2.0 Purpose and Need for the Project

A. INTRODUCTION

The purpose of the CPIP project is for the CPIP Consortium to prepare a comprehensive port improvement plan for the Port of New York and New Jersey that will address projected cargo demand to the year 2060; is economically viable and environmentally sustainable; and will support the ongoing restoration of the harbor and its environment.

The principal factors that underlie the need for the CPIP are:

- Forecasts of significant growth in cargo volumes passing through the Port, and associated transportation needs; and
- Existing Port cargo-handling and associated transportation network capacities, and projected future capacity shortfalls to meet the increasing cargo volumes.

The following sections discuss current and projected 2040 and 2060 cargo volumes; Port capacity and projected shortfalls; 2040 and 2060 traffic and rail projections; and 2040 and 2060 warehouse demand forecasts.

B. 2040/2060 CARGO FORECASTS

The Port of New York and New Jersey serves one of the largest markets in the United States, with its primary market area including more than 70 million people in 13-states,[1] who require goods and services to support their daily lives and businesses. In an increasingly global marketplace, a growing amount of the goods needed in this region arrives from overseas locations. Thus, the Port is a major conduit for international goods movement, as well as a leading gateway that supports import and export commerce for an additional four states.[2] In the years ahead, the volume of maritime trade through the Port is forecast to grow. But the Port is not the sole entry point for maritime-transported goods that come into the region, as cargo also moves via other North American ports, and then enters this region by truck and rail transport. As has been the case historically, the future demands of consumers and businesses in the region will be met one way or the other.

The volume of cargo passing through the Port has increased dramatically in recent years.[3] In 2002, the Port handled 3.7 million 20-foot container equivalent units (TEU),[4] a 13 percent increase over 2001 figures, and an 85 percent increase over the 2 million TEUs (empty and loaded) handled in the Port 10 years ago. The total tonnage passing through the Port – including general cargo, as well as petroleum and other bulk shipments – rose from 65 million tons in 2000 to 70 million tons in 2002.

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1 New York, New Jersey, New Hampshire, Vermont, Connecticut, Rhode Island, Maine, Massachusetts, Pennsylvania, Delaware, West Virginia, Virginia, and Maryland, plus Washington, D.C.

2 Illinois, Indiana, Ohio, Michigan.

3 Cargo forecast and port capacity figures presented herein are derived from *Technical Memoranda: Market Demand and Port Capacity, Volume 1: Market Forecast and Outlook* (February 2003) and *Volume 2: Current Capacity and Aggregate Capacity Needs at Port Facilities*, (January 2003), Sir William Halcrow & Partners, Inc.; the memoranda may be viewed at www.cpiponline.org.

