 1.5 will be finalized upon receipt of comments by NYMTC.

■ 2.0 Task 2 – Description of Freight Transportation System in the Region

Objective

The objective of this task is to describe the freight delivery system in the tri-state metropolitan region. The task will focus on the four freight modes – maritime, rail, highway, and air – as well as intermodal operations. The analysis will focus on three key aspects of the freight system – infrastructure, operations, and markets. This task also will include an overall analysis and description of the existing and potential markets and commodities for freight transportation using existing and derived data and forecasts to the extent possible.

Approach

The CONSULTANT will structure its approach to this task by the five modal areas, with a sixth section providing an overview of regional freight markets. The CONSULTANT will expand on the Cross-Harbor Existing Conditions report by mode as described below. It will adapt the commodity flow data and analysis developed for the Cross-Harbor MIS and the data owned by NYMTC to meet the needs of a general regional study as compared to a study concerned exclusively with cross-harbor goods movement. Similarly, the CONSULTANT will apply the lessons learned about truck/rail mode choice in regard to cross-harbor goods movement to broader issues of regional mode choice.

■ 2.1 Highways/Commercial Vehicle Operations

The CONSULTANT will collect general roadway data as it relates to truck movements, and specific truck-related freight movement data as it relates to the roadway system.

General Roadway Data as It Applies to Major Truck Routes

The CONSULTANT will compile a database of highway vehicular volume, vehicle mix, speed, capacity, physical constraints (such as height/weight limits), and truck percentage data for the key roadways in the region that either carry the majority of the freight traffic or are expected to carry significant volumes of freight traffic in the future. The CONSULTANT will gather most of the data from NYMTC and the various local agencies, state DOTs, and trucking associations, or from ongoing or completed MISs, EISs, or other transportation studies in the region as identified in Task 1. On a very limited basis, if necessary, new data may be collected.

Data are generally available on a broad level (AADT instead of hourly traffic, for example). The CONSULTANT will tabulate all information in a summary form. The regional information will be supplemented with specific data from ongoing and recently completed projects, including: 1) Staten Island Expressway MIS; 2) the Gowanus Expressway

Project; 3) South Brooklyn TIS; 4) Strategic Plan for the Redevelopment of the Port of New York; 5) Cross-Harbor MIS; 6) Cross Bronx/Major Deegan Expressway MIS; and 7) Long Island Transportation Plan (LITP). For roadway segments that connect the NYMTC region to adjacent jurisdictions (New Jersey, Connecticut, etc.), supplemental data will be collected from the PANYNJ or the appropriate DOTs.

Hourly traffic volumes will be collected wherever available, and 24-hour histograms will be developed and used to identify peak hours. For roadway segments with no available hourly data, the hourly distribution of traffic will be assumed to be the same as a nearby roadway for which data are available. Wherever possible, peak hours for truck traffic also will be identified (if they do not coincide with the peak hour of the background traffic). Highway capacity constraints throughout the region will be identified, either by using the roadway capacities and peak-hour volumes described previously, or through anecdotal evidence from one of the aforementioned data sources.

The work in this subtask will be closely coordinated with simultaneous efforts on the project for other modes, particularly in areas where the highway network plays a major role in serving major freight transportation facilities (the Van Wyck Expressway and JFK International Airport, and the New Jersey Turnpike and Port Newark/Elizabeth, for example).

Truck Routing System

The CONSULTANT will describe the region's highways and their function in the truck-freight delivery system, including access to warehouses and distribution centers. The CONSULTANT will describe the regional truck-freight network. The CONSULTANT will work from and update the regional network identified by it in the Regional Truck-Freight Network Strategic Plan, prepared for the Port Authority of New York and New Jersey in 1996, and will also review work conducted by the I-95 Corridor Coalition. The CONSULTANT will identify and update its description of the strategic truck-freight corridors. These are corridors that meet the following criteria:

- The highway carries a large volume of traffic (i.e., above 2,500 average annual daily truck trips).
- The highway serves a facility with a high capital cost, such as an airport, seaport, or intermodal facility that cannot be relocated easily and must be served regardless of total truck traffic volumes.
- The highway provides a critical link for the reliable and efficient movement of freight considering the circuitry of alternative routes; the travel time reliability of the route; its truck size and weight carrying capacity; its suitability for hazardous materials transportation; its role in linking two major truck routes; and its role in providing an alternative to tolled routes.
- The highway is vital to serving key economic activities, such as access to one-of-a-kind manufacturing plants, utility plants, terminals, and resource recovery plants.

Working from this inventory of strategic truck-freight corridors, the CONSULTANT will analyze and describe how these corridors serve three types of truck trips:

- **Through-Trips** - Truck trips that have both an origin and a destination outside of the region.
- **Terminal and Warehouse Access Trips** - Truck trips that have an origin outside of the region and destination inside the region at a warehouse, distribution center, or a terminal, including the region's air, rail, and marine terminals.
- **Distribution and Interplant Moves** - Truck trips that have both their origin and destination within the three-state metropolitan area.

The CONSULTANT will assess the travel time, cost, and reliability of truck travel along these corridors relative to the freight transportation needs of major industry/commodity clusters in the region (i.e., food industry/fresh and processed foods). The assessments will be based initially on its knowledge of the corridors and the industries, then updated over the course of the study as quantitative and qualitative information become available (see the market section below).

This analysis will be one of the factors in developing recommendations for the regional freight plan under Task 5.

■ 2.2 Rail System

The CONSULTANT will develop a profile of the existing rail system in the region that involves looking not only at the obvious physical, operational, and market characteristics of the system, but also to look at the often-subtle factors and nuances that influence rail operators and potential rail users to make decisions most consistent with public policy objectives. The CONSULTANT will augment its existing knowledge with a thorough review of the resource literature listed in the RFP as well as a number of recent (including yet-unpublished) documents and studies of shipper demand criteria and changes in rail operations. The CONSULTANT also will conduct a series of new interviews with the region's rail operators (both large and small; both existing and potential) to accurately define changes and trends in their thinking, their motivations, and operating philosophy as they react to the changing environment.

This effort will document the historical barriers and issues that are outlined above, the physical routes that currently exist, the current and potential rail operators; factors influencing shipper modal decisions, public policy issues, known barriers to market penetration, and competitive issues among modes. The CONSULTANT will identify and document industry trends and recent changes, paying particular attention to the impact of the CSX/NS takeover of Conrail and to potential changes that have not yet reached widespread public prominence, such as recently proposed mergers, changes in intermodal technology, issues on the Northeast Corridor, the Congressional Intervention Petition, and various regulatory issues affecting modal decisions.

The CONSULTANT will conduct a series of informal meetings and interviews with rail operators and rail user groups. Based on these meetings, the CONSULTANT will define and document the issues, economic factors, barriers to market penetration, and other factors that will enable or discourage expanded or enhanced rail service (and demand for rail service) in the rapidly changing external business environment.

Based on these findings, the CONSULTANT will identify and briefly define for further consideration a range of public-sector actions that have the potential of motivating private-sector decision-makers to take actions consistent with (or contrary to) identified public policy goals. The universe of potential actions will be broad and may include zero-cost regulatory or policy actions, relatively low-cost public investment designed to leverage private-sector investment, and large-scale public-sector investment in infrastructure. The potential actions will include both those with positive anticipated results and those which should be avoided because of the likelihood of negative results.

■ 2.3 Ports and Waterborne Commerce

The CONSULTANT will describe the region's public and private marine cargo terminals, and the relationship of marine cargo handling and landside access requirements. Substantial data already exist on certain aspects of marine cargo terminals, but little or no data exist on other aspects. In addition, a major port planning effort – the Comprehensive Port Improvement Program (CPIP) will shortly be undertaken in the region. The CONSULTANT's role on this subtask will be primarily to provide liaison to this study.

