

I. INTRODUCTION

I.1 PORTWAY - A REGIONAL MOBILITY AND ECONOMIC PERSPECTIVE

The Portway Extensions Study Area, inclusive of the existing and planned maritime port facilities in Newark, Elizabeth, Jersey City and Bayonne, and the major Intermodal Railyard facilities in Newark, South Kearny, Secaucus and Jersey City, represents the front door to global and domestic commerce for New Jersey and greater metropolitan New York. This maritime port and railyard system is currently the largest center for the import/export and transfer of container freight on the east coast, and the second largest (after Los Angeles/Long Beach) in the United States. Although containers do not represent the majority of freight traffic in the region, container movement is the basis for a substantial share of job creation and economic activity in the study area, and supports a vast array of business enterprises.

The ever-larger container ships that arrive daily into the ports of New Jersey carry products that will ultimately reach consumers throughout the Northeast and the United States. In order for these products to reach the end consumer, they must make the journey from the docks, to the warehouses, and then to the individual retailers. These distribution moves can involve container trucks, smaller non-container trucks, rail, and even barges.

Currently, North Jersey's marine container terminals generate nearly 13,000 truck movements each day. The number of containers moved each day by truck is expected to continue to grow, limited only by the anticipated expansion of the capacity of the existing and planned port facilities and intermodal railyards, growth in global trade, and the significantly increased container handling capacity of the new generation of container ships. According to recent projections, the number of container-related trucks generated by port activity could increase to upwards of 28,000 per day. This represents an increase of nearly 125 percent over and above the container truck trips being made currently.

In addition to the movement of containers through the maritime ports, over one-half of the region's international containers enter and exit the Portway Extensions Study Area via the west coast ports and the national intermodal "landbridge" rail network. Still more containers are moved throughout the region on trucks originating from or destined to other east coast ports. Finally, containers also handle high volumes of purely domestic freight moving into, out of, within and through the study area.

The roadway network serving the immediate Portway Extensions Study Area is already stretched to near capacity. Some of the key roadways connecting the Portway

Extensions Study Area facilities to each other and to the regional and national transportation infrastructure have only one lane in each direction and have not been improved for many years. The poor condition of these roads and their inability to properly serve current and future traffic can be expected to negatively impact the port industry if not addressed.

Many of the roadways throughout the study area carry a very high percentage of trucks. In some cases, trucks represent the overwhelming majority of traffic throughout the day on key thoroughfares. For example, Doremus Avenue carries a relatively low AADT of 3,500 to 4,000 vehicles. However, nearly 65 percent of the traffic through this corridor is comprised of trucks. Similarly, Truck Route 1 & 9, just south of Route 1 & 9, carries approximately 20,000 vehicles daily, nearly 30 percent of which is comprised of heavy trucks.

With the anticipated increase in international container traffic, the question of the existing transportation infrastructures ability to safely and efficiently accommodate the demand that will be placed upon it in the future has taken center stage. Over the next ten years, New Jersey plans to invest nearly \$750 million to improve essential elements of the transportation infrastructure that serve the Portway Extensions Study Area.

In conjunction with improving the roadway network in the Portway Extensions Study Area, there are plans to expand the marine terminals of Port Newark, Port Elizabeth, and the Bayonne Peninsula. The North Jersey Transportation Planning Authority (NJTPA) is investigating local Brownfields that could be redeveloped into value-added warehouse/manufacturing sites that would serve the goods movement industry and generate increased commerce. The Brownfield initiative would not only improve the environment within and proximate to the Portway Extensions Study Area, but would significantly stimulate economic growth. All of these improvements would result in more efficient movement of containers with the required distribution mechanisms located nearby.

Clearly, significant improvements are vital to the future of the goods movement industry and the hundreds of thousands of jobs that are created by this industry. These improvements cannot be limited strictly to roadway infrastructure. In addition, enhancements must be made not only in the modes of transportation utilized for the movement of containers, but also in how the movement of these containers is managed.

I.2 PORTWAY PHASE I – CONCEPT AND STATUS

Creation and maintenance of a multimodal network for the transport of the containers that move through the Portway Extensions Study Area is of paramount importance to the continued mobility and economic vitality of the region. In recognition of the need to safely and efficiently move containers through the region, the Portway concept was born.

