
TAMPA BAY CRUISE STUDY PRE-FEASIBILITY



Final Report
July 8, 2014

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I EXECUTIVE SUMMARY

The cruise line industry provides extensive economic impacts to the residents and business community throughout the State of Florida. According to Cruise Lines International Association (CLIA) more than USD\$7-Billion was spent in Florida in 2012 by cruise line passengers and crew. The cruise line industry also provides thousands of jobs throughout the State of Florida from its corporate offices (the top 3 cruise lines worldwide are headquartered in South Florida – Carnival Corporation, Royal Caribbean Cruises, Ltd. and Norwegian Cruise Line) as well as jobs in ground transportation, tourism, logistics, food and beverage, etc.

As the birthplace of the modern cruise industry, Florida has long held the distinction of being the number one U.S. cruise state in terms of passenger sailings and economic impacts. In fiscal year 2012, more than 12.5 million cruise passengers sailed from the key Florida homeports of Jacksonville, Tampa, Port Canaveral, Port Miami, Palm Beach, and Port Everglades, while an additional 832,000 port-of-call passengers visited Key West.

To solidify its growth in the global tourism market the cruise line industry is continuing to develop new cruise line vessels to be deployed not just to Florida, but to worldwide ports as well. New cruise vessels capable of carrying more than 5,000 passengers, over 1,200-feet in length, air drafts of more than 180-feet and tonnages exceeding 125,000 have already been deployed into the worldwide market. These larger vessels will most likely become the deployment norm for the North American cruise industry moving forward. Thus, it is essential to understand the current conditions of the cruise infrastructure supporting the industry and those impediments if Florida ports want to maintain its cruise dominance while it competes on a worldwide basis for cruise vessel deployment. In addition to supporting infrastructure, other considerations are taken into account by cruise line decision makers when positioning vessels, as noted in an earlier Florida Department of Transportation (FDOT) study.¹

FDOT commissioned this study to address a key infrastructure issue that will impact cruise line deployment to the Tampa Bay and Florida's west coast region over the mid- to long-term (10 – 25 years). Low bridge clearance as a result of the air-draft height limitation of the Sunshine Skyway Bridge at a maximum of 180-feet does not allow for the larger cruise vessels to utilize the cruise

terminals and support infrastructure developed within Tampa Bay. While this is not unique to Tampa Bay, i.e., Jacksonville has similar issues, this report focuses on Tampa Bay.

As cruise ships have grown in passenger capacity, the air draft of most new ships is now exceeding the height limit of the Sunshine Skyway Bridge at 180-feet. Today, Tampa Bay is a thriving homeport option to several of the major cruise lines. However, as more of the larger air draft ships are built and deployed into the cruise market and the older vessels are withdrawn or redeployed out of the major markets, these vessels will not be able to call on Tampa Bay. The available options are outlined below:

- Do nothing and only receive vessels that fit into the present air draft envelope;
- Build a new port seaward of the bridge; or,
- Replace the Sunshine Skyway Bridge.

For this study, the State of Florida has chosen to develop a work plan to allow for a methodical decision-making process. The Plan can be executed in phases beginning with this Pre-Feasibility Study serving to establish the future cruise traffic for the region taking into consideration the air draft issue and then examining the options available for the Tampa Bay region.

It is important to note that FDOT is not recommending one option over another. Rather this Pre-Feasibility Study attempts to bring the best data together on the current and future projections of the cruise industry impacts on the Tampa Bay region so that the Tampa Bay community can decide which course of action they may wish to pursue. Each of the three alternatives need to be further explored to weigh the feasibility of each. With the exception of the Do Nothing alternative, the environmental community and public will require strong justifications to balance the environmental impact and mitigation with the economic impacts to the Tampa Bay region.

Each of the available options presented has a cost component. The implementation of new facilities will require the implementation of creative modes of moving people and baggage to and from the airport, major highway systems and Tampa's downtown core. Assessing whether or not there are additional uses or combinations of uses for a new development seaward of the bridge will need to be evaluated as part of the overall process. Replacing the existing bridge presents potential issues related to costs, community impacts for a lengthy road closure period and others.

¹ Florida Department of Transportation, Florida's Cruise Industry: A Statewide Perspective, November 2013,

2 WORLDWIDE CRUISE INDUSTRY

Global overview

The cruise industry is a significant contributor to the world's economies with over \$100 billion in economic impact including \$33 billion in global wages. In 2013, an estimated 21.3 million passengers embarked one of over 400 cruise ships and 21.7 million passengers are forecasted for 2014. The cruise industry has consistently grown since 1980 by 7.2% per annum.

The underlying successes of the cruise industry as a whole are detailed below:

- The industry is constrained by ships (supply), not passengers (demand). The delivery of new large capacity vessels with an extended life cycle provides for a compelling growth strategy;
- There is a high level of repeat clientele demand due to satisfaction and the demand for new and different passenger experiences;
- The industry is rapidly expanding in several cruise regions worldwide due to passenger demand and the quest for increased revenue opportunities and lower costs;
- Major deployment factors include:
 - Passenger demand – cruise lines use survey tools, travel agent and passenger feedback as key indicators for future deployment; and,
 - Yields – lines place vessels into itinerary patterns with high demand and lower operating costs to maximize passenger spending per day.
- There are opportunities for ports worldwide to become part of the cruise business. However, there is a cost in the development of infrastructure and support tourism businesses that must be addressed. Return on investment parameters and the ability of ports and cities to provide platforms for a variety of social and economic impacts to the community must be addressed as part of any development opportunity;
- Some cruise brands and consumers see a saturation of traditional ports and regions, which allows for new port opportunities on a worldwide basis. This is further exacerbated by the implementation of costly regulatory and operational costs in some regions;

- The industry is controlled by a handful of US based profitable cruise operators with key players in Europe and Asia;
- Currency exchange rates play a major role in shipbuilding and deployment patterns that define the timing and deployment patterns of cruise brands;
- Weather patterns, consumer demand and cruise line operations have influenced deployments in many regions extending or moving seasonality into non-traditional time slots. This includes new cruise sailings that now include Christmas and holiday sailings in traditionally summer cruise regions, such as the Baltic, as well as year round cruises from New York that depart in the winter for the Bahamas and Caribbean; and,
- The industry has shown itself to be generally recession resistant by controlling and reducing costs, shifting capacity between longer and shorter cruises, developing vessels with more outside cabins, on-board amenities, re-fitting vessels for all year-round cruising in specific regions and allowing for discounting on cabin fares to pick up the potential for on-board revenue spending in order to stay profitable.

Cruise line business model

The industry is supply-led and has formulated a business model to take advantage of its mobility and size. The fundamentals of the cruise industry business model are outlined below:

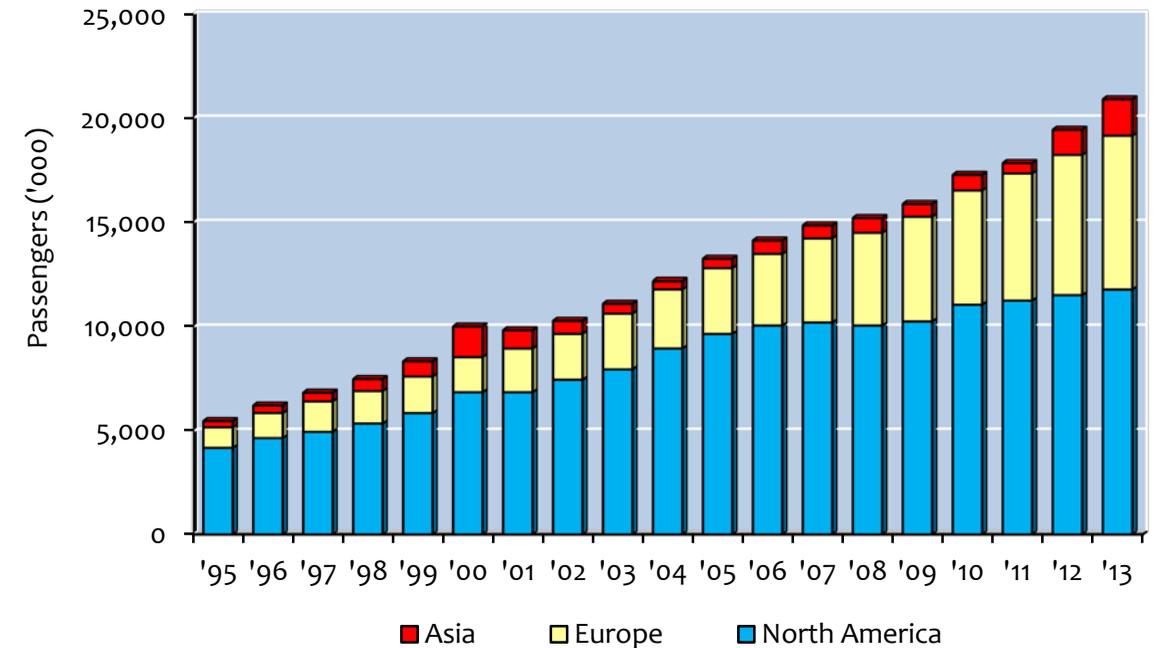
- Control supply and demand through new-builds and vessel deployments;
- Develop cruise itineraries that are easy to sell to cruise consumers (marquee destination with demand), profitable (per diem vs. cost of operations), and Upsell to cruise consumers (provide for strong shore side revenue opportunities). This is accomplished through:
 - Using cruise vessels with a broad appeal to targeted consumer demographic and financial threshold;
 - The appeal of cruise line brands and in many cases individual vessels in a fleet;
 - Creation of cruise itineraries that fit within consumer vacation patterns of 4-day, 5-day, and 7-day patterns;
 - Deployment of cruise vessels close to base cruise consumer groups; and
 - Mix of European and North American and other consumer groups to fill capacity.

- Cabin ticket price is only a portion of the overall revenue possibilities. The lines have also been able to create revenue opportunities on-board and shore-side by developing the following:
 - Varieties of shore excursions catering to many demographics;
 - Destination-oriented deployments;
 - On-board retail options;
 - Unique bar and casino revenue options; and,
 - On-board services such as spa, classes and lecture series, and unusual experiences.
- Control the expense side through balancing the cost of a deployment or destination against the value it produces.

Global Cruise Passenger Growth

Through the use of the above business model, the cruise industry has grown every year. **Figure 1** illustrates the growth of the cruise line industry from 1995 through 2012. As shown, the North American region continues to be the main consumer generating market. However, there has been significant growth in the European market over the past ten years. Asia has maintained a relatively flat growth over the period, but has an unexhausted growth potential due the large population base with fast-growing income streams and the desire to travel abroad and within the vast Asian region. The market share breakdown for 2013 include: the Caribbean region (34.4%) including the Bahamas was the number one cruise destination by way of passenger bed-days (*a formula based upon lower cabin berths x cruise length x sailings*) with the Mediterranean (21.7%) ranking second and Northern Europe (11.1%) third overall. The Australia/New Zealand (5.0%) and Alaska (4.8%) regions round out the top 5 destinations with Asia (3.4%) and South America (3.9%) continuing to grow overall capacity.

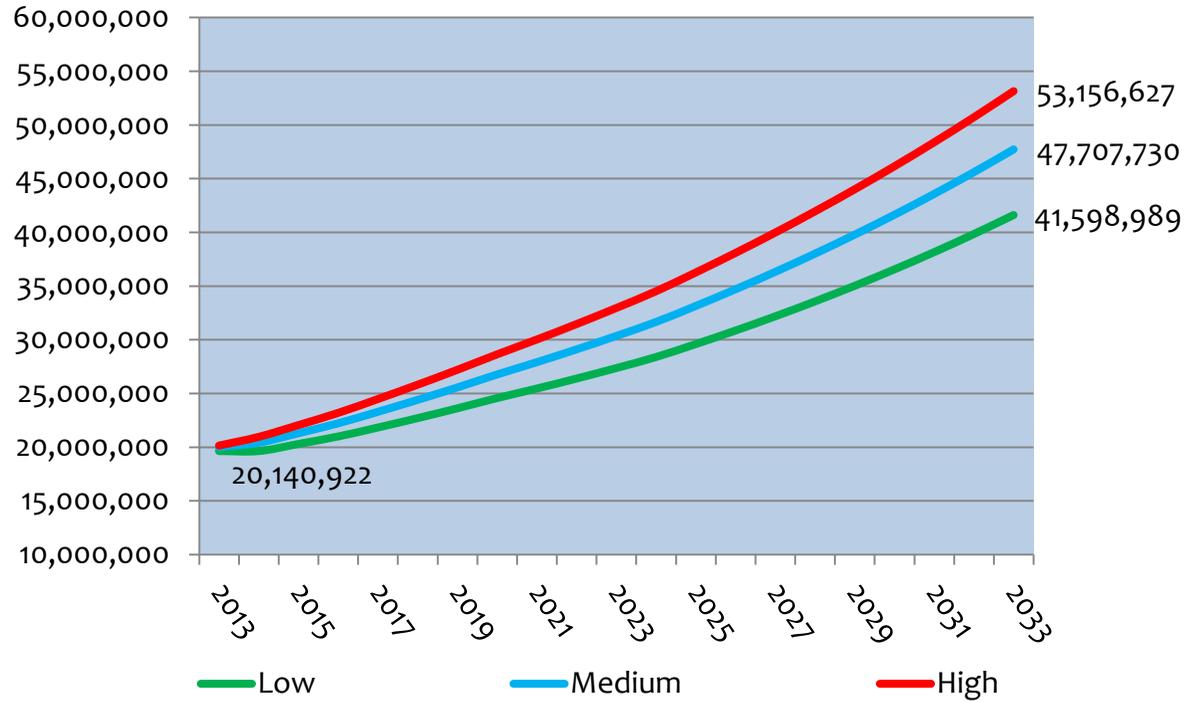
Figure 1: Conventional cruise worldwide and regional expansion, 1995 – 2013



Source: Cruise Industry News Annual

Based upon the additional market supply and factoring a minimal withdrawal factor of 5% to 10%, **Figure 2** shows the potential worldwide passenger growth through 2033 estimated to be between 41 and 53-million passengers. This is a growth factor of approximately 5.6% to 8.2% per annum (consistent with the past growth factor experienced since 1980).

Figure 2: Conventional cruise worldwide growth projections, 2013 – 2033

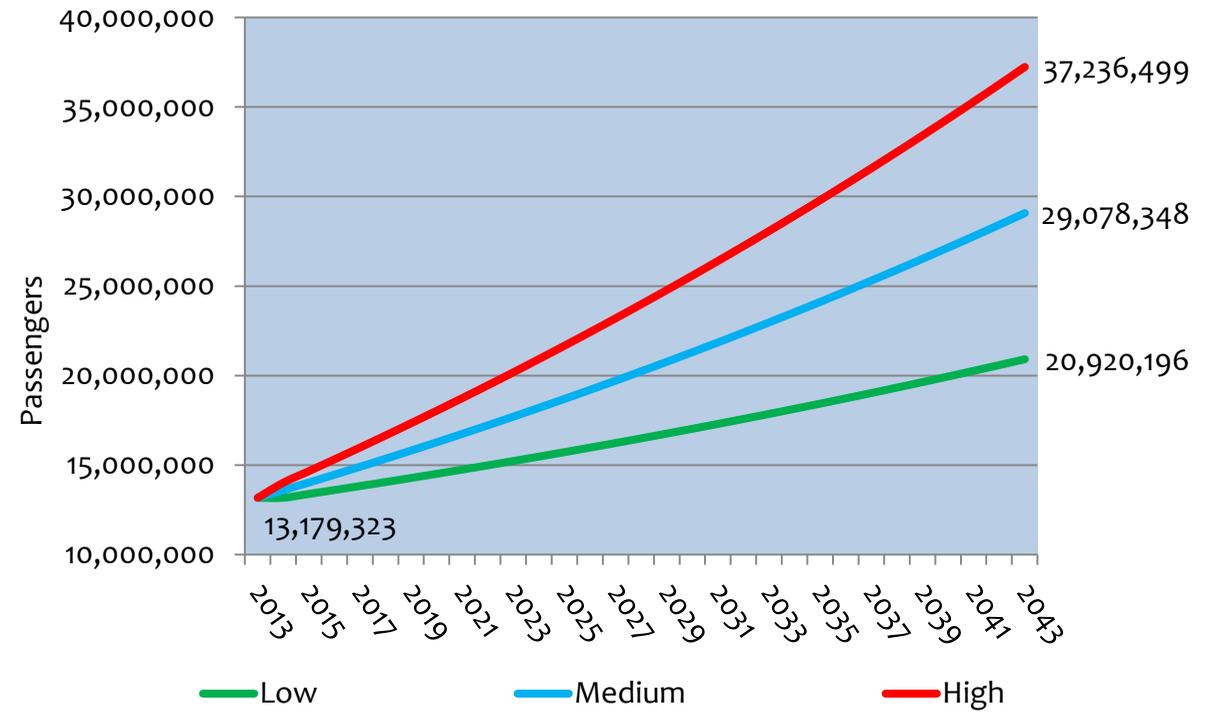


Source: Bermello Ajamil and Partners, Inc.

North American Growth

Based upon the new build delivery orders and those that are destined primarily for the North American market **Figure 3** provides a 30-year growth projection. As shown, growth ranges from 2.0% to 5.9% per annum with a final range of between 20.9 and 37.2-million passengers in 2043.

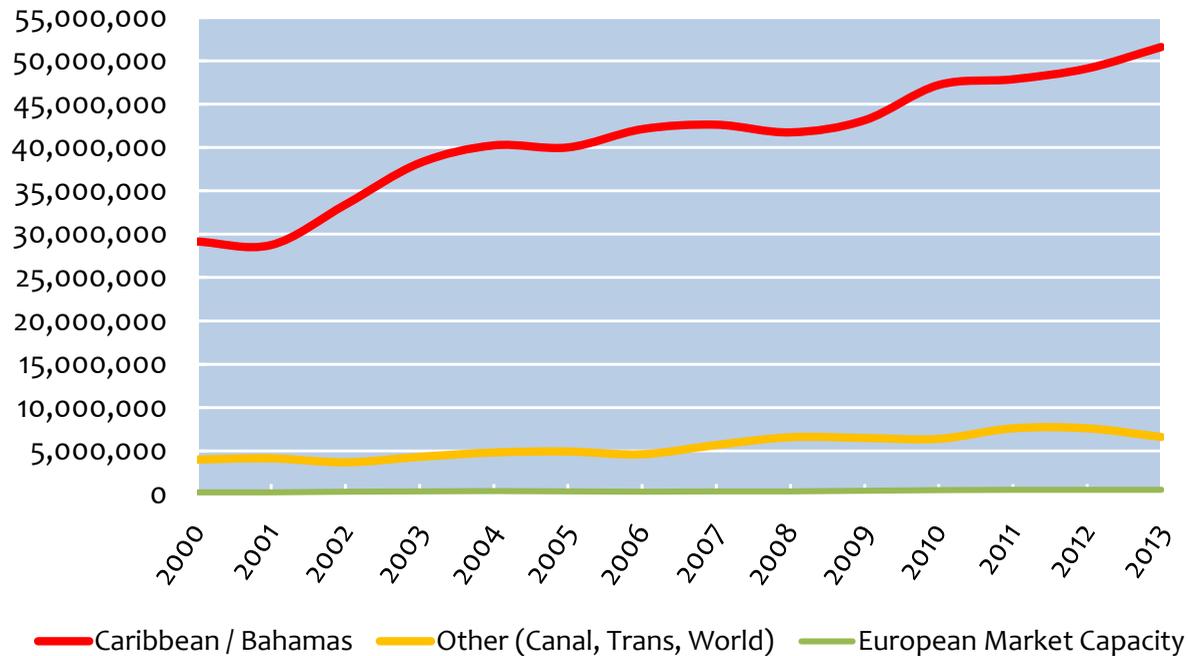
Figure 3: North American Cruise Market Growth Projection, 2013 – 2043



Source: Bermello Ajamil and Partners, Inc.

Figure 4 outlines the key North American Market Capacity Placement. As shown the Caribbean/Bahamas region provides the greatest impact to the marketplace with smaller contributions from Panama Canal, Trans-Atlantic and world sailings. Additionally, these markets are also fed by the European consumer market as it grows and begins to spread further out as their consumer demands additional itinerary options outside of the current arena.

