SECTION 5

CARGO

5.1 OVERVIEW

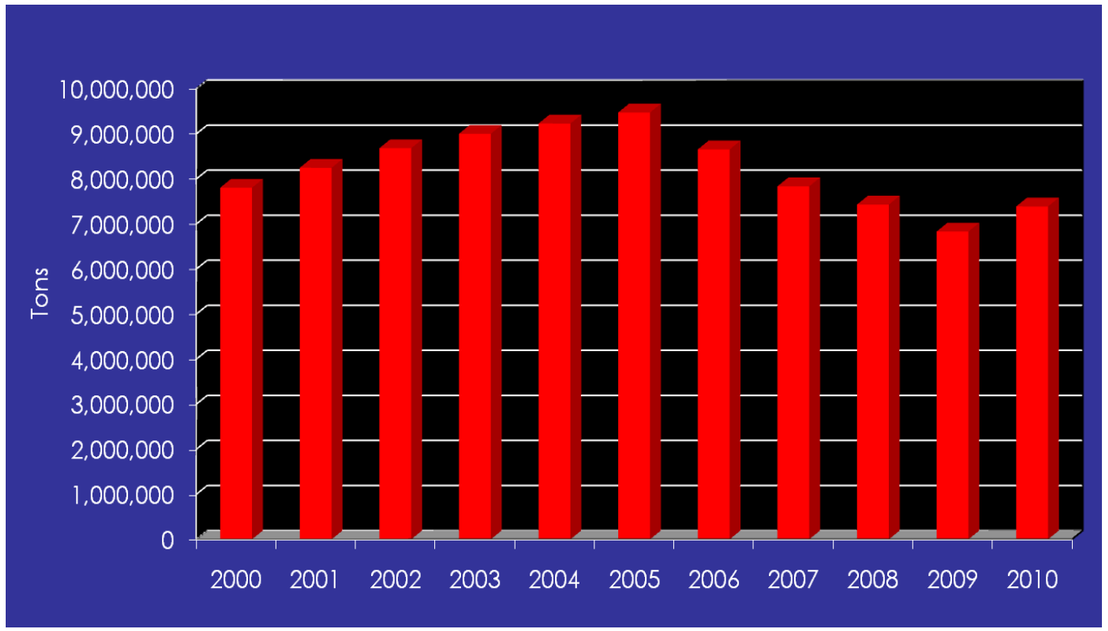
This section provides a summary of the projected containerized cargo throughput through 2035.

These forecasts are used as the baseline for the business plan and physical master plan efforts for the Port to determine future annual throughput capacities and facility demand.

5.2 CARGO FORECAST

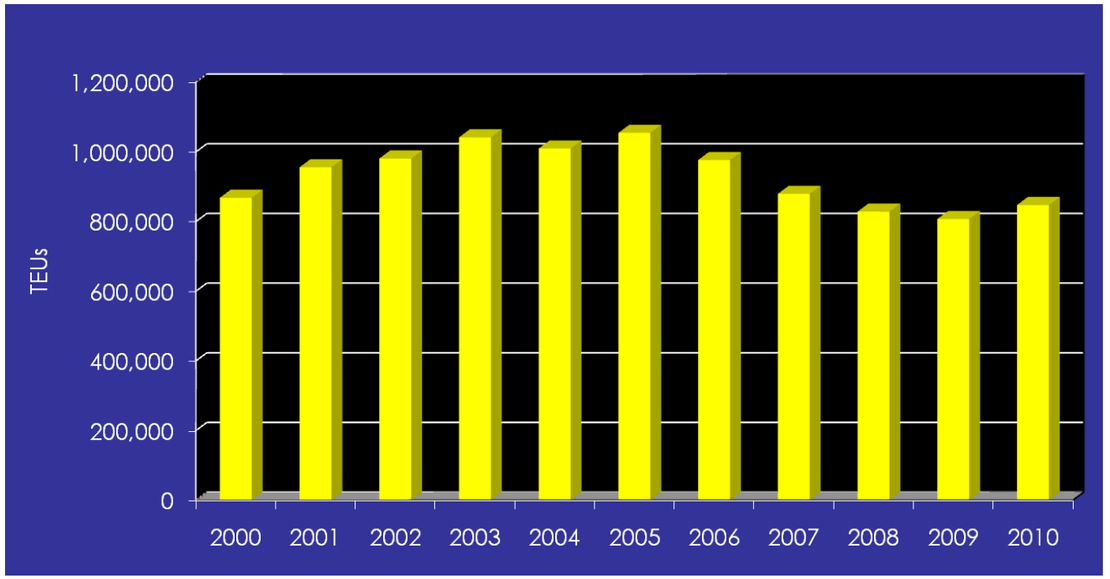
The Port of Miami handles over seven million tons of waterborne containerized cargo annually. Figure 5.1 graphically depicts the historical annual tonnage handled at the Port's public terminals since 2000. From 2000 through 2005, the Port's tonnage increased steadily, growing at an average rate of about 4% per annum.

FIGURE 5.1: HISTORICAL CARGO TONS HANDLED AT THE PORT OF MIAMI



After peaking at nearly 9.5 million tons in 2005, market conditions and economic factors, including the US and global recession have adversely affected container growth. Similarly, total TEUs handled at the Port of Miami peaked at just over 1 million in 2005 and have since declined. The relocation of carriers to competing ports, specifically MSC's relocation to Port Everglades, have contributed to this decline. Fiscal Year (FY) 2010 demonstrated a nearly 5% increase over 2009, the first year-to-year cargo increase five years. Figures 5.1 and 5.2 show the historical tonnage and TEUs (Twenty-foot Equivalent Unit) handled at the Port since 2000.

FIGURE 5.2: HISTORICAL TEUS HANDLED AT THE PORT OF MIAMI



The containerized cargo activity handled at the Port is handled by three individual terminals occupying approximately 268 acres: Seaboard Marine, South Florida Container Terminal/Terminal Link (formerly APM Terminals), and Port of Miami Terminal Operating Company, LLC (POMTOC).

- **SEABOARD MARINE:** Seaboard Marine operates on 76.69 acres and provides weekly service to Central American, Caribbean and South American destinations. Seaboard Marine has exhibited the strongest growth at the Port as container throughput has grown from 250,000 TEUs in 2000 to about 350,000 TEUs in 2008. The Seaboard Terminal accounts for over 70 vessel calls per month at the Port of Miami.

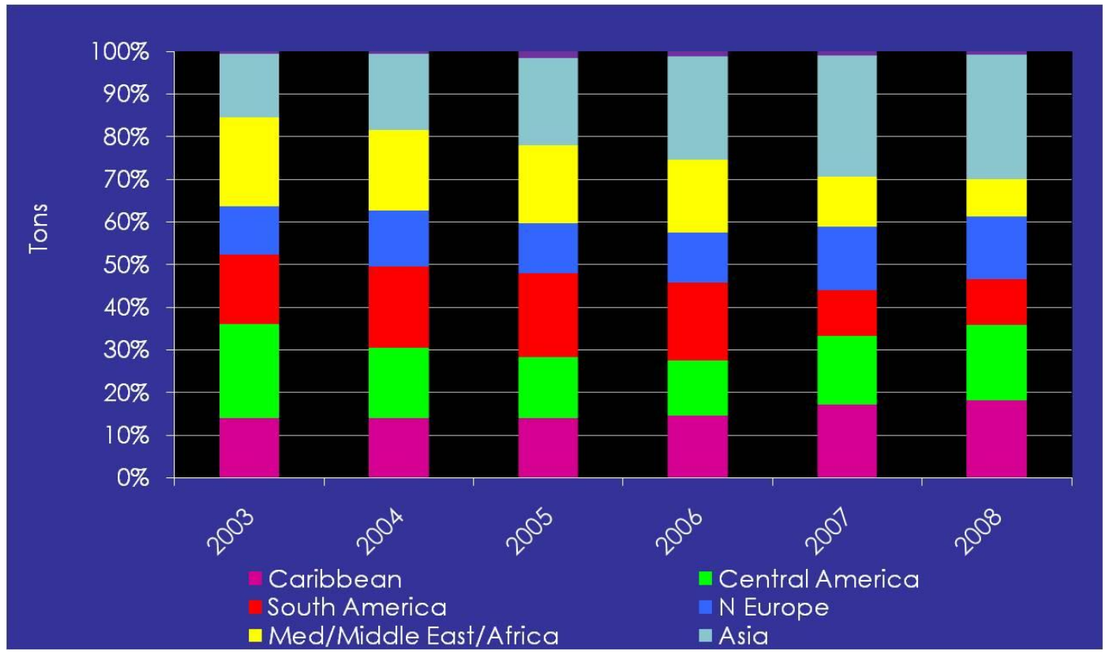
- **SOUTH FLORIDA CONTAINER TERMINAL/TERMINAL LINK:** Formerly APM Terminals, this 71.32-acre facility has recently been realigned as part of a joint venture agreement with Terminal Link, a subsidiary of CMA-CGM Group (51% ownership) and APM Terminals (holding 49%). APM Terminals has historically handled over 200,000 TEUs annually. Throughput is expected to grow as new accounts are secured.

- **POMTOC:** Operates on 120 acres and is the Port of Miami's only non-carrier owned terminal operator. Through 2007, POMTOC was the Port of Miami's largest terminal operator handling over 400,000 TEUs annually. In 2006, a key customer (MSC) relocated operations to Port Everglades, affecting cargo volumes.

POMTOC was the dominant terminal at the Port through 2007 handling over 400,000 TEUs annually and accounting for about 45% of the Port's total throughput. However, the terminal's volume has declined steadily since the mid 2000's due to the loss of MSC to Port Everglades. Conversely, Seaboard Marine has been increasing throughput since 2001. In fact, in 2008, Seaboard Marine handled the most TEUs at the Port, accounting for about 40% of the Port's total TEU throughput. APM Terminals handled over 200,000 TEUs per annum through 2005 but has been relatively unstable since, reflecting a port share decline from 30% in 2000 to 20% in 2005 figures that have remained relatively constant through present day. In FY 2009, the distribution is expected to shift considerably since the APM Terminal has been realigned as part of a joint venture agreement by Terminal Link, a subsidiary of CM-CGM Group.

Latin American cargoes have typically accounted for about 45-50% of the Port of Miami's total tonnage. Northern European cargoes have remained relatively constant at about 10-15% of the total, while Asian cargoes have increased from 15% in 2003 to nearly 30% in 2008. Conversely, Mediterranean, Middle East, and African cargoes share have been declining to less than 10%. It is anticipated that, as more direct, all-water services call the Port, the share of Asian cargoes will continue to grow. Figure 5.3 demonstrates the distribution of tonnage by trade lane.

FIGURE 5.3: SHARE OF PORT OF MIAMI TONNAGE BY TRADE LANE



Based on the previous competitive analysis, low, medium and high container forecasts have been developed. The forecasts are based on the following assumptions:

- The forecast base year is a FY2010;
- All current terminal/liner services are incorporated;
- The forecasts incorporate both full and empty TEUs;
- The forecasts represent unconstrained growth; and,
- The forecasts factor in potential new tenants/services under contract or being pursued by the Port or carriers/terminal operators.