In 1996, Portway Phase I was initially conceived as a roadway/intermodal connector facility that would strengthen highway and inter-facility access between the Newark/Elizabeth Seaport Complex and major intermodal rail and trucking distribution facilities throughout the region. In the early stages of development, Portway Phase I was envisioned primarily as a dedicated roadway network designed to accommodate oversized and overweight trucks. Portway Phase I concept was intended to serve the many Brownfields properties along and proximate to its alignment and thereby facilitate their re-use for value added processing and other good movement logistics purposes.

The initial components of Portway Phase I included numerous roadway network enhancements to increase safety and support seamless connections by separating heavy truck traffic flows from other traffic flows. A series of eleven (11) projects, each having independent utility are in various stages of the project implementation pipeline. These Phase I projects include:

PROJECTS UNDER CONSTRUCTION

1. Doremus Avenue reconstruction and bridge replacement, from south of Port Street to north of Wilson Avenue. The project is anticipated to be completed in 2003.
2. Doremus Avenue reconstruction and widening, from north of Wilson Avenue to north of Raymond Boulevard. The project is anticipated to be completed in 2004.
3. Construction of operational improvements to the Tonnelle Circle and elimination of the Charlotte Circle. This project commenced in January 2002 and is expected to be completed by in 2003.

PROJECTS IN FINAL DESIGN OR PRELIMINARY DESIGN

4. The Route 1&9 St. Paul's Avenue Bridge Replacement was advanced to design in 2003. Construction is scheduled to commence in 2005.
5. The Route 7 Wittpenn Bridge Replacement is currently in Final Scope Development, with construction anticipated to commence in 2007.

I.3 PORTWAY EXTENSIONS – STUDY OVERVIEW

While the mobility enhancements and possible traffic safety improvements that will result from the Portway Phase I improvements are significant, the geographic area of influence of the Portway Phase I improvements is limited, particularly in light of the recognition that the movement of containers to and from the Portway Extensions Study Area has implications not only throughout the immediate area, but also throughout New Jersey and the entire Mid-Atlantic region.

In the early development stages of the Portway program, a number of specific phases were identified for the study and advancement of Portway related projects. The definition of Portway Phases 2 through 4 based upon geographic areas initially was somewhat arbitrary (extensions to the north, east and south). This assignment of numbered phases led to misunderstandings of the nature, extent and prioritization of necessary improvements.

This issue was remedied in the packaging of all phases of the Portway program beyond Phase I into the Portway Extensions. The Portway Extensions Concept Development Study was framed around the following objectives and benefits that highlight the importance of, and need for, the Portway Extensions:

- Develop value-added infrastructure and systems/operational efficiency to create a modern, seamless intermodal connection between port, rail and truck transfer facilities and the regional and national container distribution routes.
- Create an intermodal service platform that will generate economic opportunity and a higher quality of life through congestion reduction, Brownfield reuse and transportation related employment growth.
- Facilitate a reduction in congestion and avoidance of “freightlock”.
- Increase safety through improved ROW and roadway geometry, incident management and greater separation of trucks and automobiles.
- Support expansion of freight related economic development tied to access improvements, Brownfield remediation, and adaptive reuse of land and facilities.
- Forge new, long term public and private sector working relations tied to active industry and community stakeholder partnerships.
- Develop a recommended alternative improvements package focusing on system management, operations, information, and improvement.

To be effective, the analysis and concept development process must look beyond current conditions and anticipate the future policy directions, and the role that New Jersey will play in the ever-changing global economy. The study must identify realistic

solutions to real problems, and lay the groundwork for long-term investment to ensure that the stream of commercial and consumer goods traveling to and through the state may be transported efficiently.

The recommended alternative should not only accommodate travel demand and reduce/eliminate congestion from a local perspective, but it should also be developed with the understanding that this important initiative will play a major role in the economic health of the entire region. The connection between transportation and industry must be carefully considered. Increasing emphasis on the New Jersey ports, and investment in the future of the goods movement industry throughout the existing and future Portway Extensions Study Area will place increased demand on the transportation infrastructure. The Portway Extensions are expected to play a pivotal role in accommodating this demand.

