The State of Connecticut Office of Policy and Management

CONNECTICUT'S DEEP WATER PORT STRATEGY STUDY

SEPTEMBER 2012

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BETA

Connecticut Deep Water Port Strategy Study

Presented to:

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In association with

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Preamble

In September, 2011, The State of Connecticut issued an RFP for a marketing and economic development study in support of Connecticut's three deep water Ports, Bridgeport, New Haven and New London. The Office of Policy and Management (OPM), Department of Economic and Community Development, Department of Transportation (DOT), and Department of Energy and Environmental Protection (DEEP) collaborated to develop the scope of work.

The purpose of the study is to assist the state in developing and implementing a long-term strategy for the economic development of Connecticut's three deep water ports. The main focus of the study is a market analysis to determine the best uses of the ports. Additionally, development of a comprehensive marketing plan and the identification of any required infrastructure investments in order to better competitively position the ports within the market are a part of this study. Also called for is the development of a model for an efficient and effective Grants-in-Aid program to address necessary improvements to Connecticut's ports and marinas.

Moffatt & Nichol in association with Beta Group were awarded the contract on December 23, 2011, to carry out this study. This report represents the final report of the findings of this study as presented by the Moffatt & Nichol and Beta Group study team, to the State of Connecticut.

The report is published in two editions.

- The complete report
- The Executive Summary and Technical Market Study Data

Table of Contents

List of Tables

List of Figures

Executive Summary

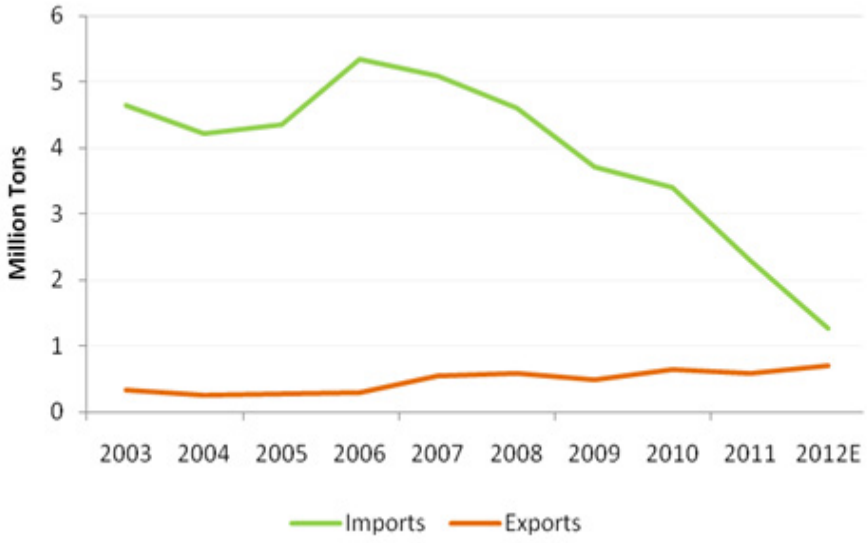
The State of Connecticut has commissioned an independent, market-based planning study to determine the best uses of its three deep water ports and to develop a supporting strategy to realize and enhance those best uses.

The three deep water ports of Connecticut—Bridgeport, New Haven and New London—serve several economic functions, including:

- Competing for price-sensitive cargoes, both imports and exports, on a global scale
- Enabling passenger and vehicle ferry services
- Supporting maritime and water-dependent employment, including ship repair, shipbuilding, recreational boating and tourism
- Providing a nexus for statewide and northeast regional energy resources, including energy production, liquid bulk storage and processing of liquid cargo such as gasoline, bio-diesel, diesel fuel and jet fuel

Despite its rich maritime history, the Connecticut ports and related maritime industries have not fared well in recent decades. As **Figure 1** illustrates, export volumes have grown modestly, while import volumes have declined by nearly 80% since 2006. Much of this decline is due to the phasing out of coal and elimination of fresh fruit imports into Bridgeport, as well as the loss of imports due to the real estate market collapse and the corresponding loss of demand for lumber, steel and other building materials that would have passed through Connecticut ports:

Figure 1: International Import & Export Tonnage at Connecticut's Ports



Source: US Census Bureau

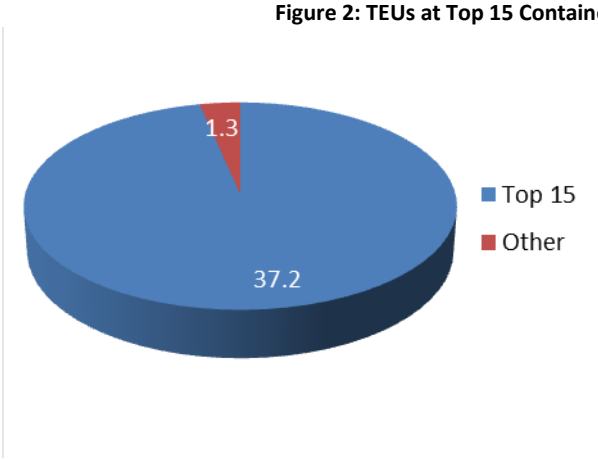
The long-term decline of Connecticut deep water ports is a function of global and geographic forces beyond the reach of any individual port or any individual state government. This report details eight specific, market-based strategies to respond to these long-term trends. This report also details five specific government actions and policies in support of those eight market-based strategies.

A. The Global and Geographic Basis for the Decline

The development of globally integrated supply chains moving billions of tons of goods has largely bypassed the Connecticut deep water ports, in all likelihood irreversibly. This situation is a consequence of economic, geographic, and other factors well beyond the reach of any individual port authority or state government.

The import supply chain in the U.S. is among the most efficient in the world, and cargo owners seek combinations of ocean carrier, rail, trucking, warehousing and distribution services that achieve the overall lowest cost to the cargo owner. Many efficiencies of the global import supply chain in the U.S. have been achieved through simple economies of scale: ever-larger ships, trains, warehouses, and trucks moving ever-larger quantities of increasingly standardized freight over greater distances. For U.S. ports, increasing economies of scale have led to significant concentrations in the domestic port marketplace. Five ports (Los Angeles, Long Beach, Houston, Savannah and New York, New Jersey) accounted for 61% of total U.S. container imports in 2011, while the top fifteen container ports have accounted for 93% to 96% of total container imports over the last decade (see **Figure 2**).

Figure 2: TEUs at Top 15 Container Ports in 2011 (Million TEU, Mainland US)



Port	TEU	Port	TEU
Los Angeles	7,840,611	Tacoma	1,488,790
Long Beach	6,081,091	Charleston	1,381,349
NYNJ	5,503,485	Miami	906,607
Savannah	2,944,678	Jacksonville	899,258
Oakland	2,342,504	Port Everglades	880,999
Seattle	2,033,535	Baltimore	631,802
Hampton Roads	1,918,029	New Orleans	477,363
Houston	1,866,450		

Source: American Association of Port Authorities (AAPA)

These fifteen successful container ports share at least four key characteristics:

- Ready access to major metropolitan consumer markets—largely served by trucks and local warehousing
- Adequate waterside and landside capacity to accommodate ever-larger ships (e.g. dredging, berthing and cranes), longer trains (e.g. on-dock and near-dock rail facilities) and larger volumes of heavier trucks (e.g. dedicated truck ramps and sophisticated gate and security control systems)
- Adequate financial resources to build, maintain, and constantly enhance waterside, landside and offsite transportation capacity. Ports and related supply chains that are unable to consistently fund capacity expansions are likely to lose market share, profitability, and even portions of their "local" market
- Adequate institutional capacity to provide a stable and adaptable investment climate for both public and private investors

Unfortunately, the Connecticut deep water ports do not share any of these basic characteristics of success, whether for the import or export of either containers or bulk cargoes.

The State of Connecticut cannot provide access to a major metropolitan market, nor can it overcome the geography that limits the waterside and landside capacity of its deep water ports.

However, the State can identify local and niche cargo markets appropriate to one or more of its deep water ports. The State can provide adequate financial resources to reach or expand those markets. And the State can provide the institutional capacity that will result in a stable and adaptable investment climate, for both public and private investors.

B. A Market-Based Strategy

The appropriate strategy under these conditions is to aggressively support the retention and expansion of existing business lines, and, secondarily, to identify niche opportunities to introduce new business lines that will help diversify and grow Connecticut's port-related and overall economies.

Market analysis did not reveal any potential for a significant container port. However, market analysis did reveal four existing business lines in need of retention and expansion efforts by the State:

- Liquid bulk and related energy uses at all three deep water ports
- Private ferry services at Bridgeport and New London
- Shipyard and ship repair services at all three deep water ports
- Dry bulk and break bulk cargoes at New Haven and New London

Market analysis also revealed four niche cargo opportunities for new business lines:

- Scrap metal exports from New Haven
- Wood pellet exports from New London
- Break bulk lumber, copper, and steel imports to New Haven or New London
- Fresh food imports to New Haven and New London

These strategies are described in more detail below. Implicit in these strategies is an acknowledgement that, of the three deep water ports, New Haven serves the strongest consumer market, has the most varied cargo mix, and is the only port that has attracted significant private investment.

The Port of New Haven should be a central focus of State investments and actions to arrest the decline of the port and its related industries in Connecticut.

PROTECT AND ENHANCE LIQUID BULK AND ENERGY USES

All three deep water ports provide liquid bulk storage and related energy services, which include liquid bulk processing, power generation, waste-to-energy processing, and major pipeline access. The port of New Haven, in particular, is a crucial import location for refined petro-products, which supplies demand within Connecticut and the broader Northeast region. The Northeast maintains a large refinery production/demand deficit and must rely heavily on imported volumes of refined products in order to meet demand.

The flow of petroleum products through the ports is critical to Connecticut's economy and its energy future.

New Haven handled the fifth largest volume of domestic trade of gasoline and other distillates in 2010. This high ranking underscores the strong demand volume being served by these facilities. New Haven is the origin of the Buckeye Pipeline, which connects directly into Hartford and Springfield, Massachusetts and also

supplies aviation fuel to Bradley International Airport. Additionally, New Haven and New London host two of the three National Strategic Heating Oil Reserve sites.

Liquid bulk storage at Bridgeport and New London also account for significant volumes at the respective ports. These facilities serve more localized demand. None of the Connecticut deep water ports is a major hub for natural gas importation or storage.

Table 1: Domestic Import/Export Tonnage of Gasoline and Distillates 2010

	Import	Export	Through	Total
New York, NY and NJ	1.8	13.3	1.4	16.5
Tampa, FL	13.6	0.0	0.0	13.6
South Louisiana, LA, Port of	0.3	9.5	0.0	9.7
Port Everglades, FL	8.9	0.1	0.0	9.0
New Haven, CT	**5.7**	**0.4**	**0.0**	**6.0**
Pascagoula, MS	0.2	4.4	0.0	4.6
Richmond, CA	1.8	2.1	0.0	3.9
Boston, MA	3.7	0.1	0.0	3.8
Jacksonville, FL	2.7	0.0	0.0	2.8
Texas City, TX	0.1	2.4	0.0	2.4

Source: U.S. Army Corp of Engineers

Approximately one-third of the land area within each port area is devoted to energy-related uses. This represents a long-term land use and economic asset for the entire State economy.

Given the major changes underway in global energy markets—expanded domestic oil, gas and ethanol production and distribution, onshore and offshore wind, bio-fuel and bio-diesel production, smaller and cleaner power generation facilities, etc.—the State should define, protect and enhance liquid bulk and energy related uses in and around all three deep water ports. This long-term strategy could help address energy security and electric rate issues in Connecticut. Over time, this strategy will pay economic dividends to every sector of the Connecticut economy.

Required Capital Investment: $0

Required Policy and Institutional Actions: Statewide definition, protection, and enhancement of energy production and storage areas at all three deep water ports.

PROTECT AND ENHANCE PRIVATE FERRY SERVICES

The Bridgeport and New London ferry services transport nearly two million passengers and more than half of a million cars and trucks annually. While statewide coastal transportation employment has declined from its 2001 peak of 917 jobs, it has remained relatively stable at approximately 830 jobs since the Recession, with prospects for organic growth.

In addition to supporting local and regional tourism, the ferry services provide quantifiable public and private benefits. The U.S. Department of Transportation Maritime Administration (MARAD) estimates total benefits of approximately 18 cents for every mile of freight moved on water instead of on highway. The U.S. Environmental Protection Agency (EPA) estimates greenhouse gas benefits of approximately 4-6 cents for

every mile of reduced passenger vehicle travel; these figures do not include the congestion benefits of taking cars and trucks off of I-95.

The private ferry services in Connecticut do not require a public subsidy. This is a rarity in the U.S. and a condition worth protecting and promoting. The State should continually seek ways to protect and promote the viability of private ferry services in Connecticut.

In the short term, both providers have identified a need for expanded parking and queuing facilities.

In Bridgeport, the State should support the Phase 1 relocation/expansion of the Bridgeport ferry to the Barnum Landing location consistent with the analysis presented in the October 31, 2011 TIGER Grant Application, which was supported by the City of Bridgeport. A total of 347 jobs by 2020 are projected as part of that relocation and expansion. The City should integrate the ferry relocation with the recently-announced 150,000-square-foot Bass Pro Shop's location to the Steel Point development in Bridgeport harbor.

The recent court decision to deny the ferry relocation is a cause for concern. The situation may be resolved through a revision to the City and Harbor Commission master plans.

In New London, the operator indicates that the long-term sustainability and future growth of ferry services depends on the availability and affordability of parking.

Required Capital Investments: $0

Required Policy and Institutional Actions: State support for Bridgeport Phase 1 ferry relocation. State support of a New London parking study, including consideration of the growth of ferry services in New London.

PROTECT AND ENHANCE SHIPYARD AND SHIP REPAIR SERVICES

Although statewide employment for shipbuilding and repair is below its 2007 peak, it is higher in 2011 (118 jobs) than it was in 2001 (95 jobs). [Note that these census numbers do not include public and private employment around the Electric Boatyard and Groton area shipyards.] This sector typically has higher-than-average industrial wages; it builds on and provides a skills-pipeline for the high-end fabrication and repair services in the Groton area.

The private Thames shipyard in New London is the largest non-cargo employer among the three deep water ports. Shipbuilding and repair continues in New Haven at Buchanan Marine. The Bridgeport Regional Maritime Complex (BRMC) supported a significant (but now-bankrupt) shipbuilding enterprise (Derecktor), leaving behind a vacant shipyard equipped with significant ship repair equipment and facilities.

The State should undertake two initiatives to protect and enhance shipyard and ship repair services in Connecticut.

- First, the State should review the combined effects of the multiple local, regional, state, and federal requirements on this industry and streamline the regulatory processes for ship repair and shipbuilding. Industry sources cited permit consulting fees (not mitigation or enhancement costs) in excess of 3% of gross receipts as a major business constraint.
- Second, the State should continue to play a supporting role to Bridgeport Port Authority (BPA) in its efforts to retain ship repair services at the former Derecktor Shipyard. The State has a significant financial interest in the site and its facilities, as well as an interest in protecting *existing* shipbuilding and ship repair jobs in New Haven and New London.

Required Capital Investments: $0

Required Policy and Institutional Actions: Streamline local, regional, state, and federal shipyard regulations. If appropriate, revise Bridgeport solicitation process to provide for a stronger State role.

INCREASE DRY BULK AND BREAK BULK CARGOES

New Haven and New London both provide dry bulk and break bulk services (New Haven accounts for approximately 75% of these totals if the dedicated coal volumes are excluded from Bridgeport's total). Salt, sand, and cement imports are the dominant bulk cargoes at these ports—virtually all volumes are for immediate local use. These aggregates are in highly captive markets and are unlikely to grow or shrink substantially. Ferrous metal imports and exports, wood pellet exports, copper imports and lumber imports are discretionary ("footloose") cargoes that operate within highly competitive markets. These bulk market opportunities are summarized in Section 1.10.2 of the main report.

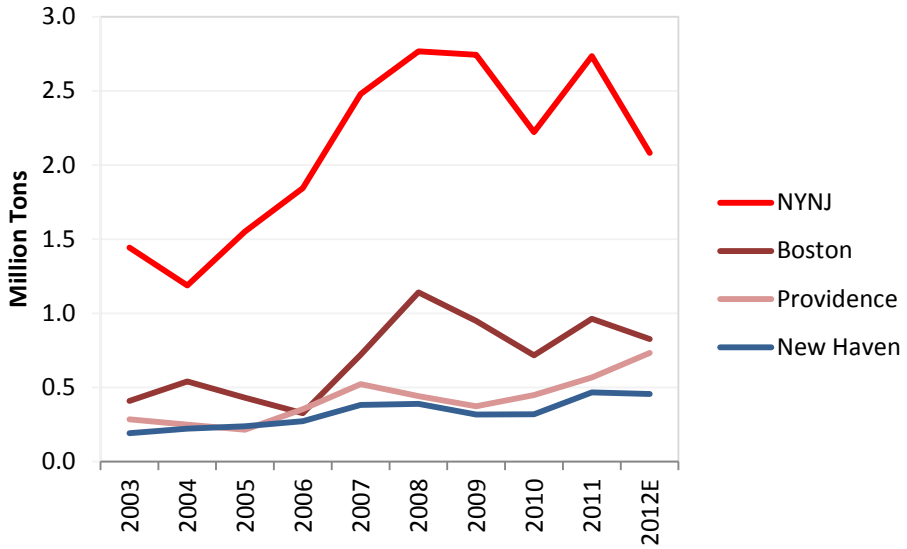
Required Capital Investments: Up to $11 million for increased rail access to New Haven, which will consist of rail spurs to terminals and related Waterfront Street improvements; Up to$14 million for North Yard expansion in New Haven on land identified in the New Haven Port Authority (NHPA) Strategic Land Use Plan; Up to $40 million for capital incentive improvements in New London.

Required Policy and Institutional Actions: State policy and individual transactions to require matching private investments and long-term business commitments prior to any public investments. Market needs and economic viability should drive these types of infrastructure investments—not the reverse.

INCREASE SCRAP METAL EXPORTS

Scrap metal is Connecticut's largest single export commodity by weight. The market for scrap metal is highly competitive with relatively few large producers (shredders) accounting for the majority of production volume/sales. An estimated 900,000 tons scrap metal are produced annually within the State, with approximately half of that amount exported through the Port of New Haven to destinations in China, Turkey, Egypt, and Saudi Arabia. The balance is exported, largely by truck, through New Jersey, Rhode Island and Philadelphia.

Figure 3: Scrap Metal Export Tonnage by Port



Source: US Census Bureau

Connecticut can increase scrap metal exports through the Port of New Haven by:

- Capturing a larger share of Connecticut scrap metal production by partnering with the three large scrap metal processors in the state and, possibly, by developing a statewide brokering system to encourage smaller scrap metal dealers to export their product through the Port of New Haven.
- Capturing a larger share of the wider regional (NY/MA/RI) scrap metal production by, again, partnering with the three large scrap metal processors in the state.
- Offering incentives for exporting Connecticut- and regionally-generated scrap metal through the Port of New Haven as "heavyweight" containers on barge rather than by truck on I-95. This process is summarized in Section 2.5.2 of the main report.

Required Capital Investments: $0 capital investment; public benefit grants Up to $400,000 annually.

Required Policy and Institutional Actions: Partner with scrap metal processors to authorize, fund, and oversee public benefit grants in support of scrap metal exports through New Haven.

ATTRACT WOOD PELLET EXPORTS

Global market demand for hardwood and softwood pellets is significant at approximately 15 million tons and projected to grow to 45-60 million tons by 2020. Exports to the European Union are driven by carbon reduction mandates, and totaled 850,000 tons in 2011.

Wood pellets are moved by rail and are often exported in empty containers in order to control moisture content. While ports in Maine have an advantage in this export market, the New England Central Railroad (NECR)provides direct access to Canadian and northern New England forestry production centers and has on-dock rail at the State Pier. Specialized handling equipment and improvements can be installed for $2-12 million. However, any such investment should be part of a larger contract or concession to manage and market the State Pier in collaboration with the NECR.

Required Capital Investments: $2-12 million.

Required Policy and Institutional Actions: Require matching private investments and long term contractual and business commitments to wood pellet exports, including the NECR. Such commitments should be part of a larger contract or concession to manage and market and the State Pier.

COMPETE FOR BREAK BULK LUMBER, COPPER AND STEEL IMPORTS

Break bulk lumber, copper, and steel imports at the State Pier have declined from 286,000 tons in 2005 to 71,000 tons in 2011 as shown in **Table 2** below.

New London and New Haven could increase lumber and/or copper imports if housing construction rebounds in the Northeast. Both ports can also compete for various steel imports, including plate steel, coiled steel and "winter steel" (i.e. bound for the Midwest but unable to access the frozen St. Lawrence Seaway during winter months).

Rail connections could help to attract these break bulk products. Operators at the State Pier have not coordinated marketing efforts with the NECR. Limited rail access to New Haven terminals has limited joint marketing efforts between the New Haven terminals and the Providence and Worcester Railroad.

Since New Haven and New London compete for these same commodities, the State should not provide incentives for these break bulk imports if those incentives unduly provide an advantage to one port over the other.

Table 2: Admiral Harold E. Shear State Pier, New London, CT Shipping Report 2004–2011

Year	Number of Cargo Ships	Forest Products Tonnage	Copper/Steel[s] Tonnage	Other Cargo	Total Tonnage
2011	16	0	60,672[s]	10,758[cc]	71,430
2010	13	0	46,391[s]	7,476[cc] 230[trans]	54,097
2009	5	30,139	0		30,139
2008	14	99,216	6,677		105,894
2007	30	81,420	89,352		170,773
2006	39	121,479	14,217		135,751
2005	41	126,669	78,551	81,000[hl]	286,221
2004	49*	136,945	82,931		219,877

- [cc] Calcium Chloride
- [s] Steel only
- [hl] Heavy lift
- [trans] Transformers
- *1/2004 – 3 ships with Heavy Lift cargo – tonnage not reported

Required Capital Investments: Up to $11 million at either New Haven or New London

Required Policy or Institutional Actions: Growth of these commodities in New London should be rewarded or incentivized as part of a larger contract or concession to manage and market the State Pier in collaboration with the NECR. Similarly, growth of these commodities in New Haven should be rewarded or incentivized by specific capital investments (e.g. an on-dock rail spur) that are matched by private investment and long-term business commitments. However, the challenge for the State will be to ensure that any rewards given or incentives provided will not unduly disadvantage one port over the other.

EVALUATE FRESH FOOD IMPORTS

The 2008 loss of Turbana, the private banana importer, from Bridgeport to Philadelphia was a major loss for the City and the State. At its peak, Turbana imported 50,000 tons of fresh bananas annually and employed up to 100 people. The fresh food industry has higher margins than many of the other commodities discussed in this report, but its market is also more volatile. The Delaware River Basin in New Jersey, Pennsylvania and Delaware has a long term strategy created around fresh food importation, processing, and distribution. As a consequence, the Basin has developed a critical mass for fresh food imports.

According to a business owner who was interviewed for this study, one potential fresh food anchor is the scallop and shellfish fleet based in, or possibly relocating to, New London. The fresh shellfish catch, which comes over the pier in New London, is currently transported to New Bedford for processing and distribution. The Thames River Seafood Cooperative would actively support future landside investments in ice and refrigeration equipment and welcome an increase in the scallop and shellfish fleets with New London as their home port. They envisage the development of an industrial condominium to support this increased fishing fleet with its own processing and distribution capabilities.

While beyond the scope of this study, fresh food imports, including scallop and other shellfish fisheries, deserve further consideration and study by the State.

Required Capital Investments: $0

Required Policy and Institutional Actions: A business case analysis to evaluate the viability of fresh food importation, processing, and distribution, including shellfish, by the State.

C. Policies and Actions to Support a Market-Based Strategy

Policy and institutional analysis revealed five separate State actions—an initial strategy—to protect and expand the four existing business lines and to compete for the four new business lines recommended above:

- New Haven maintenance dredging, small marina maintenance dredging and environmental restoration
- State Pier solicitation
- Bridgeport /Derecktor Shipyard solicitation
- Statewide capital or grant-in-aid program based on complementary private investments and the "purchase" of public benefits that support specific cargo flows
- Revised governance structure to: reduce regulatory risk and provide a stable investment climate for both public and private entities; ensure a consistent and long-term vision for the Connecticut deep water ports; provide ports and port users access to capital funds necessary to compete globally; and to manage a grant-in-aid program oriented towards building port businesses (and not simply port infrastructure).

FUND NEW HAVEN CHANNEL AND SMALL MARINA DREDGING

The Port of New Haven is the most important cargo facility in the state, and its current business is threatened by shoaling and poor channel maintenance. The possible closing of open water disposal sites in 2013 could lead to increases in dredge disposal costs after 2014. Avoiding those cost increases requires a $10 million funding commitment from the U.S. Army Corps of Engineers (USACE) by federal fiscal year 2014. If the USACE does not make that funding commitment, the State should fund the New Haven maintenance dredging with its own resources. Recent statements from the Corps, and passage of the recent federal transportation bill, have increased the likelihood of adequate funding from the USACE.

In addition, scores of smaller marinas, both public and private, are in need of dredging. These facilities provide economic, tourism, and recreational benefits to the State. The State should explore opportunities for wetlands creation and environmental remediation using dredge disposal materials from these smaller sites. While beyond the scope of this study, the State should establish an annual budget for these dredging activities, which may be approximately $1 million, annually.

Required Capital Investments: $1 million annually for small harbor dredging and environmental remediation; Up to $10 million for maintenance dredging of New Haven channel.

Required Policy and Institutional Actions: Appropriation, programming, and solicitation of small harbor dredge and remediation projects; Formal determination of funding commitment from USACE of Engineers.

REVISE STATE PIER SOLICITATION

Public entities have spent more than $58 million overall in support of New London port facilities, including $43 million for emergency repairs to the State Pier. The State Pier has been operated by a private stevedoring company since the early 1980s. The leases have averaged seven years in length with rent based on a percentage of gross receipts. These short-term leases and rent structures do not incentivize cargo growth.

The current operator has slightly increased salt, steel, and specialized cargoes from their low point in 2009. However, despite consolidating New Haven and New London operations under the current operator, total tonnage at the State Pier is approximately one-third of its 2004 levels.

As the current lease and extensions expire, the State should revise its solicitation process to seek a long-term lease that rewards cargo growth appropriate to New London and that leverages public investments with private investments, representing a public-private-partnership. ***The State should NOT make additional investments without securing complementary private sector investments.***

The State should use a two-step solicitation process in order to discover a range of options from the private sector and achieve this public-private-partnership. The first step is a Request for Expressions of Interest (see Appendix E), followed by proprietary discussions with individual respondents. These discussions then inform the second step, a formal Request for Proposals, based on at least three requirements:

- A long-term lease, in the general range of thirty years
- An up-front payment or capital investment by the lessee
- A *potential* capital investment by the State (e.g. infrastructure or specialized equipment) linked to specific and long-term cargo commitments (e.g. plate steel imports or wood pellet exports)

Required Capital Investments: Up to $10 million (depending on specific cargo commitments)

Required Policy and Institutional Actions: Appropriation of funds for contingent State investment; Request for Expressions of Interest; Request for Proposal.

BRIDGEPORT /DERECKTOR SHIPYARD SOLICITATION

Public entities have invested more than $43 million in Bridgeport waterfront enterprises, including more than $20 million in the BRMC, which incorporates the now-bankrupt Derecktor Shipyard. The State has a financial interest in returning economic activity to the Derecktor Shipyard AND attracting a tenant that does not harm adjacent uses in either Bridgeport or the existing shipyards in Connecticut.

The City of Bridgeport has solicited and received proposals for the use of the real estate, but not for the existing improvements, which are part of the ongoing bankruptcy proceeding. The BPA is determined to re-position the shipyard as a local economic driver and jobs creator. A temporary agreement is being worked on with a ship repair operator which has the use of the yard to carry out overhaul work on Coast Guard vessels and the focus is now on negotiating a long term lease agreement.

The State should continue to play a supporting role in Bridgeport's efforts to retain ship repair services at the former Derecktor Shipyard.

Required Capital Investments: Up to $5 million (depending on specific business commitments)

Required Policy and Institutional Actions: Appropriation of funds for contingent State investment

CREATE MARKET-BASED GRANT-IN-AID PROGRAM

The State has a number of infrastructure and grant programs that have supported Connecticut deep water ports and their related industries. The DOT dredging program, for example, is well-positioned to draw down expanded maintenance dredging funds (Federal Harbor Maintenance Tax) under the new federal transportation act.

The competitive challenge for Connecticut is to create a transparent framework for market-based planning, capital investments, and grants-in-aid that:

- Leverages private sector investment and private sector employment
- Reflects, anticipates and responds to changes in local, regional, national and international cargo and non-cargo markets
- Implements a long-term transportation, economic, and environmental vision for Connecticut
- ***Funds infrastructure and capital investments only when complementary private investments or business activities are committed***, and
- Funds the purchase of public benefits in support of specific cargo or business activity goals (e.g. number of trucks diverted from I-95, number of tons of emissions reduced, or acres of wetlands restored with dredged material)

The policy and institutional challenge for Connecticut will be to reserve bond and general funds for projects or programs that may or may not happen. Market-based planning and funding seeks out and responds to market opportunities in real time, whereas traditional governmental processes for long-term capital planning and programming rarely respond to these market needs and opportunities. This process could involve holding back appropriated funds to leverage additional private investment.

Note that the following table (**Table 3**)—while drawing upon feasible proposals identified during the course of the study—is intended to be an illustrative and not a definitive capital plan. The actual scope and timing of investments should be driven by market-based opportunities developed by, and with, private sector tenants and/or partners in port based activities.

Table 3: Illustrative Capital Expenditure Scenario

Assumes: Private State Pier Lease & Wood Pellet Facility in New London; Private Break Bulk & Scrap Steel Commitments in New Haven Private Shipyard & Repair Facility in Bridgeport

Facility/Program	FY 12	FY 13	FY 14	FY 15
Bridgeport			1.0M Derecktor Equipment	
New Haven	6.0M Water Street Improvements	2.5 M Rail Spur	2.0M North Yard Initiation	4.0M M North Yard Improvements 2.5M Additional Rail Spur
New London	1.0 M State Pier Improvements	3.0M Wood Pellet Equipment		
Small Marina/Restoration	1.0 M	1.0 M	1.0 M	1.0 M
TOTAL Bonds	8.0 M	6.5 M	4.0 M	7.5 M
Public Benefit/General Fund Scrap Steel	.3 M	.3 M	.3 M	.3M
Grand Total	**8.3 M**	**6.8 M**	**4.3 M**	**7.8 M**

REVISE AND IMPROVE GOVERNANCE STRUCTURE

Since World War II, the deep water ports of Connecticut have become financially and institutionally disadvantaged compared to their east coast competitors. These disadvantages have only deepened over time.

Connecticut deep water ports are the ***only*** east coast ports without dedicated, state-level financial and institutional support. State-level entities in Maine, Massachusetts, Rhode Island, New York, New Jersey, Pennsylvania, Delaware, Maryland and Virginia provide some or all of the following: direct financial support, credit assistance, simplified regulatory regimes (including land use), and high level marketing and economic development services.

In Connecticut, these responsibilities have fallen to two small, financially distressed localities and a branch of the State DOT. Each has performed its task well, but none is properly equipped to compete in the global economy or even against other east coast ports.

As summarized in Section B above, participation in the capital-intensive global supply chain requires both significant capital investment as well the kind of state-level institutional support that creates a stable investment climate for both public and private investors.

The previous section outlined some *possible* capital investments in specific cargo and non-cargo opportunities—all contingent on complementary private investments. The more difficult improvements are in the areas of institutional support.

In order to grow, the institutions governing Connecticut deep water ports require a major cultural change—away from building a piece of infrastructure and more toward building a business. The skills necessary to build a business are very different from the skills necessary to build a dock or a bulkhead. The capital investments suggested in Table 3 will not show positive returns without institutional structures committed to, and capable of, building and growing a business.

Increased private investment will not occur without reducing regulatory risk and providing a stable investment climate. To achieve these goals, the State must address the overlapping layers of local, regional, and state regulation, including local land use. Some opportunities include:

- Resolution of air emission and water discharge regulatory issues for shipyards to facilitate the continued development of this important industry
- Addressing conflicting land uses, constrained land area and complex land use approvals in and around the Port of New Haven to foster continued strength in port activity
- Increased State involvement in Derecktor Shipyard solicitation to protect prior State investment and focus future development to the benefit of the State economy

The State of Connecticut can revise and improve its deep water port governance structure in one of two ways: the market-based approach or the statewide port authority approach.

Market-based Approach to Governance. A market-based approach to governance essentially follows the outline of the above recommendations, with supporting policy and institutional changes at the Port of New Haven and within and among the executive agencies of the State. The coordination of efforts to achieve the following individual tasks will not happen naturally, but will require hands-on, executive leadership:

- New London: revise state pier solicitation
- Bridgeport: support BPA in their efforts to retain ship repair services at the former Derecktor Shipyard

- New Haven: ensure channel maintenance dredging
- New Haven: strengthen and streamline NHPA's access to capital, ability to realize adopted master plan (including expansion and adjacent land uses) and ability to create a stable investment climate
- DEEP: review regulations affecting shipyard operations
- DECD: guide a culture change towards "building a business"
- OPM: guide multi-agency (DOT, DEEP, and DECD) capital and grant-in-aid programs in support of solicitations, and time-sensitive cargo prospects

This type of management challenge is significant, and does not lend itself to easy exposition or spread sheet analysis. However, without active, executive-level management and leadership, the market-based approach to governance cannot succeed.

Statewide Port Authority. A statewide port authority provides an alternative governance structure for these initiatives. The chief benefit of this approach is the development and implementation of a long-term vision for all three of the deep water ports of Connecticut and their related industries. The majority of the other states on the east coast have state port authorities that enjoy state funding and support. If this path is chosen, one potential model is the Capital Region Development Authority, which has strong financial backing from the State, can issue bonds, can acquire and improve land, and can lead a streamlining of the regulatory processes—all part of creating a stable investment climate for public and private investors. Another possible structure could be to add responsibility for ports to a renamed Connecticut Airport Authority, extending its current statutory powers. Several states (Massachusetts, for example) have similar structures.

In addition, a statewide port authority could lead and manage the capital and grant-in-aid programs on behalf of the State.

While perhaps less nuanced and less responsive to the real-time needs of the global marketplace, a statewide port authority could help to reverse the decline and improve the competitiveness of the deep water ports of Connecticut.

D. Conclusions

The State of Connecticut is committed to strengthening and diversifying its economy by overcoming or, at least, reversing, the decline of its three deep water ports and their related industries. This report recommends eight specific, market-based strategies and five supporting governance reforms to achieve this goal. These strategies, in the short-term, are not prohibitively expensive. The real challenges lie in the decentralized structure of Connecticut government, and the need for an overall system of port leadership that is committed to "building a business" of ports and related industries—and not by simply managing episodic port infrastructure improvements.

Summary of Eight Market-Based Strategies

I. **Protect and enhance liquid bulk and related energy uses** *(Required Investments: $0)*
- The flow of petroleum products through the ports is critical to Connecticut's economy and its energy future
- Will pay economic dividends to every sector of the Connecticut economy, over time
- Significant investment in liquid bulk and related energy infrastructure already in place at the three ports

II. **Protect and enhance private ferry services** *(Required Investments: $0)*
- The private ferry services in Connecticut do not require public subsidy, a rarity in the U.S. and a condition worth protecting and promoting
- Both providers (Bridgeport and New London) have identified a need for expanded parking and queuing facilities

III. **Protect and enhance shipyard and ship repair services** *(Required Investments: $0)*
- The private Thames shipyard in New London is the largest non-cargo employer among the three ports
- The State should streamline the regulatory processes for ship repair and ship building
- Support BPA's efforts to retain ship repair services at the former Bridgeport/Derecktor Shipyard

IV. **Increase dry bulk and break bulk cargoes** *(Required Investments: Up to $11 million for increased rail access to New Haven, up to $14 million for North Yard expansion, and up to $40 million for capital incentive improvements in New London)*
- Extend the ports' serviceable reaches into competitive regional markets
- Existing flows of salt, sand, and cement are tied to immediate local demand (highly captive and stable markets)
- Do not commit State capital without similar private commitment

V. **Increase scrap metal exports** *(Required Investments: Up to $400t/year for public benefit grants)*
- Connecticut's largest export commodity by weight, of which the majority is trucked to ports outside of the State
- In order to capture a larger market share, Connecticut should partner with the three large processors, encourage smaller dealers by developing a statewide brokering system, and offer incentives as "heavyweight" containers on barge to divert traffic from congested I-95 corridor

VI. **Attract wood pellet exports** *(Required Investments: $2-12million for specialized handling equipment and improvements)*
- Leverage existing rail connectivity: NECR provides direct access to Canadian and northern New England forestry production centers and has on-dock rail at the State Pier
- Promote this, as well as other potential specialized infrastructure, which could attract wood pellet flows through New London

VII. **Compete for break bulk lumber, copper and steel imports** *(Required Investments: Up to $11 million for new rail connections)*

- Break bulk commodities have traditionally been handled efficiently at the ports
- New Haven and New London could increase lumber and/or copper imports if/when housing construction rebounds in the Northeast and can also compete for various steel products
- Leverage existing rail connectivity to reach markets located in New England, Canada and the Midwest.

VIII. **Evaluate fresh food imports** *(Required Investments: $0)*

- Had historically been a valuable tenant at Bridgeport, but was attracted to competing regions due to inadequate port maintenance/infrastructure
- One potential fresh food anchor is the scallop and shellfish fleet in New London

Summary of Five Policies and Actions to Support a Market Based Strategy

I. **Fund New Haven Channel and Small Marina Dredging** *(Required Investments: $1 million/year for small harbor dredging and up to $10 million for New Haven dredging)*

- New Haven is the state's most important cargo facility and its current business is threatened by shoaling and poor channel maintenance
- Scores of smaller marinas which provide economic, tourism, and recreational benefits to the State are in need of dredging

II. **Revise State Pier solicitation** *(Required Investments: Up to $10 million depending on specific cargo commitments)*

- The State should revise its solicitation process to seek a long-term public-private partnership
- Existing short-term leases and rent structures do not incentivize/reward cargo growth

III. **Bridgeport/Derecktor Shipyard solicitation** *(Required Investments: Up to $5million depending on specific business commitments)*

- Significant State capital has already been spent on buildings and equipment at the Shipyard for which a return on investment should be sought
- The State has financial interest in returning economic activity to the Derecktor Shipyard AND attracting a tenant that does not harm either adjacent uses in Bridgeport or other CT shipyards

IV. **Create Market-Based Grant-in-Aid Program** *(Required Investments: Up to $8 million/year)*

- Build on existing infrastructure and grant programs to create a transparent framework for market based planning, capital investment and grants-in-aid that:
  - Leverages private sector investment and private sector employment
  - Reflects, anticipates and responds to changes in local, regional, national and international cargo, and non-cargo markets

- Implements a long-term transportation, economic and environmental vision for Connecticut
- **Funds infrastructure and capital investments only when complementary private investments or business activities are committed**
- Funds the purchase of public benefits in support of specific cargo or business activity goals (e.g. number of trucks diverted from I-95 or number of tons of emissions reduced or acres of wetlands restored with dredge material)

V. Revise and improve governance structure

The State of Connecticut can revise and improve its deep water port governance structure in one of two ways:

- **Market-Based Approach**
  - In order to grow, the institutions governing Connecticut deep water ports require a major cultural change—away from building a piece of infrastructure and towards building a business
  - Participation in the capital-intensive global supply chain requires both significant capital investments as well as the kind of state-level institutional support that creates a stable investment climate for both public and private investors
  - Requires a coordinated effort across port authorities, land-use agencies, local, State and Federal governing agencies

- **Statewide Port Authority Approach**
  - The majority of East Coast states have state port authorities that enjoy state funding and support
  - In Connecticut, the Capital Region Development Authority can be used as a potential model as it promotes a stable investment climate for public and private investors through its capacity to:
    - issue bonds
    - acquire and improve land
    - streamline the regulatory process

1. Market Analysis

1.1. Introduction

A thorough understanding of the current and potential future freight flows in Connecticut and its surrounding hinterland is a crucial component in developing a realistic and achievable strategic plan for the future of Connecticut's ports.

The objective of the analysis presented in this chapter is to identify cargo flows through the hinterland of the Connecticut ports that are currently utilizing Connecticut ports, as well as those cargo flows to or from this hinterland that currently utilize other competitive ports. An analysis of the relative costs of serving this hinterland region through the Connecticut ports, as compared to competitive ports, is developed to identify the potential of capturing some share of these flows by the Connecticut ports. The analysis also includes a consideration of the outlook for growth in the various types of cargo flows. These analyses are used to develop a view of what the cargo flows might be in the future, and to develop scenarios describing how the Connecticut ports, through improvements in infrastructure, facilities and/or strategy, might be able to capture additional cargo flow leading to sustainable economic development.

1.2. Approach, Methodology and Data Sources

To develop a clear assessment of the current commodity flows through locations within Connecticut, Moffatt & Nichol utilizes a number of economic- and trade-related data sets. These data sets include:

- Commodity Flow Survey; U.S. Census Bureau
- U.S. Census of Manufacturing; U.S. Census Bureau
- County Business Pattern; U.S. Census Bureau
- Freight-Analysis-Framework; Federal Highway Administration/Bureau of Transportation Statistics
- U.S. Trade Volumes by Port/District; U.S. Census Bureau
- Transystem Trade Database; Transystems Corporation

These commodity flows are established for Connecticut's eight respective counties, using local levels of employment and production by industry and then allocating their trade demand to the nation's ports. This yielded a detailed relationship between the County-Commodity-Port, where the analysis illustrates which county is being served by which port and for which commodity.

Once this relationship is established, it can be determined to what extent Connecticut's three deep water ports are serving the State's trade demand and if there are opportunities for the ports to increase their share of the local market.

Moffatt & Nichol realizes that there are limitations to utilizing these data sets. For example, the Commodity Flow Survey, which provides details of trade between domestic point-of-origin and domestic point-of-destination by commodity, is prone to reporting trade based on official corporate locations, as opposed to actual points of production and consumption. This is referred to as the "Headquarter's Effect" and it is caused by a method of data collection which relies on sampling. While steps are taken by the US Census Bureau to mitigate the impact of the Headquarter's Effect, there still exist anomalies in the data which inaccurately allocate trade. These become more pronounced in comparatively smaller trade economies with high service concentrations, such as in Connecticut.

Moffatt & Nichol utilized qualitative research on industry (plant) openings and closures as well as quantitative population and employment statistics to further refine the data sets.

Ports are an important component of the national and regional economies they serve, and the nature of any port's utilization is related to the economic characteristics of the region that it serves. Therefore, an initial effort in this analysis is to develop an understanding of the economic context of Connecticut's deep water ports by reviewing the State's economic performance. This review is important in understanding the performance of those economic sectors that have the most relevance to port utilization.

1.3. Growth by Sector

A review of the performance of the Connecticut economy over the last decade by economic sector is summarized in **Table 4**. The Table presents each sector's contribution to the State's Gross Domestic Product annually over the past decade and the resulting growth rate of that sector's share.

The growth of Connecticut's economy has outpaced that of the U.S. as a whole, expanding by an average 1.4% annually (Compound Annual Growth Rate or CAGR) since 2005, as presented in **Table 4,** compared to the national 0.9% average. This relative strength has been supported by the State's heavily service-oriented economy, which accounts for 80% of Connecticut's Gross Domestic Product that grew by an average 2.1% over the same time period.

Table 4: Economic Contribution by Sector

	2000	2005	2006	2007	2008	2009	2010	2005 - 2010 CAGR[1]
All industry total	185,265	197,055	204,181	210,271	208,742	204,995	211,345	*1.4%*
Agriculture, forestry, fishing, and hunting	386	363	337	320	304	335	327	*-2.1%*
Mining	102	68	58	47	38	34	47	*-7.1%*
Utilities	3,464	3,194	2,977	3,339	3,419	3,061	2,926	*-1.7%*
Construction	7,736	6,980	6,816	6,541	6,113	5,082	5,076	*-6.2%*
Manufacturing	21,215	23,690	26,863	27,071	25,189	20,401	21,657	*-1.8%*
Durable goods	14,407	14,063	15,262	15,256	15,797	14,630	15,669	*2.2%*
Nondurable goods	6,772	9,626	11,594	11,806	9,484	6,060	6,312	*-8.1%*
Wholesale trade	8,821	10,480	10,981	11,589	11,759	12,227	12,581	*3.7%*
Goods	**41,724**	**44,775**	**48,032**	**48,907**	**46,822**	**41,140**	**42,614**	*-1.0%*
Services	**143,541**	**152,280**	**156,149**	**161,364**	**161,920**	**163,855**	**168,731**	*2.1%*
CT's Goods Economy as % of Total	23%	23%	24%	23%	22%	20%	20%	
US's Goods Economy as % of Total	29%	27%	28%	27%	28%	26%	27%	

[1] Compound Annual Growth Rate

Source: Bureau of Economic Analysis

Conversely, the goods economy accounts for just 26% of the State's total (2010), and contracted by an average of 1.0% annually. The drop in the goods economy was led primarily by contractions in the manufacturing and construction sectors.

The manufacturing sector declined at an average 1.8% annually over past five years, this decline was influenced primarily by a drop in non-durable goods manufacturing, including chemicals, food and beverages. The non-durable goods manufacturing sector was severely impacted by the recession beginning in 2007, declining by almost 50% from its peak in 2007. Durable goods manufacturing, however, showed a five-year growth rate of 2.2% annually, and displayed resilience during the recessionary period. This sector included growth in computers and electronics, as well as transportation equipment other than motor vehicles, primarily aviation and military.

Wholesale trade has been the strongest performing industry within the goods-related economy, and has even outpaced the service sector. This industry includes sellers of scrap metal, which has become a staple export commodity for the Port of New Haven, and is also shipped out in significant volumes via competing ports outside of the state.

The scrap metal industry is one that Moffatt & Nichol identifies as vital to maintaining an active deep water port operation in Connecticut.

1.4. Connecticut's Base Industries

To help identify other base industries that could support throughput at the state's ports, the "location quotients" for the key economic sectors are illustrated in **Table 5.** Location quotients represent the ratio of the share of employment in a sector in Connecticut and the corresponding share for that same sector for the U.S. as a whole. For example, education services make up 4% of Connecticut's employment, which is 1.69 times the education employment share of the U.S., indicating that education is one of the State's base industries.

Table 5: Employment Location Quotients

Industry	Location Quotient	Share of Employment
Total, all industries	1	100%
Educational services	1.69	4%
Finance and insurance	1.65	9%
Health care and social assistance	1.19	18%
Management of companies and enterprises	1.17	2%
Manufacturing	1.13	12%

Source: Bureau of Labor Statistics

As expected, other service sector industries including finance and insurance, health care, and social assistance show employment strength. However, manufacturing is also relatively strong, with a location quotient of 1.13.

Within the state's manufacturing sector, the location quotients indicate that the strongest base industries are:

- Transportation Equipment
- Electrical Equipment and Appliances
- Fabricated Metal Products
- Miscellaneous Manufacturing Chemicals
- Chemicals

The complete list of manufacturing industries is presented in **Table 6.**

The manufacturing industries with the strongest location quotients produce/consume predominantly very high value commodities, namely transportation equipment (turbines) and electronics (aviation), and are typically shipped via container, trucks and/or specialized transportation.

As the ports in Connecticut do not generally handle container volumes, any trade associated with these industries is handled by competing ports or other modes.

Other manufacturing industries in Connecticut include fabricated metal products, chemicals, and wholesale traders (not identified as manufacturing). Goods associated with these industries are non containerized and more likely to be handled at Connecticut's ports. Import volumes of steel have been handled at New Haven and New London, as well as liquid bulk shipments of chemicals via New Haven.

Table 6: Connecticut's Manufacturing Location Quotients

Industry	Location Quotient	Share of Employment	Total Employment
NAICS 336 Transportation equipment manufacturing	2.49	3.12%	42,194
NAICS 335 Electrical equipment and appliance mfg.	2.15	0.72%	9,767
NAICS 332 Fabricated metal product manufacturing	1.73	2.07%	28,080
NAICS 339 Miscellaneous manufacturing	1.37	0.73%	9,858
NAICS 325 Chemical manufacturing	1.26	0.93%	12,589
NAICS 333 Machinery manufacturing	1.19	1.11%	15,080
NAICS 334 Computer and electronic product manufacturing	0.95	0.98%	13,284
NAICS 323 Printing and related support activities	0.93	0.43%	5,757
NAICS 322 Paper manufacturing	0.75	0.28%	3,735
NAICS 326 Plastics and rubber products manufacturing	0.72	0.42%	5,702
NAICS 331 Primary metal manufacturing	0.72	0.24%	3,292
NAICS 314 Textile product mills	0.7	0.08%	1,066
NAICS 337 Furniture and related product manufacturing	0.57	0.19%	2,584
NAICS 313 Textile mills	0.47	0.05%	715
NAICS 327 Nonmetallic mineral product manufacturing	0.47	0.16%	2,197
NAICS 311 Food manufacturing	0.39	0.53%	7,232
NAICS 312 Beverage and tobacco product manufacturing	0.38	0.07%	887
NAICS 321 Wood product manufacturing	0.22	0.07%	939
NAICS 324 Petroleum and coal products manufacturing	0.19	0.02%	270

Source: Bureau of Labor Statistics

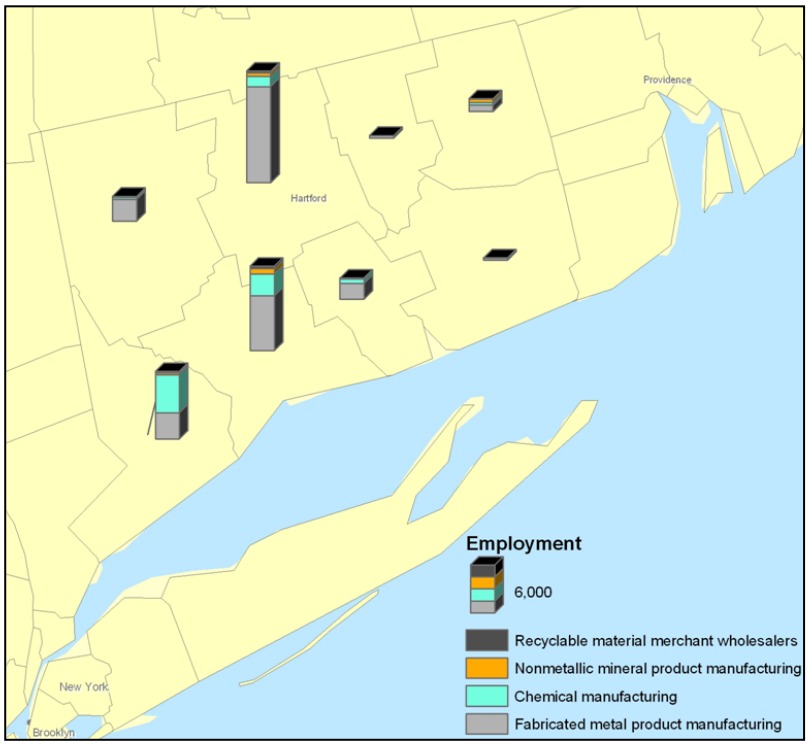
1.5. Connecticut's Employment by Location and Industry

Further analysis was performed to begin to develop an understanding of the geographic distribution of key industries and their relationship to port locations. **Figure 4** shows employment in several key industries, which have relevance to port activity, by county location in Connecticut. The industries presented in this exhibit are recyclable materials, merchant wholesalers (scrap metal), nonmetallic mineral products, chemicals, and fabricated metal products. As shown below, employment in these industries is strongest in the southwest portion of the state as well as in the Hartford area.