Information that is available from existing sources includes:

- Existing and planned future physical configuration, operating characteristics, and “over the wharf” cargo volumes for the region's public container, automobile, neo bulk/break bulk, liquid bulk, and dry bulk marine cargo terminals. Information on terminals in New York City can be derived from the Strategic Plan for the Redevelopment of the Port of New York; information on terminals in New Jersey is available in the PANYNJ's Port Development and Investment Strategy (which this team is very familiar with due to our close coordination with the PANYNJ in preparing the Strategic Plan). Consistent and supporting information also is documented in the U.S. Army Corps of Engineers' Harbor Navigation Study.
- Past and present physical configuration, operating characteristics, and “over the wharf” cargo volumes for the region's private marine cargo terminals. Private ports are a very significant segment of regional maritime activity, but are generally not the focus of public policy studies (because they handle lower-value bulk commodities and raise few questions regarding public investment). Nevertheless, they are critical elements of the region's overall maritime freight system, and must be considered as part of a comprehensive policy assessment. The U.S. Army Corps of Engineers maintains data on private facilities and their commodity movements.

Information that is less readily available includes:

- Future forecasts for private marine cargo terminals. For selected major commodity groups (petroleum, chemicals, et al.), forecasts will need to be generated. This does not have to be an expensive undertaking – but we should have future forecast data of comparable quality for both public and private marine cargo activity.
- Landside truck and rail activity associated with “over the wharf” freight movement. While some information exists, it tends to be fragmented and in need of completion and synthesis. For example, the Strategic Plan offers projections by route and direction of truck and rail traffic that would be generated by planned marine cargo terminal expansion projects in only New York City. The PANYNJ has some limited data on existing truck and rail moves from its terminals, but the data vary with respect to timeliness, and do not address future traffic at a significant level of detail (although more information may be available as part of the Port’s ongoing study of the Port Inland Distribution Network). Virtually nothing appears to be known about truck and rail traffic associated with private marine terminals. The CONSULTANT will provide data on all maritime facilities without undertaking a time-consuming and expensive data collection effort.

■ 2.4 Air Cargo

The CONSULTANT will provide a general description of the following elements:

- Basic introduction to the air cargo industry;
- Identification of airports in the region handling significant volumes of air cargo;
- Basic airfield infrastructure for each facility;
- Description of major planned infrastructure improvements;
- Major air cargo carriers operating at identified airports;
- Historical air cargo volumes;
- Comparison of local historical air cargo volumes with other regions in the United States;
- Historical role of each identified airport in regional and national air cargo operations; and
- Anticipated future role in regional and national air cargo operations.

The CONSULTANT will rely heavily on our team’s knowledge of the air cargo industry in the New York region, existing documentation, and informal contact with key industry officials.

■ 2.5 Intermodal

The CONSULTANT will describe the intermodal system in terms of its infrastructure, operational logistics, and commercial aspects.

- The section on infrastructure will document the intermodal terminals, railways, rolling equipment, and information systems that support service to the region.
- The section on operational logistics will describe the physical flow of cargo through the system. It will document the various firms and kinds of firms involved in the logistics of intermodal movements.
- The section on commercial aspects will document the manner in which intermodal freight services are bought and sold. Railroads are the decision-makers and market these services in a very complex manner involving several, sometimes competing market channels.

The CONSULTANT will use its extensive experience in the subject area, review all relevant documentation, and interview representatives of the intermodal community, both in New York and nationally/internationally, in order to complete the analysis of the intermodal freight industry serving the NYMTC region.

■ 2.6 Market Overview

The objective of the market overview is to identify existing and potential markets and commodities for freight movement to, from, through, and within the region.

Summary of Commodity Flows

The CONSULTANT will work closely with NYMTC and the FTWG to determine how best to adapt the Reebie TRANSEARCH database for the unique needs of this study. The CONSULTANT and the NYCEDC own the New York region Reebie data produced for the Cross-Harbor MIS, and are able to freely apply it to this project. The data already have been disaggregated by East-of-Hudson county, and some county-level analysis has been undertaken. More analyses may be desirable for this project. The CONSULTANT will evaluate the NYMTC Reebie data set to determine its applicability to the project.

Municipal-Solid Waste

Certain types of commodity-movements are not well represented in the Reebie data. Of particular concern to this study is the issue of municipal solid waste. The impending closure of the Fresh Kills landfill in Staten Island will result in dramatic changes in how this

category of freight movement is addressed in the region. The CONSULTANT will assess the likely policy choices for the disposal of municipal solid waste and the relationship of these choices to other aspects of regional freight movements. The most recent proposal by the City of New York will be incorporated into this analysis.

Industry-Specific Logistics

While the Reebie data provide a quantitative and macro-level description of commodity flows in the region, they do not provide for a real understanding of regional freight logistics at the industry level. To obtain that, the CONSULTANT will build on the shipper surveys conducted as part of the Cross-Harbor MIS and Pilgrim Hospital study. The resulting industry-specific profiles will provide an understanding of logistical patterns.

Truck to Rail Diversion

The CONSULTANT will assess the applicability of the Cross-Harbor truck to rail diversion model to this project. If appropriate, model application should occur as part of the modeling activities (described in Task 4) to be used for testing the impact of strategies that might result in truck to rail diversion as identified in Task 5 and analyzed in Task 6.

■ 2.7 Work Steps

- Thoroughly analyze all of the data collected in Task 1, compile the collective team knowledge, and identify, obtain, and review such other data as may be necessary to prepare a complete analysis of existing modal conditions in terms of infrastructure, operations, and markets.
- Conduct a series of informal interviews (as needed) with facility operators and users to further inform and update data on existing systems, given the rapidly changing institutional, market, and technological context.
- Selectively visit a limited number of key facilities to identify and verify current operational and commercial issues as well as the current level of systems infrastructure.
- Identify key issues relevant to the application of Reebie data to this study; work with Reebie as needed to produce the data in the desired format; and analyze the revised Reebie data.
- Identify key issues relevant to rail/truck mode choice, and prepare to apply the Cambridge Systematics regional mode choice diversion model to proposed changes in the truck/rail infrastructure.

■ 2.8 Draft Products

- A Technical Memorandum which comprehensively describes the freight delivery system, its assets and deficiencies.
- A digest report which focuses on the highlights of the findings for use by the media and general public.
- Comprehensive Reebie databases and supporting analysis and graphics describing regional freight flows.

■ 2.9 Final Products

The draft technical memorandum, digest report and databases submitted in Task 2.8 will be finalized upon receipt of NYMTC comments.

■ 3.0 Task 3 – Industry and Community Outreach and Involvement Program

Objective

The objective of this task is to solicit public and industry input at key points in the project, and to better educate the general public, shippers and carriers, and government officials about how and why freight is shipped. The CONSULTANT will develop an Industry and Community Outreach and Involvement Program that seeks to provide information about freight transportation and to obtain proactive and continuing input into the development of the Plan. This task will result in the identification of appropriate stakeholders.

Approach

The CONSULTANT, in consultation with NYMTC staff, will prepare meeting notices, presentation materials, deliver the presentation, provide handouts, moderate the discussion, seek consensus on issues, and record minutes. NYMTC logistical support in meeting preparation will enable the CONSULTANT to focus its resources on outreach and the technical aspects of the meeting preparation, delivery, and follow-through.