Sources included in developing the forecasts include:

- Historical container throughput data from AAPA;
- Published Florida population data;
- Published data from the International Monetary Fund (IMF); and,
- Carrier/terminal operator interviews.

Historically, growth at South Florida ports – Miami and Port Everglades – has averaged a modest 1.2% annually over the past ten years; however the 20-year containerized growth for these ports has been 5.4%. Specifically, since 1991, the Port of Miami has averaged 3.9% per annum.

Based on data from Moody's economy.com, US real GDP likely to grow between 2-4 % annually over next 5 years. Based on the 1.5X future growth rate, this equates to a 3% to 6% baseline growth rate in TEUS at US ports. Some ports will experience greater growth, as the result of shifting trade patterns, while other ports are likely to grow at lower rates. Similarly, Florida GDP is expected to remain between 2% and 4% through 2020.

It is anticipated that over time more Asian service will be introduced on all-water Suez and Panama Canal routings however, the Port of Miami will still remain heavily vested in an export market that serves Latin American and Caribbean countries with consumer goods and supplies that replenish the cruise and tourism industries. Historical and projected near-term growth was also examined in terms of gross domestic product (GDP) in the Latin American and Caribbean countries. According to the International Monetary Fund (IMF)'s World Economic Outlook (April 2011) the Latin American and Caribbean region's GDP has experienced average annual growth rate of 3.4% over the past ten years. GDP growth rates for 2011 through 2016 are expected to average 4.1%.

Based on the estimated FY 2010 containerized volume handled at the Port of Miami, interviews of Port terminal operators and carriers and future growth factors, a range of containerized forecasts were developed:

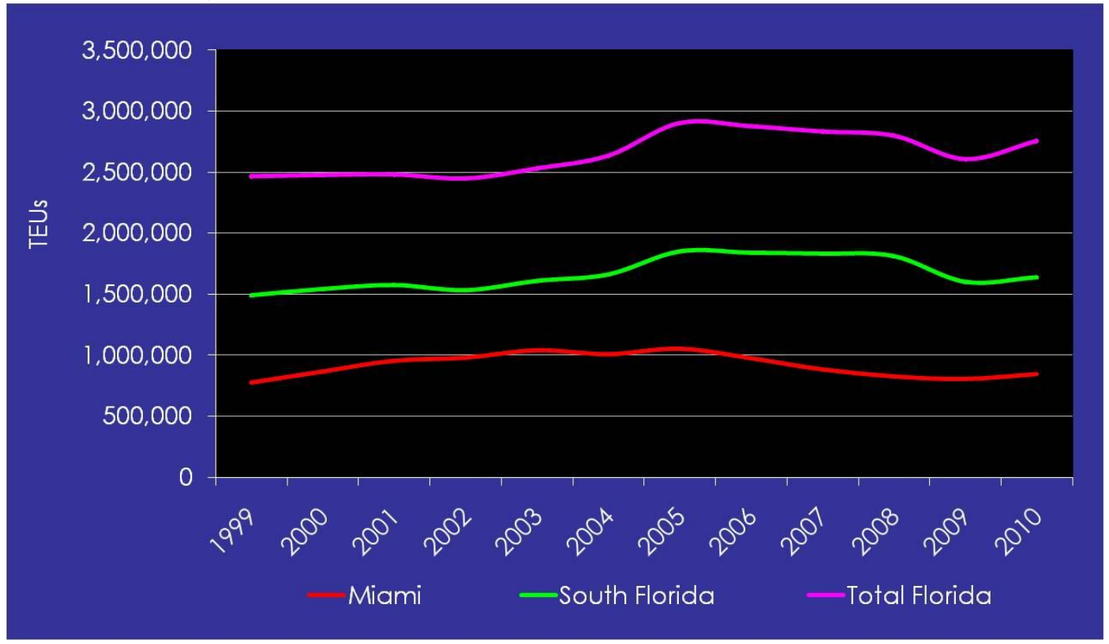
- Low scenario container forecast, with no new market penetration, assumes a 3 percent growth of FY2010 base cargo.
- The moderate growth penetration scenario incorporates the estimated 500,000 potential TEU market that the Port of Miami can capture; 50% of the local truck hinterland market and 25% of the Central Florida market by 2020, with a 3% growth thereafter.
- The aggressive market penetration scenario assumes the same 500,000 potential TEU market is captured by 2016, with a 4.5% growth through 2025 and 3% thereafter.

- The aggressive market penetration plus intermodal scenario assumes the same rate of capture of the local truck hinterland and Central Florida market as described in the aggressive scenario as well as a 18% intermodal share, assuming the Port deepens the channel to -50', allowing for the ability to market to global carriers and handle a fully-laden first-inbound call.

Figure 5.4 shows the historical combined container throughput of Miami, South Florida and Florida since 1999.

FIGURE 5.4: PORT OF MIAMI, SOUTH FLORIDA AND FLORIDA COMBINED HISTORICAL CONTAINER THROUGHPUT (TEUS)

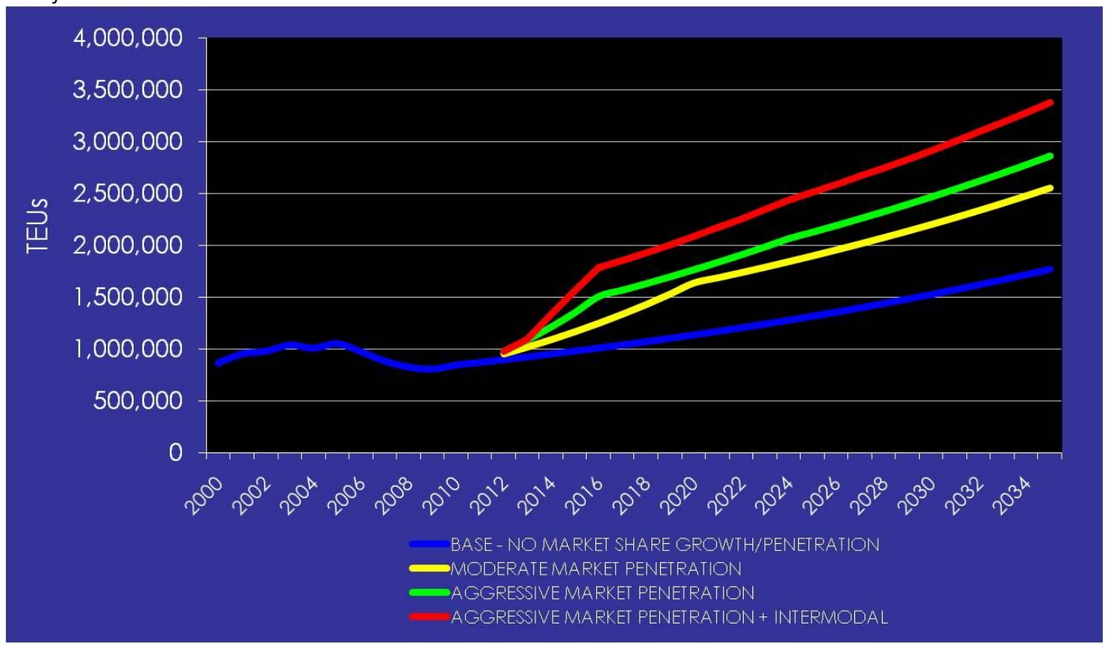
Source: American Association of Port Authorities



By 2035, the unconstrained container throughput at Port of Miami is projected to range between 1.77 million and 3.38 million TEUs. The long-term growth rates of these scenarios range between 3% and 5.8%. The low/base, moderate, aggressive and aggressive plus intermodal container forecasts are graphically depicted in Figure 5.5.

FIGURE 5.5: PORT OF MIAMI LOW AND HIGH UNCONSTRAINED CONTAINER FORECASTS

Source: John Martin Associates



5.3 ON-PORT CARGO FACILITY DEMAND

In terms of current terminal capacity, the 828,349 TEUs handled over 259 terminal acres at the Port of Miami yielded about 3,200 TEUs per acre. This figure incorporates total gross acreage for all three cargo terminals. This TEU per acre figure is fairly consistent with the East Coast average of 3,257 TEU per acre. Other Florida ports of Port Everglades and JAXPORT reflect similar densities under current configurations. The Port of Palm Beach boasts the highest TEU per acre ratio given the fact that the majority of the cargo arrives the day of the vessel sailing and therefore reduces dwell time. Conversely, the ports of Philadelphia, Baltimore and Wilmington (NC) operate less efficiently as the TEU per acre ratio is below 2,000. Table 5.1 illustrates the TEU per acre averages for all East Coast (US and Canadian) ports.

TABLE 5.1: EAST COAST TEU PER ACRE (BASED ON GROSS ACREAGE)
Source: American Association of Port Authorities and public port data

PORT	2008 TEU's	ACREAGE	TEU PER ACRE
MONTREAL	1,473,914	185	7,967
HALIFAX	387,347	162	2,391
BOSTON	211,085	101	2,090
NEW YORK / NEW JERSEY	5,265,059	1,261	4,175
PHILADELPHIA	255,994	228	1,123
BALTIMORE	612,877	354	1,731
NORFOLK	2,083,278	619	3,366
WILMINGTON, NC	196,040	100	1,960
CHARLESTON	1,635,537	395	4,141
SAVANNAH	2,616,185	1,200	2,180
JACKSONVILLE	718,467	215	3,342
PALM BEACH	249,931	30	8,331
PORT EVERGLADES	985,095	270	3,649
MIAMI	828,349	259	3,198
TOTAL EAST COAST	**17,519,158**	**5,379**	**3,257**