Fabricated metal products manufacturing accounts for the largest employment figure and is concentrated in Hartford, New Haven, and Fairfield counties. Scrap metal, which has comparatively lower employment totals, but accounts for significantly more volume through Connecticut's ports, is concentrated in New Haven and Fairfield counties.

There is limited base industry activity in the immediate New London region which could support volumes through the Port, meaning that it will have to draw from more distant locations. New Haven and Bridgeport are more centrally located to industrial activity and can draw from their immediate markets.

Figure 4: Employment by Industry and Location



Source: Bureau of Labor Statistics

1.6. Total Trade Flows

A first step in developing an understanding of the market opportunities for Connecticut's deep water ports is to identify the current trade flows to and from the State of Connecticut and surrounding hinterland, regardless of the current ports used by these trade flows. This analysis will identify the dominant existing flows; identifying them on a geographic basis will facilitate a competitive analysis that will help target those flows for which the Connecticut ports are likely to have the best chance of capturing.

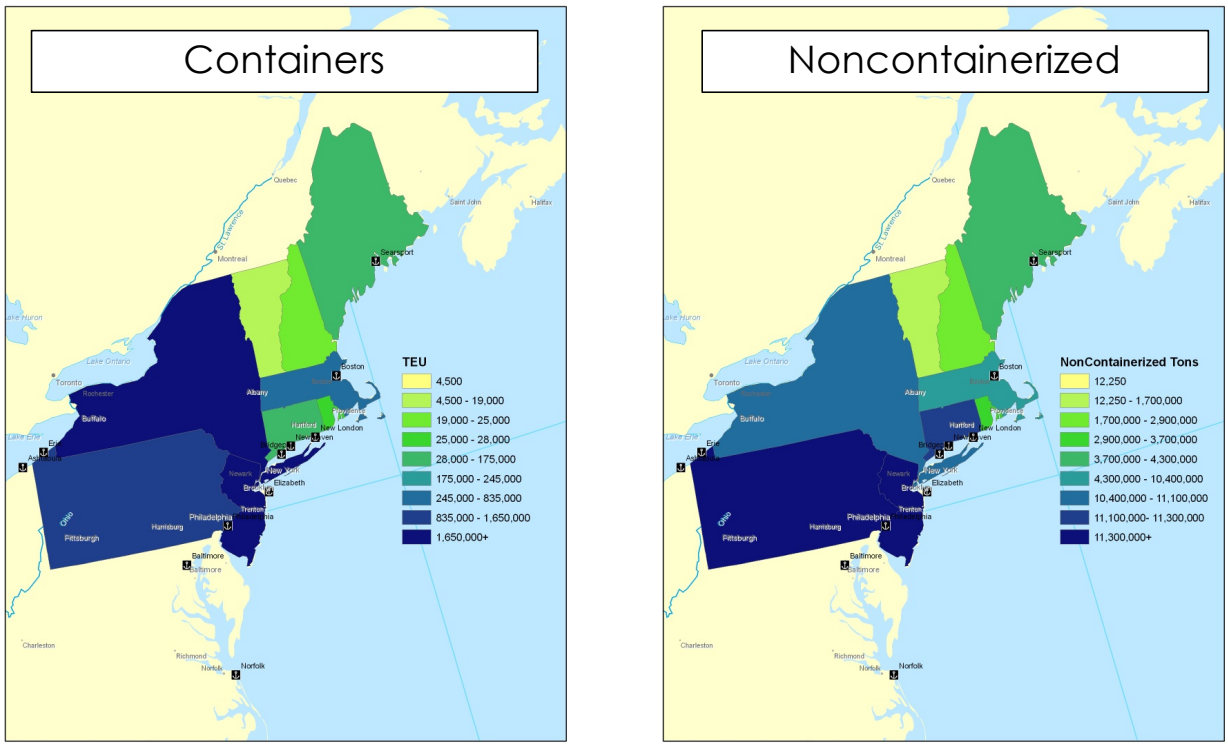
1.6.1. GEOGRAPHIC DISTRIBUTION OF INTERNATIONAL TRADE

An overview of the volume of international maritime trade into and out of Connecticut and surrounding states is presented in **Figure 5**. These trade flow totals are estimates of total trade into and out of each state regardless of the choice of port. Trade flows for both containerized and non-containerized trade flows are presented.

As can be seen in **Figure 5**, Connecticut, by virtue of its population, industry, and overall economic performance, is a relatively robust trade market, with a somewhat stronger presence in the flow of non-containerized commodities. Nearby states New York, New Jersey, and Pennsylvania have greater total trade flows of both containerized and non-containerized commodities, while Massachusetts has a higher total of containerized trade.

Container trade is typically a mix of consumer and industrial related products. Therefore it is not surprising to see that the states with larger populations demand higher volumes of containerized cargo (consumer goods).

Figure 5: Total International Maritime Trade Flow by State



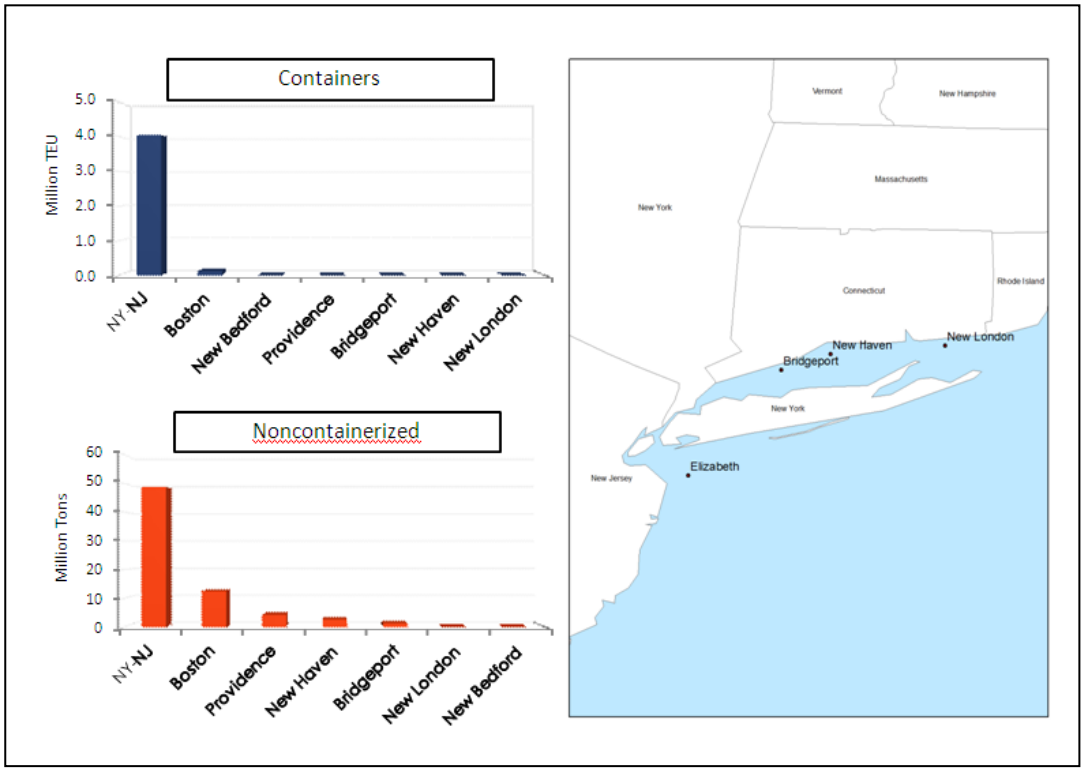
Source: U.S. Census Bureau; Moffatt & Nichol

Connecticut's comparative strength in non-containerized cargo is due primarily to the large liquid bulk (petroleum products/chemicals) storage and transfer facilities maintained by state ports. Connecticut is home to two of the three strategic reserve storage sites of heating oil (one in New Haven, the other in Groton).

1.6.2. REGIONAL PORT VOLUMES

In reviewing regional trade flows and the competitive alternatives, the dominance of the nearby Port of New York and New Jersey must be considered. The total volume of containerized and non-containerized cargo through the region's ports is presented in **Figure 6**. The overwhelming share of this trade is readily apparent, with the great preponderance of containerized trade among the regional ports, and a slightly smaller share of non-containerized international trade utilizing the Port of New York and New Jersey.

Figure 6: Regional Port Volumes 2010



Source: Marad; U.S. Census Bureau

1.7. Containerized Trade

Additional analysis of the containerized trade into and out of Connecticut was done to identify the highest commodity flows by import and export flows and the ports utilized to handle those imports and exports.

1.7.1. CONNECTICUT'S CONTAINERIZED TRADE BY COMMODITY

The ranking of containerized commodities that enter and leave Connecticut are presented in **Table 7**.

This data indicates that imports are largely retail consumer goods included in the textile, furniture, electronics, and other categories. However, basic chemicals (mostly caustic soda) also represent a significant category of imported containers.

More than half of the exported containers from Connecticut are waste and scrap. While this category includes waste paper, most of these containers carry scrap metal. The export containers also include a relatively significant number of machinery and non-metallic minerals (sand) as containerized commodities.

Table 7: Containerized Trade to and from Connecticut

IMPORTS

Commodity	TEU	Share
Textiles & Articles	29,800	*21%*
Furniture	24,934	*18%*
Other Prep Foodstuffs, Fats/Oils	17,617	*13%*
Electronic and Electrical Equip	8,903	*6%*
Plastics and Rubber	7,794	*6%*
Ag ex Animal Feed	7,198	*5%*
Alcoholic Beverages	6,222	*4%*
Basic Chemicals	5,299	*4%*
Motor/Other Vehicles inc. parts	4,716	*3%*
Misc. Manufactured Products	4,671	*3%*
Other	23,327	*17%*
Total	**140,482**	***100%***

EXPORTS

Commodity	TEU	Share
Waste and Scrap	25,632	*55%*
Machinery	7,836	*17%*
Other Non-Metallic Minerals	4,231	*9%*
Basic Chemicals	2,235	*5%*
Plastics and Rubber	1,580	*3%*
Paper or Paperboard Articles	962	*2%*
Motor/Other Vehicles inc. parts	860	*2%*
Textiles & Articles	686	*1%*
Milled Grain Prod/ Bakery Prod	636	*1%*
Chemical Prod/Prep, n.e.c.	572	*1%*
Other	1,369	*3%*
Total	**46,601**	***100%***

Source: US Census Bureau; US Federal Highway Administration; Moffatt & Nichol

1.7.2. CONNECTICUT'S CONTAINER TRADE BY PORT

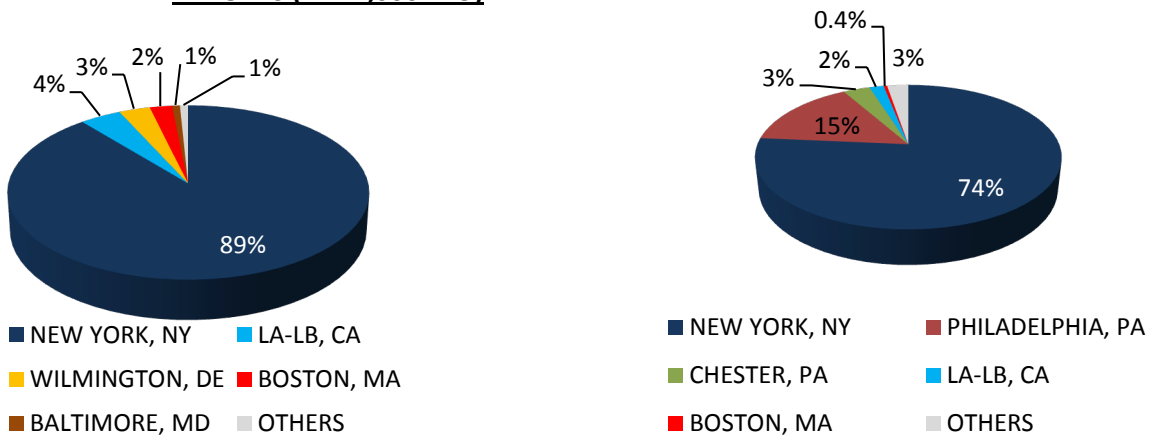
While the containerized trade flows described above originate from or are destined to Connecticut, virtually all of them use non-Connecticut ports. **Figure 7** shows the distribution of ports used for the import and export of these Connecticut containers.

Not surprisingly, the nearby Port of New York and New Jersey handles the great preponderance of Connecticut's container trade, with 89% of imports and 74% of exports.

The west coast ports of Los Angeles-Long Beach also serve a sizable share of Connecticut's imports, largely consumer products such as apparel and electronics. The port of Wilmington, Delaware, with about 3% of the import volume, is estimated to be almost exlusively chemical products. These are a mix of basic goods, including fertilizers and cleaning products, which are used by both the consumer and industrial sectors.

Figure 7: Container Port Choice

IMPORTS (~ 141,000 TEU)



Source: US Census Bureau; US Federal Highway Administration: Moffatt & Nichol

On the export side, the Port of New York and New Jersey similarly accounts for the majority of the containerized exports. Included in these export loads is a significant volume of containerized scrap metal, machinery and sand (mostly bagged silica). The Philadelphia port region accounts for about 15% of Connecticut's containerized exports, or about 7,000 TEU, and this export flow is dominated by containerized scrap metal. Chester, Pennsylvania, also in the Philadelphia region, is fourth with 3% of total exports, and also primarily handles scrap metal. Containers to the Philadelphia region are largely transported by truck.

The containerized commodity flows of scrap metal and basic chemicals to and from the Philadelphia, PA and Wilmington, DE port region may offer some opportunity for Connecticut ports.

This could include the possibility of capturing this truck flow on a waterborne feeder service calling at the two relatively proximate Delaware River ports. This alternative (and others) will be discussed in more detail in Section 2.5.

1.8. Non-containerized Trade

Similar to the preceding analysis of containerized trade, an analysis of non-containerized commodity flows into and out of the State was performed, identifying the ranking of non-containerized trade by commodity and by port choice.

1.8.1. CONNECTICUT'S NON-CONTAINERIZED TRADE BY COMMODITY

Connecticut's import and export of non-containerized trade is concentrated in fewer commodity classifications than its containerized trade. As shown below in **Table 8,** coal and other petroleum products (other than gasoline, aviation fuel and other fuels oils) make up 81% of the imports, with gasoline, aviation fuel and fuel oils making up another 10%. Non-metallic minerals and road deicing salt are another 8% of the imports. On the export side, waste and scrap account for approximately 73% of the total volume. Basic Chemicals and fuel products round-out the majority.

Table 8: Non-containerized Trade to and From Connecticut

IMPORTS			EXPORTS		
Commodity	**Tons**	***Share***	**Commodity**	**Tons**	***Share***
Coal and Petroleum Products, n.e.c.	7,348,630	*81%*	Waste and Scrap	986,387	*73%*
Non-Metallic Minerals, n.e.c.	755,655	*8%*	Basic Chemicals	225,618	*17%*
Gasoline & Aviation Turbine Fuel	700,558	*8%*	Gasoline & Aviation Turbine Fuel	105,868	*8%*
Fuel Oils	146,026	*2%*	Machinery	15,068	*1%*
Motor/Other Vehicles inc. parts	56,873	*1%*	Non-Metallic Minerals, n.e.c.	13,066	*1%*
Others	58,422	*1%*	Others	13,670	*1%*
Total	**9,066,163**	***100%***	**Total**	**1,359,676**	***100%***

Source: US Census Bureau; US Federal Highway Administration; Moffatt & Nichol

1.8.2. CONNECTICUT'S NON-CONTAINERIZED TRADE BY PORT

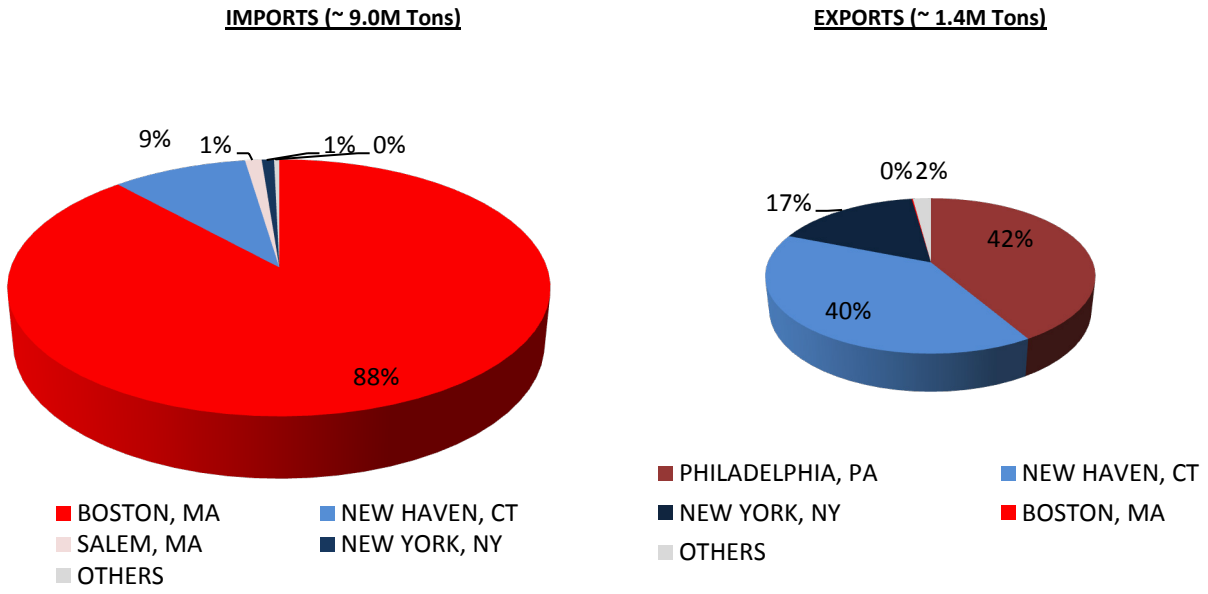
While Connecticut's containerized trade flows, both import and export, are dominated by the Port of New York and New Jersey, non-containerized cargo uses a somewhat more diverse range of port choices.

On the import side, Boston dominates with 88% of the volume, made up primarily of coal and other petroleum products. This volume also includes shipments of liquefied natural gas (LNG).

The Port of New Haven ranks second in non-containerized import tonnage, with 9% of the total, or about 800,000 tons, of mostly petroleum products.

New Haven acts as a gateway for exports of non-containerized goods destined to international markets, handling roughly 40% of the total volumes. These are largely scrap metal and fuel/petro-product shipments. Philadelphia and New York also handle significant volumes of non-containerized export cargo, which originates in Connecticut. Philadelphia receives mostly scrap metal (of which roughly two-thirds is trucked, with the remaining via rail loaded directly at the scrap metal yards) and New York handles a more varied set of commodities including scrap metal, chemicals and non-metallic mineral products.

Figure 8: Non-container Port Choice



Source: US Census Bureau; US Federal Highway Administration; Moffatt & Nichol

1.9. Connecticut's Domestic Port Volumes

Connecticut's three deep water ports also serve domestic coastwise cargo (U.S. port-to-U.S. port) as presented in **Table 9.** As with the international flows, New Haven is the dominant port in terms of total tonnage of domestic shipments. These are largely import shipments of liquid bulk fuels and petro-products, and originate predominately from other New England ports. Export shipments are largely barge movements to the southern U.S. and Gulf coast region. ***The high volume of domestic petro-good shipments underscores the importance of the liquid bulk terminals at New Haven, and the need to ensure that these facilities continue to operate efficiently.***

Table 9: 2010 Domestic Port Volumes (Million Tons)

	Import	Export	Through	Total
Bridgeport, CT	**1.7**	**0.8**		**2.5**
Asphalt, Tar & Pitch	0.0			0.0
Coal Coke	0.0	0.8		0.8
Distillate Fuel Oil	0.5			0.5
Gasoline	0.6			0.6
Sand & Gravel	0.6			0.6
New Haven, CT	**6.6**	**0.5**		**7.1**
Alcohols	0.5			0.5
Asphalt, Tar & Pitch	0.1			0.1
Cement & Concrete	0.1			0.1
Coal Coke	0.0	0.0		0.1
Distillate Fuel Oil	3.3	0.3		3.6
Gasoline	2.4	0.1		2.4
Other	0.3	0.0	0.0	0.3
New London, CT	**0.2**	**0.0**	**0.7**	**0.9**
Coal Coke			0.7	0.7
Distillate Fuel Oil	0.2			0.2
Fab. Metal Products	0.0	0.0		0.0
Machinery (Not Elec)				0.0
Residual Fuel Oil	0.0	0.0		0.0
Total	**8.6**	**1.3**	**0.7**	**10.5**

Source: U.S. Army Corps of Engineers

Table 10: Top 10 Ports for Domestic Gasoline & Distillate Shipments in 2010 (Million Tons)

	Import	Export	Through	Total
New York, NY and NJ	1.8	13.3	1.4	16.5
Tampa, FL	13.6	0.0	0.0	13.6
South Louisiana, LA, Port of	0.3	9.5	0.0	9.7
Port Everglades, FL	8.9	0.1	0.0	9.0
New Haven, CT	**5.7**	**0.4**	**0.0**	**6.0**
Pascagoula, MS	0.2	4.4	0.0	4.6
Richmond, CA	1.8	2.1	0.0	3.9
Boston, MA	3.7	0.1	0.0	3.8
Jacksonville, FL	2.7	0.0	0.0	2.8
Texas City, TX	0.1	2.4	0.0	2.4

Source: U.S. Army Corps of Engineers

1.10. Competitive Cost Analysis

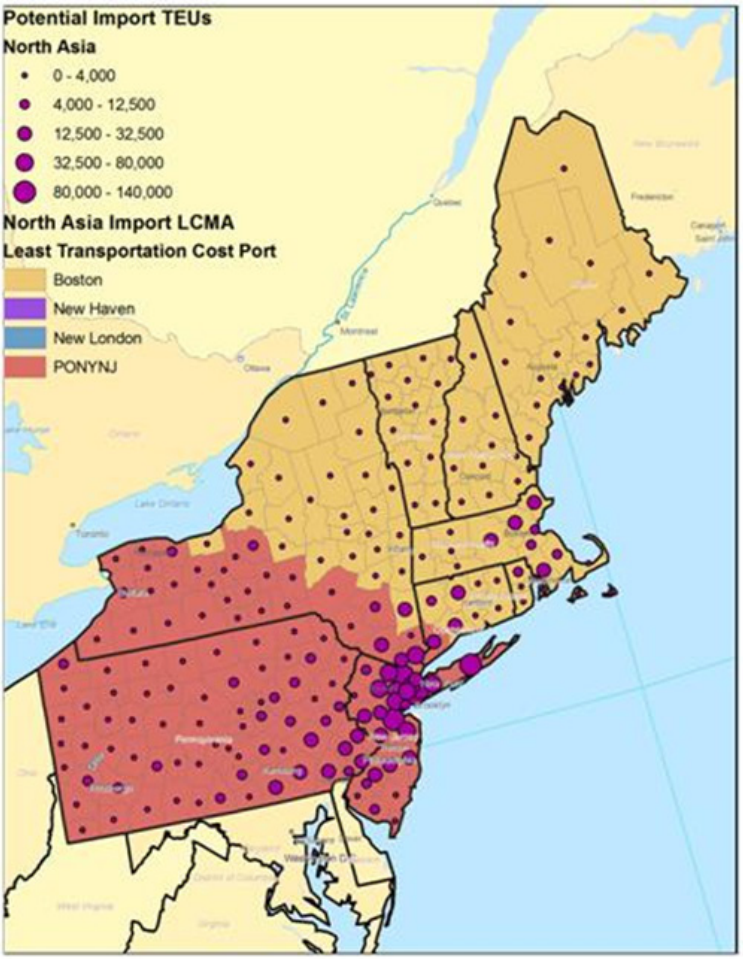
1.10.1. CONTAINER MARKETS

Least Cost Market Area (LCMA) analysis is used to designate the inland locations where a port facility acts as the international gateway in the low cost supply chain. This supply chain consists of three costs:

- The ocean freight cost
- The port handling charge
- The inland transportation cost (road, rail or combination thereof)

- The Port of New York and New Jersey's LCMA region is denoted in the darker red color in **Figure 9**. For these locations, the Port of New York and New Jersey is the port of entry with the lowest cost supply for inbound containers arriving from North Asia (China). The yellow regions are those captive to the port of Boston. The Connecticut ports are not estimated to have a cost competitive advantage in serving container demand in the region.

Figure 9: LCMA Regions for Containers



Source: Moffatt & Nichol

The following table (**Table 11**) shows container flows in Twenty Foot Equivalent Units (TEU) through Connecticut ports. It can be seen that with the loss of the Turbana flows through Bridgeport, there is now no container volume through any of the ports.

Table 11: TEU at Connecticut Ports

Customs Port	State	2007	2008	2009	2010
Bridgeport CT	CT	3,002	979	0	0
New Haven CT	CT	40	0	0	0

This analysis only considers transportation cost in identifying the preferred port. There are other factors such as travel time and cargo value, among others.

However, total travel cost is an important factor and this LCMA analysis shows that Connecticut ports do not have a strong competitive advantage for container traffic.

These findings do not preclude other alternatives, such as feeder service by tug and barge or other similar services; these are examined in more detail in Section 2.5.

Another possibility could include direct service by a small, niche container or multi-purpose line. Turkon, for example, has a Trans-Atlantic–Mediterranean, service that calls at the Port of New York and New Jersey, among other east coast ports, and serves European and Mediterranean ports, including Turkey, which could be a prime destination for containerized scrap steel.

This service does not always call on a regular frequency, and there may be opportunity for calls at Connecticut ports, for example, possibly by "inducement" or when there is sufficient cargo available.

The vessels in this service are in the 1,200 TEU size range, requiring a draft of less than 30 feet.

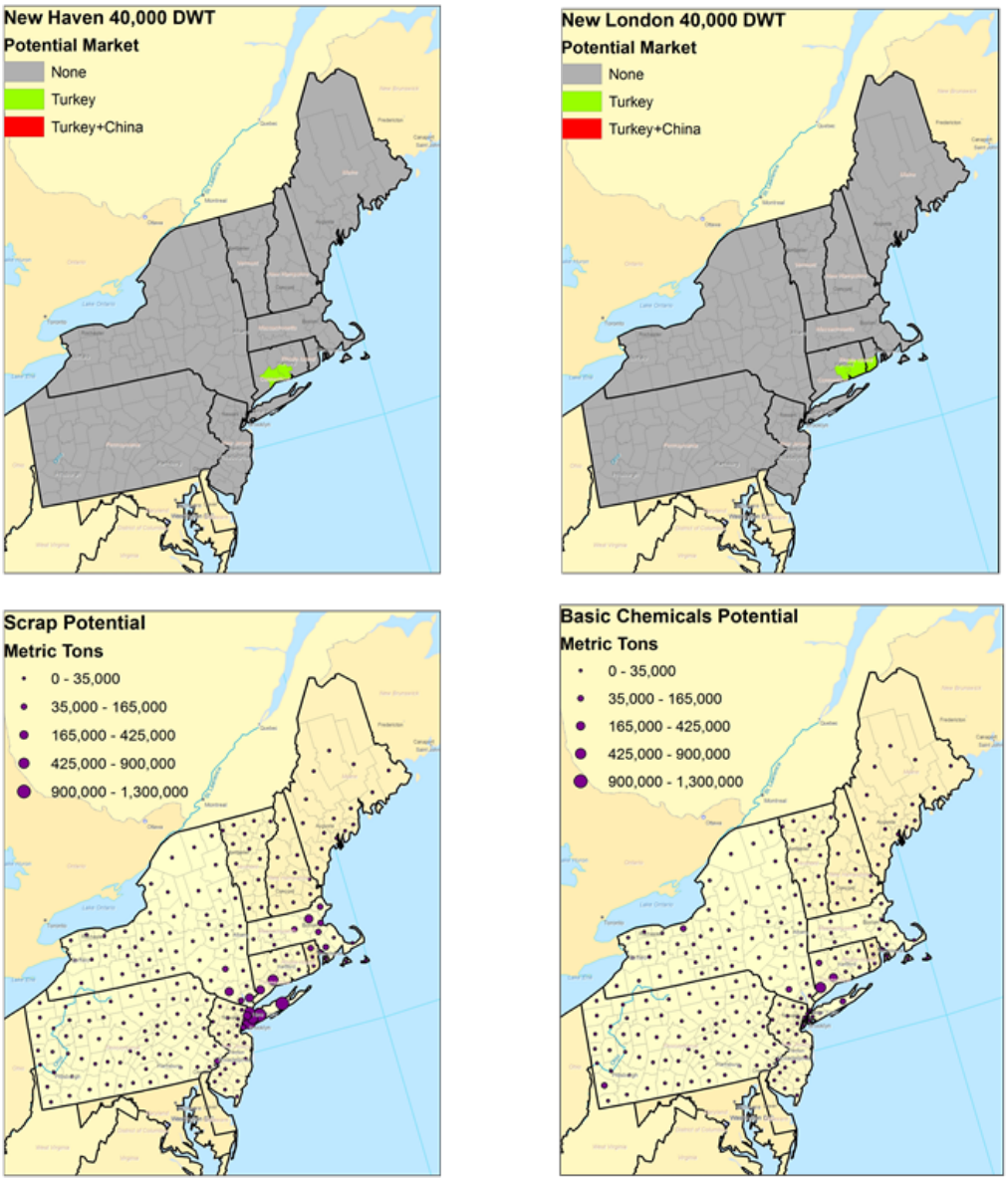
Another example of such a service is CMA-CGM's "New Black Pearl" service. It has used similarly sized vessels, serving the east coast of the U.S. and South America, while also calling at trans-shipment hubs in Freeport and Balboa, and offering access to a wide range of markets. This service is still in operation; however, it now uses 4,000 TEU vessels, which would be too large for Connecticut's ports for reasons of inadequate channel depth.

1.10.2. BULK MARKETS

The following describes the results of a similar LCMA analysis for bulk cargo for the ports of New Haven and New London. These analyses reflect the efficiencies of bringing larger vessels into competing ports, thus reducing the ocean portion of the transportation costs. The larger vessels are part of a long term trend and may or may not be a function of the expanded Panama Canal.

New Haven and New London have extremely localized LCMAs, suggesting that these ports do not offer a low-cost alternative for the majority of New England when compared to competing port facilities. This is consistent with the data, which suggests that most bulk shipments through Connecticut's ports are destined to or from the immediate markets. These include shipments of scrap metal and nonmetallic mineral products including salt and sand/gravel.

Figure 10: LCMA Regions and Tonnages for Non Containerized Goods

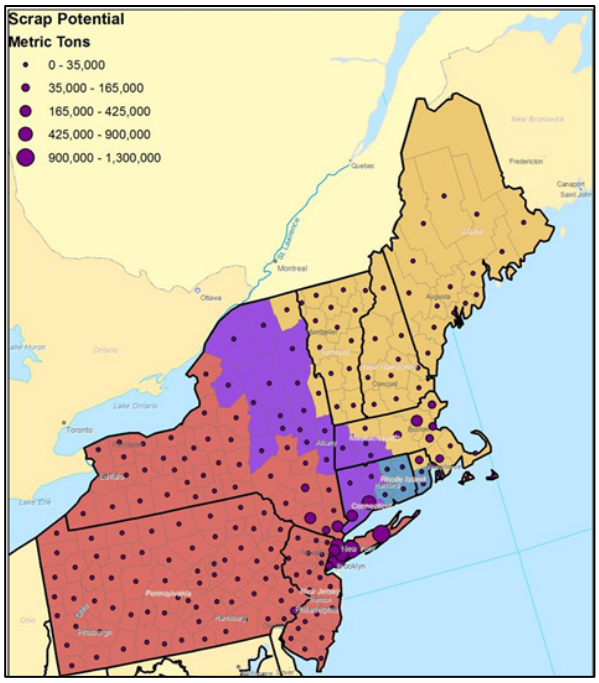


Source: Moffatt & Nichol

The results of this analysis underscore the importance of dredging the channels and berths to accommodate the larger bulk and break bulk vessels. By allowing the Ports of New Haven/ New London to receive incrementally larger ships, the ports may be able to compete more aggressively with neighboring facilities for markets based solely on the landside transportation costs.

A significant portion of the cost advantage identified above is due to the lower unit costs of shipping in larger bulk and break bulk vessels that can be accommodated at the Port of New York and New Jersey. If the vessel costs were assumed to be equal and only differences in inland transportation costs were considered, the competitive LCMA regions for New Haven and New London would be significantly larger. New Haven (denoted in purple) would have significant, competitive landside reach into southwest Massachusetts and northeast New York State as illustrated in **Figure 11.**

Figure 11: Hypothetical LCMA Regions Based Exclusively on Inland Transportation Costs



Source: Moffatt & Nichol

The following section of this report presents recommendations regarding the protection and/or cultivation of niche cargos, which have either historically been, are currently or could potentially be served by Connecticut's ports. The recommendations are substantiated by analysis of the market opportunities for:

- Scrap Metal Exports
- Wood Pellet Exports
- Liquid Bulk Import/Export
- Steel, Lumber, Copper Imports
- Fresh Fruit Imports
- Salt, Cement, Sand, Aggregates

1.11. Potential Niche Cargo Markets

1.11.1. SCRAP METAL EXPORTS

Scrap metal exports account for a large share of the total export volumes originating from Connecticut and are estimated by Moffatt & Nichol to continue to be an important export commodity to the state. Production in Connecticut is estimated to total roughly 950,000 tons in 2011, based on the national average of scrap production per capita (roughly 0.25 tons/person or 500lbs/person) as presented in **Table 12.** This volume matches closely with the total reported volume exported from the state.

Scrap metal, by nature, is in a constant stage of production as it is the waste product of a variety of common goods or materials, including construction, automobiles, and household appliances. Therefore, in terms of future availability, it is likely to continue to be in good supply.

Table 12: Connecticut's Scrap Metal Production (2000 – 2011E)

	2000 - 2006	2007	2008	2009	2010	2011E
US Scrap Production (Million Tons)	73.1	76.0	85.0	80.0	76.0	84.0
US Population (Millions)	289.9	300.9	303.6	306.2	309.0	311.7
Ton per Capita	***0.25***	***0.25***	***0.28***	***0.26***	***0.25***	***0.27***
Connecticut Population	***3.5***	***3.5***	***3.5***	***3.6***	***3.6***	***3.6***
Implied Connecticut Production	***861,507***	***867,112***	***968,473***	***910,194***	***859,994***	***945,111***

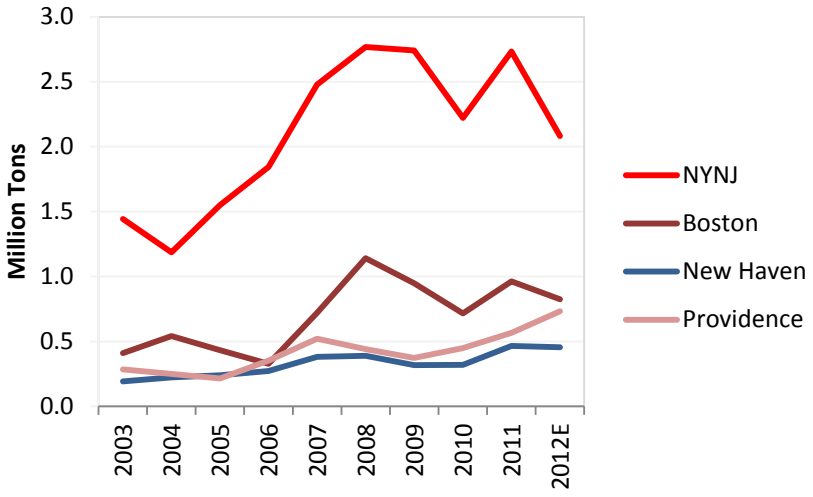
Source: U.S. Geological Society U.S. Census Bureau; Moffatt & Nichol

U.S. exports of scrap metal have grown significantly over the past decade as the balance of steel production has shifted globally to the North Asia and the Mediterranean regions. As global demand for steel continues to grow, roughly in line with global GDP[1], this should continue to support a long-term average of 2-3% annual growth of U.S. scrap metal exports.

The largest volume of scrap metal exports currently leaving the U.S. Northeast is handled at the Port of New York and New Jersey, averaging roughly 2.5 million tons per annum. Export volumes at New Haven, though smaller, have demonstrated sustained growth with volumes destined primarily to Turkey, China and most recently, to Egypt and Saudi Arabia. The Ports of Boston and Providence are currently each handling roughly 750,000 tons, with Providence experiencing strong growth since 2009. Providence's growth will be further supported by SIMS's acquisition of the Promet Marine Service Export Terminal, which includes a 600-foot-long, rail-serviced pier with two deep water berths.

Sims has not indicated if the Providence facility will have any impact on its North Haven operations. In any case, the North Haven site, with its access to the Port of New Haven, and its centralized location in the Connecticut scrap market, should continue to be a valuable site for processing scrap, regardless of ownership.

Figure 12: Scrap Metal Export Tonnage by Port



Source: US Census Bureau

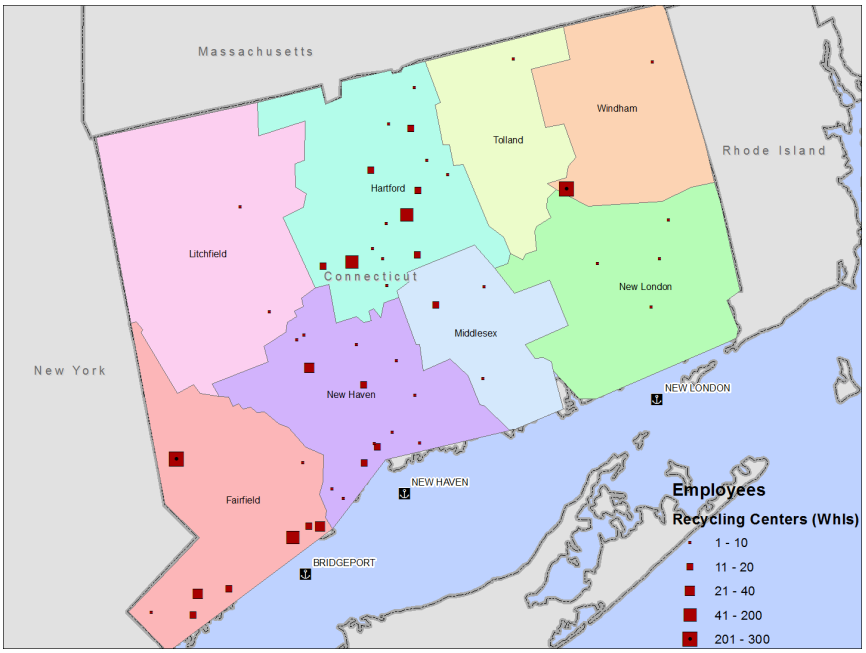
[1] Global GDP and global steel production are a highly correlated economic-to-commodity pairings. Since 1990 the average 2.9% global GDP growth has been met by an average 2.8% increase in global steel production. Source: IMF and World Steel Association

Within Connecticut there are several large scale scrap metal operations. These include:

- SIMS in New Haven (auto shredder output of which is shipped via Gateway Terminal in bulk)
- LaJoies in Norwalk (auto shredder)
- Rubino Brothers in Stamford (with access to water via barge)

In addition to these three large shredding operations, there are numerous smaller facilities located throughout the northern and interior counties of the state, as depicted in **Figure 13,** which plots employment of Recycling Centers Wholesalers (includes paper and metal). These smaller facilities typically sell their material to the larger shredding operations or ship directly to the ports for export.

Figure 13: Connecticut Zip Codes with Employees for Recycling Centers (Whls)



Source: InfoUSA, Moffatt & Nichol

The scrap industry in the state has few major firms and a variety of smaller firms. Many smaller entities sell scrap to a major firm like Sims Metal Management. Sims exports a large volume of bulk scrap through Gateway in New Haven. However, as shown elsewhere, there is a large volume of both containerized and non-containerized scrap leaving through other ports. There is some indication that containers are being stuffed at regional scrap yards and exported, through brokers, despite the regional control that a firm like Sims has.

In order to capture a greater share of the volume of scrap from Connecticut "leaking" to other ports, it may be necessary to develop and support, perhaps with some incentives, a statewide brokering system. Such a system would consolidate the smaller scrap dealers in the State in such a way that they could take advantage of economies of scale e.g. container on barge.

1.11.2. WOOD PELLET EXPORTS

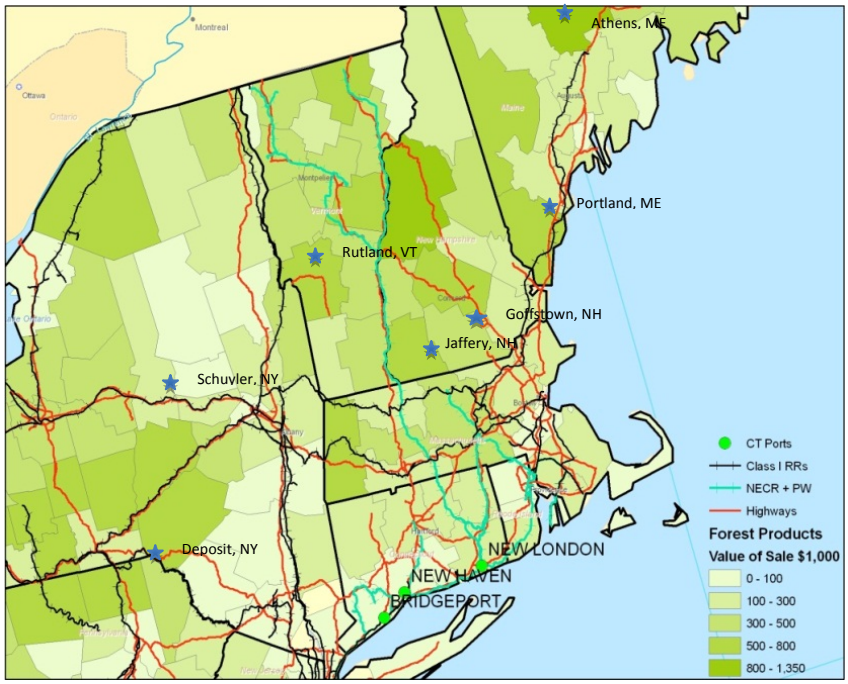
Global demand for alternative fuel sources is growing, particularly in the developed economies throughout Europe. The exports of wood pellets used as biofuel material is a burgeoning industry in the U.S. Northeast, and one which could potentially serve as an alternate source of throughput at Connecticut's deep water ports. Industry estimates suggest that current demand of roughly 15 million tons will increase to a range of 45–60 million tons by 2020[2]. This strong demand forecast underpins the positive outlook for U.S. exports of wood pellets, which have recently been driven to a large extent by growing demand in Europe. U.S. exports of wood pellets to Europe have nearly tripled over the last three years to an estimated 850,000 tons in 2011. The industry has already attracted significant investment throughout Maine, Vermont, New Hampshire and eastern New York including new export terminals located in Eastport and Portland Maine, to ship wood pellets to Europe.

Most recently, a new pellet mill planned for Baldwin, Maine will produce approximately 300,000 tons per year with 70% meant for export. This volume will be transferred by rail to move approximately 28 miles to the Port of Portland for export. New England Wood Pellet opened a production facility in Deposit, New York in mid-2011. The plant's capacity is stated at 85,000 tons, though it is meant for domestic use.

Much of the production is occurring to the north of Connecticut and, as such, the extent to which Connecticut ports can attract some of this volume south will depend on their ability to leverage the infrastructure, which provides access to the northern region. This infrastructure includes the NECR that serves New London and possibly the Providence and Worcester Railroad.

Canadian production of wood pellet exports originates predominantly from British Columbia. Nova Scotia production is approximately 200,000 tons per annum.

Figure 14: Forest Product Manufacturing and Wood Pellet Operations



[2] Sources include: Poyry, "Pellets - Becoming a Global Commodity? - Perspectives on the global pellet market to 2020", April, 2011; IEA Bioenergy "Global Wood Pellet Market & Trade Study", December 2011; Wood Resources International LLC "North American Wood Fiber Review" March 2011

Source: US Census Bureau; Moffatt & Nichol

1.11.3. LIQUID BULK IMPORTS AND EXPORTS

The areas in and around Connecticut's deep water ports are critical components in the energy supply chain and deserve careful consideration in the ongoing statewide energy study.

As illustrated in **Figure 15**, approximately 70 acres in or near the Port of Bridgeport are devoted to liquid bulk and/or energy uses—a liquid bulk tank farm for local gasoline, heating oil and other petroleum products; Bridgeport Energy's 520 mw natural gas-fired electrical power plant; and the municipally-operated Wheelabrator, Bridgeport's 67,000 kilowatt waste-to-energy plant.

Figure 15: Bridgeport Energy & Liquid Bulk Facilities

Source: Moffatt & Nichol

The highlighted areas in **Figure 16** represent approximately 254 acres in or near to the Port of New Haven—a majority of the landside acreage in the Port of New Haven area. As detailed in Appendix A, these liquid bulk facilities provide aviation fuel, gasoline, ethanol and other petroleum products to Connecticut and the larger New England marketplace.

As previously discussed in the development options section for New Haven, various options have been considered to improve the tanks, pipelines, and rail connectivity in New Haven—all directed at improving the competitiveness of the liquid bulk operation and enhancing the opportunity to capture additional cargo including, for example, bio-diesel and ethanol. There also continues to be investment by the private operators in their facilities.

While all of the improvements mentioned are important, there is a strong belief among the private operators, port authority officials, and other industry participants, that the maintenance dredging of the channel in New Haven would be the most valuable improvement, and that this is an immediate need. Since the economic benefit studies have not been done yet, a precise measure of the cost-benefit ratio is not available, but it seems clear that the reconnaissance study required for further deepening of the channel should also occur.

Figure 16: New Haven Energy & Liquid Bulk Facilities

Source: Moffatt & Nichol

The New London port area does not currently devote landside acreage to energy or liquid bulk uses. However, the Groton area, across the Thames from New London, provides approximately 17 acres for liquid bulk storage, with potential room for expansion.

Figure 17: Groton Liquid Bulk Facilities

Source: Moffatt & Nichol

1.11.4. COPPER, STEEL, LUMBER IMPORTS

These break bulk commodities have historically represented relatively significant volumes for Connecticut deep water ports. However, as **Table 13** below indicates, the volumes have declined significantly in recent years. This decline is due to a number of reasons, including the collapse of the housing industry, which has entirely eliminated the importation of lumber through Connecticut ports.

The losses in the copper and steel trade (including "winter steel," which cannot access Great Lake ports during the winter season when the St. Lawrence Seaway is closed) are due to several reasons. The economic downturn has impacted these cargoes also, as can be seen by the decline from 2007 to 2009, despite the fact that Logistec consolidated its operations in New London in 2009 after having operated in both New Haven and New London. In addition, the loss of various manufacturing industries in Connecticut has also played a role in these losses, particularly in copper. In addition, there were losses to other port options, such as Philadelphia.

Table 13: Cargo at State Pier

Admiral Harold E. Shear State Pier, New London, CT
Shipping Report – 2004 - 2011

Year	Number of Cargo Ships	Forest Products Tonnage	Copper/Steel[s] Tonnage	Other Cargo	Total Tonnage	Number of Passenger Ships	Number of Passengers
2011	16	0	60,672[s]	10,758[cc]	71,430	0	0
2010	13	0	46,391[s]	7,476[cc] 230[trans]	54,097	2	6,059
2009	5	30,139	0		30,139	0	0
2008	14	99,216	6,677		105,894	9	11,535
2007	30	81,420	89,352		170,773	7	15,640**
2006	39	121,479	14,217		135,751	1	1,200 est.
2005	41	126,669	78,551	81,000[hl]	286,221		
2004	49*	136,945	82,931		219,877	3	

- [cc] Calcium Chloride
- [s] Steel only
- [hl] Heavy lift
- [trans] Transformers
- ** Estimated passenger numbers for 5/9/07, 9/1/07 and 9/15/07
- *1/2004 – 3 ships with Heavy Lift cargo – tonnage not reported

Source: New London Economic Development

With economic recovery and growth there might be opportunities to recapture some of these cargo volumes, although, in view of the housing market conditions, it is unlikely that lumber imports will return to previous levels in the foreseeable future. A new lease structure in New London, with a longer term and revised compensation structure could incentivize growth. Targeted investment in the facility might provide efficiencies for the operator and shipping lines that could improve competitiveness and increase volume. For example, a deeper berth, compatible with the main channel, would enable larger or more fully laden vessels to call.

From a statewide perspective, there might also be opportunities to capture increased volume in these commodities at New Haven, as Gateway Terminals begins to operate through its lease of portions of the New Haven Terminal, which previously handled some of this cargo flow under Logistec.

1.11.5. FRESH FOOD IMPORTS

Fresh Food represents another cargo that had historically moved through Connecticut ports with the Turbana operation in Bridgeport. Given this history, and the large consumer population of Connecticut and surrounding states, it conceivably could represent an opportunity for the future. Until 2008, the Port of Bridgeport imported approximately 50,000 tons of fresh bananas annually and at one time supported up to 100 direct jobs through the private banana supplier, Turbana. The firm relocated its processing and distribution facility to the Port of Philadelphia. Turbana has cited a number of reasons for leaving Bridgeport, including channel depth to allow for larger ships, lower utility costs, shorter shipping times, inadequate

facilities and issues with the employee-owned stevedore in Bridgeport. Turbana also cited the more centralized location in Philadelphia and the shorter sailing distance from Colombia as reasons for their move.

There is a large concentration of this industry in the Delaware River area, including Wilmington, Philadelphia and Camden, from which they generally serve most of the eastern seaboard and beyond. This critical mass does create certain efficiencies for the importers.

These are not insurmountable problems, and with the proper market research, investment, and management, it may be possible to capture some of this evolving market. Regional consumer demand for fresh foods is significant, and the market is prone to major changes. These two trends may represent opportunities for fresh food imports through one or more of the Connecticut deep water ports.