Due to the large number of potential stakeholders and the criticality of their input, conventional information measures (stand-alone project newsletters, public meetings, open houses), which are often one-way information reports to a spotty attendance, are not sufficient for the Community Outreach effort. The CONSULTANT will contribute inserts and

provide technical material to ongoing NYMTC outreach activities. These will be supplemented by the targeted project outreach activities (in addition to the four expanded FTWG meetings) using the Internet. The CONSULTANT will design an element of the NYMTC web site for this study. Everyone on the contact list will be queried for their e-mail and fax numbers. To emphasize the seriousness of their participation, everyone will be asked to register on the web site. They will be alerted at four major milestones of the study to the latest entry to the web site, and the importance of their feedback will be emphasized. The CONSULTANT will prepare the e-mail and fax alerts, format the material for the web site and coordinate its posting with NYMTC's webmaster.

The CONSULTANT will make four major presentations to the expanded FTWG. The work associated with each meeting shall be considered a distinct milestone for the purposes of the cost proposal. The purpose of each meeting is described in Tasks 3.2 to 3.5.

■ 3.1 Identifying and Expanding the Stakeholder Database

In its mission statement, the FTWG calls for involving a cross-section of primary and community stakeholders in freight planning. Assets of NYMTC that will facilitate that goal include a staff that has built relationships with the freight industry, a regionwide outreach structure, a web site, and funding to design the process for developing a regional freight model. To overcome the limitations of resources, the CONSULTANT will build on the programs and capabilities of NYMTC, and draw on the team's wide experience to produce a targeted involvement program that is designed to elicit critical input of stakeholders at key junctures in the evolution of the plan.

The CONSULTANT's contacts and experience will be summarized to create a start-up database of stakeholders identified in previous studies. The CONSULTANT will review the stakeholder database and identify areas poorly represented. These are expected to include:

- Truck owner/operators;
- Retailers, large and small;
- Restaurants;
- Waste haulers, including the NYC DOS;
- Manufacturers;
- Construction contractors;
- Freight brokers;
- Traffic police in New York Police Department (NYPD) and other counties;
- Neighborhood groups; and
- Regional environmental advocacy groups.

The CONSULTANT will develop a methodology to identify additional stakeholders. This effort will entail significant outreach in itself. A likely starting point would be the

chairpersons of the Transportation Committees of the City's 52 community boards, or borough boards, and coalitions of civic groups in each borough (such as Queens Civic Congress) which comprise grass roots groups. The Environmental Justice Alliance reaches into still other neighborhoods affected by freight planning. The Tri-State Transportation Campaign's affiliations and the mailing lists of the Regional Plan Association will reach most of the concerned groups outside of New York City. Borough and county chambers of commerce will be the source of many businesses that are not presently participating in the formulation of goods movement policies; they and the borough presidents should be able to provide contacts with neighborhood retail associations. The Transportation Coordinating Committees could be asked to engage in their own outreach and generate contact lists for each subarea in the region. The City office that coordinates bids should be asked to supply their contact lists. A solicitation of interest could go into Crains' Business Weekly and the publications of county chambers of commerce. Industry associations such as the International Cargo Handlers Association, and sub-regional groupings such as the New York City Partnership, Long Island Association, and Westchester County Association will be sought out. Interface with New Jersey and Connecticut via their respective DOTs and adjacent MPOs also will be critical. The resources of this study could only cover the outreach effort to enlist these stakeholder groups. Because such contacts have a utility for NYMTC beyond the life of this study, it will be recommended that the ongoing NYMTC public outreach activities take on responsibility for integrating the contact lists that the CONSULTANT assembles into its existing contact database.

The goal of this outreach effort will be to create a more fully representative group, yet one which is of an appropriate size and form to provide constructive input in a timely manner. One strategy might be to create a small Steering Committee which would have more frequent contact with the CONSULTANT team. For example, time could be set aside on days when the team has a project management meeting with NYMTC to also meet with and report to the Steering Committee.

The CONSULTANT will make certain that this outreach effort extends beyond the NYC's boundaries and includes substantial suburban involvement from throughout the NYMTC region.

■ 3.2 Kickoff Meeting

The first meeting will focus on study approach, laying the foundation for realistic expectations of the study, and solicit input on the outreach plan and data collection plan (Task 1).

■ 3.3 Regional Freight System Meeting

The second meeting will focus on characterization of the regional freight system, needs identification, and preliminary identification of improvements and solutions (Tasks 2 through 5).

■ 3.4 Assessment Meeting

The third meeting will involve a preliminary assessment of solutions, costs, and funding (Tasks 6 through 7).

■ 3.5 Selection Meeting

The fourth meeting will involve program selection and implementation (Task 8).

■ 3.6 The Project Web Site

This web site will serve several purposes for the project, including presenting various publications, meeting calendar, meeting coordination, mailing list additions, and public feedback. The CONSULTANT will develop a relatively simple startup web site which will be reviewed and enhanced as needed during the course of the project. Major elements of the web site will include the following:

- **Publications** - Typical elements would include a mission statement for the project, project overview, and other publications of a public nature. Selected publications would be viewable on-line or possibly downloadable if appropriate.
- **Contacts** - Selected NYMTC staff and CONSULTANT team members will be listed, possibly with biographical sketches, and project role and contact information will be provided for each person.
- **Calendar** - The project calendar for the next three to six months would be laid out in a simple text format with all public meetings or events itemized. The events would embed hyperlinks to detail about each event, such as meeting times, dates, and other logistical details.
- **Meeting Notes** - The notes and follow-on documents for a project meeting may be distributed through the web site, either on-line or in printable download files.

- **Mailing List Requests** – Members of the public wishing to join the project mailing lists for notification of meetings or other activities may submit their contact information through the web page in an electronic mail message. A procedure will be put in place to capture the information and ensure that the mailing list databases are updated accordingly.
- **Feedback** – Similar to the mailing list request mechanism, the public can comment or ask questions through the web site using electronic mail. NYMTC will monitor responses to the web site as part of its normal web site maintenance activities. The CONSULTANT will assist in developing appropriate responses. This mechanism is short of a full public discussion forum, and it may well be necessary to enhance this aspect of the web site later on in the project.
- **Hit Counter** – The web site will track activity on the site to provide metrics of the usefulness and frequency of use of the site.

It is anticipated that the web site will be accessed through the general NYMTC web site and will be hosted by NYMTC, with maintenance by the CONSULTANT. The intent is to manage the entire web site remotely using CONSULTANT resources to the largest extent possible, and accordingly, the web site will be designed to facilitate remote updating. The CONSULTANT is also prepared to host the web site directly on its computer systems, which will only require NYMTC to provide a link on the NYMTC web site.

■ 3.7 Work Steps

- Develop a complete database of existing stakeholders from NYMTC and the team members.
- Develop and implement a strategy for expanding the list of stakeholders.
- Conduct four FTWG project meetings at key milestone points.
- Develop and manage a project web site as the principle ongoing outreach vehicle.
- Provide project material for inclusion in ongoing NYMTC outreach activities like newsletters and public meetings.

■ 3.8 Draft Products

- Annotated stakeholder database in easily updateable format;
- Web site developed;
- Preparations completed for the kickoff meeting;

- Preparations completed for the regional freight system meeting;
- Preparations completed for the assessment meeting; and
- Preparations completed for the selection meeting.

■ 3.9 Final Products

The draft database and web site will be finalized upon receipt of NYMTC comments. The meetings will be conducted and final meeting minutes will be prepared and distributed for each of the four FTWG meetings.

■ 4.0 Task 4 - Definition and Assessment of Needs

Objective

The objective of this task is to comprehensively determine the deficiencies, requirements, and limitations of the freight transportation system, answering the question “what is it the region needs to accomplish?”