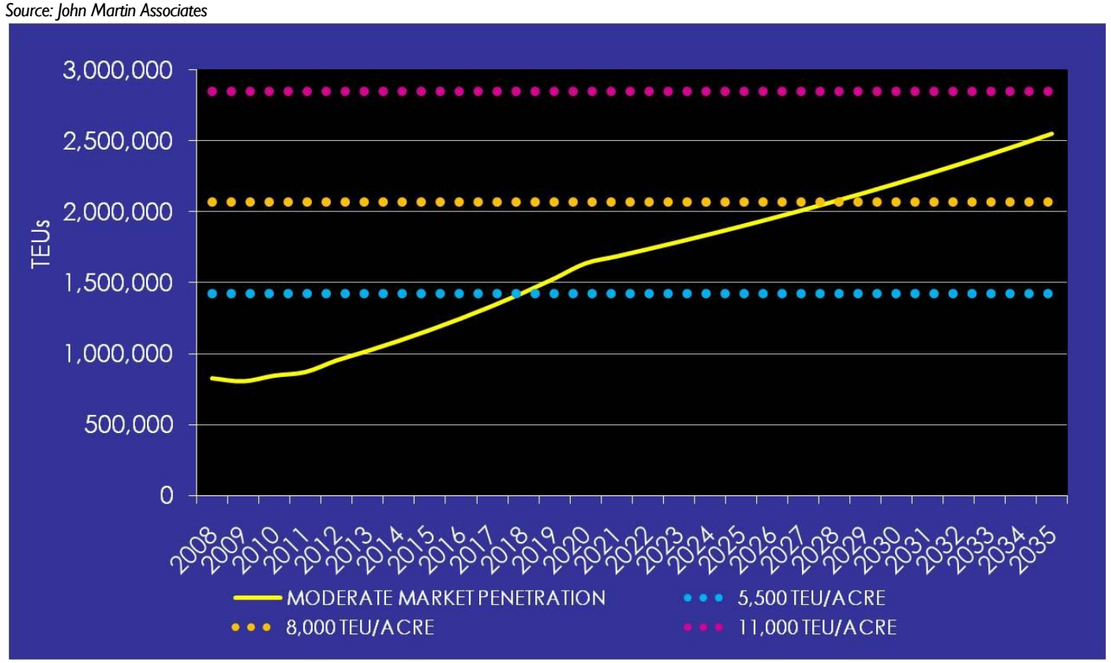
The terminal operating characteristics on the East Coast have historically differed from West Coast operations. The West Coast operating structure averages about 5,000-5,500 TEUs per acre. This is evident by the fact that the terminals are typically operated by a single carrier, who has ultimate control of yard operations. As more terminals on the East Coast shift toward single-carrier and/or terminal operator operations, TEU per acre averages will increase. For example, the APM Terminal in Portsmouth, VA is capable of handling 12,000-13,000 TEU per acre at full automated build-out. The MOL/TraPac terminal in Jacksonville is targeted to handle up to 8,000 TEUs per acre provided adequate berth and gate capacity.

5.3.1 FUTURE ON-PORT CARGO TERMINAL CAPACITY

Based on the mid potential cargo projection scenario, the Port of Miami will be required to handle nearly 2.7 million TEUs in 2035. Using the current configuration of approximately 260 acres of gross cargo terminal area, this equates to about 10,350 TEUs per acre. Industry studies indicate that terminal density can increase to 11,000 TEU's / acre and eventually to 15,000 TEU's / acre without full terminal automation. However, to reach this level of densification, significant amounts of investment, including rail mounted gantry cranes (RMG), and other technology to minimize dwell times will be required.

Figure 5.6 illustrates the thresholds of capacity under various densification scenarios. This analysis suggests that, under the medium projection scenario, Port of Miami will approach densification of 8,000 TEU per acre in 2028. Assuming an 11,000 TEU per acre densification, the Port will not reach capacity in the planning period under the medium growth scenario.

FIGURE 5.6: TEU PER ACRE PROJECTED CAPACITY THRESHOLDS
Source: John Martin Associates



Given these scenarios, the Port's terminals will need to densify in order to meet future long-term demand. This can be accomplished by:

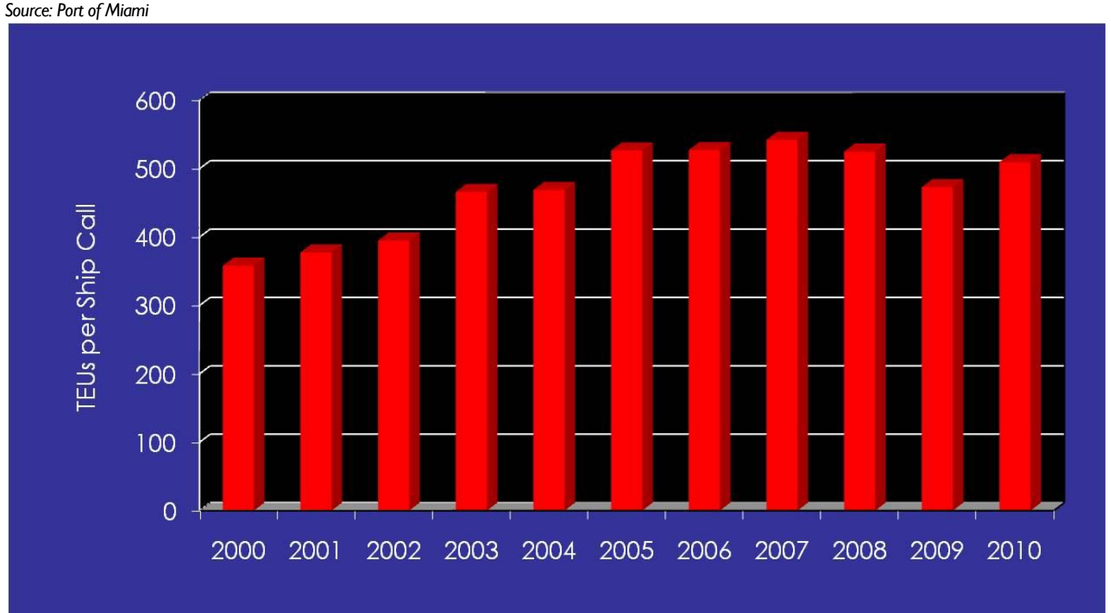
- Reducing on-dock dwell times;
- Moving toward RTG and RMG operations;
- Improving gate efficiencies; and,
- Managing off-dock overflow yards, if necessary.

The levels of investment required to achieve this level of densification could result in higher operating costs per unit. It is imperative that there is a balance of maintaining reasonable cost per unit while gaining terminal efficiencies.

5.3.2 FUTURE BERTH CAPACITY

In addition to the landside constraints, future berth capacity must be taken into consideration. Figure 5.7 illustrates that the average TEU per ship call has increased from about 350 to 510 since 2000.

FIGURE 5.7: HISTORICAL TEU PER SHIP CALL AT THE PORT OF MIAMI
Source: Port of Miami



The average number of TEUs per call will most likely continue to increase. For example, similar sized vessels to those currently calling the Port can discharge and load more units per call in the future.

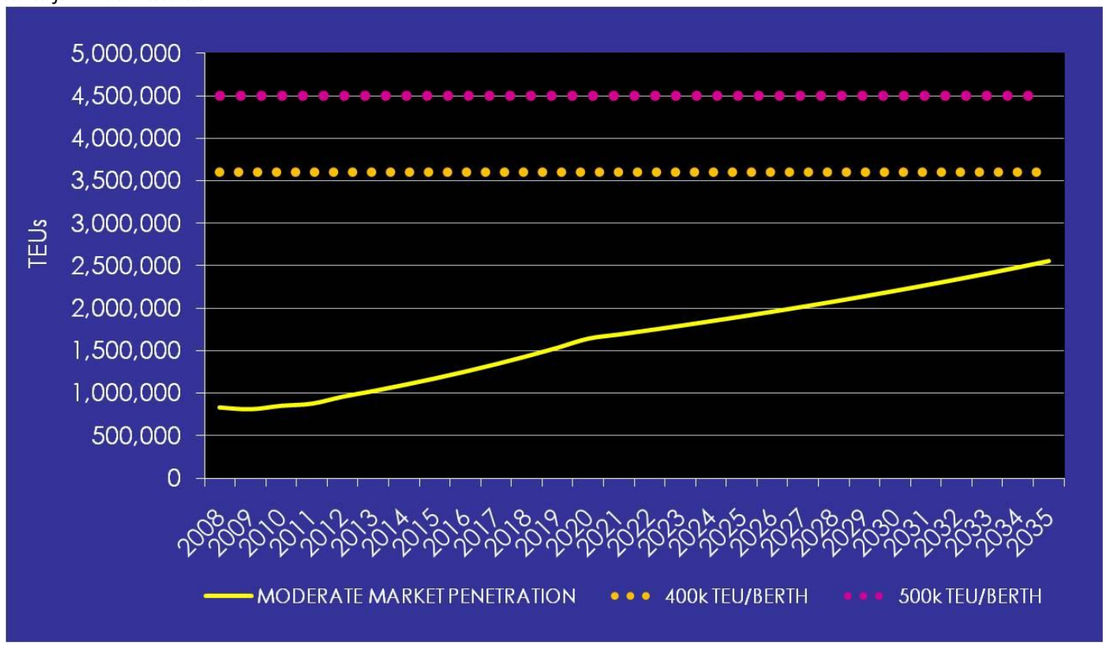
Table 5.2: Current and Future Fleets by Key Carrier
Source: AXS Alphaliner, Aug. 2009

CARRIER	CURRENTLY			ON ORDER		
	TEU CAPACITY	# VESSELS	AVG. TEU'S PER VESSEL	TEU CAPACITY	# VESSELS	AVG. TEU'S PER VESSEL
MAERSK	2,022,675	537	3,767	371,351	71	5,230
MSC SHIPPING	1,518,803	409	3,713	623,793	54	11,552
CMA-CGM	1,025,839	366	2,803	505,688	60	8,428
EVERGREEN	594,154	162	3,668			
APL	531,865	135	3,940	155,210	21	7,391
HAPAG-LLOYD	482,943	125	3,864	122,500	14	8,750
COSCO	467,909	145	3,227	425,102	56	7,591
CHINA SHIPPING	451,921	140	3,228	146,544	17	8,620
NYK LINE	412,711	109	3,786	112,600	20	5,630
HANJIN	407,013	90	4,522	270,488	30	9,016
TOTAL TOP TEN	**7,915,833**	**2,218**	**3,569**	**2,733,276**	**343**	**7,969**

Also, as larger vessel deployments occur on direct all-water routings, these vessels will discharge and load more units per call to ensure economies of scale of these larger ships. The trend toward larger vessels is evidenced by Table 2.13 which details the top carriers' order books. Currently the top 10 global carriers' fleets average about 3,600 TEU capacity per vessel. The order book for these same carriers reflects an increase in average vessel capacity to nearly 8,000 TEU per ship.

Based on industry standards it is estimated that berth capacity can handle between 400,000 and 500,000 TEUs annually. The berth capacity analysis is based on 10,000 LF of berth – 6,700 of container crane and 3,300 of mobile crane berth operations. Assuming an average of 1,100 linear feet per berth, the analysis generates the need for 9 berths.

FIGURE 5.8: PROJECTED BERTHING CAPACITY THRESHOLDS
Source: John Martin Associates



Based on the growth of the global carriers, Figure 5.8 demonstrates the capacity based on these assumptions. It appears, based on industry standard, that the mid potential scenario is capable of handling future throughput. It is important to emphasize that this is based on TEU throughput, and vessel calls will not reflect linear growth. The vessel calls will follow step-wise increases as more services are put in place at the Port.

5.4 OFF-PORT CARGO FACILITY DEMAND

5.4.1 OFF-PORT DISTRIBUTION CENTER OPPORTUNITY

The potential for the Port of Miami to compete for distribution centers (DCs) to serve the Florida wholesale and retail markets is assessed in this section. This is due to the anticipated growth in Asian imports to the East Coast ports from

increases in all-water direct services via the Panama and Suez Canals, and the accompanying growth in distribution centers near East Coast ports.