1.11.6. SALT, CEMENT, SAND, AGGREGATES (INCLUDING DOMESTIC)

These heavy weight and relatively low value commodities move most economically by water. For the most part, cement, sand, and aggregate volumes are driven by the growth in construction, including highway construction. Gateway Terminals in New Haven has a contract with Lafarge cement and handles about 250 thousand tons per year, or about half of what is moved in Long Island Sound. Gateway has three silos with a capacity of 27 thousand tons of storage. It would be very difficult to permit these silos today. Similarly, Gateway imports deicing salt and has a permitted salt pile.

2. Findings

2.1. Strengths and Weaknesses Overview

	Bridgeport	New Haven	New London
Strengths	• Relatively large amount of waterfront acreage • Good assets of the Bridgeport Regional Maritime Complex (BRMC)/Derecktor Shipyard • Successful privately funded ferry operation • Good highway access	• Strong liquid bulk operations at several private terminals • Successful and flexible non-ILA operator at Gateway with multiple resources • Manageable cost for maintenance dredging • Good highway and rail access • Successful barge repair operation • Reasonable consumer market	• Good physical facilities • Good highway and rail access, both north/south and east/west • Existing operator with industry experience • State owned property can generate revenue and simplify decision-making • Successful private shipyard operation • Successful privately funded ferry operation • Federally funded and maintained channel • Electric Boatyard and Groton Naval Base
Weakness	• Very difficult and expensive dredging challenges • Loss of cargo markets and potential revenue streams • Lack of consensus regarding east harbor land use • Loss of shipyard operator • Lack of freight rail access • Multiple layers of decision-making	• Limited land availability • Lack of labor compatibility for feeder service with NY/NJ • Incompatible land uses • Lack of potential public sector revenue streams • Multiple layers of decision-making	• Loss of cargo markets and associated potential revenue streams • Limited consumer market access • Limited cruise industry interest

	Bridgeport	New Haven	New London
Opportunity	• Mixed-use development BRMC/Derecktor Shipyard solicitation • Potential re-use of coal-fired power plant site	• Channel deepening • Feeder service • Expanded liquid & solid bulk • Good pipeline access	• State Pier solicitation • Additional freight by ferry • Expanded non-liquid bulk
Threat	• Incompatible land uses	• Incompatible land uses • Unclear federal funding for dredging during disposal site window of availability	• Base Re-alignment and Closure (BRAC); Electric Boatyard business base and impact on dredging

2.2. Investments

An effort was made to estimate the level of expenditure on the part of both the public and private sector in Connecticut's deep water ports. The results of the public expenditure review are summarized in the adjacent table, which indicates that more than $100 million in public funds have been expended on port-related projects since 1990. This estimate is based on input from a number of sources and, in view of the time frame involved and the uncertainty regarding some of the information used, should be viewed as a rough estimate.

Estimated Public Port Expenditures 1990 -2012 ($M)		
New London		
State Pier Facility	$	43.3
Thames Shipyard	$	3.5
Other	$	11.4
Total	**$**	**58.2**
Bridgeport		
Water Street Dock and Terminal	$	13.3
BRMC/Derecktor	$	20.4
Security	$	4.6
Other	$	4.8
Total	**$**	**43.1**
New Haven		
Waterfront Street Railroad	$	5.7
Bio-fuels grant	$	1.3
Port Surveillance	$	1.1
Response Vehicle	$	0.8
Other	$	1.0
Total	**$**	**9.9**
Total Three Ports	**$**	**111**

The public investment reflected in the table includes a variety of public sector entities. For example, the State Pier investment in New London is largely from the Connecticut DOT. The Bridgeport investments include grants by MARAD and the Connecticut Department of Community and Economic Development for BRMC/Derecktor, as well as the BPA investment in the Water Street Dock and Terminal. The New Haven totals include Congestion Mitigation and Air Quality (CMAQ) funds for the Waterfront Street Railroad relocation and various federal grants, including Federal Emergency Management Agency (FEMA) grants and others.

A review of these public expenditures indicates the lack of a consistent, statewide investment strategy relative to the maritime industry, and has not resulted in significant success in developing or maintaining the maritime industries or the individual ports. Some observations:

- The State Pier in New London received the bulk of direct investment to address a variety of structural deficiencies, and, while the immediate facility is generally in good physical condition, cargo volumes have declined and have not recovered to pre-recession levels.

- While an argument could be made that the State Pier is publicly owned and therefore merits direct investment, a significant public investment has also been made in the Bridgeport Regional Maritime Centre (BRMC)/Derecktor facility in support of a private concern for economic development objectives, which, nevertheless, has failed.
- The Water Street Dock and Terminal investments in Bridgeport support the successful ferry operation; however, there is an ongoing disagreement regarding the future desirability of that site for ferry operations.
- The Port of New Haven, which is mainly operated by private entities and has some of the most active cargo facilities in the state, has received the least amount of public support. It has benefitted, however, from private capital investments in recent years.
- Many port assets are in less than optimal condition. Potential condition improvements include: needed channel maintenance dredging in New Haven and Bridgeport (nominally a federal responsibility); revamp of the collapsing refrigerated warehouse in Bridgeport; various bulkhead and berth improvements, such as the proposed improvements in the North Yard in New Haven, among others.

In addition to the public investment in port and maritime related businesses, there has been significant private investment, which by its nature is more difficult to document. Some examples of these investments include more than a reported $9 million investment in improvements to the Thames Shipyard in New London; the recent expenditure of about $4 million for land acquisition by the Port Jefferson Ferry in Bridgeport; and more than $25 million invested in dredging, dock improvements, land acquisition and improvements to loading racks and tanks by the private terminals in New Haven. This New Haven total does not include any investment by Gateway Terminal, for which data was not available. However, visual inspection of their facilities indicates that they appear to be in good condition and well maintained. In addition, Gateway is actively involved in making improvements to their new leasehold at New Haven Terminal.

Drawing conclusions regarding the outcome of investments in port- and maritime-related assets is complicated by the mix of public and private facilities, the diverse mix of uses, and the variation in port oversight among the three deep water ports. The historic public sector investments, while having addressed structural issues at the State Pier, have not generated significant increases in cargo or employment.

In addition to some of the issues discussed above, there has been a considerable loss of cargo markets, and ***statewide employment in water transportation industries has declined from 977 in 2001, to 905 in 2011.*** If the State wishes to preserve and ultimately grow its ports and related industries, a more focused, market-driven, and programmatic effort that addresses investment and market needs would have a better chance of contributing to long-term success.

2.3. Infrastructure

2.3.1. BRIDGEPORT INFRASTRUCTURE

2.3.1.1. Channel

Bridgeport Harbor's current channel depths and navigation features were authorized in the River & Harbor Act of 1958 and include entrance, main and branch tributary channels, anchorages, a turning basin, and two stone breakwaters at the entrance to the harbor. The main channel has an authorized depth of 35 feet mean low water (MLW), but in the absence of maintenance dredging since 1964, shoaling has resulted in a reduction in the controlling depth, reported by the USACE to be 30 feet in its 2008 Bridgeport Dredge Material Management Plan (DMMP), with similar reductions in the controlling depth of the channels in various tributaries.

The dredging of Bridgeport Harbor entails the removal of significant quantities of contaminated material.

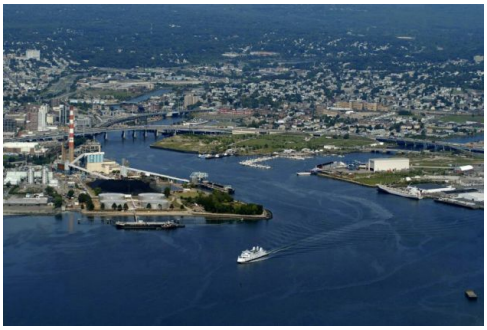
The USACE's Bridgeport Harbor Disposal Plan presented two alternatives. Under one alternative, some portion of the unsuitable material would be placed into an existing borrow pit located in Morris Cove, New Haven Harbor. This plan has generated objection from the New Haven community and its elected officials. The estimated project cost for this plan is estimated at $43 million.

The other alternative disposal plan would require the construction of two confined aquatic disposal cells in Bridgeport Harbor with an estimated cost of $53 million. The estimated local sponsor's share of the project cost is $5.7 million.

In its March 31, 2012 update report for Connecticut, the USACE reports that continued maintenance dredging of Bridgeport Harbor is likely justified. The Dredged Material Management Plan was submitted in early 2012 and is currently under review by USACE Headquarters.

The project cannot begin until federal funding is authorized, appropriated and committed to the project.

2.3.1.2. Cargo Handling Facilities



Private cargo handling facilities in the Port of Bridgeport include the Motiva facility, which handles liquid bulk petroleum products, although it is understood that Motiva is attempting to sell this facility. Since there are a number of liquid bulk tanks in the harbor area that are not in use, the possible Motiva sale may indicate further reduction in demand for this use in Bridgeport. In addition, some sand, stone and aggregate is handled by Oil & Gas Industries at two locations in the harbor and some coal to supply the Public Service Energy & Gas (PSE&G) power plant, although the coal has been displaced recently with the drop in price of natural gas and there are discussions regarding the possible de-commissioning the coal-fired plant. The channel depth restrictions discussed above had required the lightering of coal to barges into Bridgeport Harbor.

The only facility that handled general cargo was the Coastline Terminal (formerly known as CILCO), which was owned by an Employee Stock Ownership Plan (ESOP) of the International Longshoremen's Association (ILA) local, and operated by stevedoring firm Logistec. The Coastline Terminal facility included more than 900 feet of berth, approximately 26 acres and two warehouses—one of which was a refrigerated warehouse that had supported the imported banana trade previously handled at the port. The refrigerated warehouse is now in a state of advanced deterioration from lack of maintenance and vandalism, and the other warehouse

has been demolished. A portion of the Coastline Terminal acreage has been sold to the Port Jefferson Ferry (8.8 acres) for possible use as a new ferry terminal. The Ferry operator would like to purchase an additional parcel (9.5 acres) from Coastline Terminal.

The Port of Bridgeport is hampered as a cargo port by the lack of conveniently accessible freight rail.

Turbana Bananas, which had been Coastline Terminal's main customer, indicated that one of the reasons the company left Bridgeport for Philadelphia was that the facilities were not kept up-to-date. (Of note, facility improvements for the stevedore handling Turbana in Philadelphia were funded by the Philadelphia Regional Port Authority, with the stevedore's lease guaranteeing a portion of this funding.) Other stated reasons included access to mid-Atlantic markets, utility costs, and the inability to service larger ships due to channel depth constraints.

2.3.1.3. Ferry Terminal and Operations

The Bridgeport and Port Jefferson Steamboat Company (Ferry Company) is a privately owned company that has been providing vehicle and passenger ferry service between Bridgeport and Port Jefferson since 1883. Currently, the Ferry Company owns and operates three ferry boats and in 2005, they transported approximately 460,000 vehicles and one million passengers.

On the Port Jefferson side, the Ferry Company owns most of the dock and terminal facilities and provides all ferry-related services. On the Bridgeport side, however, the Ferry Company does not own the dock or terminal facilities. Until 1993, the Ferry Company leased the use of the Water Street Dock from the City of Bridgeport. When the City transferred control of the Dock to the BPA, the Ferry Company entered a lease to rent the Dock from the BPA at an annual rate, which was $100,000 for the first year and has increased to $158,956 in 2011.

The lease agreement entitles the Ferry Company to "non-exclusive preferential use" of the dock. The BPA reserved for itself all other uses of the dock and the premises, except for the following: operation of the food concession, which was the subject of another agreement between the parties; use of office and waiting room space in the two-story terminal building that the BPA "may from time-to-time make available"; and use of a few parking spaces for Ferry Company employees.

The terminal serving the Port Jefferson Ferry operation is located at the Water Street Dock & Terminal on BPA-owned property, which totals eleven acres. The current ferry site is 1.5 acres and includes the ferry berth, a terminal building, and a vehicular staging area. While these facilities appear to be in very good condition, the ferry operator believes that this area is inadequate for operations, with an insufficient staging area for vehicles, and proposes to move to a new facility on the eastern side of the harbor. The current site does have direct pedestrian access to the Bridgeport rail/bus terminals, and is more conveniently located to the city center. The proposed new site would have better interstate highway access and significantly improved staging area for cars and trucks.

The Water Street Dock area is also the considered site for high speed ferry between Bridgeport/Stamford and New York City. Feasibility studies have been completed, and site location planning and development are under consideration.

2.3.1.4. Bridgeport Regional Maritime Complex/Derecktor Shipyard

Bridgeport Regional Maritime Complex is a maritime business park owned and developed by BPA. It is a 43-acre former steel industry site that was remediated, redeveloped, and dedicated for use by water-dependent industries. The Derecktor Shipyards facility, currently in bankruptcy, occupies a 23-acre site in the BRMC. Derecktor was a full service shipyard that constructed, repaired, and maintained vessels. The facility has a berthing distance of 570 feet, a depth of 18 feet, and approximately 300 feet of additional berthing space for small vessels available along steel floats moored to steel piles at the mouth of the Yellow Mill Channel. ***The shipyard facility appears to have very good facilities and equipment, including a 3,500-ton dry dock that can handle vessels up to 350 feet in length and a beam up to 82 feet in width, a 660-ton travel-lift crane, and 55,000 square feet of fabrication area with a large main assembly building, among other features.***

BPA, following an RFP Process, has recently selected a new operator for the shipyard. Negotiations are underway with the selected operator for a long term lease agreement.

2.3.1.5. Development Options

The City of Bridgeport has indicated that development plans for the harbor center around three main themes:

- Connectivity to the waterfront through the Water Street Dock, with its access to the downtown area and the downtown Amtrak and transit facilities.
- Mixed-use development of the 40-acre Steel Point peninsula site, anticipating 2.6 million square feet of commercial retail and residential development. A key feature of the Steel Point project is a super-marina at the tip of the peninsula, which would accommodate mega-yachts.
- Build on the assets of the former Derecktor shipyard, servicing ferries, fishing boats and pleasure boats. A Request for Proposals for development of the Derecktor property has recently been issued by the BPA.

Other assets in the harbor that can provide development options include the balance of the property in the BRMC (21 acres), other than the 23 acres of the shipyard. The property is level waterfront land with access to Long Island Sound. The remaining parcel (9.5 acres) of the former Coastline Terminal, which has berth access, is also available. This parcel is adjacent to the parcel purchased for the proposed new Port Jefferson Ferry terminal.

The development of BRMC and the remaining Coastline parcel is dependent on the final location of the ferry terminal and; indirectly, the nature, intensity and timing of the Steel Point harbor development.

2.3.2. NEW HAVEN INFRASTRUCTURE

2.3.2.1. Channel

New Haven Harbor has a federally authorized channel depth of 35 feet and a width of 400 to 800 feet and can accommodate ships ranging from 20,000 to 40,000 deadweight tons. Maintenance dredging of the main channel would include dredging about 650 thousand yards of material, with anticipated disposal at the Central Long Island Sound Disposal Site. The USACE report has found the dredged material suitable for unconfined open water disposal.

The most recent maintenance dredge was in 2004 when about 380 thousand cubic yards were dredged. Federal funding might be available for this $10 million project in FY 2014.

Maintenance of the channel is critical to Connecticut energy supplies and the regional economy.

New Haven maintenance dredging faces two substantial risks.

- Scheduled closing of the disposal site in 2013, which can be extended one year by EPA.
- Obtaining sufficient federal funding while the Central Long Island disposal site is still available. Recent federal legislation increases the likelihood of maintenance dredging funding.
- There are U.S. Senate and House resolutions calling for a study to examine deepening the main channel to greater than 35 feet. A reconnaissance study costing about $100,000 would be required to begin this process.

2.3.2.2. Cargo Handling Facilities

The Port of New Haven primarily handles petroleum products, chemicals, scrap metal, metallic products, cement, sand and stone, salt and general break bulk cargo. The Port of New Haven's fuel facilities are part of the U.S. Government's strategic heating oil reserve. Pipeline connections (Buckeye Pipeline) from the port handle jet fuel for Bradley International Airport and for the Massachusetts Air National Guard Base in Westover, Massachusetts. The port's largest multipurpose terminals are operated by New Haven Terminal and Gateway Terminal (with each utilizing multiple berths).

The port cargo handling facilities are all privately owned and represent on-going private investment. The NHPA owns two non-waterfront sites totaling twelve acres that are being used as lay-down and staging areas for port cargo. One of these sites is leased to Gateway Terminals. The NHPA also has developed, and is currently promoting, a truck rest area with electrification on one acre.

Gateway Terminal, the most active terminal in the port, has historically handled both liquid and dry bulk cargo. Products include asphalt and petroleum, cement, salt, scrap, steel billets and rock. They recently entered into an agreement with New Haven Terminal to lease and manage the dry cargo operations at that terminal, which includes several warehouses. The largest warehouse is located at 31 Waterfront Street and has 120,000 square feet. Previously, they handled primarily bulk cargo, now they are interested in attracting new business such as the break bulk cargo or general cargo that once called on New Haven Terminal. These commodities include steel products and project cargo such as generators, turbines, and other goods that must be loaded individually and not in containers or bulk. They have their own fleet of tugs and barges. In addition to the facilities within the port district, Gateway owns or leases sites outside the district to support its port operations by providing additional lay-down area. Two sites are located on the Mill River and a third facility is on the Quinnipiac River. Gateway has a 12-acre rail siding that can handle 35 rail cars at the Chapel Street site on Mill River, which is served by the Providence and Worcester Shortline railroad, which connects to CSX, Norfolk Southern, and Canadian National Railroads.

The privately owned **New Haven Terminal** presently handles only bulk liquid, with a capacity 2.5 million barrels of oil or diesel. In addition to the 15 tanks located at Waterfront Street, 15 larger tanks in East Haven are accessible by pipeline. Historically, the New Haven Terminal did handle dry cargo, and since 1990 had contracted with Logistec USA to handle its dry cargo operation. That relationship ended in July of 2011, and Harbor Terminal (a subsidiary of Gateway Terminal) now manages dry cargo operations on New Haven Terminal property. In addition, a new company, **Greenleaf Biofuels,** has leased a portion of 100 Waterfront Street and is constructing a biofuels manufacturing facility that should be operational in 2012. Greenleaf will be sourcing both domestic and foreign material to produce its biodiesel, and the first phase of their project

will include construction of additional tank storage. The NHPA is working to amend its foreign-trade zone to include the Greenleaf site.

Gulf Terminal, which is owned by Gulf Oil Limited Partnership, is a bulk petroleum storage and distribution facility. They have six terminal employees and a fleet of 12 trucks with 34 drivers serving all of Connecticut, eastern New York, and much of central Massachusetts.

Magellan Midstream Partners, LP occupies 55 acres in New Haven, including sites outside the port district. Their business includes the storage of petroleum variants and asphalt. In addition to the facilities in New Haven harbor, they have remote storage in the neighboring towns of East Haven and Hamden that are accessible by pipeline.

Motiva Enterprises, LLC handles petroleum products, including gasoline, diesel, jet fuel and ethanol. They are currently making major improvements to their pier. Their storage facility is approximately one-quarter mile inland from its pier, and product is transferred via pipeline.

R & H Terminal is owned by Hudson Company of Providence, whose primary business is liquid asphalt. However, they stopped storing asphalt at this site and have replaced it with storage of #2, #4 and #6 oil. Most recently, they submitted plans to the City of New Haven to demolish certain tanks and construct new tanks in their stead.

Buchannan Marine was a subsidiary of Tilcon, and its primary line of business was constructing and repairing barges, including those that transported trap rock from a Tilcon facility just outside New Haven to New York. Recently, the business has been sold to Norfolk Tug, and only a small portion of this operation remains within the port district. Norfolk Tug may consider continuing to build and repair barges, potentially employing up to 32 personnel.

2.3.2.3. Rail Connectivity

Rail service to the New Haven Port District has begun with the reconstruction of a rail line along the eastern side of Waterfront Street. A series of sidings are proposed to enter the private property of various terminals. Reconstruction of the railroad trackage along Waterfront Street was funded by federal congestion mitigation funds in the amount of $5,598,000. The City of New Haven has prepared final design plans and contract documents for the reconstruction of Waterfront Street. This project is estimated to cost $6 million and will allow future construction of an estimated $10 million worth of rail spurs across Waterfront Street to the private terminals.

Rail service is provided by the Providence & Worcester Railroad under an operating agreement with the State of Connecticut, which owns the Waterfront Street rail tracks. The Providence & Worcester Railroad is a large, regional railroad with lines and trackage rights in Connecticut, Massachusetts, Rhode Island, and New York. ***A major Class I rail carrier, CSX Transportation, provides freight rail service in the vicinity with a yard at North Haven, situated approximately 15 miles from the Port.*** As indicated above, Gateway Terminal has access to a rail siding at their Chapel Street Yard.

2.3.2.4. Highway Connectivity

The Port District is bisected by I-95 and can be accessed directly via ramps from the interstate highway. The junction of I-95 and I-91, which provides access to points north extending into Massachusetts and Vermont, is located approximately 1/4 mile west of the Port District. The Connecticut DOT is presently undertaking a major reconstruction of the I-95 span (the "New Haven Harbor Crossing Improvement Program") across the river as well as its approaches, with a total cost of $2.2 billion.

Local roadway access to the Port District is achieved via two main roads, Waterfront Street and Stiles Street, both of which intersect with Forbes Avenue (US route 1). Forbes Avenue is the main east-west local roadway connection traversing the Tomlinson vertical lift bridge. ***The Tomlinson Bridge is a new construction by the Connecticut DOT costing $96 million and was completed in 2003. The bridge carries four lanes of traffic and a single-track freight rail line.***

2.3.2.5. Development Options

The site known as the **North Yard**, north of the I-95 corridor and Forbes Avenue, was identified in the Port Authority's Strategic Land Use Plan as a key site for further development to expand maritime use in the port district. It is the site of the former U.S. Steel plant, located on the Quinnipiac River, and consists of approximately 10 acres, with approximately 1,100 feet of frontage on the river, and two warehouses—one of 100,000 square feet and one of 40,000 square feet. The North Yard site is located just north of Magellan's Forbes Avenue facility, and could be accessible by barge with improvements to the bulkhead and dredging.

As indicated above, completion of the Waterfront Street reconstruction will allow the development of rail spurs to the terminals west of Waterfront Street. Up to four new spurs have been contemplated, although difficulties in integrating the new spurs with some existing facility infrastructure may call for a revised plan. There has been some uncertainty regarding the cost estimates for these improvements; as indicated above, there is a preliminary estimate of $10 million included in the Connecticut DOT draft capital plan documents. In the past, included as part of a TIGER Grant application, it was indicated that Magellan was interested in the feasibility of installing a 10-car-spot rail offloading facility for more efficient transfer of ethanol into its terminal. Recently, it has been reported that Gulf Terminal has expressed interest in rail connectivity to facilitate ethanol transfer to its terminal.

Another possible, related rail improvement is a rail spur from the Waterfront Street line to the "parklands" sites owned by the NHPA. As indicated above, one site is leased to Gateway Terminals, and the other is being used by Gateway under a use agreement. Rail connectivity to these sites is viewed by Gateway as being advantageous, increasing the value of the sites.

Another development option that has been considered in the recent past is an upgrade to the tanks, pipelines and pumping facilities at the New Haven Terminal to enable the handling of biodiesel and related products, supporting a volume increase at the terminal.

A container feeder service to serve the Port of New York and New Jersey is another potential development option for the Port of New Haven. This option was pursued a number of years ago as part of the PANYNJ's Port Inland Distribution Network (PIDN). With the recent demise of the American Feeder Line venture, which was considering a coastal feeder service from Halifax, Nova Scotia to the Port of New York & New Jersey, the most likely scenario now would probably involve a container-on-barge service. Similar services have been, and are being operated by Columbia Coastal between Norfolk, Baltimore and Philadelphia; and by Norfolk Tug between Norfolk and Richmond, Virginia. Norfolk Tug has recently purchased Buchanan Marine, which has a facility in New Haven.

New Haven's location at the intersection of I-95 and I-91, and its proximity to central Connecticut industrial and distribution locations is an advantage. The Port, however, does not have a great amount of land area that would be needed for container storage, crane movements or other landside services. In addition, the non-union nature of the general cargo labor in the port, while offering the potential for a more economical operation, could prove to be a complicating factor in harmonizing operations with the Port of New York & New Jersey, which is an ILA port.

A more detailed analysis of the economic viability of a container feeder service is presented in Section 2.5 of this report.

2.3.3. NEW LONDON INFRASTRUCTURE

2.3.3.1. Channel

The federal channel, which serves New London, has a depth of 40 feet at MLW and a width of 500 feet and is maintained by the Navy due to the presence of the Groton Naval Base. The channel and its approaches are wide enough for vessels to utilize the water-sheet east of the State Pier Facility for a turning basin.

2.3.3.2. State Pier

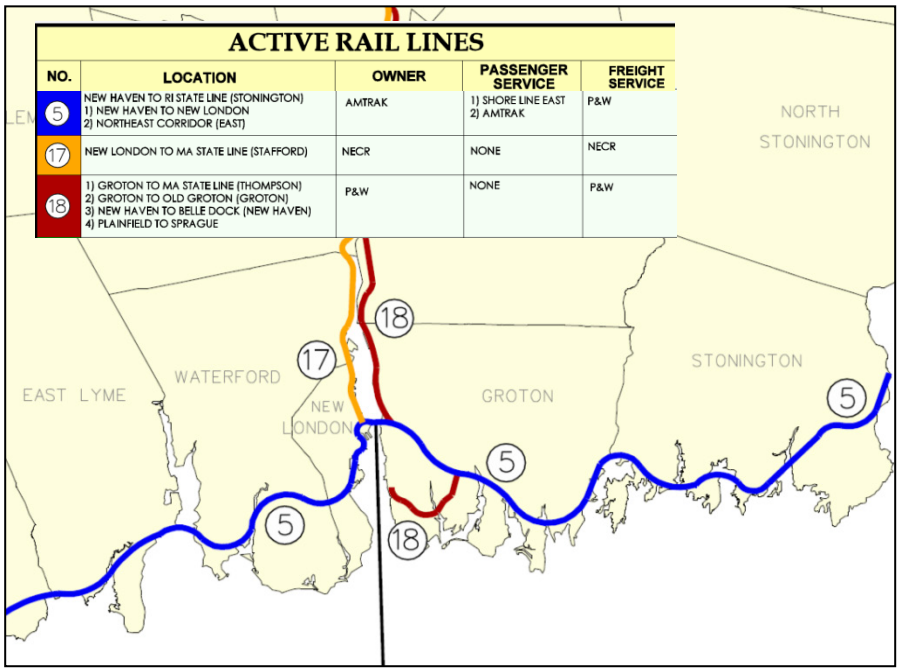
The State Pier Facility has two main finger pier structures: the Admiral Harold E. Shear State Pier and Long Dock.

The **State Pier** is an approximately 1,000 foot long finger pier structure with 200 feet of apron width. The State Pier has two main berths, with water depths of 35 feet at MLW at the eastern berth and 30 feet MLW at the western berth, with equivalent approach depths from the boundary of the federal channel. A new fender system on both sides of State Pier allows vessels to berth close to the pier face, thereby minimizing crane reaches. Posted pier loading is restricted to storage of 1,000 pounds per square foot. Crane loads are limited to 1,000 pounds per square foot. The State Pier received a major overhaul in 1993 including functional, structural and aesthetic improvements.

Long Dock (also known as the CVRR Pier or the Salt Pier) is also a finger pier, but is limited with respect to pier structure, berthing and utilization. A large amount of the pier structure is original, with inconsistent berth interfaces and structural deficiencies in portions. Generally, the pier is usable for berthing of barges and smaller vessels. Depths in the berthing areas range from 16 to 23 feet at minimum and approach depths up to 26 feet from the federal channel. Long Dock and portions of its apron area currently support a number of shallow draft fishing vessels; however, the pier is available for cargo storage and can be used for additional berthing for limited length and draft commercial vessels. This can be expanded with various pier face improvements and the installation of fenders.

The storage areas on adjacent properties have varied surfaces comprised of pavement, packed dirt and gravel. The main work space on the apron is illuminated by a high-level pier lighting system installed in 2010. The State Pier apron is equipped with direct on-dock rail for standard gauge rail equipment that connects to upland warehouses and the interchange with the NECR. The regional rail connectivity of the NECR is shown in **Figure 18**.

Figure 18: New London Rail Connections



Source: Connecticut Department of Transportation

The facility incorporates six primary structures, which consist of warehouses, a garage, an administration building and other supporting structures. There is 106,200 square feet of warehouse space on site, distributed among three primary structures: a new warehouse at 50,000 square feet; the second one is 53,000 square feet; and the third, which is currently used to store equipment, is 3,200 square feet. The two larger warehouses have direct rail access and rail/truck loading docks. The newest warehouse was designed for handling lumber products, pulp and paper commodities, with above-average ceiling heights and heavy per square foot floor load weights. The facility is in excellent condition and suitable for a number of warehousing, transit or processing activities. The other warehouse structures have average warehouse height ceilings with reinforced concrete and steel floors designed for heavy loads. While stacking capabilities are limited due to the ceiling height, there is adequate space for wide distribution of stored commodities. There is also an Administration Building, which houses Connecticut DOT personnel and port operations personnel, and portable trailers that serve as the security building.

2.3.3.3. Other Marine Cargo Facilities in the New London Harbor Region

Hess Corp. has a liquid bulk terminal in Groton for the shipment and receipt of petroleum products. The terminal has an approximate 900 foot berth with a draft of about 36 feet. The facility includes eleven steel storage tanks with a total capacity of 879,000 barrels.

Dow Chemicals has a facility for the receipt of chemical in Gales Ferry, with a 700 foot berth and depth alongside of approximately 15 feet MLW. The facility has rail connection with CSXT. Six steel storage tanks at the facility have a total capacity 4,000,000 gallons. It is reported that plans called for installation of steel-sheet-pile bulkhead at the north section of wharf.

DDLC Energy receives petroleum products by barge at their facility, which has a 225 foot berth with depth alongside of 13 to 14 feet MLW.

Pfizer in Groton has a 360 foot berth with depth alongside of 20 feet MLW, for the receipt of fuel oil for plant consumption. Plant trackage connects with Providence and Worcester Railroad, as shown in Figure 4. The facility has one 50,000-barrel steel storage tank.

NRG Montville Operations in Uncasville receives fuel oil for plant consumption at a 350 foot berth with depth alongside of 19 feet MLW. The plant has three steel storage tanks in the rear with a total capacity 525,000 barrels.

Whaling City Dredge & Dock Corp. has a wharf, pier and a barge ramp in Groton for the mooring of company-owned floating equipment and handling of construction materials, supplies and equipment. The pier also moors fishing vessels. There are 4.7 acres of open storage for contractor's equipment, supplies and materials.

The City of New London leases its facilities to the passenger ferry operators in New London.

Port facilities on the Thames River are located in several jurisdictions: New London, Groton, Gales Ferry, Uncasville, etc.

2.3.3.4. Ferry Operations

Cross Sound Ferry is a passenger and road vehicle ferry service, which operates between New London, Connecticut and Orient, Long Island, New York. The service is privately owned and operated by Cross Sound Ferry Services, Inc., and is headquartered in New London. According to the company's website, it serves over one million passengers annually.

Use of the ferry avoids heavy urban traffic in New York City and on Interstate 95 in Connecticut.

The company owns a fleet of seven vehicle-passenger ferries and a single high-speed, passenger-only ferry - the Sea Jet I. The fleet consists of new-build vessels and vessels retrofitted at a sister company (Thames Shipyard and Repair in New London). The fleet has been added to and upgraded over the years to serve a surge in demand for service caused by a number of factors, including the growth of Long Island's population, congestion on all-highway routes and, more recently, the opening of gambling casinos near New London. Three of the vessels have had their diesel engines upgraded to reduce emissions.

On the New England side, the ferry is located near Mystic, the Mystic Aquarium and Institute for Exploration, the Mystic Seaport and the Olde Mystic Village. The city of Providence and Newport, Rhode Island are within an hour's drive from the New London terminal. Boston and the Cape Cod bridges can be reached in two hours or less. Mohegan Sun and Foxwoods Resort casinos are both 20 minutes from the ferry terminal in New London.

On the Long Island side, the ferry is located within Long Island Wine Country, with its collection of over 30 wineries located on Long Island's North Fork. The maritime village of Greenport is just 10 minutes away. Montauk and the Hamptons are within an hour and a half drive of the Orient Point terminal.

The Cross Sound Ferry also handles trucks moving freight between Connecticut and Long Island. Outside of the peak summer season, particularly, the ferry has excess capacity that is used for trucks and freight, which includes gravel and other heavy items.

When significant quantities of lumber were being handled at the State Pier, the Ferry was used to transport the lumber to Long Island. The Ferry recently entered into a contract to support UPS service.

In a single day, operating between 7am-7pm, each ferry boat can make four round trip crossings. Each Ferry could transport 10 tractor trailers, or 40 per day, each way, for a total capacity of 80 trips per day.

In addition to the Cross Sound Ferry, there are two additional ferry services operating from New London. The Fishers Island Ferry District operates a service between New London and Fishers Island, NY for passengers, autos and freight service. The Block Island Express operates between New London and Block Island with passenger service only.

2.3.3.5. Thames Shipyard

The Thames Shipyard (Shipyard) is located on the Thames River in New London, Connecticut - equidistant from New York and Boston or equidistant from Providence and New Haven. The Shipyard has complete new-build and maintenance capabilities for all types of commercial vessels, both steel and aluminum, along with machine and engine repair shops. Two floating dry-docks can accommodate vessels up to 400 feet in length and with 10,000 tons displacement.

The Shipyard handles commercial vessel dry docking, new construction and vessel re-powering and overhaul. In addition, the Shipyard also repairs long liners, small freighters, ferries, fishing vessels, tugs, dredges, barges, and tankers.

Cross Sound Ferry Services, Inc. and the Thames Shipyard are owned by the same company. The Shipyard was bought to provide shipbuilding/repair and maintenance services for the Cross Sound Ferry. The Shipyard also services outside clients and has recently won a significant commission to service the New York Fire Department fire boats, beating out New York-based competition.

The Thames Shipyard provides maintenance and repair support for the State's and region's ferry systems, the US Naval Base in Groton and Electric Boat Shipyard. It also maintains the port's tug fleet, which provides assistance to the Navy's submarine fleet and ships coming in and out of New London's State Pier.

The Shipyard was added to the National Register of Historic Places in 1975, and at least four buildings, in a state of severe disrepair, were to be seen on the Shipyard as "listed" buildings and cannot be demolished. The Shipyard, absent of public support, is allowing them to deteriorate. They clearly serve no purpose in the Shipyard.

Industry feedback indicates that the Thames Shipyard is very well respected both locally and regionally in the industry.

2.3.3.6. Groton

General Dynamics Electric Boat, a premiere submarine designer and builder, has a submarine building and repair facility in Groton, New London. Their Groton facility, which occupies 118 acres along the Thames River, has more than 400,000 square feet of space dedicated to submarine and surface ship design and to the development and demonstration of undersea systems. Two additional dry docks, as well as various piers and shops, also support maintenance and repair activities for active submarines—primarily those assigned to the U.S. Naval Submarine Base in New London.

2.3.3.7. Development Proposals

In the *State Pier Needs and Deficiencies Stud*y, significant improvements to the infrastructure at the facility are recommended; these include the relocation of access roads, renovation to the piers, improvements to the bulkheads, paving of storage areas, and the construction of a new warehouse.

Various civic and industry groups have suggested improvements to serve the regional fishing—and—seafood- processing industries (to compete with New Bedford and Gloucester MA) as well as improvements to attract some level of cruise ship activity.

Connecticut DOT's preliminary capital plan includes approximately $40 million for a multi-phase project to implement improvements to the State Pier, including those recommended in the *State Pier Needs and Deficiencies Stud*y. These "maximum build-out" improvements include the following:

- Phase 1:
    - Prepare environmental permit documents
    - Acquire more than 11 acres of property
    - Acquire a mobile harbor crane
    - Level and re-grade existing lay down areas for dust control and standing water concerns
    - Relocate and improve main access road
    - Bulkhead between NECR Pier and State Pier—Increase lay-down area
    - Sheet pile around State Pier starting from east wing, east side, pier head, and west side to new bulkhead
    - Extend the quay wall bulkhead north
    - Remove existing dolphin piles and platforms
    - Dredge partial facility
- Phase 2:
    - Renovate CVRR Pier
    - Extend/contract sheet pile footprint to westerly property line
    - Backfill behind sheet pile, raise grade of NECR Pier
    - Re-establish rail line on NECR Pier
    - Upgrade lighting
    - Dredge balance of facility place in CDF
- Phase 3:
    - Remove, re-grade, and level entire northeast side of facility
    - Demolish administration Building, cargo warehouse and maintenance garage
    - Final paving of all open storage areas, complying with environmental storm water runoff management practices

As addressed in the Recommendations section of this report, the implementation of the *State Pier Needs and Deficiencies Stud*y development plan should not be pursued until the revised solicitation process for the facility is complete, and a commercial business case and/or a complementary private investment has been developed.

2.4. Governance

Independent, locally created port authorities oversee the ports of Bridgeport, New Haven, and New London. They operate under state statutes granting them broad powers to plan, finance, develop and operate facilities in the locally designated port district (CGS § 7-329c to 329u). The current districts include privately owned and operated facilities, including docks and shipping terminals. New London's district includes the state-owned and managed State Pier. Consequently, the port authorities' roles vary.

The Connecticut Maritime Commission is the primary body within the State of Connecticut to develop and recommend maritime policy to the Governor and the General Assembly. It is responsible for developing and updating a long-term strategic plan for all ports and waterways in the State of Connecticut, with a focus on the three deep water ports. Within its purview, the Connecticut Maritime Commission will review, recommend and develop policies as they relate to the maritime sector and Public Act No.04-143. The Commission's annual report states that the maritime policy developed will be for the purposes of addressing issues concerning the maritime sector, related industries and port infrastructure (both public and private). In 2008, the Maritime Commission supported legislation that created a Harbor Improvement Account to be made available to the Commissioner of the DOT for marine infrastructure projects including dredging.

There is some level of statewide oversight/coordination by the Transportation Maritime Manager position, created in the Connecticut DOT about ten years ago. The focus of this position is to provide coordination between the USACE channel dredging efforts and local governments, provide liaison with the three deep draft Port Authorities, and provide oversight on the State Pier operations in New London, which is State owned.

As a result of the Maritime Commission focus on dredging issues, a position of dredging coordinator was created in the DOT in an effort to rationalize, advance, and prioritize dredging projects throughout the state.

In addition to these agencies being more directly involved with port and maritime governance, a variety of other federal, state and local agencies can be incorporated in a variety of ways; ranging from land-use issues to environmental permitting. However, this level of complexity can be a burden, particularly on the smaller, private sector entities that play a key role in the economic health of Connecticut's port industry.

While each section of the regulatory network performs its tasks, the multiple layers of regulatory oversight and approvals present a significant barrier to private investment and operation. It is possible for a port-area to seek approvals and receive governing conditions from:

- More than one local governing body
- A local planning commission and a local zoning board
- A port authority
- A harbor commission
- A regional metropolitan planning organization
- Two to four state agencies such as the; DOT, Department of Economic and Community Development, Department of Energy and Environmental Protection, Taxation, etc.
- Two to four federal agencies such as the; Federal Highway Administration, EPA, USACE, MARAD, etc.

The maritime industries tend to be capital-intensive, meaning idle facilities and investments have very high carrying costs. The fragmented regulatory network in Connecticut adds to carrying costs and the risk premium by private investors. Small business is particularly disadvantaged by these costs, delays and uncertainties.

2.4.1. BRIDGEPORT PORT AUTHORITY

The BPA is a quasi-public entity created in 1993, pursuant to a state statute that authorizes Bridgeport to establish a port authority (See Connecticut General Statute § 7-329a and the City of Bridgeport Municipal Code). The Municipal Code gives broad definition to the BPA's purposes, which include: "to foster and stimulate the shipment of freight and commerce through the ports;" "to develop and promote port facilities within the district in order to create jobs, increase the city's tax base and provide special revenues to the city;" and to work with the City "to maximize the usefulness of available public funding." The BPA's independent auditors' report also describes the BPA's purposes broadly by stating it is "to develop strategies and initiatives to promote and create port facilities within the district, [and] participate in the economic development of the harbor and waterfront areas."

The BPA has jurisdiction over a geographic area known as the Port District. The Port District extends approximately 1,000 feet inland from the waterways of Bridgeport Harbor, Black Rock Harbor, and their navigable waters and tributaries (excluding residential property and park lands). The BPA also has jurisdiction over certain lands outside the 1,000-foot limit. Located within the Port District are the Water Street Dock, the Coastline Terminal (formerly CILCO), the 50-acre Steel Point Peninsula and the 48-acre BRMC, which includes the Derecktor Shipyard.

The BPA is directed by a five-member Board of Commissioners, three of whom are appointed by the mayor of Bridgeport and two of whom serve by virtue of their positions as the City's Director of Economic Development and Harbor Master. The BPA is managed by an executive director and staff. Since the bankruptcy of the Derecktor Shipyard, the BPA has very limited revenue sources and these are principally the dock lease revenues from the Port Jefferson Steamboat Company.

Currently, the Chief Administrative Officer of the City of Bridgeport serves as the Acting Executive Director of the BPA. The City of Bridgeport has planning and zoning authority over the Port District, as well as a separate board of appeals process that applies to the Port District. The City of Bridgeport and the Port Authority work together and collaborate on projects by combining resources and commissioning studies together.

The BPA has the ability under certain conditions to acquire property, as laid out under State law and also in the municipal city code.

There is also a Harbor Commission, which has some authority regarding water side activities by virtue of their approved Harbor Management Plan. However authority over activities water-ward of the high tide line ultimately rests with the State DEEP and the USACE. The BPA controls the land side.

2.4.2. NEW HAVEN PORT AUTHORITY

The NHPA endeavors to enhance the economic competitiveness of the greater New Haven region and all of Connecticut through waterborne traffic. The Port Authority was created by the New Haven Board of Aldermen in February of 2003 (Article II. Sec. 15-31 of the Code of Ordinances in accordance with the General Statutes of the State of Connecticut CGS Sec. 7-329a).

The Port District consists primarily of a cluster of privately owned facilities, which continue to be the subject of private investment. The NHPA was established for the purpose of stimulating the shipment of freight and commerce through the port, to develop and promote the facilities within the port district and to create jobs and increase the tax base of the City of New Haven. The NHPA was further charged with maximizing the use of public funding in conjunction with the maintenance, development, improvement and use of the facilities within the port district. The role of the Port Authority is that of a facilitator and supporter of maritime uses at the Port, rather than a day-to-day operator. The Port Authority, working with the private entities, the City and the State, guides and monitors the land use and development within the Port District. The NHPA owns

one significant parcel of land, termed the "East Shore Parkway" area, in deference to its originally intended use as a now-discontinued arterial roadway. Various sub-parcels within this area are licensed to terminal operators for staging and storage activities.

In 2007, the Port Authority adopted a Strategic Land Use Plan that continues to guide its work. Since 2008, NHPA has collaborated with several City departments to secure funding to improve security and air quality at the port and continues to seek funding opportunities to improve the port's infrastructure (Appendix D).

2.4.3. NEW LONDON PORT AUTHORITY

New London recently reactivated its port authority (NLPA) after it had been dormant for several years. NLPA is currently considering how to balance the waterfront needs of the public, recreational boaters and waterfront businesses. The Economic Development Coordinator for the City of New London is staff to the Port Authority, as well as to a number of other entities, including the Harbor Management Commission, the enterprise zone and the foreign trade zone. The NLPA also serves as the Harbor Management Commission for the New London area.

The NLPA staff communicates with the DOT maritime manager regarding the State owned and operated State Pier, keeps in touch with the stevedoring company, Logistec, and coordinates with the cruise ship and scallop fishing interests. The NLPA also communicates with the Town of Groton regarding the creation of a combined Harbor Management Plan and the discernment of related common interests.

2.5. Container Developments

The following section presents the recommendations and analysis regarding the potential development of:

- A major container terminal in Connecticut
- A container feeder service

2.5.1. MAJOR CONTAINER DEVELOPMENT

Based on the various findings identified in this report, including the market analysis, the review of port assets, including land availability and experience in the development of many container terminal projects over many years, Moffatt & Nichol has concluded that it would be very unlikely that a major container port facility could be developed in an economically, environmentally or financially feasible way in the state of Connecticut.

The proximity to the major load center port in New York and New Jersey with its extensive multi-billion dollar investment in terminals, channels, rail and highway service, workforce, etc., as well as that port's proximity and access to the national markets and the distribution centers that have developed around the port in New Jersey, make it highly unlikely that a significant amount of that container volume could be captured, even with significant public sector investments and subsidies.

The development of a minimally efficient container port facility requires much more land than is feasibly available at any of the three deep water ports. A minimum footprint of 50 to 100 acres of waterfront land would be required, and the port-related uses would need to operate unencumbered by time, intensity or noise restrictions.

The development of a container port facility would require hundreds of millions of dollars of investment, making it a very risky venture. For example, the recent expansion of the Seagirt Terminal in Baltimore was estimated at $105 million to deepen an existing berth to 50 feet and to replace four cranes. This was for an existing terminal. A recent project to build a container facility at a site previously used for an automobile

terminal had an estimated cost of more than $200 million for a 75 acre site, consisting of site preparation including surcharge, paving and utilities, wharf structure and buildings.

While the development of a major container terminal does not seem feasible, it may be possible to consider port calls by smaller container vessels at Connecticut ports for some niche cargo. The "Least Cost Market Analysis" review (Section 1.7) examines the economics of container shipping through the existing ports, constrained by limits on vessel size, and conceivable increases in vessel size with appropriate dredging as well as discussing some other niche options.

2.5.2. CONTAINER FEEDER SERVICE

As the analysis presented above indicates, there are significant flows of containerized cargo into and out of the State utilizing New York and New Jersey and other ports that may present opportunities for some form of container feeder service.

The following sections review the potential feeder service opportunities identified in the market data analysis in order to evaluate their feasibility. This review includes an assessment of a number of factors that can affect the feasibility of feeder service implementation, including:

- The cost characteristic of possible feeder services in order to evaluate their competitiveness
- The types of commodities that may be most amenable to a feeder service and their flow characteristics
- Non-cost factors such as highway congestion and emissions that may be impacted by a feeder service and produce public benefits

2.5.2.1. Feeder Service Cost Characteristics

A case study of a possible container feeder service serving New Haven and the Port of New York and New Jersey was developed and analyzed. A potential market representing containerized commodities most likely to find a tug-barge feeder service attractive was estimated. A cost model using cost factors developed based on industry input and similar experience, including extensive involvement with the Port Authority of New York and New Jersey's (PANYNJ) PIDN and the feeder barge service to Albany, which operated for almost three years, was developed. The resulting estimated cost per loaded container for the service was $1,117, which is well in excess of the typical truck drayage cost for the same trip of less than $600. Public benefits for the service were also estimated using the Marine Highways Cooperative Public Benefits Calculator. These benefits, which encompass congestion, emissions, safety, carbon and highway maintenance and infrastructure savings, are estimated at about $34 per loaded container. In addition, there might be savings of about $100 per container due to reduced ILAunit assessments. In total, it appears that a feeder service would require additional economies in operation beyond those assumed in the analysis, to be commercially viable. These are more fully described below.

One possible economy is the movement of heavyweight cargo by barge in containers that exceed the over-the-road weight limits. This could result in much more competitive costs for shippers of such cargo. This alternative reduces the cost per TEU to an estimated $786. With the possibility of capturing the $100 per container unit assessment savings, and considering the $34 per loaded TEU in public benefits, the gap between alternative modes is reduced significantly. With the prospect of growing interstate congestion, this alternative appears to warrant further, more detailed consideration.

2.5.2.2. Public Sector Initiatives

The use of coastal and/or inland waterways in the U.S. to provide an alternative to highway transportation of freight is a concept that has received considerable interest in recent years.

In 2001 the Connecticut DOT conducted a study of a possible feeder barge service from the Port of New York and New Jersey to Connecticut and concluded that such a service "may be feasible." The report discussed the requirements, costs and other characteristics of possible services to Bridgeport, New Haven and New London. The report was prepared in the context of the "Port Inland Distribution Network" (PIDN) project then being carried out by the PANYNJ. Ultimately, the DOT provided funding to the BPA to assist in the financing of a feeder service, however that service was never implemented.

Another service that was part of the PIDN project was a container barge service between the Port of New York and New Jersey and the Port of Albany, New York. This cooperative project between the Albany and New York and New Jersey Port Authorities was implemented and was operated for almost three years by the barge operator Columbia Coastal Transport. Partial funding for the service was provided by a CMAQ grant. The service was ultimately discontinued as the volume of activity was insufficient for cost-effective operation.

Columbia Coastal remains in the container-on-barge business, however. They recently added a weekly container-on-barge service linking Philadelphia with Norfolk and Baltimore and increased the frequency of its Norfolk-Baltimore barge service to twice a week.

In April, 2011, the U.S. Transportation Department (USDOT) released a report that said it would serve as a roadmap to the future in creating and further strengthening the nation's marine highways. Prepared by the MARAD, the 84-page report, "America's Marine Highways," highlights the benefits of using coastal and river transportation as part of America's new "clean energy economy." Congress requested the report to show how water transportation can help move the country to a more environmentally-sustainable transportation system, reduce highway congestion and cut down on the maintenance and replacement costs of the nation's roads and bridges.

The James River Container Expansion Project sponsored by The Virginia Port Authority is a project of the MARAD's American Marine Highway (MARAD AMH) Program. The MARAD awarded $1.1 million to assist with expanding an existing marine highway service between Norfolk and Richmond in Virginia. Since the award of the grant, the service has expanded from a once weekly, partially loaded service to a twice weekly, fully loaded service and is soon to be expanded to a thrice weekly service. Customers who utilize the barge service to ship their goods have also been able to take advantage of tax incentives provided by the State of Virginia aimed at rewarding shippers who use "green" methods of freight transportation. Additionally, each barge movement removes 100 trucks off of I-64 resulting in reduced congestion, air emissions and road maintenance, improving the quality of life for the surrounding community. The service is operated by Norfolk Tug, which recently acquired Buchanan Marine, which operates a facility in New Haven.

With the support of federal investments, work has begun on a waterborne shipping route between Oakland, Stockton, and West Sacramento, California. The objective is to create an environmentally beneficial alternative to conventional freight and cargo movement in Northern California. This service, called the Green Trade Corridor, is expected to open in 2012.

Also recently, MARAD released 11 model designs for vessels operating on the marine highways. These standardized designs are intended to allow American shipbuilders to take advantage of a ready pool of suppliers, lower costs for each vessel and fewer planning variables for the ports along the routes.

An East Coast Marine Highway initiative, evaluating a Marine Highway alternative serving ports from New England to Florida as an alternative to I-95, the M-95, is also underway.

