2.4 Liquid Bulk (Petroleum Products) Assessment

2.4.1 Summary

IHS Purvin & Gertz, part of the AECOM team, was responsible for conducting the Petroleum *Sector Strategy Study* for Port Everglades in 2005, which was incorporated into the 2006 *Port Everglades Master Plan* and then updated in the 2009 *Port Everglades Master/Vision Plan*. While the study results were consistent with the outlook for petroleum products at the time, changes have occurred in the U.S. and global markets since the study was originally conducted for Port Everglades. Accelerated growth in domestic crude oil and natural gas has lowered operating costs for U.S. Gulf Coast refiners. Various Caribbean refineries, such as Hovensa in the U.S. Virgin Islands, unable to compete with U.S. Gulf Coast refiners, shut down in 2011 and 2012. As a result, Port Everglades has seen its petroleum supply shift from foreign sources to domestic sources. This update of the previous studies takes these recent developments into account.

Product Demand. Overall, U.S. light petroleum product demand will grow in 2013 and at 0.6 percent per year through 2019, declining slowly through the end of the forecast period. The eastern U.S. Petroleum Administration for Defense District I (PADD I) is forecast to follow a similar path as the U.S.. Annual growth rates recover in 2013 and increase at an average of 0.5 percent per year through 2019, before declining at an average of 0.5 percent annually. Due to expectations of strong population growth, Florida's annual demand growth rate for light products is greater than that of every other state in PADD I. Florida's light product annual demand growth is higher than the U.S. and PADD average at a rate of 1.3 percent per year from 2013 through 2023 before slowing down to an annual growth rate of 0.5 percent through 2033. For the same period, the 12-county market served by Port Everglades will rebound from recent recession-driven declines. The Port is expected to see growth of 1.2 percent annual average through 2023, before seeing demand growth slow to 0.4 percent annually through 2033.

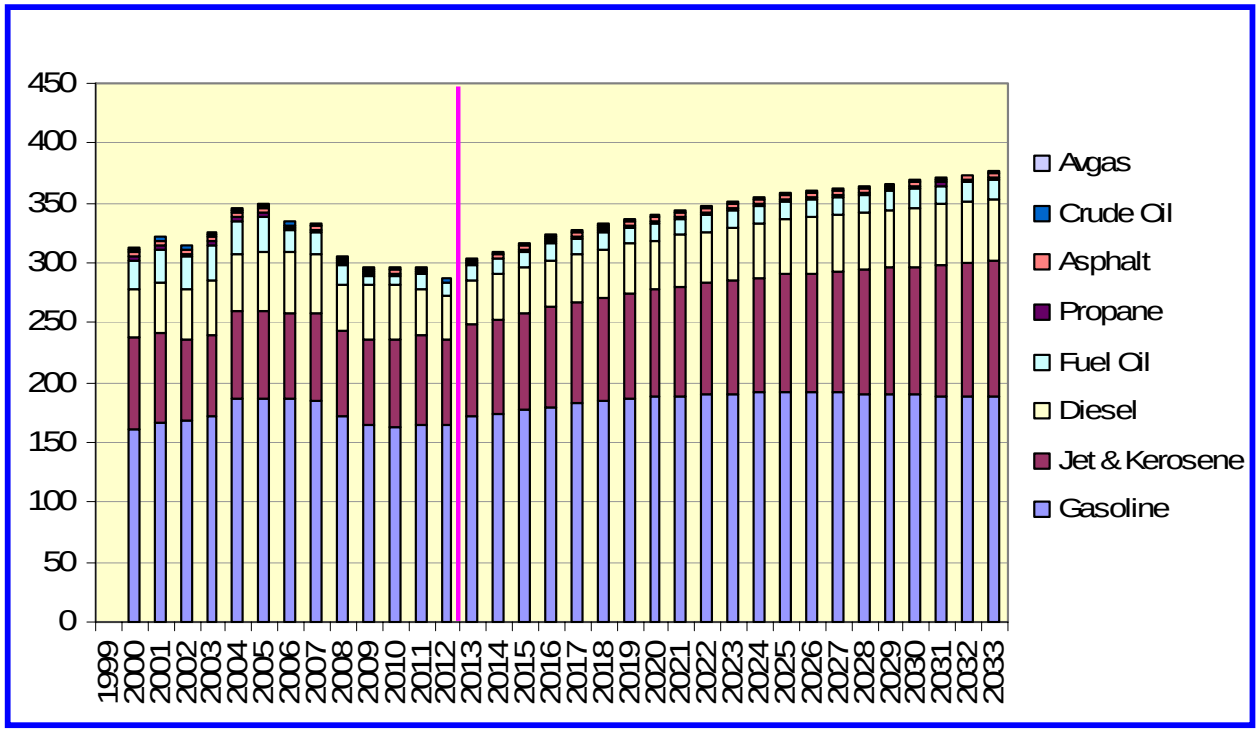
Competitive Seaports in Florida. Of the seven major commercial seaports in Florida, four currently have significant petroleum terminaling capabilities: Port Everglades, the Port of Tampa, the Port of Jacksonville, and Port Canaveral. One telling shift in market dynamics since 2009 has been the emergence of Port Canaveral as a petroleum terminal due to its 2009 expansion. Based on the most recent available data, it appears that the expansion did not significantly impact petroleum volumes into Port Everglades. Both Tampa and Jacksonville have, however lost market share since the Canaveral expansion was completed.

Refinery Changes. Numerous refinery expansions took place from 2009 to 2013 and led to increased refinery runs and petroleum product production in the US despite lower domestic product demand. Increased production in the face of falling local demand led to the US becoming a net exporter of refined petroleum products. Strong product demand growth in Latin America and low refinery reliability in Mexico have led to increased exports from the US Additionally, numerous refinery shutdowns on the U.S. East Coast led to additional Gulf-Coast production to be directed to the Northeast U.S. via pipeline due to the relatively lower pipeline shipping costs.

Strong gains in domestic crude production will lead refining projects to shift focus from increasing product volumes to increasing crude slate flexibility. Expectations of continued low cost natural gas and crude oil advantages for U.S. Gulf Coast refineries will lead to sustained utilization rates and provide continued supply into Port Everglades, keeping reliance on foreign barrels at historically low levels.

Port Everglades Forecast. The Port Everglades petroleum throughput forecast summary is provided in Figure 2.4-1. Total throughput volumes will grow from just over a projected 300,000 barrels per day (B/D) in 2013 to nearly 376,000 B/D by 2033. Gasoline continues to be the leading product; however, due to more rapid diesel and jet demand growth, the percentage of the throughput attributed to gasoline falls over the forecast period from 57 percent of the total in 2013 to 50 percent by 2033. Jet throughputs will see strong growth, seeing the percentage of throughput growing from 25 percent in 2013 to 31 percent in 2033.

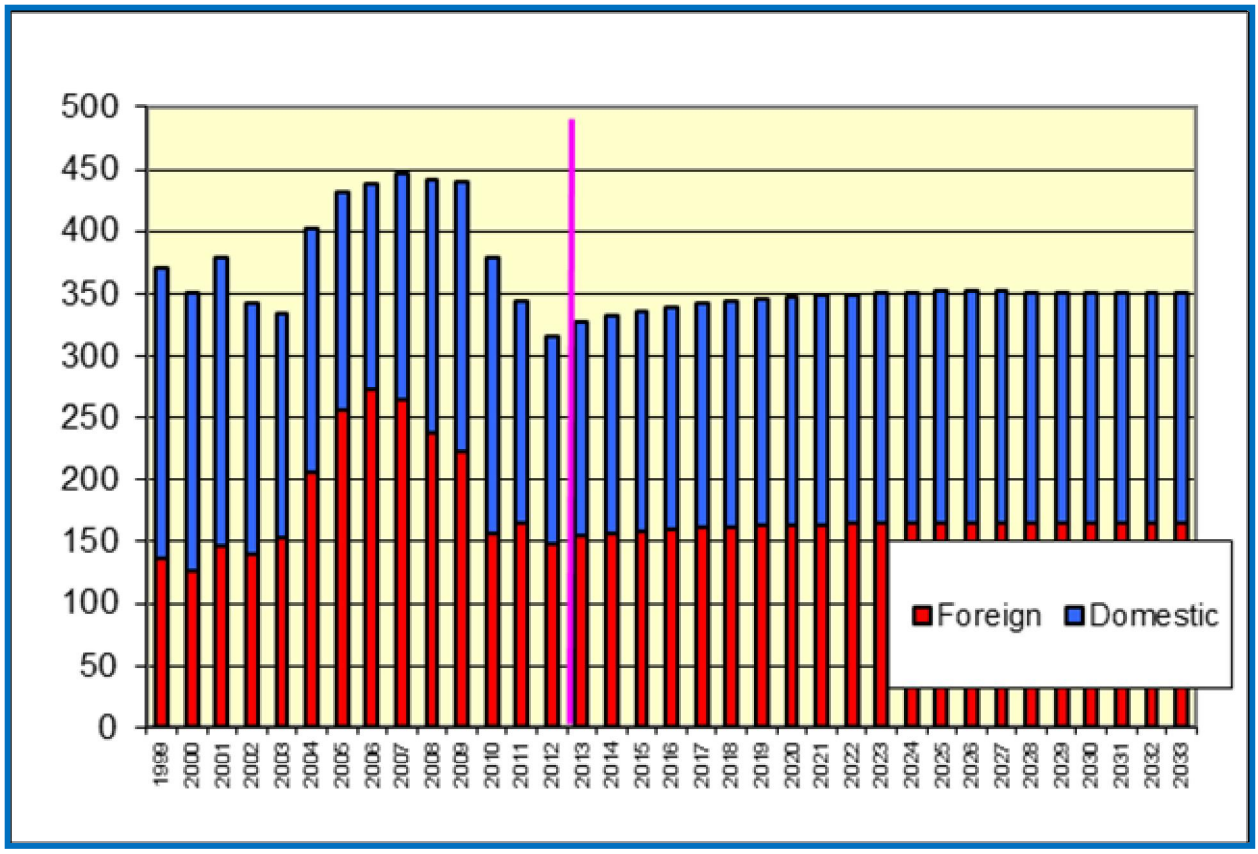
Figure 2.4-1
PORT EVERGLADES THROUGHPUT
(Thousand barrels/day)



Moving forward, most of the growth in refined products is due to jet and diesel demand. The U.S. recently has become a net exporter of diesel and continues to import gasoline. Europe and Latin America are significantly short of diesel and exports from the U.S. have increased to historical highs. Thus, Port Everglades' throughput will increasingly be sourced domestically, since gasoline demand (which can be foreign sourced) is expected to stay flat and diesel/jet demand (which is now primarily domestically sourced) is expected to grow.

Vessel Calls. Figure 2.4-2 below illustrates the projected number of annual vessel calls for the period from 2000 to 2033. Reduced product demand, the Hovensa refinery shutdown, and increasing competition from Latin America for refined products produced domestically have led to significant declines in tanker calls since 2009. To meet growing product demand in the region Port Everglades serves, the number of domestic tanker calls is expected to increase at an annual average of 0.6 percent through 2025. Then, despite rising throughput, domestic tanker calls are expected to flatten out thorough the forecast period due to reduced supply out of the U.S. Gulf Coast.

Figure 2.4-2
TANKER CALLS AT PORT EVERGLADES
(Calls/Year)

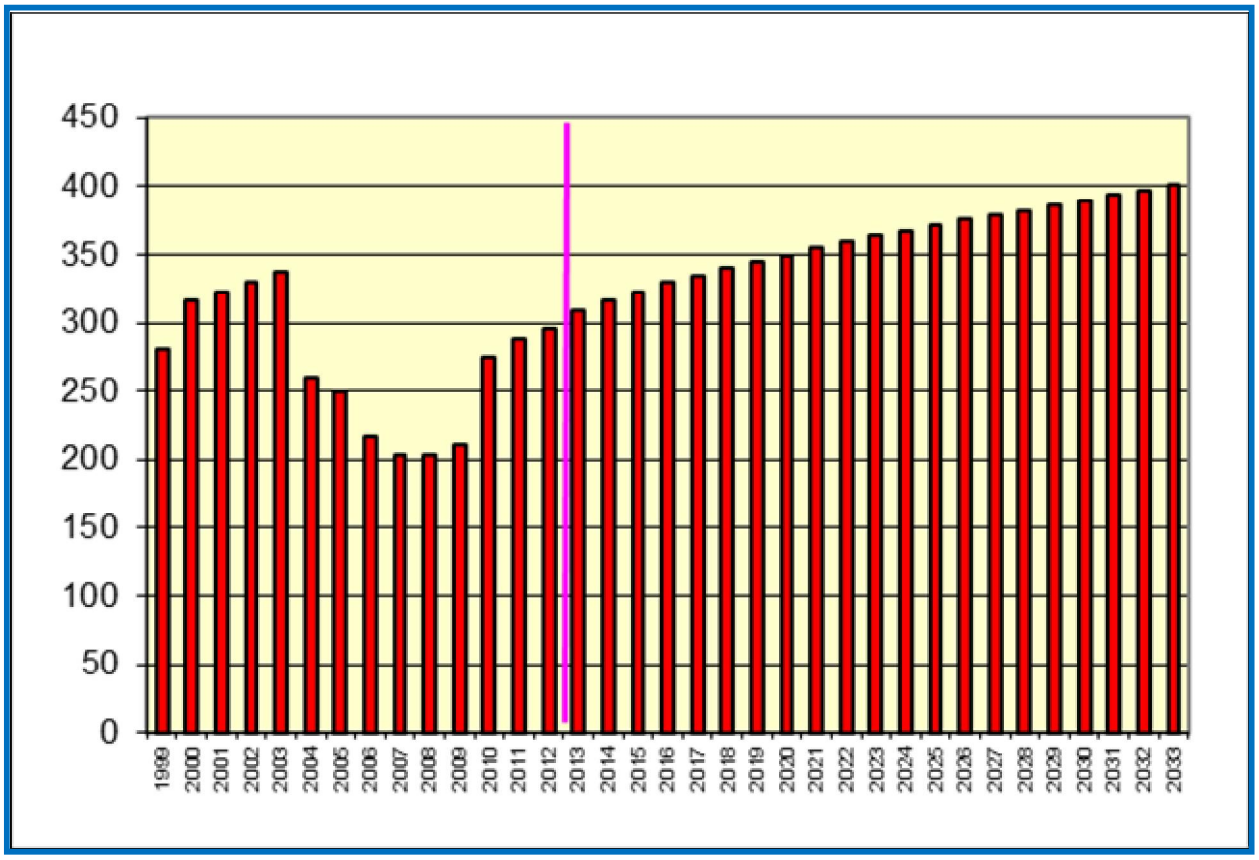


Foreign tanker calls have fallen significantly since the Hovensa refinery shutdown. Supply shifted strongly towards barge calls from the U.S. Gulf Coast and other regional terminals such as the BORCO terminal in the Bahamas. After a sharp increase, which took place between 1999 and 2008, it is expected that the percentage of foreign tanker calls will decrease slightly through the forecast period.

Barge calls increased strongly after the Hovensa and Aruba refinery shutdowns. Port Everglades and other ports in Florida increasingly depended on barge shipments from Gulf Coast refineries to meet product demand as tanker calls fell. These barge calls increased by 50 percent, from just over 200 in 2009 to over 300 by 2012. Barge calls, as shown in Figure 2.4-3,

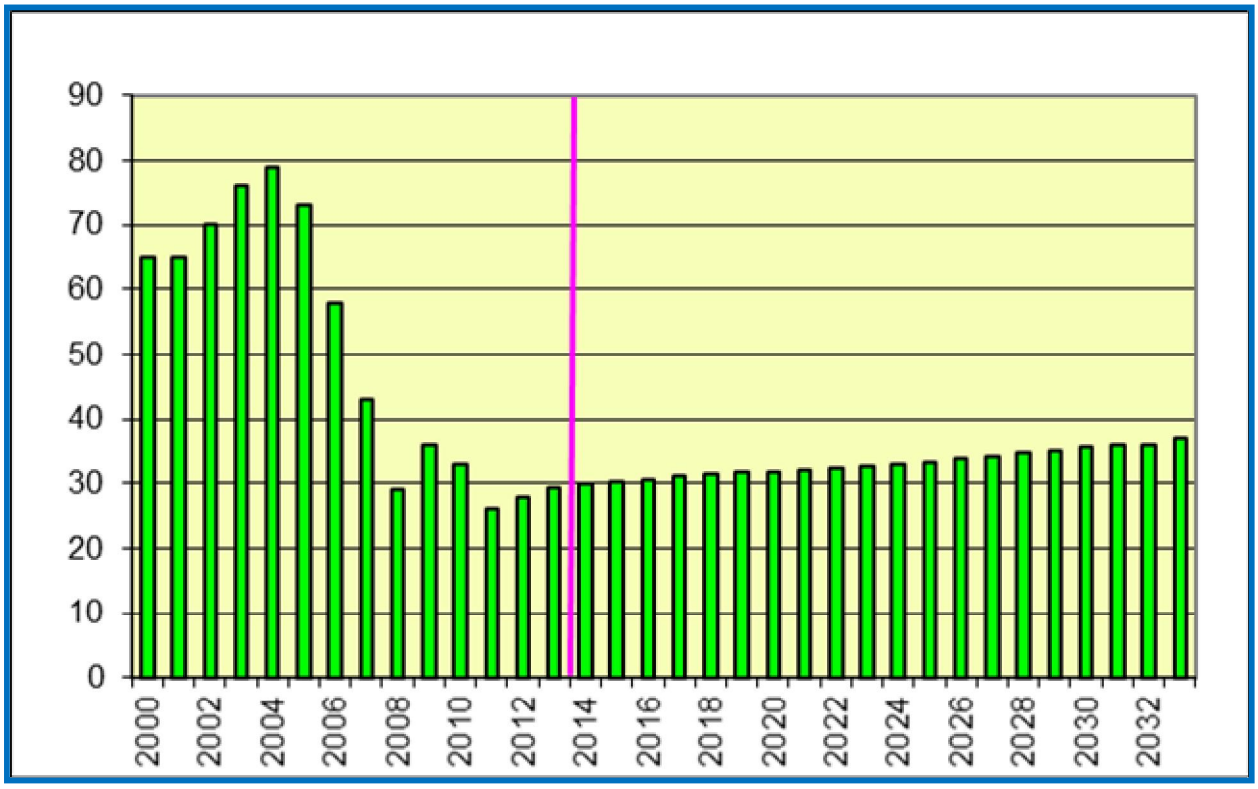
are expected to continue increasing to meet local demand growth, reaching more than 400 calls by 2033, a 33 percent growth.