Figure 4: North American Cruise Key Capacity Placement, 2001 – 2012



Source: Cruise Industry News Annual

The success of the Caribbean/Bahamas region is based on a series of factors including growth opportunities and constraints and traffic influences. Growth factors include the following:

- Operators are continuing trends toward US and key Caribbean homeports:
 - To reach drive consumer markets (limited market supply); and,
 - To reach lower Caribbean / Central America cruise region (via deployment).
- Carnival controls majority of all beds in the region (60%):
 - Norwegian Cruise Line is focusing on the US market - expanding their presence and Caribbean foothold focus; and,
 - RCI is moving small ships out of the region in favor of larger ships with international leanings (50%).
- Consumer demand - value for money;
- The world economy is growing shorter cruises;
 - Boosting short haul Bahamas / Caribbean / Private Island combinations.

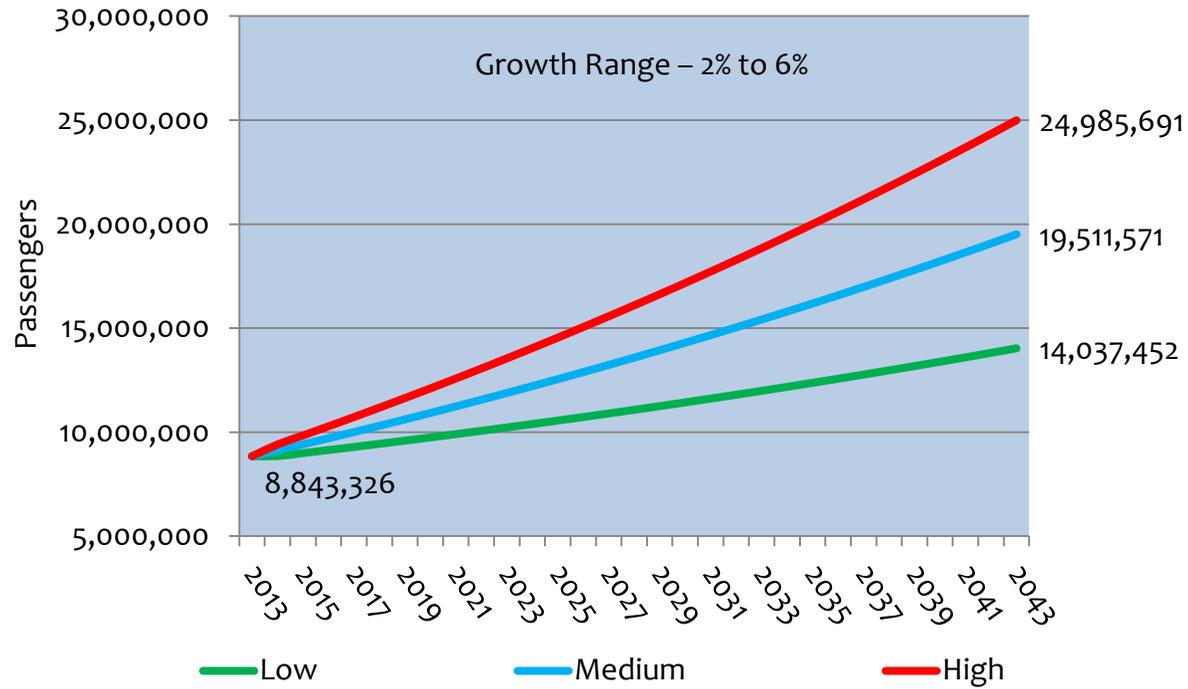
- Poor Bahamas infrastructure and services are impacting passengers / line deployment.

The factors influencing the regional traffic are:

- **Homeland Market:** Homeports along the Atlantic and Gulf Coasts have opened key drive markets for cruise lines:
 - Feedback indicates these are limited in scope (primarily due to the balance of per diem vs. operational costs).
- **Demographic Target Markets:** Northeast and Southeast regions provide an overall disproportionate volume of cruisers overall to the region;
- **4- to 7-day Cruise Product:** The ability of ships to reach lower Caribbean and Bahamas has changed deployments and enhanced the opportunities for new homeports outside of the primary South Florida region that once served the Caribbean and Bahamas market;
- **Seasonality of US East Coast Region:** US Northeast coast ports are used for year-round cruising. They can also then reach out to a broader consumer market that does not need to rely on airlift;
- **Airlift:** Essentially taken out of the mix with deployment offerings that are close to home. Cruisers are willing to drive from 4 to 6 hours and in many cases we are seeing overnight travel to cruise ports;
- **Vessel Size/Capacity:** Infrastructure and ability to service large cruise vessels are a critical factor for long-term success for any homeport and port of call in the region (downstream ports have product issues that must be solved into the mid-term to allow for continued growth).

Based upon the past success and potential growth opportunities for the Caribbean/Bahamas region **Figure 5** outlines the projections through 2043. As shown, growth is anticipated between 2.0% and 6.0% per annum over the period. This includes the addition of European and Asian consumers.

Figure 5: Caribbean and Bahamas Growth Projections, 2013 – 2043



Source: Bermello Ajamil and Partners, Inc.

Cruise Line Deployment Drivers

Table 1 outlines a number of cruise line drivers that in many cases become challenges for destinations on a regional or port basis. These are separated into four distinct areas. Each is important, but it is necessary to address each of these key components in order to meet the needs and expectations of the cruise industry over the long-term from a deployment and infrastructure perspective. Marketing and Sales is the key deployment driver. Deployment is based upon consumer awareness and demand. Marine operations also play a key role in ensuring the itinerary pattern routing and ports provide a safe and secure environment for the cruise vessel asset.

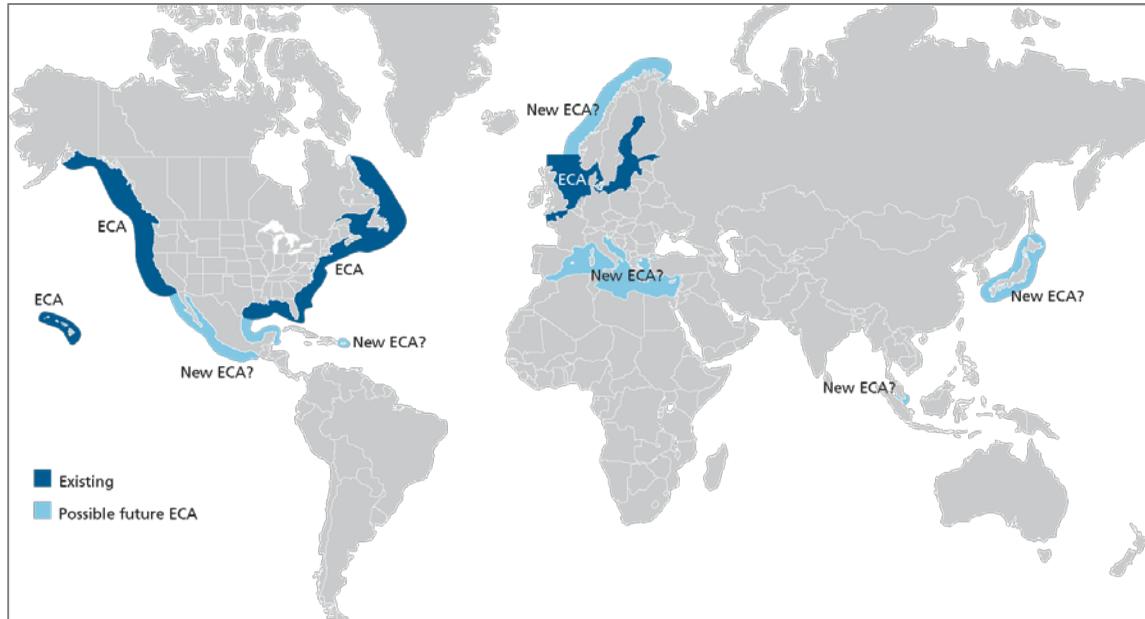
Table 1: Destination challenges: Cruise line needs

• Marketing and Sales	• Marine Operations
<ul style="list-style-type: none"> • Consumer awareness and education • Access to consumers – sales chains • Marketability for the consumer • Fit with cruise brand philosophies • Fit with consumer holiday patterns 	<ul style="list-style-type: none"> • Marine navigation and access • Security • Berth, apron and terminal features • Ground transportation areas • Provisioning
<ul style="list-style-type: none"> • Landside – coach and guide needs • Airlift – capacity and cost • Lodging – capacity and cost • Consumer product satisfaction • Destination venue capacities 	<ul style="list-style-type: none"> • Port charges • Labor, fuel and other operating costs • Regulatory and environmental issues • Maritime law • ECA and European Union Environ. laws
• Logistics, Air and Shore Excursions	• Finance and Legal

Source: Bermello Ajamil and Partners, Inc.

Other key issues that have and will continue to affect the cruise industry over the mid-term will be the full implementation of Emission Control Areas (ECAs) throughout the Baltic, Northern Europe, and the perimeter of North America with possible extension in the future to other regions such as the Mediterranean, as shown in Figure 6. The costs to the industry in terms of fuel, monitoring and on-board emission systems are still being contemplated.

Figure 6: Current and Potential Emission Control Areas (ECAs) Worldwide



Source: DNV-GL as sourced by International Maritime Association

Cruise vessel trends and new-build program

Cruise operators have been highly successful in introducing new vessel inventory and developing on-board products that generate sustained interest in cruising. Cruise brands continually work to improve the quality and quantity of on-board experiences with more diverse food and beverage venues, entertainment and deck activities, meeting and conference facilities and recreation areas.

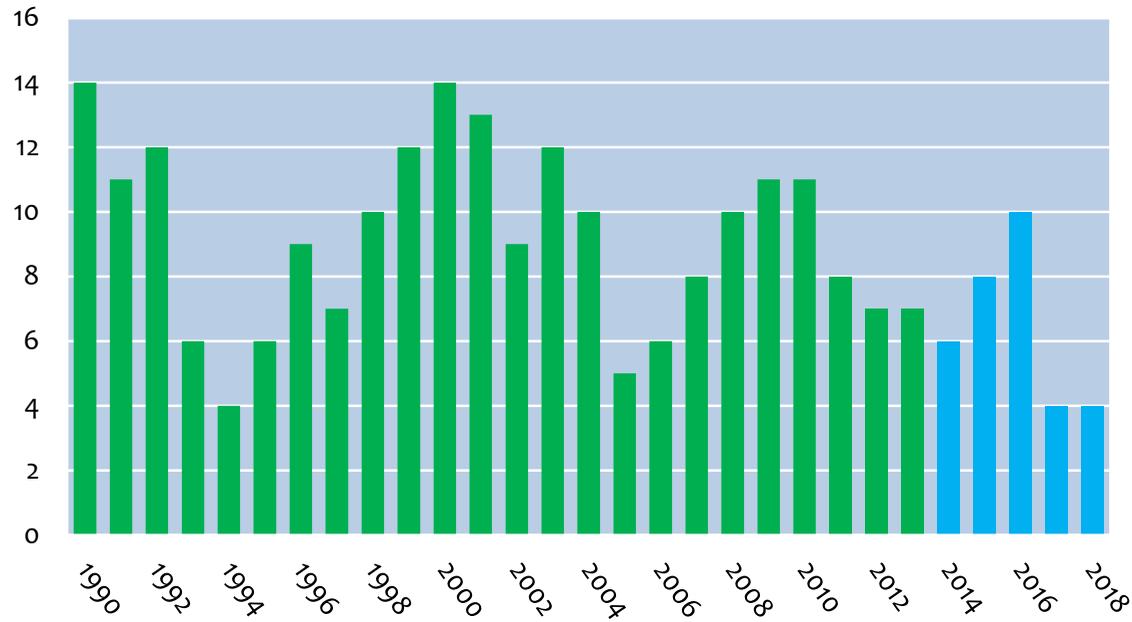
Responding to cruise passenger demand, cruise operators continue to order new vessels, although at a more restrained pace than observed at the peak of vessel orders in the late 1990s through the mid-2000s. Amongst their primary efforts is the creation of larger and more lavish vessels furnished with veranda-style outside cabins, grand central atriums, health spas and other amenities found in the best land-based resorts. This trend became the norm in the mid-1990s and has continued as cruise brands introduce innovative products and services on the newest vessels to further differentiate themselves from the competition and generate renewed public interest in cruising. Consumers generally meet each new vessel launch with enthusiasm, and ultimately, increased passenger bookings.

For each of the homeports to remain competitive in the cruise marketplace into the future and be able to fully accommodate the future generation of cruise vessels, current and future berth, terminal facilities and upland support areas and impediments such as channels, bridges and power lines will need to accommodate these larger cruise vessels. To forecast these future facility requirements and passenger throughput, it is important to take into account the trends in ship construction and deployment.

- More than 70% of the vessels delivered or on order since 2009 exceed the 120,000-GT mark, with this number increasing annually. The length overall (LOA), breadth, and air drafts of the new build vessels are increasing. In the Appendix of the study (Cruise Design Vessel Outlook) there is an extensive review and assessment of the growth of the modern cruise vessel with specific analysis related to the air draft of the newer ships.
- As of December 2013, there were 26 new cruise vessels on order and scheduled for delivery over the next five years (2014 through 2018). **Figure 7** below shows the cruise vessel new build deliveries from 1990 through 2018.

This supply propels the industry forward. There are established trends within the delivery pattern that coincide with the industry utilizing deliveries as a tool to control demand and pricing. Cruise line vessel orders are also affected by exchange rates and shipyard dry-dock / wet-dock slot availability in the limited number of yards that build these high quality vessels.

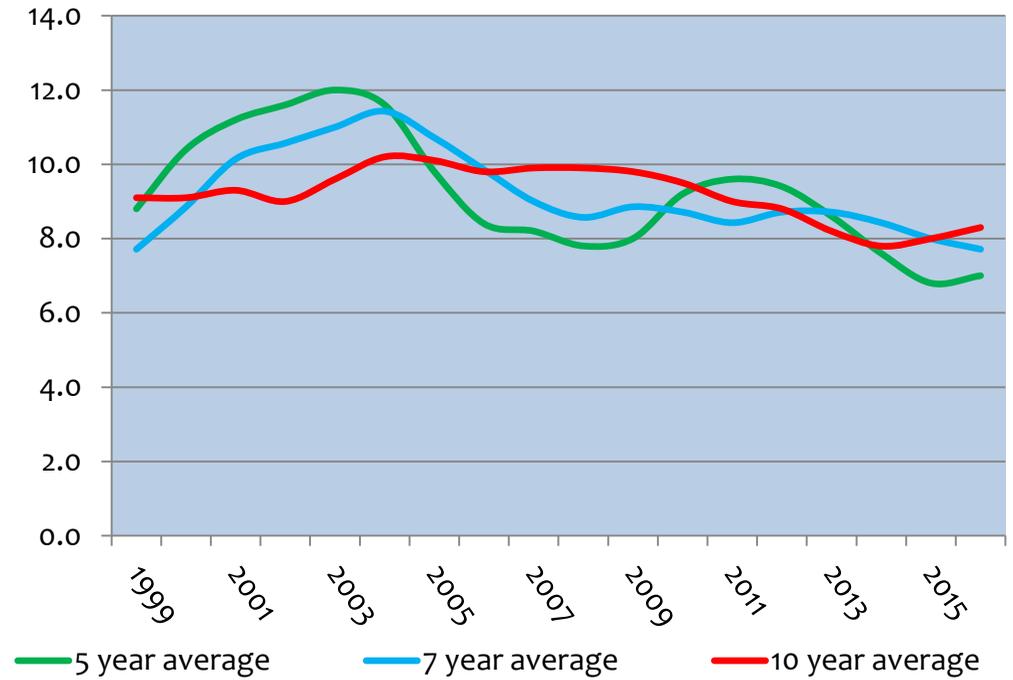
Figure 7: Conventional cruise vessel deliveries and on order, 1990 – 2018



Source: Bermello Ajamil and Partners, Inc.

Figure 8 shows the average per year ship deliveries on a 5, 7 and 10 year averages. It is clear that over a ten-year average ships are delivered at a pace between 8 to 10 ships per year.

Figure 8: Average ship deliveries, 1999 – 2016



Source: Bermello Ajamil and Partners, Inc.

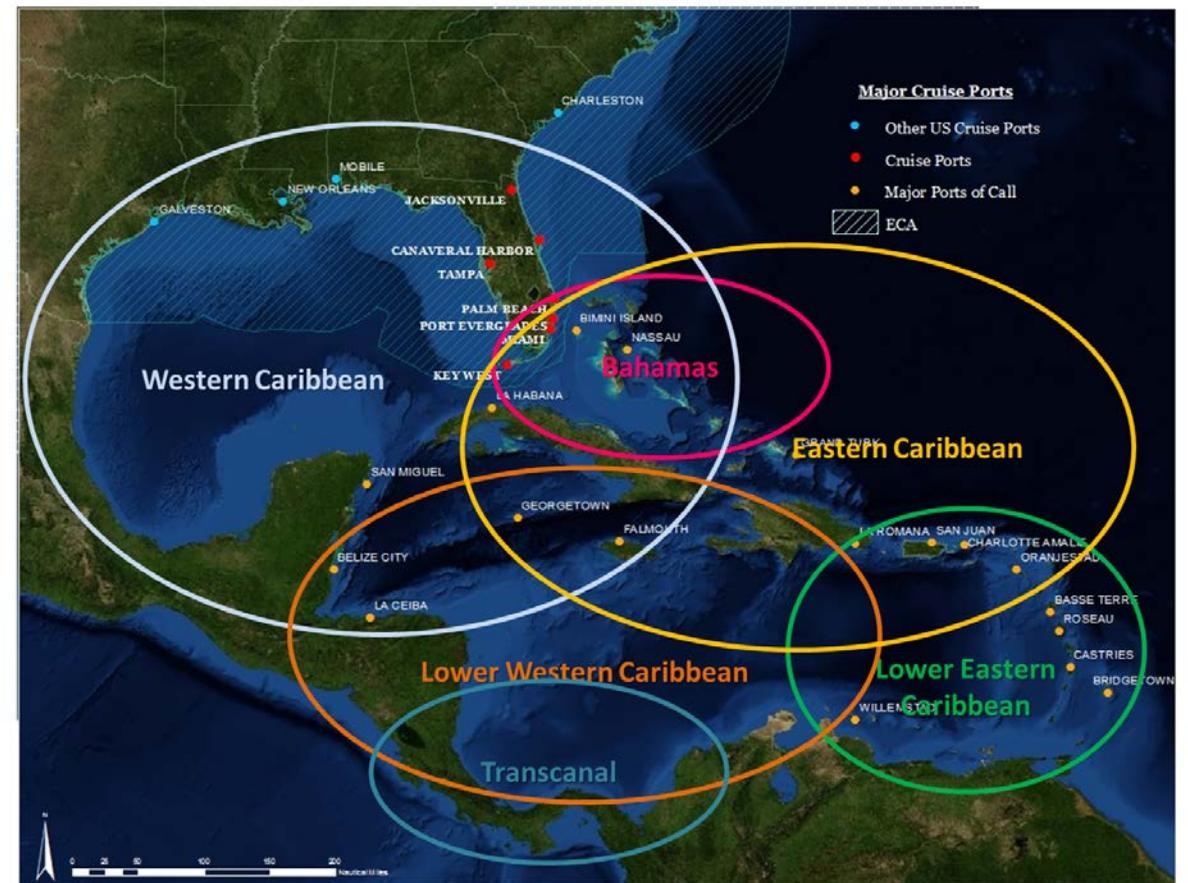
The cyclical nature of shipbuilding is driven by economics, shipyard competition, cost of capital, availability of government support or subsidies and consumer demand. Most of these factors are external to passenger issues.

3 TAMPA BAY CRUISE BUSINESS AND OUTLOOK



Today, Tampa Bay hosts several of the major cruise lines for homeport operations in the downtown core of Tampa at three state-of-the-industry and full-service terminals. To transit into Tampa Bay the vessels must pass under the Sunshine Skyway Bridge which has an air draft restriction of 180 feet. The terminals are accessed once in the Bay via the Sparkman Channel which also restricts the ships' length overall (LOA) to 965 feet.

In Fiscal Year 2013, Tampa hosted some 826,000 cruise passengers on 179 cruise calls. It is anticipated that in 2014 almost 1.1-million cruise passengers will sail from Tampa Bay on 239 cruises. The primary cruise region for service is the Caribbean, particularly the Western Caribbean for Tampa Bay, due to speed and distance from its geographic location. However as noted above, Tampa Bay can also serve as a homeport on sailings for other Lower Caribbean, Transcanal, Trans-Atlantic, and repositioning cruises. Cruises from Tampa range from 4-, 5- and 7-days plus, primarily sailing to Western Caribbean destinations. The North American consumer is the primary passenger. The map below provides the historical reference for the primary North American cruise market growth that has propelled the industry forward to date and is the primary Tampa Bay market base.