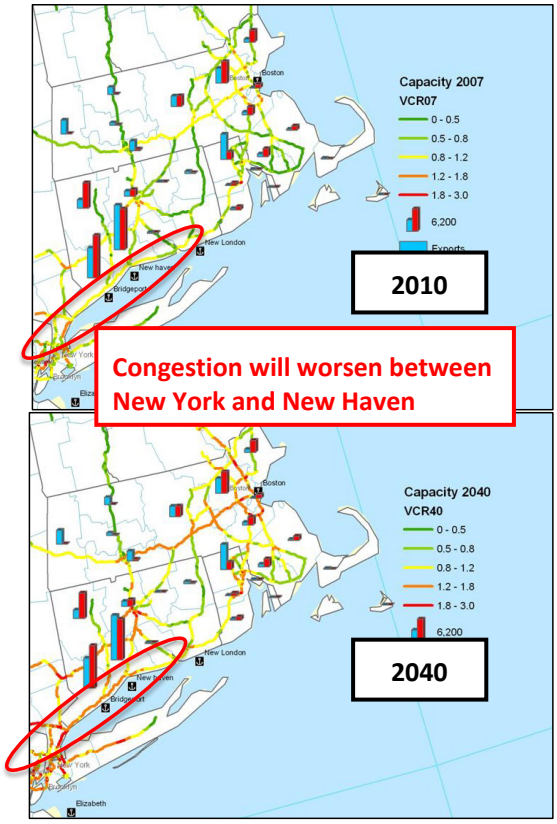
Generally speaking, container-on-barge services perform better over longer distances where the costs of capital and specialized labor "lifts" can be amortized over a longer trip.

2.5.2.3. Potential Market and Competitiveness – Case Study Example

As indicated in the previous market analysis sections of this report, there is currently a substantial amount of containerized cargo that is destined for, or originates in, Connecticut. However, virtually all of this international containerized cargo enters or departs through non-Connecticut ports, with the Port of New York and New Jersey handling most of it. These containers are then moved to and from Connecticut by truck drayage, for the most part utilizing the congested I-95 corridor, as shown in **Figure 19**.

Rail service between the Port of New York and New Jersey and Connecticut is not a viable option due to the proximity of the Port, since rail transportation is generally not economical within about a 400 mile radius. In addition, there are no intermodal container facilities in Connecticut, with the closest being in Worcester, Massachusetts. Finally, the freight rail connections between New York, New Jersey, and Connecticut are limited by extensive passenger rail needs in the I-95 corridor and by circuitous alternative routes to central and eastern Connecticut.

Figure 19: Congestion Forecast and Container Volumes of Heavy Commodities*



***Congestion is measured in volume-to-capacity ratios (VCR). These ratios indicate the volume of traffic over a particular road segment relative to the road's designed capacity. The Freight Analysis Framework's forecast suggests that much of I-95 between New York and New Haven will be operating 120-180% capacity by 2040.**

Source: Federal Highway Administration; Moffatt & Nichol

2.5.2.4. Target Markets

Because a waterborne feeder service between the Port of New York and New Jersey and Connecticut would be significantly slower than truck drayage and operate with less frequency, it is more likely to attract relatively low value cargo, for which speed of delivery is less important. Based on the previous market study, the following potential markets (**Table 14**) have been identified.

Table 14: Potential Markets

	Commodity	TEU/year
New Haven to NY	Scrap metal	18,000
NY to New Haven	Plasitcs and rubber	6,800
	Base metal	4,000
	Non-metallic mineral	2,500
Total		31,300

These are also generally heavy-weight commodities, which may also make a water borne feeder more attractive by avoiding highway weight restrictions for at least part of the trip.

These markets also represent relatively concentrated industry grouping, which may make it easier to identify base shippers who can provide stability to the volume outlook, as well as enhance the chance of identifying two-way loads, thus minimizing empty container moves, which can reduce costs as described more completely below.

2.5.2.5. Competitive Case Study

In order to develop a preliminary estimate of the potential competitiveness of a feeder service between the Port of New York and New Jersey and Connecticut, a case study of such a service has been prepared. The Port of New Haven was used in this case study. New Haven was chosen due to its central location at the intersection of I-95 andI-91, its proximity to key industrial concentrations, as well as its rail connectivity.

A key variable in the competitive evaluation is the cost per loaded container to move it by feeder service between the Port of New York and New Jersey and its origin or destination in Connecticut. This cost will be evaluated by shippers and compared to truck drayage rates as they choose their mode of transportation.

The cost per load for the feeder service is influenced by several key components:

- The cost to load and unload the containers, including empty containers being returned, at both ports. These "lift-costs" are influenced by manning rules and work practices at each port. The Port of New York and New Jersey is an ILA port, and it is likely that an ILA in Connecticut would be used. (Currently, there is no ILA terminal in New Haven.) The number of lifts will be affected by the extent to which containers can be re-loaded for the return voyage. Empty containers are a non-revenue move, but nonetheless they must be lifted (and transported) and thus add to the costs. Adding to the complexity is the fact that containers are generally owned by a particular shipping line and can only be re-loaded with cargo for that same line.

- The transportation costs for the leasing of the tug and barge for the time required to make the round trip voyage between Port of New York and New Jersey and New Haven, as well as the time it is in port being docked, unloaded and loaded. This time is influenced by the distance between the two ports, the speed of the tug-barge, the rate of loading and unloading and any other time spent in port.
- The "local dray" or the truck trip between New Haven and the origin or destination of the cargo in Connecticut.

A case study model for the Port of New York and New Jersey–New Haven feeder service was developed to estimate the cost per loaded container and the values of the input variables for this model were estimated. These estimated input variables are summarized below. The estimates are based on discussions with industry participants, experience with previous similar operations and other reliable sources.

- Round trip distance of the Port of New York and New Jersey–New Haven: 212 nautical miles
- Average speed of tug/barge: 8 nautical miles per hour
- 1 TEU per container
- 12 tons per TEU
- Lift cost New Haven: $150
- Lift cost Port of New York and New Jersey: $180
- Load/unload rate: 15 lifts per hour
- Fixed time per roundtrip voyage: 8 hours
- Cost per day (or part) of tug/barge: $20,000
- Average cost of local dray: $250–$500

In addition, estimates were made regarding the share of the potential market for the feeder service described above that could be captured by the service, the percentage of each market segment that would have empty container returns and the number of TEUs per container. Since this is generally heavy weight cargo, one TEU per container was assumed for all. These market assumptions are summarized in **Table 15,** below.

Table 15: Market Assumptions

	Commodity	TEU/year	Capture	return empty
New Haven to NY	Scrap metal	18,000	40%	50%
NY to New Haven	Plasitcs and rubber	6,800	30%	50%
	Base metal	4,000	30%	50%
	Non-metallic mineral	2,500	30%	50%
Total		31,300		

Based on the parameters and assumptions described above, the model estimates that the total cost per loaded container between the Port of New York and New Jersey and the final origin and destination in Connecticut, by way of a feeder service through the Port of New Haven, would be ***$1,117***. This is comprised of $372 of transportation costs, $495 of lift costs, and, as described above, $250 of local dray.

One possible offset to this cost is the reduction in "unit assessments" on cargo moved through Port of New York and New Jersey. The ILA contract with the New York Shipping Association requires that each container moving through the Port of New York and New Jersey, for destinations within 270 miles, pay an assessment of $130 to fund ILA retirement benefits. However, if the cargo is transshipped to another ILA port, that assessment is reduced to $30. This charge is paid by the shipping line, and it is not clear if in all cases a reduced assessment would be reflected in freight charges to the shipper.

The estimated cost per loaded container of $1,117 estimated above is significantly higher than the cost of a comparable truck dray from the Port of New York and New Jersey to Connecticut locations, and therefore would not be economically competitive to shippers. Truck rates for Port of New York and New Jersey to New Haven of less than $600 have been reported. However, there are public benefits associated with the feeder service alternative that can be considered and these are discussed in the next section.

2.5.2.6. Potential Public Benefits

An effort was made to make a preliminary estimate of the public benefits that may be created by a the case study container feeder service calling at the Port of New Haven, as described above. As previously mentioned, a feeder service between New Haven and the Port of New York and New Jersey has the potential to remove truck traffic from one of the most congested segments of I-95. In addition, a waterborne container feeder service has the potential to create additional public benefits such reductions in emissions, fuel consumption and greenhouse gas creation, safety improvements and reduced highway maintenance and infrastructure development costs. All of these externalities represent savings or benefits to the population in general and are not necessarily reflected in the commercial terms of the service as represented by the costs to shippers estimated above. But they could be relevant to developing public policy regarding the establishment of incentives or support of some type regarding a potential feeder service.

In order to estimate these benefits the Marine Highways Cooperative Public Benefits Calculator was used. (http://www.marinehighways.org/benefits_calculator/) The Marine Highways Cooperative works closely with the U.S. DOT, U.S. Department of Defense, and the MARAD to develop smart transportation policies and systems. This tool uses the basic parameters of a proposed Marine Highway service, such as the number of containers now going by truck, the relevant trucking and sailing distances, cargo weight, etc.; using various factors from the research develops a monetized value for the various categories of public benefits. While this methodology is recognized by industry participants and the Federal Government, there are a variety of approaches to estimating public benefits. The estimates presented here are offered as indicative of the possible magnitude of benefits, and if more specific policy recommendations are to be developed, a more detailed benefits analysis would be appropriate.

The following from the Marine Highways Cooperative website describes the public benefit categories:

- Indirect Cost Benefits
- Congestion Reductions: Congestion costs are the external costs borne by other road users and wider society as a result of adding extra mileage into the transportation system. These costs represent added delays to other motorists/rail users associated with an additional trip. The costs are external to the trip maker since they are over and above the trip-maker's travel time costs, but they are not external to highway/railway users as a group.

- Pollution Reductions: Pollution costs are the indirect costs to society and the environment from the emission of Volatile Organic Compounds (VOCs), oxides of nitrogen (NOx) and Particulate Matter fewer than 10 micrometers in size (PM10). Associated truck trips do contribute to pollution.
- Safety Improvements: Safety/Accidents costs are those costs that are not paid by drivers, individually or collectively, e.g., uncompensated costs to pedestrians struck by motor vehicles, costs of emergency medical response to highway crashes not covered by those injured, etc. These costs also include costs (or cost savings) associated with possible variations in crash rates with traffic levels. Higher traffic volumes might increase crash rates by increasing the number of multi-vehicle crashes. However, it is also possible that higher traffic volumes might reduce rates for some types of crashes by lowering average speeds and increasing driver awareness.
- Carbon reductions: Limiting the emissions of carbon dioxide to the atmosphere through modal shift can play an important role in emissions abatement. As a result of impact and abatement modeling, and, carbon trading and offset, there are now a range of methods to attribute financial value to CO_2 emission reduction.
- Public Cost Benefits
- Reduced Infrastructure Development: Estimates have been made for the cost of development of new highway infrastructure for each truck mile travelled.
- Reduced Infrastructure Maintenance: Estimates have been made for the cost of maintaining highways due to the wear caused by trucks.

Using the market parameters for the case study feeder service described above in **Table 15**, as well as the characteristics of the service in terms of highway and rail distances, the Marine Highways Cooperative Public Benefits Calculator arrived at the following results:

Table 16: Calculated Benefits Summary

Indirect Cost Benefits	
Congestion Reduction	$162,398.38
Pollution Reduction	$41,989.89
Safety Improvements	$5,266.82
Carbon Reductions	$45,976.06
Public Cost Benefits	
Reduced Infrastructure Development	$3,105.71
Reduced Infrastructure Maintenance	$119,219.04

The total public benefit estimated above is $377,956. For the 11,190 annual loaded containers estimated for the case study example, that represents a public benefit of about $34 per load. Even if the full value of these estimated public benefits could be captured and credited to the case study service, it may not be sufficient to create a commercially viable service, absent other economies.

2.5.2.7. Potential Heavyweight Cargo Economies

One possible economy that could contribute to the viability of a feeder service is the potential to handle heavyweight cargo that exceeds the highway weight limits. Heavyweight cargo is usually shipped in 20-foot containers in order to stay within typical highway weight limits of approximately 20 tons. More heavyweight cargo could be shipped in 40-foot containers and still remain within the structural integrity of the container itself, while also achieving some freight charge savings. If the heavy 40-foot container is moved by tug/barge, it replaces two over-the-road truck trips between the main port and the feeder port. For export

cargo such as the exported scrap-steel this would require two truck trips from the origin and consolidation of the cargo at the feeder port (New Haven in the case study). The single 40-foot container would replace two twenty foot containers and only be handled once at the Port of New York and New Jersey on and off the ocean vessel. For imported cargo such as the plastics and rubber, the opposite would occur, requiring deconsolidation at New Haven and then two local drays to the destination.

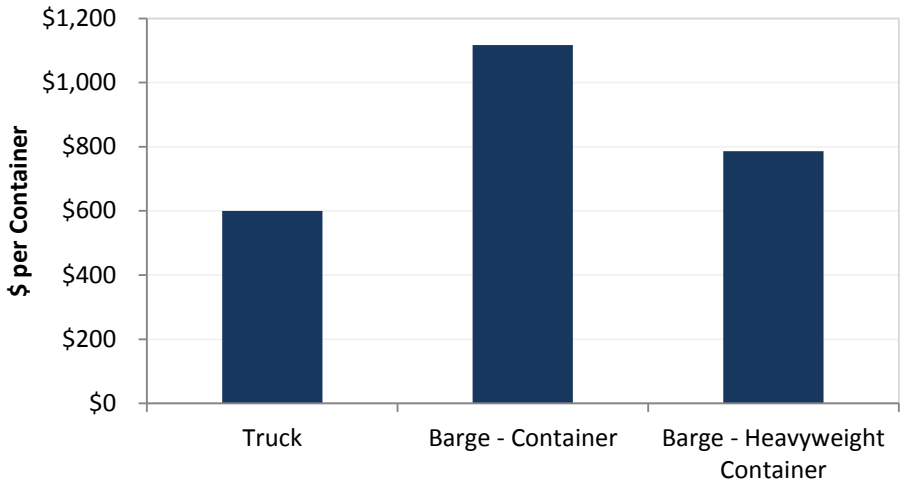
Based on a preliminary modeling of the costs of moving heavyweight cargo it appears that cost of the heavyweight feeder service would be much more competitive with truck drayage between the Port of New York and New Jersey and New Haven.

For the same target market described earlier it was assumed that the cargo would move in a 40-foot container between Port of New York and New Jersey and New Haven, each holding 24 tons. This would reduce the number of lifts on the barge feeder service and also reduce the ocean freight cost since only one 40-foot container would need to be loaded to and from the ocean vessel, rather than two 20-foot containers. It would however require the extra cost of consolidating or deconsolidating the cargo at New Haven for the local dray on public highways, within the weight limits. There would be two local drays at New Haven per 40-foot container. For the purpose of this case study a freight savings of $180 per 40-foot container was assumed and a cost of de-/consolidation of $200 per 40-foot container.

After considering the additional cost of consolidation and deconsolidation—including potential freight savings and the reduced number of barge lifts—a cost of $786 per loaded TEU was estimated.

A theoretical barge service carrying shipments of heavyweight containers offer the closest competition to truck shipments between New York/New Jersey and New Haven, as presented in **Figure 20.** Overcoming the comparatively lower cost of trucking poses a significant hurdle to developing a feeder-barge service. However, considering unit assessment savings, estimated public benefits and the possibility of further interstate congestion, the heavyweight alternative may be economically feasible.

Figure 20: Comparative Cost per Container by Mode



Source: Moffatt & Nichol

2.5.2.8. Halifax Feeder

For the past nine months, until abruptly announcing the suspension and then shortly thereafter the shutdown of operations in late April, American Feeder Lines (AFL) had been running a container feeder service from Halifax to Portland, Maine and Boston.

AFL started the Halifax–Boston service last July with a chartered vessel called the AFL New England with a capacity of 700 20-foot-equivalent units.

The carrier had hoped to build up to 10 container ships in the U.S. and launch weekly short-sea services that would link up to 18 ports under the Jones Act.

AFL's chartered vessel was foreign-flagged, and, therefore, could only serve international cargo between Halifax and the two U.S. ports. AFL had been attempting to get an exemption from the Jones Act to use foreign flagged vessels for U.S. coastal feeder service while vessels were being built in U.. shipyards. These U.S. vessels would be built from pre-fabricated "kits" in order to reduce their costs. The option of an articulated tug-barge (ATB) was also being considered.

Previous discussions with representatives of the Maine Port Authority indicated that Portland volumes had been about 120 containers per week between Portland and Halifax. This volume included forest product exports and retail imports, mainly for LL Bean. Other cargo included seaweed and scrap steel. Portland was operating on a 15-acre facility using a mobile harbor crane and International Longshoremen's Association labor. The importance of matching shipping line containers was emphasized by the Maine representative, as well as the need to establish a port authority-run chassis pool in Portland.

Discussions with AFL prior to their recent announcement indicated that they saw potential for the Connecticut market; in part because of the I-95 congestion issues and that they thought they could benefit from focused marketing help from State authorities.

AFL had also been considering a port call at Davisville, Rhode Island at Quonset Point. Davisville has a new crane, significant acreage, and proximity to southern Massachusetts distribution centers. The crane and recent berth improvements have been acquired with TIGER Grant funding.

The recent announcement by AFL, however, reflected considerable pessimism regarding the feasibility of short-sea service. As reported by the Journal of Commerce *April 27, 2012*:

> *"We had to pull the plug because there was not enough volume on the service," said Rudy Mack, chief operating officer of the New York-based carrier. "You need a certain cash flow to run this service. We don't have it today. We won't have it tomorrow."*
>
> *Mack said the German investors who had helped launch the company last year were no longer willing to subsidize the money-losing operation. "So we decided to close it. Otherwise it would be irresponsible to bleed money away without the hope to break even within the near future."*
>
> *"The short-sea, Jones Act idea has died," Mack said. "If you can't run a feeder service from Halifax to Boston and Portland, how will you be able to run other short-sea services?"*

2.6. Non Cargo Opportunities

While the bulk of this study is oriented towards retaining and expanding water-borne cargo opportunities in Connecticut, Moffatt & Nichol is cognizant of the related employment and economic activity that occurs in and around ports. The following section presents findings and recommendations based on analysis of several non-cargo related operations, which the deep water ports currently house and/or could develop in the future. These operations include:

- Ship Repair and Fabrication
- Ferry Service
- Fresh Seafood Processing
- Cruise Ship Excursion

2.6.1. SHIP REPAIR AND FABRICATION

All three Connecticut deep water ports have a history of shipbuilding and ship repair, including:

- The former Derecktor Shipyard in Bridgeport
- The Thames Shipyard in New London
- Buchanan Marine in New Haven

These ship repair and fabrication operations are described earlier in this report in the Infrastructure sections.

However, the overall market for U.S.-made ships has declined dramatically since World War II, and even more so for shipyards constrained by space, or competing against shipyards with access to prefabricated components and competitive labor markets. Nevertheless, some remnants of the shipbuilding industry remain, and ship repair will continue to be an ongoing need in the region. While the State cannot alter the global marketplace for shipbuilding and repair, it can affect their business and regulatory climate. Service providers expressed concern with the time required to secure permits to expand current services (sometimes as much as a decade), as well as the costs of permit submission and regulatory compliance (sometimes as high as 3% of gross revenues).

Bridgeport Ship Repair and Shipbuilding. As detailed previously in this report, the Bridgeport facility previously operated by Derecktor represents a significant physical asset with a wide array of shipbuilding facilities. It represented a major public-private partnership venture from 2001 to 2011, including substantial federal, state and local assistance. With prior public sector grants in excess of $16 million and public loans in excess of $5 million (the vast majority of which were state funds or federal funds passed through state agencies), the State has a significant interest in realizing some return on its prior investments.

At its height, Derecktor employed more than 300 people and featured state-of-the-art shipyard facilities and equipment. Bankruptcy proceedings are underway, and the City of Bridgeport has issued a request for proposals for re-use of the site.

Derecktor had been engaged primarily in new boat building, having been commissioned to build a mega-yacht, the "Cakewalk." Maritime industry experts say U.S. boat building is foundering with a slack in demand and rise in expenses and global competition, according to Ian McCurdy, a naval architect quoted in a recent press report. He said boat building in the U.S. has been in decline for 20 years. "We've seen production boat builders go from 40 to 10," he said. The one area of demand growth has been in mega-yachts, like Cakewalk, he said. But global competition is fierce for these contracts. On the smaller ship contracts, he said, the wider

use of fiberglass has contributed to the reduction in demand, he said: "Fiberglass doesn't rot." Smaller yards are making it by building one or two boats a year and doing service work, he said. Paul Derecktor confirmed the company's Mamaroneck Yard in New York, which is smaller, is holding its own in this market.

In a recent discussion with the study team, Brian McCallister, of the Bridgeport and Port Jefferson Steamboat Company, also indicated that the industry is in tough shape. He said the replacement of oil by natural gas has impacted one of the major segments of demand for vessels in that trade, and it has hurt the shipbuilding business.

The City of Bridgeport and the BPA have indicated that they would like to re-position the Derecktor Shipyard, with a new operator focusing on servicing ferries, fishing boats and pleasure boats. They see the facility as being a complement to the adjacent Steel Point mixed-use development and also very competitive for the New Bedford fleet. They cite the declining number of eastern seaboard boatyards as an opportunity.

This direction by Bridgeport for Derecktor seems to be in competition with the niche that Thames Shipyard in New London has been most successful in. And in view of the approximately $15 million of public funding of Derecktor infrastructure and equipment, the question of competitive equity may be raised. On April 20, the BPA issued an RFP for the 23-acre former Derecktor Shipyard site. The RFP was llimited to the real estate only and does not include the fairly substantial onsite facilities and equipment. The RFP was not preceded by a request for qualifications or expressions of interest; it has a thirty-day response period and it limits the lease term to ten years, with one potential ten year option.

An Operator has been selected subject to the final negotiation of a long-term lease agreement. It is envisaged that they will be the core tenant, but with the possibility to accommodate other maritime firms in the 23 acre yard as space and logistics allow.

Statewide Barriers to Ship Repair and Fabrication

- The combined burden of numerous local, regional, state and federal regulatory processes is extensive, often uncoordinated and potentially open-ended. Several examples of extended permit reviews were cited.
- The simple cost of regulatory submissions is significant, approaching 3% of annual gross revenues by one account
- Project scope did not allow an analysis of time delays due to the Connecticut regulatory process, but several examples indicate that Connecticut might be at a competitive disadvantage.

One of the potential opportunities for commercial shipyards in Connecticut is State environmental regulations specifically tailored to shipyards and their activities. This is a relatively common practice in other states, and it appears to result in comparable levels of environmental protection with shorter regulatory processes and less uncertainty for applicants. Several interviews, both in and out of the State indicate that the Connecticut processes could be improved with shorter timelines, lower costs and greater overall certainty.

2.6.2. PRIVATE FERRY SERVICES

The private ferry operations from New London and Bridgeport to Long Island transport nearly two million passengers and more than half a million vehicles annually. These services reduce auto and truck traffic on I-95. In addition, seasonal tourist traffic helps to support tourism and related enterprises in downtown Bridgeport and New London. Ferry operations can be a part of a vibrant downtown space that integrates tourism, transportation and a mixed land use model similar (but not identical) to transit-oriented development.

The Bridgeport & Port Jefferson Steamboat Company provides year round ferry service across Long Island Sound between Bridgeport, Connecticut and Port Jefferson, New York for vehicles, passengers and freight. The company operates 20-30 trips per day (178 trips per week) in each direction using three vessels, and carries over 400,000 cars and trucks and more than 800,000 passengers per year. The company has proposed relocating its Bridgeport facility across the harbor to vacant land adjacent to the vacant Derecktor Shipyard.

Figure 21: Proposed Ferry Relocation Site

Source: City of Bridgeport Connecticut: Barnum Landing Ferry Improvement TIGER Application

Cross Sound Ferry Services, Inc. provides year-round ferry services across Long Island Sound between New London and Orient, New York for vehicles, passengers and freight. The company operates 20-30 trips per day in each direction using eight vessels. The company also operates seasonal services to major tourism destinations and carries more than one million passengers annually.

The Bridgeport and New London ferry services are among the very few domestic ferry services that operate without some form of capital or operating subsidy. The protection and growth of existing ferry services is in the interest of the State; failure of the existing ferry operators would likely lead to demands for public subsidies to preserve ferry services. The State should conduct a "census" of the state and local regulations affecting private ferry operators. In addition, the Bridgeport ferry operator has proposed relocating across the harbor to a larger site. If this relocation strengthens the sustainability of the provider and does not propose indirect costs on the State or Bridgeport, the State and the city should seriously consider this proposal. The ferry operator has proposed purchasing the remaining 9.5 acres of the former Coastline Terminal site for this use. In view of the relatively small size of this parcel, the uncertainty of the viability of channel deepening in Bridgeport Harbor, and the lack of rail connectivity in the Harbor, the use of this land for non-cargo purposes seems appropriate.

2.6.3. FRESH SEAFOOD PROCESSING

The Thames River Seafood Cooperative has been located at the State Pier for over ten years and currently has a lease with the State DOT, which expires on January 31, 2013.

The Co-Op is responsible for about $10 million in gross income per year in the sea scallop fishery. The Co-Op also has a variety of tenants, which include marine contractors and some smaller commercial fishing operations, including the owner of the largest privately-owned sea scallop company in New Bedford, Massachusetts. The six largest sea-scallopers at the pier employ approximately 10 people each in highly paid positions. These scallopers work cooperatively with the Stonington Town Dock (east of New London), purchasing supplies.

The Co-Op is working to attract another two to three large sea scallop and squid fleets from Massachusetts, Rhode Island and New Jersey by demonstrating the advantages they see in New London including its proximity to the fishing grounds and excellent transportation infrastructure. The Co-Op also believes that Connecticut offers a more favorable business climate than Massachusetts, Rhode Island or New Jersey.

The Co-Op suggests forming the New London Terminal, which will consist of 10,000 feet of industrial condominium and associated office space. They indicate they have verbal commitments from a developer as anchor tenant and a commitment for 80% of the funding. A second phase would include a cold storage warehouse with associated public market, patterned after Pike Place in Seattle.

The Co-Op indicates that to move forward on this plan, they require a minimum five year lease extension and suggests a combined lease with the lease for the operation of the State Pier. They also indicate an immediate need for an ice truck, estimated to cost $149,000.

Evaluation of these claims was beyond the scope of this study. However, the presence of a strong fresh seafood processing industry in neighboring states, alongside the strong scallop industry in New London, warrants further exploration of this non-cargo opportunity for the Port of New London.

2.6.4. SHORE EXCURSIONS FOR CRUISE SHIPS

Like the cargo ports, entering the highly competitive cruise industry markets requires resources well beyond those of a single city or local port authority. State and major metropolitan area resources will be needed if the State wishes to realistically compete in this arena.

New London and Connecticut's other ports are not currently strong candidates for expanding calls by visiting and home-porting cruise vessels. Rather than continuing efforts to market New London on its many merits directly to the cruise lines, Moffatt & Nichol recommends these resources be redirected to identify possible niches for expansion of maritime tourism.

A sketch-level study could ask if opportunities are present for New London to serve as a homeport for small cruise vessels. How viable is a lunch and dinner cruise operator along the waterfront (similar to Entertainment Cruises, Inc., operations in Norfolk and Washington, D.C.)? Could a specialized charter business operate from New London on a seasonal basis? These, and other areas, would be studied as part of a positioning analysis for New London and other destinations in the region. As part of this analysis, a more detailed revisit of the mainstream cruise industry should also be conducted. Emphasis should be placed on identification of strategies to clearly differentiate a role for New London within the marketplace and/or seek a brand looking to break away from the New York/Boston pack. Ways in which New London and Connecticut's offerings can be marketed as part of a cruise line shore excursion and pre- and post-cruise stay-overs in New York, Boston and elsewhere should also be reviewed.

2.6.5. STATE PIER SOLICITATION

The original lease of the State Pier expires on January 31, 2013, and an earlier solicitation has been cancelled. A three year extension is being considered for both current lessees pending the recommendations of this study. Over the term of that original lease, cargo tonnage at the State Pier declined from roughly 240,000 tons in 2004 to 70,000 tons in 2011 year. In the same time period, dry cargo tonnage at the Port of New Haven decreased from 3.3 million tons to 1.8 million tons.

The State Pier has the best port and landside infrastructure in the state, but also the smallest local and regional markets. If market development is to occur at the Port of New London, it will be based on a long-term, incremental strategy and a very robust, sustained marketing effort.

3. Policies and Actions to Support a Market-Based Strategy

Since World War II, the deep water ports of Connecticut have become financially and institutionally disadvantaged compared to their east coast competitors. These disadvantages have only deepened over time.

Connecticut deep water ports are the ***only*** east coast ports without dedicated, state-level financial and institutional support. State-level entities in Maine, Massachusetts, Rhode Island, New York, New Jersey, Pennsylvania, Delaware, Maryland and Virginia provide some or all of the following: direct financial support, credit assistance, simplified regulatory regimes (including land use) and high level marketing and economic development services.

In Connecticut, these responsibilities have fallen to two small, financially distressed localities and a branch of the State DOT. Each has performed its task well, but none are properly equipped to compete in the global economy or even against other east coast ports.

Participation in the capital-intensive global supply chain requires both significant capital investments as well the kind of state-level institutional support that creates a stable investment climate for both public and private investors.

Some *possible* capital investments in specific cargo and non-cargo opportunities are outlined in the sections below—all are contingent on complementary private investments. The more difficult improvements are in the areas of institutional support.

In order to grow, the institutions governing Connecticut deep water ports require a major cultural change—away from building a piece of infrastructure and more toward building a business. The skills necessary to build a business are very different from the skills necessary to build a dock or a bulk head. These capital investments will not show positive returns without institutional structures committed to, and capable of, building and growing a business.

Increased private investment will not occur without reducing regulatory risk and providing a stable investment climate. To achieve these goals, the State must address the overlapping layers of local, regional and state regulation, including local land use.

The State of Connecticut has recognized the desirability and the economic necessity of first maintaining, then growing, the maritime industries in and around the deep water ports of Connecticut. Realistic, short-term opportunities to maintain and potentially grow those industries are summarized below. This section restates and prioritizes the necessary actions to capitalize on those opportunities.

3.1. Market-Based Approach to Governance

A market-based approach to governance essentially follows the outline of the above recommendations, with supporting policy and institutional changes at the Port of New Haven and within and among the executive agencies of the State.

3.1.1. NEW HAVEN CHANNEL AND SMALL MARINA DREDGING

The Port of New Haven is the most important cargo facility in the state, and its current business is threatened by shoaling and poor channel maintenance. The possible closing of open water disposal sites in 2013 could lead to increases in dredge disposal costs after 2014. Avoiding those cost increases requires a $10 million funding commitment from the USACE by federal fiscal year 2014. If the USACE does not make that funding commitment, the State should fund the New Haven maintenance dredging with its own

resources. Recent statements from the USACE, and passage of the recent federal transportation bill, have increased the likelihood of adequate funding from the USACE.

In addition, scores of smaller marinas, both public and private, are in need of dredging. These facilities provide economic, tourism and recreational benefits to the State. The State should explore opportunities for wetlands creation and environmental remediation using dredge disposal materials from these smaller sites. While beyond the scope of this study, the State should establish an annual budget for these dredging activities, which may be approximately $1 million, annually.

The Commissioner should seek and advocate for a reconnaissance study to deepen the channel beyond the mandated 35 feet.

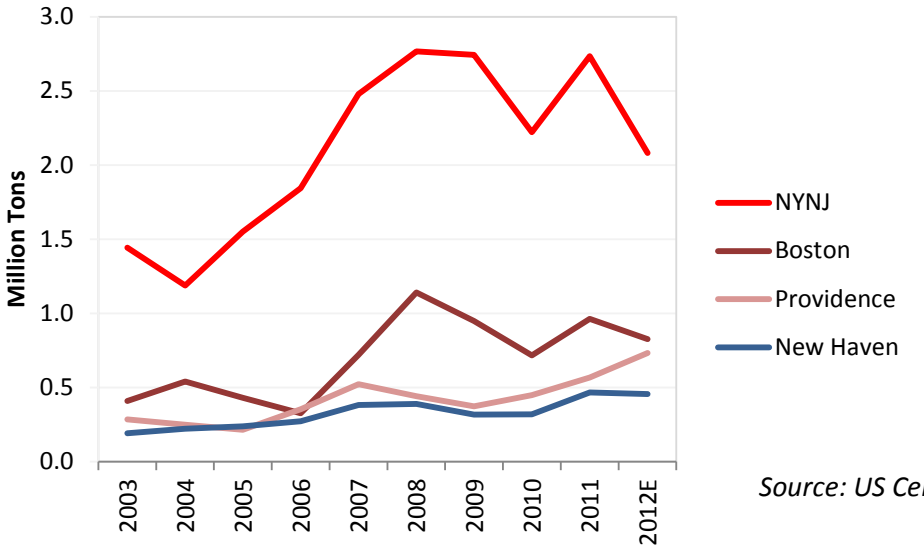
A capital investment of $1 million annually will be required for small harbor dredging and environmental remediation and up to $10 million for maintenance dredging of New Haven channel.

Some policy and institutional actions that will be required for this plan to have a meaningful impact include authorization of a grant-in-aid program for small harbor dredging.

3.1.2. SCRAP METAL/CONTAINER FEEDER SERVICE

Scrap metal is Connecticut's largest single export commodity by weight. The market for scrap metal is highly competitive with relatively few large producers (shredders) accounting for the majority of production volume/sales. An estimated 900,000 tons scrap metal are produced annually within the State, with approximately half of that amount exported through the Port of New Haven to destinations in China, Turkey, Egypt and Saudi Arabia. The balance is exported, largely by truck, through New Jersey, Rhode Island and Philadelphia.

Figure 22: Scrap Metal Export Tonnage by Port



Source: US Census Bureau

Connecticut can increase scrap metal exports through the Port of New Haven by:

- Capturing a larger share of Connecticut scrap metal production by partnering with the three large scrap metal processors in the state and, possibly, by developing a statewide brokering system to encourage smaller scrap metal dealers to export their product through the Port of New Haven.

- Capturing a larger share of the wider regional (NY/MA/RI) scrap metal production by, again, partnering with the three large scrap metal processors in the state.
- Offering incentives for exporting Connecticut- and regionally-generated scrap metal through the Port of New Haven as "heavyweight" containers on barge rather than by truck on I-95.

The Commissioner of Economic and Community Development and the Commissioner of Transportation should work with the Port of New Haven to identify sources, consolidators and processors of scrap metal for potential scrap metal export by barge feeder service, or potentially through a direct call niche container service, most likely through the Port of New Haven. The Commissioners should consider a more detailed feasibility study for scrap steel exports, including consideration of ongoing tolling and freight emission studies. To the degree that funding can help overcome these barriers, the Commissioners should consider grants-in-aid, including performance-based grants for public benefits, to incent a mode-shift from truck to barge for scrap steel exports.

A capital investment may not be required; however, offerings of public grant benefits of up to $400,000 per year may be necessary. The State should authorize, fund and oversee public benefit grants in support of scrap metal exports through New Haven.

3.1.3. BRIDGEPORT/DERECKTOR SHIPYARD SOLICITATION

Public entities have invested more than $43 million in Bridgeport waterfront enterprises, including more than $20 million in the BRMC, which incorporates the now-bankrupt Derecktor Shipyard. The State has a financial interest in returning economic activity to the Derecktor Shipyard AND attracting a tenant that does not harm adjacent uses in either Bridgeport or the existing shipyards in Connecticut.

At the time of writing the City of Bridgeport had already solicited and received proposals for the use of the real estate, but not for the existing improvements, which are part of the ongoing bankruptcy proceeding. The BPA is determined to re-position the shipyard as a local economic driver and jobs creator. A temporary agreement is being worked on with a ship repair operator while it has the use of the yard to carry out overhaul work on Coast Guard vessels. The focus is now on negotiating a long term lease agreement.

The State should continue to play a supporting role to Bridgeport's efforts to retain ship repair services at the former Derecktor Shipyard.

3.1.4. STATE PIER SOLICITATION

Public entities have spent more than $58 million overall in support of New London port facilities, including $43 million for emergency repairs to the State Pier. The State Pier has been operated by a private stevedoring company since the early 1980s. The leases have averaged seven years in length with rent based on a percentage of gross receipts. These short-term leases and rent structures do not incentivize cargo growth.

The current operator has slightly increased salt, steel and specialized cargoes from their low point in 2009. However, despite consolidating New Haven and New London operations under the current operator, total tonnage at the State Pier is approximately one-third of its 2004 levels.

As the current lease and extensions expire, the State should revise its solicitation process to seek a long-term lease that rewards cargo growth appropriate to New London and that leverages public investments with private investments, representing a public-private-partnership. The State should NOT make additional investments without securing complementary private sector investments.

The State should use a two-step solicitation process in order to discover a range of options from the private sector and achieve this public-private-partnership. The first step is a Request for Expressions of Interest (see Appendix E), followed by proprietary discussions with individual respondents. These discussions then inform the second step, a formal Request for Proposals, based on at least three requirements:

- A long-term lease, in the general range of thirty years
- An up-front payment or capital investment by the lessee
- A *potential* capital investment by the State (e.g. infrastructure or specialized equipment) linked to specific and long-term cargo commitments (e.g. plate steel imports or wood pellet exports)

A two-step solicitation process seeking expressions of interest will afford the Department the opportunity to learn from the private sector and to seek detailed proposals based on that enhanced market knowledge. In addition, such a process will likely generate a new list of different respondents to the detailed request for proposals (RFP).

A detailed outline of a possible "Request for Expressions of Interest" and subsequent lease structure and terms is included in Appendix E. This initial solicitation would highlight the assets, connectivity and market potential inherent in the State Pier and seek input from potential proposers regarding their views on the potential of the facility, the nature of the investment required and the outlines of a deal that might be possible.

The key to this approach is using confidential industry knowledge to build a request for proposals that reflect both the interests of the State and the reality of the marketplace.

The actual lease should be predicated on private investment and a lease payment structure that rewards that investment, including longer initial and optional terms. If the solicitation process is not successful in developing a long-term agreement that provides the State with an appropriate financial and economic return on the State Pier facility, alternative long-term uses for the property should be considered.

The market analysis section of this report has identified a number of markets that the State Pier could serve, some of which are being handled now, or have been handled in the past. These include wood pellet exports and imports of copper, steel and lumber, each of which is discussed in later sections. However, while additional focused analysis of these markets will be useful, the most meaningful market assessment will be reflected in lease/concession proposals for a long-term agreement to manage and operate the State Pier. This could include, for example, collaboration among partners such as the NECR and potential terminal operators to develop market opportunities. NECR, for example, has identified a variety of potential cargo opportunities that they believe could be, but have not been, exploited at the State Pier.

A capital investment of up to $10 Million may be required, depending on specific cargo commitments. In addition, some policy and institutional actions must be implemented for the solicitation to be successful. These will be an appropriation of funds for contingent State investment, a Request for Expressions of Interest, and a Request for Proposal.

3.1.5. SHIP REPAIR AND SHIPBUILDING

Although statewide employment for shipbuilding and repair is below its 2007 peak, it is higher in 2011 (118 jobs) than it was in 2001 (95 jobs). [Note that these census numbers do not include public and private employment around the Electric Boatyard and Groton area shipyards.] This sector typically has higher-than-average industrial wages; it builds on and provides a skills-pipeline for the high-end fabrication and repair services in the Groton area.

The private Thames shipyard in New London is the largest non-cargo employer among the three ports. Shipbuilding and repair continues in New Haven at Buchanan Marine. The BRMC supported a significant (but now-bankrupt) shipbuilding enterprise (Derecktor), leaving behind a vacant shipyard equipped with significant ship repair equipment and facilities.

The State should review the combined effects of the multiple local, regional, state and federal requirements on this industry and streamline the regulatory processes for ship repair and shipbuilding. Industry sources cited permit consulting fees (not mitigation or enhancement costs) in excess of 3% of gross receipts as a major business constraint.

The Commissioner of Economic and Community Development and the Commissioner of Energy and Environmental Protection should undertake a regulatory census to minimize or eliminate unnecessary local, regional and state regulations and regulatory procedures on private shipyards and ship repair facilities in Bridgeport, New Haven, and New London. Comparisons to Atlantic Coast states should also be included. Instances of more onerous interpretation and application of regulations as compared to other states has been reported in interviews. This includes the application of regulations not specifically tailored to shipyard operations, as well as the need for very costly professional services to navigate the regulatory requirements. Extremely long time frames for permit approval, as well as conflicting guidance from various bureaus in the same regulatory agency have been cited.

There may be no capital investment required for this strategy to be successful. However, critical policy and institutional actions include the streamlining of local, regional, state, and federal shipyard regulations, and if appropriate, revising the Bridgeport solicitation process to provide for a stronger State role.

3.1.6. PRIVATE FERRY SERVICE

The Bridgeport and New London ferry services transport nearly two million passengers and more than half of a million cars and trucks annually. While statewide coastal transportation employment has declined from its 2001 peak of 917 jobs, it has remained relatively stable at approximately 830 jobs since the Recession, with prospects for organic growth. In addition to supporting local and regional tourism, the ferry services provide quantifiable public and private benefits. The MARAD estimates total benefits of approximately 18 cents for every mile of freight moved on water instead of on highway. The U.S. EPA estimates greenhouse gas benefits of approximately 4-6 cents for every mile of reduced passenger vehicle travel; these figures do not include the congestion benefits of taking cars and trucks off of I-95.

The private ferry services in Connecticut do not require a public subsidy. This is a rarity in the U.S. and a condition worth protecting and promoting. The State should continually seek ways to protect and promote the viability of private ferry services in Connecticut. In the short term, both providers have identified a need for expanded parking and queuing facilities.

In Bridgeport, the State should support the Phase 1 relocation/expansion of the Bridgeport ferry to the Barnum Landing location consistent with the analysis presented in the October 31, 2011 TIGER Grant Application, which was supported by the City of Bridgeport. A total of 347 jobs by 2020 are projected as part of that relocation and expansion. The City should integrate the ferry relocation with the recently-announced 150,000-square-foot Bass Pro Shop's location to the Steel Point development in Bridgeport harbor.

In New London, the operator indicates that the long-term sustainability and future growth of ferry services depends on the availability and affordability of parking.

3.1.6.1. Bridgeport

Recognizing that land use is a local prerogative, the Commissioner of Transportation and the Commissioner of Community and Economic Development should seek a mutual resolution of the land use dispute in Bridgeport. The operator has asserted that the move will increase ferry volumes and profitability. The City has supported such a move through the TIGER grant process. The State would have an interest in any access improvements to the proposed site or traffic impacts associated with the new site. Both the City and the State would want to ensure that the proposed ferry relocation does not compromise the long-term value and operational flexibility of the adjacent, and currently vacant, BRMC site.

Based on the analysis presented in the October 31, 2011 TIGER Grant Application, which was supported by the City of Bridgeport, the relocation to Barnum Landing provides additional queuing space for ferry customers, and improves access to I-95, the dominant routing for Ferry customers. Less than 25% of ferry passengers are pedestrians, and connectivity to the Intermodal Transportation Center can be maintained with a shuttle bus or water taxi to serve them. In view of the analysis presented in the grant application, the relocation to Barnum Landing seems appropriate.

3.1.6.2. New London

The Cross Sound Ferry could contribute to moving freight between New England and Long Island, taking trucks off of I-95. An incentive program recognizing the public benefits of doing so may be appropriate. In addition, the public benefits inherent in the provision of transportation services to individuals, as well as cargo interests, should be considered in the planning and development of land use for terminal facilities in New London, including parking availability and affordability, which the operator indicates is crucial to the long-term sustainability of the service.

The State should support these successful private ferry operations and avoid placing burdens on them. The Secretary of Economic and Community Development should consider carrying out a review of existing ferry-related regulations.

There may be no capital investment required for this plan to be successful. However, critical policy and institutional actions include State support for Bridgeport ferry relocation and support of a New London parking study, including consideration of the growth of ferry services in New London.

3.1.7. WOOD PELLET EXPORTS

Global market demand for hardwood and softwood pellets is significant at approximately 15 million tons and projected to grow to 45-60 million tons by 2020. Exports from the U.S. to the European Union are driven by carbon reduction mandates, and totaled 850,000 tons in 2011.

Wood pellets are moved by rail and are often exported in empty containers in order to control moisture content. While ports in Maine have an advantage in this export market, the NECR provides direct access to Canadian and northern New England forestry production centers and has on-dock rail at the State Pier. Specialized handling equipment and improvements can be installed for $2-12 million. However, any such investment should be part of a larger contract or concession to manage and market the State Pier in collaboration with the NECR.

The Commissioner of Economic and Community Development should consider working with the Port of New London and the NECR to identify potential origins and market opportunities (particularly in northern New England) for wood pellet exports.

A capital investment of $2-12 million may be required for specialized handling equipment purchases and other improvements. Such commitments should be part of a larger contract or concession to manage and market and the State Pier.

3.1.8. LIQUID BULK SHIPMENTS

All three deep water ports provide liquid bulk storage and related energy services, which include liquid bulk processing, power generation, waste-to-energy processing and major pipeline access. The port of New Haven, in particular, is a crucial import location for refined petro-products, which supplies demand within Connecticut as well as the broader Northeast region. The Northeast maintains a large refinery production/demand deficit and must rely heavily on imported volumes of refined products in order to meet demand. The flow of petroleum products through the ports is critical to Connecticut's economy and its energy future.

New Haven handled the fifth largest volume of domestic trade of gasoline and other distillates in 2010. This high ranking underscores the strong demand volume being served by these facilities. New Haven is the origin of the Buckeye Pipeline, which connects directly into Hartford and Springfield, Massachusetts and also supplies aviation fuel to Bradley International Airport. Pipeline Transportation as a share of the State's GDP is the largest in the Northeast. Additionally, New Haven, and New London host two of the three National Strategic Heating Oil Reserve sites.

Table 17: Domestic Import/Export Tonnage of Gasoline and Distillates 2010

	Import	Export	Through	Total
New York, NY and NJ	1.8	13.3	1.4	16.5
Tampa, FL	13.6	0.0	0.0	13.6
South Louisiana, LA, Port of	0.3	9.5	0.0	9.7
Port Everglades, FL	8.9	0.1	0.0	9.0
New Haven, CT	**5.7**	**0.4**	**0.0**	**6.0**
Pascagoula, MS	0.2	4.4	0.0	4.6
Richmond, CA	1.8	2.1	0.0	3.9
Boston, MA	3.7	0.1	0.0	3.8
Jacksonville, FL	2.7	0.0	0.0	2.8
Texas City, TX	0.1	2.4	0.0	2.4

Source: US Army Corp of Engineers

Liquid bulk storage at Bridgeport and New London also account for significant volumes at both ports. These facilities serve more localized demand. Not one of the Connecticut deep water ports is a major hub for natural gas importation or storage.

Approximately one-third of the land area within each port area is devoted to energy-related uses. This represents a long-term, land use and economic asset for the entire State economy.

Given the major changes underway in global energy markets—expanded domestic oil, gas, and ethanol production and distribution, onshore and offshore wind, bio-fuel and bio-diesel production, smaller and cleaner power generation facilities, etc.—the State should define, protect and enhance liquid bulk and related energy uses in and around all three deep water ports. This long-term strategy could help address energy security and electric rate issues in Connecticut. Over time, this strategy will pay economic dividends to every sector of the Connecticut economy.

As part of its ongoing and comprehensive energy study, the State should consider whether its deep water ports, and their surrounding areas, deserve special consideration, designations or protections to allow energy facility expansions and the ability to adapt energy facilities and sites to the changing global energy marketplace. The Commissioner of Energy and Environmental Protection should include this issue in the ongoing statewide study.

There may be no capital investments required for this plan to be successful. However, vital policy and institutional action calls for a statewide definition, protection, and enhancement of energy production and storage areas at all three deep water ports, including long term land use.

3.1.9. COPPER, STEEL, AND LUMBER IMPORTS

Break bulk lumber, copper and steel imports at the State Pier have declined from 286,000 tons in 2005 to 71,000 tons in 2011 as shown in **Table 18**.

Table 18: Admiral Harold E. Shear State Pier, New London, CT Shipping Report – 2004 – 2011

Year	Number of Cargo Ships	Forest Products Tonnage	Copper/Steel[s] Tonnage	Other Cargo	Total Tonnage
2011	16	-	60,672[s]	10,758[cc]	71,430
2010	13	-	46,391[s]	7,476[cc] 230[trans]	54,097
2009	5	30,139	-	-	30,139
2008	14	99,216	6,677	-	105,894
2007	30	81,420	89,352	-	170,773
2006	39	121,479	14,217	-	135,751
2005	41	126,669	78,551	81,000[hl]	286,221
2004	49*	136,945	82,931	-	219,877

- [cc] Calcium Chloride
- [s] Steel only
- [hl] Heavy lift
- [trans] Transformers
- ** Estimated passenger numbers for 5/9/07, 9/1/07 and 9/15/07
- *1/2004 – 3 ships with Heavy Lift cargo – tonnage not reported

New London and New Haven could increase lumber and/or copper imports if housing construction rebounds in the Northeast. Both ports can also compete for various steel imports, including plate steel, coiled steel and "winter steel" (i.e. bound for the Midwest but unable to access the frozen St. Lawrence Seaway during winter months).

Rail connections could help to attract these break bulk products. Operators at the State Pier have not coordinated marketing efforts with the NECR. Limited rail access to New Haven terminals has limited joint marketing efforts between the New Haven terminals and the Providence and Worcester Railroad.

Since New Haven and New London compete for these same commodities, the State should not provide incentives for these break bulk imports if those incentives unduly provide an advantage to one port over the other.

The Commissioner of Community and Economic Development should work with the ports of New Haven and New London to identify potential destinations and market opportunities for break bulk lumber, copper and steel imports.

Up to $11 million may be required as a capital investment for this plan to work. Growth of these commodities in New London should be rewarded or incentivized as part of a larger contract or concession to manage and market the State Pier in collaboration with the NECR. Similarly, growth of these commodities in New Haven should be rewarded or incentivized by specific capital investments (e.g. an on-dock rail spur) that are matched by private investment and long-term business commitments. However, the challenge for the State will be to ensure that any rewards given or incentives provided will not unduly disadvantage one port over the other.

3.1.10. FRESH FOOD IMPORTS

The 2008 loss of Turbana, the private banana importer, from Bridgeport to Philadelphia was a major loss for the City and the State. At its peak, Turbana imported 50,000 tons of fresh bananas annually and employed up to 100 people. The fresh food industry has higher margins than many of the other commodities discussed in this report, but its market is also more volatile. The Delaware River Basin in New Jersey, Pennsylvania and Delaware has a long term strategy created around fresh food importation, processing and distribution. As a consequence, the Basin has developed a critical mass for fresh food imports.