Figure 2.4-3
BARGE CALLS AT PORT EVERGLADES
(Calls/Year)



After Hurricane Katrina destroyed the Dynegy plant in Venice, Louisiana, in 2005, the volume of their available propane to bring into the Port decreased significantly. Much of their market share has since been taken by C-3, through Tampa, resulting in the dramatic decrease in barge calls in recent years. Demand is forecast to resume a growth trend in 2013 through the end of the forecast period, as shown in Figure 2.4-4 below.

Figure 2.4-4
LPG BARGES
(Calls/Year)



Infrastructure Considerations. Several factors must be considered when making decisions regarding the Port's liquid bulk infrastructure.

- Deliveries to the Port are not ratable and annual average volumes may not reflect peak activity at the Port, masking actual facility limits.
- Reductions in demurrage costs may create a competitive advantage.
- Crude and natural gas prices are inherently volatile. If Gulf-Coast refiners lose their competitive advantage, petroleum products may shift once again to foreign sources.
- There is uncertainty in the planning basis, as forecasts are inherently uncertain.

2.4.2 Market Forecast

Forecast Methodology Overview. This section discusses Port Everglades' liquid bulk market, specifically the diverse petroleum products that account for a substantial portion of the Port's revenue. For the most part, the analytical basis for this section has been derived from IHS

Annual Strategic Workbooks (ASW) and data acquired from the Port. Additional specifics have been derived from the consultant team's interviews with several of the Port's petroleum industry tenants.

Total U.S. Demand Factors. Total demand for refined products in the U.S. is influenced by many factors. The relative strength of the economy, petroleum prices, the regulatory environment, the extent of travel, the fuel efficiency of the fleet, and assumptions regarding alternative motor fuels all affect the outlook for petroleum fuels.

Economic activity is a strong driver of U.S. petroleum demand. Demand for light products grew at a rate of 1.2 percent per year from 2000 to 2007. The low rate of growth can be attributed to a weak economy in 2001/2002 and the increase in oil prices in 2004-2007. From 2007 to 2009, however, light product demand fell by over 1.1 million B/D in response to high prices and the economic collapse. Demand remained relatively flat from 2009 to 2012 and is expected to resume weak growth in 2013 through 2020. Past 2020, declining gasoline demand is expected to outweigh growth in other products.

Despite the sharp drop in 2008-2009, ultra low sulfur diesel is expected to show the greatest increase longer term, with a recovery after 2013. Jet fuel growth will occur, but be relatively constrained due to more efficient airline fleets and possibly lower airline traffic. Gasoline demand continues to decline over the next few years with increasing supplies of ethanol displacing petroleum-based gasoline as a result of the Energy Independence and Security Act of 2007 (EISA). Longer term, total gasoline demand (including blended ethanol) recovers through about 2016, but demand then starts to decline as more efficient new vehicles mandated by EISA start to impact the fuel economy of the overall fleet.

The EISA requires a gradual increase in new light duty vehicle fuel efficiency requirements up to 35 miles per gallon (MPG) on average by the 2016 model year. This is a very significant change from the previous requirements of 27.5 MPG for cars and 22.5 MPG for light trucks. The impacts of this efficiency improvement will not begin to be seen in the overall fleet until at least 2015 since the new requirements started to take effect in the 2011 model year. Additionally, the EISA requires a gradual increase in light duty vehicle fuel efficiency requirements up to 54.5 MPG by 2025.

The consultant team's analysis still indicates that alternative fuels are not likely to have a significant effect on gasoline demand until after 2020. The extent of the impact at that time is by no means a clear issue at this point. The primary alternative fuels presently at issue include methanol, compressed natural gas (CNG), liquefied petroleum gas (LPG), electricity, and hydrogen. LPG (primarily propane) has contributed 30,000 to 40,000 B/D to the transportation sector, and this is projected to grow to about 55,000 B/D during this decade. Though CNG is currently in use, its application is likely to be restricted to fleet vehicles for some time. Fleet vehicles, however, represent only a small portion of the overall fleet, and the effect on gasoline demand, therefore, would likely be small, unless full conversions were made. A major portion of CNG use is also displacing diesel fuel rather than gasoline. Methanol usage is also expected to be inconsequential, taking into account such factors as toxicity, logistics, and economics.

Additionally, various ship builders and operators have alluded to plans of utilizing gas to power marine vessels.

Market Allocation by PADD. Annual PADD-level consumption for each refined product is based on historical Department of Energy (DOE) data. The PADD consumption is divided by the total population of the PADD, producing a demand-per-capita value for each year. This demand is then allocated to each state based on the number of people in the state that are of driving age. The state demand can then be compared to the State Energy Data System (SEDS) data published by the Energy Information Administration (EIA) for the state and normalized.

State and County Distribution. State historical consumption estimates for gasoline, diesel, and kerosene (excluding jet fuel) are based on the SEDS data. The SEDS basis was used as the PADD-to-state allocation for the Florida jet fuel demand. For all other states, the overall PADD-level demand, as reported by the DOE, was distributed to the state-level based on the Federal Aviation Administration's (FAA) Airport Operations summaries for each state. Florida county demand was then determined using the FAA's summaries by allocating the total state jet fuel demand to each county by percentage of total state flights, by county.

The state petroleum consumption forecast is made based on an independent forecast of state population and the PADD-level demand forecast. The historical per-capita state consumptions are grown at the PADD-level per-capita consumption growth rate. Multiplying the per-capita consumption estimate by the forecast population results in a first-pass forecast of state consumption. Due to uneven population growth, the first-pass sum of the state forecast demand does not exactly match the PADD-level forecast. Therefore, an iterative technique is used to adjust each of the state demand estimates, based on an error distribution between the sum of the state demand and the forecast PADD demand.

Population Drivers of Light Product Demand. Population growth is a large determinant in the forecast of gasoline and transportation diesel and to a lesser extent heating oil and jet fuel. As the population grows, the demand for light petroleum products will increase. The population history and forecast basis for Florida, shown in Table 2.4-1, is from the University of Florida Bureau of Economic and Business Research's December 2011 projections. The population statistics are provided at the state and county level, which facilitates the state sub-

Table 2.4-1
STATE AND PADD POPULATIONTRENDS
(Thousands of People)

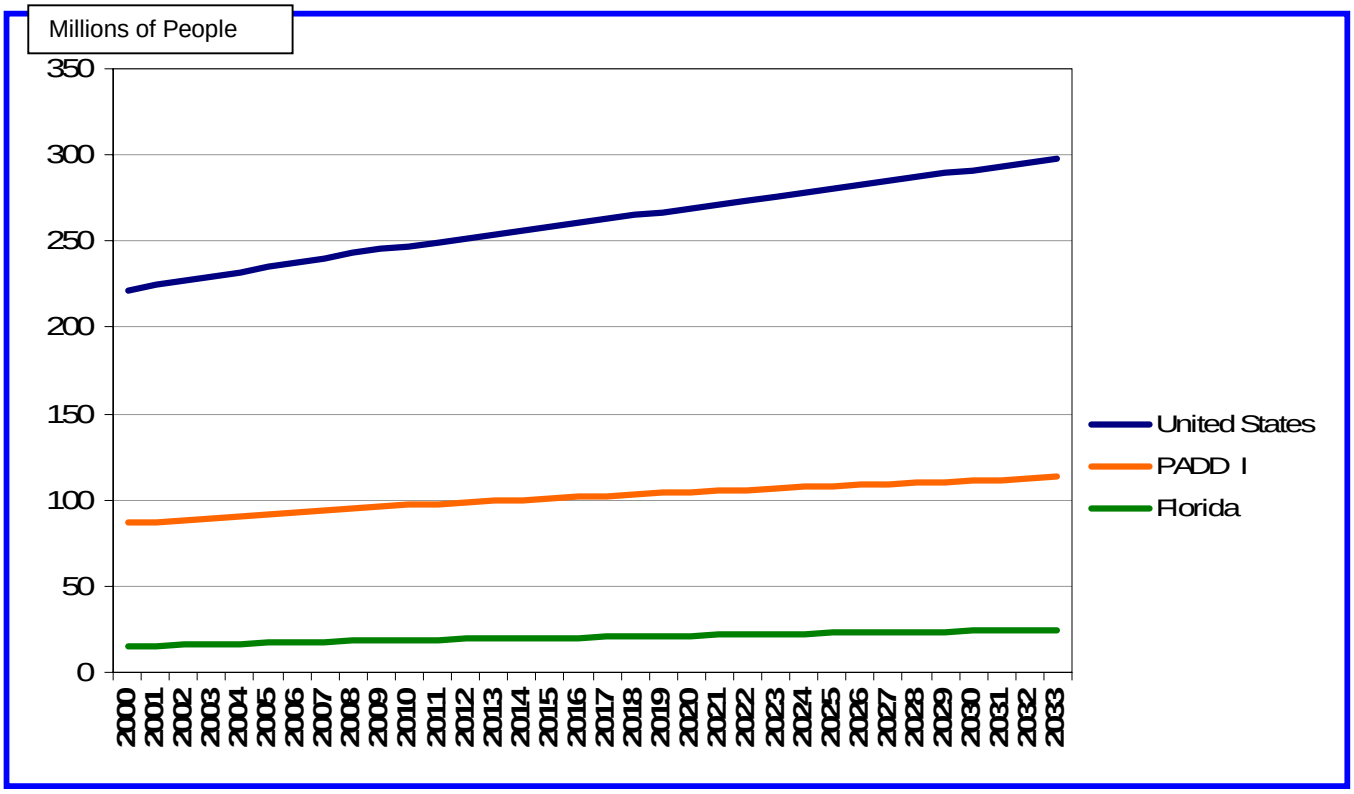
	PADD		
	U.S.	I	Florida
2000	221,169	86,348	15360.1
2001	224,515	87,444	15544.4
2002	227,040	88,534	15940.73
2003	229,415	89,578	16337.06
2004	232,034	90,663	16733.4
2005	234,800	91,771	17129.73
2006	237,570	92,974	17526.06
2007	240,285	94,117	17922.39
2008	242,805	95,226	18318.72
2009	245,124	96,129	18560.01
2010	246,905	96,820	18801.31
2011	249,108	97,596	19035.93
2012	251,338	98,375	19270.55
2013	253,599	99,157	19505.17
2014	255,893	99,944	19739.79
2015	258,213	100,732	19974.41
2016	260,415	101,490	20244.89
2017	262,642	102,250	20515.37
2018	264,892	103,011	20785.84
2019	267,112	103,760	21056.32
2020	269,357	104,510	21326.8
2021	271,506	105,188	21589.7
2022	273,677	105,867	21852.61
2023	275,875	106,550	22115.52
2024	278,078	107,229	22378.43
2025	280,308	107,912	22641.34
2026	282,490	108,558	22904.24
2027	284,700	109,206	23167.15
2028	286,940	109,859	23430.06
2029	289,161	110,501	23692.97
2030	291,413	111,069	23877.89
2031	293,697	111,737	24140.8
2032	295,989	112,402	24403.7
2033	298,301	113,071	24666.61

regional demand analysis.

Historically, Florida's population growth has been robust. Between 2000 and 2013, the population in Florida grew an average of 1.9 percent per year, outpacing the U.S. as a whole which saw growth of 1.1 percent per year for the same period. From 2013 to 2033, growth in Florida is expected to slow to an annual average of nearly 1.2 percent per year as a result of economic conditions. This is stronger than the expected average growth for the entire U.S. over this period, which is 0.8 percent per year. Recent projections to 2033 indicate that Florida, California, and Texas will each gain more than 6.5 million residents and together will account for 40 percent of the nation's growth.

Figure 2.4-5 shows the population forecasts for the U.S., PADD 1, and Florida through the planning period to 2033**.**

Figure 2.4-5
U.S., PADD, AND FLORIDA POPULATION FORECASTS



2.4.3 Petroleum Demand Forecast

U.S. Overview. U.S. refined product demand will experience only moderate growth in the near-term before vehicle fleet efficiency gains cause longer-term declines in gasoline demand. US demand for diesel will grow at a slower pace in the future as a result of competition with low-priced natural gas in trucking. Prior to 2011, light product demand growth has generally tracked gross domestic product (GDP) growth in history. The dramatic increase in crude oil and gasoline prices in the first half of 2008, along with the global economic recession, led to an equally dramatic demand response. As a result, U.S. total petroleum demand declined by 1,262,000 B/D in 2008, of which gasoline fell by nearly 300,000 B/D. Total petroleum demand continued to fall from 2009 to 2013. As the U.S. and world economy recovers from the recession, a very modest recovery in refined product demand is expected to begin in 2014.

Near-term demand growth from a strengthening economy will, however, give way to a long-term demand decline, as vehicle fleet efficiency gains begin to reduce gasoline demand after 2017. As discussed earlier, fuel efficiency standards require a fleet average of 35 MPG by the 2016 model year and 54.5 MPG by 2025. Thus, gasoline demand growth is expected to average about 0.5 percent per year from 2013 through 2017. After 2017, a plateau is expected, followed by a gentle decline in demand to 2023 as the effects of increasing fleet efficiency begin to be seen. Once the 54.5 MPG standards are adopted in 2025, accelerated reductions of gasoline demand to 2033 are expected, averaging a decline of 1.3 percent per year

In 2008, gasoline demand in the U.S. was significantly higher than gasoline supply, resulting in gasoline imports of over 700,000 B/D in 2008. In addition, another 300,000 B/D of gasoline blendstocks were imported. Primary import sources were Europe, Canada, and the Caribbean. Since 2008, however, imports have fallen by more than 300,000 B/D of gasoline and blendstocks as new U.S. refinery capacity came on line and demand continued to fall. Gasoline imports are expected to continue to fall to 2033 as U.S. refiners continue to run at relatively strong utilization rates due to low cost crude and natural gas along with continued demand declines.

Consumption trends for diesel have not been subject to the trends in vehicle efficiency that have influenced gasoline demand, but are much more closely tied to economic activity and weather changes. The bulk of diesel fuel demand is used in commercial transportation which moves directly with strength in the economy. Demand for distillate fuel oil in the residential/commercial sectors moves with short-term temperature trends, and has been subject to long-term encroachment by natural gas.

Distillate demand grew at an average rate of 0.3 percent from 2000 to 2013. Demand growth for this product tracks GDP growth closely. Demand fell by over 6 percent in 2008 and an additional 8 percent in 2009 with the economic downturn, and growth return in 2010 and 2011, but fell again in 2012 as high prices muted demand. Annual average growth rates through the next five years are expected to average 1.0 percent. Longer-term, demand growth is expected to slow to 0.4 percent.

Most of the distillate fuel oil consumed in the U.S. is produced domestically. Prior to the Hovensa refinery shutdown, the U.S. East Coast imported diesel in the form of heating oil from the Caribbean. With the substitution of natural gas for heating along with the Hovensa shutdown, imports have declined significantly. Remaining heating oil imports today are sourced primarily from local East Coast refineries and Canada. Exports of diesel have increased significantly in recent years, primarily to destinations in Latin America and Europe. Due to the more robust growth of distillate demand relative to gasoline, refinery production of distillate relative to gasoline will continue to increase.

Other trends in the petroleum forecast are as follows:

- Air travel, and therefore jet fuel demand, have yet to fully recover from the September 11th attacks and it is expected that they will remain below levels seen in 2001 to the end of the 2033 forecast period. Growth is expected to resume in 2014 as airline travel grows after the current recession. Offsetting increased travel, however, is a continuing trend of more efficient passenger jets replacing less efficient aircraft models.
- The sulfur content of residual fuel oil, specifically bunker fuels, is being reduced. Residual consumption is expected to decline slowly as natural gas continues to displace residual fuel oil used for electricity generation.

The long-term declines in utility demand and a small amount of industrial demand result in the transportation sector's becoming the dominant demand sector for residual fuel oil. This forecast anticipates that residual bunker demand will erode slowly in the long term, with the growing use of gasoil bunkers as a result of new marine pollution regulations. Longer term, these trends result in declining residual fuel oil demand. Due to the projected recovery in demand growth and the impact of several recent large expansions, crude oil runs continue to increase in the future.

PADD, Florida, and Port Everglades Forecasts. The U.S. light product demand will see gains this year (2013), growing at an average rate of just over 0.6 percent through 2017 before declining slowly through the end of the forecast period in 2033. PADD I is forecast to follow a similar path as the U.S.. Annual growth rates recover in 2013 and increase at an average of 0.5 percent per year through 2019 before declining at an average of 0.6 percent annually through 2033.