The Port of Miami finds itself in a unique situation by virtue of the fact that there is a significant parcel of land adjacent to the Hialeah intermodal yard that may be available for DC operations. The Flagler Property is approximately 400 acres and can be used for both intermodal and distribution opportunities. The following analysis focuses on this potential opportunity.

Fueling the growth in the all-water services is the fact that the major importers are developing distribution centers at East Coast and Gulf Coast ports. The leader in terms of DC marketing and development on the East Coast is clearly Savannah. Since the early 1980's, the Georgia Ports Authority has attracted 19 near-port distribution centers totaling 15 million square feet. The success of attracting these DCs is evident by the TEU volume in recent years as well as the percentage of those TEUs that are imported from Asia.

The Virginia Port Authority has also been aggressively pursuing the development of distribution centers and has experienced success at the Port Authority's inland port in Front Royal. In terms of Florida, specifically Jacksonville, there has been significant development and interest in the creation of distribution centers in the region. Currently wholesale stores such as BJ's and Wal-Mart have distribution centers near the port that are primarily used for export activity to the Caribbean. The Westside Industrial Park consists of a 960-acre master planned development with 4 million square feet of space. The Northside consists of three primary business parks: North Point Industrial Park, Imeson and Jacksonville Tradeport. The North Point Industrial Park is located about 4 miles from the Port and consists of 350 acres of build-to-suit lease or sale sites from 10 to 150 acres. The City of Jacksonville is also pursuing a distribution center development strategy and is in full support of JAXPORT's growth.

Similar distribution center development is also occurring in Houston, accompanying growth in Asian cargo imports at the Port of Houston. These developments include the Cedar Crossing area site of a 4 million-SF distribution center for Wal-Mart and 8,000 acres of land available for DC and industrial development.

Other ports, including Charleston, Wilmington (NC), and New York, are also aggressively pursuing distribution center development. The property previously occupied by General Motors, and now owned by Duke Realty, is currently the only "near port" location for distribution center development at the Port of Baltimore, but with the potential development of property in the Cox Creek area, a significant opportunity for distribution center development near the Seagirt Marine Terminal could be provided.

5.4.2 OVERVIEW OF FLORIDA CURRENT DISTRIBUTION CENTER (DC) MARKET

The Distribution Center (DC) and warehousing market in Florida has historically served not only retail and wholesale industries that serve the key consumption markets throughout the State with import and domestic shipments, but also the freight consolidators primarily located in South Florida and Jacksonville to serve the export Caribbean Island and Latin American trade as well as supply cruise vessels calling the Florida ports. The majority of DC growth in Florida has occurred in three regions:

- **MIAMI-DADE/BROWARD COUNTIES**: Serves the South Florida retail and wholesale markets; food wholesalers near the Port of Palm Beach, Port of Miami, and Port Everglades infrastructure serve cruise and island export markets; consolidators focus on near-airport facilities to also serve the air cargo market at Miami International Airport (MIA). There are also major highway and rail corridors linking the major cores of these areas.

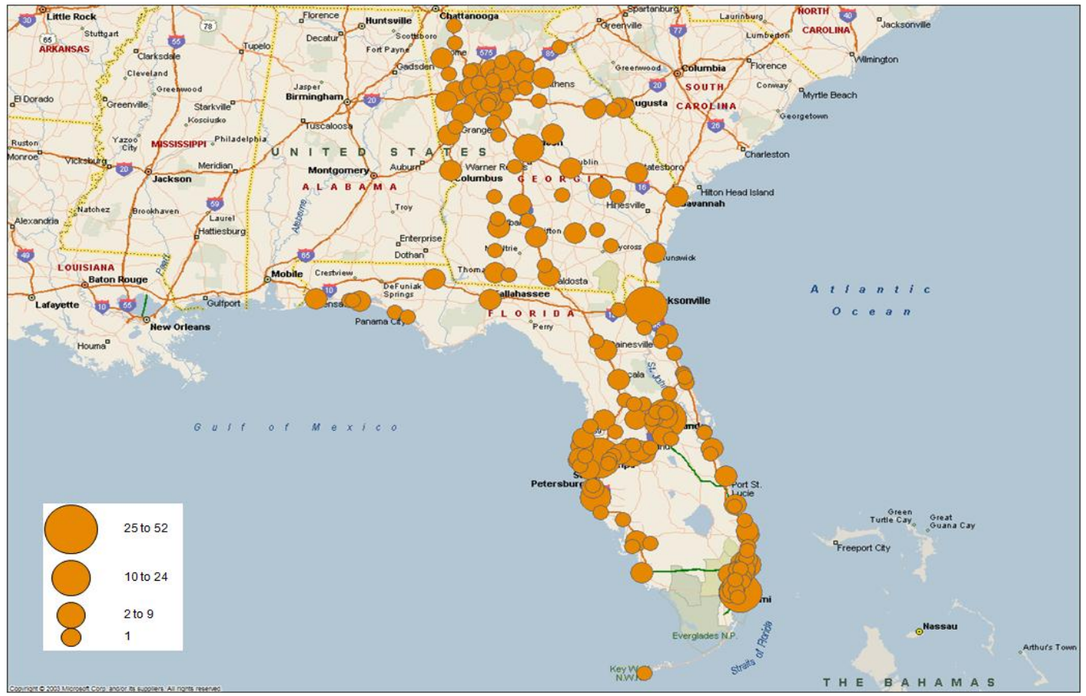
- **I-4 CORRIDOR (TAMPA-LAKELAND-ORLANDO)**: Serve growing population and tourism in Central Florida. Also ability to serve South Florida retail and wholesale markets; excellent highway and rail access from hinterland.

- **GREATER JACKSONVILLE AREA**: Increasing market share; ability to serve into North/Central Florida as well as westbound; inexpensive land, low congestion; excellent highway and rail access that can also access South Florida; high interest by Asian steamship lines to develop container terminals in JAXPORT.

Figure 5.9 illustrates the location of DCs in Florida and Georgia, as identified by the Chain Store Guide. The map legend identifies the range of the number of DCs for a specific location. The DCs listed in this exhibit represent eight different commodity sectors including: apparel, chain restaurant, department store, discount/general merchandise, drug store, home center/hardware, home furnishings, and supermarket/grocery/convenience store. The map shows the dense concentration of DCs in South Florida and Central Florida's I-4 Corridor. The growing Jacksonville market is also represented. The concentration of DCs in Georgia, specifically Atlanta due to the activity at the Port of Savannah, is evident.

FIGURE 5.9: LOCATION OF FLORIDA AND GEORGIA DCS

Source: Chain Store Guide



Historically, the South Florida markets of Palm Beach, Broward, and Miami-Dade Counties have been significantly more expensive in terms of lease rates and operating costs than Central and Northern Florida.

Asking rates have been falling and vacancy rates have been on the rise due to the global recession. In most markets net absorption has been negative, suggesting that supply is outpacing demand and, therefore, most key markets are showing

little or no new construction starts. Most of these six markets in Florida have witnessed a decline of 10% - 20% in asking rates since Q3 2007. Only the Orlando market has increased asking rates for bulk distribution space over the same period (from $5.49 to $5.66/square foot).

Miami-Dade County's current industrial gross (IG) asking rate is $7.48 per square foot. Industrial gross differs from triple net (NNN) leases in that in a NNN agreement, the lease pays for rent and absorbs the costs of utilities, building insurance, and taxes. In an industrial gross arrangement, these costs are included in the rent. The differential from NNN to industrial gross is about $1.50 per square foot. Current NNN asking lease rates in Palm Beach and Broward Counties are $ 6.71 and $7.37, respectively. In contrast, NNN rates in Central Florida market of Tampa and Orlando range from $5.27 to $5.66 per foot. Furthermore, the Jacksonville area boasts a NNN asking rate of $3.86 per square foot.

5.4.3 PORT OF MIAMI DISTRIBUTION CENTER SITE ANALYSIS

In order to assess if a Miami DC can serve the Florida retail/wholesale market the following methodology was used.

First, ocean voyage costs were developed for an Asian trade lane to the ports of Miami, Port Everglades, Tampa, Jacksonville, and Savannah. A voyage cost model was used to estimate the voyage costs of calling each port. The voyage costing model for a 4,800 TEU vessel was calibrated for each port and each trade lane. It was assumed that the vessel was deployed on a direct routing, and further that 800 containers were discharged at each port. Productivity and vessel turn time was assumed equal at each port. The cost analysis included voyage costs by trade lane, terminal costs, and port costs via each port.

The voyage costing model has been used to estimate the national economic benefits of channel deepening and maintenance dredging projects for approval by the US Army Corps of Engineers, to evaluate fleet deployment and equipment utilization strategies for ocean carriers, to develop and define competitive market strategies for public port authorities, and to assess the impact on transportation costs of the use of larger vessels by specific trade lanes.

The key inputs into the voyage costing model are:

- Vessel type;
- Vessel flag of registry;
- Vessel speed (knots):
- Design speed;
- Operating speed;
- Design draft;
- Constrained draft;
- TPI (tons per inch of dispersion) due to draft constraints;
- Load port;
- Mileage for entire route;
- Port days (based on vessel load/discharge rate and ports of call on a voyage);
- Use of Panama, Suez Canal;
- Canal fees;
- Vessel capital costs:
- Capital repayment;
- Vessel operating costs:
- Crew wages;
- Maintenance and repair;
- Insurance;
- Stores/supplies; and,
- Miscellaneous.

The values of the inputs are derived from several sources. The deadweight tonnage and flag of registry are first developed. On average, a 4,800 TEU container ship represents the type of vessels currently deployed on the East Coast and Gulf Coast routings. These vessels are typically foreign flag vessels since the operating costs, particularly crew costs, are significantly less than the crew costs on US flag vessels. A 4,800-TEU vessel typically has a design draft of -43 feet which is consistent with most container ports on the East and Gulf coasts and is compatible with the current depth dimension of the Panama Canal. It is to be emphasized that, with an expanded Panama Canal (as well as increased Suez routings) and the ability of vessels in excess of 7,000 TEUs to transit the Canal, a -50-foot channel depth will be necessary to accommodate these vessels at first-inbound ports. Furthermore, the ability to use a larger vessel – 7,000+ TEU vessels versus a 4,800-TEU vessel will provide cost savings per container.

The values for operating costs and capital costs, as well as design speed, TPI, design draft, etc., are obtained from the US Army Corps of Engineers Deep Draft Self Propelled Vessel Cost Database while current bunker fuel prices are from Bunker World. For each port, the stevedoring costs, terminal costs, port charges as well as pilotage and towing costs were identified by Martin Associates.