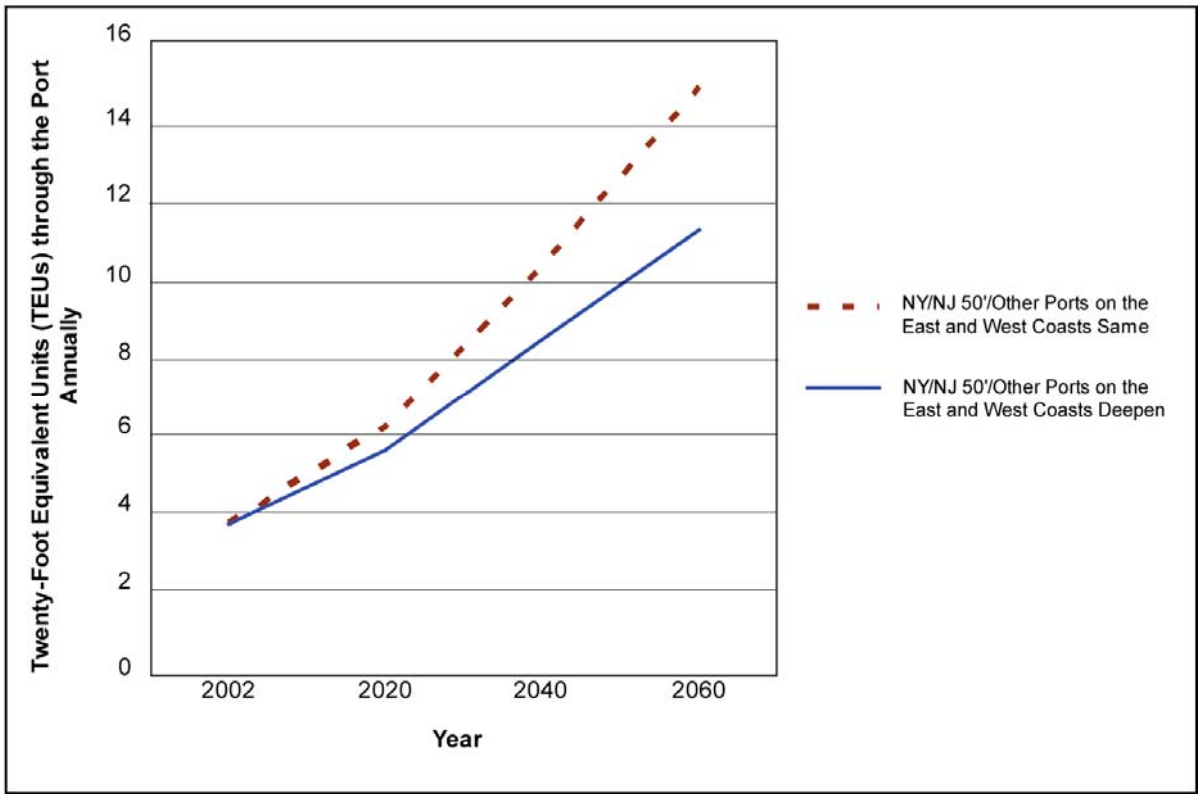
4 A TEU refers to a 20-foot-long container. Maritime containers come in several lengths. Amounts provided in TEU units mean that the various lengths of containers coming through a port have been translated into the equivalent amount of 20-foot containers. A 20-foot container represents one TEU, and a 40-foot container is two TEUs.

Nearly 589,000 automobiles and other vehicles were imported and exported through the Port in 2002, a 7 percent increase over 2001 figures.

Projections developed for the CPIP for the years 2040 and 2060 indicate that maritime traffic will continue to grow. The movement of containerized cargo will be via increasingly larger ships used in international trade (e.g., post-Panamax vessels, with capacity for +5,000 TEUs), which require greater channel depths than do current vessels. Therefore, channel depths at ports will be an important factor in determining a port's ability to handle future maritime cargo movements.

Deepening of the Port of New York and New Jersey's channels to 50 feet was approved and funded, and dredging work to deepen the Kill Van Kull to 50 feet was begun in April 2005. Deepening of other key portions of the Harbor to that depth will be undertaken over the next decade. As shown on Figure 2-1, if all other ports also deepen their channels, the number of TEUs moving through this region's port terminals is projected to grow to over 11 million units by 2060, more than a threefold increase over the next six decades. Over the next four decades, throughput would double, but the existing Port capacity would still be sufficient.

Figure 2-1: Cargo Growth Scenarios



Note: Port sites in the category of "Other Ports on the East and West Coasts" include Seattle, Oakland, Los Angeles, Houston, New Orleans, Miami, Charleston, Norfolk, Baltimore, Philadelphia, and Boston.

If other ports do not receive Federal authorization and appropriation of funding to fully deepen their channels, or they do not actively compete for containerized cargo, the amount of cargo traffic through the Port would be even higher than the forecast 11 million TEUs by 2060. However, as many other ports are moving to deepen their channel depths, it is expected that cargo movement through the Port

will grow to the projected 11 million TEUs by 2060. A dockworkers' strike that shut down 29 West Coast ports in October 2002, causing diversion of ships from the West Coast to the East Coast, including to the Port of New York and New Jersey, illustrated the influence that conditions at one port have on shippers' decisions and ports' ability to compete for cargo. The strike contributed to the unusually high 13 percent increase in container throughput at the Port from the previous year. However, as many other ports are moving to deepen their channel depths, it is expected that cargo movement through the Port will only grow the projected 11.3 million TEUs by 2060.