Below are some of the typical itinerary patterns that sail from the Tampa Bay region.



From Tampa Bay the primary port offerings are found in the Western Caribbean with the marquee ports of Cozumel, Grand Cayman and Key West; private destinations of Mahogany Bay and Costa Maya; and, the newer port options in the region of Belize, Guatemala and Roatan (where Mahogany Bay is the private Carnival Corporation port).

Tampa Bay's Fit in the Cruise Regional Market

Tampa Bay's strength in terms of strategic fit is to serve as a Caribbean homeport for regional cruise deployments. These are primarily Western Caribbean sailings due to speed and distance issues. Longer sailings of 7-days or longer can reach lower into the Caribbean region. However, cruise lines would then

typically deploy to an alternative Florida or other homeport to serve this market deployment. **Table 2** provides an overview of the fit.

Table 2: Tampa Bay cruise fit

Target Cruise Sectors	Homeport
Western Caribbean	↑
Eastern Caribbean	■
Southern Caribbean	■ / ↑
Canal & Repositioning	■ / ↑
Bahamas	↓

Key: Strong (↑), Fair (■), Weak (↓)

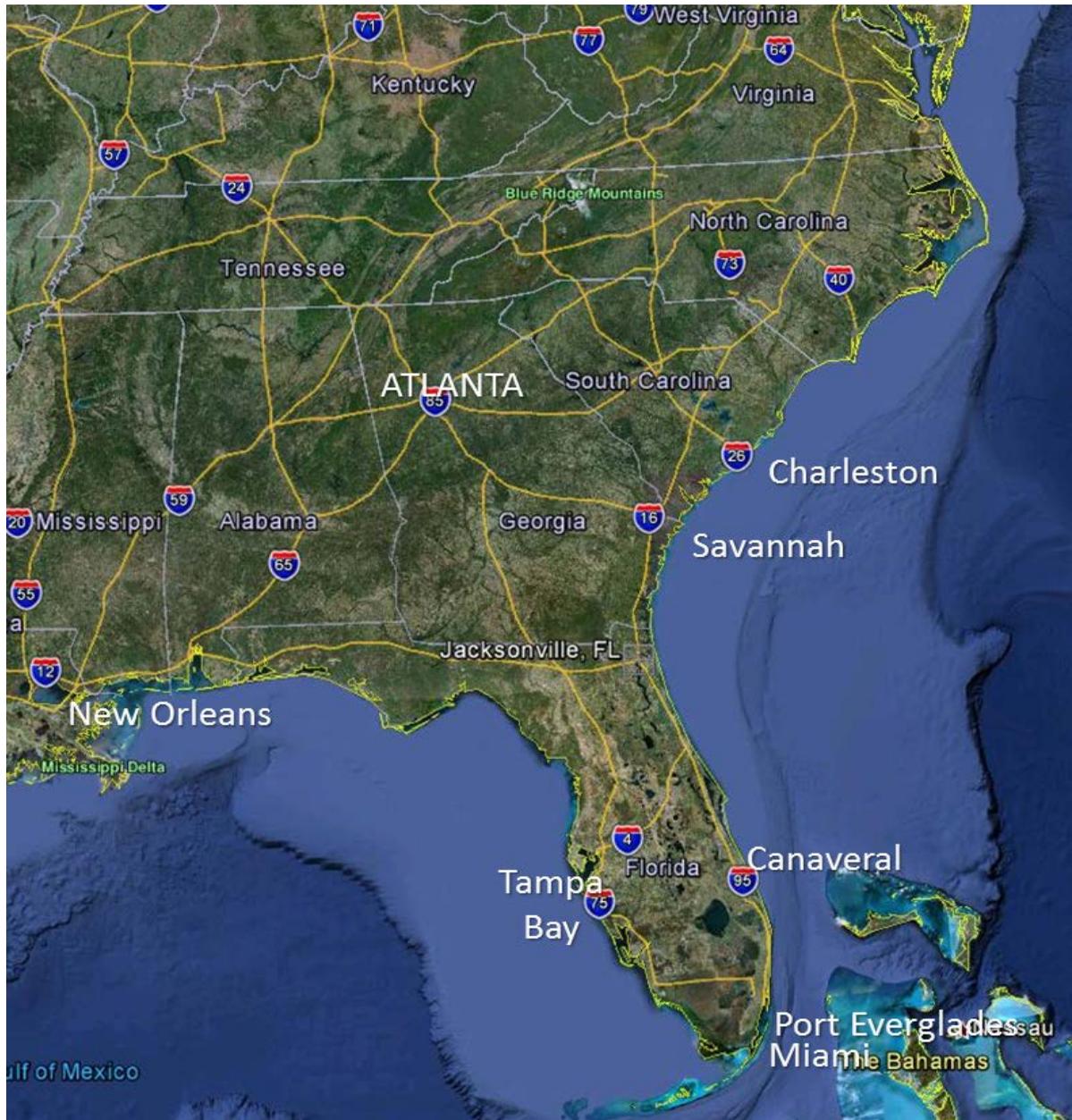
Source: Bermello Ajamil and Partners, Inc.

Regional Competitor Ports

For Tampa Bay the primary competitor for cruise passenger traffic is New Orleans with secondary competitors in the Gulf region being Mobile, Houston and Galveston. This is mainly due to the similar itinerary patterns offered from these ports to the western Caribbean and Mexican ports of call. Jacksonville is also a secondary competitor for cruise traffic, but this is due to the similar cruise consumer catchment area of the greater southeast US region including Georgia, Alabama and the Carolinas. However, Jacksonville cannot offer itineraries to the western Caribbean due to its geographic location. Jacksonville's main itinerary offerings include the Bahamas and eastern Caribbean.

Due to its geographic location, consumer draw and bridge impediments, Tampa Bay homeport options are viewed as a secondary deployment market for the cruise line industry in Florida. Port Canaveral, Port Miami and Port Everglades are the primary homeports providing drive-in and fly-in options for cruise consumers and itinerary patterns throughout the Bahamas, Caribbean, and other destinations.

There are limited port-of-call opportunities due to Tampa Bay's geographic location. Each of the Florida homeports taps into the primary core southeast target consumer market to varying degrees. The southeast drive market is very active in Florida and provides the primary traffic for Tampa Bay cruise tourism.

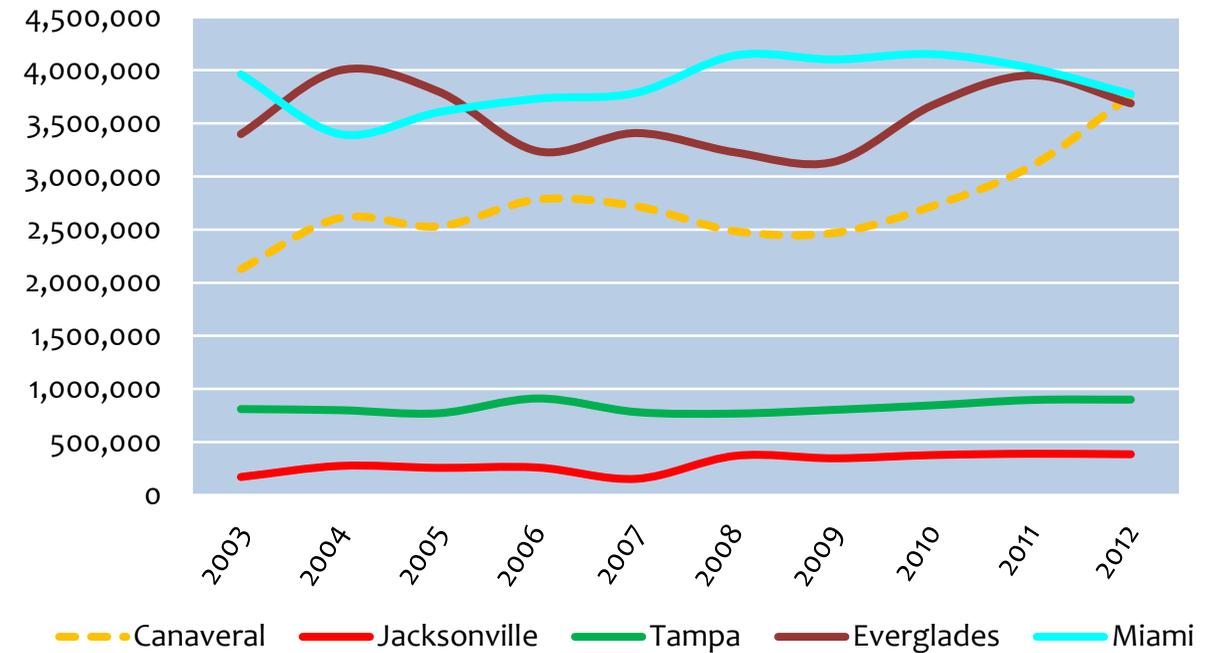


This consumer catchment is also shared with New Orleans, Mobile, Jacksonville and Charleston. However, as illustrated above, these ports provide homeport options that do vary from Tampa Bay in terms of itinerary patterns.

At present neither Tampa Bay nor Jacksonville has the ability to homeport the large cruise vessels in the world cruise fleet due to air draft issues at each port (bridge(s) and power lines).

Figure 9 shows that Port Canaveral, Port Miami and Port Everglades provide for the majority of the traffic from Florida ports within the competitive sphere of Tampa Bay. Tampa and Jacksonville are more regional in nature and cater to a smaller cruise consumer market overall.

Figure 9: Competitive Port Passenger Throughput, 2003 – 2012, not including day sailings



Source: Ports listed and Bermello Ajamil and Partners, Inc.

Cruise Line Decision-Maker Feedback

As part of the study process cruise line decision makers were asked to provide feedback on the Tampa Bay issues. All of the major North American Cruise operators provided input via interview or e-mail questionnaire. The feedback is found below:

- Tampa is a big city and airport with some appeal;
 - Canaveral is closer to Orlando and has a larger airport – coupled with the investments made it makes for a better (deployment) choice;
- Tampa Bay marine transit is more difficult (in comparison to competing regional ports);
 - 4 hours, one way traffic and 340-meter channel;
- Downstream ports of Belize and Roatan are not big enough to start a new market;
- Tampa Bay is restricted by a lack of itinerary options;
- In 10-years the fleet will start exceeding air draft restrictions (for Tampa Bay);
- Over the next few years there will be no smaller ships left;
- There is a strong market potential to grow (Tampa Bay);
 - Replacing vessels with larger ships (is the mechanism); and,
 - Drive market focused – Tampa Bay is isolated with a small percentage fly market;
- Prefer Tampa Bay over New Orleans;
 - Stronger geographic positions (5 hours shorter with lower fuel percent cost); and,
 - Galveston would cannibalize region with deployments;
- Likely (traffic) has peaked in Tampa;
 - Limiting own growth keeps demand up;
 - Strong drive market; and,
 - Do not see huge future demand for deployments to Tampa Bay;
- Tampa Bay's issue is where to take the ship;
 - Needs creative itineraries;
- If they build for larger ships they will get the business;
 - We would likely guarantee vessels to port for expansion;
- Continuation of 1 vessel in Tampa into the next 3 years;
 - Sooner or later vessel(s) will need to be replaced as they are closing in on the end of life for ship at 25 years; and,
 - Vessel air draft similar to today long-term (pinnacle class);
- Tampa Bay may be the lowest yielding market in Florida;
- Tampa Bay is doing well as compared to Canaveral;
 - Better passenger spend;
- Line is destination focused, thus concentrating on the lower Caribbean deployments;
 - May look for new homeport if there is congestion; and,
 - Have not studied Tampa's source market;
- There is a familiarity and comfort with FLL (Port Everglades);
 - Easy access for selected itinerary types; and,
 - Disadvantage is that they are always the same;
- Large ships are the future;
 - Small ships will soon be the Grand class.

Cruise Line Homeport Logistics

If a new homeport were to be built seaward of the Sunshine Skyway Bridge, there would be significant cost savings for cruise lines based upon their feedback. A cruise facility on the seaward side of the bridge would reduce sailing time by approximately 4 hours, thus saving fuel. Cruise vessels must sail down the channel from the bridge to and from Channelside in downtown Tampa where the primary cruise terminals are currently located. Providing an option that would not require vessels to transit the channel would also be safer for all ships in that it would remove one-way traffic from the ship channel.

A seaward cruise facility option would also improve the speed and distance ratio (lower fuel consumption) for vessels sailing on itinerary patterns from Tampa Bay. This additional time on an

itinerary pattern (4 hours saved by not having to transit the channel) would not necessarily provide for new ports from Tampa Bay. However, this time could reduce speeds to downstream ports of call or could be used to provide additional time in these ports that could then be used create additional revenue opportunities such as more shore excursion options; more shore excursion departures; or, more time in port to shop at retail stores promoted by the cruise lines.

A cruise facility created on the seaward side of the bridge (outside of downtown Tampa) would also create a number of issues for cruise line logistics. There is a longer distance for supply trucks and service vehicles to travel from the current highway corridors; longer commutes for facility staff, stevedores and Customs and Border Protection (CBP) personnel; and, it is a longer distance from the airport, downtown core, major hotels, etc. Based on cruise line feedback these challenges would not provide unique or costly challenges to the cruise lines that are deployed to Tampa Bay. Thus, it would not be a negative determining factor as to cruise line deployments to Tampa.

Projections

The projections shown herein are used as the baseline to determine Tampa Bay’s future cruise demand. The cruise projections assess the current industry trends impacting future cruise passenger and vessel throughput over a 30-year planning period (FY2013 – FY2043). This assessment of one of the primary revenue drivers identifies global and regional market trends that impact potential levels of traffic.

As it relates to cruise traffic, the projections are based upon an examination of Tampa Bay’s existing position in world and regional cruise deployments, levels and types of cruise operations, and overall traffic patterns based on the most probable range of passenger (first) and vessel (second) throughput. The assessment includes the growth analysis of the regional future trends for the Caribbean and Bahamas regions and other deployments that may impact Tampa Bay.

It is difficult to project the cruise lines’ growth for a region or Port over the mid-term (3 to 5 years) as for the most part lines themselves rarely know their deployment outside of this time period due to outside forces and market trends. To project out over a 30-year period is especially difficult and filled with numerous assumptions. However, this exercise does provide a perspective of the potential market over the period should all of the fundamentals be maintained in the industry and region.

Projections anticipate that the cruise industry will continue to follow fundamental positive trends. The methods and various assumptions incorporate the best interpretation of demand and supply conditions

in the marketplace. Projections are un-constrained in nature and do not take into account the potential berth capacity, utilization or other limiting factors of Tampa Bay or downstream ports. There are several factors that have been considered in contemplating the projections shown. The projection models used include:

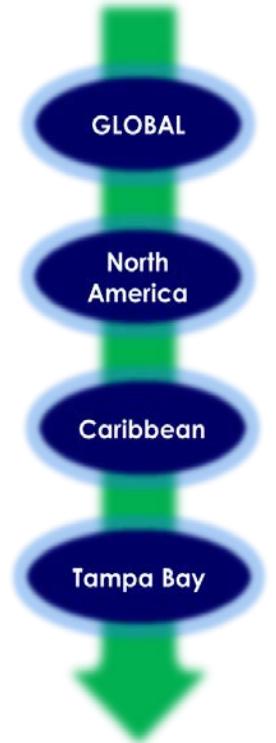
- Trend regression that is a basic test and is based upon past success;
- Market capture based upon past achievements in gaining market share in the primary markets (Caribbean) that impacts Tampa Bay. This is a direct competitive look at the market; and,
- Scenarios based on cruise line trends and opportunities. These are the key for Tampa Bay in assembling scenarios that are actionable due to the opportunities associated with additional traffic growth. They include two constrained and one unconstrained approach.

The methodology, shown in the adjacent figure, is as follows:

- Understanding of Global forecasts;
- Market capture of North America (primarily for Tampa Bay);
- Market share of key market deployments; and,
 - Caribbean, etc.;
- Market share to Tampa Bay;
 - Homeport options; and,
 - Expansion or contraction due to the Sunshine Skyway Bridge impact, ECAs and global position.

Key projection factors for Tampa Bay include the following elements:

- Impact of the Sunshine Skyway Bridge height limitations or non-constrained picture;
- Caribbean market growth – where is it long-term?;
- Opportunities to expand air traffic access to Tampa Bay region and rely less on the drive-to market for cruise growth;
- Competition and deployment splits;
- North American (SE) and future European and Asian consumer desire;
- Cruise duration (shorter or longer sailings into the long-term?); and,



- Cruise season extension for Tampa Bay beyond the peak seasonality.

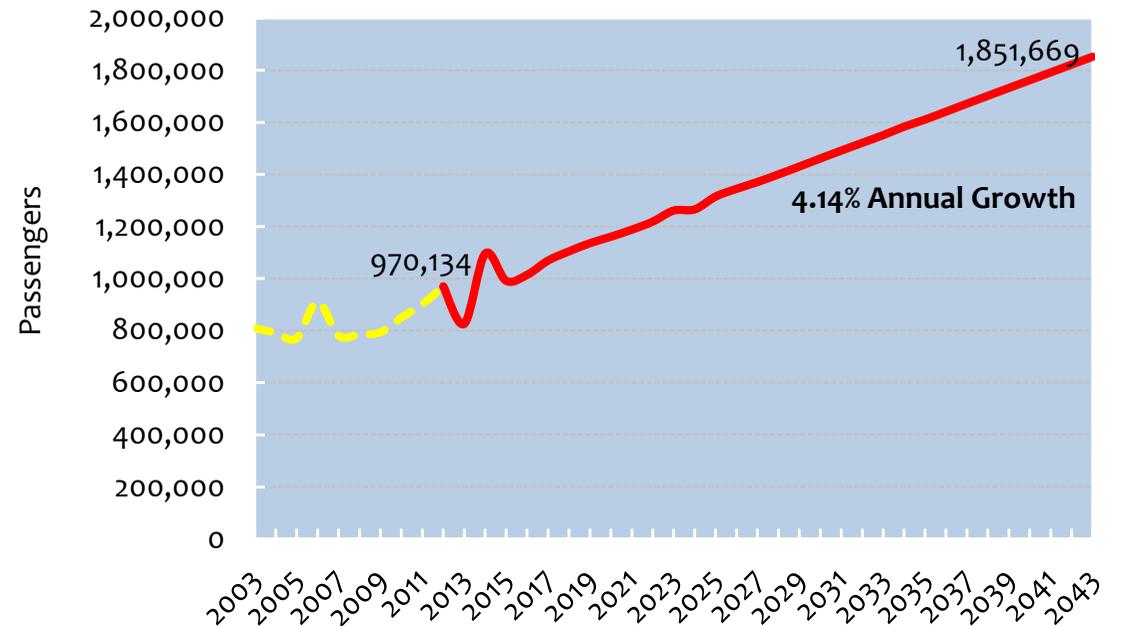
Past trends of the region were used to estimate future capture levels based on cruise offerings as seen in **Figure 5** on page 6 in the previous section, which make up the identified key patterns feeding cruise passengers to the region and potentially to Tampa Bay into the future. An estimated capture rate was developed for the overall North American cruise passenger projections based upon a historical analysis and future assumptions for growth including worldwide growth projections, impact of ECAs and other competitive factors.

It is assumed that the region will maintain a stable base for cruise operations with fluctuations due to the implementation of policies related to ECAs. These projections were developed irrespective of facility use. Projections were done for a 30-year baseline term.

Projection approach 1 – Natural Growth (Trend Regression)

Figure 10 is a trend progression model based on historical events to project future throughput. This model is basic and used as a guideline. The annual growth is 4.14% with approximately 1.8 million passengers in FY2043 on 287 cruise calls. The average annual growth rate from 2003 – 2013 was .19%. There is a substantial cruise passenger increase in FY2014 that pushes capacity past the 1-million mark. However, the 4.14% growth rate is unlikely over the long-term with the current constraints.

Figure 10: Tampa Bay natural growth passenger projection, 2003 – 2043



Source: Bermello Ajamil and Partners, Inc.