Florida's annual demand growth rate for light products is greater than that of any other state in PADD I. During the forecast period, Florida's light product average annual demand growth is higher than that of the U.S. and PADD, averaging a rate of 1.5 percent from 2013 – 2019 before slowing down to an annual growth rate of 0.6 percent through 2033. For the same period, the 12-county market served by Port Everglades will experience an average annual growth of 1.3 percent per year through 2019 before seeing demand slip to an average annual growth of 0.5 percent through 2033 (see Table 2.4-2).

Table 2.4-2
UNITED STATES LIGHT PRODUCT DEMAND
Annual Percent Growth Rate

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2020	2025	2030	2033
United States	1.7%	1.4%	0.7%	1.4%	2.5%	1.1%	0.5%	0.2%	4.3%	3.1%	1.5%	1.1%	1.4%	0.4%	0.6%	1.3%	0.1%	0.0%	-0.7%	-0.7%
Florida	**4.7%**	**0.2%**	**1.6%**	**2.1%**	**6.2%**	**2.9%**	**1.2%**	**1.4%**	**2.4%**	**3.6%**	**2.3%**	**1.9%**	**2.9%**	**1.4%**	**1.5%**	**2.0%**	**0.9%**	**1.0%**	**0.3%**	**0.3%**
PADD 1	2.1%	1.8%	-0.3%	3.7%	3.8%	0.6%	1.6%	0.3%	4.6%	2.4%	0.1%	3.1%	3.3%	0.6%	0.5%	1.1%	0.1%	0.2%	-0.8%	-0.8%
Port Everglades Market																				
12 County	4.7%	-0.6%	0.8%	1.7%	6.1%	2.4%	0.8%	1.3%	1.7%	4.2%	0.0%	2.0%	3.2%	1.3%	1.4%	1.9%	0.8%	0.9%	0.4%	0.3%
Port Everglades Throughput	3.8%	1.9%	1.5%	2.5%	7.4%	0.8%	0.2%	0.7%	7.8%	0.5%	0.1%	1.0%	2.3%	5.1%	1.6%	2.1%	1.1%	1.1%	0.6%	0.6%

Total U.S. light product demand will remain essentially flat between 2013 and 2033 with a slight rise from 2013 to 2020, then a slight decline through the end of the forecast period. PADD I light product demand will shrink from over 4.8 million B/D for the 2013 projection to just over 4.5 million B/D in 2033. Florida leads all states in PADD I in terms of light product demand volume. Expected to top 754,000 B/D in 2013, Florida's light product demand will top 897,000 B/D by 2033. The 12-county Port Everglades market will grow at a much faster rate than the rest of PADD I with demand expected to be 290,000 B/D in 2014 and up to 340,000 B/D by 2033 (see Table 2.4-3, and Figure 2.4-6).

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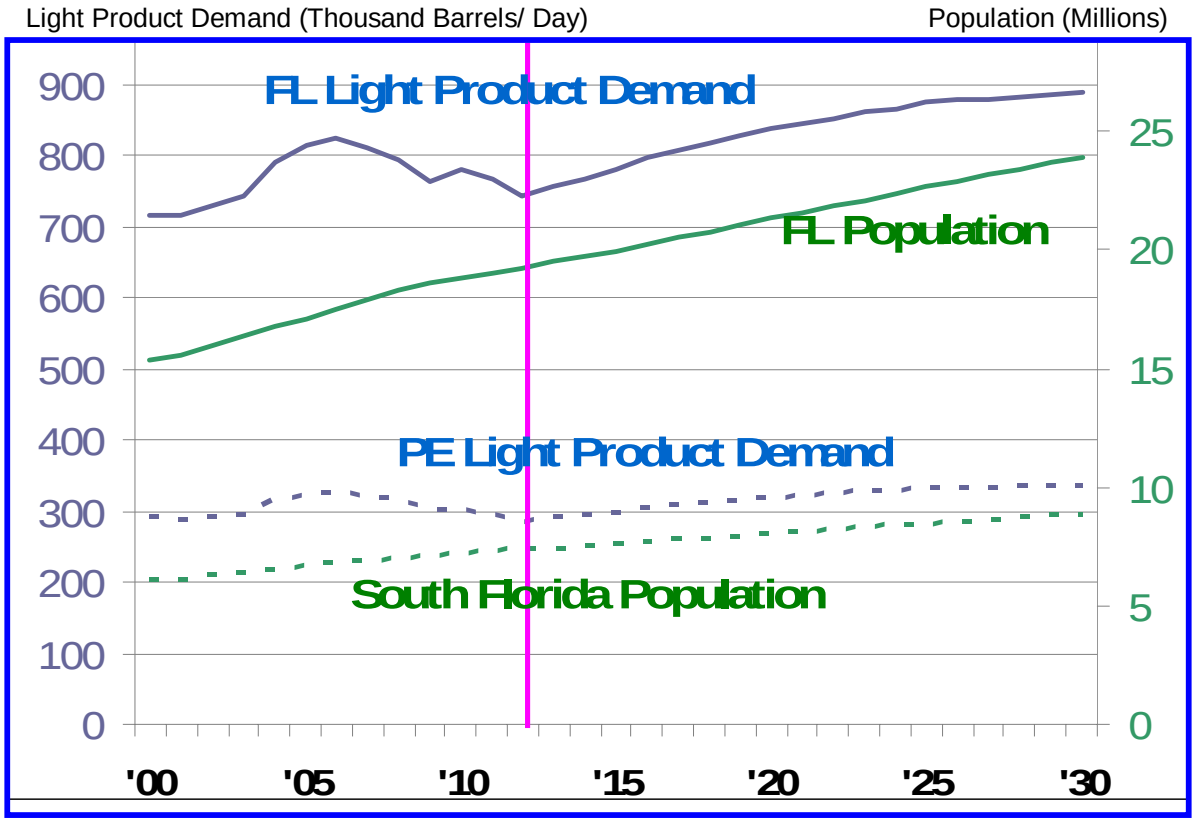
Table 2.4-3
UNITED STATES LIGHT PRODUCT DEMAND
(Thousand Barrels/Day)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2020	2025	2030	2033
United States	14,007	14,204	14,306	14,511	14,875	15,045	15,126	15,153	14,503	14,053	14,259	14,104	13,906	13,961	14,044	14,224	14,466	14,358	13,835	13,554
Florida	716	717	728	744	790	814	823	811	792	764	781	766	744	754	766	781	836	873	888	897
PADD I Total	5,071	5,162	5,147	5,339	5,541	5,574	5,484	5,466	5,213	5,090	5,097	4,937	4,776	4,803	4,828	4,879	4,947	4,885	4,685	4,576
Port Everglades Market 12-County	319	322	323	329	346	356	358	351	334	325	321	317	309	315	320	326	348	364	369	373
Port Everglades Throughput	277	283	279	286	307	309	309	306	283	281	281	278	272	286	290	296	319	336	346	353

Figure 2.4-6
FLORIDA LIGHT PRODUCT DEMAND
(Thousand Barrels/Day)



2.4.4 Market Assessment

Major Competitive Ports in Florida. Port Everglades competes with other seaports in Florida as well as with other Gulf Coast, Eastern Seaboard, and Caribbean ports across business sectors. In the petroleum sector, only the ports of Tampa and Jacksonville currently have diversified petroleum operations on a similar scale to Port Everglades. Recent capacity upgrades at Port Canaveral have increased its market share, but it remains relatively small on a volume basis. The other ports are primarily oriented around fuel oil operations for ship bunkering or for supply to local power plants.

Of the competing ports within the state, the Port of Tampa is approximately 235 miles driving distance (over 300 miles by water) from Port Everglades on the Gulf Coast side of the state. Tampa clearly has a geographical advantage in terms of supply from Gulf Coast refineries. The petroleum products must, however, be trucked over 80 miles from Tampa across the state to penetrate the outer 12-county market served by Port Everglades. Although the Port of Tampa recently increased capacity, petroleum throughput has declined.

Port Manatee is 35 miles south of the Port of Tampa and about 210 miles driving distance from Port Everglades. The receipts at this port have been primarily residual fuel oil for bunkering and to supply the nearby Florida Power & Light (FPL) power plant. Conversion of the FPL plant to gas sources has caused residual fuel oil throughput to decline to negligible levels.

The Port of Jacksonville is approximately 320 miles north of Port Everglades along the Eastern Seaboard. Jacksonville has a location advantage in terms of supplies from New York Harbor and European imports. To penetrate the outer 12-county market served by Port Everglades, products must, however, be trucked over 170 miles, which is beyond the typical practical trucking range. Additionally, Jacksonville is experiencing competition for market share due to the Port Canaveral capacity expansion in 2009.

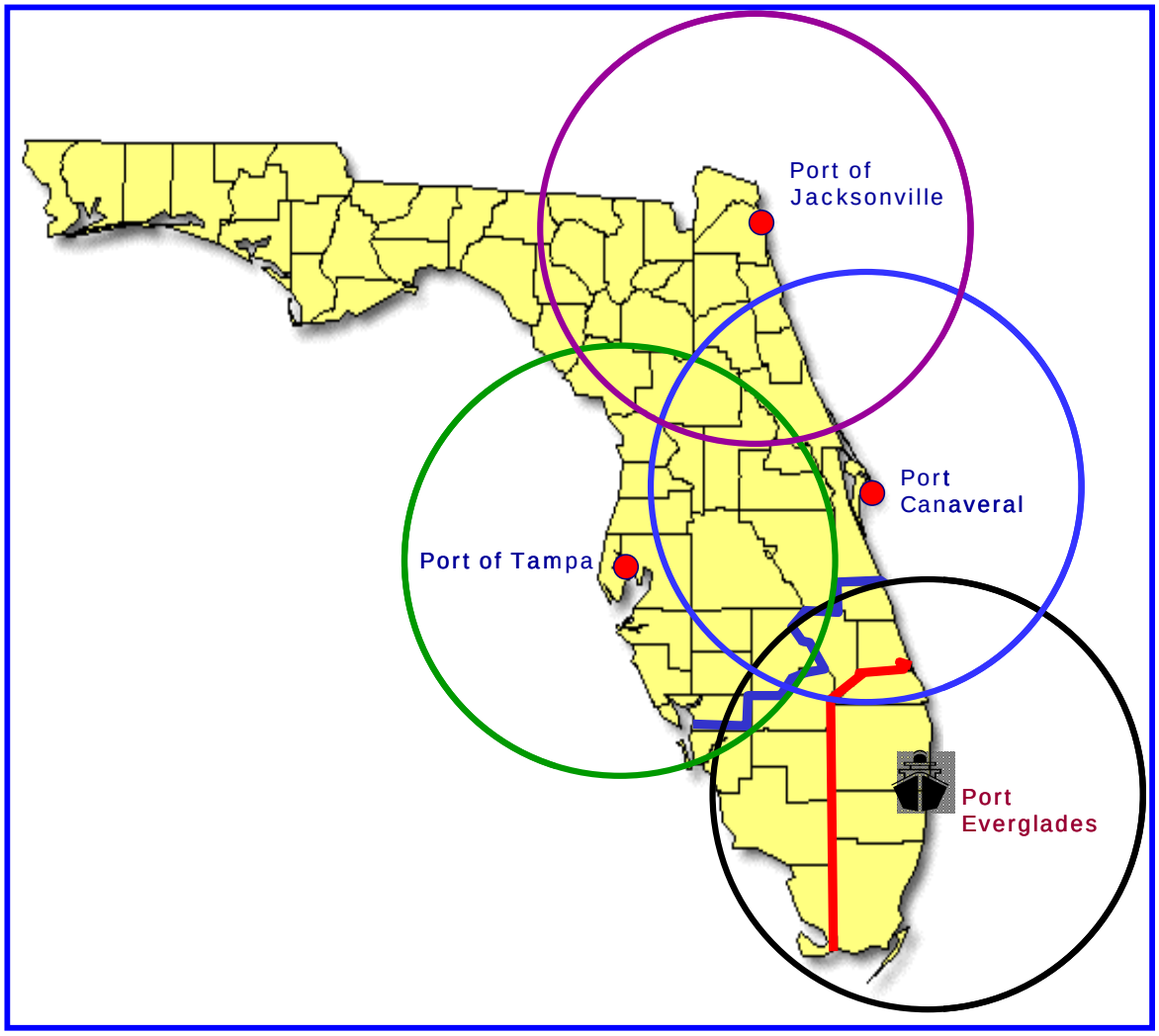
Port Canaveral is located approximately 170 miles north of Port Everglades and is within trucking range of counties served by the Port of Tampa, Port Everglades, and the Port of Jacksonville. It is also ideally located to serve the growing Orlando market. In addition to residual fuel oil, Port Canaveral currently receives small volumes of light refined products, but not enough to satisfy the demand in its surrounding area. Port Canaveral saw significant increases in petroleum throughput since expanding in 2009, but still remains relatively smaller than Everglades, Tampa, or Jacksonville.

PortMiami is located approximately 35 miles south of Port Everglades along the Eastern Seaboard. PortMiami's volumes are primarily residual fuel oil for ship bunkering and power plant operations at Turkey Point.

The Port of Palm Beach is located approximately 50 miles north of Port Everglades along the Eastern Seaboard. Until recently, essentially all the volumes through the port had been residual fuel oil for power plant use. A terminal completed in 2007 was intended to bring more diesel fuel into the market; however, diesel volumes have remained fairly low since the expansion as U.S. refiners shifted focus to supply growing Latin American demand.

As indicated in the 2009 plan, trucking companies state that the typical practical range for truck deliveries is 120 to 130 miles, with runs up to as far as 200 miles in unusual cases. The map below, Figure 2.4-7, shows radii of 130 miles around each port indicating the areas of potential overlap of supply. The more typical run distance of 120 to 130 miles is approximately half way between the Port of Tampa and Port Everglades, so there can be competition at the outer edges of each port's delivery range. Additionally, Port Canaveral has the opportunity to compete in the ranges of Tampa, Everglades, and Jacksonville.

Figure 2.4-7
COMPETITIVE PORT SUPPLY OVERLAP

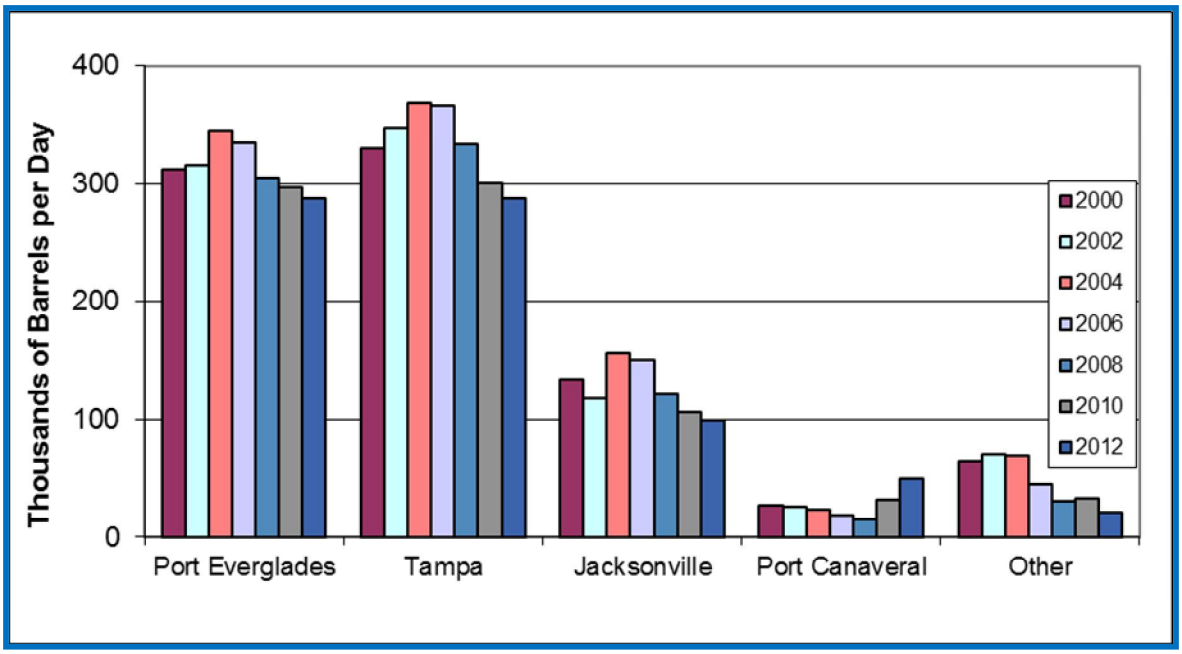


The greatest overlap is between Port Canaveral and the Port of Tampa. The Central Florida pipeline, owned by Kinder Morgan, which runs from Tampa to Orlando, gives the Port of Tampa a significant cost advantage over trucking products to the area. Port Canaveral is, however, located much closer to the area and will be competitive in this overlapping region. Because of the high waterborne delivery cost from the Gulf Coast and distance from Port Everglades, the

Port of Jacksonville's is not expected to be a significant competitor to Port Everglades. Jacksonville's proximity to the U.S. East Coast refineries may, however, allow it to receive petroleum products at a slightly lower price from Northeastern and Canadian refineries when compared to Port Everglades.

Petroleum Throughput at Florida's Major Ports. The petroleum throughput for the 2000-2012 period for the major ports is based on Waterborne Commerce data collected by the U.S. Army Corps of Engineers and IHS estimates and is shown in Figure 2.4-8**.**

Figure 2.4-8
TOTAL PETROLEUM PRODUCTS RECEIVED



As the chart shows, the Port of Jacksonville, the Port of Tampa, and Port Everglades handle the majority of petroleum products coming into the state, with Tampa and Everglades the largest by a significant margin. Receipts had been growing at most ports through 2004, but that growth slowed or declined in 2006 due to the high price environment for transportation fuels. The only port that has seen growth in total petroleum products received since 2006 is Canaveral, due to its capacity upgrade.

