VII. FUTURE GROWTH IN CONTAINER FLOWS

VII.1 OVERVIEW OF METHODOLOGY

Forecasts of future container volumes and origin-destination flows were developed for years 2010 and 2025. Two scenarios -- "low growth" and "high growth" – were developed for each forecast year, based on the four major types of container movement identified in Section VI:

- Future over the wharf container traffic through PONYNJ marine container terminals was estimated based on forecasts developed in the Comprehensive Port Improvement Plan, and published in their Task E Technical Memorandum. For landside distribution, mode splits to truck, rail and barge were estimated in two ways: assuming no change from current conditions; and assuming full implementation of the Ports Inland Distribution Network initiative. Trip distribution was accomplished by the study area model, where the team identified existing and future container clusters that are expected to grow faster (or slower) than the default growth rates in the base traffic model and made appropriate adjustments to the relevant traffic analysis zones.
- Future landbridge traffic to and from North Jersey was also estimated based on forecasts developed in the Comprehensive Port Improvement Plan, and trip distribution was accomplished by the study area model based on growth in the relevant traffic analysis zones.
- Future cross-border and domestic traffic into, out of, within and through the study area was allowed to grow at the default rates built into the Portway Phase I Model and Regional Truck Model. While port and landbridge rail forecasts could be developed for specific facilities, cross border and domestic traffic occurs over the entire system, and requires a system-wide growth factor (or factors). Alternative forecast sources were explored, including the USDOT Freight Analysis Framework and forecasts available within Transearch forecasts. While these forecasts would have been acceptable, the team ultimately determined that, for purposes of this project, it was preferable to remain consistent with prior forecasts except where new forecasts were clearly superior.
- "Non-freight" traffic was forecasted by applying an inflation factor to freight-carrying trips, consistent with the estimation of non-freight traffic for current conditions.

This methodology required the development of forecasts for both ends of the freight trip – the trip generator (marine terminal, intermodal railyard, etc.) and the trip attractor (regional warehouse and distribution clusters, PIDN clusters, etc.). Table VII.1 lists the types of generators and attractors – both existing and emerging or potentially emerging - that were considered in the forecasting process.

Table VII.1
Major Trip Generators and Attractors Considered in Developing Container Forecasts

TRIP GENERATORS	TRIP ATTRACTORS
Marine Terminals	**Regional Attractors (Warehouse and Distribution)**
Port Elizabeth (Maher, Maersk)	Newark/Doremus Avenue
Port Newark (PNCT, Marsh, Red Hook)	I-80/I-287
Bayonne Peninsula (Port Jersey – Global, MOTBY)	I-78/I-287
Howland Hook Container Terminal	Exit 12, Tremley Point /Carteret
Brooklyn (Red Hook, Sunset Park)	Exit 12, Port Reading/Carteret
	Allied Junction
Port-Serving On-Dock Rail	Resources Terminal
ExpressRail/Portside/PNCT	Exit 10, Raritan/Woodbridge
Bayonne Peninsula	Exit 8A, Cranbury
Port Ivory (Howland Hook)	Exit 7A, Turnpike South
Landbridge Rail Terminals	**Out-of-Region PIDN "Dense Trade Clusters"**
NS Croxton	Worcester and Framingham
CSX South Kearny	Hanover PA
	Reading and Camden
Domestic Rail Terminals	Pittsburgh
NS E-Rail	Hartford and Springfield
CSX North Bergen	Rochester
CSX Little Ferry	Albany
	Buffalo
	Syracuse

VII.2 Forecasts of "Over the Wharf" Container Traffic

Over the past several years, forecasts for PONYNJ container traffic have been developed as part of several different studies, including: the Harbor Navigation Study; the Port Development and Investment Strategy; the Strategic Plan for the Redevelopment of the Port of New York; and (most recently) the Comprehensive Port Improvement Plan (CPIP). This study utilizes the CPIP forecasts, because:

- The CPIP is being sponsored by several regional agencies. Given this common sponsorship, it seems reasonable and appropriate to assume that the CPIP information is based on common assumptions.
- The Portway Extensions recommendations will ultimately need to be coordinated with the findings and recommendations of the CPIP, and it will be much easier to do so if the two studies are working from common ground regarding estimates of port traffic.

The CPIP forecasts were generated by examining total container trade growth between the U.S. and all world markets, and by apportioning this trade growth among different U.S. "gateway" ports. The apportionment process assumed that the PONYNJ would be capable of accommodating "mega-containerships" with 50' navigation channels, that its terminals would provide adequate capacity to meet demand, and that its landside access system would be capable of providing the necessary capacity and quality of service. The apportionment process also assumed that other U.S. ports would make comparable improvements in their own competitive positions.