Next, potential DC locations were identified. The DC locations included in this analysis are Hialeah, Medley, Orlando, and Jacksonville. The corresponding lease rate information was obtained from CBRE MarketView reports Q2 2009. Separate annual lease rates per square foot were then developed for 250,000, 500,000 and 1million square foot facilities. Adjustments were made to account for inconsistencies between NNN and industrial gross lease rates. These annual lease rates for each size DC were divided by the average number of inbound and outbound loads for each respective DC size. The average number of inbound and outbound loads was based on interviews conducted with DC operators as well as Martin Associates in-house databases. The resulting figure provides a lease rate per container/load for each of the three (250,000, 500,000 and 1 million square feet) DC sizes.

Next, drayage and trucking rates were developed for each port-DC location pairing. Weighted cost per-mile truck rates (with current fuel surcharges) were developed from interviews with trucking companies and Martin Associates' in-house database. Mileages from Port to DC locations were developed from PC Miler. Intermodal rates used in this analysis (where applicable) were developed from averages of data collected from various sources including the Surface Transportation Board (STB) 1 Percent Waybill Sample, Intermodal Department of Ocean Carriers, and Martin Associates' in-house databases. Intermodal lift charges and drayage rates were applied to ports that do not have on-dock rail access.

The final step in developing the location and sensitivity analysis includes the development of a weighted average truck distance (again based on PC Miler) to serve retail/wholesale markets from each DC location – Hialeah, Medley, Orlando, and Jacksonville.

A Hialeah DC location with the cargo moving via the Port of Miami offers the total logistics least cost routing per box to serve the Florida retail and wholesale market - $3,014 on a 500,000 square foot DC and $2,963 on a 250,000 Square foot DC. Other port-DC location pairings that fall within $50 per box are Hialeah through Port Everglades, Medley through Miami, and Orlando via the Port of Tampa.

An analysis for the 1 million square foot facility yields similar results; however, given the size of the available parcel and the shift toward smaller DCs, the 500,000- and 250,000-SF facilities are more suitable to the current market situation. It should be noted that these costs are extremely competitive, with the top port-location parings separated by less than $60 per box. A number of different factors including truck rates due to backhaul availability, loading charges, and incentives to DC operators could narrow the cost gap.

Given these results, it appears that the Port of Miami can compete with the Central and Northern Florida locations to serve the Florida consumption market with DC operations in Hialeah or Medley. The Flagler Property, which provides significant industrial acreage and intermodal access, exists and is available for development. The size of the parcel, coupled with the fact that smaller to mid-size DCs are becoming the trend, allows the site to pose as a potential multi-tenant complex. It is recommended that the Port continue to work in conjunction with Flagler and other involved parties including the Florida East Coast Railroad (FEC) to market this site to carriers, developers, and DC operators (shippers/consignees).

5.5 CARGO LAYOUT ALTERNATIVES

5.5.1 OVERVIEW

The options for providing for the cargo needs at the Port are affected by the cargo projections, input from the current leaseholders of the cargo terminals, and the longevity of the leases that the Port has over the current Port lands.

Figure 5.10 illustrates the current lease structure of the Port cargo territory. These leases are currently held by POMTOC (117 acres per lease agreement), Seaboard (76.1 acres per lease agreement), and South Florida Container Terminal - Terminal Link- (71.8 acres per lease agreement), .44 acres used by Fisher Island for the movement of commercial vehicles to and from the island, and approximately 7.55 acres leased to third parties. This is a generalized drawing, which shows the location and sizes of the leases. However, it should not be used for specific property definition.

Since the cruise plan calls for the extension of cruise berths along the north shore of the container yard, the main component of the plan is to reroute the main access road to all of the container terminals on Lummus Island from that location. Figure 5.11 illustrates the proposed new cargo access roadway allowing for the expansion of the cruise berths CB 7 to CB 9, and the access to each yard, fumigation yard, pilot station, and the utilities zone at the far eastern end of the Port.

To provide the Port and Users with future sustainable yard flexibility, the approach to flow cargo traffic from the main gate complexes to the north along the cargo/cruise boundary and into the cargo yards has been taken. The specific gates for each yard, configuration and acreage of each, layout of support facilities, and containers is then only dictated by the available space within the yard and not affected by outside issues. As noted in the cruise section above, the addition of the new cruise berths on the North Channel impacts the cargo yard acreage in that area. Access to the Seaboard cargo yard will continue to be organized in a similar fashion as today following the implementation of their master plan and gate complex.

The proposed cargo right-of-way is a total area of 457, 681 square feet (10.5 acres) and is 7,232 linear feet (1.37 miles). This is a four-lane, paved roadway tapering at the fumigation yard to two-lane traffic flow.

FIGURE 5.10: CURRENT CARGO LEASES

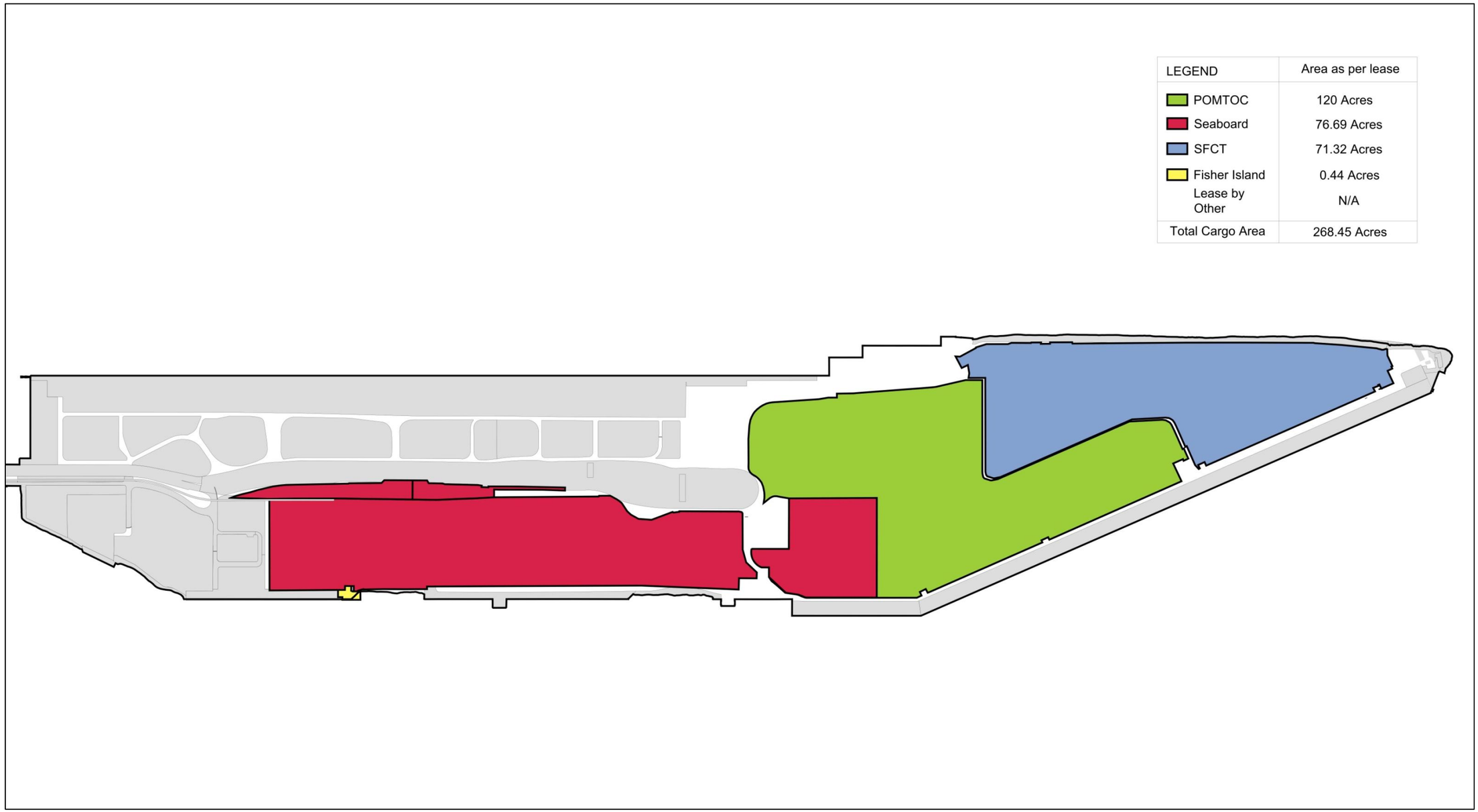


FIGURE 5.11: IMPLEMENTATION OF PROPOSED CARGO ACCESS ROADWAY

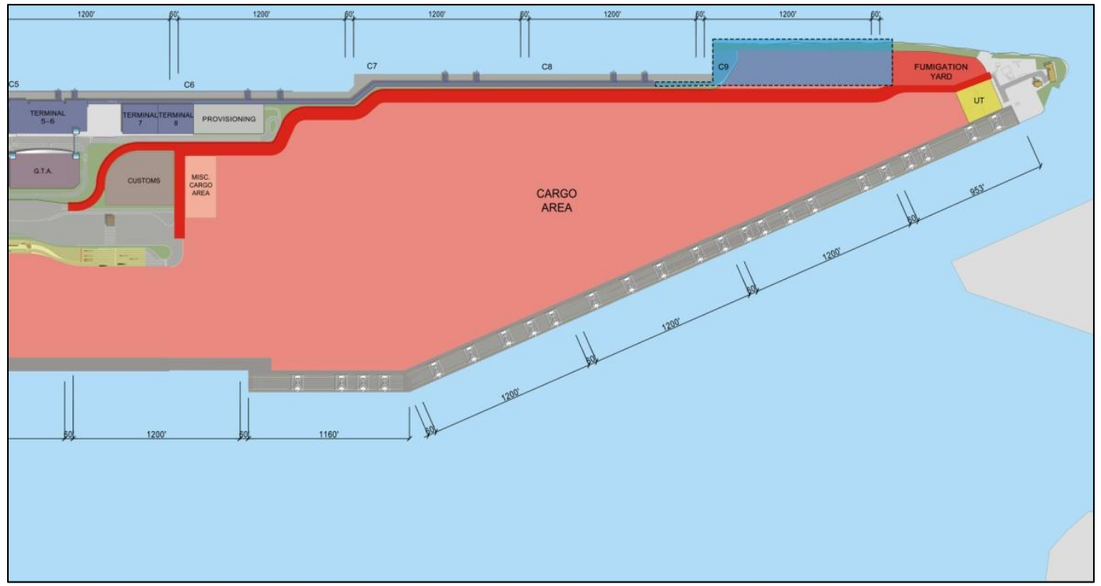
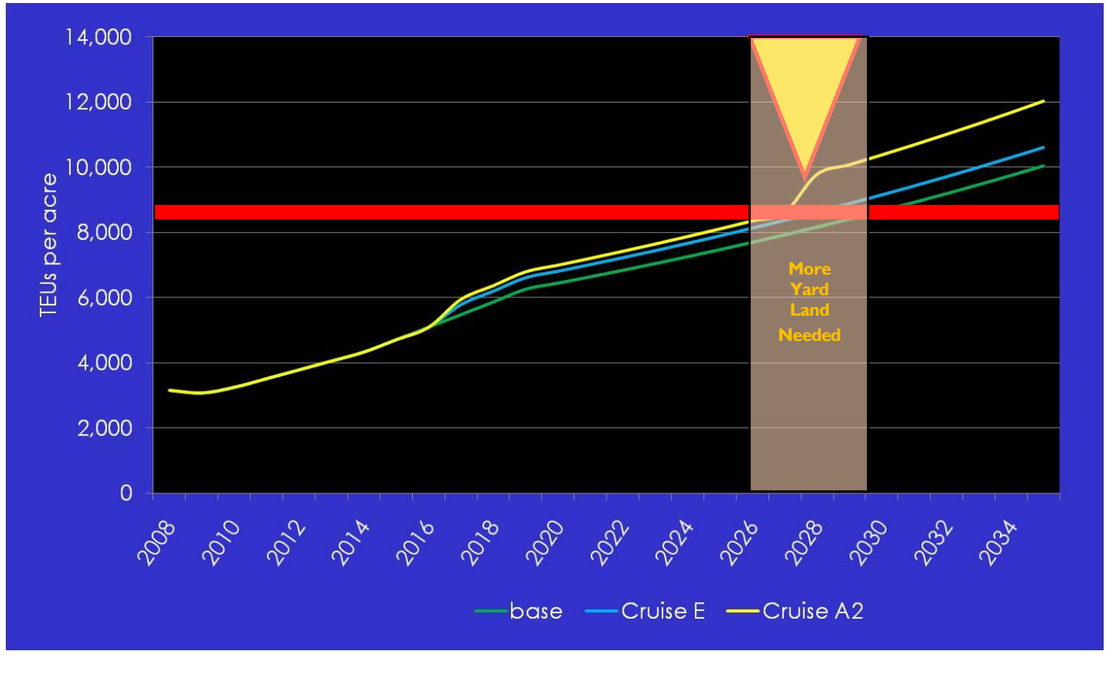