Projection approach 2 – Market Capture

The market capture approach is based upon Tampa Bay’s past track record for capturing a percentage of all passengers in the region. An assumption is then made as to the future ability to capture a percentage of the overall market over the 30-year projection period. Tampa’s historical cruise passenger capture rate from 2003 to 2012 is 11.26% of the overall market. Growth has remained relatively flat over the period with increases over the past two years and then a slight drop to less than 10% for 2013. Tampa is expected to capture over 12% in FY2014.

It is envisioned for the Caribbean to continue its growth rate. Thus, capture ranges into the future for Tampa may be from 10.59% to 11.26%. See **Figure 11**.

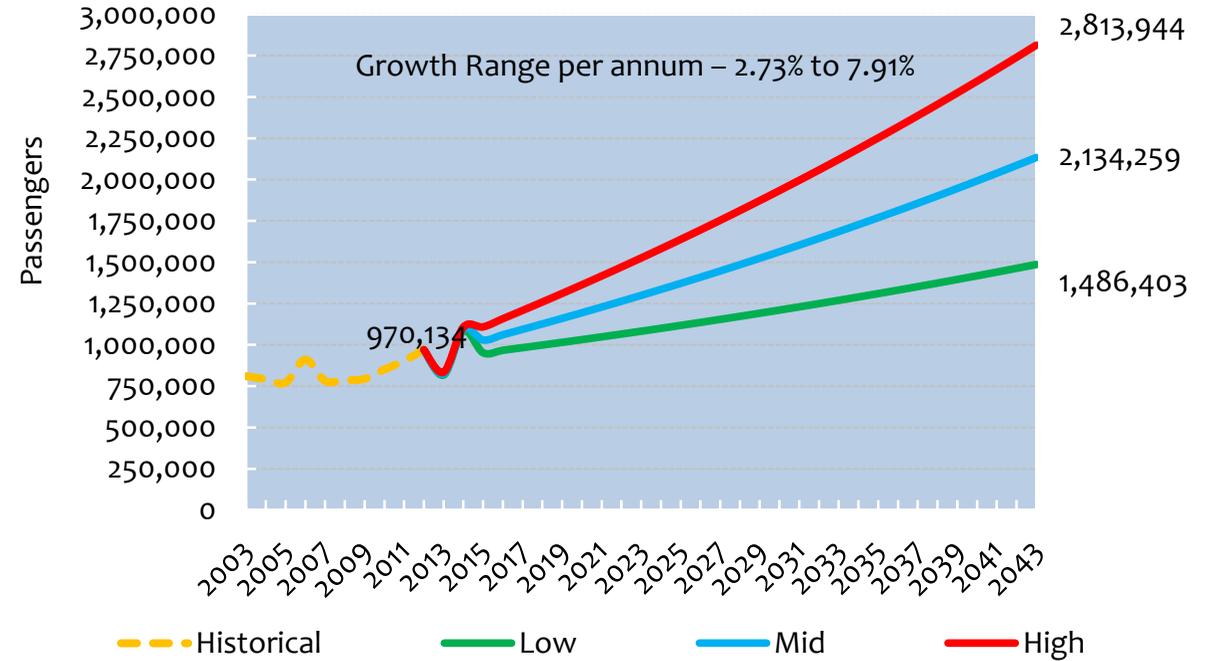
Figure 11: Tampa Bay market capture rates, 2003 – 2013



Source: Bermello Ajamil and Partners, Inc.

Based upon the market capture model **Figure 12** shows the growth in FY2043 to be from 1.4 million to 2.8 million cruise passengers on 231 to 437 cruise calls. This model is unconstrained and would likely require additional cruise facilities over the long-term and the ability to bring larger vessels into Tampa Bay that presently exceed the air draft limits of the Sunshine Skyway Bridge.

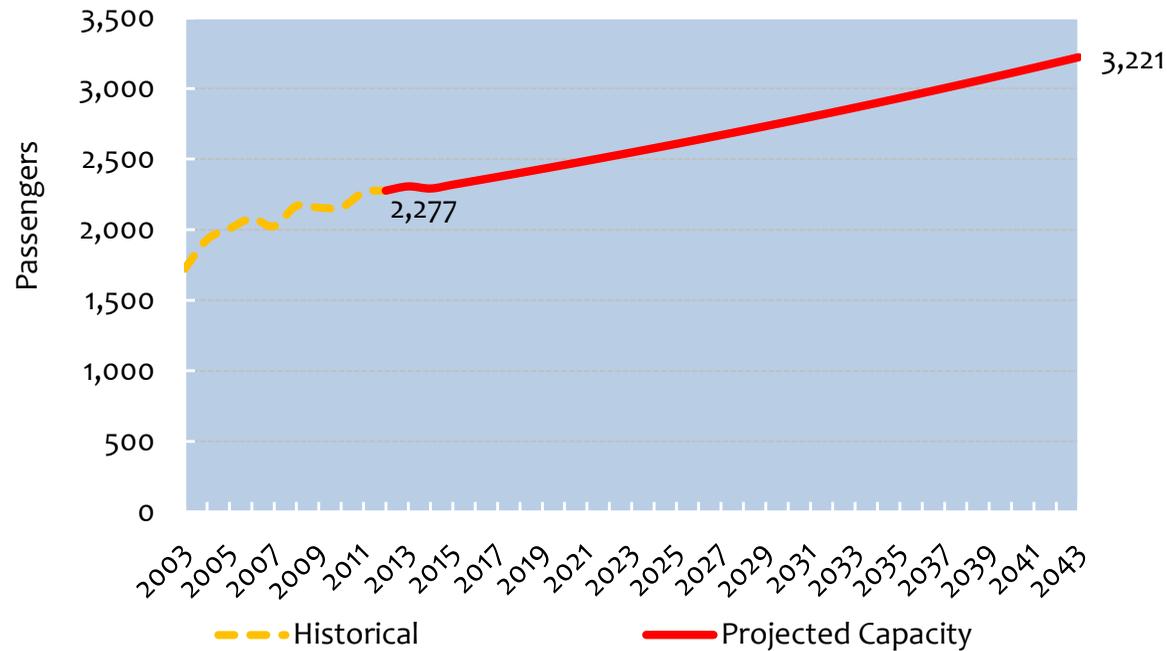
Figure 12: Tampa Bay market capture passenger projection, 2003 – 2043



Source: Bermello Ajamil and Partners, Inc.

Under the standard models outlined the passenger capacity per sailing increases due to the larger size ships. Thus, as shown in **Figure 13** the passenger capacity per call moves from 2,277 to 3,221 passengers per cruise call in FY2043. This is a growth rate of 1.32% per annum.

Figure 13: Tampa Bay passenger capacity per vessel call projection, 2003 – 2043



Source: Bermello Ajamil and Partners, Inc.

Projection approach 3 – Vessel deployment scenarios

Under this approach, based upon past trends of the cruise industry, marketplace assumptions have been made as to the deployment of cruise vessels to and from Tampa Bay as a secondary homeport into the mid-term and a more significant homeport into the long-term. This approach requires additional work on the part of Tampa Bay and regional partners to entice cruise deployments and provide the platform necessary for the lines to be successful such as infrastructure, cost and operational stability, tourism attraction growth, removal of impediments (air draft and channel traffic issues).

In this industry, success breeds success. Thus, as one cruise line brand is successful with a cruise product in the region another will then look to also come into the marketplace and set up its product for their target consumer market. Three scenarios were assembled illustrating levels of deployment to Tampa

Bay based upon current and projected contractual levels, the development of new markets, North American and European deployment trends, ECAs impacts, and the draw of new markets, such as Asia, for large cruise vessels into the long-term.

We have established the ship size and range of vessel calls for each scenario based upon our interpretation of the potential growth of the region, seasonality, type of vessels that will likely be deployed to the region and Tampa Bay; and, historical context as it relates to the types of itineraries in the region based upon speed and distance issues.

Scenario targets include primarily North American and European brands. Mid- to long-term forecasts are based upon success and continued positive trends inclusive of per diem and revenue generation.

In addition, the scenarios are based upon factors including interviews with cruise lines, constrained and unconstrained (based upon air draft considerations) and sailing types. For each scenario, lower berth capacity was used. Dependent upon the brand an additional 10% to 20% sailing capacity was also factored into the sailing figures. These are based upon past statistical assessments of cruise lines in the market. By example, Carnival typically sails at 120% capacity, while Holland America Line is closer to 90% to 110% based upon market segment and sailing type. An assumption that it would take a minimum of 10 years for the development of berths that do not limit air draft was used (scenario 3).

Scenario #1 –Carnival / RCI Growth Dominant

- Carnival Fantasy 90-98 (2,040 cap.) 554 yr. round
- Carnival Spirit 01-04 (2,470 cap.) 7 yr. round
- Carnival Spirit 01-04 (2,470 cap.) 554 yr. round
- Carnival Spirit 01-04 (2,470 cap.) 554 yr. round
- HAL R Class 97-00 (1,432 cap.) 7 seasonal
- HAL Signature Class 08-10 (2,104 cap.) 7 seasonal
- HAL S Class 93-96 (1,266 cap.) 7 seasonal
- RCI Vision Class 95-98 (2,200 cap.) 554 yr. round
- RCI Radiance Class 01-04 (2,112 cap.) 7 yr. round
- Norwegian Jewel Class 05-07 (2,466 cap.) 7 seasonal
- Princess Sun Class 95-98 (1,950 cap.) 10/11 seasonal

Scenario #2 – Add Norwegian / European lines (additional opportunities)

- Norwegian Jewel Class 05-07 (2,466 cap.) 7 seasonal
- MSC Musica Class 06-10 (3,013 cap.) 7 short seasonal

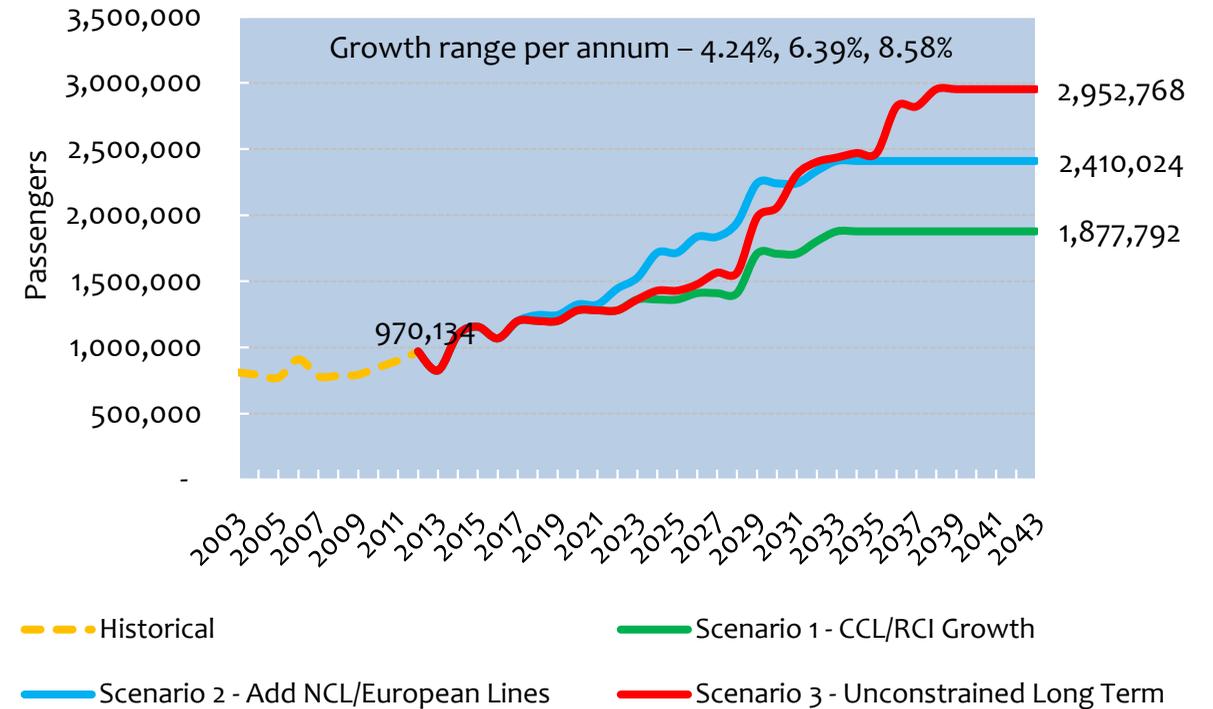
- MSC Lirica Class 03-05 (2,099 cap.) 7 seasonal
- AIDA Vita Class 02-03 (1,266 cap.) 10/11 seasonal
- AIDA Diva Class 07-13 (2,050 cap.) 10/11 seasonal

Scenario #3 – Unconstrained large ship deployment

- Carnival Fantasy 90-98 (2,040 cap.) 554 yr. round
- Carnival Spirit 01-04 (2,470 cap.) 7 yr. round
- Carnival Spirit 01-04 (2,470 cap.) 554 yr. round
- Carnival Spirit 01-04 (2,470 cap.) 554 seasonal
- Carnival Conquest Class (3,006 cap.) 7 yr. round
- Carnival Dream Class (4,000 cap.) 7 yr. round
- HAL S Class 93-96 (1,266 cap.) 7 seasonal
- HAL R Class 97-00 (1,432 cap.) 7 seasonal
- HAL Signature Class 08-10 (2,104 cap.) 7 seasonal
- RCI Vision Class 95-98 (2,200 cap.) 554 seasonal
- RCI Radiance Class 01-04 (2,112 cap.) 7 yr. round
- RCI Voyager Class (3,114 cap.) 554 seasonal
- RCI Freedom Class (3,634 cap.) 7 seasonal
- RCI Quantum Class (4,180 cap.) 7 seasonal
- Norwegian Jewel Class 05-07 (2,466 cap.) 7 seasonal
- Norwegian Epic / Breakaway Class (4,000 cap.) 554 seasonal
- Princess Sun Class 95-98 (1,950 cap.) 10/11 seasonal
- Princess Grand Class (3,600 cap.) 7 seasonal

Under these scenarios the projection model for cruise passenger throughput rises to between 1.8 and 2.9 million passengers by FY2043. It would be anticipated that vessel size would continue to increase into the long-term, particularly under scenario 3 as it is unconstrained. Thus, in FY2043 vessel capacity is expected to range from 2,739 to 3,402 passengers per call. See **Figure 14** for the overall passenger growth based upon the above scenarios. Growth per annum ranges from 4.24% to 8.58% under these scenarios.

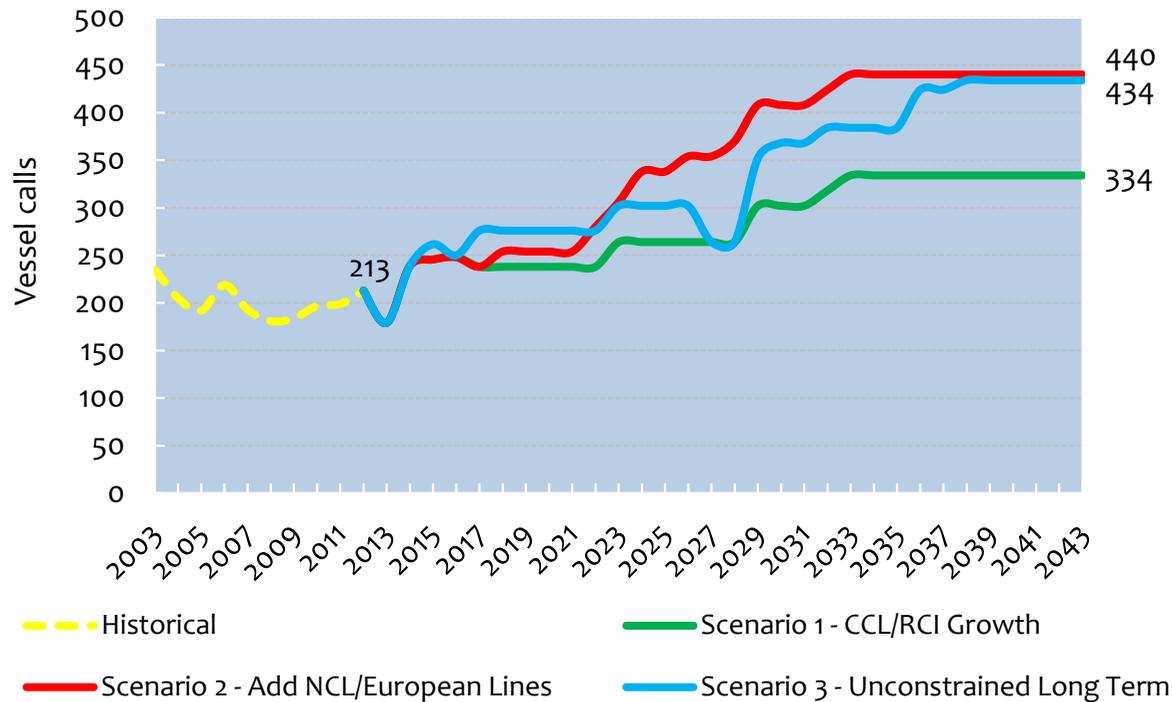
Figure 14: Tampa Bay deployment scenarios passenger projection, 2003 – 2043



Source: Bermello Ajamil and Partners, Inc.

Figure 15 illustrates the number of calls ranging from 334 to 440 revenue based cruise calls (double count for homeporting) based upon the scenarios presented. The total number of calls is based upon the passenger projection divided by the projected number of passengers per vessel. Under these projections the total number of passengers is estimated first, followed by the vessel capacity for the port. That then drives the total number of cruise calls.

Figure 15: Tampa Bay scenario cruise calls projection range, 2003 – 2043



Source: Bermello Ajamil and Partners, Inc.

Projection Conclusions

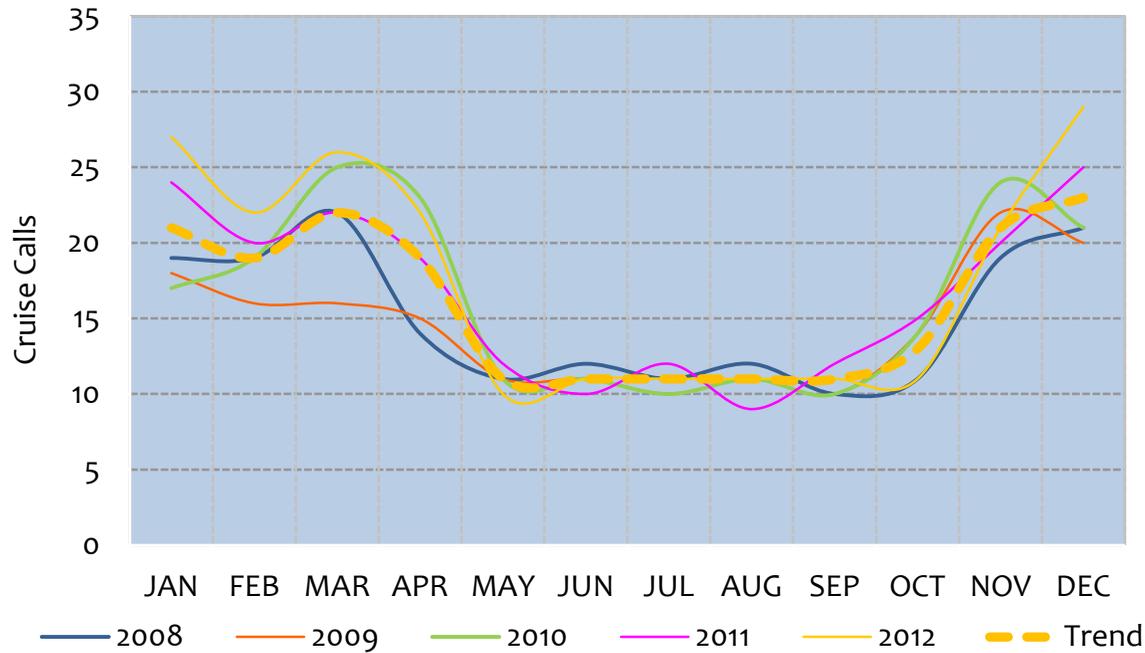
- All of the major cruise brands indicated that there is a willingness to deploy larger vessels into the Tampa Bay market if facilities are available;
- If facilities are not available in Tampa in the long-term to accommodate larger ships, this does not mean vessels will necessarily go to another Florida port. It is likely that a percentage of vessels would be lost to another regional deployment competitor;
- Cruise brands would guarantee vessels for the ability to berth larger ships in Tampa Bay. However, it must be recognized that Tampa Bay is likely a 2nd tier port in Florida based upon cruise feedback. This would limit overall deployment numbers into the long-term. This is primarily due to airlift value and a limited drive market; and,
- Tampa Bay does not lose all traffic in the long-term if the air draft issue is not resolved, but over time there are much more limited deployment options to Tampa Bay. Thus, Tampa Bay will slowly become a secondary vessel market with small ships (mid- to long-term).