Current annual increases in cargo movement are not expected to continue once the percentage of post-Panamanian ships that cannot use the Panama Canal increases. Other ports, particularly on the West Coast, may grow faster than the Port of New York and New Jersey, and will continue to serve consumers in this region. Therefore, it is possible that overland cargo traffic to this region from other ports could grow faster than maritime traffic moving through the Port's facilities. The potential constraint on overland cargo movement will be the capacity of the regional and local roadway and rail networks to accommodate the cargo traffic.

C. ASSESSED CAPACITY OF THE PORT

As the volume of maritime cargo increases, the Port's ability to handle the maritime trade must keep pace. A number of near-term projects to be completed by 2006 at some of the Port's major container terminals will increase the Port's capacity and productivity. The current projects' purpose is to alter and consolidate operations within individual port terminals. The Port's terminals handle predominantly container cargo, automobiles, bulk cargo, or general cargo. While Port capacity, including enhancements that will be provided by the projects underway, will be sufficient for some cargo types in coming years, additional capacity enhancements will be necessary to accommodate cargo volume growth to 2060. Should other ports not deepen their channels in order to remain competitive, the Port's assessed capacity of 8.6 million TEUs (Chapter 1, Table 1-2) would be exceeded by approximately 2040. While such growth would be steeper than assumed in the CPIP planning process, Port capacity enhancement would still not be required in the near term.

Capacity of the Port's existing terminals is assessed on the basis of the steps involved in cargo handling: vessel berthing; vessel loading/unloading; cargo handling in the terminal yard; yard storage; and, for containers, which are the predominant cargo type in the Port, passage through terminal gates. However, actual terminal capacity is determined by the cargo-handling step that most limits throughput (e.g., the limiting factor may be the number of berths at one facility, the number of cranes at another, and the number of gates at a third).

1. Container Terminals

The total throughput of the Port's 1,302 acres of container terminals in 2001 was 1,945,483 lifts per year.[5] The safe and sustainable capacity that could potentially be attained within the port facilities' existing footprints and using current methods of operation is assessed to be 5,040,000 lifts per year. This assessment is based upon current capacity with completion of a number of recent improvement projects.

Capacity of the Port's container terminals has recently been expanded through on-site improvement projects at the Port Newark, Port Elizabeth, and Howland Hook container terminals. The container terminal improvements convert current operations, some of which are chassis-based and require

[5] A "lift" is the movement of one container of any size from one place to another (e.g., ship to shore, or shore to truck or rail, or vice versa). The average "lift" in the Port is equivalent to 1.7 TEU.

significant acreage and are operationally inefficient, to more land-efficient stacked container operations. In addition to replacement of existing equipment with new generation cranes and other container-handling gear, these improvements include berth strengthening, deepening and extending; installation of enhanced on-dock rail and intermodal capabilities; electronic processing systems at terminal gates; and improved container storage. Beyond these improvements, additional operational efficiency and productivity improvements at the terminals could enhance capacities and increase throughput of the existing terminals without expanding terminal acreage.

With the recent improvement projects in place, the entire Port's aggregate container capacity is assessed at 8.6 million TEUs per year, which is anticipated to be sufficient for several decades. However, by 2040, the forecast container volume will increase to 8.5 million TEUs, just marginally less than the assessed capacity. By 2060, the aggregate assessed capacity for all of the Port's container terminals is expected to fall short of the needed capacity (11.3 million TEUs) by 32 percent.