The Portway Extensions study requires forecasts for years 2010 and 2025, and also requires high and low forecast scenarios in each of these years. The CPIP forecasts were for ten-year increments (2010, 2020, 2030, etc.), and were a single point, with no high or low ranges. Also, the Portway Extensions study is significantly concerned with the potential development of a marine container terminal at MOTBY (the Military Ocean Terminal Bayonne), but CPIP did not provide forecasts for MOTBY. Therefore, the CPIP forecasts were adapted as follows:

- Total port-wide container estimates were established for year 2025, using the CPIP 2020 forecast as the "low" scenario and the CPIP 2030 forecast as the "high" scenario. Total port-wide container estimates for interim year 2010 were then developed by interpolating between these endpoint estimates and actual 2001 volumes.
- Total port-wide containers were apportioned between the region's container terminals based on the CPIP estimate of their existing capacity. For example, a terminal that accounted for 10% of the port's capacity in year 2001 would receive 10% of the port's traffic in years 2010 and 2025, provided that the traffic does not exceed the available capacity. (This situation did not arise for any of the marine terminals examined in this study.)
- To account for MOTBY, the team assumed that a 125-acre container terminal would be operational by year 2010, and that it would have the same capacity (on a per-acre basis) as the port-wide average. The addition of MOTBY capacity to the mix meant

that some traffic that would have been allocated to other terminals was instead allocated to MOTBY.

These adaptations were discussed and coordinated with the CPIP team. The resulting forecasts are summarized in Table VII.2.

Table VII.2
Marine Container Terminal "Over the Wharf" Throughput Forecasts (TEUs)

Terminal	2001	2010 "Low"	2010 "High"	2025 "Low"	2025 "High"
Port Elizabeth – Maher	1,383,191	1,775,775	2,047,884	2,268,794	2,843,247
Port Elizabeth – Maersk	650,065	947,561	1,092,759	1,210,638	1,517,168
Port Newark – PNCT	390,017	424,520	489,571	542,382	679,712
Port Newark – Marsh St.	18,137	80,899	93,296	103,360	129,530
Port Newark – American Stevedoring	58,613	87,147	100,501	111,342	139,533
Subtotal, Port Newark/Elizabeth	***2,500,024***	***3,315,901***	***3,824,010***	***4,236,516***	***5,309,189***
Port Jersey – Global	298,554	306,776	353,784	391,948	491,188
Bayonne – MOTBY	-	372,069	429,082	475,368	595,730
Subtotal, Bayonne Peninsula	***298,554***	***678,844***	***782,866***	***867,316***	***1,086,918***
Howland Hook	***498,399***	***398,889***	***460,012***	***509,634***	***638,672***
Red Hook (excluding barge)	***10,344***	***15,379***	***17,735***	***19,649***	***24,624***
South Brooklyn Marine Terminal	***-***	***-***	***-***	***-***	***-***
TOTAL, ALL MARINE CONTAINER TERMINALS	**3,307,321**	**4,409,013**	**5,084,623**	**5,633,115**	**7,059,403**

Source: Draft Comprehensive Port Improvement Plan and Cambridge Systematics

To generate estimates of truck, rail and barge traffic associated with these over the wharf forecasts, the study team applied the methodology presented in Section 6.2 to two scenarios. The first scenario ("no PIDN") assumed that current modal shares at a port-wide level will not change, and calculates the associated truck and rail traffic. The second scenario ("with PIDN") assumed the full implementation of the PANYNJ's Port Inland Distribution Network, which aims to accomplish port-wide mode splits of 57% to truck and 43% to alternative modes (rail and barge). These forecasts are summarized in Table VII.3 through VII.6.

Table VII.3
Forecasts of Daily Truck Moves (one-way) Generated by Marine Container Terminals, No PIDN *

Terminal	2001	2010		2025	
		"Low"	"High"	"Low"	"High"
Port Elizabeth – Maher	5,613	7,206	8,310	9,206	11,537
Port Elizabeth – Maersk	2,638	3,845	4,434	4,913	6,156
Port Newark – PNCT	1,583	1,723	1,987	2,201	2,758
Port Newark – Marsh St.	74	328	379	419	526
Port Newark – American Stevedoring	238	354	408	452	566
Subtotal, Port Newark/Elizabeth	***10,145***	***13,455***	***15,517***	***17,191***	***21,544***
Port Jersey – Global	1,211	1,245	1,436	1,590	1,993
Bayonne – MOTBY	0	1,510	1,741	1,929	2,417
Subtotal, Bayonne Peninsula	***1,211***	***2,755***	***3,177***	***3,519***	***4,411***
Howland Hook	***2,022***	***1,619***	***1,867***	***2,068***	***2,592***
Red Hook (excluding barge)	***42***	***62***	***72***	***80***	***100***
South Brooklyn Marine Terminal	***0***	***-***	***-***	***-***	***-***
TOTAL, ALL MARINE CONTAINER TERMINALS	**13,421**	**17,891**	**20,633**	**22,858**	**28,646**

* Includes movement of containers, chassis and "bobtails".