Berth Demand

Based upon the projections featured earlier starting on page 13, berth demand scenarios were established for Tampa Bay. These take into consideration the number of passengers per vessel, seasonality, daily distribution and the overall numbers of cruise line customers. Demand is very specific for each port.

As shown in **Figure 16**, peaking for Tampa Bay occurs primarily in the months of November through April which coincides with the high Caribbean cruising period, which is likely the long-term deployment trend for the region and Tampa Bay. New traffic may be generated in the summer months or some peak traffic moved to accommodate new tourism products in the long-term.

Figure 16: Tampa Bay monthly peaking patterns of passenger traffic

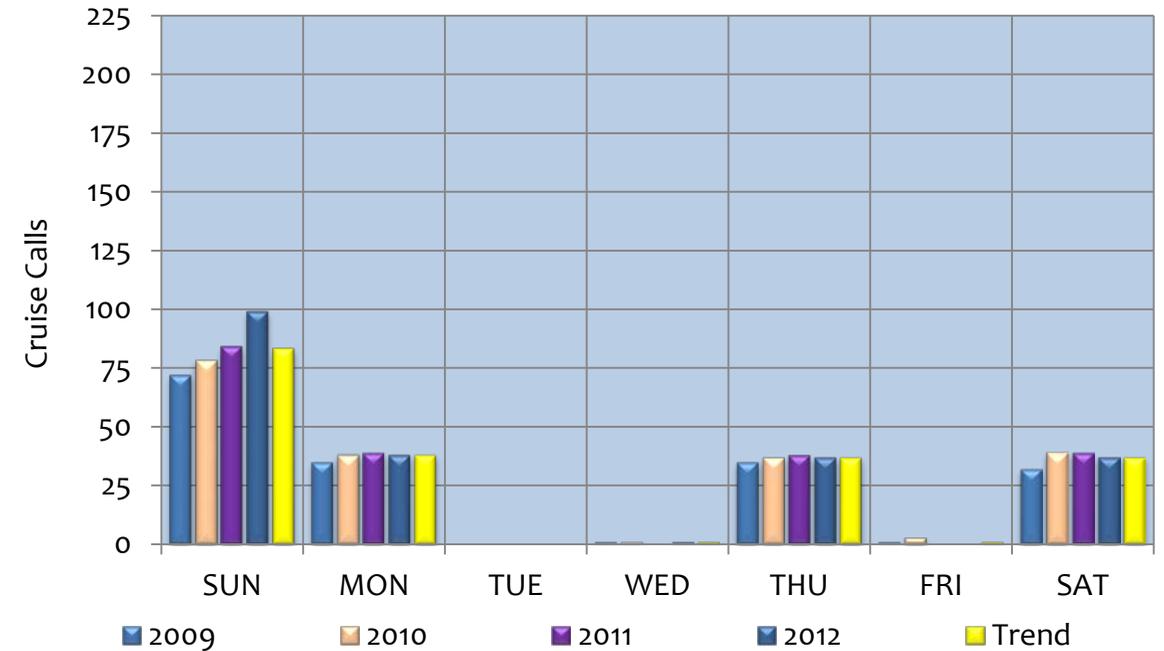


Source: Bermello Ajamil and Partners, Inc.

Tampa Bay’s traffic is a combination of 7-Day and 5, 5, 4-Day cruise itinerary products that provide for higher berth use on Saturday and Sunday and Monday and Thursday. There is a relatively open berth on Friday for vessel deployment. As suggested it is likely that similar historic daily distribution patterns over time will be continued. It must be noted that the number of cruise passengers per day also increases over time. This increase impacts infrastructure such as Ground transportation areas (GTA), parking, curb side areas and terminal operations.

Figure 17 shows the daily passenger peaking for the past 4 years and the average for the weekdays.

Figure 17: Tampa Bay daily peaking patterns of passenger traffic

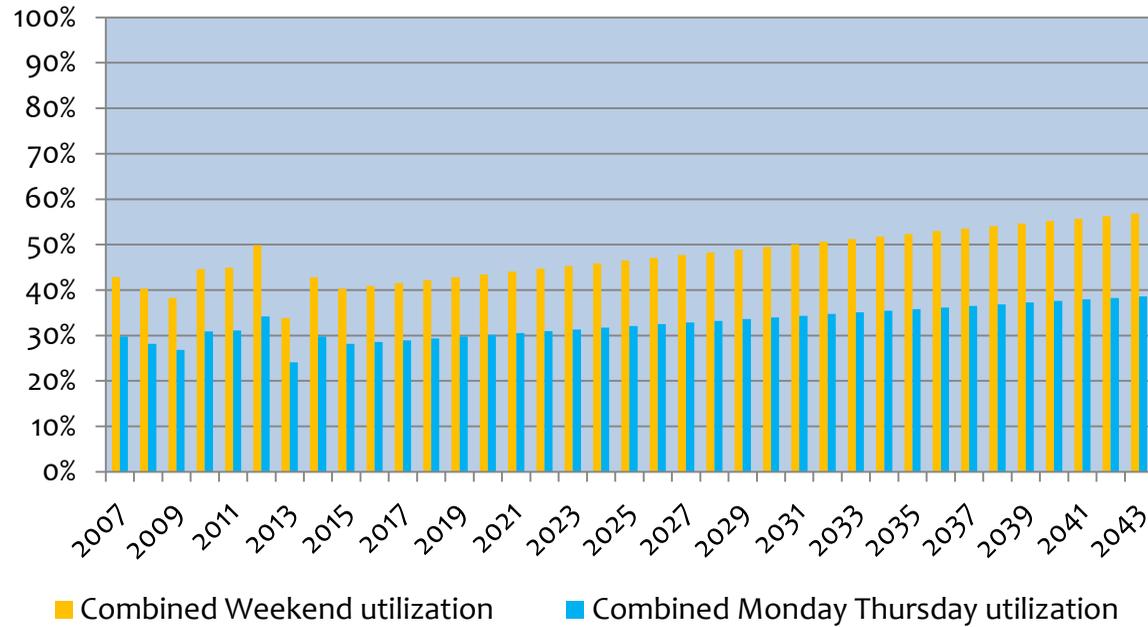


Source: Bermello Ajamil and Partners, Inc.

As shown, weekend days (including Friday, Saturday, Sunday and Monday) and the typical 5, 5, 4-day homeport sailing day of Thursday are the peak cruise homeport traffic days for Tampa. Weekend days (Saturday and Sunday) are the preferred homeport 7-day cruise pattern option due to the consumer demographic vacation patterns. Additionally, the itinerary patterns drive the days as well. This trend for Tampa will likely continue into the future. If more vessels are deployed to Tampa then this would affect the need for additional berth and terminal infrastructure.

Based upon the future deployment trends for Tampa Bay under projection scenario two – mid-range, Figure 18 illustrates that beyond into the long-term there is likely not a new demand for additional berth requirements based upon the current constraints of Tampa Bay. Cruise traffic would stay at manageable levels and the current 3 cruise berth / terminal options would be sufficient to meet the future requirements. However, should these be managed on a per brand basis and contracted accordingly then this formula may change and require additional infrastructure.

Figure 18: Tampa Bay Scenario 2 mid-range berth demand

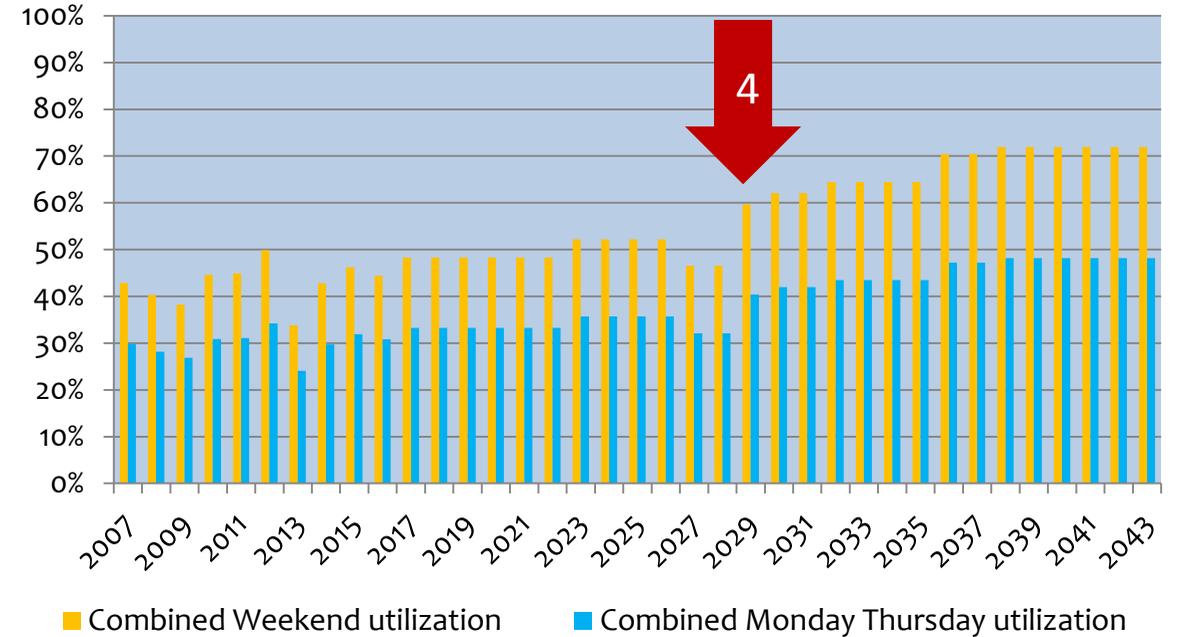


Source: Bermello Ajamil and Partners, Inc.

As shown above, weekend utilization does not reach above 60% over the projection period. Based upon past assessment experience new berth needs are required when demand reaches approximately 75% to 80% utilization.

Figure 19 shows that under the high projection scenario 3 that there is likely a need for a 4th berth in Tampa to support weekend homeport operations. This would be required in approximately 2028 to 2032. Under the high scenario with the current deployment trends the Sunday homeport slots are saturated at some 75% to 80% by 2030.

Figure 19: Tampa Bay Scenario 3 unconstrained berth demand

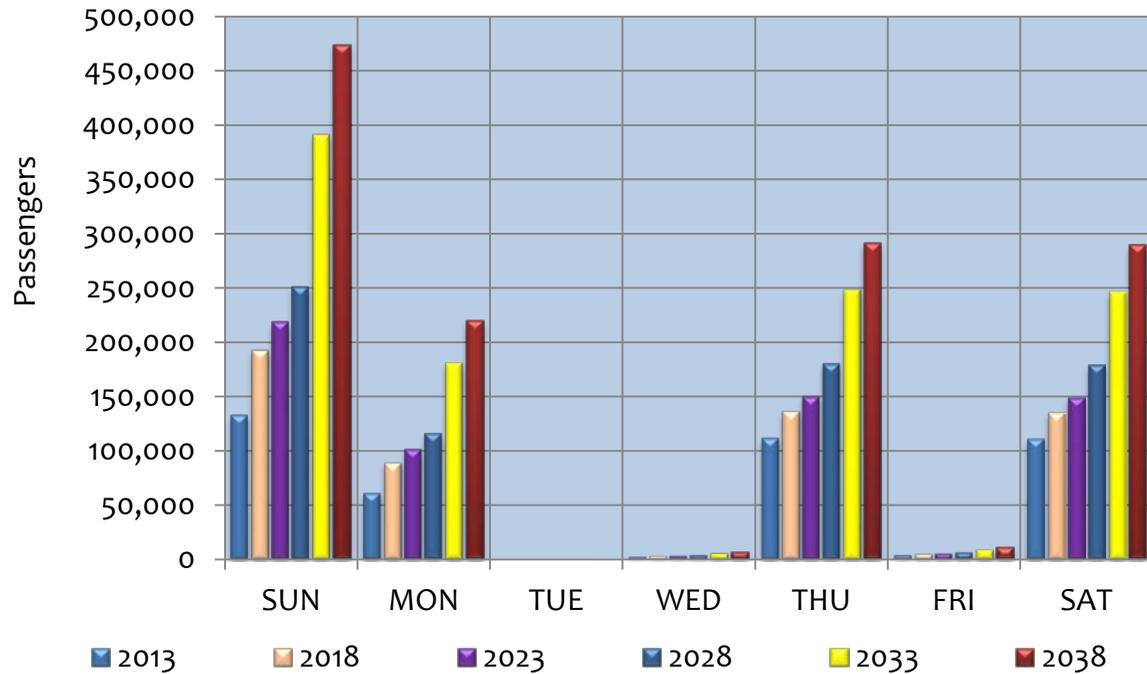


Source: Bermello Ajamil and Partners, Inc.

As illustrated above the increase in daily passenger traffic over the projection period poses a significant impact to the upland support infrastructure.

Figure 20 shows the daily passenger counts over the long-term based upon the high passenger throughput scenario in the projection model. This drives curb side (taxi and coach), parking and other landside and air requirements. By 2038 the Tampa Bay region could anticipate 3 to 5 times the number of passengers on a given weekend homeport day under this scenario.

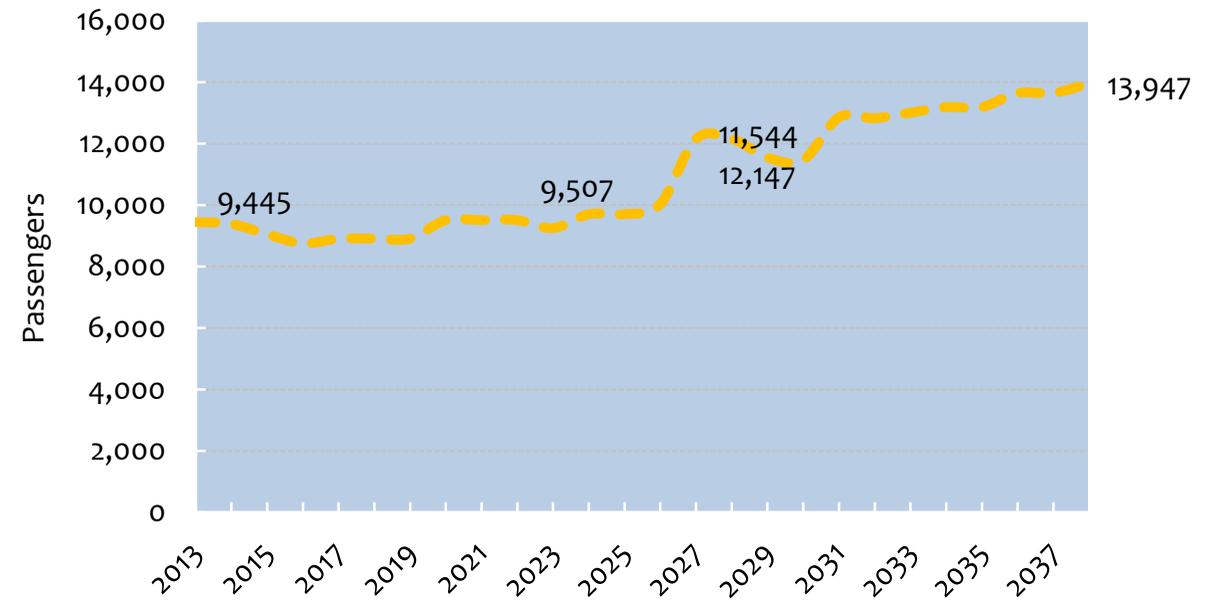
Figure 20: Tampa Bay Scenario 3 unconstrained daily passenger counts, 2013 – 2038



Source: Bermello Ajamil and Partners, Inc.

Figure 21 presents a scenario for parking demand using the high projection model. As shown this is based upon the likelihood that 75% of the cruise traffic to Tampa would be the southeast drive consumer market. To determine the total number of cars the standard 2.2 persons per vehicle was used. This does not consider cruise day overlaps. Parking demand climbs to almost 14,000 spaces by 2038 under scenario 3.

Figure 21: Tampa Bay Scenario 3 unconstrained parking demand, 2013 – 2038



Based upon 75% drive market in peak 6 month season; 2.2 pax per car; Does not consider cruise day overlap

Source: Bermello Ajamil and Partners, Inc.

Demand Conclusions

- There is a new berth required into the long-term with 4 total berths (add one in 2028/29) – primarily due to Sundays 80% capacity or the combined weekend utilization rate based upon the high projection scenario. This requirement could come earlier based upon contractual issues and the cruise brands desire for peak weekend deployment day use.
- Due to the intensive consumer drive market the parking areas would also be highly impacted.

Economic Impacts

To determine long-term economic impacts the Tampa Bay impact model was used based on the 2012 study completed for the Port of Tampa by Martin Associates. The ratios used within the tables are based upon a per passenger basis for each of the categories presented. In addition, a 3% per annum cost of living increase was factored into all dollar figures.

As shown in the graphics presented in this section the highest impacts occur in the long-term based upon an unconstrained deployment scenario, which provides for more and larger vessels with higher passenger capacities over the projection period.

Table 3 shows the 2012 total economic impact for the Port of Tampa including cruise operations. As shown, almost 2,000 jobs were created due to the cruise industry in the Tampa Bay region and USD\$90-million in personal income. Table 4 is specific to cruise, and compares the airport impacts.