However, some individual container terminals are likely to reach the potential capacity of their existing acreage sooner than others. At such time, decisions relating to the scope and timing of individual container terminal expansion will be driven as much by market forces as by physical capacity. It is possible that individual container terminal expansion may be required before all of the existing surplus capacity port-wide is utilized, in order for a given terminal to remain competitive and play its part in supporting the increasing consumer-driven demand for goods in the region.

2. Automobile Terminals

For existing automobile terminals, the actual throughput in 2001 was 603,400 autos,[6] with an assessed maximum capacity that could potentially be achieved that is 55 percent higher than currently realized. The dynamics of auto terminal usage and capacity are quite different from cargo terminals, as consumer preferences for specific vehicle makes and models dictate how long any given auto is at a terminal and the terminal's consequent capacity utilization. The uncertainty of customer demand for particular makes and models in the future also complicates assessment of future auto terminal capacity enhancement needs.

By 2040 and 2060, the capacity requirements of the Port's auto terminals are forecast at 872,000 and 1.1 million vehicles per year, respectively. By 2060, the increase will be 18 percent over current assessed capacity (930,000 vehicles), but 82 percent greater than the currently realized throughput capacity of 604,400 vehicles per year. While the CPIP forecasts indicate that the aggregate assessed capacity for handling of automobiles in the Port will not exceed demand until 2045, individual auto-handling terminals within the Port will likely require operational improvements and/or capacity enhancements before then. This is because each of the five existing auto terminals handles different vehicle makes with little flexibility for switching to others, and, as noted above, consumer demand for different auto makes and models dictates the length of time any auto is stored at a terminal, with consequent implications for the terminal's throughput capacity. Future capacity improvements may become necessary at a given auto terminal, which handles the import and export of a popular vehicle make and model, even though Portwide auto-handling capacity will not have been exhausted. Improved auto-handling and storage systems may be required, therefore, at one or more of the auto terminals in stages before the aggregate capacity is reached.

3. General and Bulk Cargo Terminals

Actual throughput of the Port's general cargo and bulk cargo terminals in 2001 was 851,788 and 4,581,478 tons per year, respectively, while their assessed capacities were 3,679,000 and 10,557,510

[6] This includes domestically produced vehicles that are stored in the auto terminals but are not imported or exported.

tons per year, respectively. These terminal capacities are more simply derived than for container and auto terminals, as they consider only the number of available berths and a generalized average handling rate for the commodities handled.

For general and bulk cargo, forecasts of growth to 2040 and 2060 indicate that the assessed capacities of existing terminals will be sufficient to handle the increased volumes, except for dry bulk cargo.[7] The Portwide assessed capacity for dry bulk cargo handling will not exceed forecast demand until 2044, assuming that operational efficiencies implemented in the nearer term improve throughput capacity above the actual throughput achieved at present. The need for and timing of capacity-enhancing improvements to the dry bulk cargo facilities will be dictated by both commercial and physical factors.

D. 2040/2060 TRAFFIC AND TRANSPORTATION PROJECTIONS

Most of the maritime traffic currently moves between the Port and inland locations on various types of trucks on the supporting roadway system; only 12 percent of cargo is currently moved by rail. The predominance of truck transport of cargo reflects the intensity of regional consumer demand and consequent amount of maritime-related traffic; current transport pricing, which makes trucking the most economical form of goods movement within 300 miles of the Port; concentration of distribution centers and warehousing for goods in locations with good road access; and capacity limitations of the region's existing railroad infrastructure, increasingly used for passenger rail transport.

While current volumes of trucks carrying cargo to and from the Port's terminals constitute only 0.07 percent of total regional highway traffic (up to a maximum of 6 percent of traffic in major highway corridors serving specific Port sites), the region's roadway network is presently characterized by high degrees of congestion and delay during peak travel periods. On local roadways near some Port sites, port-related truck traffic is estimated to constitute the majority of local truck traffic. However, local port area connectors to/from terminals are not typically congested at present.