According to a business owner who was interviewed for this study, one potential fresh food anchor is the scallop and shellfish fleet, which is based in New London. The fresh shellfish catch, which comes over the pier in New London, is currently transported to New Bedford for processing and distribution. The Thames River Seafood Cooperative would actively support future landside investments in ice and refrigeration equipment and welcome an increase in the scallop and shellfish fleets with New London as their home port. They envisage the development of an industrial condominium to support this increased fishing fleet with its own processing and distribution capabilities.

While beyond the scope of this study, fresh food imports, including scallop and other shellfish fisheries, deserve further consideration and study by the State.

The Commissioner of Community and Economic Development should work with the Ports of New Haven and New London to identify market opportunities for fresh food imports including Scallop and other seafood and shellfish. Such opportunities are likely to be higher-value commodities, requiring significant onshore storage and distribution facilities.

There may be no capital investment required for this strategy to be successful. However, policy and institutional action requires a business case analysis to evaluate the viability of fresh food importation, processing and distribution, including shellfish, by the State.

3.1.11. SHORE EXCURSIONS FOR CRUISE SHIPS

The Commissioner of Community and Economic Development should allocate State resources to identify the market opportunity for niche maritime tourism, including day-trip excursions and pleasure dining cruises out of New London.

3.1.12. MAJOR CONTAINER DEVELOPMENT

The state of Connecticut should not commit further resources to develop a large scale container terminal.

3.2. Governance Structure Recommendations

The following sections highlight three long-term opportunities to improve governance of port activities in Connecticut.

- Implement a market-based approach to governance to implement the recommendations of this report with supporting policy and institutional changes within and among the executive agencies of the state.
- As an alternative, create a statewide port authority to address the related problems of creating a consistent, long-term strategy for the State; providing a stable investment and regulatory climate for the private sector; and providing access to sufficient resources to compete in the global marketplace.
- Creating a statewide grant-in-aid program to support the short-term opportunities cited in this study and also to provide a consistent framework for the evaluation and funding of market based incentives and investments.

Over the last 20 years, the State of Connecticut, the Federal Government, and Connecticut localities have expended more than $100 million in public funds on Connecticut deep water ports and related industries, all without the benefit of a transparent, strategic or long-term statewide vision. In the absence of such a vision, it is impossible to say if those funds have been prudently invested, but the declining cargo volumes and employment levels of the last two decades suggest that perhaps Connecticut could benefit from a consistent and long-term strategy or approach.

Even if prior public sector investments had been strategically focused, the highly decentralized nature of Connecticut governance likely would have worked against a complementary level of private sector investment and risk taking. Under current state and federal law, a private port investor or user could face:

- One or more local governments with landside planning and zoning authority
- A harbor commission with authority over water-borne uses
- A regional planning or transportation entity with authority over infrastructure investments and air quality impacts
- One or more state agencies administering state requirements
- One or more state and federal agencies administering federal requirements

These many layers of governance add cost and regulatory risk to virtually every deep water port undertaking, whether public or private.

Connecticut deep water ports are disadvantaged financially as well. In an ultra-competitive and capital-intensive industry, Connecticut port authorities have no reliable revenue streams from either user fees or dedicated local, regional or state funding sources. The ports effectively move from appropriation cycle to appropriation cycle—even as federal support for such basic services as maintenance dredging is being reduced and federal regulatory regimes are being increased.

In reviewing Connecticut statutes, current local port authorities have been granted significant powers. However, as local creatures, they cannot provide a clear, transparent or long-term vision for Connecticut ports and their related maritime industries. They cannot streamline the regulatory process. They cannot reliably aggregate the financial resources necessary to compete in the highly competitive and capital intensive port and related maritime industries.

The states of New York, New Jersey, Pennsylvania, Maryland, Virginia, North Carolina and Georgia all have strong independent institutions governing their port facilities. While varying in structure, each authority lays-out and implements a long-term plan. Each has the ability to acquire land, infrastructure and equipment. Each has a chance to support port and port related industries through regulatory and incentive processes. Each has access to dedicated funding sources, whether internally-generated user fees or predictable revenue streams from the state.

Recognizing the competitive nature of maritime commerce, and the need for strong, independent institutions, each of these states has shaped and supported entry into global commerce through the creation of strong, independent entities with significant financial resources and the backing of the entire state.

3.2.1. MARKET-BASED GOVERNANCE

A market-based approach to governance essentially follows the outline of the above recommendations, with supporting policy and institutional changes at the Port of New Haven and within and among the executive agencies of the State. The coordination of efforts to achieve the following individual tasks will not happen naturally, but will require hands-on, executive leadership:

- New London: revise state pier solicitation
- Bridgeport: play a supporting role to BPA's efforts to retain ship repair services at the former Bridgeport/Derecktor Shipyard
- New Haven: ensure channel maintenance dredging
- New Haven: strengthen and streamline NHPA's access to capital, ability to realize adopted master plan (including expansion and adjacent land uses) and ability to create a stable investment climate
- DEEP: review regulations affecting shipyard operations
- DECD: guide a culture change towards "building a business"
- OPM: guide multi-agency (DOT, DEEP, and DECD) capital and grant-in-aid programs in support of solicitations, and time-sensitive cargo prospects

This type of management challenge is significant, and does not lend itself to easy exposition or spread sheet analysis. However, without active, executive-level management and leadership, the market-based approach to governance cannot succeed.

3.2.2. STATEWIDE PORT AUTHORITY

One possible model for a statewide port authority is the Capital City Economic Development Authority, which has strong financial backing from the State, can issue bonds, can acquire and improve land, and can assist in an efficient regulatory compliance effort (ref: Section 32-600 et seq of the Connecticut State Code).

Variations of this model are possible as well:

- Could a statewide authority act as the *applicant* for local, regional and federal permits and approvals on behalf of a private maritime client—similar to the brownfield risks assumed by state entities?
- Could a statewide authority act as a conduit issuer for private activity and tax exempt bonds supporting individual ports and related industries?
- Could a statewide port authority complement the economic development efforts of the State and localities by bringing resources, stability and a scale appropriate to the global marketplace?
- Another possible structure could add responsibility for ports to a renamed Connecticut Airport Authority, thus extending its current statutory powers. Several states including Massachusetts have similar structures that include both airports and marine ports.

3.2.2.1. Possible Characteristics of a Statewide Port Authority

Assets: Transfer the State Pier Facility, and all assets currently owned by the Bridgeport, New Haven and New London port authorities to the State Port Authority.

Board: The board should not be larger than nine members.

- Four citizen appointees by the Governor, including at least two from private sector maritime-related firms
- One appointee each by the Mayors of Bridgeport, New Haven, New London and Groton
- Staggered fixed terms of office

Mission: To promote and protect maritime commerce through the deep water ports of Connecticut

Functions and Powers:

- Implement land use codes and regulations within the port districts that protect private investment and provide transparency and predictability to surrounding communities
- Act as the lead state agency for the application of environmental and other federal permits within the port district
- Develop a multi-year strategic plan for the development of Connecticut's ports
- Develop a corresponding plan for public investment in the ports
- Acquire property as appropriate for port development
- Prepare a financial plan and budget
- Collect revenues from Port Authority owned assets
- Evaluate the appropriateness of port fees for public investments that benefit port users, including private entities
- Conduct on-going market outreach to develop port markets

Staff: Initial staffing organization should include:

- An executive director with extensive experience in the development and management of multi-use port operations
- A marketing manager with experience in port market development and promotion, including working with vessel operators, shippers, railroads, truckers, etc.

3.2.3. GRANT-IN-AID PROGRAM

The State has a number of infrastructure and grant programs that have supported Connecticut deep water ports and their related industries. The DOT dredging program, for example, is well-positioned to draw down expanded maintenance dredging funds (Federal Harbor Maintenance Tax) under the new federal transportation act.

The competitive challenge for Connecticut is to create a transparent framework for market based planning, capital investments and grants-in-aid that:

- Leverages private sector investment and private sector employment
- Reflects, anticipates and responds to changes in local, regional, national and international cargo and non-cargo markets
- Implements a long-term transportation, economic and environmental vision for Connecticut
- Funds infrastructure and capital investments ***only when complementary private investments or business activities are committed***
- Funds the purchase of public benefits in support of specific cargo or business activity goals (e.g. number of trucks diverted from I-95, number of tons of emissions reduced, or acres of wetlands restored with dredged material)

The policy and institutional challenge for Connecticut will be to reserve bond and general funds for projects or programs that may or may not happen. Market-based planning and funding seeks out and responds to market opportunities in real time, whereas traditional governmental processes for long-term capital planning and programming rarely respond to these market needs and opportunities. This process could involve holding back appropriated funds to leverage additional private investment.

Note that the following table (**Table 19**)—while drawing upon feasible proposals identified during the course of the study—is intended to be an illustrative and not a definitive capital plan. The actual scope and timing of investments should be driven by market-based opportunities developed by, and with, private sector tenants and/or partners in port based activity.

Over the last two decades, public entities in Connecticut have pursued significant grants, appropriations and acquisitions in the interest of furthering deep water ports and related industries in Connecticut. Without addressing the merits of these individual pursuits, it is clear that they have been conducted without reference to a statewide strategy and without clear measures of accountability or success.

Given the current budgetary climate and current market conditions, a continued ad hoc approach to port-related appropriations and expenditures poses significant risks to the State. Regardless of the funding levels, the State needs a clear vision and criteria for whether and how to invest in its deep water ports, including a transparent, accountable process to implement and evaluate the success of those investments and expenditures.

Table 19: Illustrative Capital Expenditure Scenario

Assumes: Private State Pier Lease & Wood Pellet Facility in New London; Private Break Bulk & Scrap Steel Commitments in New Haven; Private Shipyard & Repair Facility in Bridgeport

Facility/Program	FY 12	FY 13	FY 14	FY 15
Bridgeport			1.0M Derecktor Equipment	
New Haven	6.0M Water Street Improvements	2.5 M Rail Spur	2.0M North Yard Initiation	4.0M M North Yard Improvements 2.5M Additional Rail Spur
New London	1.0 M State Pier Improvements	3.0M Wood Pellet Equipment		
Small Marina/Restoration	1.0 M	1.0 M	1.0 M	1.0 M
TOTAL Bonds	8.0 M	6.5 M	4.0 M	7.5 M
Public Benefit/General Fund Scrap Steel	.3 M	.3 M	.3 M	.3M
Grand Total	8.3 M	6.8 M	4.3 M	7.8 M

This report has identified:

- Three of the remaining port-related industries for special consideration and protection
    1. Liquid bulk/energy
    2. Private ferries
    3. Shipyard/Ship repair
- Four niche industries as possible market opportunities
    1. Scrap steel exports
    2. Wood pellet exports
    3. Break bulk lumber/copper/steel imports
    4. Fresh food imports
- Two market opportunities with the pending Bridgeport and New London solicitations

With one exception, none of these initiatives should receive immediate state funding. Instead, the State should take the time to develop a long-term strategy and a transparent and accountable grant-in-aid program to support that strategy, as described in more detail below.

3.2.3.1. Grant-in-Aid Program Should Balance Public Benefits and Market Needs

Connecticut should consider creation of a statewide grant-in-aid program that will require long term State strategic and financial commitment to the deep water ports and their associated industries. The goal and performance metrics of any such program should not be the condition or quality of the port infrastructure, but rather the added economic and employment value brought to the deep water ports and their associated industries.

Put another way, "build it and they will come" is a recipe for continued decline of the Connecticut deep water ports and their related industries.

Market opportunities, alongside reasonable risk, should drive capital and operating investments in Connecticut's deep water ports. One way, perhaps the best way, to achieve this outcome is through the creation of a statewide grants-in-aid program that:

- Leverages private investment and private sector employment
- Reflects, anticipates and responds to changes in local, regional, national and international cargo and non-cargo markets
- Implements the long-term and strategic economic development, energy, environmental and transportation goals for the State of Connecticut and its deep water ports
- Is not limited to traditional infrastructure and capital investments, but can also purchase or incent public benefits through performance grants (e.g. number of trucks diverted from I-95 or number of tons of emissions reduced)

3.2.3.2. Public Benefit Framework for a Grant-in-Aid Program

The literature on economic development incentives and infrastructure-related inducements is voluminous. Judged strictly by static benefit/cost analyses, many of these types of investments appear to be failures or examples of a "build it and they will come" mentality. A common reason for many of these apparent failures is the lack of a long-term, strategic vision and realistic, programmatic support for that vision.

In 2011, the National Cooperative Freight Research Program of the Transportation Research Board published its report on "Frameworks and Tools for Estimating Benefits of Specific Freight Network Investments." The document considered several case studies (including three with significant Moffatt & Nichol roles) and identified four findings that may be relevant to the deep water port interests of Connecticut:

- The public investor must clearly and transparently identify the capital improvements or other investments and compare them to a "no build" scenario. This is a simple exercise that could bring some discipline to any grant-in-aid program for Connecticut deep water ports.
- General analytic methods, including cost-benefit analyses, work better for system-level improvements and investments than they do for more localized improvements and investments.
- Most of the improvements and investments relevant to Connecticut's deep water ports fall into the localized category, making them less amenable to high-level quantitative techniques. Transparency and common sense should guide localized investments and improvements supporting Connecticut deep water ports and the related industries. Infrastructure investments are often perceived as "safe" in that they can have public benefits beyond an immediate economic development project. However, if that economic development project fails or moves to another location, the infrastructure remains in place, and may not provide any benefits to the public at large (e.g. highway or rail access points intended for a specific industrial user).
- Determining stakeholders and assigning benefits for freight investments is difficult but essential. As illustrated by the Marine Highway public benefit calculator in Section 2.5.2.6 of this report, it is possible to quantify and in effect "buy" public benefits (e.g. $34 in public benefits for every scrap steel truckload removed from I-95 and moved by barge). The calculation of public benefits, and a corresponding allocation of public sector grants or tax benefits, is an increasingly common practice, whether in the federal TIGER grant process or in state-level freight programs. While public benefit grants and/or tax benefits can be a business inducement, they cannot be used to treat one industry or firm differently. They must be uniformly computed and allocated. Unlike traditional economic

development incentives, they cannot be used to single out one firm for business attraction or retention.

The single most important stakeholder in the Connecticut deep water ports is the State itself seeking public benefits for its citizens. This role is not only due to the previous State grants and investments identified in Section 2.2, but also to the potential public benefits to the State through job retention, job growth, environmental enhancement, energy security, cost savings and transportation improvements.

3.2.3.3. A Market-Based Grant-in-Aid Program

Of equal importance to a fair and transparent calculation of public benefits is a grant-in-aid program that adapts to port and related industry needs. Those needs are driven by a global marketplace.

Two decades ago, west coast ports focused almost exclusively on ocean carrier costs and productivity. Today, west coast ports focus on cargo owners and total supply chain costs, including rail, inventory and reliability costs.

Five years ago, east coast ports were still divesting themselves of bulk agricultural operations. Today, east coast ports are investing in agricultural containerization and export facilities—in precious urban waterfront locations no less.

The needs of the Connecticut deep water ports and their related industries will be very different in 2020 than they are today. ***Market needs should drive deep water port planning and funding, not the reverse.*** A successful grant-in-aid program in support of Connecticut's deep water ports and their related industries must be able to anticipate, analyze and adapt to changes in the market place. Achieving this will require some degree of market research (by or for a statewide port authority in addition to the ability to modify and evolve goals, strategies and implementation conditions for the grant-in-aid program.

3.2.3.4. Grant-in-Aid Program Requires Dedicated Funding

The public sector, as noted several times, has expended more than $100 million on Connecticut deep water ports over the last two decades. Those expenditures have largely occurred on an ad hoc and reactionary basis.

In the absence of significant user fees, the deep water ports of Connecticut—like highways, transit and airport facilities—need a predictable revenue stream. The absence of such a revenue stream minimizes the need for a strategic plan for the deep water ports and maximizes the likelihood of unique and expensive one-time expenditures—whether to attract "one-off" economic development prospects or to repair badly neglected infrastructure. A properly structured and funded grant-in-aid program, supported by a dedicated funding stream, could actually save the public funds.

Creating a dedicated funding source to support the deep water ports of Connecticut and their related industries is an absolute prerequisite for a strategic grant-in-aid program to achieve clear public benefits and continually adapt to the national and global freight marketplaces.

3.2.3.5. Grant-In-Aid Program Outline

The DOT has operated a grant-in-aid program pursuant to Section 13b-57 of the Connecticut General Statutes to support various dredging and marine infrastructure projects. That approach should continue if the State wishes to continue the current level and type of support currently provided to the deep water ports. That approach also could be used in the event that the State chooses to fund the New Haven maintenance dredging. However, the State should consider a revised grant-in-aid program only IF the following conditions are met:

- The State dedicates funds to the grant-in-aid program in such a way that they can be programmed over several years
- The State creates a legal framework permitting balance between public benefits and private market needs
- The State creates an administrative structure such as a statewide authority with a clear mandate to increase deep water port and related industrial activities and employment

3.2.3.6. Expanded Grant-in-Aid Program Expenditure: Categories

The State of Connecticut has followed a traditional path and made infrastructure investments as the principal form of external grant and grant-in-aid support to deep water ports and related industries. These grants have not been the result of a sustained or strategic planning process. An expanded grant-in-aid program should include the following four expenditure categories:

- Infrastructure investment (e.g. extending a rail spur)
- Public benefit purchase (e.g. providing a grant or tax credit for every truck diverted from I-95 to rail or barge)
- Asset leases and partnership arrangements (e.g. constructing a shell warehouse facility in exchange for an operator making minimum cargo, rent or employment guarantees)
- Community benefits (e.g. small harbor dredging for qualified "green" ports)

3.2.3.7. Expanded Grant-in-Aid Evaluation Process

The State of Connecticut has used its grant-in-aid process to solve infrastructure problems and to support economic development projects. IF the State chooses to expand its grant-in-aid program, a more comprehensive evaluation process should be followed. However, a more comprehensive evaluation process does not mean highly technical or expensive evaluation procedures. As noted in Section 3.2.3.2 above, localized improvements are less amenable to sophisticated quantitative analysis than are system-level investments. Transparency and common sense should guide these grant-in-aid decisions, and the following seven steps could be easily and inexpensively implemented to provide a strategic and transparent process for evaluating requests to an expanded grant-in-aid program:

- Is the proposed grant project or program consistent with an adopted strategic plan?
- Is sufficient funding available for the grant, including any ongoing operation, maintenance or induced costs?
- Is there a simple comparison of the grant project or program with and without the grant? Can the grant and the project or program withstand public scrutiny?
- Is there a simple benefit cost analysis using established federal or industry methodologies (e.g. TIGER grant criteria)? Do the benefits outweigh the costs?
- Is the proposed grant consistent with currently forecast economic trends? Does the grant support an ascending or descending economic or community trend?
- Do the private beneficiaries share an appropriate level of risk and/or cost in the grant project or program?

- Do the grant conditions address a possible failure of the grant project or program? Is there a claw-back or cost recovery provision, and is there sufficient security to assure a claw-back or cost recovery situation?

3.2.4. IMMEDIATE FUNDING FOR NEW HAVEN MAINTENANCE DREDGING

Given the strategic importance of energy and liquid bulk activities at New Haven, as well as the narrow window for affordable open water dredge spoil disposal, immediate federal funding commitments are necessary. If the USACE or Congress cannot make a firm commitment to the New Haven maintenance dredging by 2014, the State of Connecticut should step forward and fund the maintenance dredging itself.

Connecticut should not be assuming a clear federal responsibility, but the risks of a multi-year delay in New Haven maintenance dredging would have profound effects on critical energy supplies and already-high energy costs.

On a parallel track, the State of Connecticut should make legislative inquiries regarding possible reimbursement from the USACE if the State were to assume the cost of maintenance dredging at New Haven. The Federal Transit Administration makes these types of reimbursement allowances through a "letter of no prejudice" to states and localities willing to undertake a federal funding responsibility using state or local financial resources.

4. Conclusions

The State of Connecticut is committed to strengthening and diversifying its economy by overcoming or reversing the decline of its three deep water ports and their related industries. This report recommends eight specific, market-based strategies and five supporting governance reforms to achieve this goal. These strategies, in the short-term, are not prohibitively expensive. The real challenges lie in the decentralized structure of Connecticut government, and the need for an overall system of port leadership that is committed to "building a business" of ports and related industries—and not simply managing episodic port infrastructure improvements.

4.1. Recommended Market-Based Strategies

I. **Protect and enhance liquid bulk and related energy uses** *(Required Investments: $0)*

- The flow of petroleum products through the ports is critical to Connecticut's economy and its energy future
- Will pay economic dividends to every sector of the Connecticut economy, over time
- Significant investment in liquid bulk and related energy infrastructure already in place at the three ports

II. **Protect and enhance private ferry services** *(Required Investments: $0)*

- The private ferry services in Connecticut do not require public subsidy, a rarity in the U.S. and a condition worth protecting and promoting
- Both providers (Bridgeport & New London) have identified a need for expanded parking and queuing facilities

III. **Protect and enhance shipyard and ship repair services** *(Required Investments: $0)*

- The private Thames shipyard in New London is the largest non-cargo employer among the three ports
- The State should streamline the regulatory processes for ship repair and ship building
- Support BPA's efforts to retain ship repair services at the former Bridgeport/Derecktor Shipyard

IV. **Increase dry bulk and break bulk cargoes** *(Required Investments: Up to $11 million for increased rail access to New Haven, up to $14 million for North Yard expansion, and up to $40 million for capital incentive improvements in New London)*

- Extend the ports' serviceable reaches into competitive regional markets
- Existing flows of salt, sand, and cement are tied to immediate local demand (highly captive and stable markets)
- Do not commit State capital without similar private commitment

V. **Increase scrap metal exports** *(Required Investments: Up to $400t/year for public benefit grants)*

- Connecticut's largest export commodity by weight, of which the majority is trucked to ports outside of the State

- In order to capture a larger market share, Connecticut should partner with the three large processors, encourage smaller dealers by developing a statewide brokering system, and offer incentives as "heavyweight" containers on barge to divert traffic from congested I-95 corridor

VI. **Attract wood pellet exports** *(Required Investments: $2-12 million for specialized handling equipment and improvements)*

- Leverage existing rail connectivity: NECR provides direct access to Canadian and northern New England forestry production centers and has on-dock rail at the State Pier
- Promote this, as well as other potential specialized infrastructure, which could attract wood pellet flows through New London

VII. **Compete for break bulk lumber, copper and steel imports** *(Required Investments: Up to $11 million for new rail connections)*

- Break bulk commodities have traditionally been handled efficiently at the ports
- New Haven and New London could increase lumber and/or copper imports if/when housing construction rebounds in the Northeast and can also compete for various steel products
- Leverage existing rail connectivity to reach markets located in New England, Canada and the Midwest.

VIII. **Evaluate fresh food imports** *(Required Investments: $0)*

- Had historically been a valuable tenant at Bridgeport, but was attracted to competing regions due to inadequate port maintenance/infrastructure
- One potential fresh food anchor is the scallop and shellfish fleet in New London

4.2. Recommended Policies and Actions to Support a Market Based Strategy

I. **Fund New Haven Channel and Small Marina Dredging** *(Required Investments: $1 million/year for small harbor dredging and up to $10 million for New Haven dredging)*

- New Haven is the state's most important cargo facility and its current business is threatened by shoaling and poor channel maintenance
- Scores of smaller marinas which provide economic, tourism and recreational benefits to the State are in need of dredging

II. **Revise State Pier solicitation** *(Required Investments: Up to $10 million depending on specific cargo commitments)*

a. The State should revise its solicitation process to seek a long-term public-private partnership
b. Existing short-term leases and rent structures do not incentivize/reward cargo growth

III. **Support BPA's effort to retain ship repair services at the former Bridgeport/Derecktor Shipyard** *(Required Investments: Up to $5 million depending on specific business commitments)*

a. Significant State capital has already been spent on buildings and equipment at the Shipyard for which a return on investment should be sought
b. The State has financial interest in returning economic activity to the Derecktor Shipyard AND attracting a tenant that does not harm either adjacent uses in Bridgeport or other CT shipyards

IV. Create Market-Based Grant-in-Aid Program *(Required Investments: Up to $8 million/year)*

a. Build on existing infrastructure and grant programs to create a transparent framework for market based planning, capital investment and grants-in-aid that:
    - Leverages private sector investment and private sector employment
    - Reflects, anticipates and responds to changes in local, regional, national and international cargo and non-cargo markets
    - Implements a long-term transportation, economic and environmental vision for Connecticut
    - **Funds infrastructure and capital investments only when complementary private investments or business activities are committed**
    - Funds the purchase of public benefits in support of specific cargo or business activity goals (e.g. number of trucks diverted from I-95 or number of tons of emissions reduced or acres of wetlands restored with dredge material)

V. Revise and improve governance structure

The State of Connecticut can revise and improve its deep water port governance structure in one of two ways:

a. Market-Based Approach

- In order to grow, the institutions governing Connecticut deep water ports require a major cultural change—away from building a piece of infrastructure and towards building a business
- Participation in the capital-intensive global supply chain requires both significant capital investments as well as the kind of state-level institutional support that creates a stable investment climate for both public and private investors
- Requires a coordinated effort across port authorities, land-use agencies, local, State and Federal governing agencies

b. Statewide Port Authority Approach

- The majority of East Coast states have state port authorities that enjoy state funding and support
- In Connecticut, the Capital Region Development Authority can be used as a potential model as it promotes a stable investment climate for public and private investors through its capacity to:
    - issue bonds
    - acquire and improve land
    - streamline the regulatory process

Table of Acronyms

Acronym	Definition
AFL	American Feeder Lines
ATB	Articulated Tug-Barge
BPA	Bridgeport Port Authority
BRAC	Base Re-alignment and Closure
BRMC	Bridgeport Regional Maritime Complex
CLISDS	Central Long Island Sound Disposal Site
CMAQ	Congestion Mitigation and Air Quality
DECD	Departments of Economic and Community Development
DEEP	Department of Energy and Environmental Protection
DMMP	Dredge Material Management Plan
DOT	Department of Transportation
EPA	Environmental Protection Agency
ESOP	Employee Stock Ownership Plan
FEMA	Federal Emergency Management Agency
ILA	International Longshoremen's Association
LCMA	Least Cost Market Area
LNG	Liquefied Natural Gas
MARAD	U.S. Department of Transportation Maritime Administration
MARAD AMH	U.S. Department of Transportation Maritime Administration American Marine Highway
MLW	Mean Low Water
NECR	New England Central Railroad
NHPA	New Haven Port Authority
NLPA	New London Port Authority
NOx	Oxides of Nitrogen
OPM	Office of Policy and Management
PANYNJ	Port Authority of New York and New Jersey
PIDN	Port Inland Distribution Network
PSE&G	Public Service Energy & Gas
TEU	Twenty Foot Equivalent Unit Container
USACE	U.S. Army Corps of Engineers
VOCs	Volatile Organic Compounds

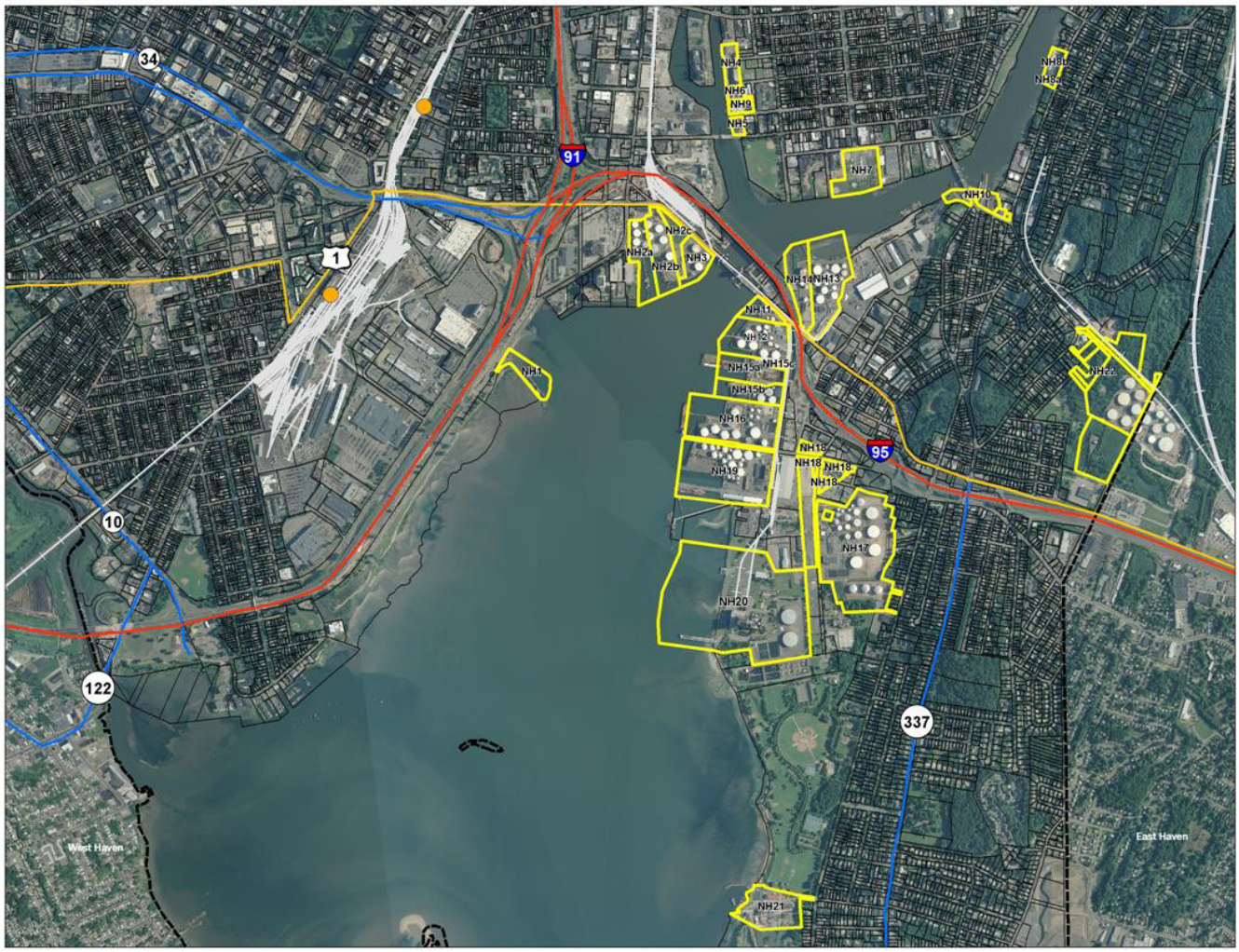
Appendix A: Inventory of Port Facilities

Bridgeport Port Facility Map

Bridgeport Port Facility Map Legend

ID	Label	Location	Owner Name	Style	Land Use Description	Total Land
B1	PSEG Power CT	1 ATLANTIC ST	PSEG POWER CONNECTICUT LLC	Industrial	Pub Utility	58.8
B2	PSEG Power CT	280 MAIN ST	PSEG POWER CONNECTICUT LLC	Warehouse	Pub Utility	2.3
B3	Bridgeport Port Authority	BRIDGEPORT HARBOR NA	BRIDGEPORT PORT AUTHORITY	Office Bldg	Mun Com Bldg Mdl 94	0.8
B4	Hoffman Fuel	156 EAST WASHINGTON AV	HOFFMAN FUEL COMPANY OF BRIDGEPORT	Office Bldg	Office	4.9
B5	Bridgeport Port Authority	137 EAST MAIN ST	BRIDGEPORT REDEVELOPMENT AGENCY		Utility Vac Lnd	15.4
B6	Hillard Bloom Shellfish	59 PEMBROKE ST	BRIDGEPORT CITY OF (BRA)	Service Shop/Garage	Mun Garage	0.5
B7a	O&G Industries	1127 SEAVIEW AV	O&G INDUSTRIES INC		Vac Ind Lnd	0.0
B7b	O&G Industries	265 CONNECTICUT AV	O&G INDUSTRIES INC		Vac Ind Lnd	0.6
B7c	O&G Industries	1023 SEAVIEW AV	O&G INDUSTRIES INC		Acc Ind Lnd	1.2
B7d	O&G Industries	1125 SEAVIEW AV	O&G INDUSTRIES INC		Acc Ind Lnd	1.4
B7e	O&G Industries	1225 SEAVIEW AV	O&G INDUSTRIES INC	Pre-Eng Garage	Industrial Mdl 96	5.5
B7f	O&G Industries	1240 SEAVIEW AV	O&G INDUSTRIES INC		Acc Ind Lnd	3.8
B7g	O&G Industries	1023 SEAVIEW AV	O&G INDUSTRIES INC		Acc Ind Lnd	1.2
B8/ B9	Derektor Shipyard/Cilco Terminal	837 SEAVIEW AV	BRIDGEPORT PORT AUTHORITY	Pre-Eng Mfg	Mun Com Bldg Mdl 96	43.2
B10	Bridgeport United Recycling	1 SEAVIEW AV	HARBORVIEW TERMINALS	Warehouse	Ind WF Mdl 96	3.6
B10	Bridgeport United Recycling	22 SEAVIEW AV	SAFETY-KLEEN SYSTEMS INC	Service Shop/Garage	Ind Garage/Shop	1.0
B11	Motiva Enterprise	LORDSHIP RD #REAR	CHELSEA SANDWICH LLC	Garage/Office	Ind Garage/Shop	8.0
B11	Motiva Enterprise	241 SEAVIEW AVE #REAR	MOTIVA ENTERPRISE LLC	Office Bldg	Comm WF Mdl 94	2.4
B12	Consumer Petroleum	LORDSHIP RD	SHELL OIL COMPANY	Office Bldg	Office	10.3
B13 a	O&G Industries	3 ANTHONY ST	O&G INDUSTRIES INC		Acc Ind Lnd	3.1
B13 b	O&G Industries	300 BOSTWICK AV	O&G INDUSTRIES INC	Warehouse	Industrial Mdl 96	1.6
B13 c	O&G Industries	135 OSBORNE ST	O&G INDUSTRIES INC		Acc Ind Lnd	0.1
B13 d	O&G Industries	141 OSBORNE ST	O&G INDUSTRIES INC		Acc Ind Lnd	0.2
B13 e	O&G Industries	189 OSBORNE ST	O&G INDUSTRIES INC		Acc Ind Lnd	1.7
B13f	O&G Industries	260 BOSTWICK AV	O&G INDUSTRIES INC	Commercial	Comm/Ind Mdl 96	8.8
B14 a	Martin Marietta Magnesia Specialist	471 HANCOCK AV	O&G INDUSTRIES INC	Service Shop/Garage	Ind Garage/Shop	3.6
B14 b	Martin Marietta Magnesia Specialist	580 BOSTWICK AV	O&G INDUSTRIES INC		Vac Ind Lnd	2.4
B14 c	Martin Marietta Magnesia Specialist	325 HANCOCK AV	O&G INDUSTRIES INC	Warehouse	Industrial Mdl 96	3.7
B14 d	Martin Marietta Magnesia Specialist	450 WORDIN AV	SOUTHERN CONN GAS CO		Vac Ind Lnd	1.6
B14 e	Martin Marietta Magnesia Specialist	39 PINE ST	SOUTHERN CONN GAS CO	Warehouse	Industrial Mdl 96	4.2
B15	Hi-Ho Petroleum	105 HARBOR ST	DADDARIO F FRANCIS EST	Commercial	Comm/Ind Mdl 96	2.3
B16	Inland Fuel Terminals	215 ADMIRAL ST	ADMIRAL ASSOCIATES		Vac Ind Lnd	1.2
B17	Bongo International LLC	315 SEAVIEW AV	315 SEAVIEW AVE LLC	Pre-Eng Warehs	Industrial Mdl 96	6.7
B18	Bridgeport Energy LLC	10 ATLANTIC ST	BRIDGEPORT ENERGY LLC	Pre-Eng Warehs	Pub Utility	7.4
B19	Conway Freight	100 THIRD ST	UNITED PROPERTIES	Truck Terminal	Truck Terminal	4.3

New Haven Port Facility Map



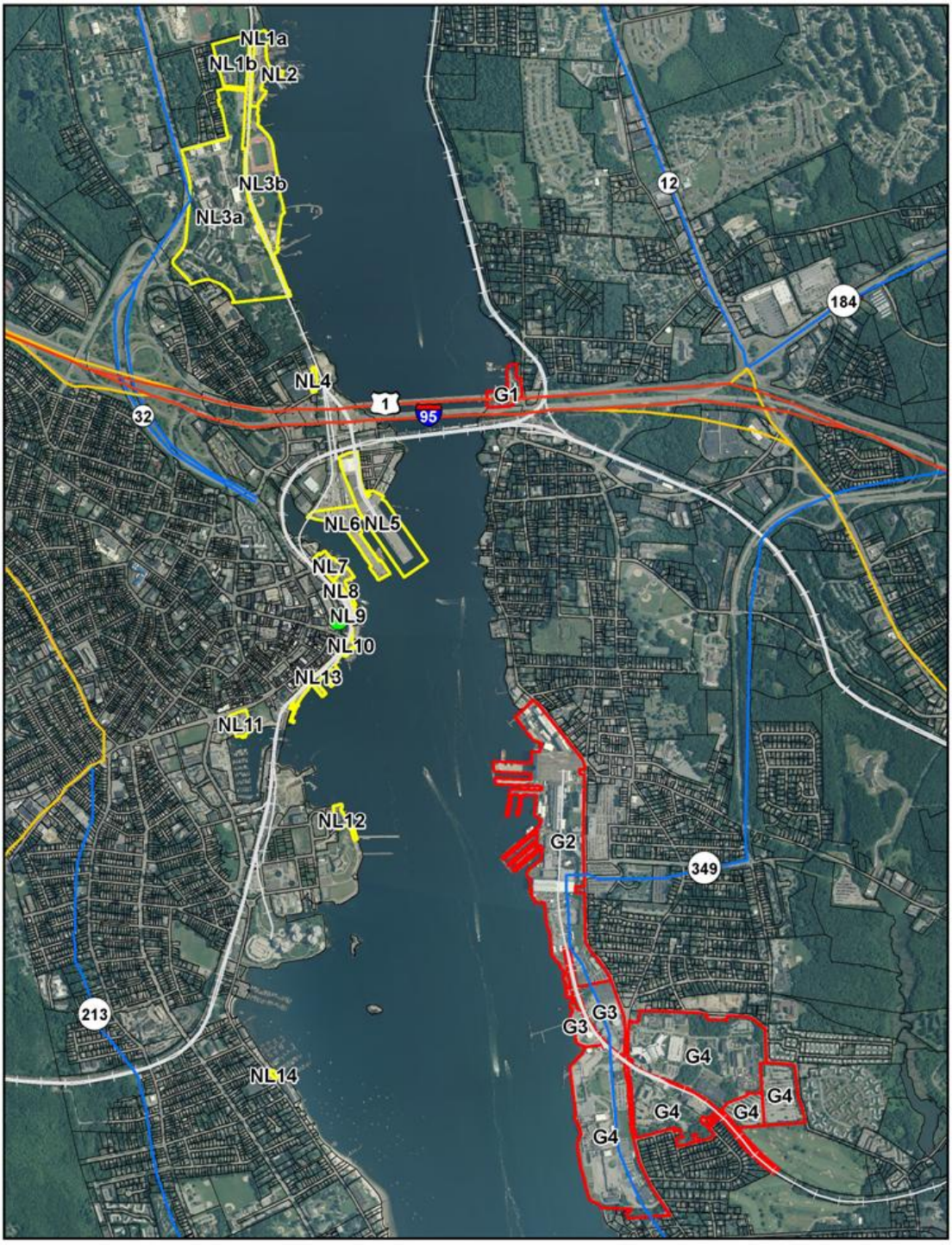
New Haven Port Facility Map Legend

ID	Label	Location	Owner Name	Style	Land Use Description	Total Land
NH1	Long Wharf Dock	LONG WARF DR	CITY OF NEW HAVEN	Equip Bldg	Exempt	7.4
NH2a	Magellan Terminal Holdings	WATER ST	WILLIAMS TERMINALS HOLDING LP	Outbuildings	Industrial	7.5
NH2b	Magellan Terminal Holdings	28 WATER ST	WILLIAMS TERMINALS HOLDING LP	Outbuildings	Industrial	8.9
NH2c	Magellan Terminal Holdings	FORBES AV	WILLIAMS TERMINALS HOLDING LP	Outbuildings	Industrial	3.7
NH3	Magellan Terminal Holdings	15 FORBES AV	WILLIAMS TERMINALS HOLDING LP	Outbuildings	Industrial	4.8
NH4	Gateway Terminals	275 WOLCOTT ST	O&G INDUSTRIES INC	Outbuildings	Industrial	3.3
NH5	Eastern Electrical Supply CO	299 CHAPEL ST	RISTAINO FRANK A	Warehouse	Industrial	1.0
NH6	NRB Corp	50 MILL ST	NEW NRB #3 CORPORATION	garage	Industrial	0.9
NH7	Amerada Hess	100 RIVER ST	AMERADA HESS CORPORATION	Outbuildings	Industrial	8.7
NH8a	NRB Corp	560 QUINNIPIAC AV	NEW NRB #2 CORPORATION	garage	Commercial	0.5
NH8b	NRB Corp	567 QUINNIPIAC AV	NEW NRB #2 CORPORATION	Outbuildings	Commercial	1.8
NH9	Tallmadge Brothers	MILL RIVER FRONT	HILLARD BLOOM SHELLFISH INC.	Outbuildings	Industrial	1.5
NH10	Buchanan Marine Terminal	360 QUINNIPIAC AV	TILCON INC	Vacant Land	Commercial	0.2
NH10	Buchanan Marine Terminal	11 FERRY ST	TILCON INC	Industrial	Commercial	0.4
NH10	Buchanan Marine Terminal	39 FERRY ST	TILCON INC	Industrial	Industrial	1.7
NH10	Buchanan Marine Terminal	69 FERRY ST	TILCON INC	Vacant Land	Industrial	0.2
NH10	Buchanan Marine Terminal	70 FERRY ST	TILCON INC	Warehouse	Industrial	1.3
NH10	Buchanan Marine Terminal	69 FERRY ST	TILCON INC	Vacant Land	Industrial	0.2
NH11	Gateway Petroleum	85 FORBES AVE	POWER TEST REALTY COMPANY	Ind/Office	Industrial	3.3
NH12	Gulf Oil	500 WATERFRONT ST	CATAMOUNT PETROLEUM LIMITED PARTNERSHIP	Garage/Office	Industrial	12.0
NH13	Magellan Terminal Holdings	134 FORBES AV	WILLIAMS TERMINALS HOLDING LP	Garage/Office	Industrial	11.1
NH14	R&H Terminals	120 FORBES AC	R&H TERMINAL LLC	Garage/Office	Industrial	8.4
NH15a	Gateway Terminals	400 WATERFRONT ST	LEX ATLANTIC CORPORATION	Office	Industrial	8.3
NH15b	Gateway Terminals	WATERFRONT ST	LEX ATLANTIC CORPORATION	Industrial	Industrial	6.4
NH15c	Gateway Terminals	410 WATERFRONT ST	LEX ATLANTIC CORPORATION	Outbuildings	Industrial	0.3

New Haven Port Facility Map Legend

ID	Label	Location	Owner Name	Style	Land Use Description	Total Land
NH16	Magellan Terminal Holdings	280 WATERFRONT ST	MAGELLAN TERMINAL HOLDINGS LP	Ind/Office	Industrial	19.7
NH17	Motiva Enterprises	481 EAST SHORE PKWY	MOTIVA ENTERPRISES LLC	Garage/Office	Industrial	37.7
NH18	Logistec New Haven Terminal Cargo Wharf	ALABAMA ST	NEW HAVEN TERMINAL INC	Vacant Land	Industrial	0.0
NH18	Logistec New Haven Terminal Cargo Wharf	ALABAMA ST	NEW HAVEN TERMINAL INC	Vacant Land	Industrial	6.5
NH18	Logistec New Haven Terminal Cargo Wharf	ALABAMA ST	NEW HAVEN TERMINAL INC	Vacant Land	Industrial	0.7
NH18	Logistec New Haven Terminal Cargo Wharf	EDGEMERE RD	NEW HAVEN TERMINAL INC	Vacant Land	Industrial	0.0
NH18	Logistec New Haven Terminal Cargo Wharf	25 CONNECTICUT AV	NEW HAVEN TERMINAL INC	Vacant Land	Industrial	0.3
NH19	Logistec New Haven Terminal Cargo Wharf	ALABAMA ST	NEW HAVEN TERMINAL INC	Vacant Land	Industrial	0.3
NH18	Logistec New Haven Terminal Cargo Wharf	165 ALABAMA ST	NEW HAVEN TERMINAL INC	Garage	Industrial	0.1
NH18	Logistec New Haven Terminal Cargo Wharf	CONNECTICUT AV	NEW HAVEN TERMINAL INC	Vacant Land	Industrial	0.5
NH18	Logistec New Haven Terminal Cargo Wharf	145 ALABAMA ST	NEW HAVEN TERMINAL INC	Warehouse	Industrial	1.7
NH18	Logistec New Haven Terminal Cargo Wharf	EAST SHORE PKWY	NEW HAVEN TERMINAL INC	Vacant Land	Industrial	0.5
NH19	Logistec New Haven Terminal Finger Pier	30 WATERFRONT ST	NEW HAVEN TERMINAL INC	Ind/Office	Industrial	25.3
NH20	PSEG Power CT	5 WATERFRONT ST	PSEG POWER CONNECTICUT LLC	Power Plant	Utility	71.3
NH21	US Coast Guard Group MSO Long Island Sound	WOODWARD AV	UNITED STATES OF AMERICA	Dormitory	Exempt	9.4
NH22	Logistec Connecticut, Inc.	BURWELL ST	NEW HAVEN TERMINAL	Vacant Land	Industrial	0.6
NH22	Logistec Connecticut, Inc.	BURWELL ST	NEW HAVEN TERMINAL	Vacant Land	Industrial	2.8
NH22	Logistec Connecticut, Inc.	BURWELL ST	NEW HAVEN TERMINAL	Vacant Land	Industrial	1.2
NH22	Logistec Connecticut, Inc.	COLORADO AV	NEW HAVEN TERMINAL INC	Vacant Land	Industrial	0.0
NH22	Logistec Connecticut, Inc.	BURWELL ST	NEW HAVEN TERMINAL INC	Outbuildings	Industrial	16.4
NH22	Logistec Connecticut, Inc.	BURWELL ST	NEW HAVEN TERMINAL INC	Vacant Land	Industrial	2.0
NH22	Logistec Connecticut, Inc.	PEAT MEADOW RD	NEW HAVEN TERMINAL INCORPORATE	Office	Industrial	11.2
NH22	Logistec Connecticut, Inc.	RUSSEL ST	NEW HAVEN TERMINAL INCORPORATE	Vacant Land	Industrial	0.2
NH22	Logistec Connecticut, Inc.	RUSSEL ST	NEW HAVEN TERMINAL INCORPORATE	Vacant Land	Industrial	4.1

New London and Groton Ports Facility Map



	New London Port Facility Map Legend					
ID	**Label**	**Location**	**Owner Name**	**Style**	**Land Use Description**	**Total Land**
NL1a	US Coast Guard T-Boat Pier	SALTONSTALL ST	UNITED STATES OF AMERICA		US GOVT MDL-00	1.1
NL1b	US Coast Guard T-Boat Pier	20 FARNSWORTH ST	UNITED STATES OF AMERICA	School/College	US GOVT MDL-94	8.9
NL2	Thames Shipyard Repair	50 FARNSWORTH ST	THAMES SHIPYARD LTD PARTNERSHIP	Warehouse	DOCKYARDS MDL-96	5.6
NL3a	US Coast Guard Academy Pier	MOHEGAN AVE	UNITED STATES OF AMERICA	Colonial	US GOVT MDL-01	74.5
NL3b	US Coast Guard Academy Pier	EAGLE DR	UNITED STATES OF AMERICA		US GOVT MDL-00	18.8
NL4	Allied Crane	1 EASTERN AVE	GI PARTNERS LLC	Warehouse	COMM WHSE MDL-94	1.0
NL5	Logistec USA	STATE PIER RD	CONNECTICUT STATE OF-STA	Office Bldg	STATE MDL-94	19.6
NL6	State of Connecticut DOT	STATE PIER RD	CONNECTICUT STATE DEPT TRANSPORT	Office Bldg	STATE MDL-94	8.4
NL7	Thames Shipyard Repair	FERRY ST	THAMES SHIPYARD & REPAIR CO	Heavy Industry	DOCKYARDS MDL-94	2.7
NL8	Thames Dredge Dock Co	WATER ST	THAMES REALTY	Office Bldg	DOCKYARDS MDL-94	1.5
NL9	New London Orient Point Ferry Wharf	WATER ST	CROSS SOUND FERRY SERVICES INC		PARK LOT MDL-00	1.2
NL10	Fisher Island Ferry Wharf	5 WATERFORNT PARK	TOWN OF SOUTHOLD	Bus/Train/Ferry Station	DOCKYARDS MDL-94	0.8
NL11	DDLC Energy	410 BANK ST	HEATING OIL PARTNERSHIPS LP	Res Convers	COM/RES	1.0
NL12	US Coast Guard New London Wharf	100 BOWDITCH ST	UNITED STATES OF AMERICA	Office Bldg	US GOVT MDL-94	1.9
NL13	New London City Pier	WATERFRONT PARK	CITY OF NEW LONDON WATERFRONT PARK		MUNICIPAL MDL-00	3.6
NL14	Thames Sport Fishing Deck	260 PEQUOT AVE	THAMESPORT MARINA LLC	Retail	MARINAS	0.2

Groton Port Facility Map Legend

ID	Label	Location	Owner Name	Style	Land Use Description	Total Land
G1	Whaling City Dredge & Dock	86 FAIRVIEW AVE	WHALING CITY DREDGE & DOCK CORP	Manufacturing Facilities	INDUSTRIAL	4.8
G2	General Dynamics Corp, Electric Boat Division	0 EASTERN POINT RD	ELECTRIC BOAT CORP	Manufacturing Facilities	INDUSTRIAL	74.9
G3	Amerada Hess	443 EASTERN POINT RD	AMERADA HESS CORP	Tanks	INDUSTRIAL	17.4
G4	Pfizer Global Manufacturing	46 BAYVIEW AVE	PFIZER INC	Single Family Residence	RESIDENTIAL	0.0
G4	Pfizer Global Manufacturing	23 EASTERN POINT RD	PFIZER INC	Manufacturing Facilities	INDUSTRIAL	57.8

Appendix B: Transportation Accessibility

A. Statewide Transportation Resources and Patterns

Connecticut is located along the Northeast Corridor between the major port cities of New York (Including Port Elizabeth, New Jersey) and Boston. Since the Connecticut Ports are not as robust travel patterns have developed for a supply economy largely serviced by truck.