Table 3: Port of Tampa total economic impact, 2012

CATEGORY	CARGO	CRUISE	SHIPYARD	REAL ESTATE	TOTAL
JOBS					
DIRECT	11,573	874	1,374	970	14,791
INDUCED	12,695	528	730	444	14,397
INDIRECT	8,754	580	1,015	224	10,573
RELATED USER JOBS	40,455	NA	NA	NA	40,455
TOTAL JOBS	73,478	1,981	3,119	1,637	80,216
PERSONAL INCOME (1,000)					
DIRECT	\$566,481	\$24,510	\$59,893	\$34,161	\$685,044
INDUCED	\$1,272,429	\$46,535	\$56,473	\$28,979	\$1,404,416
INDIRECT	\$415,785	\$19,843	\$35,529	\$10,032	\$481,189
RELATED USER INCOME	\$1,622,094	NA	NA	NA	\$1,622,094
TOTAL PERSONAL INCOME	\$3,876,790	\$90,888	\$151,894	\$73,172	\$4,192,744
VALUE OF ECONOMIC ACTIVITY (1,000)					
BUSINESS SERVICES REVENUE	\$1,258,574	\$379,776	\$174,693	\$86,647	\$1,899,690
RELATED USER OUTPUT	\$13,184,087	NA	NA	NA	\$13,184,087
TOTAL VALUE OF ECONOMIC ACTIVITY	\$14,442,661	\$379,776	\$174,693	\$86,647	\$15,083,777
LOCAL PURCHASES (1,000)	\$778,744	\$32,028	\$91,205	\$31,151	\$933,127
STATE & LOCAL TAXES (1,000)					
DIRECT, INDUCED AND INDIRECT	\$209,687	\$8,444	\$14,126	\$6,805	\$239,062
RELATED USER TAXES	\$150,855	NA	NA	NA	\$150,855
TOTAL STATE AND LOCAL TAXES	\$360,541	\$8,444	\$14,126	\$6,805	\$389,916

Source: Martin Associates 2012

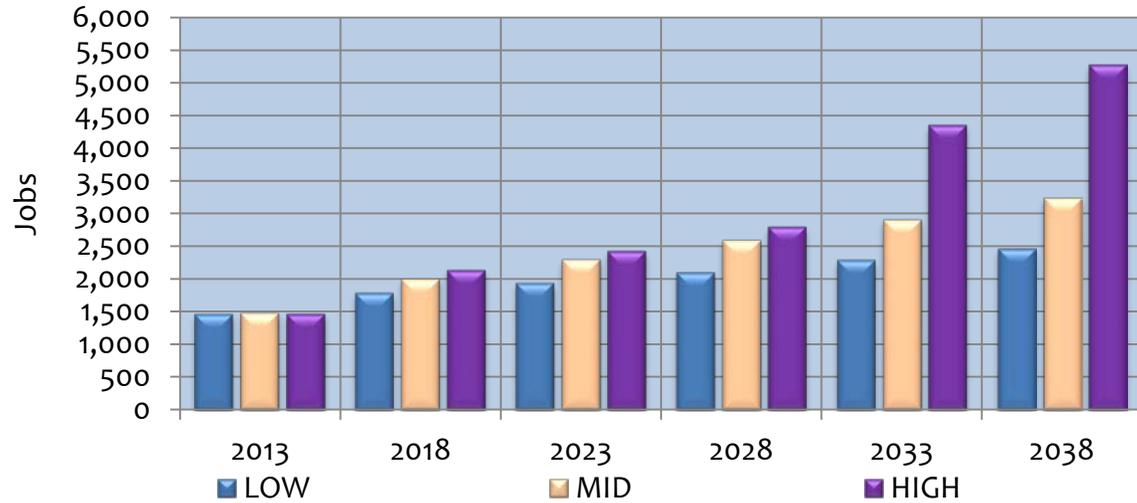
Table 4: Port of Tampa cruise economic impact, 2012

CATEGORY	CRUISE	AIRPORT	TOTAL
JOBS			
DIRECT	797	77	874
INDUCED	498	30	528
INDIRECT	447	133	580
TOTAL	1,741	240	1,981
PERSONAL INCOME (1,000)			
DIRECT	\$22,612	\$1,898	\$24,510
RE-SPENDING/LOCAL CONSUMPTION	\$44,753	\$1,782	\$46,535
INDIRECT	\$14,741	\$5,102	\$19,843
TOTAL	\$82,107	\$8,781	\$90,888
BUSINESS REVENUE (1,000)	\$269,591	\$110,185	\$379,776
LOCAL PURCHASES (1,000)	\$18,177	\$13,850	\$32,028
STATE/LOCAL TAXES (1,000)	\$7,636	\$808	\$8,444

Source: Martin Associates 2012

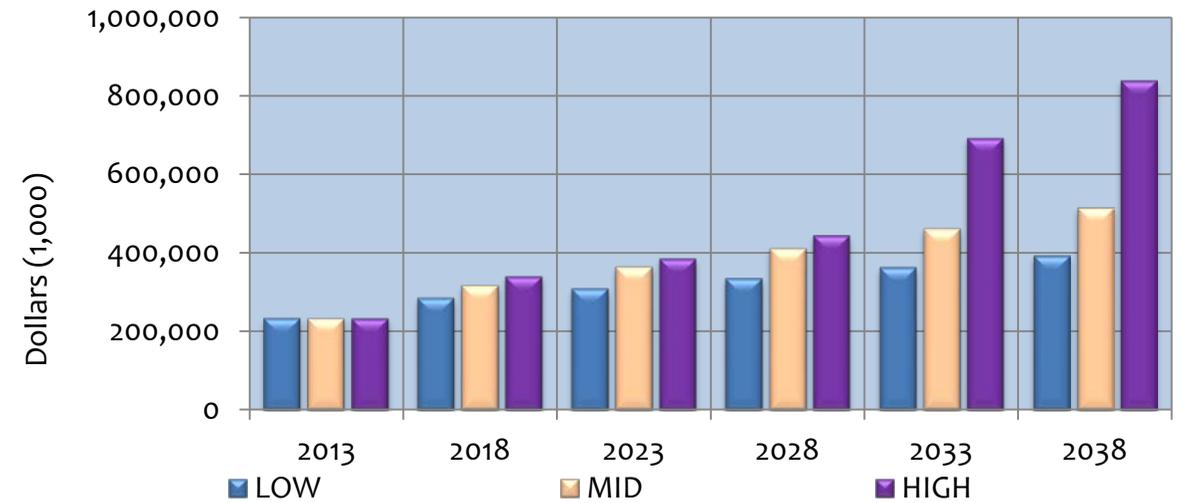
Figures 22 through 26 below express the economic impacts to the Tampa Bay region from 2013 to 2038 based upon the unconstrained high scenario 3. As shown, once the air draft impediment is no longer an issue there is significant positive impacts to the surrounding area economy. In 2038 the number of jobs generated by the cruise industry will be approximately 5,250; up from some 1,500 today. During the same period, business income, purchases and tax income to the local and state also see substantial gains due to the increased presence of the cruise industry.

Figure 22: Tampa Bay Cruise Job Impact, 2013 – 2038



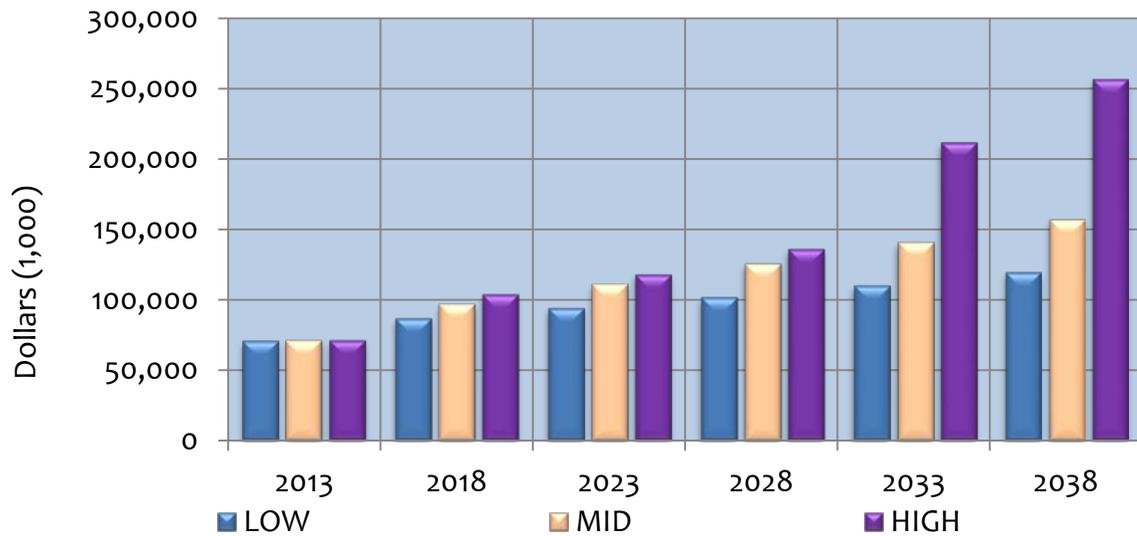
Source: Bermello Ajamil and Partners, Inc.

Figure 24: Tampa Bay Cruise Business Revenue Impact, 2013 – 2038



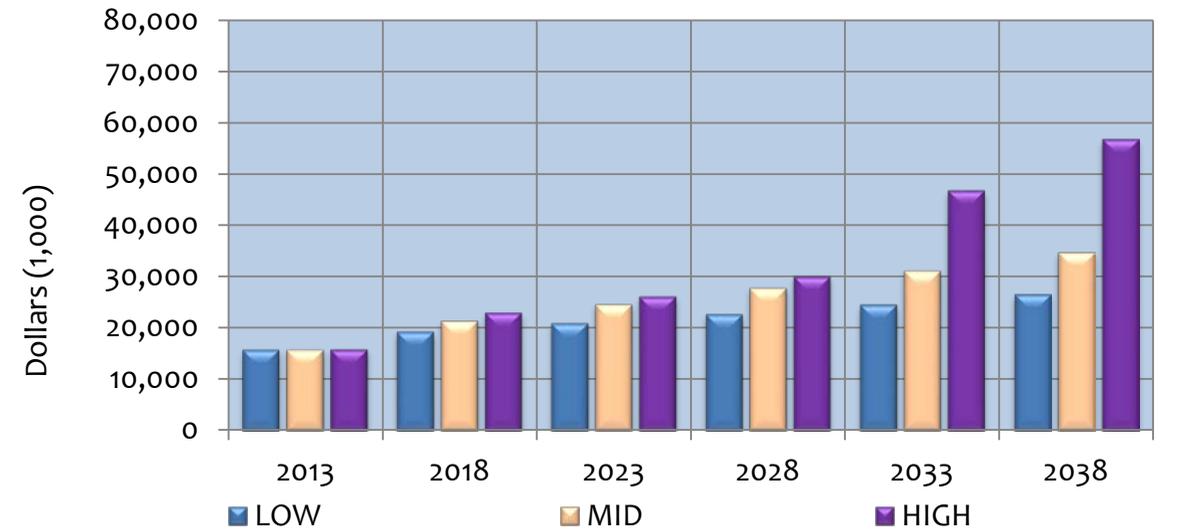
Source: Bermello Ajamil and Partners, Inc.

Figure 23: Tampa Bay Cruise Personal Income Impact, 2013 – 2038



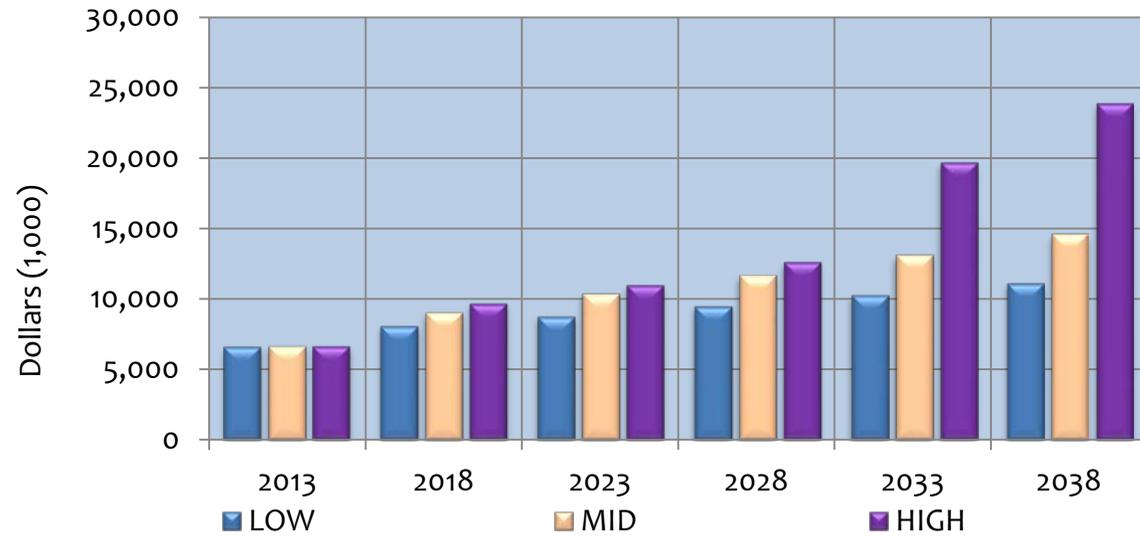
Source: Bermello Ajamil and Partners, Inc.

Figure 25: Tampa Bay Cruise Local Purchases Impact, 2013 – 2038



Source: Bermello Ajamil and Partners, Inc.

Figure 26: Tampa Bay Cruise State and Local Tax Impact, 2013 – 2038



Source: Bermello Ajamil and Partners, Inc.

4 CRUISE OPTIONS AND FACILITY PROGRAM ASSESSMENT

As part of the study process the following available options outlined below were examined for validity in this initial pre-feasibility phase:

- Do nothing and only receive vessels that fit into the present air draft envelope;
- Build a new port seaward of the bridge; or,
- Replace the Sunshine Skyway Bridge.

In order to make a decision, the ramifications and feasibility of each option must be understood. If development of a new seaward port or bridge replacement takes place this would represent one of the most potentially significant projects in Tampa Bay and in Florida. There are several issues and challenges associated with the project including the potential loss of cruise market share and economic impacts to the Tampa Bay region and to Florida; impacts on users and neighbors; and, environmental and political implications.

1. Do Nothing Option

A choice could be made to do nothing and receive only those vessels that fit into the bridge's air draft envelope into the future. As outlined in Sections 3 and 5 there is a significant loss of economic impact and jobs to the region over the long-term should this be the choice. Not doing anything that will allow larger vessels to use the Tampa Bay regional market for homeport and port of call activities into the future will likely mean that the Tampa Bay region will miss out on between 33- to 35-million cruise passengers through 2043.

Additionally, these cruise passengers will likely not be absorbed by other Florida ports, based on information from cruise lines. Most of this business, therefore, would be lost to other Gulf Ports (not Florida) in the region. This is primarily due to the western Caribbean itinerary offerings from Tampa and the consumer market catchment area (drive market) where a majority of the passengers come from to cruise from Tampa. The other Florida ports do not necessarily provide for the same offerings, as Mobile or New Orleans.

Conclusions

- There would be a significant loss of cruise traffic in the long-term with some 33- to 35-million passengers lost.
- The loss of this significant cruise traffic would have negative economic and job impacts on the Tampa Bay Region. Further analysis would be required and warranted to understand the full magnitude of these potential impacts.
- The majority of cruise passenger traffic lost in Tampa Bay would not be absorbed by other Florida ports, but instead likely be absorbed at ports such as Mobile and New Orleans.

It is noted, however, that the drive market for Tampa should be further explored. Even though considered "limited" by cruise lines, the air draft restriction that is currently associated with Tampa warrants further investigation in strategic planning options.

2. Build a New Port Seaward of the Bridge

As part of the scope for the Pre-Feasibility Study the potential development options for a cruise facility seaward of the Sunshine Skyway Bridge were developed and assessed in order to provide a vision outlook for the required capacity of these types of cruise facility(s), including the cost, timeline for development, and potential alternative uses.

Additionally, impacts to the environment and other lines of business in the Tampa Bay region were also examined.

Based upon the projections, berth demand and design vessel template the following platform was established:

- 4 berth homeport facility;
- Each terminal needs to be a nominal 100,000 square feet to accommodate all of the required aspects of a homeport terminal facility inclusive of lobby, security, waiting/check-in areas, baggage laydown, Customs and Border Protection and other ancillary options. It is contemplated that each terminal would provide for simultaneous embarkation / debarkation;

- Parking facilities with 9,000 spaces and space for future expansion is required; and,
- Ground Transportation Areas (GTA) to accommodate the requirements for coach, taxi, shuttle, private vehicles, etc. for embarkation and debarkation is needed.

A general cruise facility concept capable of accommodating 4 cruise vessels berths that respond to the predicted market demand into the long-term for future cruise operations to the Tampa Bay region and allow for an unconstrained cruise condition were developed. In general the concepts developed to evaluate order-of-magnitude costs and the associated return on investment provided for the following elements:

- Sites - 44 acres (1,915,823 sf) to 58 acres (2,520,752 sf);
- Cruise Terminal footprint - 100,000 square feet (T); and,
- Parking garage is 6 levels with 1500 spaces per parking garage to accommodate 9,000 spaces in total (P).

In assessing the potential layout options the following elements are observed:

- All layouts consume about the same area +/- 50 acres;
- Plan selection can be done simultaneously with navigation, hydrodynamic and environmental considerations; and,
- Siting is critical based upon environmental and community impacts.

Preliminary Cost Estimates

Preliminary cost analyses for cruise facility plan options range from \$632-million to \$647-million without inflation, depending on the potential location of the facility. The costs include a 20% allowance of hard cost for mitigation, 15% for soft costs and contingency set at 20% of hard costs plus mitigation and soft costs. Several potential theoretical layouts were used to calculate the costs. The different layout options that were used to calculate costs are approximately 50 acres in land and berth area. More detailed costs can only be determined once a siting study is completed and an actual project budget is calculated.

Alternative Uses

With the development of a new seaward cruise facility there may be opportunities for alternative uses and shared options as part of the development that may provide positive impacts to the environment and surrounding communities, while providing for additional lines of business for the Tampa Bay region.

A specific market assessment to determine these uses was not part of the Pre-Feasibility Study.

Alternative and complementary uses may include the following:

- Marina;
 - Mega-yachts (including service and repair facility);
- Hotel;
 - Boutique hotel;
 - Provide for yachts, plus retail, restaurant;
- Ferry facility;
 - Regional and international to service Mexico, etc.;
- Marine, environmental, military, weather facility; and,
 - Bay location provides access to a variety of sites, data points;
- Cargo.
 - Container port for large deep draft vessels; and,
 - Specialty cargo.

Facility Impact Observations

The Army Corps of Engineers is currently studying the Tampa Bay channels to determine the long-term impacts on maritime traffic. Thus, besides the Sunshine Skyway Bridge air draft limitation two of the major channel issues facing Tampa Bay are the following:

- Channels are too narrow for safe two-way cruise traffic (beam and LOA are the main factors); and,
- There is a 965-foot limitation on cruise vessel length due to the Sparkman channel and turning basin.

There are also other related issues in channels closer to the Tampa downtown core, as well as potential capacity restrictions at the existing cruise terminal facilities which could impact the ability of the Tampa Bay region to accommodate larger 3,000-passenger plus vessels in these facilities. There is currently a Channelside Study underway sponsored by Port Tampa Bay to determine current and future capacity requirements of the existing facilities.

Conclusions

- Environmental issues will need to be considered in further study of these alternatives.
- All alternatives need to be further researched.

3. Replace the Sunshine Skyway Bridge



Another alternative which would allow large cruise vessels (more than 180-foot air draft) to transit into Tampa Bay is to replace the bridge to a vertical clearance of 240-feet in order to accommodate this cruise vessel traffic.

FDOT conducted a brief study of three Sunshine Skyway Bridge alternatives:

- **Build a new bridge and demolish the existing bridge:** This option would not require the closing of the existing bridge, thus maintaining traffic flow during the entire construction period. Therefore, there would be no toll revenue loss. The total cost of construction and demolition would be approximately \$2.0-billion. The construction period for a new bridge would be 4 years. The demolition of the existing bridge would take 2-years.
- **Raising the deck vertical profile (lifting the impacted bridge section to 240-feet):** Under this option the existing bridge would need to be closed for approximately 1.5 to 2-years during the lifting operation. Total construction time would be 3-years. The cost would be approximately \$1.5-billion. This option has a very high risk of instability during the cutting and lifting phase of the operation. Adding new piles may also induce the unexpected settlement of the existing pile structures.
- **Raising the deck vertical profile to 240-feet (demolishing and replacing the impacted bridge section):** This option would provide lesser risk, but has a longer closing time for construction of approximately 3-years. The cost would be approximately \$1.5-billion. This option may cause problems for maintenance and future bridge replacement due to the combination of new structure and existing structure that would be 30- to 40-years old by the time this would be completed.

Conclusions

- Overall costs associated with this alternative are high.
- Environmental issues will need to be considered in further study of this alternative due to the extensive bridge work.
- Traffic impacts during construction of a bridge system will be extensive as part of these alternatives for an extended period of time.
- Existing cruise facilities would continue to be viable in the downtown Tampa core, although they would require upgrades to support larger cruise vessels, namely, LOA and maximum beam of existing cruise berths. For example, the longest cruise ship that can dock at Port Tampa Bay is 965 feet. This restriction, along with the maximum beam,

needs to be factored into planning and design of any prospective renovations to the Sunshine Skyway Bridge.

- It must be determined what impacts the bridge work and closing will have to marine traffic transiting in and out of Tampa Bay during this period.

5 PRE-FEASIBILITY STUDY CONCLUSIONS

This Pre-Feasibility Study, undertaken by FDOT, is the first phase in finding a solution to the low clearance of the Sunshine Skyway Bridge and providing insight into how to sustain and grow the cruise business in the Tampa Bay area. This phase of the study served to establish the future cruise traffic for the region taking into consideration the air draft issue and then examined the options available for the Tampa Bay region. Three options were explored to handle the larger ships that will be entering the market over the next 20 years, including do nothing, to build a new port seaward of the Sunshine Skyway Bridge, and to replace the Sunshine Skyway Bridge. This report has emphasized the fact that over next 10 to 15 years the Sunshine Skyway Bridge will impede growth to the Tampa Bay region due to the air draft limitations for cruise vessels entering the Bay. This is a limiting factor today and will be a further limiting factor for cruise vessel deployment to the Tampa Bay area into the future. Cruise lines will respond, and have done so already, by placing smaller older ships into the regional market. The air draft impediment has already cost the region cruise vessel deployments as they are not able to accommodate larger cruise vessels with air drafts of more than 180 feet.

Either of the build options explored could be pursued, with future analysis done into the feasibility of each. It is important to establish the clear value of the investment, for whichever option is chosen. Subsequent feasibility of alternatives will require Internal Rate of Return (IRR) and Return on Investment (ROI) evaluations. In addition, refined cost estimates, funding plans, and potential funding sources will need to be identified. Identifying the necessary strategies for maintaining and increasing the market share of the Caribbean cruise region is also recommended in order for the state of Florida to sustain its position in the global cruise industry.² Additional feasibility analyses will need to be initiated by local partner agencies and the Tampa Bay community with FDOT providing appropriate assistance as may be requested.