The CONSULTANT will use the information developed in Tasks 1 through 3, in conjunction with input from NYMTC and the FTWG, to develop a comprehensive database of freight transportation-related needs. These needs will be delineated for the short-term (five years), medium-term (five to 10 years), and long-term (10 to 25 years). Freight demand modeling will be used where appropriate to assess needs related to the volume and capacity of the freight infrastructure. This approach will use as input forecasts developed for the many other transportation planning studies identified in Tasks 1 and 2, where there are freight elements to these forecasts.

■ 4.1 Forecasting Highway Capacity Needs

As discussed in Task 2, The CONSULTANT will rely particularly heavily on the forecasts of economic growth by NYMTC and forecasts of commodity flows, highway and rail impacts and opportunities, and port growth scenarios developed by other sources such as the Cross-Harbor MIS and the Strategic Plan. The modeling work performed for this project will focus on infusing NYMTC’s current freight trip table with causal relationships to the extent possible. This can be accomplished by segmenting the trip tables into individual components based on industries and commodities. For instance, The CONSULTANT will use what it has learned about the distribution of grocery products and the commodity flow data related to these goods to identify the subset of trips within

the larger NYMTC trip tables that are performing this function. This will allow it to characterize a portion of the truck trips in terms of truck types and time sensitivities. The CONSULTANT will then be able to forecast how these trips will be impacted by network changes or new policies.

In actual practice, The CONSULTANT is not expected to explain the full set of truck trips in the NYMTC truck trip tables (there are approximately 726,000 daily truck trips in the IAM model). But, by identifying key types of movements that are most likely to be affected by proposed policies and plans, the CONSULTANT will be able to improve future-year trip tables. This will not only support NYMTC's analysis for this study, but leave NYMTC with an improved capability for future analyses.

The first step will be to broaden the NYMTC trip tables to account for rail movements (i.e., rail to truck intermodal moves), as well as strictly truck trips. The Cross-Harbor analysis and available Reebie data should provide the means to do this. The CONSULTANT will carefully review the overall reasonableness of the trip tables for identifiable key origins and destinations and special trip generators (ports, airports, intermodal terminals, etc.). For example, the rapid growth of air cargo services at Kennedy Airport, the development of new intermodal yards at locations such as Fresh Pond in Queens and Pilgrim Hospital near Islip, the development of major container ports at Sunset Park in Brooklyn and Howland Hook in Staten Island, and the growth of the Hunts Point Terminal Market, Williamsburg, and Greenpoint could be reflected. Although the NYMTC model incorporates an overall estimate of growth in regional traffic based on underlying economic growth factors, it generally does not reflect unusually high growth at specific freight generators such as these. The CONSULTANT might make changes to the trip table on this basis.

Once the aggregate review is concluded, the CONSULTANT will work on segmenting the trip table and developing causal relationships between freight demand, logistics business practices, and ultimately truck trips. Using its knowledge of the logistics patterns in the region and the Reebie/Standard and Poor's DRI forecasts, the CONSULTANT will then forecast future-year trip tables under different improvement scenarios as identified in Task 6 to support the assessment of mid- and long-range capital improvement projects. The CONSULTANT will create a new scenario which includes an agreed upon set of improvement projects which could significantly impact freight flows in the region. We will develop this scenario in close coordination with NYMTC and the FTWG. It will be desirable to focus on projects which have already been independently analyzed to minimize the amount of newly developed analysis which would be required for inputting project effects into the model. Capacity-enhancement projects might include already identified (and analyzed) projects such as the twinning of the Goethals Bridge, a cross-harbor rail freight tunnel (which we have already modeled), improvements to expressways which are critical to freight movement, including the Gowanus, Staten Island, Long Island, Cross-Bronx, Van Wyck, I-287, and NYS Thruway and local transportation improvements which might emerge from the NYCDOT's study of freight routes. As discussed earlier, the CONSULTANT's regional mode choice model could be used in conjunction with an upgraded NYMTC model which reflects rail trips to test the impact of projects which have rail to truck diversion potential.

The output of this model run would be a redistribution of all auto and truck trips based on the proposed demand and capacity improvements. The output will be used to conduct planning level analyses of key freight corridors and access points to major freight facili-

ties. This will enable identification of mid- and long-range needs and improvement projects based on a defined set of capacity and demand conditions.

The same type of modeling capability generally does not exist for the other modes. The CONSULTANT has developed and applied a rail simulation model to test the operation of the rail facilities associated with the Cross-Harbor MIS. The lessons learned from this exercise, combined with the extensive rail expertise of the CONSULTANT, will permit a thorough assessment of rail infrastructure needs.

■ 4.2 Addressing Other Performance Measures

Task 4.1 addresses a single type of performance measurement – the demand for and capacity of infrastructure (mobility in the Plan goals). While the definition of needs to be addressed in the RFP is quite broad, as are the goals and objectives identified in the Transportation Plan, the focus of the performance measures identified in the NYMTC IMS work plan tends to be on capacity/demand types of measures. Other types of performance measures typically would include the following:

- Asset management defines the physical soundness of facilities such as bridge structural ratings (“infrastructure” in the Plan goals).
- Safety of operation would include data, such as accident rates acquired through the Tasks 1 and 2 existing conditions assessments. The safety performance measures in the Regional Transportation Plan (RTP) will serve as a starting point.
- Economic development is the focus of the “freight goals” in the Plan. The CONSULTANT will rely on the data collected in earlier tasks, its team’s extensive understanding of the relationship between goods movement in the region and nationally, and the knowledge of NYMTC and the FTWG on regional and local economic development goals, to assess the extent to which the existing systems fails to support these goals.
- Impacts on the human environment will be identified, such as noise and emissions impacts caused by facilities in the vicinity of sensitive receptors (“quality of life” in the Plan goals).

As an example of this approach, the environmental assessment will rely heavily on a review of secondary and tertiary data sources with which the team is already very familiar. Through the work on the Cross-Harbor and Strategic Plan Environmental Screenings, a significant base of environmental information relative to freight movement within the region has already been collected. Qualified environmental professionals will supplement this information with limited field reviews. Where possible, information that would eventually allow for the preparation of a NEPA/SEQR/CEQR type of document will be included in the effort. This information, in conjunction with other existing sources of environmental data will be compiled and focused on the geographic and topical freight movement needs areas defined during this task. The primary goal of this task will be to allow for the focused compilation of environmental data that will aid in the development

of a freight needs assessment and that will eventually guide the selection of freight movement strategies in an environmentally sound manner.

■ 4.3 Work Steps

- Coordinate with NYMTC on the resolution of technical issues associated with the application of the NYMTC modeling tools to this purpose, including identification of special freight generators, and run a revised NYMTC model to create a new “needs identification” base case.
- Using model output, complete a planning level traffic engineering analysis at up to 20 key corridors or intersections.
- Coordinate with NYMTC and the FTWG in developing an expanded set of performance measures which incorporate more than capacity/demand elements and are more reflective of the Transportation Plan goals.
- Use CONSULTANT expertise and public input to identify needs across all modes and measures.
- Based on the preliminary assessment of freight movement needs, identify a series of specific geographically-defined environmental impact areas. These areas will either be in the form of corridors associated with rail or truck movement, or specific locations that are associated with potential freight facility expansions or creation of new freight facilities such as intermodal yards, transfer stations or port facilities. These areas will be identified on the GIS mapping system developed in Task 1.
- Identify the nature of improvements in response to the identified freight needs. This will help further focus the environmental effort. A preliminary effort that asks “*what if?*” will be undertaken to help define the range of freight movement actions that could take place. This effort will assist in identifying key environmental topic areas to be either included or excluded from data collection. For instance if a need identified a requirement for a new Hudson River Crossing versus improved rail float operations, the types of environmental information required for consideration could differ greatly. This early-on scenario building will greatly aid in focusing the environmental effort and will ensure that a database exists for the range of alternatives that will eventually be created.
- Using existing sources and field investigation, compile qualitative descriptions of existing environmental conditions for the identified geographic areas. This information will be summarized in annotated format and the original documentation identified and collected in an “environmental library” for the various study areas. Topics to be considered include:
 - Wetlands, coastal zones, floodplains;
 - Microscale air quality;

- Socioeconomics;
 - Land use;
 - Cultural resources;
 - Open space resources;
 - Noise;
 - Hazardous materials; and
 - Visual quality.
- Based on the compilation and review of existing environmental information, prepare a preliminary description of potential environmental issues within each geographic study area. This assessment will be qualitative in nature and will be prepared to help guide the alternative development process. Significant issues that could severely limit or preclude freight movement within a geographic study area will be identified. For instance, this could include the existence of sensitive environmental habitats or air quality hot spots that would either dictate one freight movement technology over another, restrict the amount of freight moving through an area, or altogether restrict freight movement through an area.