Connecticut's Highway Transportation Network is depicted on Figure 1 in this appendix.

Figure 1: State of Connecticut Major Transportation Network

Highway Corridors

Interstate Route 95 is the primary expressway facility traversing the southern shore of the State. This route is a limited access highway which enters the state from New York in Greenwich and proceeds along the shore, exiting the state to Rhode Island. It is a major truck route from the Port of New York to New England destinations. Thus, during the day many through truck trips are observed on this expressway. Interstate 95 is primarily a six-lane expressway, west of New Haven, with additional operational lanes at key interchanges. East of New Haven, the highway reduces to a four-lane expressway at Branford and generally maintains this configuration to the Rhode Island State Line.

Interstate 91 Extends from New Haven to the Massachusetts State Line connecting to Interstate highways in that state which afford access to Albany and Boston. I-91 traverses New England connecting to Canada. Thus this corridor is used to by trucks to provide regional service from New York to these areas.

Interstate 84 is an east-west Expressway, which enters Connecticut from New York at Danbury and extends to I-90 in Massachusetts. This corridor is similarly used by Truck Freight to travel the NY to Boston Route. From Danbury to Waterbury the expressway is a four-lane facility and expands to six lanes from Waterbury to its connection to I-90 in Massachusetts.

Connecticut is served by several North/South expressways and arterial facilities, which largely play a connection function to its major Interstate routes noted above.

These facilities are:

- Route 7 extends from Norwalk north to Massachusetts connecting with I-95 and I-84.
- Route 8 is an Expressway extending from I-95 in Bridgeport to Winsted and intersecting with I-84. North of Winsted Route 8 is an arterial highway.
- Route 2 is an expressway extending from Hartford to Norwich.
- Route 11 is an expressway which when fully completed will extend from Colchester to New London and I-95.
- Interstate 395 extends from I-95 east of New London to Worcester, MA. This highway corridor is seeing increased technology based development.

Travel Patterns and Congestion levels

Connecticut has developed significant employment centers in its larger Cities and communities adjacent to them. In particular the I-95 Corridor from New Haven to the New York state line has seen extensive growth. During traditional commuter hours I-95 and adjacent Route 15 parkway experience significant congestion. Diminished operations and stop-and-go traffic are routine on this highway particularly in the 30-mile section from Bridgeport to Stamford.

The Connecticut Department of Transportation has provided detailed data on the level of traffic operations for state highways. **Figures 2 and 3** show 2010 and 2030 Congestion Levels on state highways. Examination of these maps clearly indicates that Southwestern Connecticut is experiencing serious congestion slowed travel. The DOT analysis projects in some areas the unrestrained volume projected demand will reach four times the available capacity of the highway. While plans are underway for some expressway improvements, the congestion noted will not be material improved. Lesser congestion is noted in the New London Area as well as Hartford. Highway travel on the expressway network serving the Port of Bridgeport and Port of New Haven will be constrained. This congestion seriously impedes truck traffic using I-95.

In 2008 ConnDOT completed a study of rest area facilities in the state partly because of truck issues. That study documented that each night some 1,300 semi trailer trucks would attempt to park in Connecticut but not be able to be accommodated. Trucks leaving New Jersey were not able to travel through Connecticut due to driver hours issues because of I-95 congestion. Figures 4 and 5 show congestion period travel time contours for Southwestern Connecticut. It is interesting to note that the computed travel time from the New York state line to the Rhode Island state line grows over one hour. It would thus be difficult for truck travel from New York Ports to pass through Connecticut without a driver rest period.

Figure 2: 2010 Highway Congestion

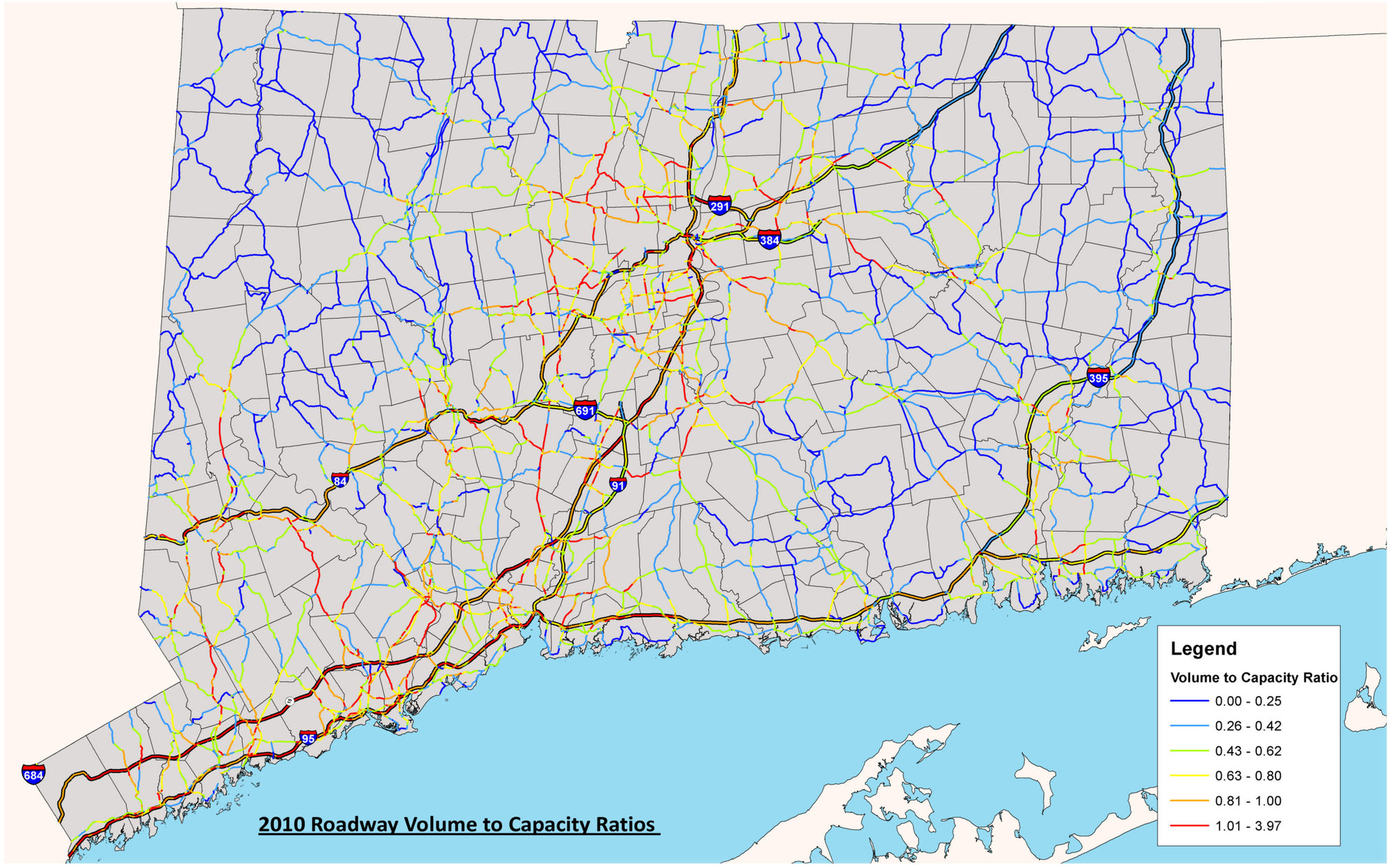


Figure 3: 2030 Highway Congestion

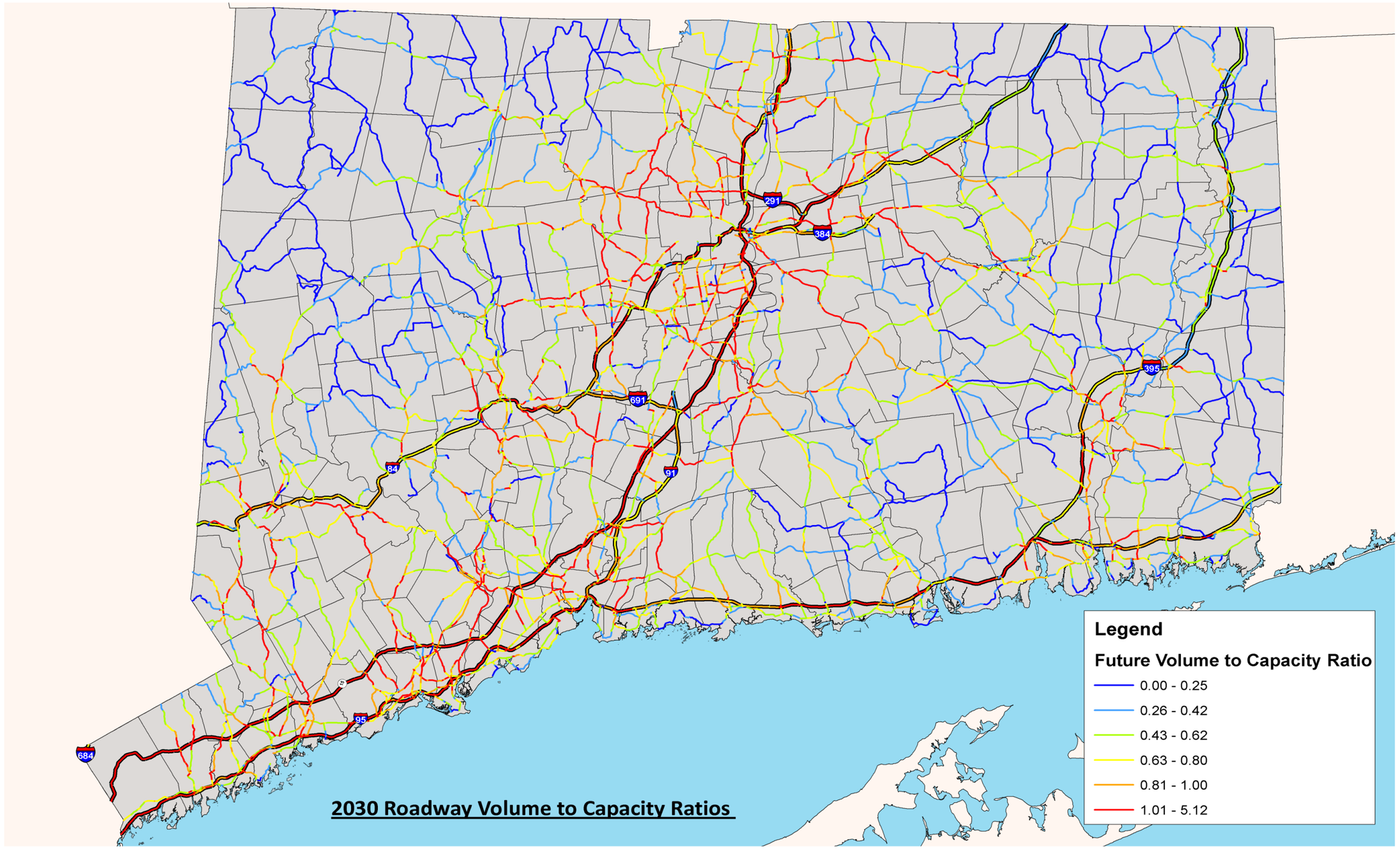


Figure 4: 2010 Mean Travel Time Along I-95 From New York State During Peak Travel Times

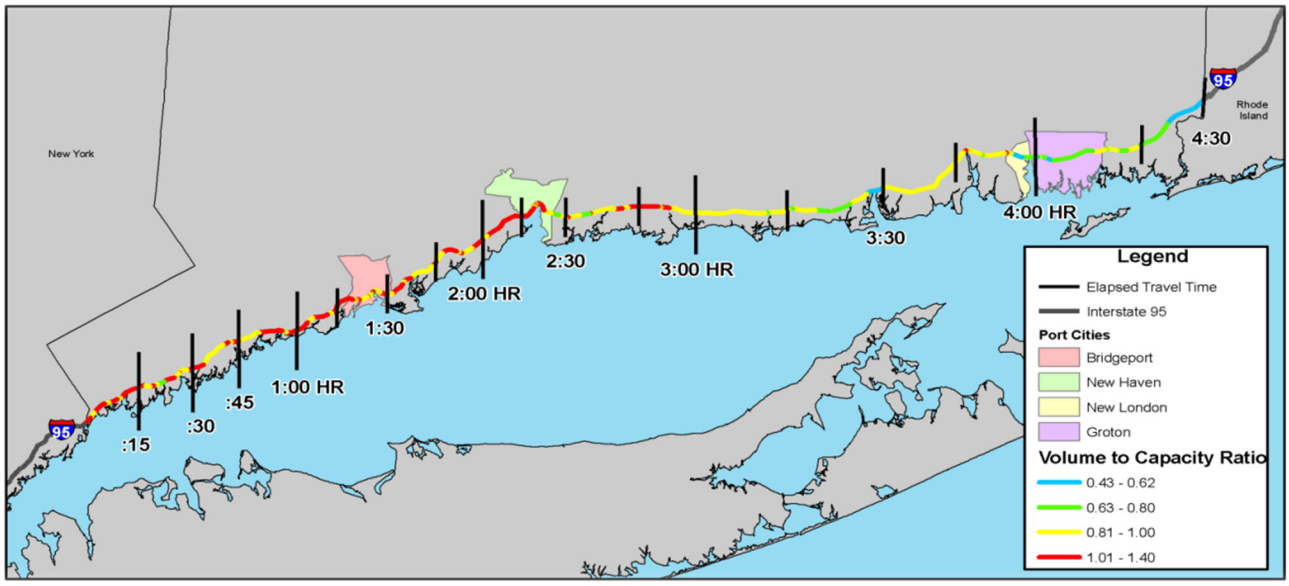
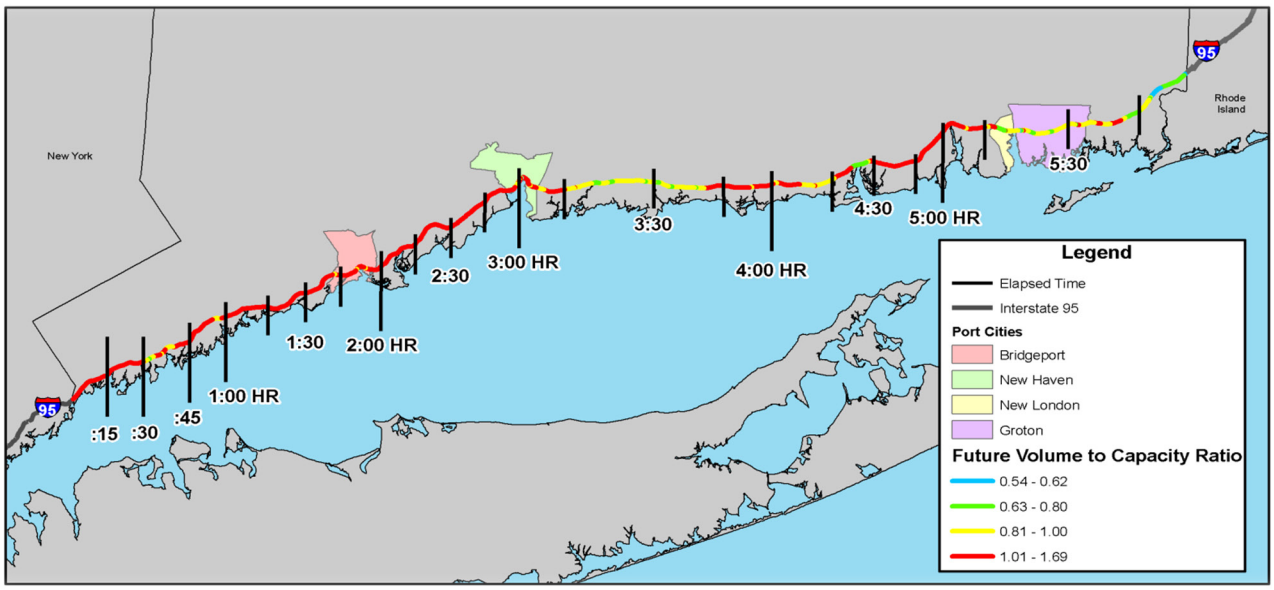


Figure 5: 2030 Mean Travel Time Along I-95 From New York State During Peak Travel Times



Projected Highway Improvements

Several of the Connecticut port facilities may experience major improvements to the expressways serving them. In New Haven the Pearl Harbor Bridge and Interchange Project will significantly improve operations to the port area. East of New Haven, long term improvement of I-95 is programmed to be widened to a six-lane facility to Rhode Island in the long term. Funding for this action is not currently available but if achieved will enhance access to the Port of New London.

Pipeline and Gas Transmission Facilities

Figure 6 shows the current routing of pipelines and similar transmission facilities in the state. New Haven is home to the port terminal of Buckeye which transports aviation fuel to from its facilities to Bradley Field International Airport.

Bulk Oil Storage is an activity found in Bridgeport and New Haven. The commitment of land to bulk storage is most significant in New Haven with over 254 acres dedicated to that use. This can be seen on Figure 7.

Figure 6: Connecticut's Gas Transmission Lines

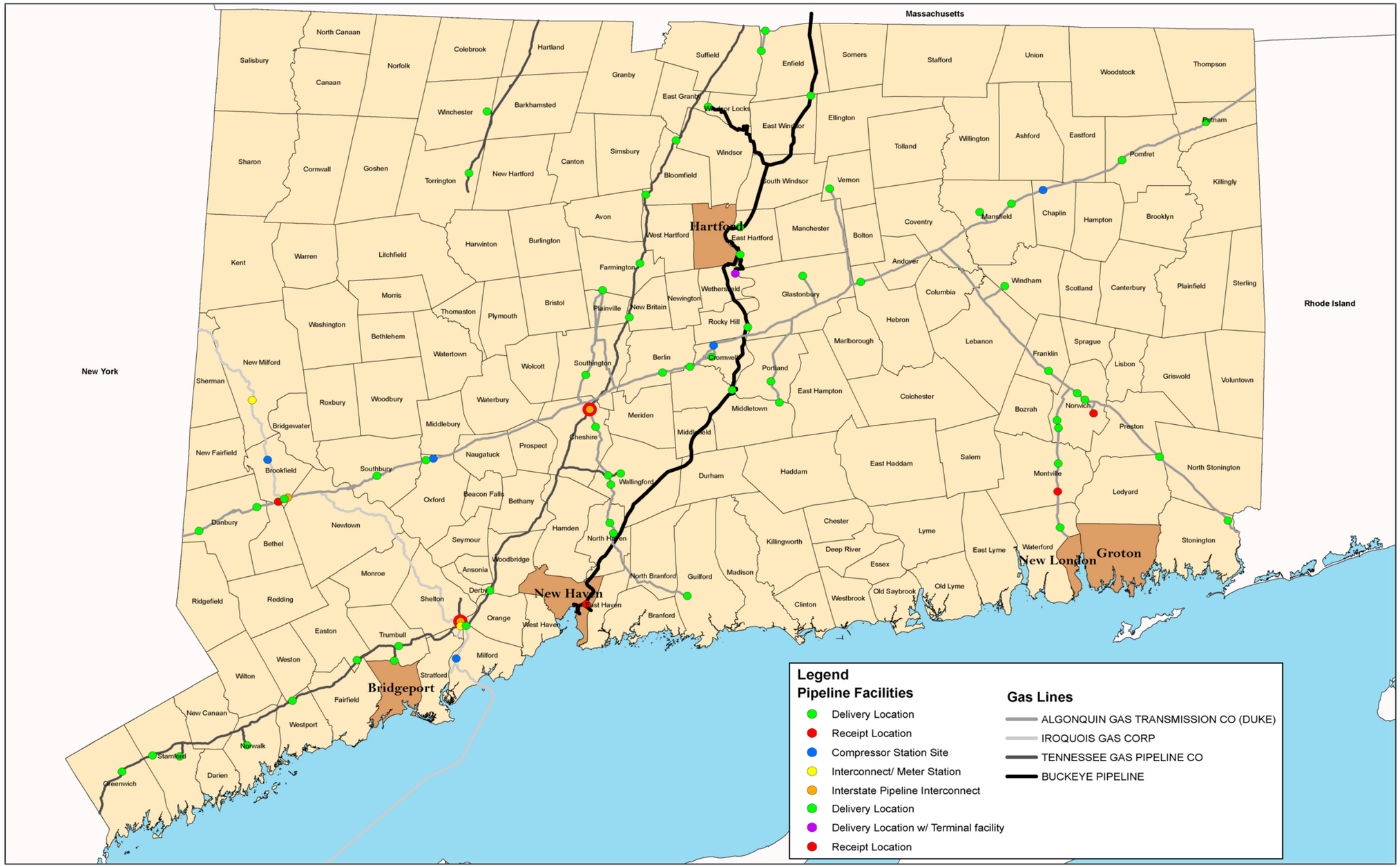


Figure 7: Port of New Haven Parcels Containing Bulk Storage: Total Acres 254.88

Rail Facilities

Connecticut has many rail lines which connect the state to the Northeast and beyond. Along the shore, the Northeast corridor is owned by Metro-North until the line reaches New Haven. AMTRAK is the owner for the remainder of the state. This rail corridor carries passenger service primarily from New York to New Haven on Metro-North and on Shoreline East from New Haven to New London. Combined with AMTRAK service, the availability of the freight service is limited. The presence of catenary power limits clearance and freight container service is not possible in this corridor. Further Track Loadings (due to bridge load ratings) do not meet the recommended standard of 286,000 lbs for the section from Greenwich to New Haven. To the east of New Haven, track weight limits are compliant with current standards.

North-south routes extend from Norwalk, Bridgeport, New Haven and New London.

Figure 8 provides the current rail system serving the state and details owners and operators.

The ports of New Haven and New London are tied to this rail system. Bridgeport, however, has only limited service and no direct rail connection to the port area. More detailed descriptions of the rail services available to each facility are presented in the following sections of this Appendix.

Figure 8: 2007 Connecticut Rail Transportation Ownership and Service

Manufacturing Development

As part of the study, the potential for developing port clients resulted in studies of land use and manufacturing in Connecticut and the Northeast. Development patterns find the manufacturing base distributed along the western segments of the interstate system, extending along the I-91 Corridor. Little manufacturing development is seen in Eastern Connecticut and confirms the reduction in vehicle travel in this part of the state. This pattern is depicted in Figure 9 for the Northeast U.S. and detailed in Figure 10 for Connecticut.

Figure 9: 2009 Total Manufacturing By County

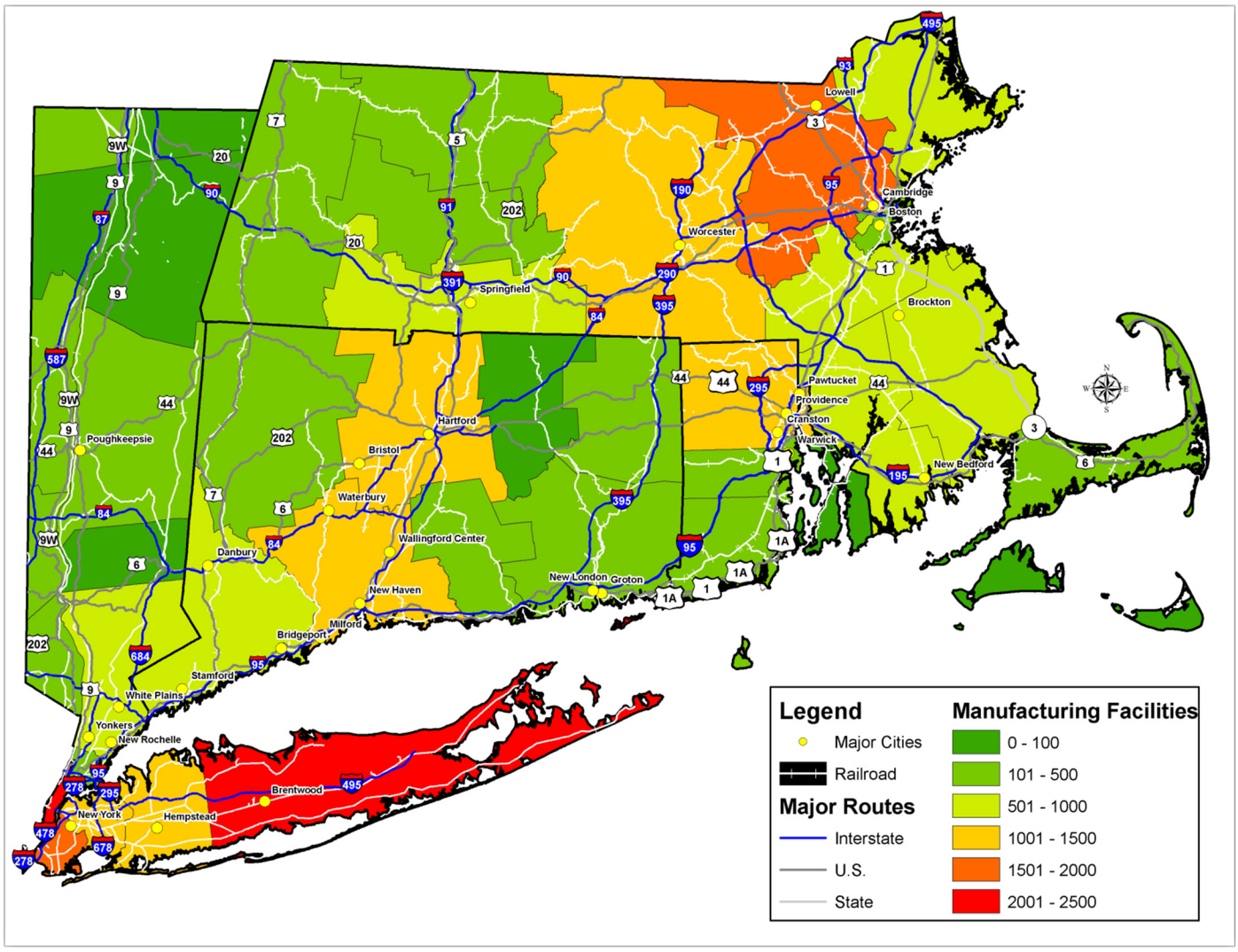
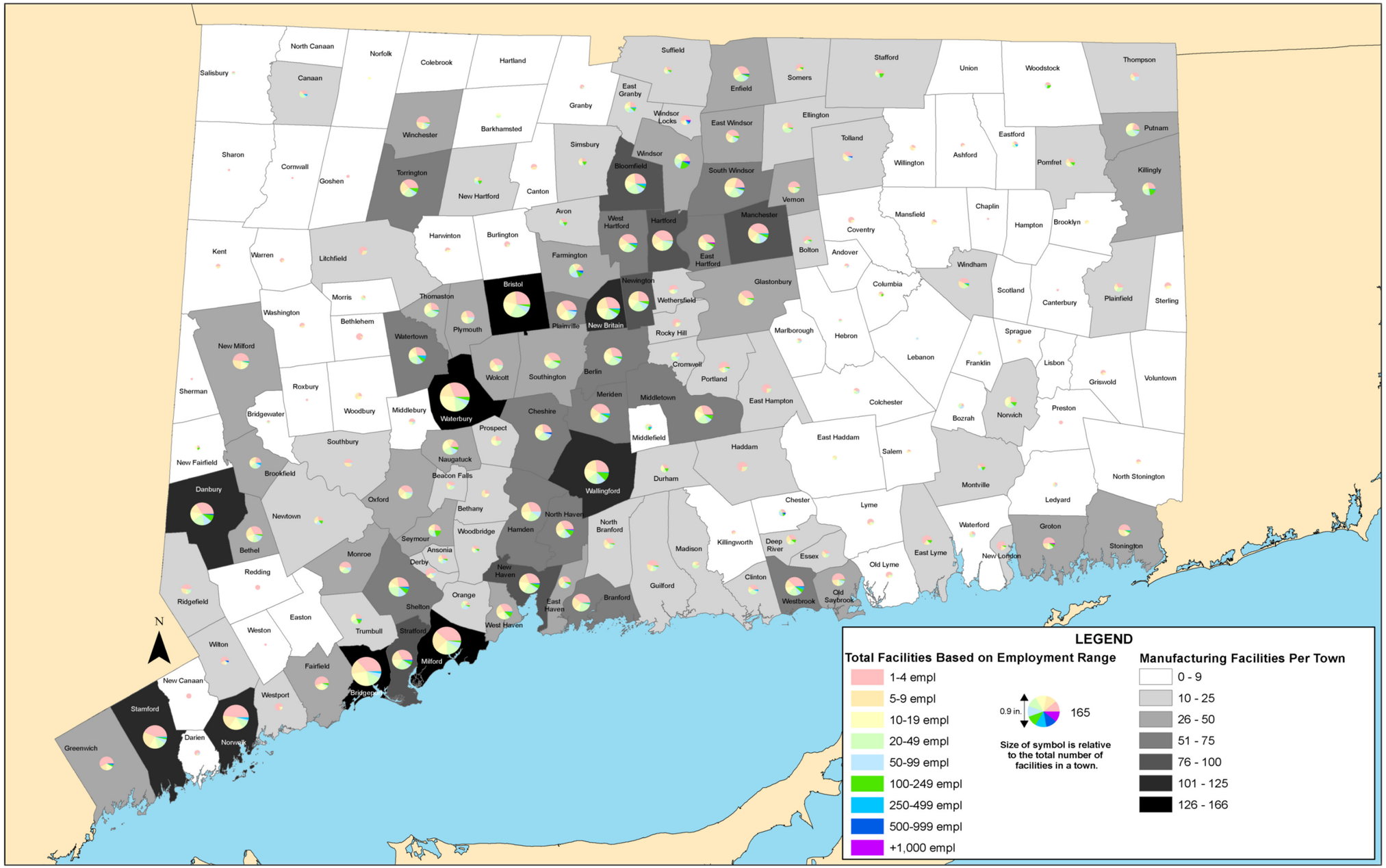


Figure 10: Manufacturing Clusters in Connecticut



Individual Deepwater Port Summaries

B. Bridgeport

a. *Highway Network* - Bridgeport is served by Access to I-95 and Route 8 as expressway facilities. Congestion on these facilities is significant and results in LOS Ratings of F in the peak congestion periods.

i. I-95 is a six-lane expressway which travels from the New York State Line to Rhode Island in Connecticut. In Bridgeport it carries from 111,000 to 135,000 vehicles per day in the port area. From the North Bridgeport is bisected by Route 8 which extends in Connecticut from 95 to the Massachusetts State line. This connection offers interchange with I-84 in Waterbury and thus connections to the east and west.

ii. Key interchanges with I-95 and the City Port area include East Main Street and Seaview Avenue

iii. Once off the interstate, the congestion levels drop significantly on the City Road System and access to port facilities are generally good. The exception to this is the current ferry operation adjacent to the Bridgeport Train Station. This area is located south of I-95 and access is somewhat circuitous. In the area of the proposed Steel Point Development roadways are currently proceeding to reconstruction to facilitate the eventual development of this major project. Access to the port areas in the vicinity to Steel Point will be enhanced. In Blackrock Harbor there is limited commercial activity which involves construction materials and some bulk petroleum operations. Again, the roadways in this area are suitable for this type of activity. Speeds on access streets are generally observed to be 25 to 30 mph.

iv. Discussions with port officials did not reveal perceived access concerns.

v. Improvements to the road system and development in the port area are largely related to a proposed relocation of the existing Ferry terminal to the area adjacent to Derecktor Shipyard and Steel Point Development Plans.

1. Review of the 2012 to 2015 Transportation Improvement Program for the Greater Bridgeport Regional Council indicated three projects which could impact port operations.
    a. 15-0346 Route 130, 127 and Waterview Ave. Scoping Design and Review funds – total $167K.
    b. 15-0351 Construction Funds for Route 130, 127 and Waterview Ave. Total $13.949K.
    c. 15-0365 Pleasure Beach Construct landside improvement for Water Taxi Service from Central Avenue and Pleasure Beach—$2.3M.

2. Private Sector Development of Steel Point Harbor will change the landscape of the port area. This project will develop over 800,000 sqare feet of retail, 300,000 sf of commercial and 2,000 residential units. A 250-vessel marina will be provided accommodating mega yachts.

Rendering Steel Point Harbor

3. Barnum Landing Ferry Improvement is proposed to relocate the current ferry terminal from the Water Street location to adjacent to the proposed Steel Point Harbor site. This project envisions the development of expanded Ferry operations capacity envisioning staging area for at least 2 vessels vehicle capacity. In addition Warehousing use is proposed with mooring capability for Cargo vessel. Total investment is anticipated to be $25M.

Barnum Landing Ferry Terminal

4. The Bridgeport Port Authority is currently soliciting proposals for operation of the former Derecktor Ship Yard. This process in ongoing and seeks to re-establish viable uses for this property.

Derecktor Shipyard

b. *Rail Facilities*
   i. Bridgeport Port facilities are not well served by rail. The Metro-North line extends through the city, paralleling I-95 in general. However, this facility has limited freight operations as it is largely dedicated to passenger service.
   ii. Freight operators include CSX and Providence and Worcester.
   iii. Current rail facilities which have freight service do not access the port areas directly. Access is provided over the Northeast corridor tracks which service also Metro-North Passenger service and Amtrak Passenger service. Thus the window for potential port-related rail connections would be severely time limited. Passenger service extends from approximately 5 a.m. to 1 a.m., leaving a four-hour window to allow freight movements.
   iv. Current freight service is limited by height and weight restrictions on the New Haven Line. Catenary structures preclude double stack container and the weight limit for freight is 263,000 Pounds. The Department of Transportation in its Draft Rail Plan lists the New Haven line as a priority upgrade section to achieve a loading of 286,000 pounds.

c. *Accompanying Maps*. A series of maps is provided to illustrate existing facilities this port.
   i. Bridgeport Transportation Facilities (Figure 11) this figure presents the highway and rail network serving Bridgeport. The road classifications and rail linkage is shown.
   ii. 2010 Congestion levels (Figure 12) the information and capacities shown on this figure and the projections for 2030 were obtained from the Connecticut Department of Transportation and derived for local roads based on available count data and geometric data. Ratings are shown are Capacity manual Level of Service which ranges from LOS A to LOS F. We have rated locations which Volume to Capacity Ratios in the Statewide Transportation Model of 1.25 or greater as LOS F. The actual Ratings on I-95 ranged to 4.0 or greater. Level of service is a term used in the Highway Capacity Manual to describe a range of congestion. Level of Service Definitions are generally defined as follows:
      1. LOS A. Free Flow. Vehicle operations are not constrained and operating speeds are determined by driver behavior and related regulations. Volume\Capacity Ratios are usually less than .25
      2. LOS B. Stable Flow. Vehicle operations are only constrained to a minor degree. Operating Speeds are not materially affected and flow is orderly. Volumes to Capacity Ratios are usually equal or less than .5.
      3. LOS C. Stable Flow. This is the LOS level that is usually considered the Design Condition. During LOS C flow drivers are aware of other traffic and may modify their behavior on the basis of surrounding traffic. Volumes to Capacity Ratios are in the range of .5 to .75.
      4. LOS D. Congested Flow. Unstable Flow. This LOS depicts conditions when drivers are significantly restricted in their behavior due to traffic flow conditions. Speeds drop on a facility and travel times increase. Volume Capacity Ratios in the range of 85% are common.
      5. LOS E Capacity Flow Unstable Flow. This is a LOS note a level of traffic flow which is not sustainable over time. Speed drop and there is significant congestion. Drivers feel constrained. Volumes to Capacity ratios are noted from .95 to 1.1. This flow rate is not maintained and will degrade to LOS F in short order

6. LOS F is Forced Flow. This is stop and go traffic. Speeds are routinely in the 15 to 25 mph range and through volumes drop markedly. Typically when a facility drops to LOS F the volume will need to be reduced to LOS C or D levels before the traffic performance will improve. For analysis purposes LOS F has been classified for Volume to Capacity Demand of 1.1 or more. For many segments in the current State Model this demand ratio is calculated to be much higher.

iii. 2030 Congestion levels (Figure 13) this figure shows the current LOS Rating for projected volumes on State Highways in the year 2030. The deterioration of LOS on major arterial is evident.

Figure 11: Bridgeport's Transportation System

Figure 12: Bridgeport's Major Routes and Selected Local Roads Level of Service 2010

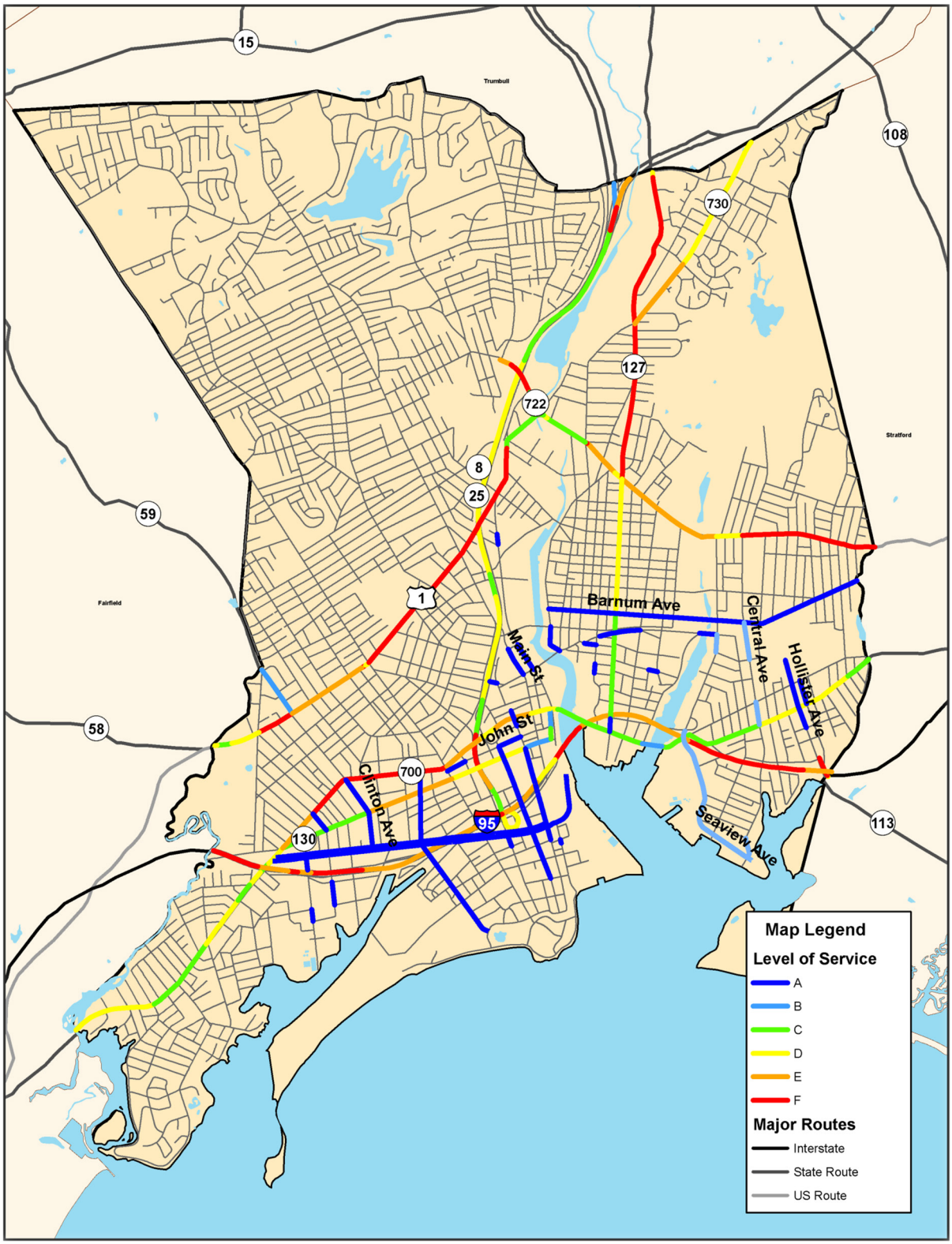


Figure 13: Bridgeport's Major Routes Level of Service 2030

C. New Haven

a. *Highway Network* This City is served by I-95 which extends along the harbor from West Haven to East Haven Frontages. I-91, another interstate facility starts at I-95 and travels north to the Massachusetts State Line and eventually into Vermont. Major State primary routes that provide access to the port area include US Route 1 and State Route 34.

   i. I-95 carries approximately 102,000 vehicles daily at the East Haven Town Line and this number grows to 150,000 in the Long Warf area on the west side New Haven. I-91 carries some 130 to 144,000 vehicles daily. Both of these Expressways demonstrate a Level of Service from E to F during peak operating hours.

   ii. Currently the Pearl Harbor Memorial Bridge and approach roadways are being reconstructed. This project will develop additional capacity in the system but peak hour congestion will continue in the future at Level D and E.

Pearl Harbor Memorial Bridge Rendering

   iii. Route 34 is a state expressway that extends briefly to the north ending the limited access portion at a parking structure. The average daily traffic on this segment is 65,000 and drops to the north.

   iv. Access to the Port area in New Haven is provided by a number of exits from the interstates which bring traffic to the local road system. Levels of Service on the local network are generally acceptable. (LOS D or better)

      1. From the east I-95 Frontage Roads provides connections to Forbes and Connecticut Avenue for access to Port Facilities.
      2. From the west I-95 provides access to the Fulton Street and through the local road connections in this area connection to port uses.
      3. Other local roads which carry significant port-related traffic include:
         a. Quinnipiac Ave.
         b. Ferry Street
         c. Waterfront Street
         d. Forbes Street
         e. Fulton Street and Fulton Terrace.
         f. Water Street

g. Long Wharf Drive
h. Sargent Drive

4. Many of the street segments serving the port area are being improved under the Pearl Harbor Bridge program. Exceptions to these improvement areas involve Waterfront street which the City is seeking to program for upgrades. This project No. 92-541 will reconstruct Waterfront Street from US 1 to the Harbor Generating Station and reestablish Rail Service. The project is currently not funded and listed for after FY 2013 in the current TIP Estimated Cost $4.900M.
5. The current TIP program listing for New Haven in the South Central Regional Council of Government program shows the following port-related projects
    a. 92-531, 92-532, 92-570, 92-585, 92-619,92—622. 92-627. These projects primarily involve I-95 adjustments. Project 92-585 is the reconstruction of Quinnipiac Ave. which is s $7.3M project improving Quinnipiac Ave. from Fulton Street to Clifton Street.

b. *Rail Facilities*

i. New Haven is served by several lines the major facility being the Northeast Corridor tracks which connect to New York and Boston. To the west this facility is owned by CDOT. To the east the tracks are owned by AMTRAK. Complicating port freight service is the dedication to Passenger Rail traffic which is on the Northeast Corridor. Service provided by AMTRAK and Metro-North dominate the line to the west of New Haven and similar service to the east by AMTRAK and Shoreline East RR. During the passenger service freight traffic is severely limited and when allowed CSX and P&W provide freight services.

ii. From the north two lines serve New Haven. The New Haven to Massachusetts Line is owned by AMTRAK and freight service is provided by CSX and CSO. Passenger Service is less frequent on this line. The second line entering New Haven in this direction is owned by CSX which provides freight service on this facility. Loading limits exist on these facilities with the need for upgrade recognized in the Draft State Rail Plan

iii. A major improvement to rail service is envisioned by reestablishment of a rail connection along Waterfront Street connecting to the Tomilson Bridge and eventually to the Shoreline East (P&W) and AMTRAK line serviced by CSO and CSX.

c. *Pipelines and related facilities.*

i. New Haven is the location of many bulk storage facilities and a significant source of petroleum imports to Connecticut. These facilities also provide some cargo services and the Buckeye Pipeline connection to Bradley International Airport in Windsor Locks carries jet fuel from New Haven. Significant facilities include:

1. Gateway Terminal

Gateway Terminal

Gateway Terminal is an established fully licensed and bonded deep water marine terminal operator handling various types of dry and liquid bulk and break bulk cargoes. Founded in 1985, Gateway Terminal is situated on eight acres in the heart of the New Haven Harbor region with over 50 acres of storage area and the only independent and privately owned marine terminal in the state of Connecticut. (Source: City of New Haven Port Authority)

2. Gulf Terminal

Gulf Terminal

Gulf Oil Limited Partnership is a national branded supplier of motor fuels throughout the United States.

3. Magellen Terminal
4. Motiva Terminal
5. New Haven Terminal
6. Buckeye Pipeline

Each of the above facilities services bulk petroleum products. Gateway and New Haven Terminals are primarily general marine deep water port facilities and service other cargos.

d. *Accompanying Maps*

i. New Haven Transportation Facilities (Figure 14)

ii. Congestion Levels New Haven 2010 (Figure 15) Congestion levels are presented based on data provided by the Connecticut Department of Transportation. This mapping depicts congestion ratings in accordance with the Highway Capacity Manual. Level of Service ratings range from A to F and were based on computed Volume to Capacity Ratios.(V\C) The V\C Ratio and LOS ratings have been extended from State Highways by using available count data and geometric data.

iii. Congestion Levels New Haven 2030 (Figure 16) 2030 Data was derived from the ConnDOT Statewide Transportation Model.