FIGURE 5.12: TEU'S PER ACRE FORECAST



5.5.2 ADDITIONAL LAND

Based on the analysis shown in the previous section, the plan will be to optimize the use of the current land within the port for cargo operations. However, at some point in the future additional land will be required. Figure 5.12 shows the need for additional cargo acreage to support the TEU projections for the Port based upon the land requirements of the different cruise development options outlined in the master plan (They are the current cruise base, E and A 2). As such, in a range from 2027 to 2029 more space will be required. It is possible that some of this need may be offset by increases in overall yard efficiencies and new technologies related to the improved handling and movement of boxes to and from the Port and yards.

Impacts on Port of Miami cargo operations will be seen in two specific upcoming projects: The Port of Miami tunnel project which has started construction as of May 2010 and is scheduled for completion in 2014. The new deep dredge project on the South Channel will allow for 50+ feet of draft for larger cargo vessels to enter and use the Port of Miami facilities. These projects together will assist in positioning the Port for the widening of the Panama Canal and the opportunity to service these large vessels capable of transiting from the Pacific to Atlantic once the canal project is completed in 2014. The development of these projects will serve as a new opportunity for the Port to expand its cargo operations to the outlying regions of the southern U.S.

Additionally, planning and design enhancements to the Port security cargo gate complex have also started and will provide for further efficiencies to cargo movements. Although this was not a key part of the master plan project, it is evident that this is a key barrier to the cargo yard efficiencies. The operations of each cargo operator are different and it is not an easy task to facilitate changes that impact each user. However, improvements to allow for faster movement in and out, box scanning capabilities, pre-clearance of trucks, and other related gate issues should be further explored as part of the overall tunnel and master plan.

5.6 CARGO LAYOUT

5.6.1 OVERVIEW

Most of the cargo operations are consolidated in Lummus Island and the south side of Dodge Island. However, transit shed B is an isolated building still handling cargo while adjacent to cruise terminals. This creates operational issues and does not allow for efficient use of space; customs is in a tight space for access.

The recommended cargo master plan layout provides for consolidation of cargo yards and supporting functions and the ability for future expansion to coincide with projected TEU throughput demand and reconfiguration of the cruise area. In doing so, a separation of cruise and cargo will occur.

A new space for the transit shed B to allow for continued use of these facilities for bulk commodities will be provided. The Customs area will be expanded and moved to a location adjacent to the gate complexes that can also serve to support cruise operations functions as necessary and the present fumigation yard will be relocated to allow for the safe distance required for use, placing it in an area where it will not impact future cruise and cargo area development.

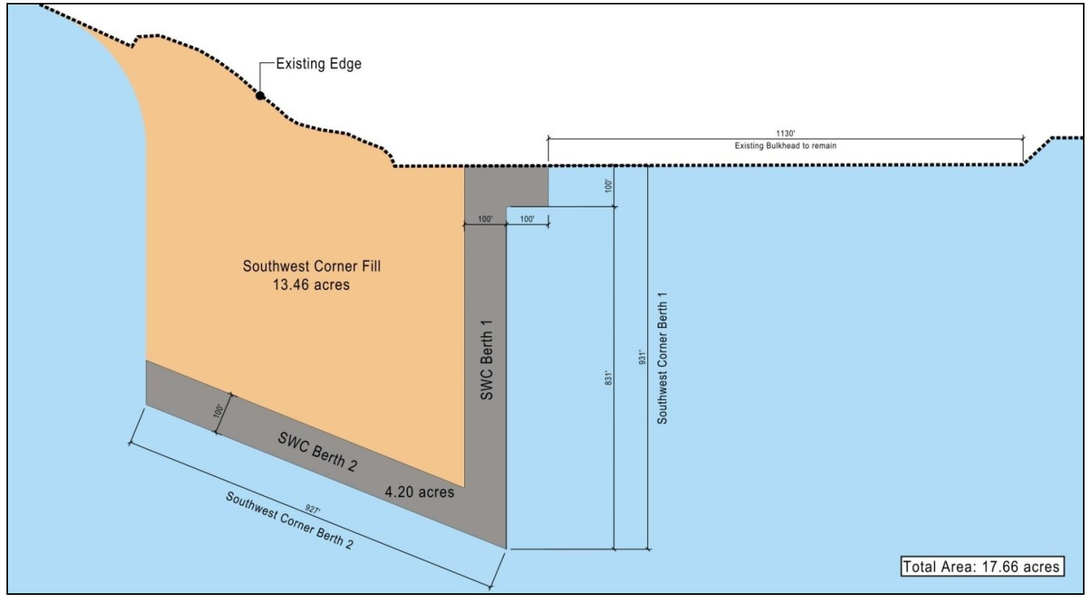
The master plan also takes into consideration current actions by Seaboard to develop their yard plan. South Florida Container Terminals is most impacted by the reconfiguration of the cruise and cargo areas due to the location of the yard gate complex. This will likely need to be relocated to provide for the completion of the master plan as presented.

To offset the potential loss of cargo yard as land is reallocated to cruise, it is recommended to expand the cargo area along the southwest corner edge by some 13.46 acres to provide a platform for future cargo operations.

Figure 5.13 shows this expansion program that would cost the Port an estimated $111,800,000 including the addition of two 830- to 927- linear foot berths with an area of 4.20 acres as illustrated in Table 5.3. This area would provide for potential river traffic interaction, Ro-Pax and Ro/Ro services. Total area is 17.66 acres.

Table 5.3: Southwest Corner Cargo Expansion Cost Estimate	
Southwest Corner Cargo Expansion	
Berth 1	$ 15,100,000
Berth 2	$ 11,300,000
Sub Total Berths	$ 26,400,000
Fill Area (13.46 acres)	$ 85,400,000
TOTAL	$ 111,800,000

FIGURE 5.13: PROPOSED LONG-TERM SOUTHWEST CORNER CARGO EXPANSION



The current cargo berthing layout shown in Figure 5.14 provides for some 10,681- linear feet of combined cargo berthing along the South Channel of the Port to sufficiently allow for small- to mid-size container and Ro/Ro vessels; these berths (99 – 182) are adjacent to the main cargo yards of POMTOC and South Florida Container Terminal and are serviced by gantry cranes. Presently, Seaboard's berths adjacent to their yard use Ro/Ro and mobile cranes to move cargo and containers.