Petroleum Storage Capacity at Florida's Major Ports. Several terminal capacity expansion projects have been completed in the last few years, as shown in Table 2.4-4

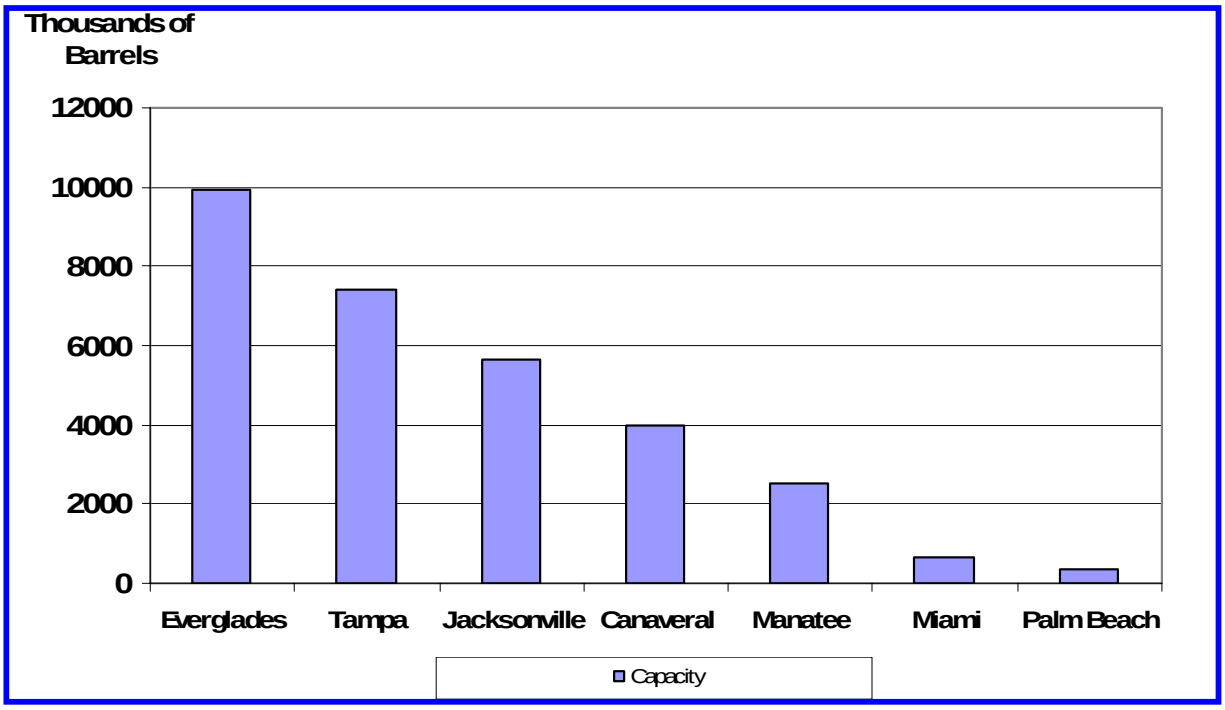
Table 2.4-4
RECENTLY COMPLETED TERMINAL EXPANSIONS

Port	Terminal Operator	Completion	Nominal Shell Capacity (Thousand Bbl)	Status
Port of Palm Beach	Vecenergy	2007	150	Complete
Port Everglades	Vecenergy	2009	1,300	Complete
Port Canaveral	Vitol	2009	2,700	Complete
Port Everglades	TransMontaigne	2009	975	Complete
		Total	**5,125**	

The addition of the above 5.13 million barrels of storage capacity represents an almost 24 percent increase over the capacity available in 2005. Faced with low product demand due to the recession of 2009, most of the new capacity has, however, been underutilized to 2013. Port Everglades has seen a slight reduction in capacity in 2013. FPL is removing 885,000 barrels of fuel oil capacity as part of its modernization project to utilize gas for power generation in the place of fuel oil. This change is reflected in the Port Everglades capacity estimates for the purpose of this market assessment.

The estimated storage capacity at each port is shown in Figure 2.4-9 below.

Figure 2.4-9
ESTIMATED STORAGE CAPACITY



The Port of Tampa is undergoing a refurbishment of three berths and associated infrastructure (see Table 2.4-5).

Table 2.4-5
PROPOSED TERMINAL PROJECTS

Port	Project Description	Timing
Tampa	Petroleum complex refurbishment of 3 berths, manifolds, and pipelines	2013-2014

Competitor Capabilities.

Port Canaveral. After its recent capacity upgrade, Port Canaveral has gained market share and is increasing its role in the supply of petroleum products to the state of Florida. The port is well known as a significant cruise port and has historically not received large amounts of light refined products. Volumes had been relatively steady over the last several years to 2009, although at levels below what they were in the early part of the decade (see Table 2.4-6.). Volumes more than doubled after the capacity upgrade, with most of the growth due to increased gasoline movements. The total storage capacity at the port's facilities is currently around 4 million barrels.

Table 2.4-6
PORT CANAVERAL
TOTAL PETROLEUM PRODUCTS RECEIVED
(Thousand Barrels/Day)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Gasoline	9	11	8	7	5	11	10	9	8	9	22	42
Distillate	2	2	2	4	9	4	4	5	3	5	9	10
Jet/Kerosene	-	-	1	-	-	-	-	-	-	-	1	1
Residual Fuel Oil	15	22	15	16	7	2	4	6	3	3	1	1
Asphalt	1	1	1	1	1	1	1	1	0	0	0	0
Total	**27**	**36**	**27**	**28**	**22**	**18**	**19**	**21**	**15**	**17**	**32**	**55**

With the shutdown of the Hovensa refinery, most of the new gasoline shipments into Port Canaveral were sourced from Europe and the U.S. Gulf Coast.

Port Canaveral's primary competitive points will likely be along the more heavily populated coastline to the north and south, and potentially the nearby market of Orlando. The majority of the Canaveral expansion has affected the Jacksonville and Tampa markets with negligible effects on Everglades' petroleum volumes.

Port of Palm Beach. The Port of Palm Beach is located just to the north of Port Everglades. It primarily serves as a distribution center for cargo received by the larger ports and destined for the smaller ports in the Caribbean and Central America. In the past, the port had a small petroleum operation focused on residual fuel oil for the nearby power plant and for bunkering (see Table 2.4-7). Now, with the conversion of FPL power plants to utilize historically low priced natural gas, residual fuel oil and overall petroleum imports are negligible.

Table 2.4-7
PORT OF PALM BEACH
TOTAL PETROLEUM PRODUCTS RECEIVED
Thousand Barrels/Day

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Gasoline	-	-	-	-	-	-	-	-	-	-	-	-
Distillate	-	2	-	1	3	2	2	1	2	2	4	0
Jet/Kerosene	-	-	-	-	-	-	-	-	-	-	-	-
Residual Fuel Oil	18	24	21	29	22	16	12	12	7	4	4	1
Asphalt	-	-	-	-	-	-	-	-	-	-	-	-
Total	**18**	**26**	**21**	**30**	**25**	**18**	**14**	**14**	**9**	**6**	**8**	**1**

The port has received small amounts of diesel fuel in recent years. The volume was expected to rise when their terminal was expanded in 2007. Vecenergy constructed a new 150,000-barrel diesel fuel terminal and leased the storage to Valero. The terminal received its first cargo of diesel fuel in October 2007. With Valero expanding its refineries in Port Arthur, Texas and St. Charles, Louisiana to produce more fuels, it was thought that some of this volume would supply the new Palm Beach terminal. Strong diesel demand growth in Latin America, Mexico, and Europe has, however, shifted U.S. diesel exports to those regions and away from domestic ports. Additionally, the Port of Palm Beach faces draft limitations on vessels that may call at the port. The entrance channel is only 33 feet deep, as are the deepest berths in the port. A study is currently underway by the U.S. Army Corps of Engineers to deepen the entrance channel to 42 feet.

Port of Tampa and Port Manatee. The Port of Tampa is the largest in Florida in terms of petroleum product volume received (see Table 2.4-8). It has an advantage over Port Everglades in its proximity to the refineries on the Gulf Coast, resulting in lower transportation costs for domestically sourced fuels. Tampa also has the ability to move petroleum products to the large and growing Orlando market via the Central Florida pipeline, which further reduces transportation costs as compared to trucking those volumes to Orlando. Volumes received by the port had been growing steadily, but declined in 2006 as a result of falling demand induced by high fuel prices. Volumes of both gasoline and distillate have also fallen since 2009 due to increased competition from Port Canaveral and lower foreign shipments due to Caribbean refinery shutdowns.

Port Manatee has not typically received large volumes of light refined products. The petroleum terminal capabilities at Port Manatee are much smaller than at the Port of Tampa and are focused on residual fuel oil (as power plant or bunker fuel). In recent years, Port Manatee has seen fuel oil imports drop to nearly zero after FPL substantially reduced demand for fuel oil in light of low natural gas prices.

Table 2.4-8
PORT OF TAMPA
TOTAL PETROLEUM PRODUCTS RECEIVED
(Thousand Barrels/Day)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
LPG	3	5	5	4	6	7	9	8	8	9	7	2
Gasoline	214	211	238	241	254	265	250	240	232	210	200	195
Distillate	63	65	61	62	77	82	85	67	54	53	51	51
Jet/Kerosene	36	41	38	33	35	32	30	30	27	28	27	28
Residual Fuel Oil	29	38	33	27	15	12	7	5	2	0	1	1
Asphalt	6	7	8	9	9	9	9	11	10	10	12	9
Total	**351**	**367**	**383**	**376**	**396**	**407**	**390**	**361**	**333**	**310**	**299**	**287**

Although the Port of Tampa receives more refined products than Port Everglades, it has less storage capacity. This results in higher utilization rates (inventory turns) and more frequent refined product deliveries, which could place a limit on Tampa's ability to meet demand increases in its service area. The Tampa Port Authority has recognized this potential limitation, and noted in its 2008 Master Plan that utilization rates are nearing the maximum for unscheduled vessel arrivals.

In 2012, the Tampa Port Authority announced that it received $22.5 million in state funds for the modernization and expansion of its primary petroleum terminal complex. The refurbishment, estimated to cost $45 million, comprises three berths and manifolds, pipelines, and related facilities. The project is expected to be complete in late 2013 or early 2014.

The entrance channel to the Port of Tampa ranges from 43 to 45 feet deep, with an operating draft of 41 feet, and is able to accommodate most of the large product tankers that would be expected to make deliveries to the port.

Draft restrictions in the main entrance channel to Tampa Bay are similar for both Port Manatee and the Port of Tampa. The petroleum berths at Port Manatee currently have a draft of 40 feet. Additionally, Port Manatee is subject to special rules and limitations regarding ship arrivals due to the perpendicular orientation of the approach channel to the tidal current. Ship movements may be limited depending on the draft and length overall of the vessels, including only one movement per tide of a vessel with more than 36 feet of draft.

PortMiami. Like Port Canaveral, PortMiami is also well known for its cruise operations. Prior to 2003, nearly all the petroleum volume that the port received was residual fuel oil, but recently it has also included more diesel fuel (see Table 2.4-9). Unlike most other Florida ports, PortMiami has sustained its fuel oil imports over the past 5 years.

Table 2.4-9
PORTMIAMI
TOTAL PETROLEUM PRODUCTS RECEIVED
(Thousand Barrels/Day)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Distillate	1	1	-	3	8	8	5	5	7	6	9	10
Jet/Kerosene	-	1	-	-	-	-	-	0	0	0	0	-
Residual Fuel Oil	17	17	17	17	12	9	7	7	6	9	10	10
Asphalt	-	-	-	-	-	-	-	-	-	-	-	-
Total	**18**	**19**	**18**	**20**	**20**	**17**	**12**	**12**	**14**	**16**	**21**	**20**

Port of Jacksonville. Located on Florida's northern Atlantic coast, the Port of Jacksonville receives the third largest volume of petroleum products among Florida's ports. Total petroleum products moved through the port fell in 2001-2002, but had rebounded to prior

levels by 2003. Volume grew in 2004, but stalled and dropped somewhat in 2006 as the impact of high fuel prices reduced demand. Volumes continued to fall to 2011 in the face of falling demand and increasing competition from the new capacity upgrades at Port Canaveral (see Table 2.4-10).

Table 2.4-10
PORT OF JACKSONVILLE
TOTAL PETROLEUM PRODUCTS RECEIVED
(Thousand Barrels/Day

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Gasoline			62	83	89	94	79	79	62	53	47	48
Distillate	36	28	21	34	40	47	45	39	47	43	50	45
Jet/Kerosene	7	5	7	7	9	8	8	7	7	8	8	8
Residual Fuel Oil	28	9	12	13	8	6	3	1	2	1	1	2
Asphalt	3	2	3	2	2	2	-	2	0	1	1	1
Total	**143**	**111**	**105**	**139**	**148**	**157**	**135**	**129**	**118**	**106**	**107**	**104**

Jacksonville is located too far from Port Everglades to provide much direct competition. As the Port Canaveral expansion came on stream, it appears that some of the displaced Jacksonville volume pushed into areas currently served by the Port of Tampa, reducing overall throughput.

New Terminals at Port Everglades. Vecenergy completed construction of a new petroleum terminal at Port Everglades in 2009. The facility was quite large, with 1.3 million barrels of storage, and increased the Port's capacity by 15 percent, to a total of 9.8 million barrels. The terminal was intended to receive typical fuels such as gasoline, jet fuel, and diesel fuel, but will also be able to store alternative fuels like ethanol and biodiesel. Additionally, TransMontaigne added 975,000 barrels of new storage to its terminal facilities at Port Everglades. Strong growth in jet and ethanol imports after the capacity upgrades allowed the Port's overall volumes to remain fairly flat in the face of falling product demand from 2009 to 2012.

Redevelopment of the Caribbean Refineries and Terminals. The Caribbean storage and refining market has seen great change since 2009. The BORCO facility in the Bahamas was sold to Buckeye Partners L.P, which intends to expand capacity significantly in the near term to supply the Florida and growing Latin American markets. Additionally, the Hovensa refinery in the U.S. Virgin Islands shut down. The refinery was a major supplier of petroleum products to Florida and the southeastern United States. The current owners, Hess and Petróleos de Venezuela, S.A (PDVSA), are attempting to sell the refinery as a terminal facility. Finally, Valero shut its Aruba refinery and is also attempting to sell the refinery as a terminal facility.

BORCO. The BORCO terminal was originally associated with a refinery at Freeport on Grand Bahama Island. The refinery was shut down in 1985, but the terminal has continued to operate under several different owners. It is a very large terminal, with nearly 22.5 million

barrels of storage for crude oil and both light and heavy refined products. It is the fourth largest oil and petroleum product storage terminal in the world and in the Caribbean.

In April 2008, First Reserve Corporation and Vopak jointly purchased the facility. First Reserve is a private equity firm specializing in the energy industry, and Vopak is a Dutch company that is reportedly the world's largest independent tank terminal operator.

In December 2010, Buckeye Partners L.P. announced that it signed a definitive agreement to acquire an 80 percent interest in BORCO from First Reserve for $1.36 billion. Vopak retained ownership of 20 percent of BORCO until it sold its stake to Buckeye in February 2011 for $400 million.

Under the previous ownership, many of the storage tanks had become unfit for use and the available storage was reduced to about 14 million barrels. First Reserve and Vopak repaired these tanks to bring the terminal back to its original capacity of more than 22.5 million barrels.

Buckeye has announced expansion projects at BORCO, which may add up to 7.5 million barrels of flexible petroleum product storage, increasing total storage capacity to more than 29 million barrels. The facility also has a significant amount of unused land available for other future expansions, with room to install approximately 13 million barrels of incremental storage capacity. As of 2011, 66 percent of BORCO's leased capacity was for fuel oil, 20 percent for crude oil, and 14 percent for refined products.

The current expansion project at BORCO is well under way, with Phase 1 to add approximately 3.5 million barrels of storage capacity; 1.1 million barrels of fuel oil storage were in operation as of July 2012. Additionally, as part of Phase 1 expansions, 800,000 barrels of refined product storage was in-service in the fourth quarter of 2012. Refined product storage of 1.6 million barrels is expected to be in service in 2013. Crude oil storage of 1.2 million barrels, as part of Phase 2 of the expansion project, is expected to be in service by the third quarter of 2013.

Part of the strategy for the acquisition of the terminal was to provide a facility that refiners or crude oil producers could use to access the U.S. market. Because of the terminal's deep berths and the ability to handle very large crude carriers (VLCCs) and ultra large cruise carriers (ULCCs), large ships unable to enter many U.S. ports would be able to transport crude oil or refined products from distant origins to the Bahamas terminal for later distribution to one or more U.S. or Latin American ports on smaller vessels, thus improving the economies of scale on the longer voyage.

Current expectations are that the flows of clean products from the Middle East and the Far East to the U.S. will be small, given the reduction in U.S. product demand and the availability of imports from closer regions. Market price volatility will sometimes create opportunities for those cargos to be placed into the U.S., but those flows are not expected to become routine.

Hovensa Refinery. Hess Oil Virgin Islands built and began operating a 45,000-B/D refinery on the south shore of St. Croix in 1966. By 1974, the refinery had been expanded to 650,000-B/D, making it the largest refinery in the world. In 1998, the Hess subsidiary joined with PDVSA's Virgin Islands subsidiary to create Hovensa. In 2011, Hovensa's refining capacity

was cut to 350,000-B/D, but the facility remained a major product supplier to the U.S, specifically the Atlantic Coast market, which claimed 85 percent of Hovensa's exports to the U.S. in 2011.