CPIP forecasts of travel on the region's overall highway network show total traffic growing by 55 percent by the year 2060. Total regional truck traffic is expected to increase by 43 percent by 2060. As highway congestion increases over the decades, travel delay is forecast to nearly double between 2000 and 2060 as the average speed across the system drops appreciably from 22 miles per hour (mph) to 11 mph. Port-related truck traffic is projected to grow by nearly 170 percent by 2060, although it will still constitute a small percentage of total traffic (0.12 percent) and total truck traffic (1.4 percent) on the region's highways. Although truck traffic increases significantly, forecast increases in auto travel will be the major factor for future diminished performance of the regional highway system.

In major roadway corridors serving the Port sites, port-related truck volumes will increase as a percentage of total traffic, representing 12 percent of total traffic by 2060. While traffic volumes and congestion will increase over the next decades on local roadways in the Port sites' vicinities, overall highway network and corridor-specific congestion and delays will continue to be the predominant issue for port-related truck-based goods movement in the future. In addition, given that a great majority of the cargo coming through the Port is to satisfy demand in the New York/New Jersey metropolitan region, the cargo would come to the region even if Port throughput did not increase. In that case, the burden to the highway network would be even greater.

[7] Development of the Brooklyn Cruise Terminal at Red Hook is focused on Pier 12, which is currently not used for Port-related purposes, and will thus not affect Port capacity.

Potential impacts of increased port-related truck traffic in future decades may be most evident on the local connector roads serving the seven Port sites considered in the CPIP. The physical and traffic characteristics of Port sites' connector roadways vary greatly among the different sites. CPIP forecasts of conditions on local connector roads indicate that Port Newark/Port Elizabeth, Port Jersey, and Bayonne connector roadways will be operating over capacity in 2040, with high degrees of congestion and delay, with conditions markedly worsened by 2060. The greatest constraints to traffic flow are projected at Port Newark/Port Elizabeth. The connector roadways at Howland Hook, Red Hook, and South Brooklyn are forecast to operate at varying degrees of acceptable traffic flow in both 2040 and 2060, with a few exceptions near Red Hook.

An extensive network of rail lines, yards, intermodal facilities, and terminals serves the Port, but will be unable to accommodate the sustained cargo growth predicted. A number of public and privately funded capacity improvements are being implemented, with additional improvements proposed, for the freight rail system in New York, New Jersey, and the greater Northeast region. However, constraints related to capacity, congestion and resultant choke points, inadequate clearances for double-stack railcars, conflicts with passenger services, freight rail policies, and competition among freight railroad companies are forecast for future decades, implying continued heavy reliance on truck-based transport of cargo to and from the Port.

E. WAREHOUSE DEMAND FORECASTS

As part of the CPIP planning process, future requirements for warehousing of ocean-borne cargo containers entering the Port were investigated to determine the extent to which such requirements could be accommodated within the Port area and whether such accommodation could be accomplished with minimal use of wetlands or other environmentally sensitive acreage. Warehouse demand in 2060 is forecast to be 8.0 million square feet, a nearly threefold increase over warehouse floor space in the Port area in 1999. The acreage required in 2060 to house such warehouse demand totals 457 acres, requiring an investment of 315 acres in addition to the 142 acres of warehousing available in 1999.

Due to greater land availability and more competitive land costs, more competitive labor rates and flexible workforces, and better highway access in the area south of the Port in New Jersey, it was determined this location would be preferable for development of future warehouse facilities to serve the Port. Based on review of the NJDOT's Freight Opportunity Sites database of sites in New Jersey towns around the Port, it was determined that more than 80 sites – ranging in size from a few to several hundred acres – are currently available. The acreage required to accommodate warehousing demand in 2060 represents only 6 percent of the total acreage inventoried in NJDOT's database. This identified acreage would avoid any need to use areas of wetlands or other environmental sensitivity to meet future warehouse demand for the Port. Given this, New Jersey State and local decision-makers should address this future need for port-related warehousing as they conduct future land-use planning in order to accommodate the demand while avoiding environmentally sensitive acreage.