FIGURE 5.14: EXISTING CARGO BERTHING LAYOUT

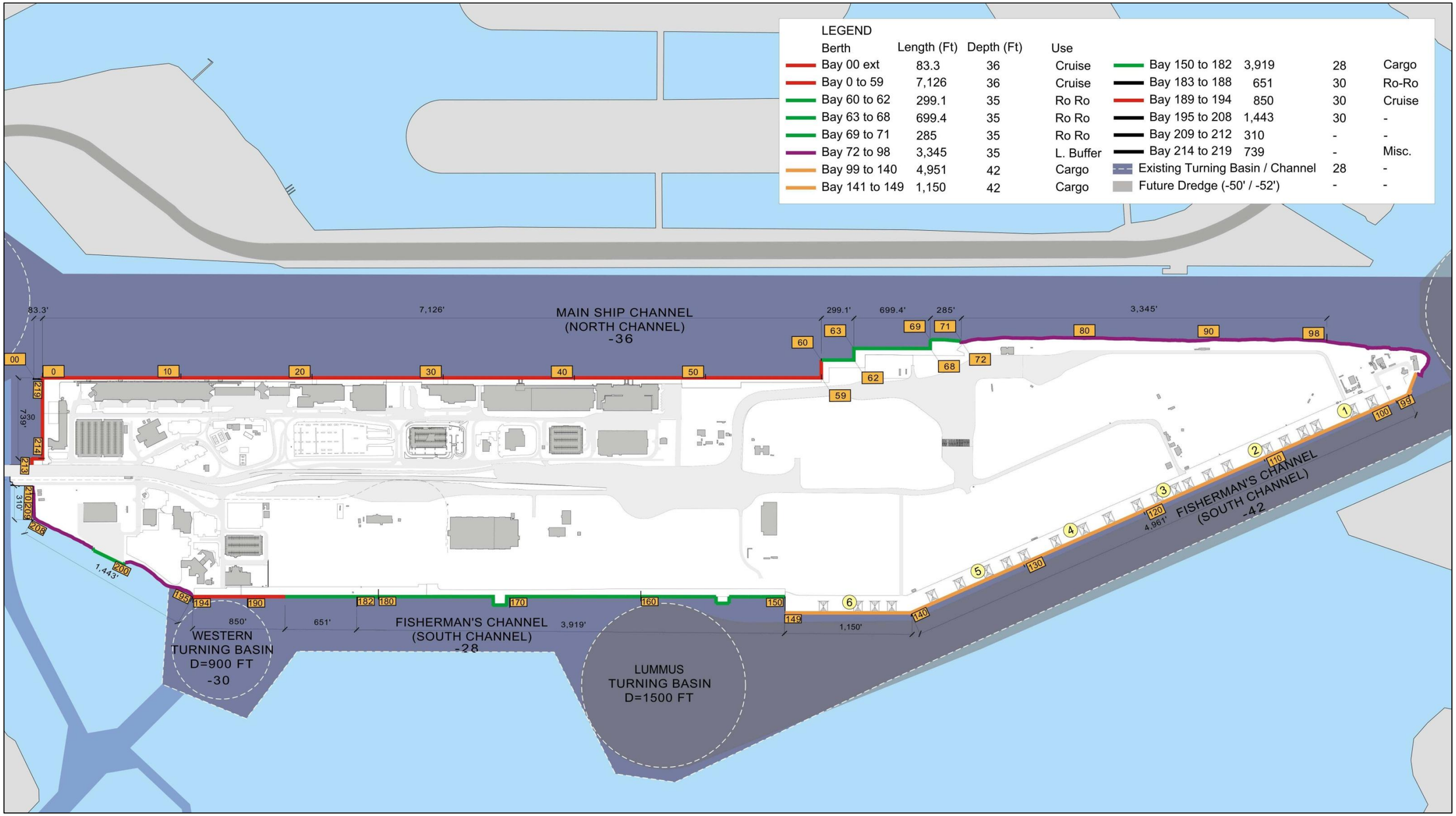
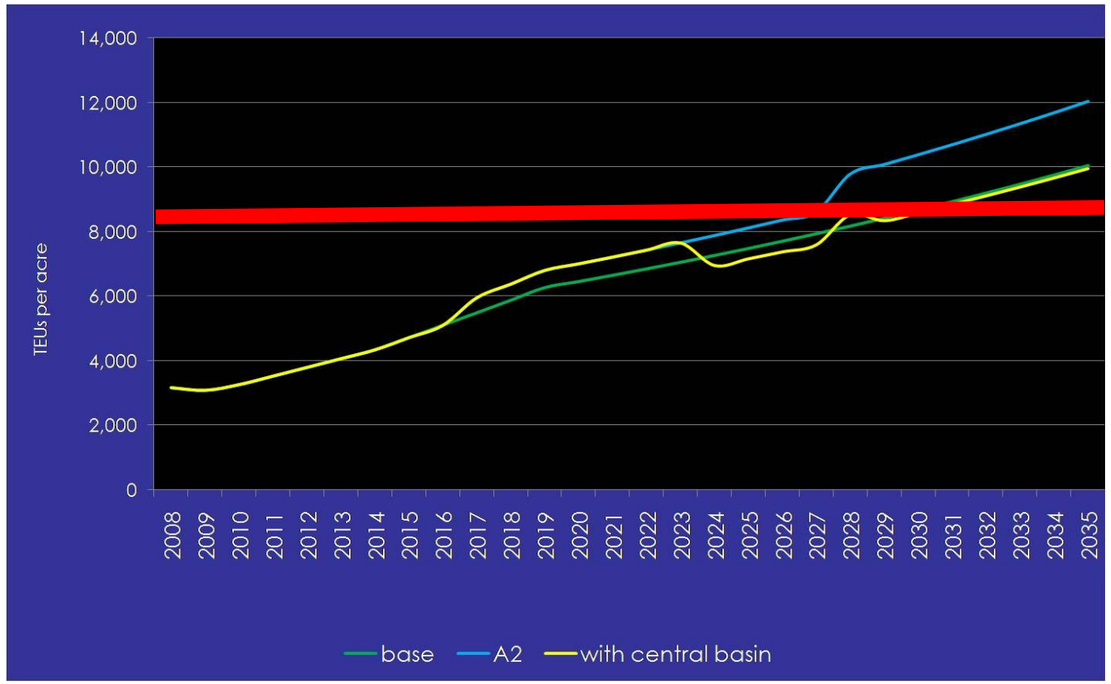


Figure 5.15 provides an overview of the projected requirements of TEU's per acre. This forecast was used as a baseline for the cargo master plan development. As shown, when levels reach approximately 8,000 TEU's per acre, there is a need for additional land area to meet the projection demands.

FIGURE 5.15: TEU'S PER ACRE FORECAST WITH CENTRAL TERMINAL



The proposed long-term master plan as illustrated in Figure 5.16 provides for 13,252 linear feet of berth. Existing bulkheads along the channel will remain and current Port plans will further enhance these areas. These projects will be done in conjunction with the deepwater channel dredge project. The transit shed B has also been moved from its present location and centralized to provide more convenient access, separating it from cruise activities. Customs has also been provided an area for centralized processing and support functions for cargo activities. With the development of the Southwest Corner and the adjacent commercial area there is also an opportunity for cargo users such as Seaboard to move their office / administrative functions from the cargo yards to allow for increased space and efficiencies.

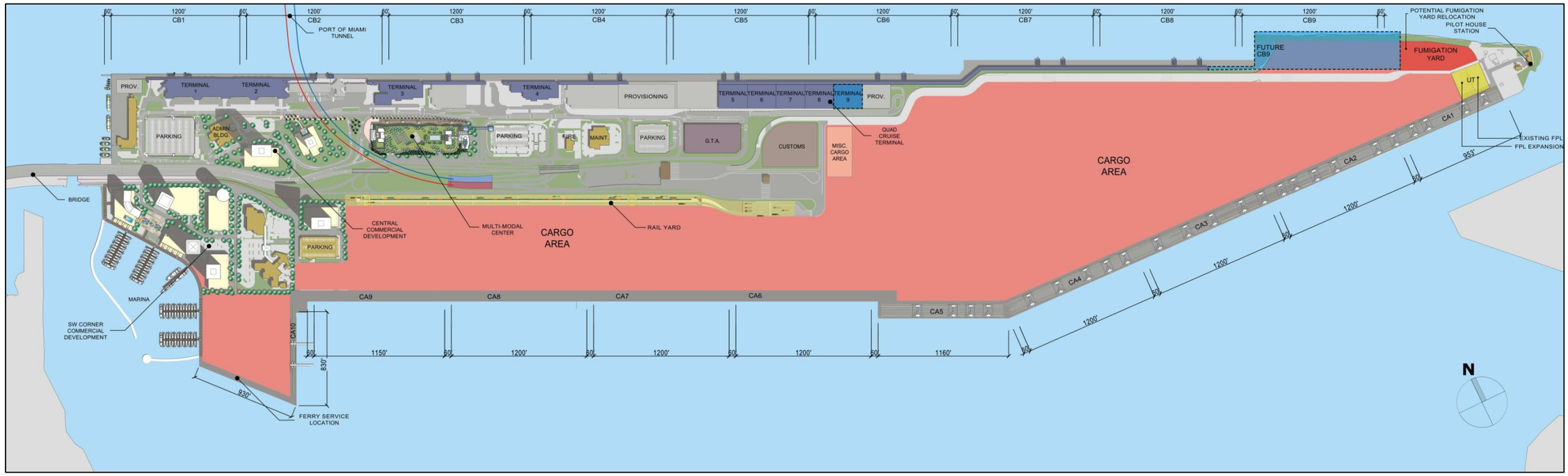
Based upon the cargo market demand projections, the Port of Miami will require additional cargo land in:

- 2023 with cruise Alternative A1; or,
- 2030 with cruise Alternative A2.

This assessment takes into consideration the acreage lost to cruise development and the addition of land with the new southwest infill.

There will be a need for further detailed operational modeling prior to the sustainable development of any new cargo land areas to ensure there is adequate need based upon the TEU per acre metrics. New berths for cargo will be required in 2029.

FIGURE 5.16: PROPOSED LONG-TERM MASTER PLAN



As part of the Master Plan, the fumigation yard will need to be relocated to the northeast corner to allow for the 200-ft. stand-off operational radius requirement and provide its present location for future development. The new location provides some challenges for users but it is a good location overall for this service. The cost of relocating the fumigation yard is approximately $856,295. See Figure 5.17 and 5.18 for a detailed view of the yard area.