Although Hovensa was a major supplier to the U.S., with the ability to source low-sulfur crude from Africa and some higher-sulfur crude from Venezuela, it lost money. In January 2012, Hess and PDVSA announced the shutdown of their U.S. Virgin Islands Hovensa refinery after suffering three-year losses of $1.3 billion due to lack of access to low-cost crude and natural gas seen in the continental United States. The company's chairman cited new refining capacity in emerging markets and the global economic slowdown as the reasons for the refinery's closure. The primary disadvantage for Hovensa was its fuel source. U.S. refiners use low-cost natural gas for power while Hovensa utilized fuel oil for power.

The Hovensa refinery is currently being utilized as a storage terminal. According to industry sources, storage tenants at Hovensa include Vitol, Hess, and Total. In May 2012, Hovensa had offered about 16 million barrels of storage capacity, or about 50 percent of its maximum capacity of 32 million barrels. The balance of unused capacity is expected to be mothballed. The company considered the offer of 16 million barrels to be the optimal capacity, based on practical operational costs and regional market demand.

Hovensa and the Virgin Islands government are in negotiations to resolve the issue of tax break extensions. Hovensa had received tax concessions from the government when it was operating the refinery, but those concessions were viewed as a government subsidy for refinery operations only. Hovensa is seeking an extension of the tax concessions for the operation of its storage facility. That request has, however, been met with resistance from the government, which wants Hovensa to restart its refinery operations for local economic reasons.

Of Hovensa's total storage capacity, about two-thirds is to be dedicated to clean oil products and the remaining one-third to crude oil and fuel oil. Most of the clean-product tanks are already operational, and the shut-in capacity is for mostly dirty products and crude. Hovensa had said that it had preliminarily planned for 10 to15 million barrels of storage capacity.

Longer-term, due to its geographical location, the potential exists for new management to employ strategies similar to those of the BORCO terminal and transform the refinery into a product terminal and gateway for the Latin American and U.S. refined product markets. If Hovensa were to achieve success as a refined products terminal, over the long term, some of the recent shifts to domestic barrels into Port Everglades may revert back to foreign barrels.[6]

Valero Aruba Refinery. The old Exxon refinery on Aruba was on the verge of being dismantled in 1989. Coastal purchased the refinery and began a downsizing and remodeling project to process about 150,000 B/D of crude. Intermediates from Aruba were moved to Coastal's/El Paso's U.S. refineries. Start-up took place in late 1990, and a coker was added in 1995 to reduce the residual fuel oil yield. The refinery was later expanded to 255,000 B/D and the coker capacity increased to 76,000 B/D from 48,000 B/D.

[6] The Department of Energy refers to the U.S. Virgin Islands as a "foreign country" for data accounting purposes http://www.eia.gov/dnav/pet/pet_move_impcus_a2_nus_ep00_im0_mbbl_m.htm)

In 2004, Valero purchased the refinery and began moving intermediates produced at Aruba into its U.S. refinery system. Valero announced in early 2008 that it was planning to sell the Aruba refinery, along with some of its U.S. operations. As of mid-2009, no buyer had been found and the refinery was shut down. In mid-2010, as refining margins began improving, Valero began a maintenance program with the goal of restarting the refinery if economic conditions continued to be favorable. The turnaround was completed in late 2010 and the refinery was re-started in January 2011. In March 2012, however, Valero announced that the refinery would be shut down again due to unfavorable economics.

In December 2012, Valero announced that it was negotiating with potential third-party customers for leasing capacity at the Aruba refinery. The refinery has a storage capacity of 6 million barrels of crude and 7 million barrels of products. It is believed that the Aruba terminal would appeal to trading companies and arbitrage players who need clean and dirty storage capacities for break-bulk and build-bulk[7] purposes. It also has two large deepwater berths that can accommodate VLCCs and four product-loading docks as well as a dry cargo dock.

U.S. Gulf Coast Refinery Expansions. Over the last several years, many refiners on the U.S.. Gulf Coast announced and completed major expansion projects. Table 2.4-11 on the next page shows the larger expansions that are expected to be completed and that might impact the supply of refined products to Florida. The table also includes the anticipated start-up year and incremental production capacity of light products.

[7]Build-bulk comes into play when traders utilize multiple petroleum product components to blend to a finished product, as for example, when a trader blends various gasoline components to produce finished gasoline for the retail market.

Table 2.4-11
US GULF COAST MAJOR REFINERY PROJECTS
(Thousand Barrels/ Day)

Project Type	Company	City	State	PADD	2013	2014	2015	2016	Total	Gasoline	Jet/Kero	Distillate
Crude	Marathon	Garyville	LA	III	20	-	-	-				
	Kinder Morgan	Galena Park	TX	III	-	50	-	-				
	Valero Energy Corp.	Houston	TX	III	-	-	90	-				
	Valero Energy Corp.	Sunray	TX	III	-	25	-	-				
	Western Refining	El Paso	TX	III	-	25	-	-				
Hydrocracker-distillate	Valero	Meraux	LA	III	-	20	-	-	20.00			20.00
Hydrocracker-other	Valero Energy Corp.	St. Charles (Norco)	LA	III	60	-	-	-	70.10	18.60	6.30	45.20
	Valero Energy Corp.	St. Charles (Norco)	LA	III	-	-	15	-	10.68	1.68	1.27	7.73
	Valero Energy Corp.	Port Arthur	TX	III	-	-	18	-	12.82	2.02	1.52	9.28
Hydrocracker-lube	Chevron	Pascagoula	MS	III	25	-	-	-				
Lubes	Chevron	Pascagoula	MS	III	25	-	-	-	-	-	-	-
Total PADD III Major Projects									**113.60**	**22.30**	**9.09**	**82.21**

Source: IHS CERA

Because the demand for refined products has been reduced in the same time frame that new refining capacity is expected to be completed, U.S. refiners are expected to initially operate at a lower overall utilization rate. The numbers in the above table represent the production capacity of these new projects, which will not necessarily be fully utilized in the near term.

The following describes each of the major expansions in more detail.

Crude Expansion Projects at Various Refineries. Various U.S. Gulf-Coast refiners have announced projects to utilize domestic grades of crude. The ability to run new crudes will lead to increased naphtha production and associated diesel and gasoline production. With diesel demand growth outpacing gasoline demand growth globally, U.S. refiners will continue to modify operations to maximize diesel yields.

Valero (Port Arthur, Texas). Valero expanded the crude-distillation capacity of its Port Arthur refinery by 75,000 B/D. The project also includes a 50,000-B/D diesel production-oriented vacuum gasoil (VGO) hydrocracker, which would allow the refinery to process higher volumes of heavy crude, and a small amount of sulfur-reducing diesel hydrotreating.[8] The new units commenced operation in 2012. Production capacity from this expansion is estimated to be about 10,000 B/D of gasoline, 7,600 B/D of jet fuel, and 46,000 B/D of distillate.

Valero has announced that it plans to expand the new hydrocracker further by another 18,000 B/D in 2015, which will lead to an additional 2,000 B/D of gasoline, 1,500 B/D of jet fuel, and 9,000 B/D of distillate.

Valero (St. Charles, Louisiana). Valero also announced expansion plans at its St. Charles refinery in 2008. The projects included a 50,000-B/D atmospheric crude distillation expansion, a 10,000-B/D delayed coker expansion, and the construction of a 50,000-B/D distillate hydrocracker. The start-up took place in 2011 for the crude and coker expansions and 2013 for the hydrocracker. It is estimated that this expansion resulted in an increase of about 70,000 B/D of light product production capacity, with 19,000 B/D of gasoline, 45,000 B/D of distillate, and 6,300 B/D of jet fuel.

Additionally, Valero has announced plans to expand the new hydrocracker further by another 15,000 B/D in 2015 which will lead to an additional 1,700 B/D of gasoline, 1,300 B/D of jet fuel, and 8,000 B/D of distillate.

Port Everglades Terminal Operators with U.S. Gulf-Coast Refinery Expansions. Table 2.4-12 shows the refining companies that have undergone recent expansions which also have terminal facilities in Florida, to which some of the incremental production might be supplied.

[8] Hydrocracking is the cracking of petroleum or the like in the presence of hydrogen in a high-pressure processing unit.

Table 2.4-12
TERMINAL OPERATORS AT FLORIDA PORTS WITH US GULF COAST REFINERY EXPANSIONS

Refining Company	Tampa	Everglades	Jacksonville	Palm Beach
Chevron	X	X	X	
Marathon	X	X		
Motiva	X	X		
Valero		X		X

Most of these refiners also ship products on the Colonial and Plantation pipeline systems to the Eastern Seaboard and on other pipeline systems to the Midwest. Part of the incremental production from the refinery expansions has been shipped on the pipelines due to the lower transportation costs as compared to waterborne movements. These volumes will displace some imports on the East Coast. Additionally, since 2009, numerous refinery shutdowns in the Northeast U.S. have led Gulf Coast refiners to increase volumes via pipeline to the region. Furthermore, much of the incremental volume was shipped to Florida, competing with import volumes there to replace barrels lost due to the Hovensa shutdown. This has led to the decline of foreign imports and the gain in domestic movements into Florida ports.

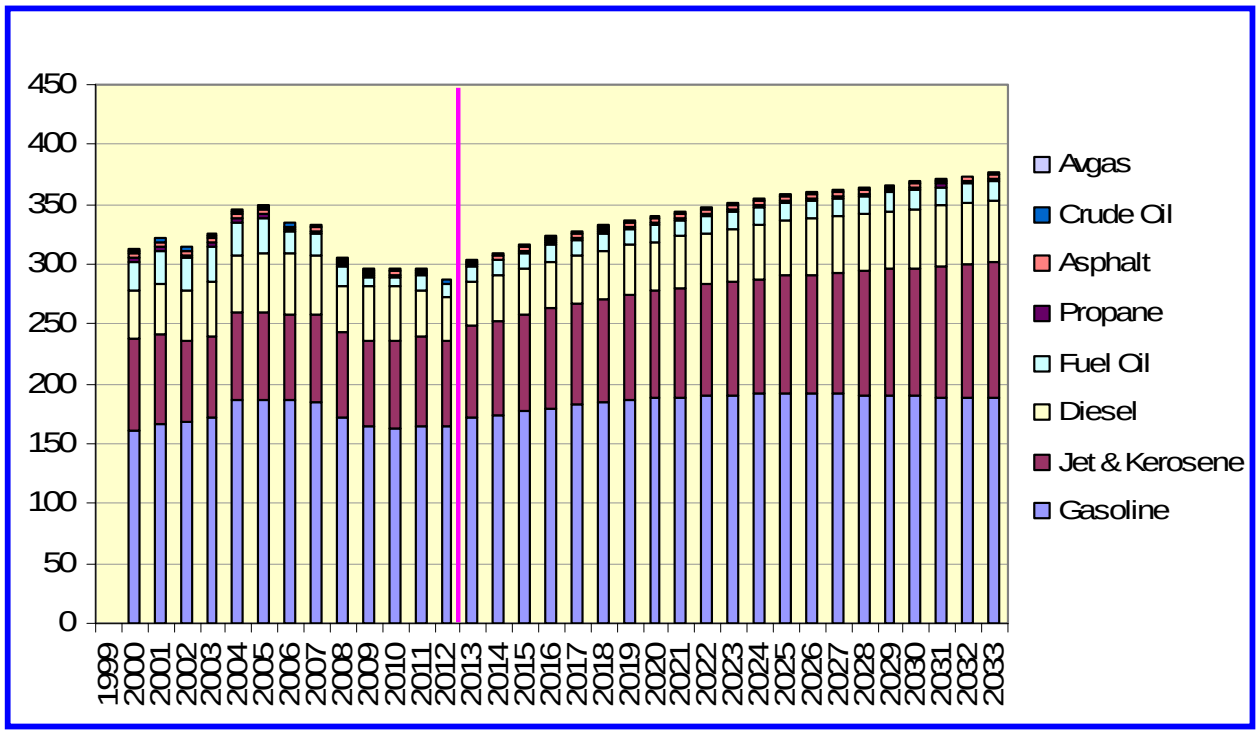
2.4.5 Petroleum Product Volume Projections

Table 2.4-13 and Figure 2.4-10 illustrate the Port Everglades petroleum throughput forecast summary. Total throughput volumes will grow from just over a projected 300,000 B/D in 2013 to nearly 376,000 B/D by 2033. Gasoline continues to be the leading product; however, due to more rapid growth in diesel and jet demand, the percentage of the throughput attributed to gasoline falls over the forecast period from 57 percent of the total in 2013 to 50 percent by 2033. Jet throughputs will see strong growth over the planning period, the percentage of throughput increasing from 25 percent in 2013 to 31 percent in 2033. More detailed discussions of each refined product are provided in this section.

Table 2.4-13
PORT EVERGLADES PETROLEUM THROUGHPUT
(Thousand Barrels/ Day)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2020	2025	2030	2033
Gasoline	161	166	168	172	187	187	187	184	173	165	163	165	164	171	188	192	190	188
Jet & Kerosene	76	75	68	68	72	72	71	73	71	71	73	76	73	77	90	98	108	114
Diesel	40	41	43	46	48	50	51	49	38	45	45	38	35	37	42	46	49	51
Fuel Oil	25	29	26	28	28	30	18	19	15	8	8	13	11	12	14	15	16	17
Propane	3	3	3	4	4	4	3	2	2	2	2	1	0	1	2	2	2	2
Asphalt	3	4	4	4	3	3	2	3	2	3	3	1	1	2	3	3	3	3
Crude Oil	3	3	3	3	2	2	2	2	2	2	2	2	3	2	2	1	1	1
Avgas	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0
Port Everglades Throughput	**313**	**322**	**315**	**325**	**345**	**349**	**335**	**334**	**305**	**296**	**297**	**296**	**287**	**303**	**340**	**358**	**369**	**376**

Figure 2.4-10
PORT EVERGLADES THROUGHPUT
(Thousand Barrel/Day)



Gasoline. Gasoline projections are derived from a historical analysis of consumption on a per-capita basis using the state population, and forecast to PADD-level demand. Gasoline growth and population growth rate projections as well as the demand per capita are shown in Tables 2.4.14 and 2.4.15 for the U.S., PADD I, and PADD III. For the U.S. as a whole, per-capita demand for gasoline is at about 12.55 barrels per person of driving age per year in 2013, but then falls to 9.53 barrels per person per year by 2033. PADD I and PADD III growth rates and per-capita demand for the same periods are shown for comparison.

Total U.S. demand for gasoline is expected to exceed 8.7 million B/D in 2013 and Florida will lead all states in PADD I with a gasoline demand volume of approximately 532,000 B/D this year. By 2033, the total U.S. demand for gasoline is expected to decline to about 7.63 million B/D, but Florida's demand will increase fairly significantly, to just under 584,000 B/D.

The 12-county market served by Port Everglades will consume over 203,000 B/D of gasoline in 2013 and this consumption is expected to grow to just over 225,000 B/D by 2025 before declining to 218,000 B/D by 2033. The decline after 2025 is due to new fuel-efficiency standards and fleet turnover. Port Everglades' historic throughput provides about 85 percent of this demand. Since Port Everglades saw no real effects on petroleum throughput from the Port Canaveral project, it can be assumed that the Port will continue to supply around 84 to 86 percent of demand in the future.