■ 4.4 Draft Products

- NYMTC model output, including volume assignments and graphics which clearly depict highway capacity needs.
- An enhanced NYMTC modeling capability to more accurately reflect freight movements consistent with logistical and commodity flow patterns, and special freight generators.
- Preparatory steps necessary to rerun the model with capacity enhancement and rail to truck diversion projects in Task 6.
- Quantitative traffic engineering assessment.
- Recommended performance measures.
- Qualitative and quantitative needs assessment for non-highway modes which cannot be modeled.
- Qualitative and quantitative needs assessment for all modes across a broad array of performance measures, including safety, economic development, infrastructure condition, and quality of life (environmental conditions). This will include mapping of the projected geographic study areas and qualitative summaries of the existing baseline environmental conditions within these areas.

- An electronic database comparing needs to performance measures by mode.
- A Technical Memorandum incorporating all of the above into a description of specific freight needs of the area refined by mode, facility type, and operational or implementation limitation.

■ 4.5 Final Products

All modeling documentation, databases, assessments and the Technical Memorandum will be finalized upon receipt of NYMTC comments.

■ 5.0 Task 5 – Preliminary Identification of Improvements and Solutions

Objective

The objective of this task will be to develop a preliminary database of improvement strategies for addressing the needs identified in Task 4.

■ 5.1 Approach

This task will build on the activities in Tasks 1 through 4 of identifying ongoing and potential projects (Tasks 1 and 2), developing recommendations through the outreach program (Task 3), and conducting an initial market assessment (Task 4). It will identify both broad-based strategies and specific projects which could potentially address the perceived and quantified needs. It will do so in the context of the Regional Transportation Plan Update goals and objectives. The Plan identifies nine major goals:

1. **Infrastructure** – To achieve and maintain a state of good repair for the existing regional transportation system;
2. **Mobility** – To provide adequate movement for people and freight;
3. **Freight Transportation** – To minimize the cost and improve the reliability of freight movement within the region;
4. **Airport Access** – To provide better access to the region’s airports, for people and freight, by developing an integrated, modally balanced plan;

5. **Regional Decision-Making** - To enhance the level of cooperation and effective regional decision-making among transportation operators and other agencies, and to educate the public and decision-makers about goods movement;
6. **Safety** - To improve the safety and security of the highway and mass transportation systems;
7. **Land Use/Transportation Connection** - To expand awareness of the links between decision-making on the use of land and the provision of transportation services in order to enhance the efficiency and effectiveness of all transportation investment;
8. **Quality of Life** - To enhance the region's quality of life through transportation investments that increase the region's economic productivity, expand access for all trip purposes, and improve the quality and aesthetics of the environment; and
9. **Financing** - To identify funding resources from all levels of government and private sources that can reasonably be expected in order to implement this Plan equitably and efficiently.

The CONSULTANT will develop project lists arrayed against the needs identified in Task 4, and the goals of the NYMTC Plan as discussed above. In doing so, both specific projects and broader policies and programs will be recommended which might be broken down into specific project elements in Tasks 7 and 8.

■ 5.2 Work Steps

- Compile a list of all possible projects as developed in Tasks 1 through 4.
- Develop a database structure in which projects can be arrayed and easily referenced in a variety of ways as defined in discussion with NYMTC. Examples might include need as identified in Task 4, relationship to the NYMTC Plan goals, cost, geographic location, mode, etc.
- Coordinate with NYMTC on the selection of an appropriate application tool, such as Access or Oracle, which is in wide use at NYMTC and among key stakeholders.

■ 5.3 Draft Product

The product of this task will be a database of recommendations keyed (at a minimum) to the needs identified in Task 4 and the goals of the NYMTC Plan, and such other attributes as may be desirable.

■ 5.4 Final Product

The recommendation database will be finalized upon receipt of NYMTC comments.

■ 6.0 Task 6 – Planning, Physical, and Technical Feasibility Assessment of Improvements and Solutions

Objective

The objective of this task is to conduct a preliminary screening of the improvements and solutions identified in Task 5. Input will be provided by the FTWG, Council members, and those participating in the industry outreach effort in Task 3. Major categories of criteria will be planning, physical, technical, and environmental.

■ 6.1 Planning, Policies and Programs

The CONSULTANT will qualitatively and quantitatively assess the degree to which the policies and programs identified in Task 5 address the needs identified in Task 4. While some of this assessment will by necessity need to be qualitative in nature, the CONSULTANT will apply its experience in the development and application of tools to assess the quantitative benefits of transportation investments. As discussed in Task 4, the CONSULTANT will rerun the NYMTC model in this task to test the effectiveness of proposed improvements on meeting freight mobility needs identified in the model run in Task 4. Where appropriate, the CONSULTANT will link this analysis to output from its regional truck to rail diversion model and commodity flow data. For example, it should be possible to relate standard measurements of highway mobility, such as vehicle miles traveled, travel time and delay, with the data developed on commodity flows by corridor through the modeling activities described in Task 4, and the data on the truck routing system developed in Task 2. Thus, the CONSULTANT can screen projects for the extent to which they reflect not only general measurements of mobility, but focus on how this relates specifically to freight movement.

Quantitative Measurements

The CONSULTANT will assess the applicability of, and apply as appropriate, tools for quantifying in monetary terms the costs and benefits of improvement strategies such as STEAM and RailDEC:

- STEAM is the Surface Transportation Efficiency Analysis Model which Cambridge Systematics developed for the FHWA to quantify the costs and benefits of transporta-

tion investment projects on highway users. STEAM requires the output of a travel demand model to quantify benefits, which would be supplied through the modeling effort defined in Task 4. STEAM can calculate the monetary benefits of changes in emissions, accidents, energy consumption, noise, and travel times. STEAM is not limited to analyzing the benefits of highway projects. Through the application of its mode choice modeling capability in combination with the NYMTC modeling system, the CONSULTANT could also assess the impact of other modal projects which divert trucks from the roadway system.

- RailDEC was developed by the FRA to analyze the benefits of rail investments to the users of new rail services. The CONSULTANT will apply its experience in utilizing RailDEC to analyze regional rail freight projects.

In each of the above cases, the monetary benefits calculated will be directly compared to the cost estimates developed in Task 7 to develop cost/benefit ratios for projects or packages of projects.

The CONSULTANT will work with NYMTC in assessing the identified needs and projects and determining the appropriate application of these tools and other planning analysis strategies.