FIGURE 5.17: FUMIGATION YARD RELOCATION OVERVIEW

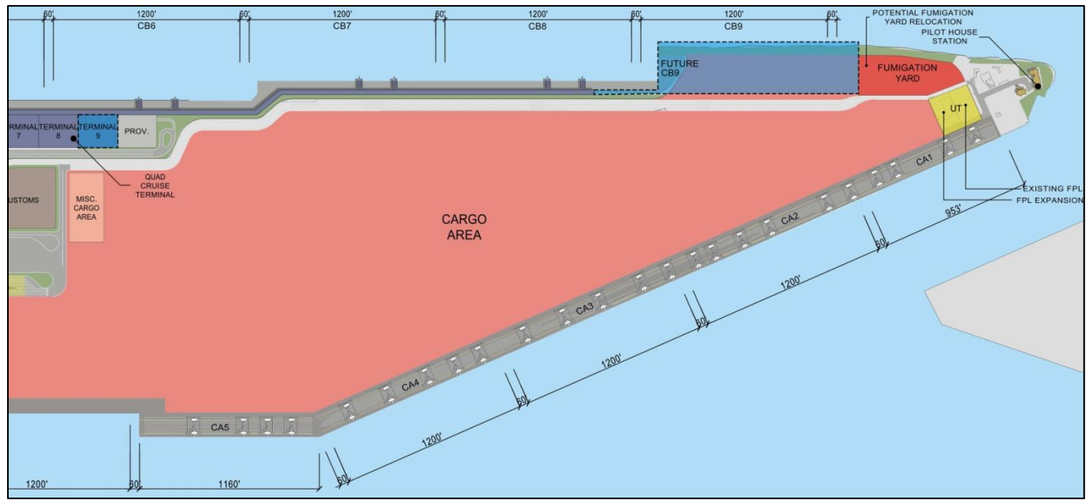


FIGURE 5.18: FUMIGATION YARD RELOCATION WITH 200 YARD RADIUS SHOWN

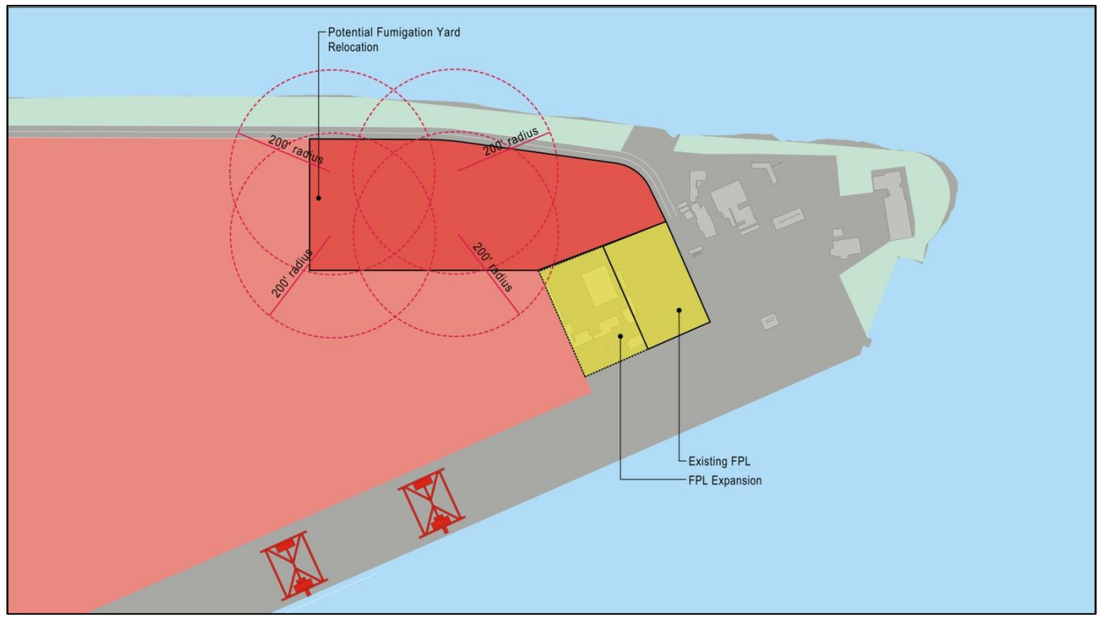
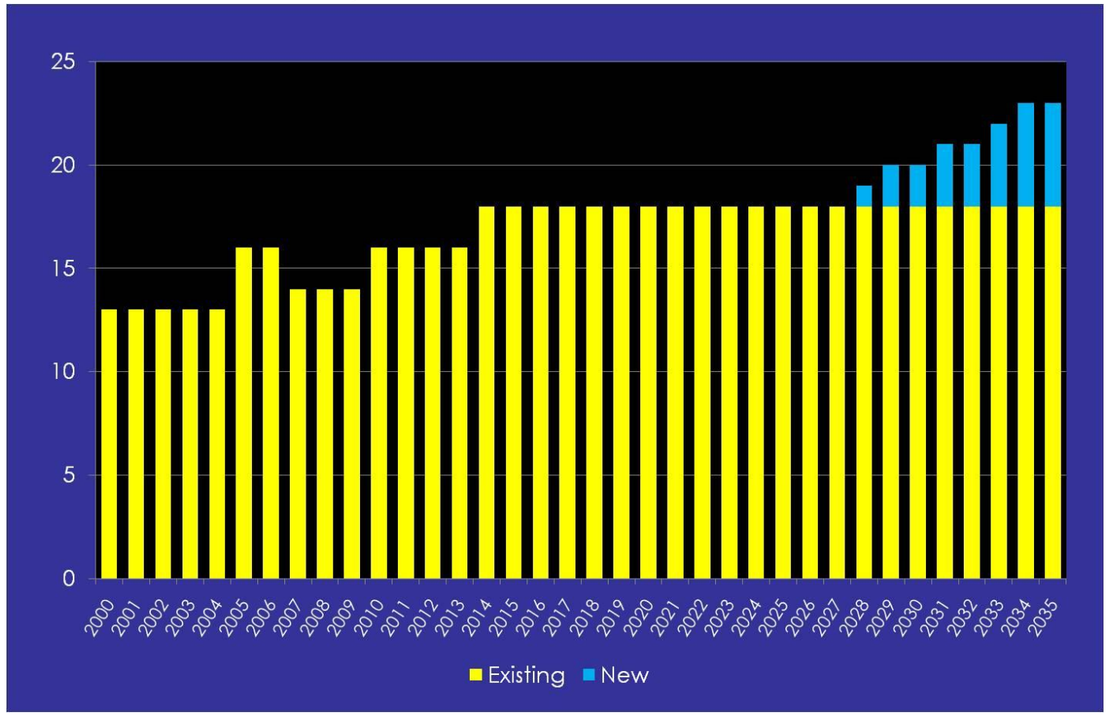


Figure 5.19 illustrates the long-term projections for gantry crane requirements to meet the container forecasts and user requirements. A total of 23 cranes by 2034 to meet the cargo market demand based upon the forecast are required for the Port of Miami. There are currently 16 operational cranes at the Port of Miami (including 5 operated by Seaboard). Four additional cranes are currently on order and will be placed at the Port as required to meet the operational needs of the Users with these additional cranes being planned for 2014 to coincide with the opening of the widening of the Panama Canal and new Port channel dredge efforts. Three existing gantry cranes (two of which are in use) will then be decommissioned. They have already been sold to another port in the region. Additional units would be added as the vessel sizes expand and new berth area is needed with the first of the master plan cranes being required in 2028 based upon projections. The projections include the entire cargo yard throughput inclusive of the Seaboard Marine facility that currently does not use the large mobile gantry container cranes for the movement of its cargo from ship to shore. See ES5.5 for the Cargo Long-Term Master Plan.

The additional cranes are projected based upon a productivity rate of 40 TEUS per hour and an overall maximum utilization rate of 2,000 hours per year per crane. The actual deployment of new gantry cranes may fluctuate based upon peaking factors, yard and gate efficiencies and other factors. As such the Port of Miami will need to monitor the overall yard effort to accurately time the purchase and deployment of new cranes, as is the case with the deployment of four new cranes to coincide with the completion of the widening of the Panama Canal and dredge project. Thus, actual implementation is a combination of operational needs, financial assessment and throughput over the next 25 years.

FIGURE 5.19: GANTRY CRANE PROJECTIONS



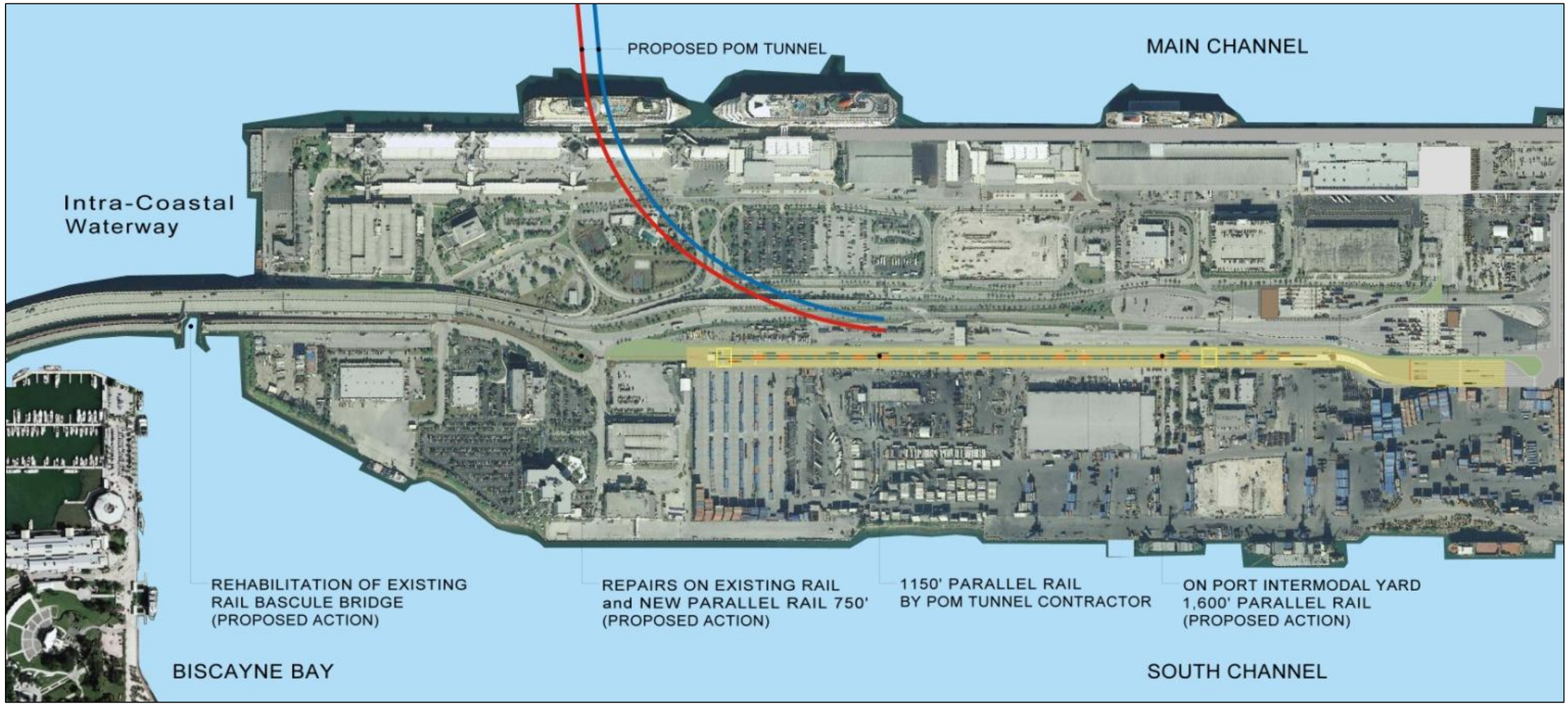
5.7 ON-PORT RAIL AND OFF-PORT CARGO OPERATIONS

5.7.1 OVERVIEW

The Port of Miami currently has an existing rail spur of approximately .57 miles in the Port. To provide for the reduced cost benefits associated with an intermodal link, a new on-port rail yard is planned for better accessibility for container movements from and to the Port. The rail yard will be incorporated into the long-term master plan. See Figure 5.20 for an example of the rail yard's position within the Port. The yard would use the existing corridor and linkages to the Hialeah FEC yard as its base. The layout of the off-site rail yard is a separate master plan element. It is envisioned that the yard would be accessed by container haulers via a security gate system, assigned a train unit, and then off-loaded by a picker system onto double-stacked trains. The rail reduces truck trips by several hundred thousand trips per year. This will improve road safety, while reducing fuel consumption, oil dependence green house gas emissions and road degradation.

The total yard area would be approximately 9.5 acres and reside adjacent to the tunnel access to the Port and Seaboard Marine yard. The total length of the intermodal rail yard is approximately 2,750-feet. The cost for the on-port rail portion and bascule bridge component of the project is approximately $22.7 million plus an additional $2.3 million for RTG equipment.

FIGURE 5.20: PORT OF MIAMI ON-PORT RAIL



This rail yard would be used to stack and unload boxes from trains arriving and departing in the nighttime hours, thus not impacting downtown Miami traffic along Biscayne Boulevard. Aprons on either side would allow for loading/off-loading to occur. The existing bascule bridge would require substantial retrofitting prior to use. This is shown in the adjacent photo – Figure 5.21.

FIGURE 5.21: EXISTING ROADWAY AND BASCULE BRIDGE

Figure 5.22 illustrates a potential development of the Hialeah rail yard to act as an inland transshipment point for the Port. The train could either be used for direct service or interim service to a multi-modal transshipment yard close to the Miami International Airport. This provision provides another tool for marketing the Port and allowing the cargo yard users to compete in the Florida and Southeast U.S. market. It also establishes a sustainable cost effective direct rail service to and from the Port of Miami to lower transportation costs for shippers.

Additional upland work on track and yard is planned to finalize the use of this rail system. It would reduce traffic in downtown Miami while providing economic and environmental benefits to the County and surrounding municipalities.

FIGURE 5.22: PORT OF MIAMI OFF-PORT RAIL AND FEC CARGO