Table 2.4-14
GASOLINE AND
POPULATION GROWTH RATE PROJECTIONS
(Percent Change from Previous Year)

	TOTAL UNITED STATES			PADD I			PADD III		
	% Pop.	% Gas.	Demand per capita (1)	% Pop.	% Gas.	Demand per capita (1)	% Pop	% Gas.	Demand per capita (1)
2000	0.99%	0.49%	13.98	0.97%	0.78%	13.20	1.24%	1.64%	15.78
2001	1.51%	1.63%	14.00	1.46%	1.71%	13.24	1.59%	1.59%	15.78
2002	1.12%	2.76%	14.22	1.14%	2.69%	13.44	1.26%	4.46%	16.28
2003	1.05%	0.98%	14.22	1.05%	1.56%	13.51	1.18%	0.47%	16.16
2004	1.14%	1.91%	14.32	1.18%	2.73%	13.71	1.30%	1.55%	16.20
2005	1.19%	0.59%	14.24	1.21%	0.33%	13.59	1.41%	1.23%	16.18
2006	1.18%	1.02%	14.22	1.20%	0.75%	13.53	1.17%	3.04%	16.47
2007	1.14%	0.36%	14.11	1.02%	0.67%	13.49	1.79%	0.16%	16.21
2008	1.05%	-3.19%	13.51	0.94%	-2.64%	13.01	1.57%	-2.88%	15.50
2009	0.95%	0.08%	13.40	0.84%	0.31%	12.94	1.43%	1.20%	15.47
2010	0.73%	-0.04%	13.29	0.69%	-0.52%	12.78	1.45%	-1.12%	15.42
2011	0.89%	-2.67%	12.82	0.89%	-3.17%	12.27	1.09%	-1.79%	14.98
2012	0.90%	-0.57%	12.64	0.89%	-1.40%	11.99	1.11%	0.83%	14.94
2013	0.90%	0.23%	12.55	0.90%	0.26%	11.92	1.11%	0.44%	14.84
2020	0.85%	0.11%	12.03	0.84%	0.15%	11.45	1.08%	-0.26%	14.14
2025	0.80%	-0.68%	11.17	0.78%	-0.64%	10.66	1.06%	-0.48%	13.09
2026	0.80%	-0.90%	10.92	0.78%	-0.87%	10.43	1.06%	-0.70%	12.80
2027	0.79%	-1.06%	10.68	0.77%	-1.05%	10.20	1.06%	-0.87%	12.51
2028	0.79%	-1.25%	10.41	0.77%	-1.25%	9.95	1.06%	-1.06%	12.18
2029	0.78%	-1.30%	10.20	0.76%	-1.30%	9.75	1.06%	-1.10%	11.93
2030	0.78%	-1.48%	9.98	0.76%	-1.47%	9.53	1.06%	-0.96%	11.65
2031	0.78%	-1.50%	9.83	0.76%	-1.49%	9.39	1.06%	-0.94%	11.76
2032	0.78%	-1.52%	9.68	0.76%	-1.51%	9.25	1.06%	-0.92%	11.87
2033	0.78%	-1.54%	9.53	0.76%	-1.53%	9.11	1.06%	-0.90%	11.97

(1) Barrels per year per person of driving age

Table 2.4-15
GASOLINE DEMAND
(Thousand barrels/day)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2020	2025	2030	2033
United States	8,472	8,610	8,848	8,935	9,105	9,159	9,253	9,286	8,989	8,997	8,993	8,753	8,703	8,722	8,765	8,824	8,875	8,579	7,964	7,633
Florida	**487**	**496**	**515**	**525**	**551**	**568**	**575**	**572**	**546**	**550**	**540**	**537**	**525**	**532**	**539**	**548**	**582**	**597**	**588**	**584**
PADD I Total	3,036	3,088	3,171	3,221	3,309	3,320	3,345	3,367	3,278	3,288	3,271	3,167	3,123	3,131	3,147	3,168	3,192	3,092	2,871	584
Port Everglades Market 12-county Totals	192	194	201	204	213	219	221	219	209	210	207	205	200	203	205	208	220	225	220	218
Port Everglades Throughput	**161**	**166**	**168**	**172**	**187**	**187**	**187**	**184**	**173**	**165**	**163**	**165**	**164**	**171**	**174**	**177**	**188**	**192**	**190**	**188**

Diesel. Diesel projections are based on a historical consumption analysis like gasoline, placed on a per-capita basis using the state population, and forecast to PADD-level demand. Diesel growth and population growth rate projections as well as the per-capita demand are shown in Tables 2.4-16 and 2.4-17 for the U.S., PADD I, and PADD III. For the U.S. as a whole, per-capita demand for diesel is remaining fairly flat, from about 5.5 barrels per person of driving age per year to 5.4 barrels per person per year by 2020 and then falling to 5.3 barrels per person of driving age per year by 2033. PADD I and PADD III growth rates and per-capita demand for the same periods are shown for comparison in the tables on the next pages.

Total U.S. demand for diesel will exceed 3.8 million B/D in 2013. Florida's consumption will be the third highest of all the states in PADD I, with demand approaching 121,000 B/D in 2013. Only New York and Pennsylvania will consume more diesel than Florida in PADD I; however, by 2028, Florida is expected to overtake both states as the largest diesel-consuming state in the PADD. By 2033, the total U.S. demand for diesel will grow to almost 4.2 million B/D and Florida will consume nearly 166,000 B/D.

The 12-county market served by Port Everglades will consume about 38,000 B/D of diesel fuel in 2013 and this consumption will grow to 49,000 B/D by 2033. Prior to 2009, the throughput of Port Everglades' historically provided about 75 percent of this demand. Since 2009, however, demand declines of diesel due to the recession and the ability of Port Everglades to maintain diesel volumes, led it to supply nearly 97 percent of demand for the region. As jet demand grows substantially in the region served by the Port, terminal operators will need to determine whether to utilize existing capacity for diesel or risk losing market share to other operators or ports.

Table 2.4-16
TOTAL DIESEL AND
POPULATION GROWTH RATE PROJECTIONS
(Percent Change from Previous Year)

	TOTAL UNITED STATES			PADD I			PADD III		
	% Pop	% Diesel	Demand per Capita(1)	% Pop	% Diesel	Demand per Capita(1)	% Pop	% Diesel	Demand per Capita(1)
2000	0.99%	4.20%	6.14	0.97%	7.21%	6.02	1.24%	4.75%	7.75
2001	1.51%	3.35%	6.25	1.46%	2.92%	6.11	1.59%	6.14%	8.09
2002	1.12%	1.84%	6.07	1.14%	3.39%	5.83	1.26%	2.20%	7.82
2003	1.05%	4.00%	6.25	1.05%	5.71%	6.10	1.18%	0.56%	7.68
2004	1.14%	3.34%	6.38	1.18%	6.44%	6.42	1.30%	6.13%	8.05
2005	1.19%	1.47%	6.40	1.21%	1.12%	6.27	1.41%	3.15%	8.19
2006	1.18%	1.24%	6.41	1.20%	5.00%	5.89	1.17%	7.00%	8.66
2007	1.14%	0.64%	6.37	1.02%	1.27%	5.75	1.79%	0.31%	8.53
2008	1.05%	5.97%	5.93	0.94%	8.16%	5.24	1.57%	3.96%	8.07
2009	0.95%	7.97%	5.41	0.84%	7.50%	4.80	1.43%	5.60%	7.51
2010	0.73%	4.66%	5.62	0.69%	3.50%	4.94	1.45%	7.86%	7.98
2011	0.89%	2.59%	5.71	0.89%	4.31%	4.68	1.09%	9.58%	8.66
2012	0.90%	3.09%	5.49	0.89%	9.45%	4.20	1.11%	7.59%	9.21
2013	0.90%	0.99%	5.49	0.90%	1.89%	4.24	1.11%	2.51%	8.88
2014	0.90%	0.62%	5.48	0.90%	0.35%	4.22	1.12%	0.12%	8.79
2015	0.90%	0.69%	5.56	0.90%	2.02%	4.26	1.11%	3.63%	9.03
2016	0.85%	0.94%	5.56	0.84%	0.67%	4.25	1.09%	1.03%	9.02
2017	0.86%	0.47%	5.54	0.84%	0.32%	4.23	1.09%	0.11%	8.94
2018	0.86%	0.39%	5.52	0.84%	0.24%	4.21	1.09%	0.18%	8.85
2019	0.84%	0.41%	5.49	0.83%	0.26%	4.18	1.07%	0.23%	8.78
2020	0.85%	0.50%	5.47	0.84%	0.34%	4.16	1.08%	0.34%	8.70
2021	0.80%	0.36%	5.49	0.78%	0.23%	4.18	1.06%	0.16%	8.62
2022	0.83%	0.34%	5.41	0.81%	0.20%	4.11	1.07%	0.20%	8.56
2023	0.80%	0.36%	5.39	0.78%	0.23%	4.09	1.06%	0.29%	8.52
2024	0.81%	0.45%	5.40	0.79%	0.30%	4.08	1.06%	0.54%	8.56
2025	0.80%	0.59%	5.41	0.79%	0.41%	4.08	1.06%	0.86%	8.62
2026	0.80%	0.59%	5.38	0.78%	0.39%	4.05	1.06%	0.96%	8.58
2027	0.78%	0.57%	5.35	0.76%	0.35%	4.02	1.06%	1.02%	8.54
2028	0.79%	0.52%	5.32	0.77%	0.28%	.99	1.06%	1.01%	8.50
2029	0.77%	0.39%	5.29	0.75%	0.15%	3.96	1.05%	0.83%	8.46
2030	0.78%	0.23%	5.26	0.76%	0.00%	3.93	1.06%	0.60%	8.42
2031	0.78%	0.21%	5.27	0.76%	0.02%	3.93	1.06%	0.58%	8.47
2032	0.78%	0.19%	5.28	0.76%	0.04%	3.93	1.06%	0.56%	8.52
2033	0.78%	0.17%	5.29	0.76%	0.06%	3.93	1.06%	0.54%	8.57

(1) Barrels per year per person of driving age. Annual average growth rate for 5 yr period up to year indicated.

Table 2.4-17
TOTAL DIESEL DEMAND
(Thousand Barrels/Day)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2020	2025	2030	2033
United States	3,722	3,847	3,776	3,927	4,058	4,118	4,169	4,196	3,945	3,631	3,800	3,899	3,778	3,816	3,839	3,934	4,034	4,154	4,202	4,238
Florida	130	135	137	147	158	167	171	153	140	127	143	130	117	121	122	126	136	149	159	166
PADD I Total	1,384	1,425	1,376	1,455	1,549	1,531	1,455	1,436	1,319	1,220	1,263	1,208	1,094	1,115	1,119	1,140	1,160	1,184	1,184	1,186
Port Everglades Market																				
12-county Total	51	53	54	57	61	65	66	63	67	68	66	63	61	60	60	61	67	75	80	84
Port Everglades Throughput	**40**	**41**	**43**	**46**	**48**	**50**	**51**	**49**	**38**	**45**	**45**	**38**	**35**	**37**	**38**	**39**	**42**	**46**	**49**	**51**

Jet Fuel and Kerosene. Jet fuel and kerosene projections are based on a historical analysis of consumption, again like gasoline, placed on a per-capita basis using the state population, and forecast to PADD-level demand. As previously discussed, all other states in PADD I are allocated on PADD-level FAA Airport Operations data and state-level FAA Airport Operations data. Jet fuel (excluding kerosene) growth and population growth rate projections as well as the demand per capita are shown in Tables 2.4-18 and 2.4-19 for the U.S., PADD I, and PADD III. For the U.S. as a whole, per-capita demand for jet fuel is remaining flat due to efficiency improvements for the passenger and cargo airline fleet along with improved operational efficiencies. PADD I and PADD III growth rates and per-capita demand for the same periods are shown for comparison in the respective tables.

Kerosene (excluding jet) growth and population growth rate projections as well as the demand per capita are shown in Tables 2.4-20 and 2.4-21 for the U.S., PADD I, and PADD III. Demand for kerosene fell significantly in recent years due to historically low natural gas and propane prices. Demand is expected to be relatively flat through the forecast period; thus growth rates in consumption are falling over time as the population increases.

Total U.S. demand for jet fuel and kerosene will be nearly 1.4 million B/D in 2013. Florida's consumption overtook that of New York and Georgia in 2010. Florida is now the largest consumer of jet fuel in PADD I, with a demand volume of approximately 100,000 B/D in 2013. By 2033, demand is expected to grow nearly 50 percent to 147,000 B/D. Total U.S. demand for jet fuel and kerosene will grow to almost 1.7 million B/D.

Port Everglades provides nearly 100 percent of the jet fuel demand at Fort Lauderdale/Hollywood, Miami, and West Palm Beach international airports. To develop the forecast, historical Port Everglades throughput was compared to the airport operations for these airports. A relationship was established and applied to projected state demand to forecast the Port Everglades demand. Port Everglades' demand is projected to grow at an average of nearly 2.0 percent annually from 2013 to 2033 and PADD I is projected to average 0.8 percent annually over the same period. The Port Everglades market will consume almost 50,000 B/D of jet and kerosene fuel in 2013 and this consumption will grow to over 73,000 B/D by 2033.

For the U.S., PADD I, and state level, jet fuel forecasts and kerosene forecasts are provided separately, as shown in the previously identified tables. Table 2.4-22 shows the combined jet and kerosene demand.

Table 2.4-18
JET (EXCLUDING KEROSENE) AND
POPULATION GROWTH RATE PROJECTIONS
(Percent Change from Previous Year)

	TOTAL UNITED STATES			PADD I			PADD III		
	% Pop	% Jet	Demand per Capita (1)	% Pop	% Jet	Demand per Capita (1)	% Pop	% Jet	Demand per Capita (1)
2000	0.99%	3.02%	2.85	0.97%	-2.61%	2.57	1.24%	7.52%	2.59
2001	1.51%	4.04%	2.69	1.46%	0.51%	2.52	1.59%	12.56%	2.23
2002	1.12%	2.13%	2.61	1.14%	-4.72%	2.38	1.26%	6.65%	2.35
2003	1.05%	2.61%	2.51	1.05%	10.18%	2.59	1.18%	34.58%	1.52
2004	1.14%	3.27%	2.56	1.18%	2.23%	2.62	1.30%	-6.54%	1.40
2005	1.19%	3.01%	2.61	1.21%	5.28%	2.72	1.41%	6.78%	1.47
2006	1.18%	2.74%	2.51	1.20%	-3.31%	2.60	1.17%	-1.89%	1.43
2007	1.14%	0.64%	2.46	1.02%	-1.29%	2.54	1.79%	-3.06%	1.36
2008	1.05%	5.17%	2.31	0.94%	-5.28%	2.39	1.57%	18.95%	1.60
2009	0.95%	9.45%	2.07	0.84%	-6.02%	2.22	1.43%	11.87%	1.39
2010	0.73%	2.76%	2.12	0.69%	-3.79%	2.12	1.45%	25.09%	1.71
2011	0.89%	0.44%	2.09	0.89%	0.81%	2.12	1.09%	-3.15%	1.64
2012	0.90%	1.41%	2.04	0.89%	-0.33%	2.10	1.11%	-0.44%	1.61
2013	0.90%	0.12%	2.02	0.90%	-0.21%	2.07	1.11%	0.30%	1.60
2014	0.90%	1.17%	2.03	0.90%	1.07%	2.08	1.12%	1.59%	1.61
2015	0.90%	1.78%	2.04	0.90%	1.51%	2.09	1.11%	2.54%	1.63
2016	0.85%	1.54%	2.06	0.84%	1.27%	2.10	1.09%	2.31%	1.65
2017	0.86%	1.32%	2.07	0.84%	1.04%	2.10	1.09%	2.09%	1.67
2018	0.86%	1.10%	2.07	0.84%	0.82%	2.10	1.09%	1.88%	1.68
2019	0.84%	1.09%	2.08	0.83%	0.81%	2.10	1.07%	1.88%	1.69
2020	0.85%	0.97%	2.08	0.84%	0.68%	2.10	1.08%	1.76%	1.70
2021	0.80%	0.80%	2.08	0.78%	0.51%	2.09	1.06%	1.60%	1.71
2022	0.83%	0.82%	2.08	0.81%	0.52%	2.09	1.07%	1.63%	1.72
2023	0.80%	0.93%	2.08	0.78%	0.63%	2.08	1.06%	1.76%	1.73
2024	0.81%	0.82%	2.08	0.79%	0.50%	2.08	1.06%	1.65%	1.74
2025	0.80%	0.81%	2.08	0.79%	0.48%	2.07	1.06%	1.65%	1.75
2026	0.80%	0.58%	2.08	0.78%	0.72%	2.07	1.06%	0.92%	1.75
2027	0.78%	0.54%	2.07	0.76%	0.69%	.07	1.06%	0.88%	1.75
2028	0.79%	0.52%	2.07	0.77%	0.67%	2.07	1.06%	0.85%	1.75
2029	0.77%	0.51%	2.06	0.75%	0.66%	2.07	1.05%	0.82%	1.74
2030	0.78%	0.52%	2.06	0.76%	0.68%	2.07	1.06%	0.83%	1.74
2031	0.78%	0.50%	2.07	0.76%	0.66%	2.08	1.06%	0.81%	1.75
2032	0.78%	0.48%	2.08	0.76%	0.64%	2.09	1.06%	0.79%	1.77
2033	0.78%	0.46%	2.09	0.76%	0.62%	2.11	1.06%	0.77%	1.78

(1) Barrels per year per person of driving age

Table 2.4-19
JET (EXCLUDING-KEROSENE) DEMAND
(Thousand Barrels/Day)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2020	2025	2030	2033
United States	1,725	1,656	1,621	1,578	1,630	1,679	1,633	1,622	1,539	1,393	1,432	1,425	1,405	1,404	1,420	1,445	1,534	1,600	1,643	1,670
Florida	**96**	**84**	**74**	**70**	**80**	**76**	**76**	**85**	**106**	**86**	**96**	**98**	**99**	**100**	**102**	**104**	**116**	**126**	**139**	**147**
PADD I Total	592	589	561	618	632	665	643	635	601	565	544	548	546	545	551	559	585	601	622	634

Table 2.4-20
KEROSENE (EXCLUDING JET) AND
POPULATION GROWTH RATE PROJECTIONS
(Percent Change from Previous Year)

	TOTAL UNITED STATES			PADD I			PADD III		
	% Pop	% Kero	Demand per Capita (1)	% Pop	% Kero	Demand per Capita (1)	% Pop	% Kero	Demand per Capita (1)
2000	0.99%	-7.60%	0.11	0.97%	5.88%	0.23	1.24%	5.39%	0.02
2001	1.51%	7.33%	0.12	1.46%	2.24%	0.24	1.59%	212.93%	0.07
2002	1.12%	40.09%	0.07	1.14%	40.71%	0.14	1.26%	-48.69%	0.03
2003	1.05%	26.07%	0.09	1.05%	24.85%	0.17	1.18%	96.92%	0.07
2004	1.14%	17.73%	0.10	1.18%	14.95%	0.19	1.30%	34.28%	0.09
2005	1.19%	8.54%	0.11	1.21%	9.13%	0.21	1.41%	12.01%	0.10
2006	1.18%	23.10%	0.08	1.20%	28.93%	0.15	1.17%	2.07%	0.10
2007	1.14%	40.13%	0.05	1.02%	36.49%	0.09	1.79%	-62.03%	0.04
2008	1.05%	55.73%	0.02	0.94%	54.40%	0.04	1.57%	-81.53%	0.01
2009	0.95%	23.32%	0.03	0.84%	23.21%	0.05	1.43%	-3.15%	0.01
2010	0.73%	13.57%	0.03	0.69%	19.49%	0.06	1.45%	-9.76%	0.01
2011	0.89%	38.60%	0.02	0.89%	40.14%	0.04	1.09%	-14.97%	0.00
2012	0.90%	49.82%	0.01	0.89%	73.80%	0.01	1.11%	286.99%	0.02
2013	0.90%	-5.86%	0.01	0.90%	3.39%	0.01	1.11%	-23.82%	0.01
2014	0.90%	0.97%	0.01	0.90%	3.28%	0.01	1.12%	1.08%	0.01
2019	0.84%	0.92%	0.01	0.83%	2.82%	0.01	1.07%	1.02%	0.01
2024	0.81%	0.90%	0.01	0.79%	2.60%	0.01	1.06%	0.99%	0.01
2029	0.77%	-0.87%	0.01	0.75%	-0.94%	0.01	1.05%	-1.06%	0.01
2030	0.78%	-1.30%	0.01	0.76%	-1.78%	0.01	1.06%	-1.57%	0.01
2031	0.78%	-1.32%	0.01	0.76%	-1.80%	0.01	1.06%	-1.59%	0.01
2032	0.78%	-1.34%	0.01	0.76%	-1.82%	0.01	1.06%	-1.61%	0.01
2033	0.78%	-1.36%	0.01	0.76%	-1.84%	0.01	1.06%	-1.63%	0.01