Economic Development

The CONSULTANT will conduct a qualitative assessment which compares the full range of benefits which are likely to be generated by improvement strategies to specific regional and local economic development goals. For example, improving truck and rail access to Howland Hook would increase its role as a container terminal and thus improve the ability of the NYC ports to attract cargo and generate jobs and tax revenue. A cross-harbor rail tunnel, in addition to supporting a port facility in Brooklyn, would likely require and support a relocation of some warehousing and distribution activities which would otherwise occur West-of-Hudson, and thus support local economic development initiatives in Brooklyn and Queens at a minimum. The assessment of this impact will include items such as the generation of jobs and state and local tax revenue.

Institutional Feasibility

A key factor in determining the success of an improvement will be its degree of broad-based institutional support. As part of the planning screening process, the CONSULTANT will seek to answer questions such as the following:

- What public sector agencies need to be involved? The multi-jurisdictional institutional arrangements in the New York region make the advancement of any transportation project unusually complex. It typically involves DOTs and planning agencies from three states; a bi-state agency (the PANYNJ); two Turnpike Authorities; the MTA and its constituent agencies; the city of New York and the other regional municipalities; and others. In addition to the jurisdictional issues in the New York region, freight

planning in the region also involves many other jurisdictions as represented in the I-95 Corridor Coalition.

- What private sector stakeholders need to be involved? This is particularly critical in advancing freight projects since much of the freight transportation infrastructure is owned and operated by the private sector. Stakeholders include the two core Class I freight railroads now operating in the region – CSX and Norfolk Southern; other railroads with interest in regional freight movement including Amtrak, the New York & Atlantic Railroad, the New York Cross Harbor Railroad, the Providence and Worcester Railroad, the Staten Island Railroad, and the Canadian Pacific Railroad; a diverse trucking community; private port operators; air cargo carriers (both the dedicated overnight carriers and the passenger carriers which transport cargo in the bellies of passenger jets); third-party logistics providers; and of course, major shippers and receivers.
- What external agencies need to be involved? Clearly, a host of federal agencies have an interest in freight projects in the region including the FHWA, FRA, Maritime Administration (MARAD), Federal Aviation Administration (FAA), and the U.S. Environmental Protection Agency (EPA). Given the strategy being advanced by the PANYNJ for a series of inland distribution centers, states from as far away as Massachusetts and Pennsylvania could be impacted by strategies developed in this region.
- What regulatory and pricing strategies might be appropriate? Examples include consideration of truck oversize/overweight permitting policy and enforcement, and truck toll policies including congestion pricing.

The CONSULTANT will use its experience in assessing the implementation feasibility, and barriers to implementation, of key projects. The CONSULTANT will use its contacts throughout the stakeholder community to informally discuss and assess implementation issues regarding proposed projects, policies and programs.

■ 6.2 Physical

The CONSULTANT will assess candidate projects highlighted through the scan and analysis of the market to determine how well they meet key physical criteria, including:

- **Connectivity** – What does the proposed project do to enhance connectivity and how well does it do this job? The ability of a project to provide a market-based or other major benefit and provide needed continuity within the whole goods movement network will be assessed. For example, a project providing for improved truck/rail intermodal service is critical if rail service is to compete with trucks. Attention would be paid to where this proposed intermodal facility would be located in addressing market needs.
- **Meeting Modern Functional Design Standards** – How well do the candidate projects address modern functional design standards? Railcars, trucks, ships, and planes are

all changing in size, weight, and performance capabilities. Functional standards/guidelines will be proposed by our team that reflect the area's older urban highway, street, and railroad network. Some functional standards need to reflect the emerging goods movement technologies and logistics chains.

- **Flexibility** - What additional flexibility is offered by the candidate projects that is being sought by the marketplace or needed in coordination with the implementation of intelligent transportation systems technologies, or some other project? The proposed physical improvements should fit in with a whole goods movement system.
- **Ease of Implementation** - How much effort will be required to implement these candidate projects? This will be an assessment of the intensity of the necessary planning, permitting and design activities and the complexity of the construction of the candidate projects.
- **Timeframe for Implementation** - How much time will it take to advance the candidate projects to the beginning of construction/implementation? An estimated range of the time needed to complete the candidate projects also will be given.
- **Coordination with Other Projects** - What other projects do these candidate projects need to be coordinated with? How strongly do the candidate projects relate to other projects? A qualitative statement also will be developed on the nature of the relationship between projects that should be coordinated.

■ 6.3 Technical

The transportation planning environment is undergoing dramatic technological changes across all modes. The application of ITS to the management of the roadway system is enabling planners to expand effective capacity without costly physical improvements. The NYMTC region has been a leader in such areas as the following:

- Electronic toll collection through the EZ-Pass program;
- Advanced traveler information systems such as TRANSCOM;
- Emergency Highway Patrols on the Van Wyck and Long Island Expressways and the New England Thruway;
- The NYCDOT's Vehicle Traffic Control System, which presently operates 5,000 traffic signals on-line in response to traffic conditions, with plans to expand to 8,000.
- The NYSDOT's Advanced Traffic Management System on 140 miles of limited access highways in the Bronx and Northern Manhattan, which uses advanced traffic sensors, closed circuit television cameras, and truck height detectors to detect and respond to problems and to provide information to travelers through Highway Advisory Radio and Variable Message Signs.

- NYSDOT's Long Island Inform System.
- New York is one of four metropolitan regions designated for the U.S. DOT's Metropolitan Model Deployment Initiative (MMDI) to implement and evaluate ITS technologies, although implementation has been slow.
- The Vessel Traffic Management System will provide air traffic control type of capability to the management of marine traffic.

Advances in electronic management systems are occurring in almost every mode. ITS-like systems are being applied to expedite gate processing functions at ports and intermodal yards, and to track containers from origin to destination. Positive train control (PTC) systems use GPS technologies to precisely locate and track train movements and prevent onboard train crews from taking actions which are contrary to train operation safety regimens.

In addition, physical changes have made a critical impact on the railroad and shipping industries. In the railroad industry, ever more seamless technologies are being developed to facilitate intermodal (truck/rail) movements including Trailer/Container-on-Flatcar (TOFC/COFC), Roadrailleurs, and Integral Trains. The newest high cube doublestack container technology is imposing significant demands to upgrade the older highway/rail infrastructure in the Northeast as reflected in the New York Full Freight Access Program.

In the area of waterborne commerce, two complementary developments could dramatically change the role of ports. On the one hand, the development of a new generation of mega-container ships requiring a minimum of 50-foot draft will lead to the concentration of trans-Atlantic shipping in a few key hub ports. These ports will be required to meet this draft requirement, and to have the landside infrastructure necessary to handle vessels carrying up to 8,000 20-foot equivalent units (TEU) – compared to a capacity of 4,500 TEUs and a draft of 40 to 45 feet for the current post-Panamax class of vessels. This trend has already had several major implications for the Port of NY/NJ including the need to dredge Newark Bay; the development of interest in the revitalization of the Port of Brooklyn (which has ready feasibility for a 50-foot harbor draft); the negotiating pressure from the Sealand/Maersk combination; and the development of an inland distribution strategy by the PANYNJ. A corollary to this trend is the development of fast coastal feeder services which may develop into a waterborne transshipment network between the few large mega-ship container ports, and the second and third tier ports along the Atlantic Coast.

The CONSULTANT will apply its extensive experience in the planning and application of all of these technological advances, and will use its experience and knowledge of the infrastructure and institutional environment in New York to assess the technological feasibility of proposed strategies.

■ 6.4 Environmental

The CONSULTANT will qualitatively describe the impact of the proposed improvements on communities' quality of life, environmental quality and planning efforts. The

CONSULTANT will evaluate the impacts of the proposed solutions against the impacts of the existing freight transportation system, and will advance options to mitigate the impacts of the proposed solutions.

Issues to be addressed include:

- What is the impact of the proposed solution on communities in terms of quality of life, environmental quality and future plans?
- How do these impacts compare to existing impacts on those communities and the region as a whole?
- What proposals can be advanced and evaluated that could address these potential impacts?