The study was designed to take a system-wide look at the future of container growth and transport to, from and through the region, and to facilitate not only identification of necessary systems, operational and infrastructure improvements, but allow prioritization of the implementation of improvements based upon the point in the future when the anticipated need would become reality. In this manner, the greatest needs could be identified and addressed first. As part of the system-wide regional planning approach, the scope of the study was designed to:

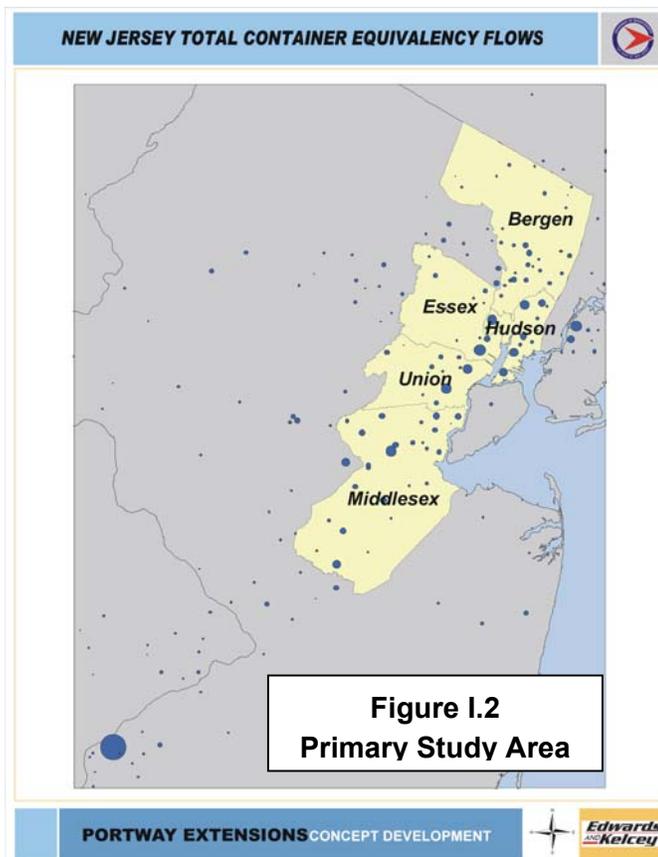
- Define and document existing and future container movements to, from and through the Portway Extensions Study Area.
- Identify and assess infrastructure improvements already being advanced by others.
- Develop a series of multimodal infrastructure, system and operational solutions to accommodate the projected container flow demands, relieve current high levels of congestion in this busy intermodal freight service corridor, meet growing future demand for access generated by increased activity at port facilities, rail yard and distribution centers, promote economic development, and create jobs along the Portway corridor.
- Prioritize the improvements based upon a series of performance measures and lead-time requirements for implementation.
- Involve a wide range of stakeholders including municipal and county planning officials, agency representatives, and affected industries in the planning and decision making process.
- Develop consensus for recommended concepts and prioritization.

While for the purposes of this study the basic unit of measure was defined as a container trip (as opposed to a vehicle trip), the analysis followed a traditional four-step planning approach that may be summarized as:

- **Trip Generation** - Measured in terms of containers. Container flow projections were developed for near-term (years 2010) and long-term (year 2025) conditions. Two growth scenarios were developed for each projection year. The high growth scenario represents the level of container activity that could be achieved assuming the elimination of capacity constraints, both external to the region and within the port facilities themselves. The low growth scenario represents a level of growth that could be achieved with more modest improvements to external and facility container handling capacities.
- **Trip Distribution** - Assessment of the geographic origins and destinations of the container flows. Multiple industry data sets were incorporated into the container distribution assessment including the TRANSEARCH database, and the Port Authority's PIERS database.
- **Modal Choice** – Projection of the means of conveyance utilized to move containers (i.e.: truck, rail, barge, etc.). Projections of future conditions without significant improvements incorporated were based primarily upon a continuation of the existing modal splits exhibited in the area. Today, approximately 89% of the container movements into and out of the Portway Extensions Study Area are made by truck, with the remaining movements made by alternative modes such as rail and barge.
- **Route Assignment** – Identification of the travel paths to be utilized between each origin/destination pair. A transportation network assignment model was developed for this task. The base model created through the integration of the North Jersey Regional Transportation Model (NJRTM) with the Statewide Truck Tool developed as part of the Portway Phase I feasibility assessment. The model was further refined and calibrated utilizing available traffic flow data developed for other studies, and an extensive data collection program conducted as part of this study.

I.4 PORTWAY EXTENSIONS - PRIMARY STUDY AREA

Prior to commencing application of the four-step planning process, it was necessary to



define the primary study area. For the purposes of this initiative, the primary study area was defined to encompass a five county area including Bergen, Essex, Hudson, Middlesex and Union. The delineation of the primary study area was based upon an evaluation of the existing origin and destination points for the movement of containers. This area is depicted in Figure I.2.