(1) Barrels per year per person of driving age

Table 2.4-21
KEROSENE (EXCLUDING JET) DEMAND
(Thousand Barrels/Day)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2020	2025	2030	2033
United States	67.4	72.3	43.3	54.6	64.3	69.8	53.7	32.1	14.2	17.5	19.9	12.2	6.1	5.8	5.8	5.9	6.2	6.5	6.0	5.8
Florida	**0.6**	**0.6**	**0.2**	**0.3**	**0.4**	**0.4**	**0.2**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
PADD I Total	53.8	55.1	32.6	40.8	46.9	51.1	36.3	23.1	10.5	13.0	15.5	9.3	2.4	2.5	2.6	2.7	3.1	3.5	3.2	3.1

Table 2.4-22
JET AND KEROSENE DEMAND
(Thousand Barrels/Day)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2020	2025	2030	2033
United States	1,793	1,728	1,664	1,633	1,694	1,749	1,687	1,655	1,553	1,411	1,452	1,438	1,411	1,409	1,426	1,451	1,541	1,606	1,649	1,676
Florida	**97**	**85**	**74**	**71**	**80**	**77**	**76**	**85**	**106**	**86**	**97**	**98**	**99**	**100**	**102**	**104**	**116**	**126**	**139**	**147**
PADD I Total	645	644	593	659	678	716	679	658	612	578	559	557	549	548	553	562	589	605	625	637
Port Everglades Market																				
12-county Total	76	75	68	68	72	72	71	73	71	71	73	76	73	77	79	81	90	98	108	114
Port Everglades Throughput	**76**	**75**	**68**	**68**	**72**	**72**	**71**	**73**	**71**	**71**	**73**	**76**	**73**	**77**	**79**	**81**	**90**	**98**	**108**	**114**

Fuel Oil

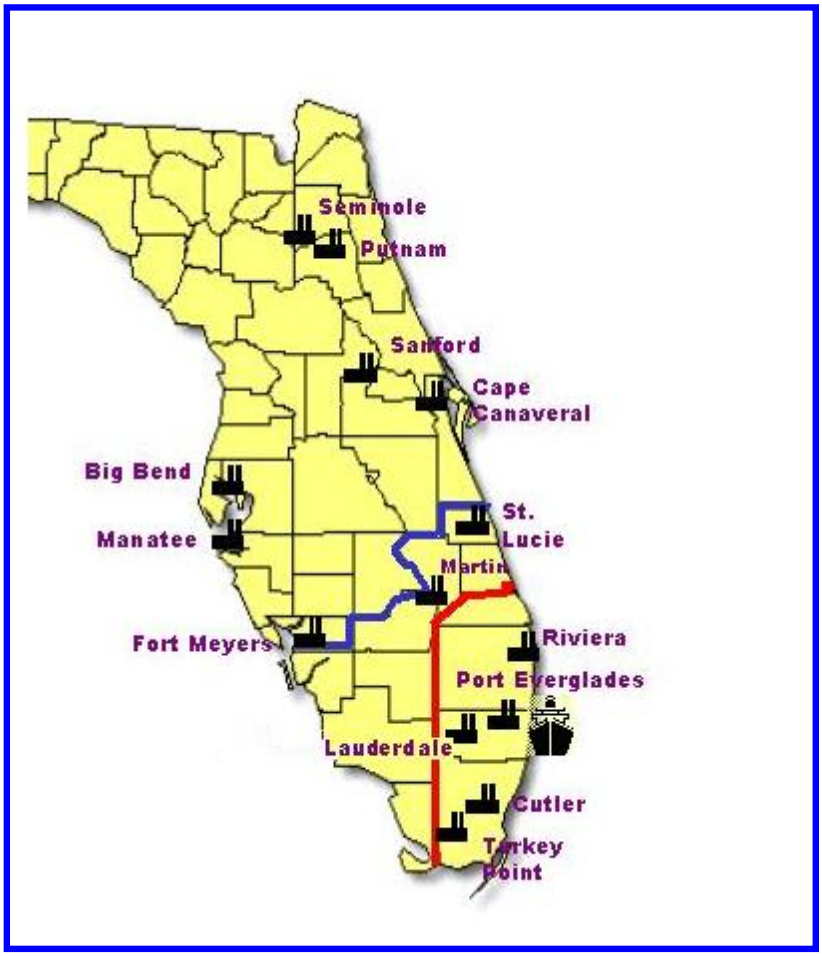
Florida Power & Light. Florida Power & Light (FPL) has reduced the use of oil to produce electricity by 98 percent from 2001 to 2012, moving from 40 million barrels per year to less than 1 million barrels in 2012 through investments in natural gas power. The trend since the early 1990s has been a steady increase in the amount of natural gas that is used by FPL to provide electricity due, in part, to the introduction of highly efficient and cost-effective combined-cycle generating units and the ready availability of natural gas. Of the FPL plants in the 12-county Port Everglades market (see Figure 2.4-11) only the Port and the Lauderdale power-generating plants were supplied with distillate and fuel oil moving through Port Everglades, although Lauderdale no longer uses fuel oil in normal operation. Port Everglades has seen fuel oil shipments drop significantly due to natural gas switching; however, shipments continue in reduced volumes to meet bunker demand.

FPL operates a power-generation facility on a 94-acre site in Port Everglades. At this site, FPL had four steam boilers that were capable of firing residual fuel oil, natural gas, or a combination of both. Of the four units, two were approximately 200 megawatts (MW) in size and two are approximately 400 MW in size.

The four existing steam units at the Port Everglades site have been removed and are being replaced with a new highly efficient combined cycle unit which will be capable of producing 1,250 MW. The new generating unit, called the Port Everglades Next Generation Clean Energy Center (PEEC), is projected to be in-service in mid-2016 with construction expected to begin in 2014. The modernization of the FPL plant at Port Everglades will retain the capability of receiving water-borne delivery of oil as a backup fuel with a maximum sulfur content of 0.0015 percent.

Other plants in the immediate area that consume liquid fuel include Riviera, Martin, and Turkey Point. In the past, the fuel for these plants was supplied through the Port of Palm Beach and PortMiami. Since 2009, the Port of Palm Beach saw fuel oil shipments fall to nearly zero as FPL shifted to natural gas.

Figure 2.4-11
MAP OF FLORIDA COUNTIES



As shown in Table 2.4-23, the fuel oil requirements for FPL's Port Everglades plants have averaged 1.14 million barrels per year (B/Yr) or 3,100 B/D in 2011. This usage has dropped off significantly to about 459,000 B/Yr or 1,200 B/D in 2012 when Units 1 and 2 at the Port Everglades plant were placed in inactive reserve due to the modernization project mentioned. By 2022, residual fuel oil demand for FPL power generation is expected to decline to 282,000 B/Yr or 770 B/D.

To increase natural gas supply to the region, FPL issued a request for proposals for new natural gas transportation capacity in Florida, commencing in 2017. After a thorough evaluation of the proposals, FPL determined that the best, most economical solution is a combination of the Sabal Trail Transmission proposal advanced by Spectra Energy Corp. for a new pipeline originating in southwestern Alabama and terminating at a new Central Florida Hub, and the proposal submitted by Florida Southeast Connection, a wholly owned subsidiary of NextEra Energy, to connect the Central Florida Hub to FPL's Martin Energy Center (see Figure 2.4-12). The construction of a pipeline to supply natural gas to the Martin Energy Center will keep shipments into Port Everglades at levels similar to the present historically low volumes.

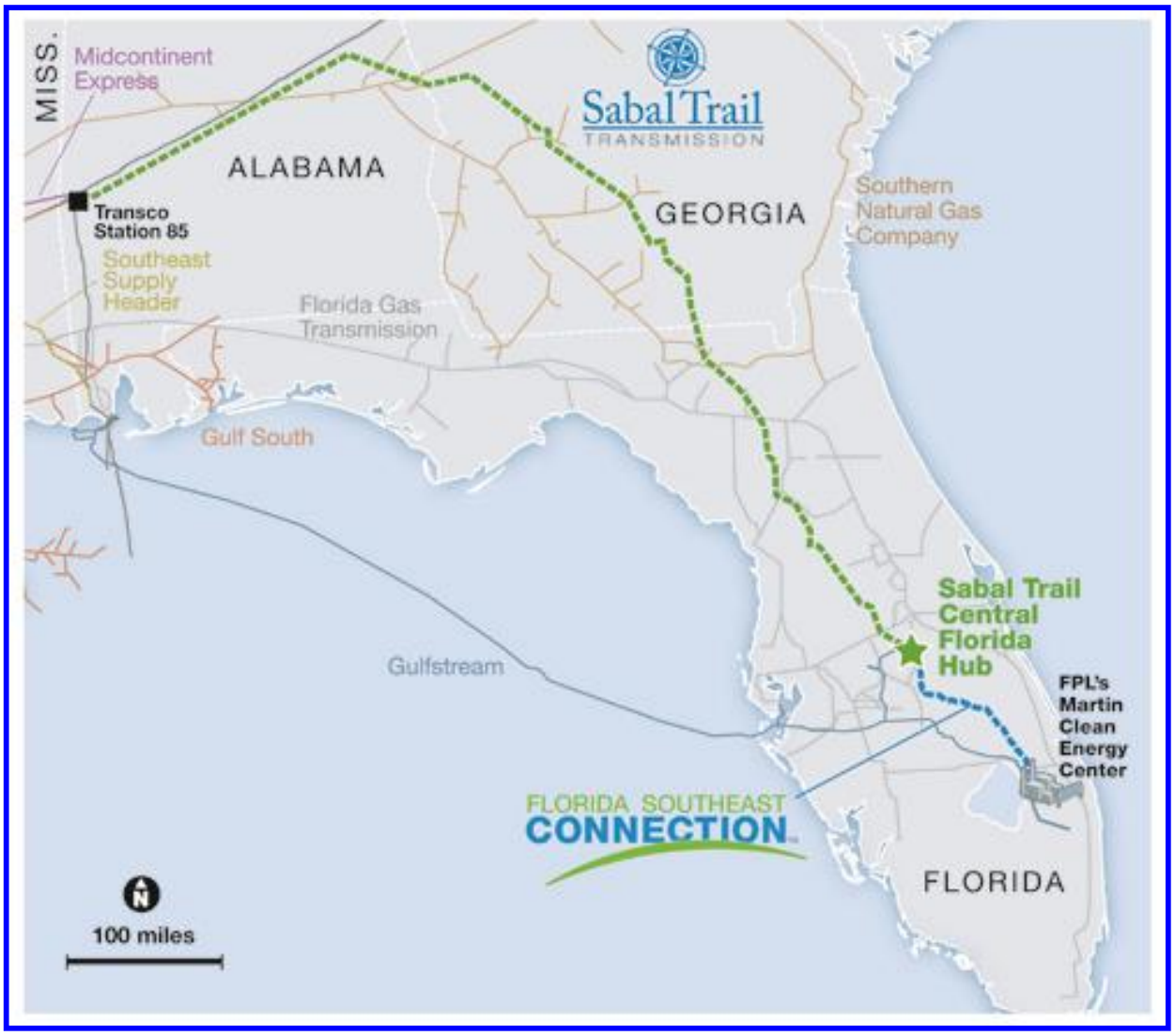
Table 2.4-23
FPL FUEL USAGE
Source: FPL 10-Year Plan

Schedule 5
Fuel Requirements
(for FPL only)

Fuel Requirements	Units	Actual 1/ 2011	Actual 1/ 2012	Forecasted 2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
(1) Nuclear	Trillion BTU	241	188	291	298	300	306	303	300	306	302	300	357
(2) Coal	1,000 TON	3,135	2,692	2,879	3,048	3,451	3,121	3,509	3,417	3,695	3,822	3,896	3,888
(3) Residual (FO6) - Total	1,000 BBL	1,141	459	401	339	489	629	283	405	314	382	417	282
(4) Steam	1,000 BBL	1,141	459	401	339	489	629	283	405	314	382	417	282
(5) Distillate (FO2) - Total	1,000 BBL	332	23	5	39	56	214	63	23	5	15	22	5
(6) Steam	1,000 BBL	2	4	0	0	0	0	0	0	0	0	0	0
(7) CC	1,000 BBL	290	15	4	24	52	153	49	2	1	1	3	1
(8) CT	1,000 BBL	40	4	1	15	4	62	14	21	4	14	18	4
(9) Natural Gas - Total	1,000 MCF	555,988	595,396	527,468	551,511	554,210	572,447	585,028	599,799	587,485	596,930	601,354	571,252
(10) Steam	1,000 MCF	61,272	46,112	2,905	2,159	3,486	5,250	4,590	6,571	5,073	6,115	6,560	4,636
(11) CC	1,000 MCF	486,116	546,386	523,796	548,510	549,998	565,976	579,234	592,222	581,374	589,516	593,419	565,588
(12) CT	1,000 MCF	8,600	2,899	767	843	727	1,221	1,204	1,006	1,038	1,299	1,375	1,028

1/ Source: A Schedules.
Note: Solar contributions are provided on Schedules 6.1 and 6.2.

Figure 2.4-12
MAP OF POTENTIAL FPL NATURAL GAS PIPELINE



Bunker Requirements. Bunker operations are primarily served by the TransMontaigne North terminal located at the Port. Using the historical bunker volumes and the number of vessels bunkered versus total vessel calls, a relationship of bunker volumes per vessel calls through time was developed. This was then applied to produce the bunker forecast.

Table 2.4-24 shows the forecast for fuel oil at Port Everglades.

Table 2.4-24
PORT EVERGLADES FUEL OIL FORECAST
(Thousand Barrels/Day

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2020	2025	2030	2033
FPL Consumption	16.3	19.0	15.4	17.4	16.7	17.6	8.1	8.5	4.4	8.0	3.3	3.1	1.3	1.1	0.9	1.3	1.0	0.9	1.0	1.0
Bunkering / Other	11.4	10.2	11.6	11.8	11.6	12.2	9.8	10.8	11.0	9.4	9.5	9.6	9.8	9.9	10.1	10.2	10.9	10.7	10.2	9.9
Total Throughput	**27.7**	**29.2**	**27.0**	**29.2**	**28.3**	**29.9**	**17.9**	**19.3**	**15.4**	**17.4**	**12.8**	**12.8**	**11.0**	**11.0**	**11.0**	**11.5**	**11.9**	**11.6**	**11.2**	**10.9**

Natural Gas Impacts. Natural gas will play a significant role in FPL's plans to meet its power generation requirements for the state and the increasing availability of natural gas will exert market pressure on fuel oil requirements, as mentioned above. Natural gas demand in Florida is growing rapidly, driven primarily by new, planned gas-fired generation units.

LPG. All LPG movements through the terminal have been propane shipments made by Dynegy from their Venice plant in South Louisiana, which was destroyed in Hurricane Katrina in 2005. Much of Dynegy's market share has been taken by C-3, which brings their LPG in through Tampa. The forecast for LPG at Port Everglades is based on this historical trade perspective in conjunction with the following considerations.

- Florida population growth.
- Heating degree days and temperature norms.
- Florida propane market shares.
- Historical growth rates for the Port's propane receipts.

Analysis of historical throughput indicates that propane volumes received at the Port have declined to nearly zero due to the problems at Dynegy's Venice plant. The forecast of future propane receipts at Port Everglades, as shown in Table 2.4-25, assumes demand follows trends for all of PADD I.

Table 2.4-25
LPG FORECAST
(Thousand Barrels/Day)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2020	2025	2030	2033
Florida	16.2	14.5	11.7	11.9	11.8	12.9	15.7	14.6	13.4	12.0	10.2	11.3	9.8	10.6	10.5	10.4	10.0	9.7	9.0	8.7
Port Everglades Throughput	**3.3**	**3.2**	**3.4**	**3.7**	**3.9**	**3.6**	**2.8**	**2.1**	**1.6**	**1.5**	**1.6**	**1.6**	**1.6**	**1.6**	**1.6**	**1.7**	**1.7**	**1.8**	**1.8**	**1.9**

Crude Oil. Crude oil throughput at the Port is declining. As far as an impact to the Port's total throughput projections, the volumes of crude are not a significant factor. In terms of facility utilization and optimization, however, the declining throughput is important since these volumes will become increasingly smaller, moving primarily by barge, and could reduce the Port's operational efficiency.