Based on the compilation of environmental baseline information undertaken in Task 4 and the preliminary menu of identified freight improvements, a qualitative screening analysis will be undertaken. The screening will review each potential improvement and identify potential environmental topic areas that might exceed established thresholds. Thresholds will be established based on common industry standards and selected thresholds identified under various review procedures such as NEPA, SEQR, and CEQR. Order of magnitude assessments will be made as to the likelihood that thresholds will be exceeded. This will be based on the type and extent of improvements identified, professional judgment, and environmental sensitivity within established geographic areas.

Characteristics pertinent to the environmental screening of potential freight improvements will be qualitatively summarized. These characteristics include location, footprint, operations, volumes, hours of operations, etc. In the instances where this information is unavailable, a series of assumptions will be made in concert with the project and client team. These characteristics will be summarized in tabular format and will be the basis for the environmental screening. It also will be crucial to identify the combination of improvements that could occur together or in various phases so as to avoid the appearance of environmental segmentation.

The purpose of the environmental screening will be to qualitatively identify the potential for impacts associated with a variety of possible freight improvements. The primary aim will be to determine if a particular improvement or package of improvements have the potential to exceed established environmental thresholds and thus potentially create an impact. The focus of this effort will **not** be to identify the specific level of impact but rather to understand that the potential to create an impact does exist and the general order of magnitude of the potential impact. This level of information will allow comparisons between improvements, help establish the feasibility of a particular improvement, and begin the process of identifying acceptable mitigation measures.

The level of potential impacts associated with a particular improvement will be identified as insignificant, moderate, or significant. A generic description of potential mitigation also will be provided. The specific approach for assessing each impact category will be fully established when the full array of improvements has been confirmed. Possible approaches for assessing impacts are as follows:

- **Wetlands, coastal zones, floodplains, natural resources** - General location of wetlands will be identified using state maps and field inspections. Intrusions into wetlands will be identified. Coastal zone limits and coastal zone policies will be obtained from the NYS Department of State and general adherence with these policies will be described. The presence of flood plains will be confirmed. Potential for the presence of threatened or endangered species will be established.
- **Air Quality** - The entire region is in non-attainment of air quality for ground-level ozone; Manhattan is in violation of PM₁₀ standards, and this status could expand to more of the region when the new PM_{2.5} standards are adopted. Increasing vehicles miles of travel and congestion will serve to worsen air quality in the coming years, potentially counterbalanced by continued improvement in vehicle technologies particularly through the Governor's adoption of California Low Emitting Vehicle (LEV) II standards. Potential for new localized air quality impacts (mobile source) will be assessed based on the number of new vehicles being added to critical intersections. The locations of existing hot spots (intersections that already significantly exceed air quality standards) will be noted. Impacts on regional mesoscale conditions (VOC and NO_x levels resulting in high ozone readings) can be tested by assessing changes in regional vehicle miles of travel produced by the NYMTC modeling element in Tasks 4 and 6.
- **Socioeconomic** - Existing population and economic information will be collected from secondary and tertiary data sources such as the U.S. Census and the NYCDCP's Community Needs Assessment series to determine if crucial community facilities and services are being displaced or overburdened. Potential direct displacements to residential, commercial and industrial properties will be explored. Impacts to neighborhood cohesion will be assessed qualitatively. An assessment of "environmental justice" will be conducted to determine if the improvements disproportionately effects low-income or minority populations.
- **Land Use** - The New York City Zoning Resolution, zoning maps, land use plans, land use incentive programs, waterfront revitalization plans, solid waste management/transport plans and various local plans will be reviewed to determine if proposed improvements are compatible with the recommendations of these documents. The preservation of land for industrial/warehousing uses will be assessed.
- **Cultural Resources** - The NYC Landmarks Commission and the New York State Department of Parks and Recreation will be contacted to determine if the proposed improvements occur adjacent to or displace local or National Register landmarks or landmark districts. The potential for the presence of historic and prehistoric archaeological remains also will be established through contact with these agencies.
- **Open Space Resources** - Existing or proposed open space resources that might be impacted either directly or indirectly will be identified. Potential impacts will be identified within the context of standards established under Section 4(f)6(f).
- **Noise** - Potential mobile noise impacts will be identified based on screening methodologies established in the CEQR Technical manual. If, for example, a doubling of traffic occurs or the distance to a noise source is reduced by 50 percent a potential impact will be identified. Stationary source noise will be screened based on the presence of sensitive receptors and standard noise generation rates for particular types of equipment.

- **Hazardous Materials** - The likely presence of hazardous materials both landside and marine-related will be determined from a search of records such as those of the NYS Registry of Inactive Hazardous Waste Sites as well as from waste incident and release reports made to the NYSDEC and NYCDEP. Assessment of hazardous materials also will be made based on past land use. It can be expected that most industrial areas will have some potential soil contamination problem.
- **Visual Quality** - Established view corridors that might be disturbed by proposed improvements will be identified. Photographic documentation will be undertaken in visually sensitive areas.

Potential mitigation strategies for the range of various impacts will be identified. Because of the conceptual nature of the environmental screening, the approach to mitigation will be general. The types of potential mitigation available will be outlined along with our professional judgment on the feasibility of that mitigation.

A matrix will be prepared for the range of possible freight movement improvements. The x-axis of the matrix will identify the specific improvement, its location and its general characteristics. The y-axis will identify the particular environmental impact category and the potential level of impact (insignificant, moderate, or significant). Two additional columns also will be provided in order to note potential mitigation strategies as well as general comments concerning the analysis and possible assumptions made.

■ 6.5 Work Steps

- Conduct an initial first cut screening of all projects, programs and policies through a team and NYMTC/FTWG “charrette” approach to determine if there are any obvious fatal flaws.
- Review the baseline environmental data developed in Task 4 against the projects to be evaluated, as a starting point for the screening analysis.
- Analyze projects, programs and policies on the four criteria: planning, physical, technical, and environmental, as described above.
- Produce matrices comparing project, programs and policy performance against the subcategories of evaluation in each of the four defined criteria.

■ 6.6 Draft Products

- A Technical Memorandum that summarizes the analysis and provides a list of recommended improvements and mitigation strategies for further analysis in Tasks 7 and 8, and a discussion of strategies which have been screened out.

- An annotated bibliography/documentation of land use, environmental quality, and quality of life documents.
- A matrix of proposed solutions against potential land use, environmental quality, and quality of life impacts.
- Proposed solutions mapped against zoning, quality of life, and environmental impacts. (Possible solutions mapped against opportunities – brownfields as well as surplus real estate housing unneeded power plants, military bases, or medical facilities).

■ 6.7 Final Products

The draft Technical Memorandum, bibliography, matrix and solutions mapping will be finalized upon receipt of NYMTC comments.

■ 7.0 Task 7 – Potential Cost and Funding of Improvements and Solutions

Objective

The objective of this task is to determine the cost of implementation and operation of the proposed improvements identified in Task 5 and screened in Task 6, and to assess potential financing strategies.

■ 7.1 Cost

The CONSULTANT will develop cost estimates for the candidate projects identified in previous tasks drawing heavily on previous and ongoing studies for such information. There is an abundance of information available on the relative capital and operating costs of many of the candidate projects we are likely to identify and consider. This information will be collected as part of the regional scan in Task 1. The CONSULTANT will add to this information for newer or emerging projects using various broadly applied cost factors. Costs which have not already been determined through previous studies can be assessed using generalized regional factors at a concept-level (30 percent contingency) of estimation detail.

The intention is to create a range of cost estimates for groupings/packages of improvements. The cost table created will provide the necessary order-of-magnitude cost estimates to frame a funding strategy.