Table VII.4
Forecasts of Daily Truck Moves (one-way) Generated by Marine Container Terminals, With PIDN *

Terminal	2001	2010		2025	
		"Low"	"High"	"Low"	"High"
Port Elizabeth – Maher	5,613	4,572	5,273	5,842	7,321
Port Elizabeth – Maersk	2,638	2,440	2,814	3,117	3,906
Port Newark – Port Newark Container Terminal	1,583	1,093	1,261	1,396	1,750
Port Newark -- Marsh St.	74	208	240	266	334
Port Newark – American Stevedoring	238	224	259	287	359
Subtotal, Port Newark/Elizabeth	***10,145***	***8,538***	***9,846***	***10,908***	***13,670***
Port Jersey – Global	1,211	790	911	1,009	1,265
Bayonne – MOTBY	0	958	1,105	1,224	1,534
Subtotal, Bayonne Peninsula	***1,211***	***1,748***	***2,016***	***2,233***	***2,799***
Howland Hook	***2,022***	***1,027***	***1,184***	***1,312***	***1,644***
Red Hook (excluding barge)	***42***	***40***	***46***	***51***	***63***
South Brooklyn Marine Terminal	***0***	***-***	***-***	***-***	***-***
TOTAL, ALL MARINE CONTAINER TERMINALS	**13,421**	**11,352**	**13,092**	**14,504**	**18,176**

* Includes movement of containers, chassis and "bobtails".

Table VII.5
Forecasts of Daily Intermodal Rail Container Moves (one-way) Generated by Marine Container Terminals, No PIDN *

Terminal	2001	2010 "Low"	2010 "High"	2025 "Low"	2025 "High"
Port Elizabeth - Maher	230	295	341	377	473
Port Elizabeth – Maersk	108	158	182	201	252
Port Newark – Port Newark Container Terminal	65	71	81	90	113
Port Newark -- Marsh St.	3	13	16	17	22
Port Newark – American Stevedoring	10	14	17	19	23
Subtotal, Port Newark/Elizabeth	***416***	***552***	***636***	***705***	***883***
Port Jersey – Global	50	51	59	65	82
Bayonne – MOTBY	0	62	71	79	99
Subtotal, Bayonne Peninsula	***50***	***113***	***130***	***144***	***181***
Howland Hook	***83***	***66***	***77***	***85***	***106***
Red Hook (excluding barge)	***2***	***62***	***72***	***80***	***100***
South Brooklyn Marine Terminal	***0***	***-***	***-***	***-***	***-***
TOTAL, ALL MARINE CONTAINER TERMINALS	**550**	**734**	**846**	**937**	**1,175**

* Includes movement of containers, chassis and "bobtails".

Table VII.6
Forecasts of Daily Intermodal Rail Container Moves (one-way) Generated by Marine Container Terminals, With PIDN *

Terminal	2001	2010		2025	
		"Low"	"High"	"Low"	"High"
Port Elizabeth – Maher	230	527	607	673	843
Port Elizabeth – Maersk	108	281	324	359	450
Port Newark – Port Newark Container Terminal	65	126	145	161	202
Port Newark -- Marsh St.	3	24	28	31	38
Port Newark – American Stevedoring	10	26	30	33	41
Subtotal, Port Newark/Elizabeth	***416***	***983***	***1,134***	***1,256***	***1,574***
Port Jersey – Global	50	91	105	116	146
Bayonne – MOTBY	0	110	127	141	177
Subtotal, Bayonne Peninsula	***50***	***201***	***232***	***257***	***322***
Howland Hook	***83***	***118***	***136***	***151***	***189***
Red Hook (excluding barge)	***2***	***5***	***5***	***6***	***7***
South Brooklyn Marine Terminal	***0***	***-***	***-***	***-***	***-***
TOTAL, ALL MARINE CONTAINER TERMINALS	**550**	**1,307**	**1,508**	**1,670**	**2,093**

* Includes movement of containers, chassis and "bobtails".