Asphalt. PADD-level asphalt demand was allocated to the state level in similar fashion as gasoline and diesel. This relationship was then allocated to the Port Everglades market level, based on per-capita consumption and forecast population growth. The asphalt demand in the 12-county market is somewhat limited, the volumes are small, and most of the supply originates from the U.S. Gulf. Thus, like crude oil, future operational efficiency is more of an issue than the actual throughput volumes.

AVGAS. Avgas demand in Port Everglades is a very small volume. Demand is forecast to remain fairly flat, from 2013 through 2033. Demand for Avgas is expected to fall for PADD I and the U.S. as a whole. In terms of impact on the Port throughput, only about 540 B/D went through the Port in 2013, or 0.2 percent, of the total petroleum; by 2033, only about 380 B/D are projected.

Ethanol. Florida mandated that all gasoline in the state contain 10 percent ethanol by 2010. This required new tanks or tank conversions at the Port, generally from gasoline service. As it is a component of gasoline, ethanol demand growth is projected to follow that of gasoline after the phase-in period is over, with demand increasing just less than 1 percent per year through 2017, before declining at an approximately 0.7 percent rate per year through 2033. Port Everglades did see increased ethanol volumes of approximately 16,000 B/D in 2013, which is around 6.5 percent of the gasoline volumes brought through the Port. The remaining volume is imported into the region via rail and truck.

In 2009, the majority of the ethanol volume moving into the Port was expected to be from the Caribbean and Latin America; however, ethanol production capacity in the U.S. expanded at a rapid pace. Domestic shippers barged ethanol from Gulf Coast refining centers and, in 2013, the majority of ethanol shipments came from domestic sources.

Biodiesel. Biodiesel, which is brought in to blend into the diesel pool, is being shipped in exclusively by Coastal at this time. The Port's throughput is currently about 0.38 percent of the 12-county market's total diesel demand.

Biodiesel is currently received at the Port only by either foreign tanker or domestic barge, with the majority of the volume being delivered via tanker. The U.S. biodiesel production capacity has increased dramatically in the past few years but, as with ethanol, there are many challenges to shipping biodiesel to Florida such as logistical barriers and pricing drivers.

2.4.6 Liquid Bulk Tenant/Stakeholder Interviews

Of the fifteen terminal contacts provided by the Port, eight were interviewed. These were Chevron, ExxonMobil, Motiva, TransMontaigne North, TransMontaigne South, Vecenergy,

South Florida Petroleum Services, and Everglades Pipeline Company. Their comments and views have been summarized and aggregated below.

There are two different classes of terminals at the Port – those owned/operated by major oil companies and those that are third-party operated. The terminals owned by the major companies typically have a much more stable operation, with predictable throughput from their Gulf Coast refineries and dedicated vessels that operate on fairly set schedules. Truck rack operation is mainly to supply their service stations. The third-party terminal operations are much more unpredictable as they are at the mercy of their customer requirements. With a multiplicity of customers, throughput rates, vessel mix, and truck rack usage vary greatly. Demurrage, truck rack congestion, and even operational effects from the Port's deepening/widening project will impact the customers much more so than the third-party terminal operator who is basically the manager of the customer's storage capacity.

Most of the terminal managers expect throughput at their facilities to remain flat overall for the next few years. Jet fuel deliveries are, however, expected to increase with future passenger traffic growth at Miami International Airport. The consensus was that no significant changes are expected in the percentage of deliveries by ship versus by barge. As a group, they also felt the ratio of domestically sourced volumes to foreign volumes would remain about the same. While aware of the Panama Canal expansion, they thought it would have little effect on their operations. Only opportunistic trade volumes will likely move from the Asian market through the Canal to the Gulf Coast and Florida.

While most of the terminal operators have not seen an overall change in demurrage/wait times, they noted the Port needs to get vessels in and out more quickly. Traffic through the Port seems to be very high at times, with long waits to get to the docks, while at other times, traffic is very light with no wait times. Increased demurrage costs have been experienced as a result of both overall port traffic and dock-space congestion. Instances of competition for the same or adjacent berth space have also occurred, with non-petroleum vessels sometimes receiving prioritization over petroleum deliveries. It was suggested that the Port needs to look into a better program for berth utilization.

For the most part, product movement out of the terminals by truck functions well, although the locations of certain exit gates can cause traffic congestion at times. The managers seem to take any congestion problems in stride and see them as a part of the overall Port operation. Gate congestion increases with the cruise ship season.

Most of the terminal managers and especially the third-party operators agreed that there is a trend or preference for bringing in larger vessels to reduce the transportation cost per barrel and to maximize the product delivered per vessel call. While larger vessels are a preference, the reality for some operators is that storage capacity constrains the size of the vessels they can handle, especially during hurricane season when they keep their tanks more than 50 percent full.

Many of the terminal operators voiced concern about the current draft and beam constraints at the berths that handle petroleum products. Market opportunities by some customers are being

missed because of the draft constraints, thus the deepening/widening project is considered beneficial in the long term. On the other hand, a few of the operators that do not expect vessel sizes to increase at their berths, feel their operations will not change significantly when the project is implemented. Most did, however, express concern at a potential disruption in the dock operation during project implementation and hope alternative berths are made available if the current petroleum berths are taken out of service during construction.

2.4.7 Forecast Vessel Calls on Port Everglades

A variety of U.S. and foreign-owned vessels of a wide range of sizes will continue to call at Port Everglades through 2033. These vessels will consist of ocean-going tankers and ocean-going barges (integrated tug-barges, ITBs). The U.S.-owned vessels are subject to the Jones Act requirements. This section summarizes the types of vessels and their size ranges, and provides a projection of the expected number of annual vessel calls from 2013 through 2033.

To establish the basis of vessel calls for facility planning purposes over the forecast period, the consultant team projects that the size characteristics of the four main vessel groups -- foreign tankers, U.S. Jones Act tankers, petroleum barges, and LPG barges -- will remain largely similar to those of the present fleet of vessels calling at the Port between 2000 and 2013. In recent years, focus has shifted from refined products to crude, as refiners attempt to utilize Jones Act tankers to gain access to cost-advantaged feedstock.

The projections of vessel calls provided herein are based on future throughput requirements. They do not, however, include port, berth, and terminal configuration and limitations, e.g., future dredging to increase the water depth in the channel and berths to accept vessels with greater arrival drafts. The planning basis used to project the number of vessel calls does not preclude the possibility for the Port to accommodate larger cargo sizes associated with deep-draft foreign tankers that may call on the Port in the future.

In the earlier part of the century, foreign volumes increased significantly from about 20 percent of total ship volume in 2003 to over 40 percent, as a result of the Oil Pollution Act of 1990 (OPA 90). The Exxon Valdez oil spill eventually led to OPA 90, which requires all tank vessels trading in the U.S. to have double hulls by 2015. OPA 90 also established phase-out dates for single-hulled vessels and age limits for double-hulled tankers at 35 years. As a result, the capacity of the U.S. Jones Act tanker fleet declined as several tankers were forced into retirement. Several new Jones Act tankers have been built and announced for refined product service, which is expected to eventually offset most of the declines to the Jones Act fleet due to OPA 90 regulations.

Domestic tanker calls and volumes are projected to recover through the forecast period, resulting in a slight reduction of foreign vessel calls and volumes.

Tankers.

Vessel Size. The tanker fleet calling on Port Everglades will be made up of tankers mostly in the deadweight (DWT) size range of Handymax 30,000 – 50,000 tonnes with a distribution of smaller and larger vessels similar to the present vessel fleet.

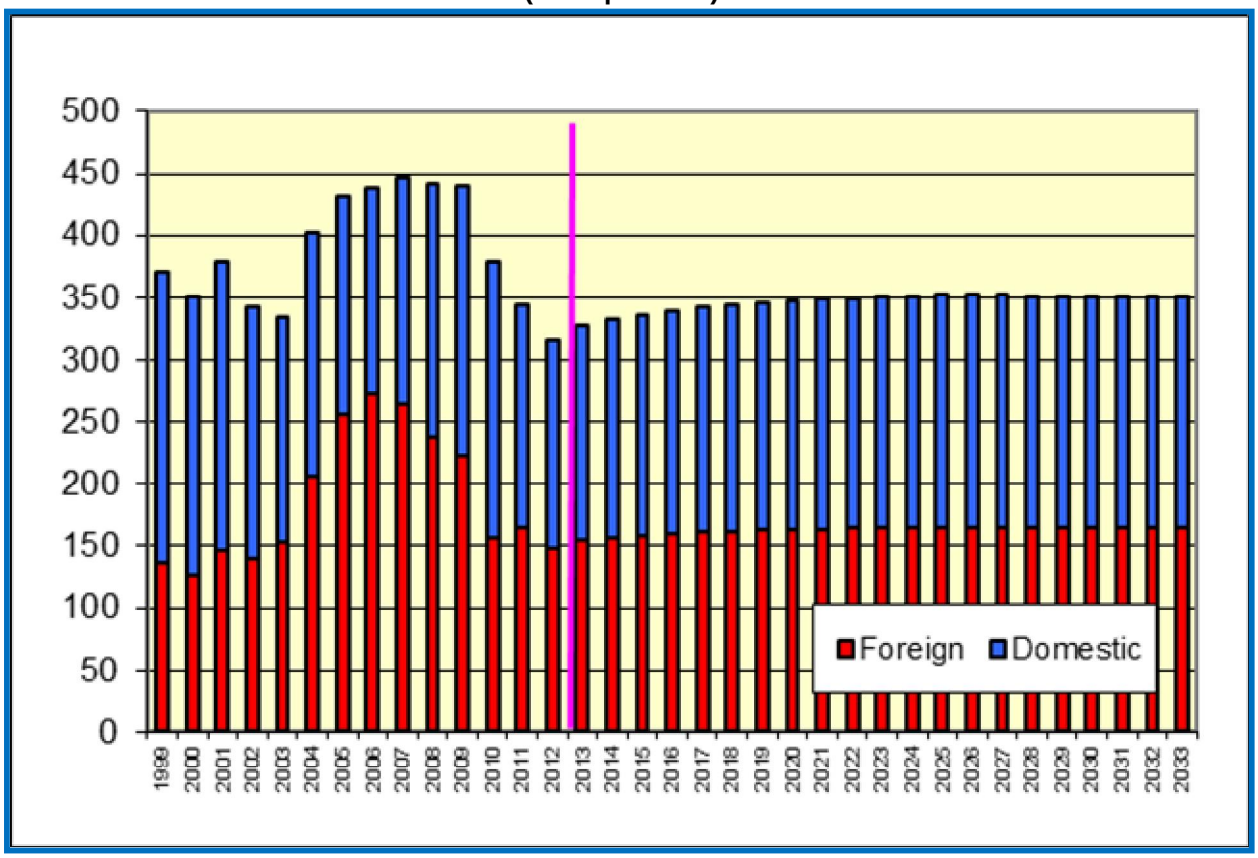
Product Types and Requirements. The tanker fleet will continue to handle the following products; asphalt, fuel oil (#6), two grades of diesel fuel (ultra-low sulfur and low sulfur), two grades of gasoline (regular and premium unleaded), jet fuel, avgas, ethanol and biodiesel. The majority of the tankers (55 percent) will likely be used for a single type of cargo, with the remaining 45 percent likely to carry two to three different cargos (usually diesel, gasoline, and/or jet fuel) onboard. Biofuels and black products (asphalt and fuel oil) will be shipped as a single cargo, using dedicated vessels.

Future Vessel Calls. Reduced product demand, the shutdown of the Hovensa refinery, and increasing competition from Latin America for domestically produced refined products have led to significant declines in tanker calls since 2009. To meet growing product demand in the region served by Port Everglades, the number of domestic tanker calls is expected to increase at an annual average of 0.6 percent through 2025. Then, despite rising throughput, domestic tanker calls are expected to flatten out thorough the forecast period due to reduced supply out of the U.S. Gulf Coast.

Foreign tanker calls have fallen significantly since the Hovensa refinery shutdown. Supply shifted strongly towards barge calls from the U.S. Gulf Coast and other regional terminals such as BORCO. It is expected that the percentage of foreign tanker calls will decrease slightly through the forecast period, after a sharp increase between 1999 and 2008, due to larger vessels and the number of new Jones Act tankers currently planned or being manufactured.

Figure 2.4-13 illustrates the projected number of tanker calls, annually for the period from 1999 to 2033.

Figure 2.4-13
TANKER CALLS AT PORT EVERGLADES
(Calls per Year)



2.4.8 Barges

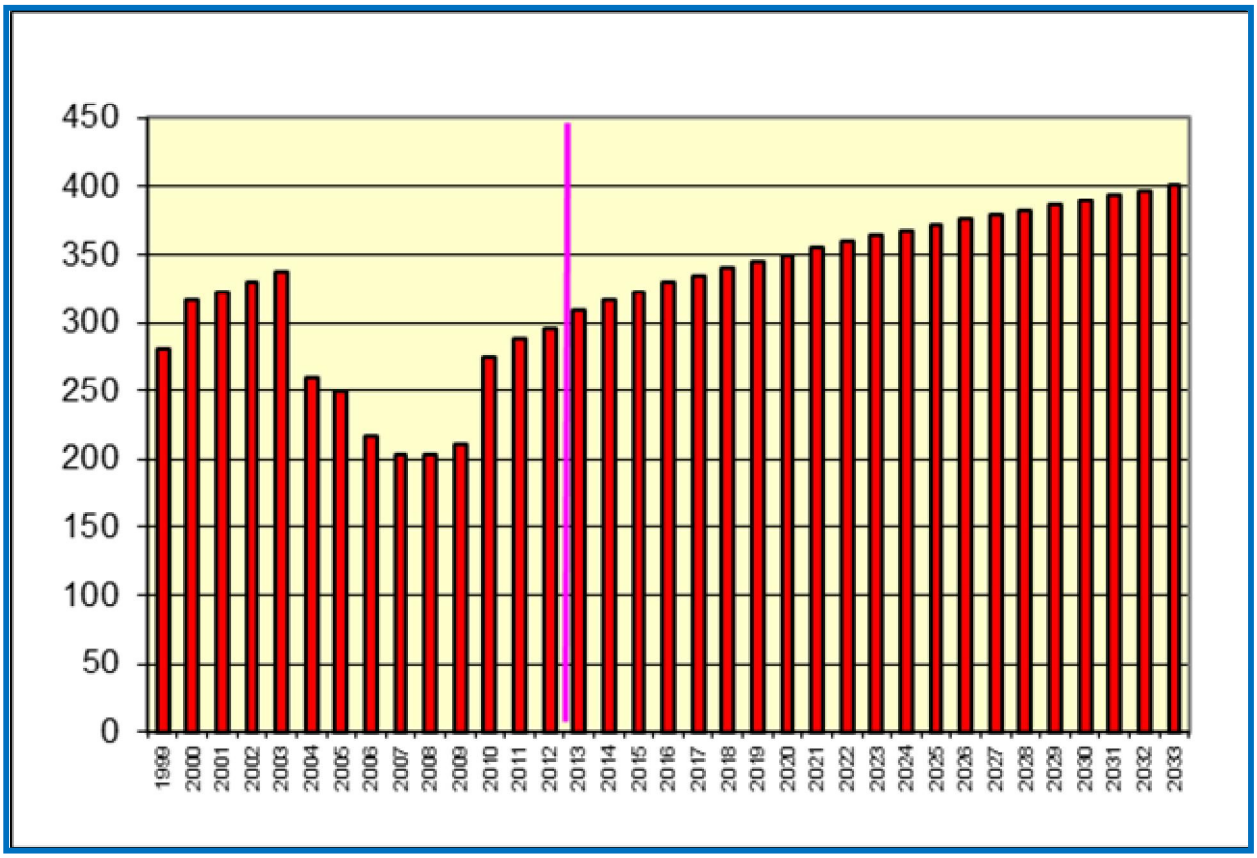
Barges are generally smaller in size, depth requirements, and unloading facilities as compared to ocean-going tankers. These barges are, however, important for short-haul trips. These barges supply products from other U.S. ports and also from the Bahamas.

Vessel Sizes. The barges expected to call at Port Everglades in the future should range in size from 10,000 to 320,000 barrels, with an expected average size of 140,000 barrels.

Product Types and Requirements. The barge fleet is used to handle the full slate of black and clean products. Total barge calls have declined in recent years resulting from the increased use of larger volume ocean-going barges. Barge traffic has increased to meet the increase in Port throughput and replace barrels lost due to the Hovensa and Aruba shutdowns beginning in 2010.

Future Barge Calls. Figure 2.4-14 illustrates the projected number of barge calls per year. Barge calls are expected to continue increasing to meet local demand growth and are expected to reach more than 400 calls by 2033, an increase of 33 percent. The increase in barge calls is primarily driven by the growing petroleum product demand/throughput and greater reliance on domestically sourced product, due to the Hovensa and Aruba refinery shutdowns.

Figure 2.4-14
BARGE CALLS AT PORT EVERGLADES
(Calls per Year)



2.4.9 LPG Vessels

LPG demand in the Florida market, primarily for home heating and cooking, makes the shipping and storage an important consideration for Port Everglades. LPG barges are smaller in size compared to other petroleum product barges.

LPG ship calls to the Port have decreased by over 60 percent since 2005. Dynegy is the only operator bringing propane into the Port and after Hurricane Katrina destroyed their plant in Venice, Louisiana, their supply and, therefore, vessel calls, decreased significantly. Much of their market share has since been taken by C-3, through the Port of Tampa, resulting in the dramatic decrease in barge calls in recent years. Demand resumed a growth trend in 2012 and is expected to continue through the end of the forecast period. Figure 2.4-15 illustrates the projected number of annual calls for LPG movements at the Port.

Figure 2.4-15
LPG BARGES
(Calls per Year)