■ 7.2 Financing

The complexity of the New York region and the likely diversity of the projects that will merit funding necessitates an approach that avoids one size fits all solutions. Therefore, the CONSULTANT propose a strategy composed of three linked funding and financing solutions for three categories of projects: public sources, private participation, and revenue opportunities. Each category involves a set of likely funding sources and financing mechanisms.

The first category are projects that have few likely funding options other than public funds (federal, state, regional, and local). A majority of potential improvements will fit the traditional mold for transportation infrastructure projects: while they clearly are beneficial to users, the various levels of government have taken responsibility for funding. Perhaps the most likely examples of such discretionary programs are the National Corridor Planning and Development Program (Section 1118), the Coordinated Border Infrastructure Program (Section 1119), and the Transportation Infrastructure Finance and Innovation Act (TIFIA). The three programs combined make more than \$100 million available annually in discretionary grants, although that level may change in TEA-21's reauthorization.

The CONSULTANT will focus its analysis on strengthening the region's competitive position vis-à-vis U.S. DOT funding. The results of the work in this task will inform decisions about what specific projects may hold the greatest potential for discretionary funding and allow the region to target any requests for federal assistance to these projects. Clearly, support of the region's congressional delegation is critical in obtaining discretionary federal funding.

The second strategy targets projects that should attract some level of private sector investment. The amount and quality of private sector investment in transportation depends directly and substantially on the strength of the market in which the investor is doing business. Public/private partnerships usually involve the government creating an opportunity and/or reducing the risk for private participants.

The third strategy involves projects and public assets that could generate revenue. This strategy - generally termed value capture - has become a more vital approach to public infrastructure funding as TEA-21 has created opportunities for using a project's revenue stream to leverage innovative funding sources. The New York region likely includes opportunities for value capture, such as leasing of right-of-way to telecommunication companies for cable and utilities for power lines and pipelines (E&K thoroughly examined this potential in the Cross-Harbor MIS). Additional opportunities are likely for development of public lands adjacent to roadway, interchanges, or other types of improvements. Although far more uncertain, opportunities for assessment districts, tolling, and joint development may become available for funding certain infrastructure.

Although some parts of this third strategy are speculative and politically difficult to implement, their potential for generating critical local matching funds may make it worth some effort to develop a framework for their implementation. Such a framework should consider a collective effort to negotiate with private entities interested in participation. This effort could range from simply sharing information on lease terms for public ROW,

to a regionwide enterprise agency that administers revenues collected throughout the corridor. The former would help public officials with information, such as the value of their assets, thus enabling them to bargain for the best deal and resist being intimidated by businesses threatening to locate in the next city or state.

The CONSULTANT will inventory the prospects for value capture and will assist policy-makers with a more comprehensive evaluation of their funding options. It also may reveal an opportunity to the private sector that would encourage their participation.

■ 7.3 Work Steps

- Compile cost estimates available from existing sources.
- Generate concept-level order of magnitude estimates for improvements that have not previously been estimated.
- Reconcile discrepancies to develop a range of estimates suitable for concept-level assessment.
- Identify likely U.S. DOT discretionary funding sources, the types of projects which would be eligible, and funding and eligibility trends which are likely to emerge in TEA-21 reauthorization.
- Identify strategies for obtaining Congressional earmarked funding.
- Identify strategies for attracting private sector financing.
- Prioritize improvements in terms of costs, financing options and benefits as identified in Task 6.

■ 7.4 Draft Products

The product of this task will be a Technical Memorandum which includes:

- A ranking of the proposed improvement packages from most to least costly based on a range of costs; and
- An analysis of various financing strategies for the recommended improvement packages, including a mix of traditional public and innovate private sector strategies.

■ 7.5 Final Products

The draft Technical Memorandum will be finalized upon receipt of NYMTC comments.

■ 8.0 Task 8 – Development of an Implementation Program

Objectives

The objective of this task is to develop a set of projects, policies, and programs that meet specific freight transportation needs. The program will be stratified by mode and facility type, implementation timeframe, responsible institution, and presented in priority order based on a rating system. Improvements will be defined for short- (five years), medium- (five to 10 years) and long-term (10 to 25 years).

■ 8.1 Approach

During the preceding tasks, considerable quantitative data will have been developed to help support a numerically-based project ranking system. This includes market demand, responsiveness to a perceived need based on a broadened set of performance measures which reflect the Transportation Plan’s goals and objectives, order-of-magnitude cost, and financing options. In addition, more qualitative data will have been developed in regard to physical and technical feasibility, potential environmental impacts, and institutional and stakeholder acceptance.

The CONSULTANT will array each set of improvements by time period and mode using two matrices based on need and feasibility. The need matrix would address how the project responds to a specific set of needs related either to performance measures and/or the NYMTC Plan goals, while the feasibility matrix would relate to all of the issues relevant to implementation such as environmental impacts, costs, funding, stakeholder support, etc. The CONSULTANT will use a relatively simple ranking system such as “high,” “medium,” and “low” and/or applying simple numerical values (such as a scale of 1 to 5) to avoid an unwarranted implication of a highly precise and quantitative approach.

Tables 8.1 and 8.2 display examples of each matrix. This sample reflects the goals of the NYMTC Transportation Plan – with economic growth reflecting the key objective of the “freight” goal in the Plan. A column for “national significance,” has also been included, reflecting the importance of demonstrating this benefit in the competition for federal funding as described in Task 7. In each case, “5” is the highest rating meaning the project responds well to a major freight need, and is generally feasible. Thus, in either case, the higher the overall score the more favorable the project. The matrices show a modal mix of long-term projects. The actual matrices would be subdivided by mode, and separate matrices developed for each of the three timeframes.

Table 8.1 Sample Needs Matrix

Project	Infrastructure	Mobility	Economic Growth	Airport Access	Safety	Land Use	Quality of Life	National Significance
Twinning Goethals Bridge	3	4	5	3	5	2	2	2
Gowanus Tunnel	5	3	3	2				1
Xharbor Tunnel	2	4	5					4
XBronx Improvements								
Pilgrim Intermodal System								
Long Island Rail Improvements								
Etc.								

Table 8.2 Sample Feasibility Matrix

Project	Cost	Financing	Regional Environ. Impacts	Local Environ. Impacts	Institutional Support	Stakeholder Support	Physical Feasibility	Technical Feasibility
Twinning Goethals Bridge	3	4	3	4	4	3	5	5
Gowanus Tunnel	1	2	3	4				
Xharbor Tunnel	5	3	4					
XBronx Improvements								
Etc.								

■ 8.2 Work Steps

- Work with NYMTC and the FTWG in developing the matrix format.
- Using the data collected in the preceding tasks, array the potential improvements against the matrices.
- Review and adjust the rankings in consultation with the NYMTC and FTWG.
- Prepare a final set of recommended improvements by timeframe, mode, and implementing agencies.
- Assess future planning directions suggested by these recommendations.

■ 8.3 Draft Products

The products of this task will be a draft report for review by NYMTC and the FTWG summarizing the findings of the previous tasks, and including a prioritized program of recommendations for incorporation into NYMTC's Transportation Improvement Program and Regional Transportation Plan, or to be undertaken through an agency's or private sector entity's capital program.

■ 8.4 Final Products

Following receipt of NYMTC comments on the draft report, a final report will be prepared. Reports will be delivered in hard copy camera-ready original format, electronic version in MS Office, and PDF for posting on the Internet.

■ 9.0 Schedule

The project schedule is shown in Figure 9.1. As indicated, the CONSULTANT will complete the project within 18 months from Notice-to-Proceed.

Figure 9.1 Proposed Schedule