With regard to the forecasts, the following observations can be made:

- In the "no PIDN" scenario, daily port-generated truck traffic is projected to more than double – from an estimated 13,421 trips in 2001, to an estimated 28,646 trips in 2025 (high). The successful implementation of PIDN as it is currently planned would a dramatic effect in reducing truck trips by absorbing the effects of new growth at the port – truck traffic basically stays flat through year 2010, then increases to 18,176 trips in 2025 (high). In other words, PIDN saves around 10,000 daily truck trips, which is close to the port's current level of truck traffic.
- Port-generated intermodal rail traffic is currently handled at ExpressRail, but planning for a new on-dock rail facility at Howland Hook is underway, and development of an on-dock rail facility to serve the Bayonne Peninsula is envisioned. As a result, each major marine terminal cluster will be served by its own on-dock rail facility, which will further reduce truck trips by eliminating drayage to off-site railyards.

- In the “no PIDN” scenario, daily port-generated intermodal rail traffic is projected to more than double – from an estimated 550 containers in 2001, to an estimated 1,175 containers in 2025 (high). The successful implementation of PIDN would result in substantially higher rail traffic – an estimated 2,093 containers in 2025 (high). Much of the PIDN service is focused on barge. Should barges prove impractical for certain services, this traffic might instead appear on the rail system, so building additional capacity into the system will be necessary.

To determine the geographic distributions of these trips, the team utilized the distribution patterns developed for current conditions (as described in Section VI), with several important modifications:

- Intermodal rail traffic was assigned to the nearest on-dock facility (ExpressRail, Howland Hook, or Bayonne Peninsula). Although this study did not involve modeling of the rail network, it was assumed for planning purposes that 50% of each facility’s traffic would be handled over the CSX system, and 50% would be handled over the NS system.
- Growth rates for traffic analysis zones containing key “trip attractors” (as identified in Table VII.1) were manually adjusted, based on expected development through the year 2025. Growth factors for the regional warehouse and distribution clusters are discussed in Section VIII. Anticipated growth in TEU’s to and from the PIDN clusters are presented in Table VII.7.

Table VII.7
Container Movements to/from PIDN Dense Trade Clusters *

PIDN Trade Cluster	State	1998/99 PONYNJ TEUs (total)	2020 PONYNJ TEUs (total)	2020 TEUs (by rail/barge)
Worcester and Framingham	MA	294,938	646,244	379,990
Hanover	PA/MD	257,122	563,386	255,644
Reading and Camden	PA/NJ	286,586	627,946	284,249
Pittsburgh	PA	48,890	107,125	44,729
Hartford and Springfield	CT/MA	47,914	104,986	69,940
Rochester	NY	47,394	103,846	43,372
Albany	NY	24,574	53,844	122,508**
Buffalo	NY	33,012	72,334	30,202
Syracuse	NY	28,115	61,604	25,722
Total - Dense Trade Clusters		**1,068,545**	**2,341,315**	**1,256,356**

Source: Moffatt and Nichol, Port Inland Distribution Network

* Excludes TEU’s not moving to / from PIDN Dense Trade Clusters

** Includes movement of domestic TEU’s by barge.

VII.3 FORECASTS OF LANDBRIDGE TRAFFIC

Because the CPIP forecasting model looked at international trade to/from the NYNJ region through all U.S. gateways – not just over the wharf – it was able to provide forecasts of landbridge rail traffic moving from west coast ports to the states of NY and NJ. For purposes of forecasting, it was assumed that each headhaul (import) move generates a corresponding backhaul move, and that the NY and NJ traffic can be fully assigned to Croxton and South Kearny. This approach was discussed and coordinated with the CPIP team.

Table VII.8
Forecasts of Annual Landbridge Rail Container TEUs

Terminal	2010 "Low"	2010 "High"	2025 "Low"	2025 "High"
NS Croxton and CSX South Kearny	2,315,000	3,744,000	2,704,000	4,717,000

Source: Draft Comprehensive Port Improvement Plan

This forecast suggests that landbridge traffic could grow at a substantially faster rate than over-the-wharf traffic, with the potential to more than triple by year 2025, provided the national and regional rail networks could accommodate the increased traffic. This finding has significant implications for these railyards, for the rail networks that feed them, and for the highways that provide their truck access.

VII.4 Forecasts of Cross-Border and Domestic Container Traffic

Unlike port and landbridge traffic, which is concentrated on a limited number of key facilities, cross-border and domestic traffic is widely dispersed throughout the study network, and could not be reliably forecasted based on facility-level analyses. Therefore, the generalized truck growth rates developed in the Regional Truck Model and Portway Phase I model were utilized to account for growth in truck trips not attributable to the port or to landbridge rail operations.

VII.5 "Non-Freight" Traffic

Non-freight traffic was forecasted by applying an inflation factor to freight-carrying trips, consistent with the estimation of non-freight traffic for current conditions.