² A recent study, Florida's Cruise Industry; A Statewide Perspective, completed by FDOT in November 2013 lists future opportunities and strategies related to the Caribbean region that can be used as the basis for further analysis.

TERMINOLOGY

Several definitions, cruise industry terms and acronyms may not be familiar to the reader. We define several of these terms in the following section.³

- 1) **Adequacy.** Sufficient to satisfy a requirement or meet a need. Barely satisfactory or sufficient.⁴
- 2) **Air Draft.** The maximum height of a vessel above the waterline.
- 3) **Apron.** Area immediately adjacent to the vessel berth where vessels' lines, provisioning, gangway and other operations occur.
- 4) **APCD (Available Passenger Cruise Days).** This is the formula cruise lines typically utilize to assess and compare cruise itineraries from a financial perspective.
- 5) **Anchorage.** Location where a vessel may anchor. In destinations where docks are not present to accommodate vessel operations, anchorages are used and passengers are shuttled to/from the cruise vessel to a landside location using a small boat (tender). Anchorages are generally only used in ports-of-call.
- 6) **Beam.** The width of the cruise vessel at its widest part. *Panamax Vessels* refer to vessels with beams that can transit the Panama Canal (beam is equal to 36m or less). *Post-Panamax Vessels* and *Super-post Panamax* have beams that exceed the width of the Panama Canal, or greater than 36m.
- 7) **Bed (berth)-nights.** A typical cruise industry form of capacity measurement representing the number of lower berths (a bed on a cruise vessel, with the aggregate total generally determining the vessel's normal passenger capacity) times nights of operation in a region.
- 8) **Berth.** (1) A bed, generally attached to the deck and/or bulkhead onboard a vessel. (2) An anchorage or dock space for a vessel in port.
- 9) **Bunkers.** Marine fuel used for propulsion.
- 10) **Cabotage Laws** (also referred to as *coastwise cruise vessel laws*). Relates to the ability of foreign-flagged vessels to transport goods and passengers between domestic ports. Cabotage Laws are often put into place to protect domestic cruise vessel industries.
- 11) **Conventional cruises (homeport cruises with destination and port-of-call cruises).** Leisure oriented voyages on deep-water, ocean-going cruise vessels of two-or-more nights often to a variety of destinations. Conventional cruises are offered either by regional or international operators marketing to a variety of consumer sectors and nationalities.
- 12) **Cruises-to-Nowhere (homeport cruises without destination).** Generally geared toward a local consumer market (within a one-hour drive) with the mainstay of the cruise experience is focused around on-board gaming, food and entertainment.
- 13) **Deadweight Tonnage.** Refers to the actual weight of cargo, fuel and stores required to bring the vessel down to her load-line marks.
- 14) **Displacement Tonnage.** The amount of water displaced by the vessel or the actual weight of the vessel. (This measure is not often used to describe cruise vessels, but it is meaningful in describing military vessels and the structural capacity of port and terminal facilities. It is typically applied to a vessel in normal operating state i.e. with fuel and stores on board).
- 15) **Dockage.** Fees levied by a port or destination for the right to dock a vessel.
- 16) **Draft.** The depth of water required by a vessel to float; the measurement in meters of the extent to which the vessel projects below the surface of the water.
- 17) **ECAs.** Emission Control Areas established through treaties provides for a decreased NoX and SoX emissions in select zones such as the Baltic, Europe and North America.
- 18) **Ferry.** Term usually applied to a vessel transporting passengers and vehicles from point to point. The key difference between these operations and conventional cruises is that ferry

³ Bermello, Ajamil and Partners, Inc. 2013, and Israel, Giora and Laurence Miller, *Dictionary of the Cruise Industry*, Seatrade Cruise Academy, 1999.

⁴ *The American Heritage Dictionary of the English Language*, Fourth Edition by Houghton Mifflin Company, 2000.

operations have as their primary business focus offering transportation services, not a travel and leisure experience.

- 19) **Gross Tonnage (GT).** A measure of a vessel's enclosed volume. This term has emerged as the standard measure of communicating a vessel's size. A *Mega-vessel* generally refers to a vessel of 70,000 GT or larger.
- 20) **Ground Transportation Area (GTA).** Zone in which vehicles, including buses, taxis and private cars are organized and accessed as part of cruise terminal/destination embarkation and disembarkation activities.
- 21) **Homeport** (also referred to as *baseport*, *port of embarkation*, *turnaround port*). A marine facility and destination city that serves as the base of operations from which the cruise begins and/or terminates.
- 22) **Itinerary.** Ports visited on a given cruise. Two itinerary types are generally observed. *Open-jaw (OJ) itineraries* refer to those deployments where the cruise begins at one homeport and end at another. *Round Trip* or *Closed-jaw itineraries*—the more common type observed—begins and end from the same homeport.
- 23) **Length Overall (LOA).** Total length of a cruise vessel, including any incidental structure that may extend this dimension.
- 24) **Lower Berth Capacity.** The number of beds of standard height on a cruise vessel. The number of lower berths determines the vessel's normal passenger capacity. *Maximum Passenger Capacity* refers to the total number of passengers that can be accommodated on the cruise vessel in lower berths and other flexible berths (also referred to as *upper berths*).
- 25) **Met ocean.** A contraction of the words 'meteorology' and 'oceanology' referring to the waves, winds and currents conditions that affect offshore operations.
- 26) **Mixed-Use Facility.** Refers to facility or complex with more than one type of real estate or operational use. Mixed-use facilities are generally: (1) Contiguous in nature; (2) Developed within a broader master plan constructed at one time or in phases; and, (3) Provide for a symbiotic vessel to occur among all uses such that the sum of the mixed-use facility from a

real estate or operational perspective is greater than its parts. Mixed-use maritime facilities often include cruise, ferry, marina, commercial, residential, recreational and other upland transportation facilities.

- 27) **Need.** A condition or situation in which something is required or wanted. Necessity; obligation. To be necessary.⁵
- 28) **Panamax vessel.** Size standard that equals the largest vessel dimension capable of transiting the Panama Canal. Generally based on the beam of the vessel. Vessels classified as Panamax are of the maximum dimensions that will fit through the locks of the Panama Canal, each of which is 304-m long by 33.5-m wide and 25.9-m deep. Thus a Panamax vessel will usually have dimension of close to 965 ft. long (294m), 106 ft. wide (32.3m) and a draft of not more than 39.5 ft. (12.04m). See Beam.
- 29) **Passenger Services Act (PSA).** Under the Passenger Vessel Services Act of 1886 (46 USC §289), foreign-flagged vessels cannot transport passengers directly between U.S. ports.
- 30) **Passenger Tax** (also referred to as a *head tax*). Port charge assessed against each passenger aboard the vessel. Generally the principal income stream to ports and destinations for accommodating cruise activities.
- 31) **Port-of-call** (also referred to as a *way-port*). One of several destinations visited as part of the cruise itinerary. The focus of the port-of-call is on tourism activities adjacent to the cruise arrival area and the transportation of passengers to regional points of interest.
- 32) **Post-Panamax vessel.** Size standard that exceeds the largest vessel dimension capable of transiting the Panama Canal. Generally based on the beam and length of the vessel. These vessels have dimensions that are wider than longer than Panama Canal locks – such as a beam of 36-m. and length of 311-metres. See Beam.
- 33) **Revenue Passenger.** This generally refers to a homeport passenger or in some very limited cases port-of-call passengers (Vancouver where all passengers are charged for on/off the vessel), whereby passenger counts reflects the Port's passenger wharfage or Tariff rate charging policy. For homeport calls the actual number of passengers is doubled to show

⁵ The American Heritage Dictionary of the English Language, Fourth Edition by Houghton Mifflin Company, 2000.

that the cruise operator is charged by the port for the passenger boarding and disembarking the vessel at a set fee.

- 34) **Super-Post Panamax vessel.** Generally refers to the largest cruise vessels in existence today. This is also a general term for the largest cargo vessels in existence today. These vessels are defined not only by their dimensions, but also their carrying capacity of more than 3,000 + passengers and GT approaching and exceeding 150,000.
- 35) **Terminal.** Building where cruise passengers embark and/or disembark in a homeport destination.
- 36) **Throughput Passenger** (also referred to as a *revenue passenger*). Total number of passengers arriving and/or processed at a cruise homeport and port-of-call.
- 37) **Transit Passengers.** By literal definition, the status of cruise passengers at a port-of-call.

APPENDIX

CRUISE DESIGN VESSEL OUTLOOK

Understanding the potential future cruise design vessels that will call at the Florida ports is an important aspect when contemplating cruise infrastructure requirements for the long-term (25-years). In addition, the design vessel(s) for each of the Florida ports may be different based upon deployment characteristics of the cruise lines calling at the port.

The design vessel establishes requirements for navigation, berths, apron, fenders and mooring structures, gangways (quantity and capacity), terminal / reception space allocation, ground transportation area (coach, taxi, private vehicle and mini-bus quantities) and parking spaces, etc.

See **Figure A-28** for data on the continued growth of the passenger capacity per vessel. New build vessels are increasing in size and the trend is continuing.⁶

Figure A-27: Average passengers per ship by year of construction, 1999 – 2016



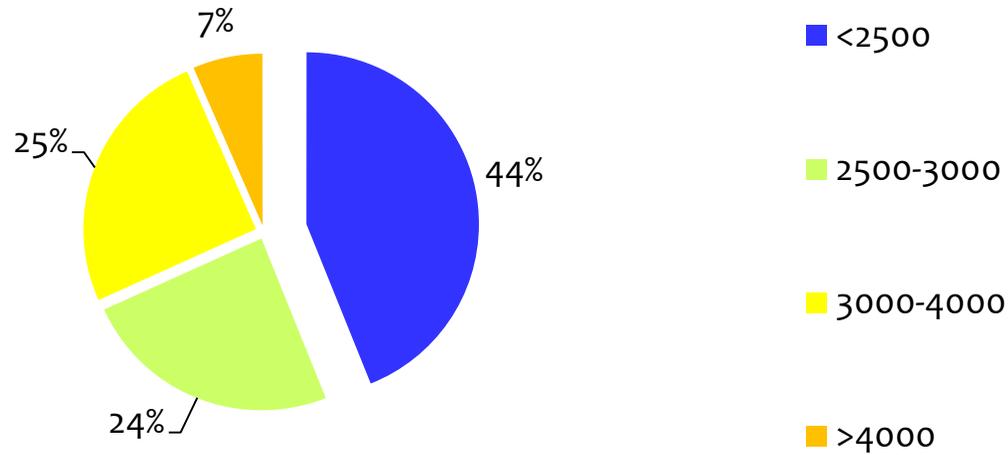
Source: Bermello Ajamil and Partners, Inc.

Based on cruise line interviews and an understanding of the cruise line market, the next generation of cruise vessels will initially be deployed to the primary cruise regions of the Caribbean and Mediterranean regions. However, it is likely that these vessels will also be deployed to new destinations worldwide over time.

Figures A-29 through A-31 illustrate the trend of the worldwide fleet passenger capacity expanding. Currently 44% of the fleet has less than 2,500-passengers.

⁶ For the years 2013 through 2016 Figure A1 averages do not include 8 total small ship vessels ranging from 200 to 928 passengers per ship.

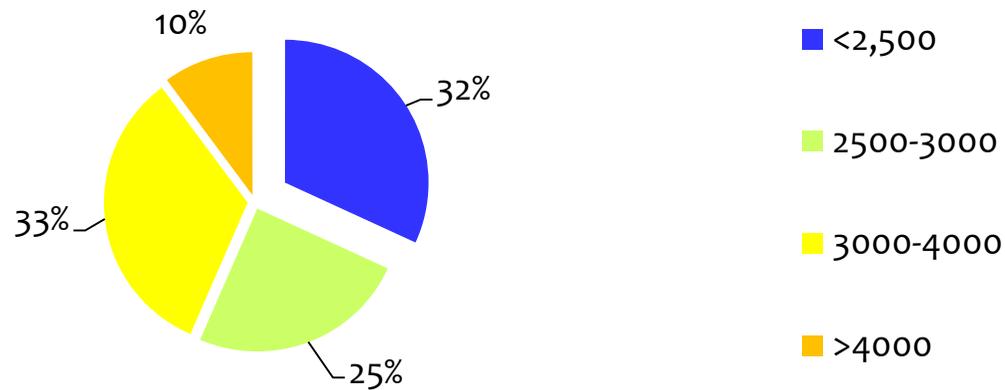
Figure A-28: Current world cruise fleet size distribution



Source: Bermello Ajamil and Partners, Inc.

Of the ships built in the last 10 years 33% have passenger capacities from 2,500 – 3,000. See **Figure A-30**.

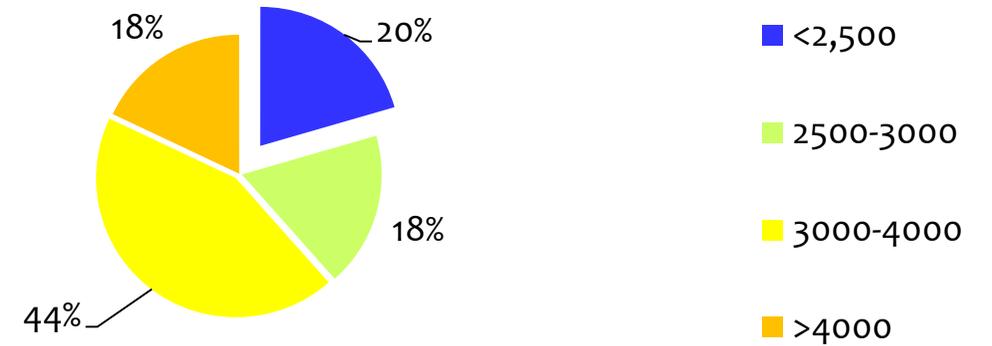
Figure A-29: Ships built in the last 10 years



Source: Bermello Ajamil and Partners, Inc.

Over the past five years, 44% of the vessels built have passenger capacities from 3,000 – 4,000 and 18% have more than 4,000-passengers. See **Figure A-31**.

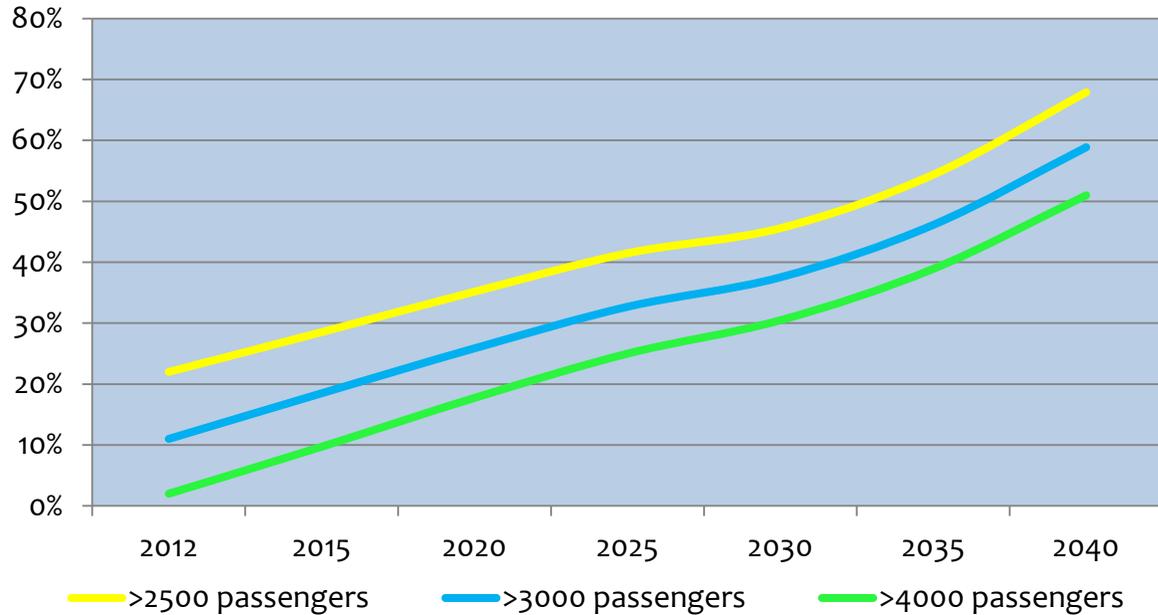
Figure A-30: Ships built in the last 5 years



Source: Bermello Ajamil and Partners, Inc.

Figure A-32 shows the projected number of passengers per ship in the worldwide fleet through 2040. This is based upon the current new build passenger capacity trend and the continued withdrawal of cruise vessels from the fleet as they reach an average age of approximately 25 years.

Figure A-31: Projected percentage of passengers per ship, 2012 – 2040



Source: Bermello Ajamil and Partners, Inc.

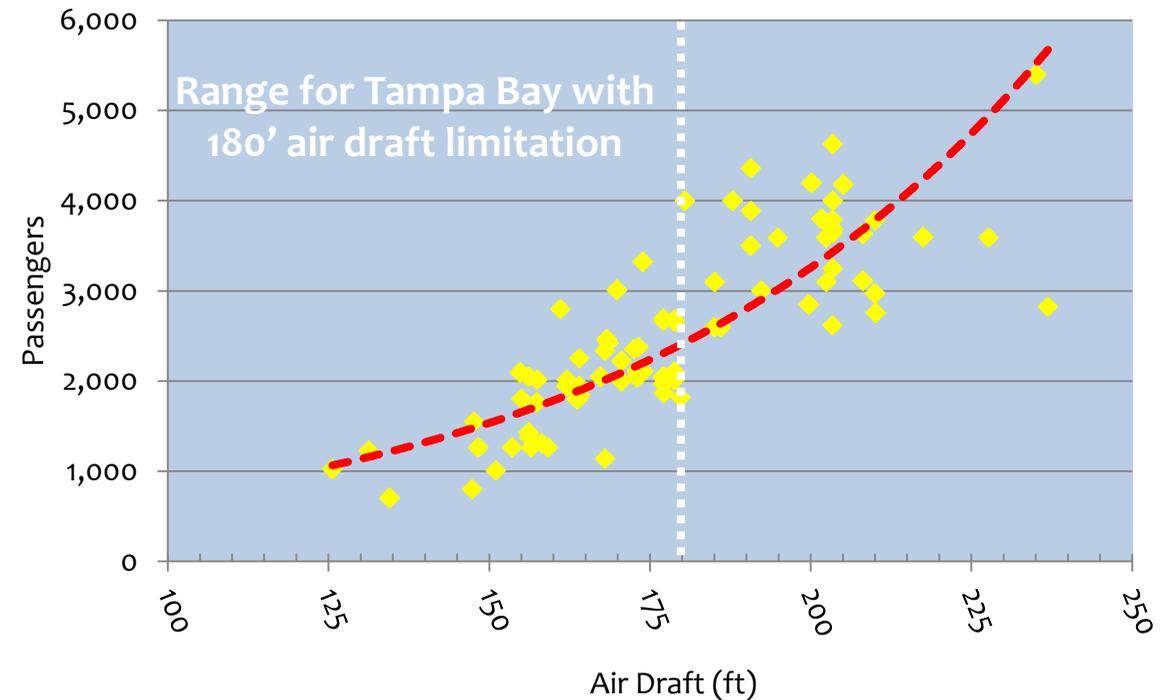
Future vessel sizes are driven by the need to optimize capacity providing for more space to increase revenue options and spread the cost over a greater area in terms of passenger loads. Thus, this larger vessel format provides for more passenger amenities and better sales yields through the use of outside cabins on the larger perimeter hulls with more balconies. There are also grander atriums for improved space allocation allowing for better flow and logistics related to the distribution of passenger boarding and disembarking. The economics of the vessels are also better in terms of crew-to-passenger ratios and power-to-fuel consumption allowing for greater fuel conservancy on a per passenger basis. With the continued rise of fuel costs due to the Emission Control Area (ECAs) rules and other worldwide regulations this is an important element in reducing the operational costs of each cruise vessel sailing.

Air Draft Assessment

Figure A-33 below illustrates the link between passenger capacity and air draft. This is a critical element in the new build trend to bolster the economies of scale of the new cruise vessels by providing space for

additional cabins, particularly outside / balconies that drive a higher ticket price. The other factors in this formula are the length overall and breadth of the cruise vessel. As shown, the new build cruise vessels with higher air drafts also accommodate more passengers. These are the primary vessels that have been deployed to the major homeports throughout Florida and worldwide. The range shown from 1,000 to 3,200-passengers per vessel is the primary fleet for Tampa Bay to date that can fit within the air draft limitation. However, several vessels from 3,000 to 3,200 do not fit into this profile.