The dots in the figure represent international container arrival and departure volumes by zip code throughout northern New Jersey. This aggregation is effectively a representation of the distribution of container movement activity associated with the Portway Extensions Study Area. It was determined that the primary

activity centers would remain relatively intact, thereby defining the geographic area of primary interest.

I.5 PORTWAY EXTENSIONS – GUIDING PRINCIPLES IN CONCEPT DEVELOPMENT

Focusing upon the findings of the container flow model application for the future conditions, a series of improvement concepts were developed to serve the primary study area. A series of guiding principles was developed to focus and facilitate the concept development process. The basic principles applied included:

- Enhance multi-modal access and connectivity between marine ports, intermodal rail yards, warehouse/distribution dense trade clusters, and the regional transportation network.

- Utilize and enhance existing rail and roadway infrastructure to the maximum extent possible.
- Build upon infrastructure improvement plans already in the planning stage.
- Create “positive system redundancy” and multiple travel paths and mode options between marine ports, intermodal rail yards, warehouse/distribution dense trade clusters, and the regional transportation network.
- Minimize adverse environmental impacts that would result from the implementation of physical infrastructure improvements.

I.6 PORTWAY EXTENSIONS - IMPROVEMENT CONCEPT CATEGORIES

From the beginning, it was the intent of this study to develop a wide range of improvements that do not rely solely on the ability of the roadway network to accommodate container movements by truck. It was recognized early on that a wide array of non-roadway improvements would likely provide significant benefit without requiring the construction of new or expanded roadway capacity. Accordingly, a series of improvement concepts was developed for evaluation in this study. The categories were defined as:

- **Systems / Operational Improvements**
 - ITS System Architecture
 - Off-Peak Freight Operations – “Temporal Shift”
 - Container Management Strategies
- **Non-Roadway Infrastructure**
 - Elimination of height, weight, other capacity constraints – particularly on key rail links
 - Short Line/Short Haul Corridor Enhancements
 - Intermodal Yard Connectivity
 - PIDN Rail/Barge
- **Roadway**
 - Truck Priority / Truck Only Facilities
 - NJTPK Interchange Enhancements
 - Last-Mile and Major Facility Connectors
 - Bridges (new or improved)

I.7 PORTWAY EXTENSIONS – CONCEPT EVALUATION CRITERIA

Throughout the study process, numerous ideas were put forth as potential improvement concepts. A set of criteria was developed to focus the evaluation process and quickly identify concepts for advancement in the process. The criteria included:

- **Mobility/Redundancy** – Will the candidate concept being considered result in enhanced mobility for the movement of containers, either regionally or at a local level? Will the concept provide an alternative or redundant travel mode or travel path to that which already exists?
- **Freight Logistics** – Can the logistical and/or institutional barriers that exist today or that would be created, be overcome, primarily with respect to the systems / operational and non-roadway concepts?
- **Environmental** – Does the concept involve construction of new or expanded infrastructure that would result in adverse environmental impacts, including such issues as wetlands impacts, residential neighborhood impacts, displacement of homes or businesses, etc.? If so, are the anticipated impacts minor in nature? Do the potential benefits outweigh the potential impacts?
- **Security** – Does the concept enhance or hinder the ability of port security to be improved?
- **Technology/Operations** – Does the concept involve the application of existing, proven technologies? Would reliance upon as yet unproven systems be required?

I.8 PORTWAY EXTENSIONS - STAKEHOLDER OUTREACH AND CONSENSUS BUILDING

Experience has shown that projects that are planned and designed through a process of dialogue between the project sponsor and the affected stakeholders better meet the needs of the traveling community that will utilize the improvements, minimize adverse impacts to the environment, reduce conflict with plans being advanced by others, and enjoy a greater level of consensus and support. Stakeholder outreach was a constant component of the study from its inception. A multi-tiered outreach program was implemented to present study status, findings and ideas as they emerged, gather feedback from the affected stakeholders, and identify critical issues as early in the process as possible.

In addition to posting key information and study material on a dedicated web site readily accessible to the public, the study process incorporated a series of one-on-one meetings with public and agency officials and industry stakeholders, continuous coordination

efforts with other overlapping studies and initiatives, and the formation of a Task Force to help guide the study process.

The following sections of this report detail the study process, assumptions and key findings, as well as a series of improvement concepts and recommendations for prioritization and implementation.