Figure 14: New Haven's Transportation System

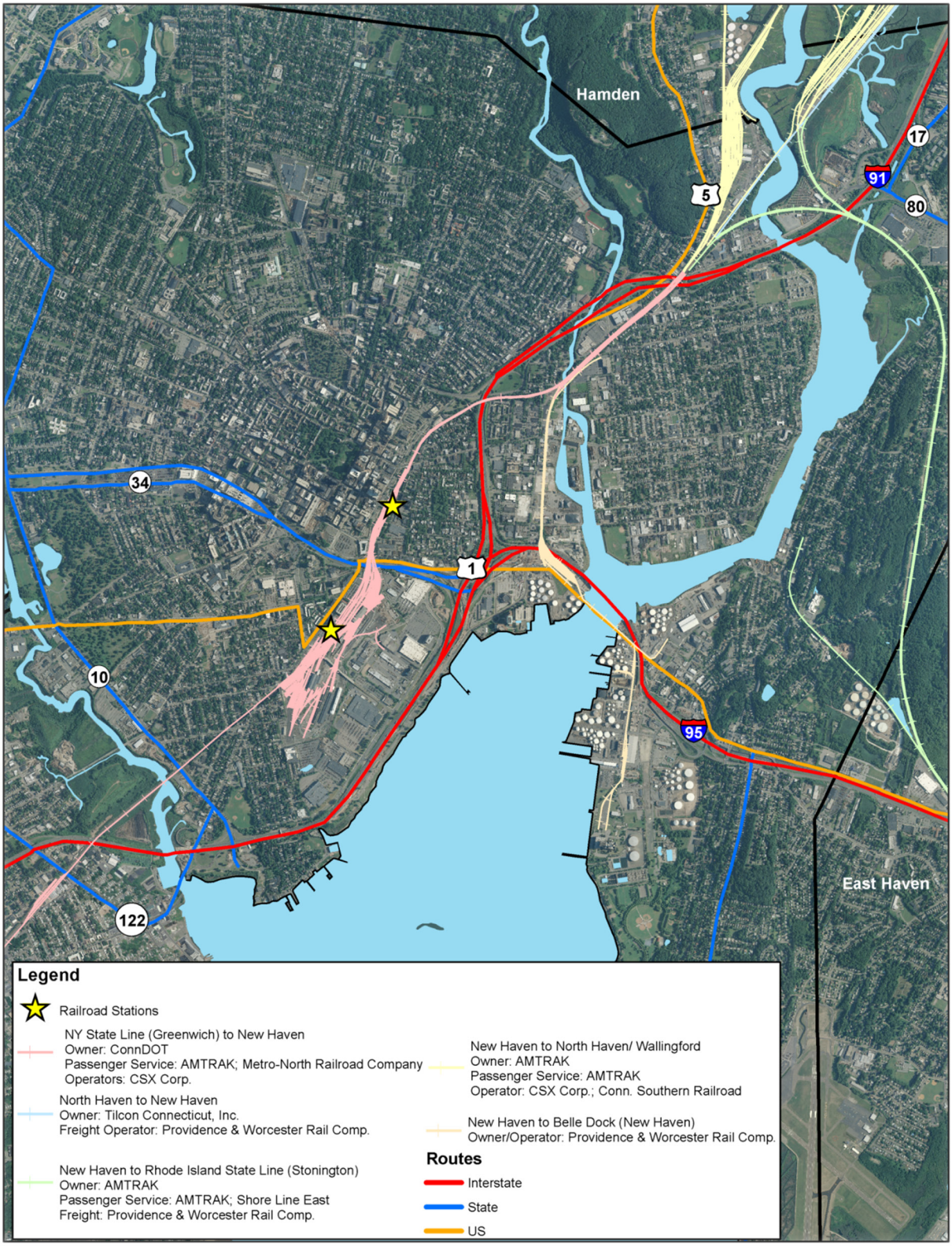


Figure 15: New Haven's Major Routes and Selected Local Roads Level of Service 2010

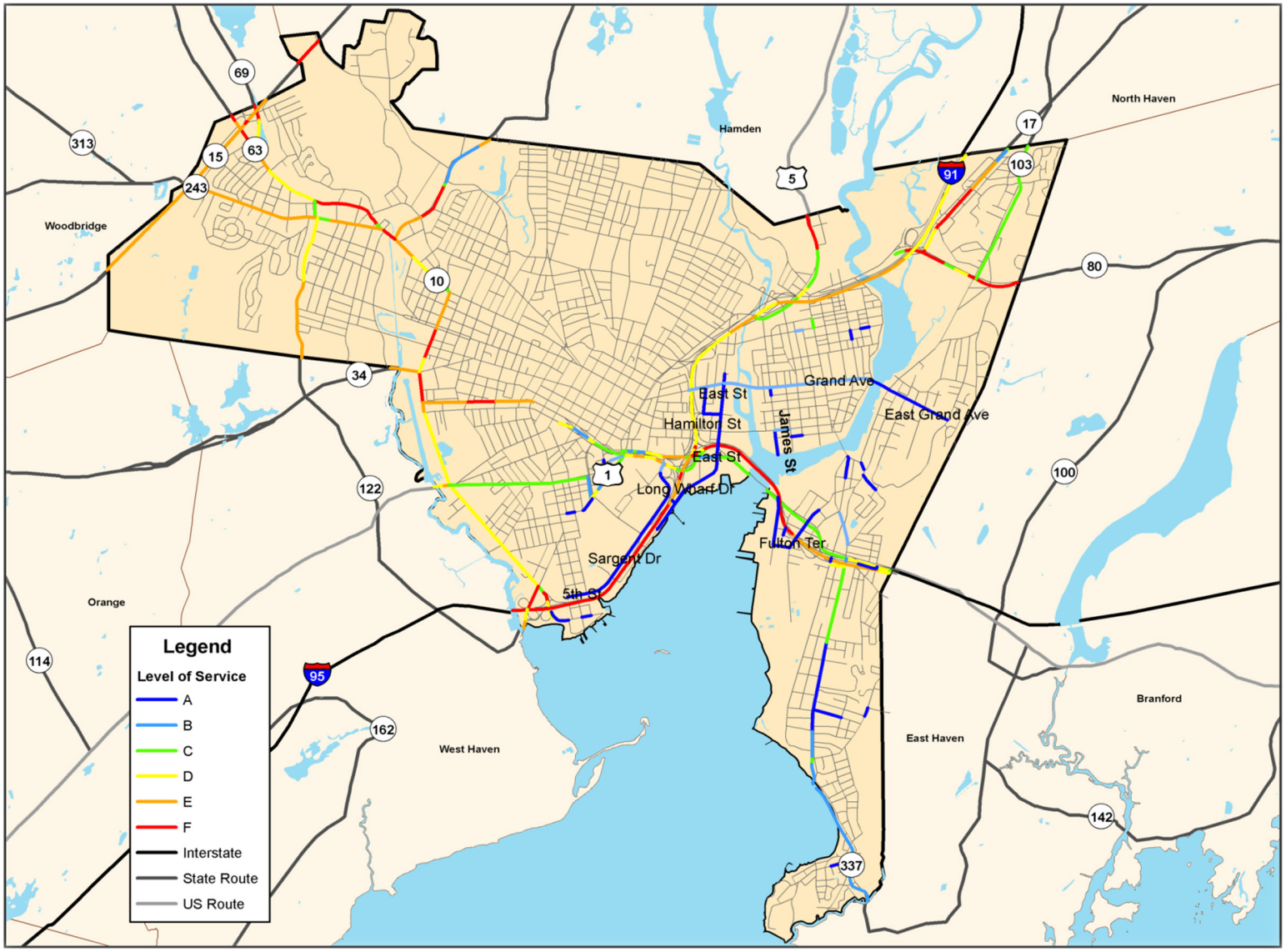
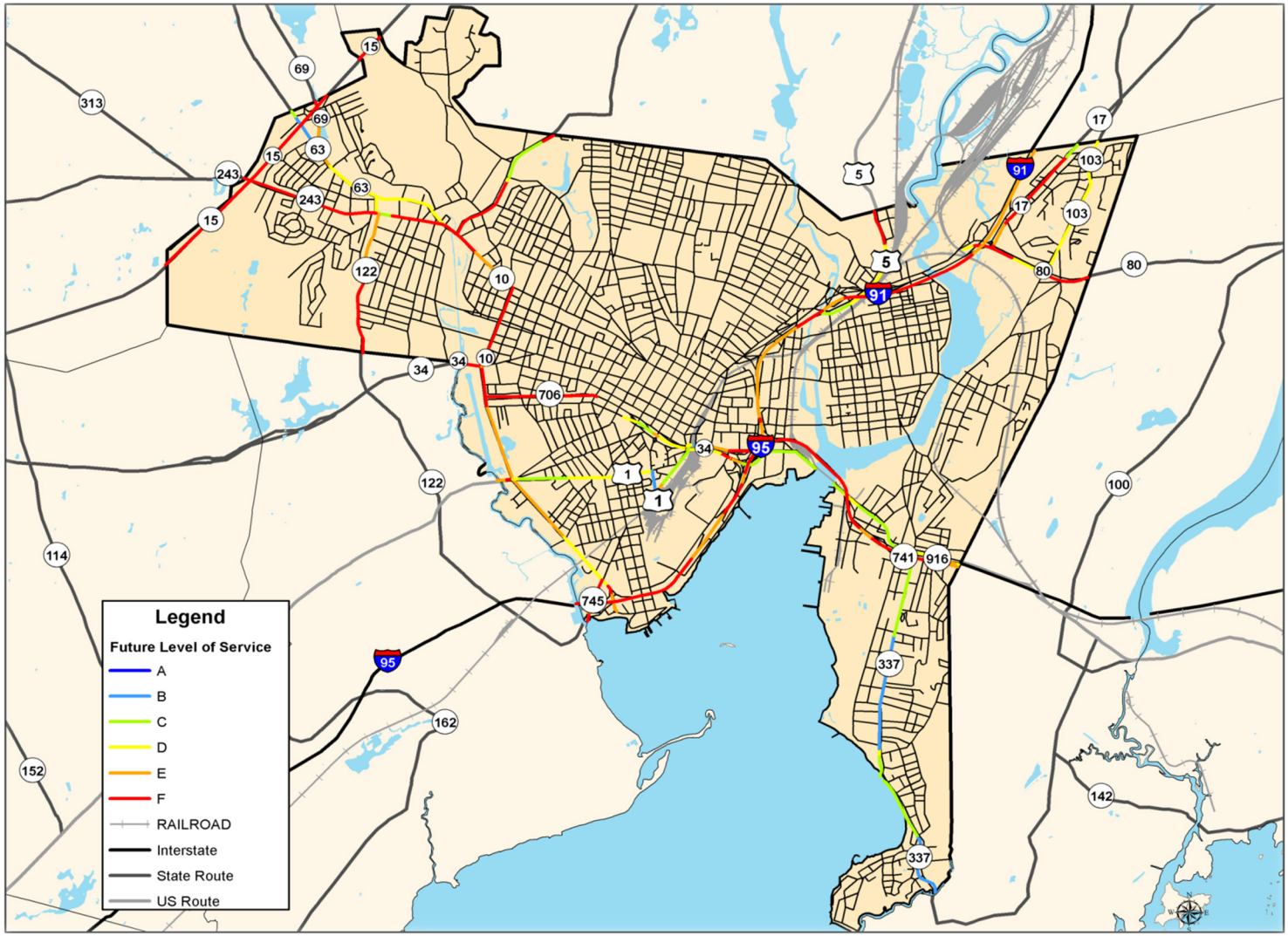


Figure 16: New Haven's Major Routes Level of Service 2030



D. New London

a. *Highway Network*—The New London Port is actually a combination of port facilities in the City of New London and the Town of Groton. On the New London side, the features include:

i. The State Pier
ii. Thames Shipyard
iii. Cross Sound Ferry
iv. Coast Guard Academy facilities
v. Municipal Docks

For the Groton side the port features are:

i. Electric Boat General Dynamics
ii. Pfizer
iii. Groton Submarine Base.

The highways serving New London include I-95, I-395, Route 85, Route 32, Route 12 and US Route 1. Traffic volumes on the Interstate Routes are much reduced in this area with corresponding congestion levels. I-95 carries approximately 63,500 daily through trips. Route 32 some 31,000, Route I-395 26,700 and Route 85 approximately 30,200.
Access to the port facilities vary in context. Several of the facilities are serviced by access routes which start out as limited access routes and as they approach the port facilities utilize lesser route classifications. In the case of some New London facilities, access is by way of residential streets. This limitation may impact some port facility improvement due to community issues.

In New London the major port facility is the State Pier with its supporting areas. Access is provided by State Pier Road which passes under the Northeast Corridor Rail Tracks. The vertical clearance of this access is posted for 13' 11". State Pier Road connects to Route 32 and I-95 in close proximity. Thus commercial vehicles have good access to the expressways.

Thames Shipyard

The Thames Shipyard is located to the north of the Coast Guard Academy and is accessed by city streets connecting to Route 32. These streets are bordered by residential development. Deshon, Nameaug, Oneco and Farnsworth Streets provide this connection.

The Cross Sound Ferry is located on Ferry Street, which is accessed by Governor Winthrop Boulevard, with traffic approaching on Broad Street (Route 85) and Eugene O'Neill Drive from the I-95 corridor. Access to the site is also available from the Downtown and New London Transportation Center along Water Street and by pedestrian connections.

Municipal Docks and the adjacent Fort Trumbull facilities are accessed by Bank Street, Pequot Street and other downtown streets.

For the Groton side of the port, the major facilities are provided access to the interstate system by the Clarence Sharp Highway (once named the Defense Access Highway). This route (State Highway 349) extends from I-95 into the Groton commercial area. For a major portion of this road, the facility has limited access and has been developed to expressway standards. In Groton this becomes a multi-lane arterial which is named Rainsville Road and leads to General Dynamics Electric Boat. Access to the waterfront is provided by Eastern Point Road, which traverses north and south, affording convenient highway facilities to each of the major waterfront commercial and manufacturing sites.

Traffic levels on the local road systems are routinely well within capacity. There are some spot congestion issues on Route 349 at shift changes for General Dynamics Electric Boat. These are limited and do not warrant major roadway modifications.

b. *Proposed Highway Improvement Project.*
   i. Based on the current Transportation Improvement Program listing for the Southeastern Connecticut Council of Governments for the years 2012-2015, there are limited projects programmed for the towns of Groton and New London. Project 94-XX02 is noted for pavement rehabilitation work for Montauk Avenue. Funded at $875K. In Groton Projects 58-283 and 58-308 are programmed for a Streetscape improvement in Mystic and Bike Ped facility along Thomas Road.
   ii. In the long term, project needs have been identified for the eventual widening of I-95 to a six-lane facility from the Rhode Island State Line to Branford. This project is not funded but would eventually improve LOS ratings on I-95.

c. *Rail Facilities*. New London is served by the AMTRAK-owned Northeast Corridor tracks which travel from New York to Boston. Passenger service on this facility is offered by AMTRAK and Shoreline East Railroad. Freight service is offered by Providence and Worcester.

In addition the State Pier and Defense facilities in Groton are serviced by P&W on the east shore of the Thames River extending to Norwich and the Massachusetts State Line. Track operated by P&W is capable of a modified 286,000 rating. This is achieved by alternating car loading. Alternate Car Loading is the practice of having every other freight car loaded to the 286,000 pound limit. Other cars are limited to the current 263,000-pound load. The loading goal is to improve this track to allow unrestricted loading. The New England Central Railroad line from New London to Stafford provides direct access to the State Pier. The line is currently rated for 263,000-pound freight and required Bridge analysis and repair to achieve the desired 286,000-pound rating. The New England Central Railroad has indicated an interest in additional service to the Port of New London. This venture would however be contingent on some certainty of increased demand. At the port facility, approximately 1,300 feet of storage track is present and accessible to NECR. The recent port study undertaken by the Department of Transportation did indicate the need to improve internal port vehicular access, but the facilities exist to support increased rail use. NECR as a carrier which extends from New London to Canada and has the potential to provide a cargo stream to the port.

A dedicated freight link extends from the northeast corridor in Groton to the port area. This facility is owned and operated by P&W. This facility accesses the shoreline at General Dynamics and offers the opportunity for increased service to the east shore of the Port of New London.

d. *Attached Mapping*
   i. New London Transportation Facilities (Figure 17)
   ii. 2010 Congestion Levels (Figure 18)
   iii. 2030 Congestion Levels (Figure 19) Congestion data was obtained from the Connecticut Department of Transportation and provides information based on the Statewide Transportation Model. This data lists projected Level of Service ratings based on the Highway Capacity Manual for state facilities and local road for which traffic volume data was available. Level of Service ratings range from A (Free Flow) to F (Forced Flow). Unlike the other two port area the state highway network is not overly congested.

Figure 17: New London & Groton's Transportation System

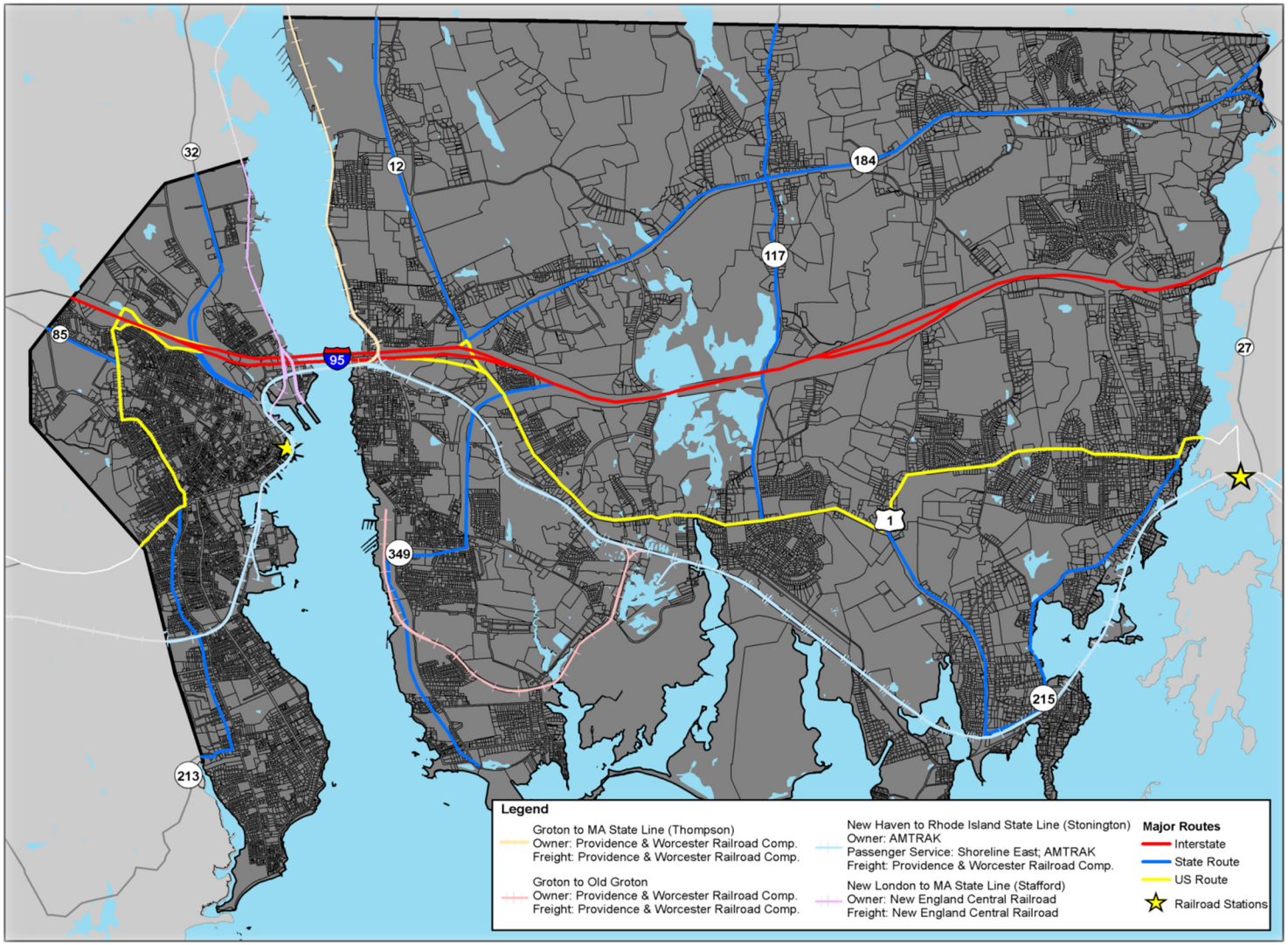


Figure 18: New London & Groton's Major Routes and Selected Local Roads Level of Service 2010

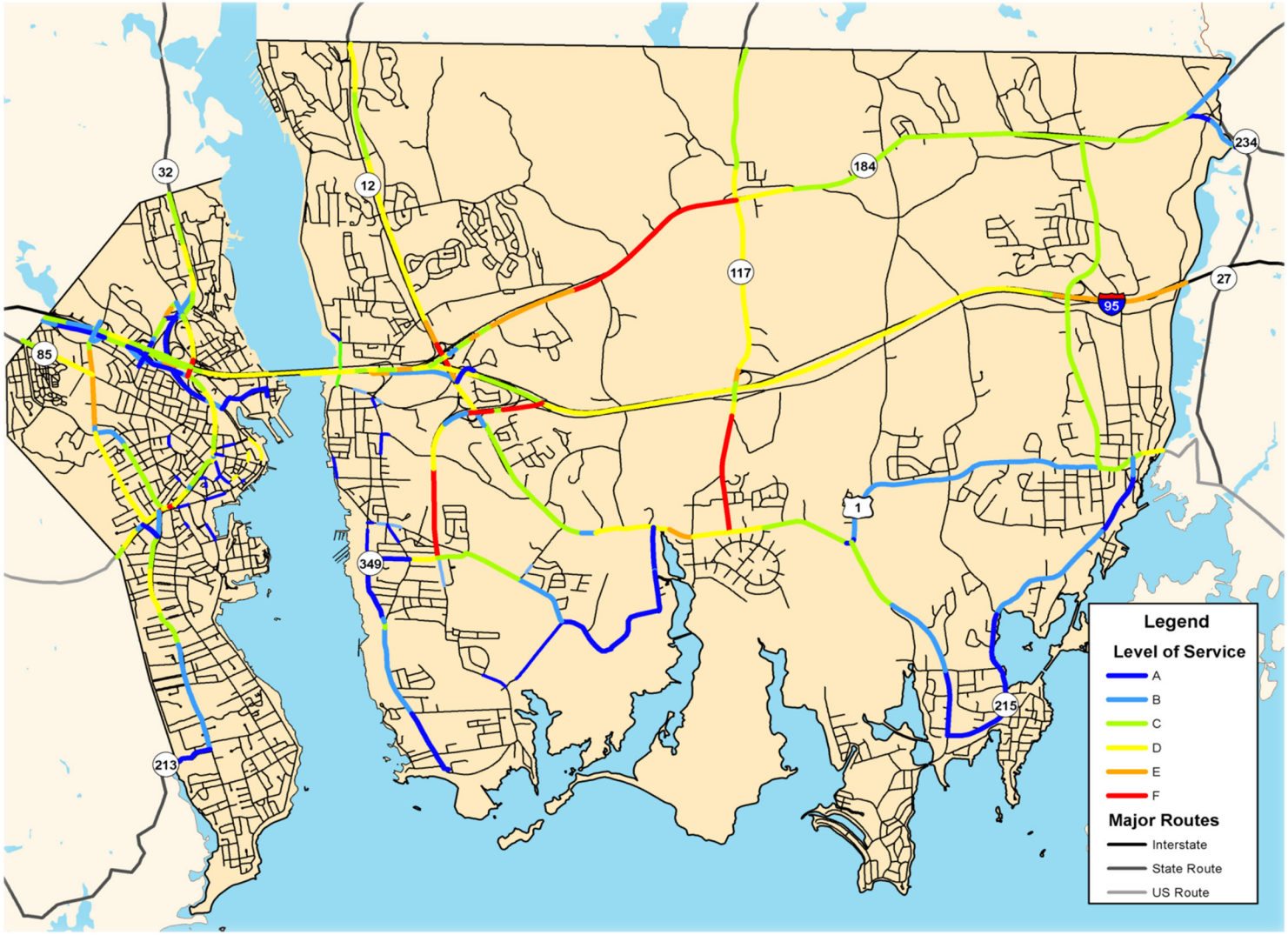
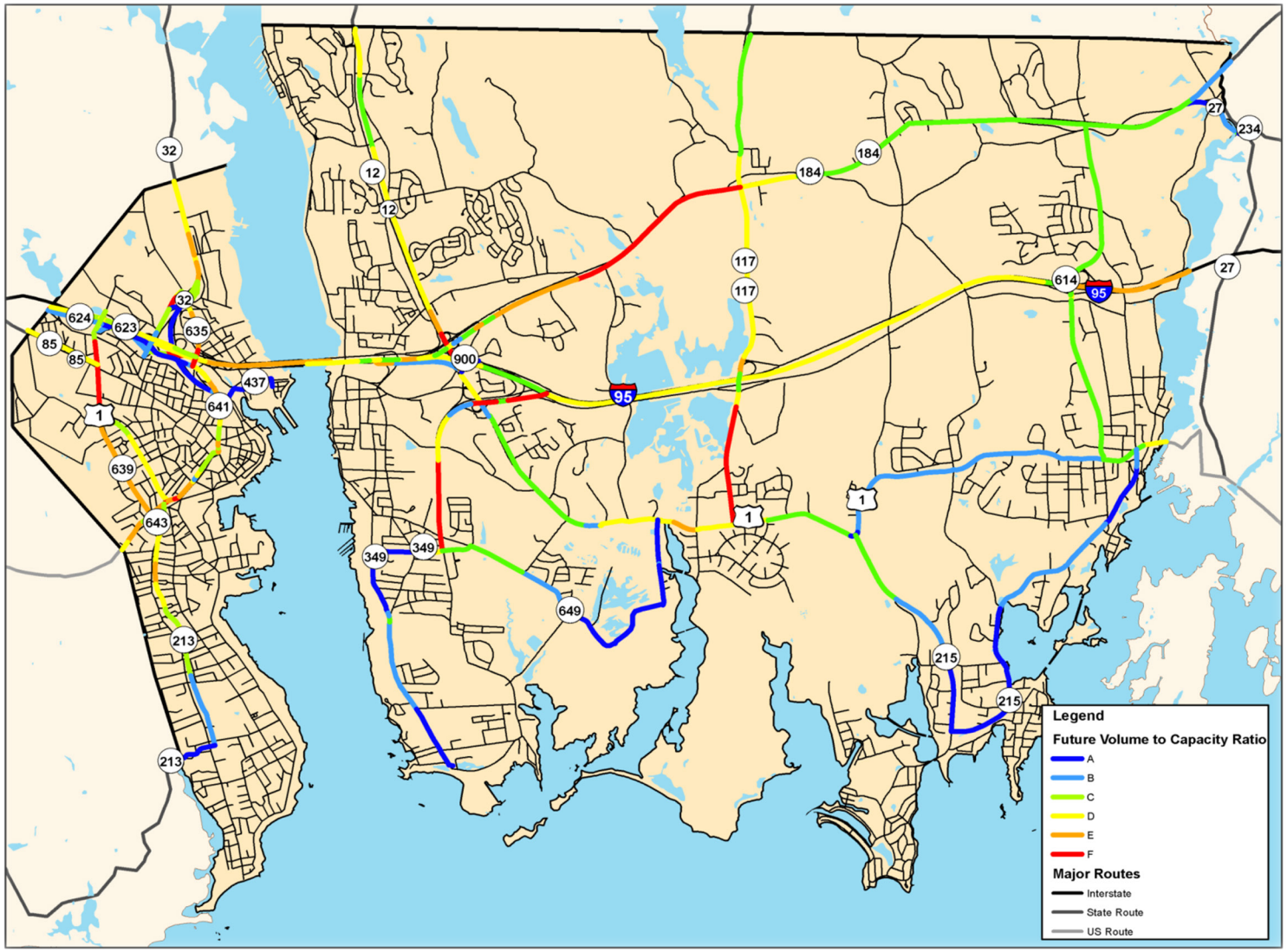


Figure 19: New London & Groton's Major Routes Level of Service 2030



APPENDIX C:
Interviewees

Appendix C: Interviewees

This appendix includes a full listing of all those persons, organizations and companies that were interviewed. Interviews, in person and via telephone were conducted with a wide cross section of stakeholders. The interviews included Connecticut State government commissioners, State Government officials, Port Authority Directors and representatives, Ferry Company Owners and Operators, Terminal Operators, Stevedores, Shipyard owners, Local Economic Development Agency representatives, Short Sea Shipping Line Executives, Consultants and a Seafood Cooperative Representative. The main purpose in conducting these interviews was to:

- Engage with the different agencies within the CT State government to gain a better understanding of their requirements for this study and to understand how a refreshed and combined strategy for the three deep water ports could be adopted and incorporated into the budgeting and planning of the respective state agencies.
- Obtain an understanding of the day to day port operations from the differing viewpoints of State Agencies, Port Authorities, Terminal Operators, Stevedores, Shippers and Ferry company operators.
- Develop an understanding of the efficacy of the public and private sector investments that have already been made in the three ports and their related Transportation infrastructure.
- Verify and validate the flow of Commodities and Cargo into and out of CT, compiled from published data with the on the ground experience of the terminal operators and port businesses.
- Gain an understanding of the private sector business plans for operations at each of the three deep water ports and gather pertinent information on the economic development environment for the private sector.

Table C-1: Interviewees

Agency/Organization/Company	Interviewee(s)	Position
CT Office of Military Affairs	Bob Ross	Executive Director
CT Dept of Economic & Community Dev.	Stan McMillen	Chief Economist
CT Dept of Transportation	Tom Maziarz	Bureau Chief
CT Dept of Energy & Environmental Protection; Office of Long Island Sound Programs	Dan Etsy, Brian Thompson	Commissioner
New Haven Port Auth.	Judi Sheiffele	Executive Director
CT Dept of Energy & Environmental Protection; Office of Long Island Sound Programs	Brian Thompson	Director
CT Dept of Economic & Community Development	Catherine Smith	Commissioner
CT Dept of Energy & Environmental Protection	Ellen Pierce, Paula Gomez, Jennifer Riley	Bureau Air Management
CT Dept of Transportation	Chuck Beck	Maritime Manager
CT Dept of Transportation	Joe Salvatore	Dredging Coordinator
City of New London	Ned Hammond	Economic Development Coordinator
CT Dept of Transportation	Jim Redeker	Commissioner
Bridgeport Port Authority	Andy Nunn,	Acting Executive Director

Agency/Organization/Company	Interviewee(s)	Position
Bridgeport Port Authority	Don Eversley	Director of Economic & Business Development
Bridgeport Port Authority	Ed Lavernoich	Assistant Director of Economic & Business Development
Bridgeport Port Authority	Martha Klimas	Project Manager/FTZ Administrator
McAllister Towing and Bridgeport Port Jefferson Ferry Company	Brian McAllister & Co	Owner, Manager
New London Cruise Task Force	George Cassidy, John Casey	New London Cruise Team
Coastline Terminals Inc.	David Shuda	Manager
Logistec (New London)	Jay Baird & Co	Manager of Sales & Marketing
Thames Shipyard & Cross Sound Ferry	Adam Wronkowski & Co	Owner
Thames River Seafood Cooperative	William Costigan	Founding Member
Moran Shipping Agency	James Gura	Vessel Manager
American Feeder Lines	Percy Pyne	CEO
Columbia Coastal	Bruce Fenimore	Manager
Norfolk Tug	Ed Whitmore	Manager
Gateway Terminals	Coy Angelo, Steve Davis	Managers
New England Central Railroad (NECR)	Douglas Low	Marketing & Sales Manager
Rail America	Charles Hunter	Rail America Operations
CT Maritime Coalition	Bill Gash and other members of the Coalition	Executive Director
Gulf Terminal New Haven	Joe Sierejko	Manager
Magellan Midstream Partners New Haven	Glenn Owens	Area Supervisor
New Haven Terminal, New Haven	Mike Vasatura	Vice President
Greenleaf Biofuels, New Haven	Gus Kellogg	President
Motiva Enterprises	Rick Voytek	Terminal Supervisor
Bridgeport Landing Development LLC	Jeanne Webb	Development Coordinator

Formal Letters inviting comment and participation in the study were sent to the following:

Agency/Organization/Company	Interviewee(s)	Position
East Haven, CT	Joseph Maturo	Mayor
Fairfield, CT	John Sullivan	First Selectman
Groton, CT	Mark Oefinger	Town Manager
Stratford, CT	John Harkins	Mayor
Waterford, CT	Dan Steward	First Selectmen
West Haven, CT	John Picard	Mayor

Appendix D: Previous Studies and Reports

In accordance with the requirements of the study's terms of reference, a comprehensive listing of previously completed studies, planning documents, concept reports and Tiger Grant applications were compiled. These together with the interviews that were carried out (See Appendix C) provided the required background information and stakeholder insight necessary to carry out this study. A bibliography of these reference materials is as follows:

- (excerpts from) State Pier Municipal Development Plan: New London, Connecticut (January 1999)
- Connecticut Maritime Coalition: Strategic Cluster Initiative: Linking Connecticut's Future with the Emerging Global Trade Grid (July 10, 2000)
- http://ctmaritime.com/downloads/10%20July%202000%20Strategic%20Maritime%20Cluster%20Final%20Report.pdf
- The Economic Impact of Connecticut's Deep water Ports: An IMPLAN and REMI Analysis (January 9, 2001)
- http://ctmaritime.com/stats.html
- Port of New London: Can New London be a Transit Container Port? (slide show) (January 31, 2001)
- Container Barge Feeder Service Study: Bridgeport, New Haven, New London, Norwich (March 2001)
- http://www.ct.gov/dot/LIB/dot/Documents/dpolicy/barge/BargeReport.pdf
- Connecticut Maritime Cluster Strategic Plan (December 2001)
- http://ctmaritime.com/stats.html
- Connecticut's Ports: Transportation Centers for People and Goods (May 2002)
- http://ctmaritime.com/stats.html
- Connecticut's Ports: Transportation Centers for People and Goods: Executive Summary (May 2002)
- http://ctmaritime.com/stats.html
- Container-On-Barge Pre-Feasibility Study: Final Report (July 2003)
- Comprehensive Economic Development Strategy for Southeastern Connecticut (2004)
- http://www.secter.org/Portals/0/pdfs/CedsReport.pdf
- Long Island Sound Waterborne Transportation Plan: Summary Presentation of Final Report (slide show) (November 29, 2005)
- City of Bridgeport, Connecticut: Harbor Management Plan (January 29, 2006)
- Impact of Cruise Ship Passengers on Local Merchants in New London, CT (January 28, 2008)
- Employment, Income, Working Conditions and Vessel Safety in New Bedford – after Amendment 13 to the Multispecies Management Plan (January 31, 2008)
- Bridgeport 2020: A Vision for the Future: Master Plan of Conservation & Development (March 2008)
- http://hadleygroupllc.com/wp-content/uploads/2010/03/Bridgeport-Master-Plan-Bridgeport-2020-A-Vision-for-the-Future-Chapters-1-8.pdf

- Substitute House Bill No. 5746: Public Act No. 08-101: An Act Concerning the Department of Transportation (shows substitutes for section of public acts and general statutes that were repealed) (Approved May 27, 2008)
- Container-On-Barge Port Concept Paper (June 2008)
- CT Statewide Rest Area and Service Plaza Study: CONN DOT Project No. 170-2533: Volume 1 – Administrative Report – Recommended Improvement Program (September 2008)
- Bridgeport Harbor: Bridgeport, Connecticut: Dredged Material Management Plan: Appendix C: Economic Evaluation (December 2008)
- Application for Designation of the I-95 Marine Highway Corridor (May 2009)
- American Recovery and Reinvestment Act: Tiger Grant Application: Port of New Haven, Connecticut: Port Infrastructure Project (September 15, 2009)
- Connecticut Economic Strategic Plan (September 2009)
- http://www.ct.gov/ecd/lib/ecd/connecticut_esp-final.pdf
- 2012 VT Wood Chip & Pellet Heating Conference (slide show) (January 16, 2010)
- Port and Infrastructure Analysis for Offshore Wind Energy Development (prepared for Massachusetts Clean Energy Center) (February 2010)
- Economic Impact Study of Maritime Industries in Connecticut (February 16, 2010)
- http://ctmaritime.com/final_conn_maritime_report_051810.pdf
- EIS Appendixes; Appendix A: EIS Maritime Industry Contact Interview Log and Interview Summaries; Appendix B: Strategic Economic Documents Reviewed; Appendix C: USACE Dredge Needs Summary Tables; Appendix D: Technical Details on the IO Model (appendixes to above listing) (February 2010)
- Recreational Boating Plan: New Bedford Harbor (August 2009 updated through May 2010)
- Assessment of Commercial Interests for American Marine Highways in New Bedford (June 28, 2010)
- Port of New Bedford: Quantification of Base Seafood Cargo (August 2010)
- Development of a Strategic Plan for Reducing Emissions Associated with Freight Movement in Connecticut (this is a proposal) (February 2, 2011)
- SECTER CEDS Data Update: Final Draft with Revisions (March 2011)
- http://www.ct.gov/dot/cwp/view.asp?a=3529&Q=487648&PM=1
- State Pier Needs and Deficiencies Planning Study: New London, Connecticut (March 2011)
- http://www.ct.gov/dot/lib/dot/documents/dcommunications/majorprojectupdates/FINAL_DRAFT_REPORT-March2011.pdf
- America's Marine Highway Report to Congress (April 2011)
- Port of New Bedford Massachusetts: Freight Rail Connections: Excerpts from the New Bedford Business Development Study (April 29, 2011)
- Marine Highway Working Group and Stakeholders Webcast (slide show) (May 10, 2011)

- National Cooperative Freight Research Program Report 12: Framework and Tools for Estimating Benefits of Specific Freight Network Investments (2011)
- Published reports of NCFRP can be ordered through: http://www.national-academies.org/trb/bookstore
- Bridgeport Dredge Summary (July 2011)
- America's Marine Highway Program Update: Delaware Valley Regional Planning Commission (slide show) (July 2011)
- New Bedford Business Development Study and Commodity Analysis: Connecting to the World (July 20, 2011)
- Draft Scope of Services: Preliminary Engineering (10% Design): State Pier Improvements, New London (August 24, 2011)
- http://www.ct.gov/dot/cwp/view.asp?a=3529&Q=487648&PM=1
- Bridgeport Regional Maritime Complex: Bridgeport Connecticut (revised September 30, 2011)
- Governor's Economic Summit: Best Practices for Advancing Economic Development and Re-Inventing Connecticut (slide show) (October 6, 2011)
- New England Cargo Potential (slide show) (October 18, 2011)
- Connecticut Department of Transportation: State Pier Improvements – Construction Schedule: New London, Connecticut (October 19, 2011)
- House Bill No. 6801: October Special Session, Public Act No. 11-1: An Act Promoting Economic Growth and Job Creation in the State (approved October 27, 2011)
- http://www.cga.ct.gov/2011/ACT/Pa/pdf/2011PA-00001-R00HB-06801SS2-PA.pdf
- American Marine Highway Design Project: Final Report (October 28, 2011)
- (Tiger III New London Pier Application- looks like mostly paperwork, but does include a brief description of project, two letters of support, and a federal wage certification) (October 2011)
- Port of New London: State Pier Facility: Tiger Grant Application (I think this is just the narrative) (2011)
- http://www.ct.gov/dot/cwp/view.asp?a=3529&Q=487648&PM=1
- Barnum Landing: Ferry Improvement Project for Connecticut I-95 Traffic Mitigation (Tiger Grant application) (October 31, 2011)
- (CT delegation support letter for New London pier Tiger application) (November 18, 2011)
- Marine Highways' New Direction (JOC article) (November 21, 2011)
- www.joc.com/print/429284?page=3
- Bridgeport Tiger Application and Support letters (October-November, 2011)
- Estimating Freight Flows for the Northeast United States: Update (January 15, 2012)
- Special Legislative Commission to Study Potential Economic Opportunities in the Development of Port Facilities in the State of Rhode Island (February 2012)

- Potential Impacts of Reductions in Refinery Activity on Northeast Petroleum Product Markets (February 2012)
- Rhode Island State Senate Economic Summit: Expanding Jobs through Port Resources (February 27, 2012)
- America's Marine Highway Update (March 16, 2012)
- BGreen 2020: A Sustainability Plan for Bridgeport, Connecticut
- Cluster Progress and Goals, page 1-5 (Connecticut Maritime Coalition documents)
- http://ctmaritime.com/stats.html
- OLR Bill Analysis: House Bill 6801 (as amended by House "A"): Emergency Certification: An Act Promoting Economic Growth and Job Creation in the State http://www.cga.ct.gov/2011/BA/2011HB-06801-R01SS3-BA.htm
- 2011 International Trade Survey
- Executive Summary: Harbor Study: New Bedford, Massachusetts
- New Bedford Port Infrastructure Assets
- New London State Pier: Property Characteristics
- http://www.ct.gov/dot/lib/dot/documents/dcommunications/majorprojectupdates/State_Pier_Property_Characteristics_handout[1].pdf
- New London State Pier Facility Tiger III Benefit-Cost Analysis
- A similar version can be found at http://www.ct.gov/dot/cwp/view.asp?a=3529&Q=487648&PM=1
- State Pier Needs and Deficiencies Planning Study: State Pier Facility New London
- New London Becoming a Popular Cruise Ship Stop (two page article)
- Update on the Marine Highway Initiative: New England Trade Development Summit (slide show)
- Port of New Haven Strategic Land Use Plan 2007 www.cityofnewhaven.com/uploads/landuseplan(1).pdf

Appendix E: Suggested Outline for a "Request for Expressions of Interest" (RFEI) Process Proposer Qualification Requirements & Evaluation Criteria

Technical Capability

Respondents should be capable of executing their development plans and operating the proposed marine terminal once development is complete. To this end, technical qualifications of Respondents will be evaluated based upon their past experience in development and operation of marine terminals. The following areas of expertise are needed:

1. Planning, design and construction of capital improvements;
2. Operation and maintenance of cargo terminals;
3. Labor relations with longshoremen's unions;
4. Marketing and customer service;
5. Information technology;
6. Environmental stewardship and community relations;
7. Worker safety; and
8. Compliance with security regulations

Financial Capability

The evaluation of financial capabilities will address whether the submission adequately responds to the financial capability requirements of the Project. The following aspects of financial capability are relevant:

1. Ability to pay an up-front payment;
2. Ability to guarantee annual or monthly payments; and
3. Ability to raise financing for future capital expansion works on and off terminal.

Indication of Desired Lease Terms

Comments are solicited regarding the anticipated capital investment the Respondent would expect to make in the facility as well as regarding a non-binding indication of the lease payments and lease structure that would be acceptable to the Respondent. Incorporating the feedback from Respondents to the following questions, the Port Authority will develop a final lease structure and terms that may serve as the basis for a subsequent Request for Proposals (RFPs) to be issued to selected respondents.

Environmental, Capacity and Competition Issues

The Port Authority's objectives are to provide environmentally sustainable and commercially competitive cargo terminal capacity in the New England Region. Respondents shall also be judged on their ability to meet these objectives

All questions from organizations qualified to submit a response to this RFEI and the answers provided by the Port Authority shall be shared with all qualified Respondents.

Submittal requirements

Submittals should be prepared in a simple, straightforward, and concise manner. All RFEI submittals should follow the format outlined below.

- Cover Page
- Cover Letter / Executive Summary
- Table of Contents
- Respondent Information

Description of the entities that make up the Respondent: List all Respondent members and describe the anticipated legal relationship (governance and capital structure) among the Respondent members (e.g. partners, shareholders, consultants, contractors, service providers) as appropriate. The roles (e.g. investors, designers, construction, operation, maintenance) that each Respondent will perform must be documented.

Contact Person: Provide a single contact person for all future communication between the Port Authority and the Respondent, including name, title, organization, mailing address, email address, telephone numbers and fax numbers.

Controlling Interests: Identify the individuals or companies holding a major or controlling interest in each Respondent member.

Technical Capability: The response to this RFEI should document the technical qualifications of the Respondents in the following areas of expertise. For each area of expertise, the Respondent member having the expertise should be identified.

1. Development. Respondents should provide evidence demonstrating their experience in the planning, design, permitting and construction of capital improvement projects at marine terminal facilities. Relevant information including dates, locations, total costs and partner firms involved in the development should be listed.
2. Operations and Maintenance. Respondents should provide evidence demonstrating their ability to operate and maintain a container terminal. Each Respondent should describe its and its Respondent members' experience with:
    - Operation and management of a high-volume marine terminal;
    - Marine terminal facility maintenance and repair;
    - Assessment of the need for remedial maintenance over time; and
    - Equipment maintenance.
3. Labor Relations. Respondents should document their experience in labor relations with longshoremen's unions. Respondents shall provide information regarding the labor unions involved, i.e. International Longshoremen's Association (ILA) vs. International Longshore and Warehouse Union (ILWU) and the duration of relations.
4. Marketing and Customer Service. Respondents should document their experience providing customer service to international shipping lines as well as logistics companies, railroads and local shippers. The response should list marketing resources available to the Respondent (i.e. number of dedicated customer service personnel, locations of call centers, etc.)

5. Information Technology. Respondents should delineate their experience implementing information technology solutions at container terminals. Experience with terminal operating systems, equipment positioning systems, optical character recognition systems and other related technologies should be listed.
6. Environmental Stewardship and Community Relations. To the extent possible, Respondents should demonstrate their track record of environmental stewardship, specifically relating to mitigation of air quality and water quality impacts of port terminal operations, and experience cooperating with community stakeholders.
7. Worker safety. Respondents should list their experience mitigating occupational hazards and ensuring worker safety, and describe policies in place. Statistics regarding injuries and fatalities at terminals currently operated by the Respondent should be included.
8. Compliance with security regulations. Respondents should document their experience implementing systems and policies to comply with new security requirements such as Transportation Worker Identification Credential (TWIC), radiation detection, etc.

Financial Capability: The Respondent should provide audited financial statements for each Respondent member that would be expected to be a financial stakeholder. In particular, such Respondent members should detail their abilities to contribute to the equity of the Lessee and their ability to raise third party financing for a project of this nature and scope. The following specific factors should be directly addressed:

- Outline of a preliminary financial plan;
- Capability of raising debt and equity in the current capital market, and indication of support obtained at this stage from third party financiers; and
- Number and size of past relevant transactions, and the roles performed in the same.

Proposed Lease Structure/Terms: The Connecticut Port Authority has no firm preference for the lease/concession structure used for the New London site. As part of this RFEI process the Port Authority solicits non-binding thoughts and suggestions regarding the lease/concession structure that would be most appealing to any interested developer. The following is offered as a guide for discussion and information, but it is not intended that a response to each point be regarded as mandatory, and a comprehensive response is not required to qualify for further consideration by the Port Authority. However, it is hoped that provision of information is completed in as much detail as possible.

- Describe/discuss the nature and value (in broad terms) of the capital investments that are anticipated by the Respondent, including the staging of this investment
  - Infrastructure including berths, dredging, pavement, gates, fencing and storage facilities.
  - Cargo handling equipment, including quay cranes, yard cranes, top-pick stackers, yard trucks,forklifts, etc.
- A discussion of non-binding indications of concession/lease value (assuming the investment delineated above by the Respondent) including a possible lease term and the breakdown between up-front, fixed, and volume based payments.
  - Duration of lease (e.g. 30 year, 50 year, 75 year or 99 year).
  - Up-front payment to Connecticut Port Authority.
  - Annual payments to Connecticut Port Authority during site development.

- Annual payments to Connecticut Port Authority indexed to CPI (assuming the up-front payment and lease duration defined above) .
  - Fixed;
  - Volume-based (indicate volume projections assumed to estimate volume-based payments);
  - Share of revenue; and/or
  - Share of profit.

Deadline

Legal

No Liability for Costs

The Port Authority shall not be responsible for any costs or damages incurred by any entity in connection with the solicitation process, including but not limited to costs associated with preparing responses, qualifications, and proposals, and of participating in any conferences, oral presentations, or negotiations.

Modification and Termination Rights

The Port Authority reserves the right to modify or terminate this process and/or to reject any submittal or proposal at any stage, if the Port Authority determines such action to be in its best interests. The issuance of this RFEI or the receipt, review or consideration of submissions or other documents at any stage of either this RFEI or the selection process will in no way obligate the Port Authority to proceed with the Project or to enter into any contract of any kind with any party. The Port Authority reserves the right to choose none, one or more proposers for further discussion and negotiation on the project.

Appendix F: Technical Market Study

Pervasive Economic Trends Driving Trade in Connecticut

With the exception of containerized consumer products, demand for goods trade in Connecticut will be difficult to preserve due to economic forces.

- Connecticut's population growth forecast of 0.15% annually between 2010 and 2030, is the lowest in New England, which regionally is expected to increase at a far-slower rate than the country as a whole
- The low population growth forecast is suggestive of comparatively slower economic activity
- Slower growth in demand for consumer products
- Slower growth in manufacturing activity (availability of young/cheap labor)
- Slower growth in demand for housing and construction related projects

Population Forecasts (Millions)

Region, division, and state	Projections July 1, 2010	Projections July 1, 2015	Projections July 1, 2020	Projections July 1, 2025	Projections July 1, 2030	*CAGR 2010 - 2030*
United States	**308.94**	**322.37**	**335.80**	**349.44**	**363.58**	***0.82%***
Northeast	**55.79**	**56.57**	**57.14**	**57.47**	**57.67**	***0.17%***
New England	14.74	15.05	15.31	15.49	15.62	*0.29%*
Maine	1.36	1.39	1.41	1.41	1.41	*0.20%*
New Hampshire	1.39	1.46	1.52	1.59	1.65	*0.87%*
Vermont	0.65	0.67	0.69	0.70	0.71	*0.44%*
Massachusetts	6.65	6.76	6.86	6.94	7.01	*0.27%*
Rhode Island	1.12	1.14	1.15	1.16	1.15	*0.16%*
Connecticut	**3.58**	**3.64**	**3.68**	**3.69**	**3.69**	***0.15%***
% or National Share	*4.8%*	*4.7%*	*4.6%*	*4.4%*	*4.3%*	
Middle Atlantic	41.05	41.51	41.83	41.98	42.05	*0.12%*
New York	19.44	19.55	19.58	19.54	19.48	*0.01%*
New Jersey	9.02	9.26	9.46	9.64	9.80	*0.42%*
Pennsylvania	12.58	12.71	12.79	12.80	12.77	*0.07%*
% or National Share	*13.3%*	*12.9%*	*12.5%*	*12.0%*	*11.6%*	

- Despite the implications of the population forecasts, Connecticut will remain a robust consumer market, driving demand for containerized goods as a result of its comparative wealth. Connecticut remains the wealthiest state per capita in the U.S., as measured by personal income, excluding Washington, D.C.

Top 5 Wealthiest States per Capita (Personal Income - $ Annual)

Area	2005	2006	2007	2008	2009	2010	2011
United States	35,452	37,725	39,506	40,947	38,846	39,937	41,663
District of Columbia	56,362	60,957	65,329	70,686	68,357	70,710	73,105
Connecticut	**48,134**	**52,324**	**55,859**	**56,959**	**53,012**	**54,239**	**56,889**
Massachusetts	44,097	47,559	50,150	51,902	49,788	51,304	53,621
New Jersey	43,880	47,500	50,256	52,141	49,549	51,139	53,181
Maryland	42,405	44,858	46,839	48,864	47,611	49,023	51,038
New York	41,108	44,567	47,852	49,408	46,824	48,596	50,545

- Connecticut's goods economy accounts for20% of the State's total economy which is less than the national average of 27%. Nationally, the goods economy has remained relatively stable at between 27 – 28% of the total. Connecticut's goods economy has declined from 23% to 20% of the State total.
- This goods economy helps drive trade to/from respective regions throughout the US, as sectors within these regions consume intermediate materials and produce finished goods. For this analysis the goods economy is assumed to be composed of the following sectors:
  - Agriculture
  - Mining
  - Utilities
  - Construction
  - Manufacturing
  - Wholesale Trade

Real GDP by Industry

	2005	2006	2007	2008	2009	2010	*2005 - 2010 CAGR*
All industry total	197,055	204,181	210,271	208,742	204,995	211,345	*1.4%*
Agriculture, forestry, fishing, and hunting	363	337	320	304	335	327	*-2.1%*
Mining	68	58	47	38	34	47	*-7.1%*
Utilities	3,194	2,977	3,339	3,419	3,061	2,926	*-1.7%*
Construction	6,980	6,816	6,541	6,113	5,082	5,076	*-6.2%*
Manufacturing	23,690	26,863	27,071	25,189	20,401	21,657	*-1.8%*
Durable goods	14,063	15,262	15,256	15,797	14,630	15,669	*2.2%*
Nondurable goods	9,626	11,594	11,806	9,484	6,060	6,312	*-8.1%*
Wholesale trade	10,480	10,981	11,589	11,759	12,227	12,581	*3.7%*
Goods	**44,775**	**48,032**	**48,907**	**46,822**	**41,140**	**42,614**	*-1.0%*
Services	**152,280**	**156,149**	**161,364**	**161,920**	**163,855**	**168,731**	*2.1%*
CT's Goods Economy as % of Total	23%	24%	23%	22%	20%	20%	
US's Goods Economy as % of Total	27%	28%	27%	28%	26%	27%	

- Of the goods related sectors, just Wholesale trade (including scrap metal production/sales) and Durable goods (transportation/aviation equipment) are the only two sectors to show sustained growth
- The decline in the goods related economy will lead to lower demand for non-containerized commodities
- The service economy remains strong—this will continue to support personal income/wealth in the state, which will in turn fuel demand for consumer products (containers)
- The decline in Connecticut's goods economy is reflected in the State's employment data which also shows significant decline in the above identified sectors (particularly manufacturing and construction)
- The strongest drop in some of the largest employment industries came from:
    - Specialty trade contractors—construction
    - Fabricated metal production— manufacturing
    - Machinery— manufacturing
    - Chemicals—manufacturing
    - Construction of buildings—construction
- Until there is a reversal in either the goods related-employment or economic activity (GDP) trends, Moffatt & Nichol does not foresee a strong increase in trade of non-containerized volumes of steel, lumber and aggregate through Connecticut's ports.

Connecticut's Employment by Industry

Industry	Connecticut 2005	Connecticut 2010	Connecticut *% Change*	New England *% Change*
Transportation equipment manufacturing	35,197	33,537	*-5%*	*-11%*
Specialty trade contractors	43,469	33,272	*-23%*	*-22%*
Fabricated metal product manufacturing	33,625	28,064	*-17%*	*-14%*
Machinery manufacturing	17,835	14,862	*-17%*	*-15%*
Computer and electronic product manufacturing	14,946	13,168	*-12%*	*-16%*
Electrical equipment and appliance mfg.	10,492	9,766	*-7%*	*-18%*
Miscellaneous manufacturing	12,138	9,738	*-20%*	*-23%*
Chemical manufacturing	12,627	9,699	*-23%*	*-5%*
Construction of buildings	13,487	9,595	*-29%*	*-30%*
Food manufacturing	7,472	7,229	*-3%*	*1%*
Utilities	8,433	6,191	*-27%*	NA
Plastics and rubber products manufacturing	7,526	5,703	*-24%*	*-18%*
Printing and related support activities	7,578	5,359	*-29%*	*-26%*
Heavy and civil engineering construction	4,595	5,049	*10%*	*-15%*
Paper manufacturing	4,669	3,736	*-20%*	*-27%*
Crop production	4,017	3,478	*-13%*	*-5%*

Industry	Connecticut 2005	Connecticut 2010	Connecticut % Change	New England % Change
Primary metal manufacturing	4,257	3,262	-23%	-28%
Furniture and related product manufacturing	3,372	2,565	-24%	-40%
Nonmetallic mineral product manufacturing	2,852	2,151	-25%	-23%
Textile product mills	1,218	978	-20%	-28%
Wood product manufacturing	1,847	865	-53%	-34%
Beverage and tobacco product manufacturing	393	834	112%	-2%
Animal production and aquaculture	653	818	25%	9%
Recyclable material merchant wholesalers	895	755	-16%	NA
Textile mills	321	190	-41%	-45%
Agriculture and forestry support activities	142	170	20%	-12%
Mining, except oil and gas	501	111	-78%	-43%
Apparel manufacturing	236	42	-82%	-31%
Petroleum and coal products manufacturing	110	39	-65%	-26%
Leather and allied product manufacturing	0	0	NA	-29%
Support activities for mining	0	0	NA	NA
Forestry and logging	16	0	NA	-10%
Fishing, hunting and trapping	39	0	NA	-3%
Oil and gas extraction	0	0	NA	NA
Grand Total	**254,958**	**211,226**	-17%	-19%

Connecticut's Employment by Industry by County

	2005	2010
Fairfield	**57,907**	**50,339**
Transportation equipment manufacturing	7,431	9,426
Specialty trade contractors	10,226	7,720
Chemical manufacturing	5,984	4,749
Machinery manufacturing	5,948	4,426
Computer and electronic product manufacturing	5,028	4,338
Fabricated metal product manufacturing	3,880	3,225
Electrical equipment and appliance mfg.	2,965	3,155
Construction of buildings	3,606	2,502
Miscellaneous manufacturing	2,681	1,892
Utilities	1,752	1,611
Food manufacturing	1,637	1,513
Plastics and rubber products manufacturing	1,567	1,059
Printing and related support activities	1,560	1,045
Heavy and civil engineering construction	0	798
Furniture and related product manufacturing	949	591
Paper manufacturing	793	569
Primary metal manufacturing	384	352
Textile product mills	246	260
Nonmetallic mineral product manufacturing	295	253
Beverage and tobacco product manufacturing	0	216
Wood product manufacturing	366	196
Recyclable material merchant wholesalers	214	164
Crop production	118	138
Animal production and aquaculture	50	94
Mining, except oil and gas	52	37
Textile mills	25	10
Fishing, hunting and trapping	29	0
Support activities for mining	0	0
Leather and allied product manufacturing	0	0
Oil and gas extraction	0	0
Petroleum and coal products manufacturing	0	0
Apparel manufacturing	79	0
Agriculture and forestry support activities	42	0
Forestry and logging		
Hartford	**82,737**	**69,281**
Transportation equipment manufacturing	19,301	17,891
Fabricated metal product manufacturing	13,820	11,930

	2005	2010
Specialty trade contractors	13,369	9,914
Machinery manufacturing	6,119	5,521
Electrical equipment and appliance mfg.	2,989	2,522
Construction of buildings	3,011	2,358
Food manufacturing	1,811	2,280
Printing and related support activities	2,979	2,234
Miscellaneous manufacturing	2,452	2,009
Computer and electronic product manufacturing	2,184	1,921
Heavy and civil engineering construction	1,665	1,692
Furniture and related product manufacturing	1,339	1,309
Chemical manufacturing	1,258	1,272
Utilities	3,360	1,208
Crop production	1,440	1,187
Plastics and rubber products manufacturing	1,677	1,084
Paper manufacturing	1,281	989
Primary metal manufacturing	756	664
Nonmetallic mineral product manufacturing	567	421
Beverage and tobacco product manufacturing	234	238
Recyclable material merchant wholesalers	323	213
Wood product manufacturing	468	155
Textile product mills	223	152
Agriculture and forestry support activities	0	60
Animal production and aquaculture	54	57
Forestry and logging	0	
Leather and allied product manufacturing	0	
Apparel manufacturing	57	0
Mining, except oil and gas	0	0
Support activities for mining	0	0
Textile mills	0	0
Petroleum and coal products manufacturing	0	0
Litchfield	**15,098**	**12,557**
Fabricated metal product manufacturing	3,777	2,691
Specialty trade contractors	2,518	2,003
Electrical equipment and appliance mfg.	908	1,024
Construction of buildings	1,164	769
Transportation equipment manufacturing	731	757
Computer and electronic product manufacturing	931	738
Plastics and rubber products manufacturing	602	732
Miscellaneous manufacturing	941	626

	2005	2010
Heavy and civil engineering construction	615	475
Paper manufacturing	0	427
Textile product mills	266	348
Machinery manufacturing	558	249
Printing and related support activities	301	228
Chemical manufacturing	129	196
Nonmetallic mineral product manufacturing	246	177
Beverage and tobacco product manufacturing	0	176
Utilities	187	157
Wood product manufacturing	201	149
Crop production	118	134
Food manufacturing	251	121
Primary metal manufacturing	196	110
Animal production and aquaculture	73	100
Furniture and related product manufacturing	172	96
Mining, except oil and gas	104	74
Forestry and logging	5	0
Textile mills	23	0
Apparel manufacturing	0	0
Petroleum and coal products manufacturing	36	0
Recyclable material merchant wholesalers	0	0
Agriculture and forestry support activities	45	0
Leather and allied product manufacturing	0	
Middlesex	**14,354**	**12,373**
Transportation equipment manufacturing	3,270	3,167
Fabricated metal product manufacturing	2,283	1,976
Specialty trade contractors	1,873	1,536
Machinery manufacturing	1,171	1,170
Computer and electronic product manufacturing	706	700
Plastics and rubber products manufacturing	738	663
Heavy and civil engineering construction	401	594
Chemical manufacturing	920	499
Construction of buildings	680	455
Crop production	422	377
Utilities	362	332
Electrical equipment and appliance mfg.	212	230
Miscellaneous manufacturing	275	199
Nonmetallic mineral product manufacturing	247	135
Paper manufacturing	264	88

	2005	2010
Printing and related support activities	206	74
Furniture and related product manufacturing	94	59
Wood product manufacturing	57	52
Food manufacturing	51	44
Agriculture and forestry support activities	33	23
Beverage and tobacco product manufacturing	0	0
Textile mills	0	0
Apparel manufacturing	0	0
Animal production and aquaculture	0	0
Textile product mills	89	0
Mining, except oil and gas	0	0
Petroleum and coal products manufacturing	0	0
Recyclable material merchant wholesalers	0	0
Forestry and logging		0
Primary metal manufacturing	0	0
New Haven	**60,162**	**46,995**
Specialty trade contractors	10,317	8,216
Fabricated metal product manufacturing	8,522	6,863
Computer and electronic product manufacturing	4,854	4,380
Miscellaneous manufacturing	4,640	4,369
Chemical manufacturing	3,975	2,656
Construction of buildings	3,272	2,467
Machinery manufacturing	2,705	2,348
Transportation equipment manufacturing	4,008	2,296
Food manufacturing	2,188	1,992
Electrical equipment and appliance mfg.	2,374	1,786
Primary metal manufacturing	2,330	1,777
Printing and related support activities	2,042	1,426
Plastics and rubber products manufacturing	1,592	1,155
Utilities	1,130	1,122
Heavy and civil engineering construction	1,323	827
Crop production	747	731
Nonmetallic mineral product manufacturing	882	686
Paper manufacturing	1,163	591
Furniture and related product manufacturing	544	402
Recyclable material merchant wholesalers	315	302
Wood product manufacturing	456	237
Textile product mills	326	218
Beverage and tobacco product manufacturing	20	53

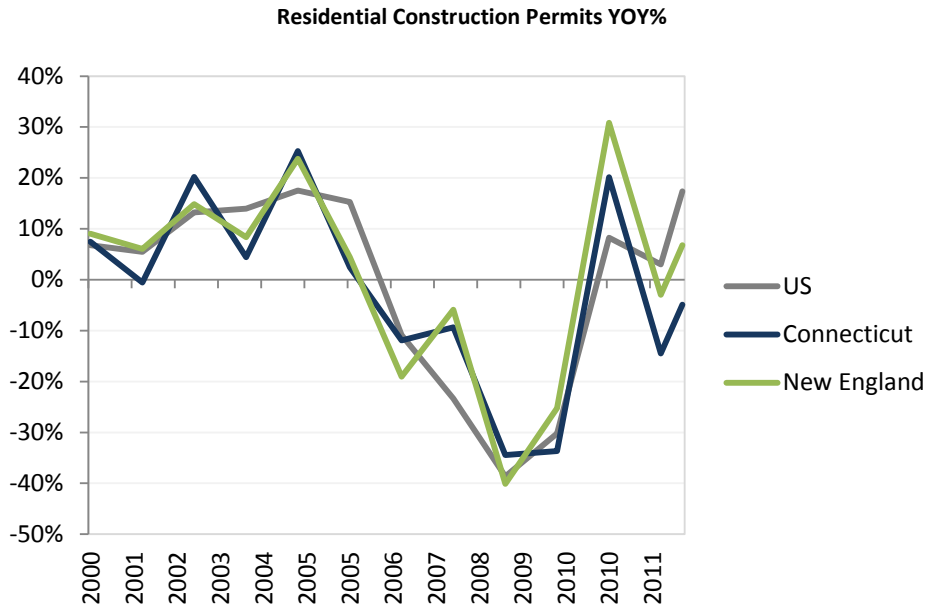
	2005	2010
Apparel manufacturing	100	42
Petroleum and coal products manufacturing	74	39
Agriculture and forestry support activities	22	14
Animal production and aquaculture	21	0
Textile mills	0	0
Leather and allied product manufacturing	0	0
Forestry and logging	0	
Support activities for mining		
Mining, except oil and gas	220	0
Fishing, hunting and trapping	0	0
New London	**11,834**	**9,081**
Specialty trade contractors	3,013	2,181
Utilities	1,426	1,555
Crop production	999	593
Paper manufacturing	637	573
Construction of buildings	955	559
Heavy and civil engineering construction	328	518
Machinery manufacturing	486	459
Miscellaneous manufacturing	686	373
Primary metal manufacturing	591	359
Animal production and aquaculture	352	335
Computer and electronic product manufacturing	437	278
Electrical equipment and appliance mfg.	312	268
Fabricated metal product manufacturing	347	240
Printing and related support activities	301	238
Plastics and rubber products manufacturing	221	124
Beverage and tobacco product manufacturing	139	121
Food manufacturing	168	119
Nonmetallic mineral product manufacturing	64	62
Furniture and related product manufacturing	161	55
Agriculture and forestry support activities	0	28
Recyclable material merchant wholesalers	0	24
Textile mills	0	19
Forestry and logging	0	0
Textile product mills	68	0
Fishing, hunting and trapping	10	0
Support activities for mining		0
Petroleum and coal products manufacturing	0	0
Transportation equipment manufacturing	0	0

	2005	2010
Wood product manufacturing	70	0
Apparel manufacturing	0	0
Mining, except oil and gas	63	0
Chemical manufacturing	0	0
Tolland	**4,979**	**4,380**
Specialty trade contractors	1,322	1,049
Computer and electronic product manufacturing	707	813
Machinery manufacturing	848	689
Fabricated metal product manufacturing	348	338
Construction of buildings	549	332
Food manufacturing	258	268
Crop production	173	227
Animal production and aquaculture	0	146
Heavy and civil engineering construction	112	145
Paper manufacturing	0	123
Printing and related support activities	189	114
Plastics and rubber products manufacturing	106	71
Electrical equipment and appliance mfg.	43	35
Beverage and tobacco product manufacturing	0	30
Textile mills	0	0
Wood product manufacturing	59	0
Transportation equipment manufacturing	188	0
Forestry and logging	0	
Furniture and related product manufacturing	34	0
Agriculture and forestry support activities	0	0
Recyclable material merchant wholesalers	0	0
Chemical manufacturing	0	0
Support activities for mining	0	0
Mining, except oil and gas	0	0
Textile product mills	0	0
Miscellaneous manufacturing	0	0
Utilities	0	0
Nonmetallic mineral product manufacturing	43	0
Fishing, hunting and trapping		0
Apparel manufacturing		
Windham	**7,887**	**6,220**
Food manufacturing	1,108	892
Plastics and rubber products manufacturing	1,023	815
Fabricated metal product manufacturing	648	801

	2005	2010
Electrical equipment and appliance mfg.	689	746
Specialty trade contractors	831	653
Nonmetallic mineral product manufacturing	508	417
Paper manufacturing	531	376
Chemical manufacturing	361	327
Miscellaneous manufacturing	463	270
Utilities	216	206
Textile mills	273	161
Construction of buildings	250	153
Crop production	0	91
Animal production and aquaculture	103	86
Wood product manufacturing	170	76
Furniture and related product manufacturing	79	53
Recyclable material merchant wholesalers	43	52
Agriculture and forestry support activities	0	45
Beverage and tobacco product manufacturing	0	0
Printing and related support activities	0	0
Textile product mills	0	0
Apparel manufacturing	0	
Mining, except oil and gas	62	0
Petroleum and coal products manufacturing	0	0
Computer and electronic product manufacturing	99	0
Transportation equipment manufacturing	268	0
Fishing, hunting and trapping	0	0
Primary metal manufacturing	0	0
Forestry and logging	11	0
Heavy and civil engineering construction	151	0
Machinery manufacturing	0	0
Grand Total	**254,958**	**211,226**

Residential Construction Trends

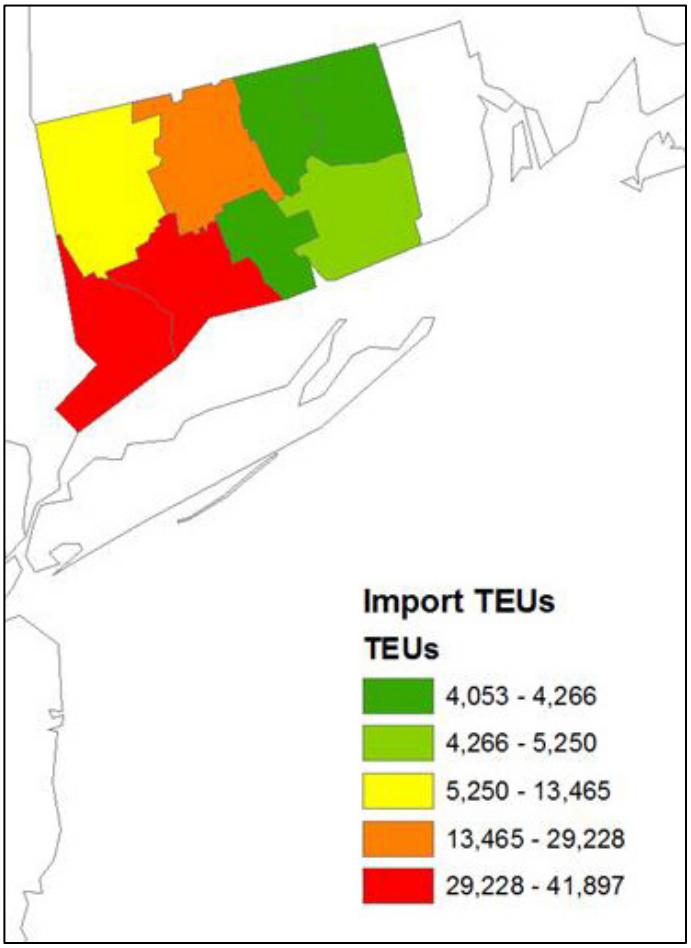
- Residential construction activity acted as one of the strongest drivers of trade through Connecticut's ports (particularly lumber at New London) over the past decade.
- Permits for residential construction have failed to establish a sustainable recover following the collapse in 2007.
- The strong rebound in 2010 did not materialize in increased trade of construction related products at Connecticut's ports.
- Connecticut continues to trail the recovery both in New England and the U.S.



County/Commodity Flows: Imports Container

Moffatt & Nichol developed flow estimates of containerized and non-containerized commodities to/from Connecticut's counties. The county-level estimates were established by proportioning state-level and Freight Analysis Framework (FAF)-level (smaller than state/larger than county) commodity flow volumes, employment by industry, and population measures. The following tables present these estimates.

County/Commodity	TEU
Fairfield	**38,169**
Textiles & Articles	7,809
Furniture	6,320
Ag ex Animal Feed	3,973
Electronic and Electrical Equip	2,639
Plastics and Rubber	3,132
Other Prep Foodstuffs, Fats/Oils	2,453
Basic Chemicals	2,221
Machinery	1,497
Alcoholic Beverages	1,295
Misc. Manufactured Products	1,221
Articles of Base Metal	1,056
Milled Grain Prod/ Bakery Prod	688
Non-Metallic Mineral Products	660
Chemical Prod/Prep, n.e.c.	624
Wood Products	548
Base Metal in Pri/Semi-FinishForms	541
Meat, Fish/Seafood, and Prep	468
Motor/Other Vehicles inc. parts	437
Printed Products	325
Paper or Paperboard Articles	261
Gasoline and Aviation Turbine Fuel	0
Fuel Oils	0
Hartford	**29,228**
Textiles & Articles	7,039
Furniture	6,434
Other Prep Foodstuffs, Fats/Oils	6,269
Electronic and Electrical Equip	2,136
Motor/Other Vehicles inc. parts	1,670
Milled Grain Prod/ Bakery Prod	1,404
Articles of Base Metal	1,295
Non-Metallic Minerals, n.e.c.	1,194
Non-Metallic Mineral Products	554



County/Commodity	TEU
Misc. Manufactured Products	500
Machinery	422
Wood Products	116
Printed Products	53
Chemical Prod/Prep, n.e.c.	45
Base Metal in Pri/Semi-FinishForms	41
Meat, Fish/Seafood, and Prep	34
Coal and Petroleum Products, n.e.c.	13
Ag ex Animal Feed	11
Paper or Paperboard Articles	0
Litchfield	**13,465**
Alcoholic Beverages	4,798
Textiles & Articles	1,693
Furniture	1,312
Plastics and Rubber	991
Basic Chemicals	865
Other Prep Foodstuffs, Fats/Oils	632
Misc. Manufactured Products	519
Electronic and Electrical Equip	443
Wood Products	467
Ag ex Animal Feed	304
Articles of Base Metal	274
Motor/Other Vehicles inc. parts	240
Non-Metallic Mineral Products	190
Base Metal in Pri/Semi-Finish Forms	171
Milled Grain Prod/ Bakery Prod	168
Chemical Prod/Prep, n.e.c.	156
Meat, Fish/Seafood, and Prep	130
Paper or Paperboard Articles	70
Machinery	28
Printed Products	14
Fuel Oils	0
Gasoline and Aviation Turbine Fuel	0
Middlesex	**4,157**
Textiles & Articles	1,304
Furniture	1,151
Other Prep Foodstuffs, Fats/Oils	426
Electronic and Electrical Equip	420
Articles of Base Metal	214

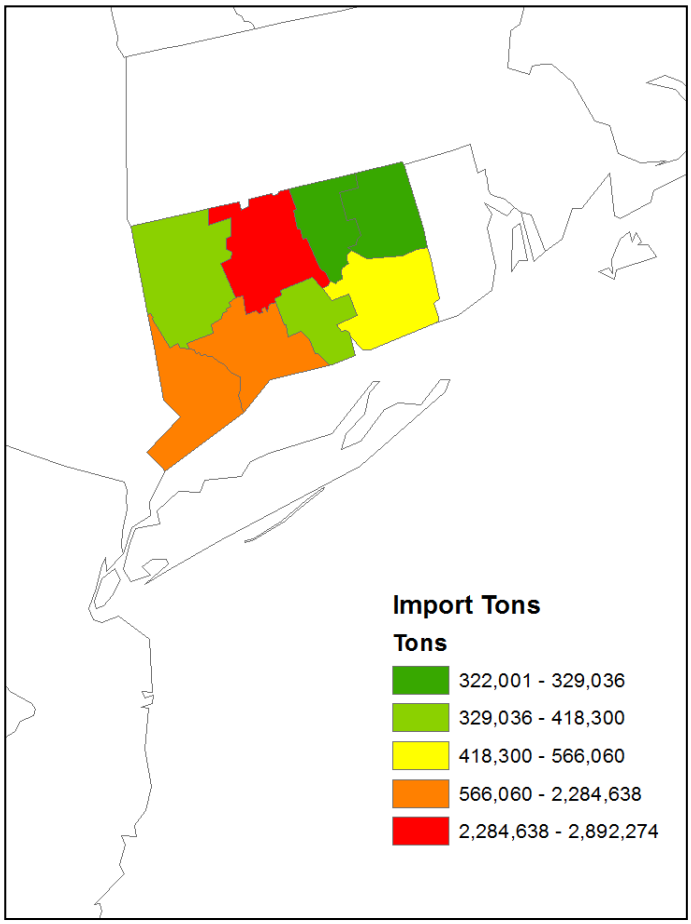
County/Commodity	TEU
Non-Metallic Minerals, n.e.c.	146
Motor/Other Vehicles inc. parts	120
Milled Grain Prod/ Bakery Prod	97
Misc. Manufactured Products	88
Machinery	60
Non-Metallic Mineral Products	51
Printed Products	43
Chemical Prod/Prep, n.e.c.	11
Wood Products	11
Base Metal in Pri/Semi-FinishForms	7
Coal and Petroleum Products, n.e.c.	5
Meat, Fish/Seafood, and Prep	3
Ag ex Animal Feed	1
Paper or Paperboard Articles	0
New Haven	**41,897**
Textiles & Articles	7,664
Furniture	5,954
Other Prep Foodstuffs, Fats/Oils	5,394
Plastics and Rubber	3,672
Electronic and Electrical Equip	2,294
Ag ex Animal Feed	2,895
Misc. Manufactured Products	2,233
Basic Chemicals	2,213
Motor/Other Vehicles inc. parts	1,569
Milled Grain Prod/ Bakery Prod	1,494
Base Metal in Pri/Semi-FinishForms	1,244
Articles of Base Metal	1,033
Meat, Fish/Seafood, and Prep	1,013
Non-Metallic Mineral Products	967
Wood Products	729
Chemical Prod/Prep, n.e.c.	707
Paper or Paperboard Articles	342
Machinery	245
Alcoholic Beverages	129
Printed Products	104
Gasoline and Aviation Turbine Fuel	0
Fuel Oils	0
New London	**5,250**
Textiles & Articles	2,158

County/Commodity	TEU
Furniture	1,883
Other Prep Foodstuffs, Fats/Oils	491
Electronic and Electrical Equip	394
Wood Products	155
Milled Grain Prod/ Bakery Prod	112
Motor/Other Vehicles inc. parts	57
Non-Metallic Mineral Products	2
Tolland	**4,053**
Textiles & Articles	1,202
Furniture	1,054
Other Prep Foodstuffs, Fats/Oils	1,003
Electronic and Electrical Equip	318
Milled Grain Prod/ Bakery Prod	223
Motor/Other Vehicles inc. parts	74
Articles of Base Metal	69
Non-Metallic Mineral Products	24
Misc. Manufactured Products	21
Non-Metallic Minerals, n.e.c.	20
Machinery	12
Chemical Prod/Prep, n.e.c.	8
Printed Products	7
Meat, Fish/Seafood, and Prep	6
Wood Products	6
Ag ex Animal Feed	2
Coal and Petroleum Products, n.e.c.	2
Base Metal in Pri/Semi-FinishForms	2
Paper or Paperboard Articles	0
Windham	**4,266**
Other Prep Foodstuffs, Fats/Oils	950
Textiles & Articles	932
Furniture	825
Motor/Other Vehicles inc. parts	548
Electronic and Electrical Equip	259
Milled Grain Prod/ Bakery Prod	216
Non-Metallic Mineral Products	159
Non-Metallic Minerals, n.e.c.	134
Misc. Manufactured Products	88
Articles of Base Metal	75
Machinery	20

County/Commodity	TEU
Chemical Prod/Prep, n.e.c.	17
Ag ex Animal Feed	13
Wood Products	7
Base Metal in Pri/Semi-FinishForms	6
Printed Products	6
Meat, Fish/Seafood, and Prep	5
Coal and Petroleum Products, n.e.c.	4
Paper or Paperboard Articles	0
Total Connecticut	**140,483**

County/Commodity Flows: Imports Non-Container

County/Commodity	Tons
Fairfield	**2,284,638**
Ag ex Animal Feed	361
Alcoholic Beverages	26
Articles of Base Metal	588
Base Metal in Pri/Semi-FinishForms	1,708
Basic Chemicals	2,946
Coal and Petroleum Products, n.e.c.	1,885,074
Chemical Prod/Prep, n.e.c.	382
Electronic and Electrical Equip	220
Fuel Oils	78,104
Furniture	367
Gasoline and Aviation Turbine Fuel	300,549
Machinery	945
Meat, Fish/Seafood, and Prep	13
Milled Grain Prod/ Bakery Prod	4
Misc. Manufactured Products	167
Motor/Other Vehicles inc. parts	5,184
Non-Metallic Mineral Products	1,283
Other Prep Foodstuffs, Fats/Oils	5,204
Paper or Paperboard Articles	23
Plastics and Rubber	470
Printed Products	129
Textiles & Articles	849
Wood Products	42
Hartford	**2,892,274**
Ag ex Animal Feed	79
Articles of Base Metal	567
Base Metal in Pri/Semi-FinishForms	2,226
Chemical Prod/Prep, n.e.c.	28
Coal and Petroleum Products, n.e.c.	1,838,164
Electronic and Electrical Equip	188
Furniture	419
Gasoline and Aviation Turbine Fuel	400,009
Machinery	2,914
Meat, Fish/Seafood, and Prep	1
Milled Grain Prod/ Bakery Prod	5
Misc. Manufactured Products	38
Motor/Other Vehicles inc. parts	20,440



County/Commodity	Tons
Non-Metallic Mineral Products	1,089
Non-Metallic Minerals, n.e.c.	603,882
Other Prep Foodstuffs, Fats/Oils	21,438
Paper or Paperboard Articles	0
Printed Products	21
Textiles & Articles	752
Wood Products	13
Litchfield	**401,618**
Ag ex Animal Feed	28
Alcoholic Beverages	98
Articles of Base Metal	153
Base Metal in Pri/Semi-FinishForms	539
Basic Chemicals	1,148
Coal and Petroleum Products, n.e.c.	390,505
Chemical Prod/Prep, n.e.c.	96
Electronic and Electrical Equip	39
Fuel Oils	3,906
Furniture	76
Machinery	18
Meat, Fish/Seafood, and Prep	3
Milled Grain Prod/ Bakery Prod	1
Misc. Manufactured Products	71
Motor/Other Vehicles inc. parts	2,846
Non-Metallic Mineral Products	370
Other Prep Foodstuffs, Fats/Oils	1,340
Paper or Paperboard Articles	6
Plastics and Rubber	149
Printed Products	6
Textiles & Articles	186
Wood Products	36
Middlesex	**418,300**
Ag ex Animal Feed	5
Articles of Base Metal	94
Base Metal in Pri/Semi-Finish Forms	370
Chemical Prod/Prep, n.e.c.	7
Coal and Petroleum Products, n.e.c.	340,643
Electronic and Electrical Equip	36
Furniture	69
Machinery	412

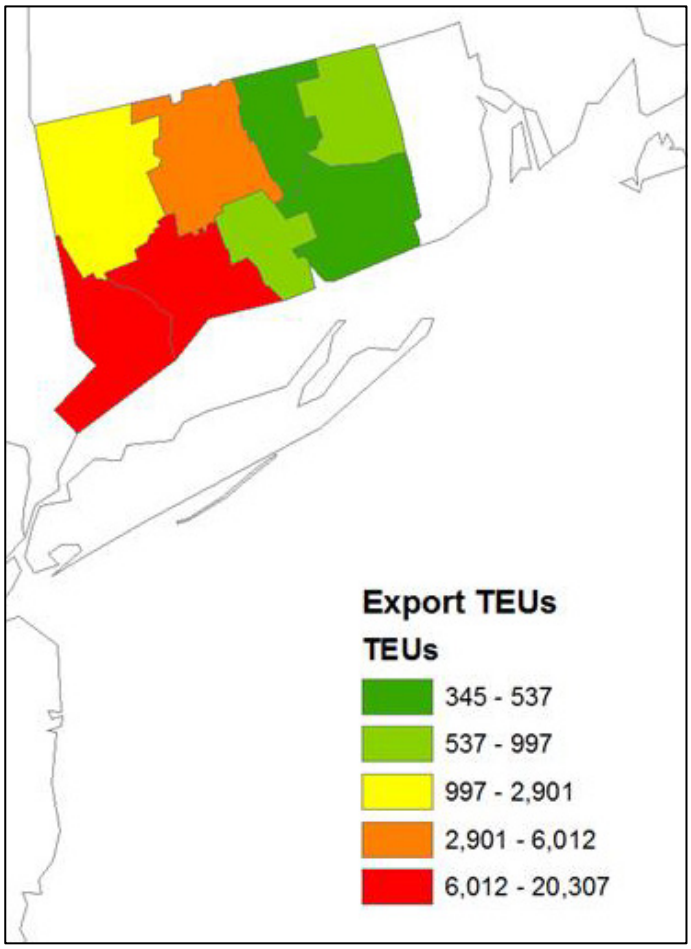
County/Commodity	Tons
Meat, Fish/Seafood, and Prep	0
Milled Grain Prod/ Bakery Prod	0
Misc. Manufactured Products	7
Motor/Other Vehicles inc. parts	1,473
Non-Metallic Mineral Products	99
Non-Metallic Minerals, n.e.c.	73,799
Other Prep Foodstuffs, Fats/Oils	1,128
Paper or Paperboard Articles	0
Printed Products	17
Textiles & Articles	139
Wood Products	1
New Haven	**1,879,951**
Ag ex Animal Feed	263
Alcoholic Beverages	3
Articles of Base Metal	576
Base Metal in Pri/Semi-Finish Forms	3,930
Basic Chemicals	2,935
Coal and Petroleum Products, n.e.c.	1,773,322
Chemical Prod/Prep, n.e.c.	432
Electronic and Electrical Equip	196
Fuel Oils	64,017
Furniture	345
Machinery	154
Meat, Fish/Seafood, and Prep	27
Milled Grain Prod/ Bakery Prod	8
Misc. Manufactured Products	305
Motor/Other Vehicles inc. parts	18,596
Non-Metallic Mineral Products	1,880
Other Prep Foodstuffs, Fats/Oils	11,442
Paper or Paperboard Articles	30
Plastics and Rubber	551
Printed Products	42
Textiles & Articles	841
Wood Products	56
New London	**566,060**
Coal and Petroleum Products, n.e.c.	563,479
Electronic and Electrical Equip	42
Furniture	110
Milled Grain Prod/ Bakery Prod	0

County/Commodity	Tons
Motor/Other Vehicles inc. parts	713
Non-Metallic Mineral Products	5
Other Prep Foodstuffs, Fats/Oils	1,041
Textiles & Articles	231
Wood Products	439
Tolland	**329,036**
Ag ex Animal Feed	17
Articles of Base Metal	30
Base Metal in Pri/Semi-Finish Forms	94
Chemical Prod/Prep, n.e.c.	5
Coal and Petroleum Products, n.e.c.	313,945
Electronic and Electrical Equip	29
Furniture	62
Machinery	81
Meat, Fish/Seafood, and Prep	0
Milled Grain Prod/ Bakery Prod	1
Misc. Manufactured Products	2
Motor/Other Vehicles inc. parts	906
Non-Metallic Mineral Products	47
Non-Metallic Minerals, n.e.c.	10,200
Other Prep Foodstuffs, Fats/Oils	3,484
Paper or Paperboard Articles	0
Printed Products	3
Textiles & Articles	128
Wood Products	1
Windham	**322,001**
Ag ex Animal Feed	96
Articles of Base Metal	33
Base Metal in Pri/Semi-Finish Forms	350
Chemical Prod/Prep, n.e.c.	10
Coal and Petroleum Products, n.e.c.	243,497
Electronic and Electrical Equip	23
Furniture	50
Machinery	135
Meat, Fish/Seafood, and Prep	0
Milled Grain Prod/ Bakery Prod	1
Misc. Manufactured Products	7
Motor/Other Vehicles inc. parts	6,714
Non-Metallic Mineral Products	312

County/Commodity	Tons
Non-Metallic Minerals, n.e.c.	67,773
Other Prep Foodstuffs, Fats/Oils	2,897
Paper or Paperboard Articles	0
Printed Products	2
Textiles & Articles	100
Wood Products	1
Total Connecticut	**9,093,878**

County/Commodity Flows: Exports Container

County Commodity	TEU
Fairfield	**14,591**
Milled Grain Prod/ Bakery Prod	3
Other Prep Foodstuffs, Fats/Oils	17
Non-Metallic Minerals, n.e.c.	1,355
Basic Chemicals	1,333
Chemical Prod/Prep, n.e.c.	343
Plastics and Rubber	256
Paper or Paperboard Articles	1
Printed Products	61
Non-Metallic Mineral Products	1
Base Metal in Pri/Semi-Finish Forms	47
Articles of Base Metal	11
Machinery	1,360
Electronic and Electrical Equip	27
Motor/Other Vehicles inc. parts	367
Precision Instr. and Apparatus	48
Misc. Manufactured Products	43
Waste and Scrap	9,318
Hartford	**6,012**
Ag ex Animal Feed	29
Milled Grain Prod/ Bakery Prod	447
Other Prep Foodstuffs, Fats/Oils	10
Chemical Prod/Prep, n.e.c.	17
Plastics and Rubber	268
Wood Products	7
Pulp, Newsprint, Paper/Paperboard	23
Paper or Paperboard Articles	638
Printed Products	14
Textiles & Articles	140
Base Metal in Pri/Semi-Finish Forms	15
Articles of Base Metal	59
Machinery	4,115
Electronic and Electrical Equip	16
Motor/Other Vehicles inc. parts	16
Misc. Manufactured Products	67
Waste and Scrap	130
Litchfield	**2,901**
Milled Grain Prod/ Bakery Prod	0



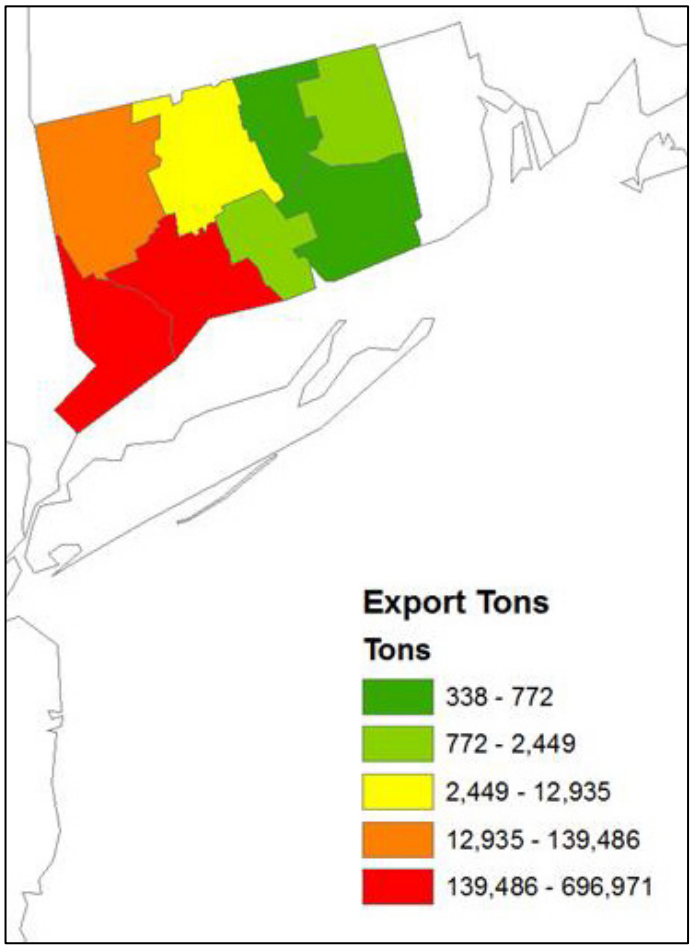
County Commodity	TEU
Other Prep Foodstuffs, Fats/Oils	1
Non-Metallic Minerals, n.e.c.	1,989
Gasoline & Aviation Turbine Fuel	0
Basic Chemicals	152
Chemical Prod/Prep, n.e.c.	31
Plastics and Rubber	180
Paper or Paperboard Articles	1
Printed Products	5
Non-Metallic Mineral Products	0
Base Metal in Pri/Semi-Finish Forms	9
Articles of Base Metal	9
Machinery	158
Electronic and Electrical Equip	8
Motor/Other Vehicles inc. parts	33
Precision Instr. and Apparatus	7
Misc. Manufactured Products	27
Waste and Scrap	291
Middlesex	**900**
Ag ex Animal Feed	4
Milled Grain Prod/ Bakery Prod	46
Other Prep Foodstuffs, Fats/Oils	0
Chemical Prod/Prep, n.e.c.	21
Plastics and Rubber	96
Wood Products	2
Paper or Paperboard Articles	121
Printed Products	3
Textiles & Articles	70
Base Metal in Pri/Semi-Finish Forms	7
Articles of Base Metal	13
Machinery	488
Electronic and Electrical Equip	3
Misc. Manufactured Products	6
Waste and Scrap	20
New Haven	**20,307**
Milled Grain Prod/ Bakery Prod	6
Other Prep Foodstuffs, Fats/Oils	37
Non-Metallic Minerals, n.e.c.	887
Basic Chemicals	750
Chemical Prod/Prep, n.e.c.	140

County Commodity	TEU
Plastics and Rubber	536
Paper or Paperboard Articles	1
Printed Products	33
Non-Metallic Mineral Products	1
Base Metal in Pri/Semi-Finish Forms	402
Articles of Base Metal	28
Machinery	1,409
Electronic and Electrical Equip	33
Motor/Other Vehicles inc. parts	441
Precision Instr. and Apparatus	49
Misc. Manufactured Products	122
Waste and Scrap	15,431
New London	**345**
Chemical Prod/Prep, n.e.c.	103
Plastics and Rubber	163
Pulp, Newsprint, Paper/Paperboard	79
Tolland	**537**
Ag ex Animal Feed	7
Milled Grain Prod/ Bakery Prod	2
Other Prep Foodstuffs, Fats/Oils	1
Chemical Prod/Prep, n.e.c.	11
Plastics and Rubber	6
Wood Products	1
Paper or Paperboard Articles	45
Printed Products	1
Textiles & Articles	294
Articles of Base Metal	3
Machinery	159
Electronic and Electrical Equip	2
Motor/Other Vehicles inc. parts	0
Misc. Manufactured Products	2
Waste and Scrap	2
Windham	**997**
Ag ex Animal Feed	4
Milled Grain Prod/ Bakery Prod	131
Other Prep Foodstuffs, Fats/Oils	4
Chemical Prod/Prep, n.e.c.	9
Plastics and Rubber	239
Wood Products	3

County Commodity	TEU
Paper or Paperboard Articles	155
Printed Products	1
Textiles & Articles	182
Base Metal in Pri/Semi-Finish Forms	7
Articles of Base Metal	3
Machinery	147
Electronic and Electrical Equip	4
Motor/Other Vehicles inc. parts	4
Misc. Manufactured Products	2
Waste and Scrap	102
Total Connecticut	**46,601**

County/Commodity Flows: Exports Non-Container

County Commodity	Tons
Fairfield	**504,906**
Milled Grain Prod/ Bakery Prod	5
Other Prep Foodstuffs, Fats/Oils	3.96
Non-Metallic Minerals, n.e.c.	4,185
Basic Chemicals	134,514
Chemical Prod/Prep, n.e.c.	546
Plastics and Rubber	230
Paper or Paperboard Articles	0
Printed Products	274
Non-Metallic Mineral Products	33
Base Metal in Pri/Semi-Finish Forms	227
Articles of Base Metal	75
Machinery	2,588
Electronic and Electrical Equip	163
Motor/Other Vehicles inc. parts	454
Precision Instr. and Apparatus	101
Misc. Manufactured Products	63
Waste and Scrap	361,352
Hartford	**12,935**
Ag ex Animal Feed	28
Milled Grain Prod/ Bakery Prod	1,930
Other Prep Foodstuffs, Fats/Oils	49
Chemical Prod/Prep, n.e.c.	45
Plastics and Rubber	292
Wood Products	51
Pulp, Newsprint, Paper/Paperboard	94
Paper or Paperboard Articles	475
Printed Products	69
Textiles & Articles	149
Base Metal in Pri/Semi-Finish Forms	59
Articles of Base Metal	461
Machinery	7,961
Electronic and Electrical Equip	20
Motor/Other Vehicles inc. parts	7
Misc. Manufactured Products	104
Waste and Scrap	1,139
Litchfield	**139,486**
Milled Grain Prod/ Bakery Prod	0



County Commodity	Tons
Other Prep Foodstuffs, Fats/Oils	6
Non-Metallic Minerals, n.e.c.	6,142
Gasoline & Aviation Turbine Fuel	105,868
Basic Chemicals	15,380
Chemical Prod/Prep, n.e.c.	50
Plastics and Rubber	162
Paper or Paperboard Articles	0
Printed Products	22
Non-Metallic Mineral Products	18
Base Metal in Pri/Semi-Finish Forms	41
Articles of Base Metal	64
Machinery	300
Electronic and Electrical Equip	47
Motor/Other Vehicles inc. parts	40
Precision Instr. and Apparatus	14
Misc. Manufactured Products	39
Waste and Scrap	11,291
Middlesex	**1,820**
Ag ex Animal Feed	4
Milled Grain Prod/ Bakery Prod	197
Other Prep Foodstuffs, Fats/Oils	0
Chemical Prod/Prep, n.e.c.	55
Plastics and Rubber	104
Wood Products	18
Paper or Paperboard Articles	90
Printed Products	16
Textiles & Articles	75
Base Metal in Pri/Semi-Finish Forms	27
Articles of Base Metal	104
Machinery	945
Electronic and Electrical Equip	4
Misc. Manufactured Products	9
Waste and Scrap	171
New Haven	**696,971**
Milled Grain Prod/ Bakery Prod	9
Other Prep Foodstuffs, Fats/Oils	212
Non-Metallic Minerals, n.e.c.	2,739
Basic Chemicals	75,723
Chemical Prod/Prep, n.e.c.	223

County Commodity	Tons
Plastics and Rubber	483
Paper or Paperboard Articles	1
Printed Products	148
Non-Metallic Mineral Products	82
Base Metal in Pri/Semi-Finish Forms	1,938
Articles of Base Metal	192
Machinery	2,681
Electronic and Electrical Equip	198
Motor/Other Vehicles inc. parts	546
Precision Instr. and Apparatus	103
Misc. Manufactured Products	176
Waste and Scrap	611,519
New London	**338**
Chemical Prod/Prep, n.e.c.	32
Plastics and Rubber	289
Pulp, Newsprint, Paper/Paperboard	17
Tolland	**772**
Ag ex Animal Feed	7
Milled Grain Prod/ Bakery Prod	11
Other Prep Foodstuffs, Fats/Oils	7
Chemical Prod/Prep, n.e.c.	28
Plastics and Rubber	6
Wood Products	7
Paper or Paperboard Articles	34
Printed Products	6
Textiles & Articles	312
Articles of Base Metal	20
Machinery	308
Electronic and Electrical Equip	3
Motor/Other Vehicles inc. parts	0
Misc. Manufactured Products	3
Waste and Scrap	20
Windham	**2,449**
Ag ex Animal Feed	4
Milled Grain Prod/ Bakery Prod	565
Other Prep Foodstuffs, Fats/Oils	20
Chemical Prod/Prep, n.e.c.	24
Plastics and Rubber	261
Wood Products	24

County Commodity	Tons
Paper or Paperboard Articles	115
Printed Products	4
Textiles & Articles	194
Base Metal in Pri/Semi-Finish Forms	29
Articles of Base Metal	21
Machinery	284
Electronic and Electrical Equip	5
Motor/Other Vehicles inc. parts	2
Misc. Manufactured Products	3
Waste and Scrap	895
Total Connecticut	**1,359,676**

Measuring Cargo Flows by Mode

To estimate the mode of transportation of the commodity flows to/from Connecticut, the Commodity Flow Survey (CFS) and Transearch Databases were used.

The CFS which is maintained/reported by the US Census Bureau, and the privately developed Transearch data base, report the mode (truck, rail, water) used to carry the cargo flows throughout Connecticut. These data sets report the origin (dms_orig), destination (dms_dest), Commodity (SCTG2), mode (dms_mode), value (value_2010) and weight (tons_2010) of the cargo flow. The below is an example of data that comes from the CFS data set – and illustrates the top 10 rows of records of scrap/waste exports (SCTG2 = 41) leaving Connecticut (dms_orig = 091 and 092).

Example of CFS Data for Scrap/Waste Volume Leaving Connecticut

dms_orig	dms_dest	sctg2	dms_mode	fr_inmode	fr_outmode	fr_orig	fr_dest	trade_type	value_2010	crvalue_2010	tons_2010
091	139	41	1	NULL	NULL	NULL	NULL	1	0.0	0.0	0.0
091	139	41	2	NULL	NULL	NULL	NULL	1	0.0	0.0	0.4
091	160	41	1	NULL	NULL	NULL	NULL	1	0.0	0.0	0.0
091	171	41	1	NULL	NULL	NULL	NULL	1	1.9	2.1	1.0
091	172	41	1	NULL	NULL	NULL	NULL	1	0.0	0.0	0.0
091	179	41	1	NULL	NULL	NULL	NULL	1	0.0	0.0	0.0
091	181	41	1	NULL	NULL	NULL	NULL	1	0.0	0.0	0.0
091	182	41	1	NULL	NULL	NULL	NULL	1	0.0	0.0	0.0
091	189	41	1	NULL	NULL	NULL	NULL	1	5.9	6.3	1.0
091	190	41	1	NULL	NULL	NULL	NULL	1	0.0	0.0	0.0

When fully aggregated – the CFS data reports that the majority of waste/scrap transported from Connecticut is transported via truck. This is identified in the table below by the largest tonnage being associated with "1" – which is "truck for hire". The "091" & "092" are geographic codes for Connecticut's sub-regions.

Example – Aggregated Summary of the Scrap/Waste Volume Leaving Connecticut by Mode

Row Labels	Tons (1000s)
091	**9**
1	9
5	0
7	0
092	**540**
1	536
2	2
5	1
7	0
Grand Total	**549**

Similarly, the Transearch Data provides the origin (Origin Region), destination (To FIPS), Commodity (STCC), mode (Mode) and weight (Tons) of the cargo flows to/from Connecticut. The top 10 rows of the data set for scrap metal (STCC 40 21) are presented below.

Year	Origin Region	STCC	Equip	Trade Type	Mode	Tons	Units	Value	Average Miles	First Node	Last Node	From FIPS	To FIPS	Entry Road	Exit Road
2009	167	40 21	B	D	4	4.1	0.2	737	123.1	766	900075	25013	0	I84	I84
2009	167	40 21	B	D	6	5.2	0.3	938	123.1	766	900075	25013	0	I84	I84
2009	167	40 21	D	D	4	1.0	0.1	184	123.1	766	900075	25013	0	I84	I84
2009	167	40 21	D	D	5	0.3	0.0	57	123.1	766	900075	25013	0	I84	I84
2009	167	40 21	D	D	6	1.3	0.1	234	123.1	766	900075	25013	0	I84	I84
2009	167	40 21	B	E	6	1.7	0.1	310	179.1	766	900175	25013	0	I84	S40
2009	167	40 21	B	D	6	1.4	0.1	242	105.5	766	900467	25013	0	I84	I84
2009	167	40 21	B	D	4	2.2	0.1	395	96.7	765	900212	25027	0	I395	I395
2009	167	40 21	B	D	6	5.5	0.3	990	106.95	765	900212	25027	0	I395	I395
2009	167	40 21	D	D	5	0.2	0.0	30	96.7	765	900212	25027	0	I395	I395

When the data is aggregated to show the mode by which scrap metal is transported from Connecticut, again Truck appears as the dominant mode (4 = Truck Load, 6 = Truck PVT (Private Truck), 9 = Water)

Year	2009
STCC	40 21
Origin Region	(Multiple Items)

Row Labels	Tons
3	228
4	108,181
5	6,671
6	137,676
7	18,581
9	173,297
Grand Total	**444,633**

Moffatt & Nichol used this analysis across the major commodity groupings to determine the mode in which the volumes were being transported.

Other Potential Markets

Example: Wood Pellets

To investigate other potential markets/commodities, which could be handled and served via Connecticut's ports, existing trade flows are first analyzed and then qualitative evidence of regional development is identified.

For example to establish the potential of serving wood pellet exports, first the existing export tonnages are identified as per the table below. Currently there is a limited tonnage of wood waste products (chips, sawdust, pellets) leaving the North Atlantic/New England region. Only the Ports of NYNJ report trade volumes of these commodities. The majority of product is exported via the Pacific Northwest or US Southeast ports which are regionally located near sources of production.

Export Tonnage of Wood Waste Products (including pellets)

Row Labels	2008	2009	2010	2011	2012
Coos Bay, OR (Port)	1,216,418	922,436	1,470,672	1,359,415	1,047,178
Savannah, GA (Port)	270,119	474,687	628,471	728,218	900,534
Panama City, FL (Port)	76,984	338,496	386,492	218,761	413,760
Wilmington, NC (Port)	0	87,946	256	41,187	168,000
Beaufort-Morehead City, NC (Port)	0	0	0	74,548	165,492
New York, NY (Port)	75,167	78,353	91,346	94,844	141,068
Gramercy, LA (Port)	0	0	2,861	27,104	118,002
Mobile, AL (Port)	602,075	280,099	55,897	3,386	113,914
Everett, WA (Port)	330,667	100,571	84,024	137,560	95,025
Norfolk, VA (Port)	42,608	27,743	26,279	78,239	76,147
Long Beach, CA (Port)	36,697	29,599	32,535	39,563	72,808
Oakland, CA (Port)	14,004	14,573	30,186	39,800	65,004
Los Angeles, CA (Port)	9,172	8,197	15,687	26,560	30,726
Blaine, WA (Port)	1,769	23,510	43,049	38,844	30,400
Newark, NJ (Port)	20,802	13,185	4,094	5,162	25,101
Houston, TX (Port)	18,459	8,404	19,222	1,231	23,678
Miami, FL (Port)	5,957	5,064	13,593	4,077	11,384
Beaumont, TX (Port)	0	0	0	5,600	10,800
Charleston, SC (Port)	15,611	3,143	5,737	7,232	6,875
Baltimore, MD (Port)	164	1,368	512	1,072	6,620
Port Everglades, FL (Port)	2,519	7,742	8,901	2,247	6,236
Seattle, WA (Port)	8,073	8,720	6,125	4,320	4,727
Tacoma, WA (Port)	20,066	18,226	5,536	7,730	3,819
West Palm Beach, FL (Port)	2,365	1,532	587	2,398	542
Detroit, MI (Port)	28	476	121	49	102

Production of wood pellets in New England is expected to grow, however based on industry research the majority of this will occur north of Connecticut, primarily in Maine and New Hampshire and, to a lesser extent, Upstate New York. Much of this new production appears to have been planned in a coordinated effort with one of Maine's deep water ports. This assessment is based on qualitative research from a number of sources including:

- http://www.fpl.fs.fed.us/documnts/fplrp/fpl_rp656.pdf
- http://biomassmagazine.com/articles/6077/positioned-for-pellets
- http://biomassmagazine.com/articles/5874/maine-pellet-mill-will-overcome-northeast-exporting-barriers/
- http://biomassmagazine.com/articles/5874/maine-pellet-mill-will-overcome-northeast-exporting-barriers/
- http://biomassmagazine.com/articles/1425/new-york-houses-largest-wood-pellet-plant/
- http://blog.forest2market.com/2011/12/16/capacity-pellets/

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Bridgeport Shipyard Repair *(Photo Credit: Morgan Kaolian)*