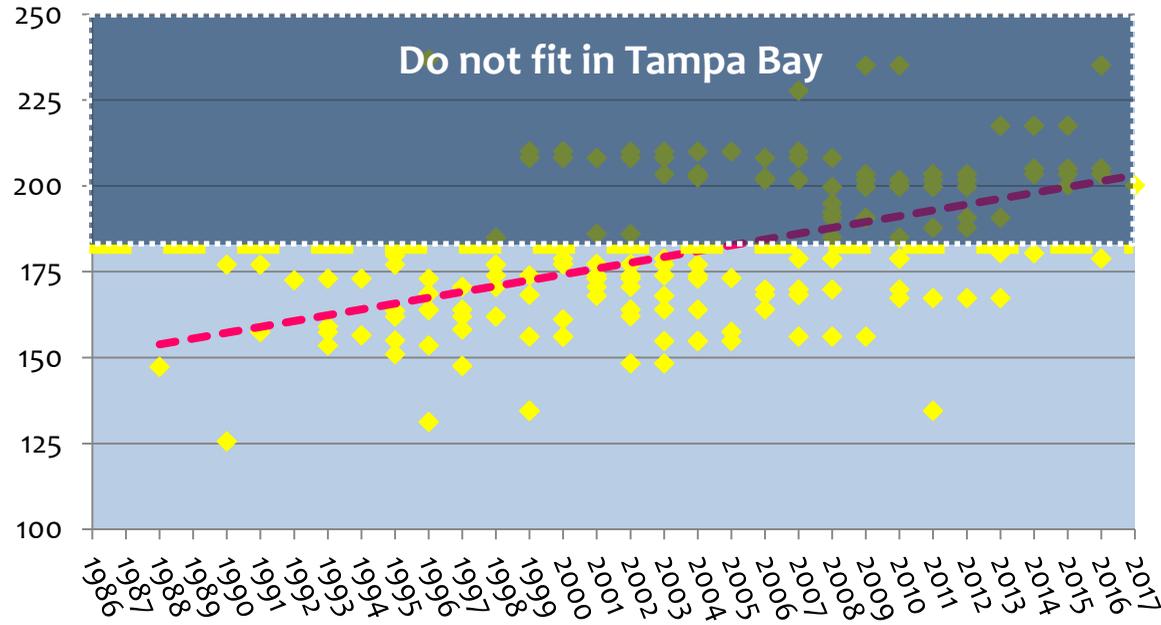
Figure A-32: Ship capacity vs. air draft



Source: Bermello Ajamil and Partners, Inc.

Figure A-34 provides the air draft of cruise vessels over a period from 1986 through 2017 for those ships built and delivered to date, as well as those currently on the order book for the primary North American fleet. As shown, beginning in the mid-1990s the air drafts of cruise vessels began to move over the 180-foot mark. Today, there are many cruise vessels being built with air drafts of more than 200 feet plus.

Figure A-33: Cruise ship air draft (ft.) by year of construction, North American fleet 1986 – 2017est.



Source: Bermello Ajamil and Partners, Inc.

In assessing the 166 vessels in the large vessel world fleet (> 700 passengers) as of December 2013 including the major North American brands, and European brands such as MSC, AIDA, PandO, Costa, etc. built from 1990 – 2017 (2014 – 2017 on order) the following particulars have been defined:

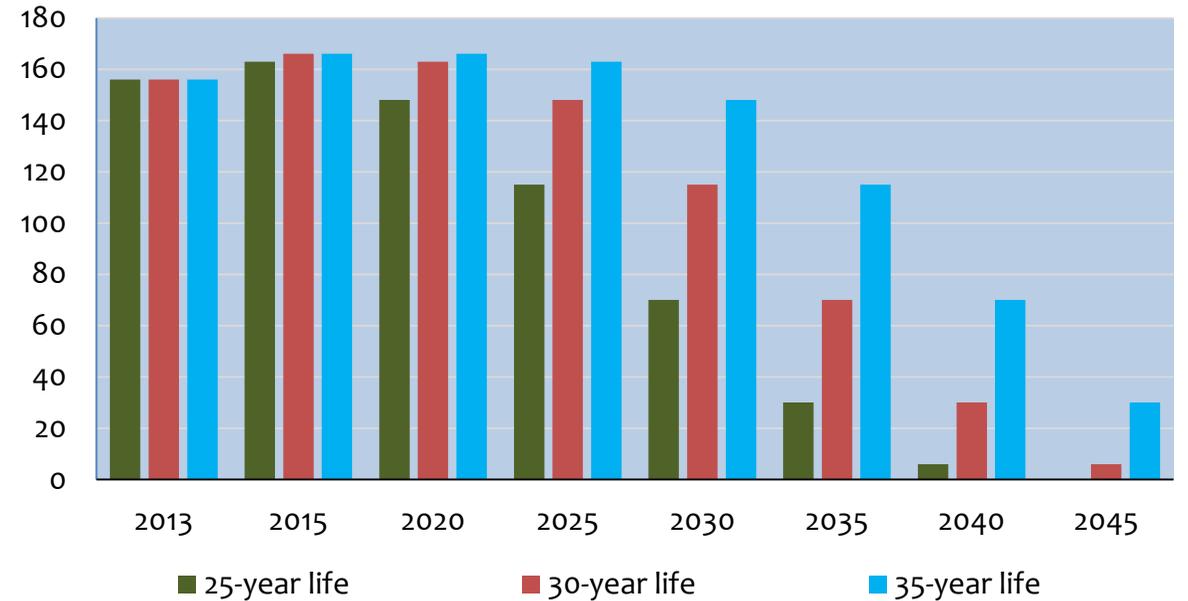
- 98 vessels are less than 180-foot air draft:
 - 39 were built prior to 2000 (40%) are more than 13 years old;
 - 46 were built from 2000 - 2007 (47%);
 - 13 were built after 2008 (13%), and are Less than 5 years old; and,
 - The average age of these vessels is 12 years, 74,002 GT, 1,991 lower berth capacity.

- 68 vessels are more than 180 ft. air draft:
 - 4 were built prior to 2000 (6%) and are more than 13 years old;
 - 22 were built from 2000 – 2007 (32%);
 - 42 were built after 2008 (62%), and are less than 5 years old; and,

- The average age is 5 years, 132,167 GT, 3,558 lower berth capacity.

Figure A-35 illustrates the projected longevity of the existing cruise fleet based upon the life cycle of a cruise vessel ranging from 25 to 35 years. This is the basis through which the estimates for the withdrawal of the smaller older vessels in the fleet for the newer larger ships are extracted. Based upon the new build dates of the fleet it is then estimated that approximately 100 of the fleet today will be gone by 2030 with a 25-year life span, and the same number in 2040 based upon a 35-year span.

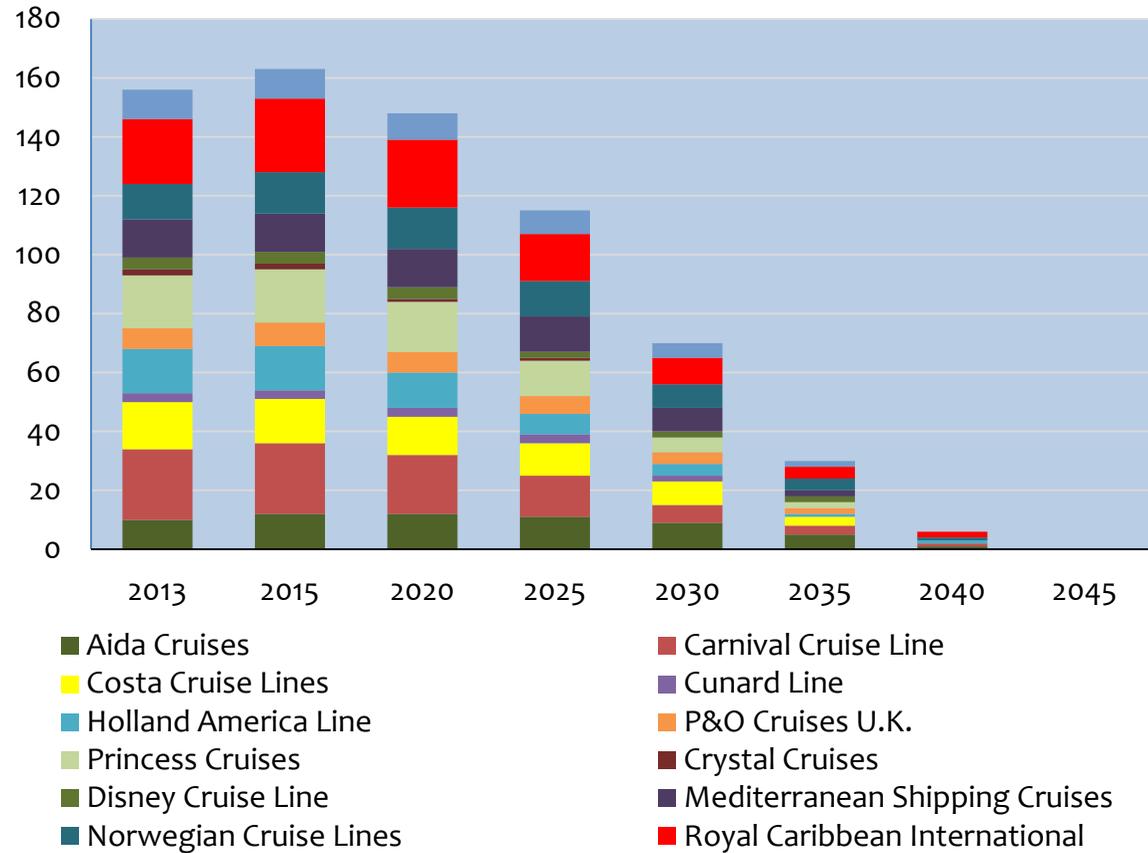
Figure A-34: Estimated longevity of the current cruise fleet



Source: Bermello Ajamil and Partners, Inc.

Figure A-36 provides a view of the existing major fleet’s longevity by cruise brand.

Figure A-35: Estimated longevity of the current cruise fleet by cruise brand



Source: Bermello Ajamil and Partners, Inc.

Cruise line feedback on air drafts varied based upon the brand and their deployment and operating characteristics. Critical feedback from the major cruise brands includes the following:

- New-build characteristics are determined by economies of scale and the cruise brands target market;

- Long-term it is likely that the vessel capacity of the ships will be more challenging for homeports and destinations than air draft limitations;
 - There are a few air draft limitation exceptions worldwide including Tampa Bay (bridge), Jacksonville (bridge and power lines), Baltimore (bridge), St. Lawrence River (bridge), Alaska Inside Passage (power lines and Seymour Narrows), Vancouver, CA (Lion's Gate Bridge); Baltic entrance via Copenhagen (bridge); and,
 - Other examples of bridge heights over the 180-ft. mark include the New York – Verrazano Narrows (219-ft.); San Francisco – Golden Gate Bridge (225-ft.); Suez Canal – Peace Bridge (230-ft.); Panama Canal – Americas Bridge (201-ft.).

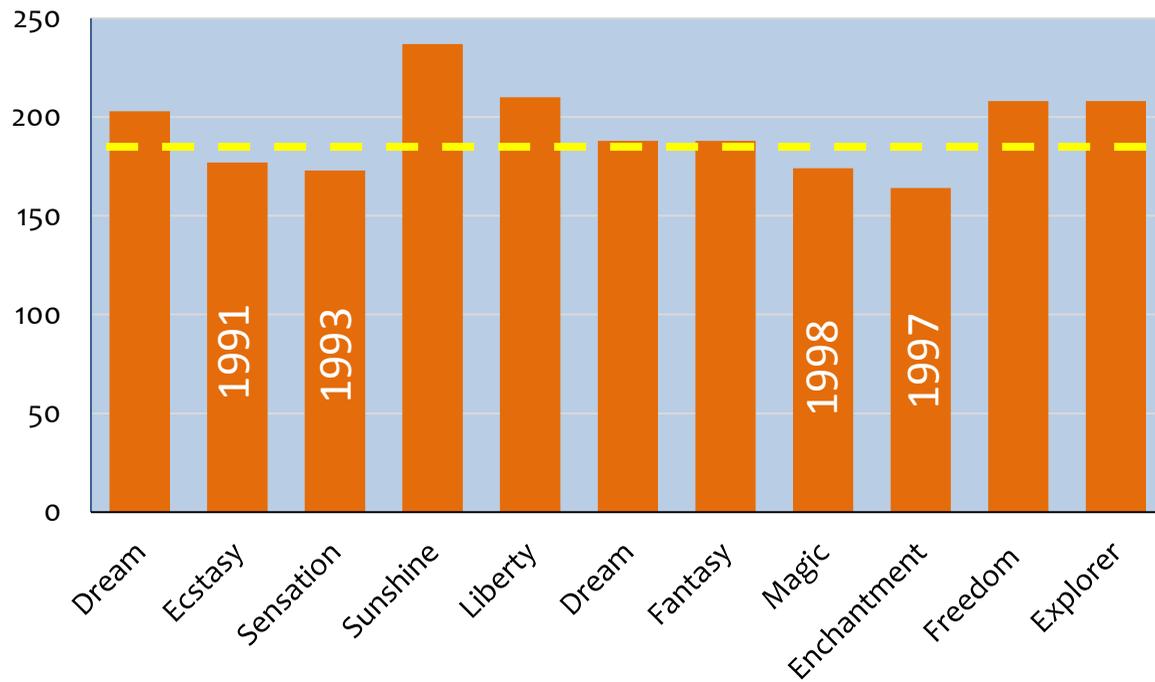


- A cruise vessel life expectancy in the major fleets is approximately 25 years, then they typically move to secondary market in Asia or the Greek Isles; and,
 - These secondary markets wanting tonnage are minimal at present and likely will not see increasing demand into the mid-term;
- It is unlikely that there will be a reverse trend of larger air draft vessels.
 - Vessels gain more floors for outside and balcony cabins that have higher ticket price points;
 - Passenger capacity and on-board revenue areas are expanded and provide for more opportunities;
 - It is less costly per passenger for cruise operational expenses; and,

- Some vessels may continue to be limited in areas due to harbor entryways, e.g., channel width and turning areas (length overall and breadth), maneuvering, berth lengths and upland terminal support areas.

Figure A-37 shows examples of the vessels deployed closest to the Tampa Bay region illustrating the number of vessels that fit into the 180-foot air draft parameter and those that do not presently. It is significant to note the age of the vessels deployed that do fit into the Tampa Bay air draft envelope range from 16 to 23 years old.

Figure A-36: Air drafts of vessels at the closest ports to Tampa Bay

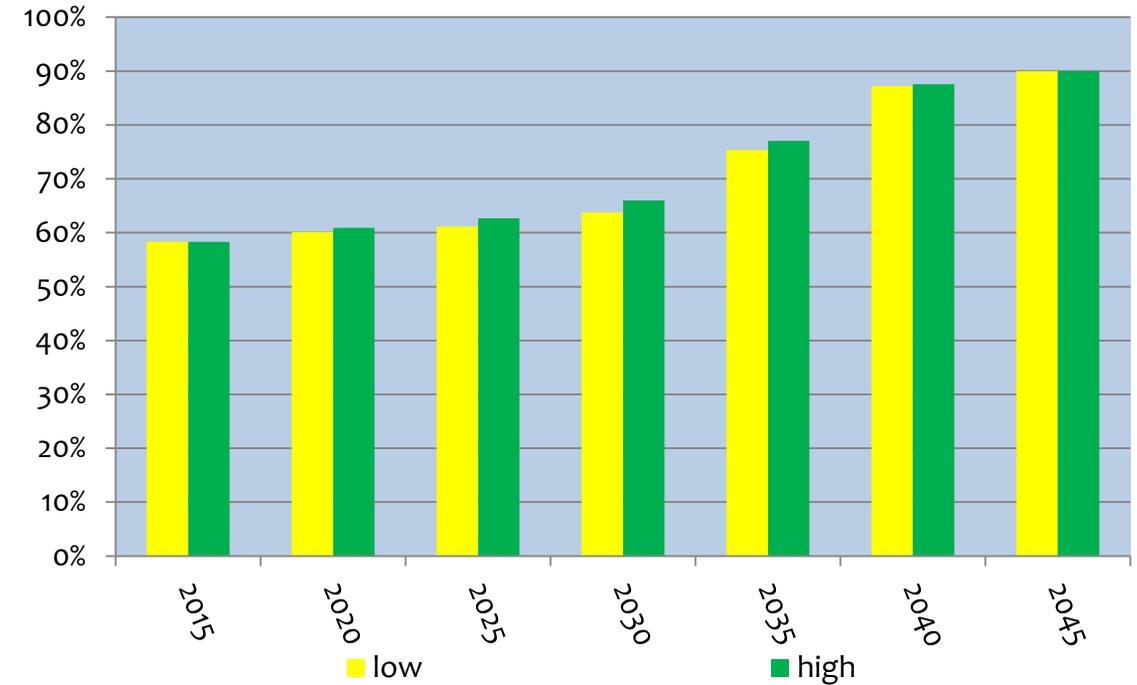


Source: Bermello Ajamil and Partners, Inc.

As shown in Figure A-38, an estimate of the primary North American cruise fleet that deploys to the Florida ports, inclusive of Tampa Bay, shows that in 2015 almost 60 percent of the vessels will be more than 180 feet in air draft. This will continue to increase over time as older vessels depart the fleet and

are replaced by new builds. Thus, by 2045 it is estimated that some 90% of the major North American cruise ships will be over 180 feet in air draft.

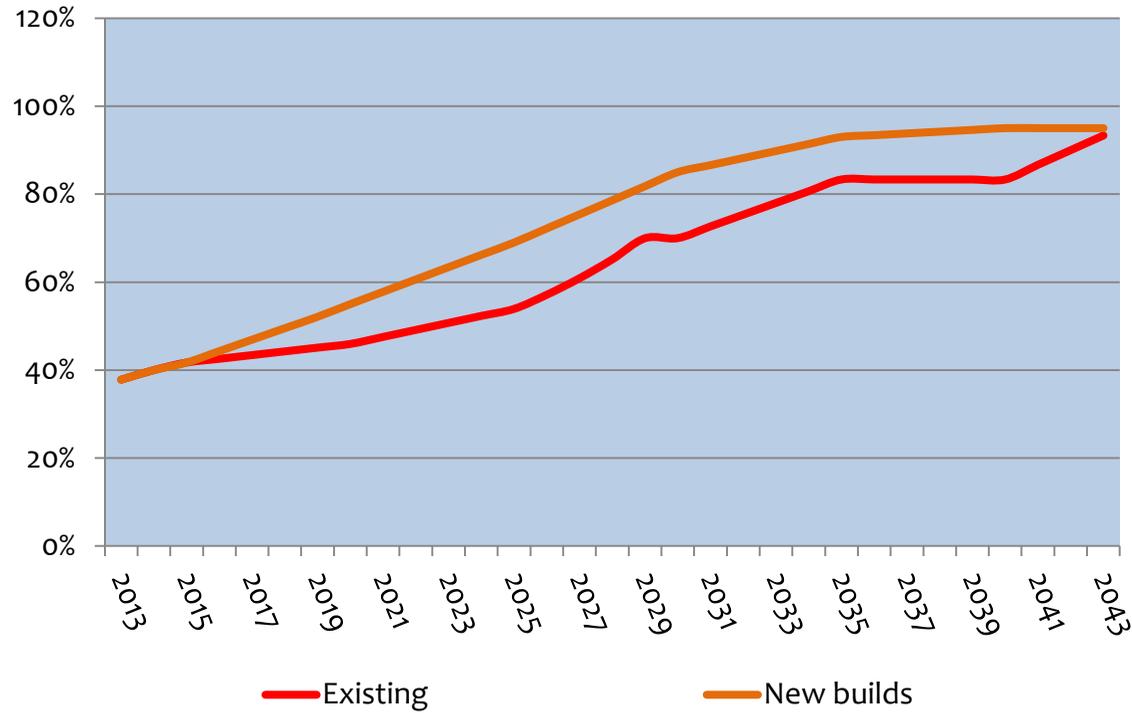
Figure A-37: Percent of North American cruise fleet above 180-feet, 2015 – 2045 estimates



Source: Bermello Ajamil and Partners, Inc.

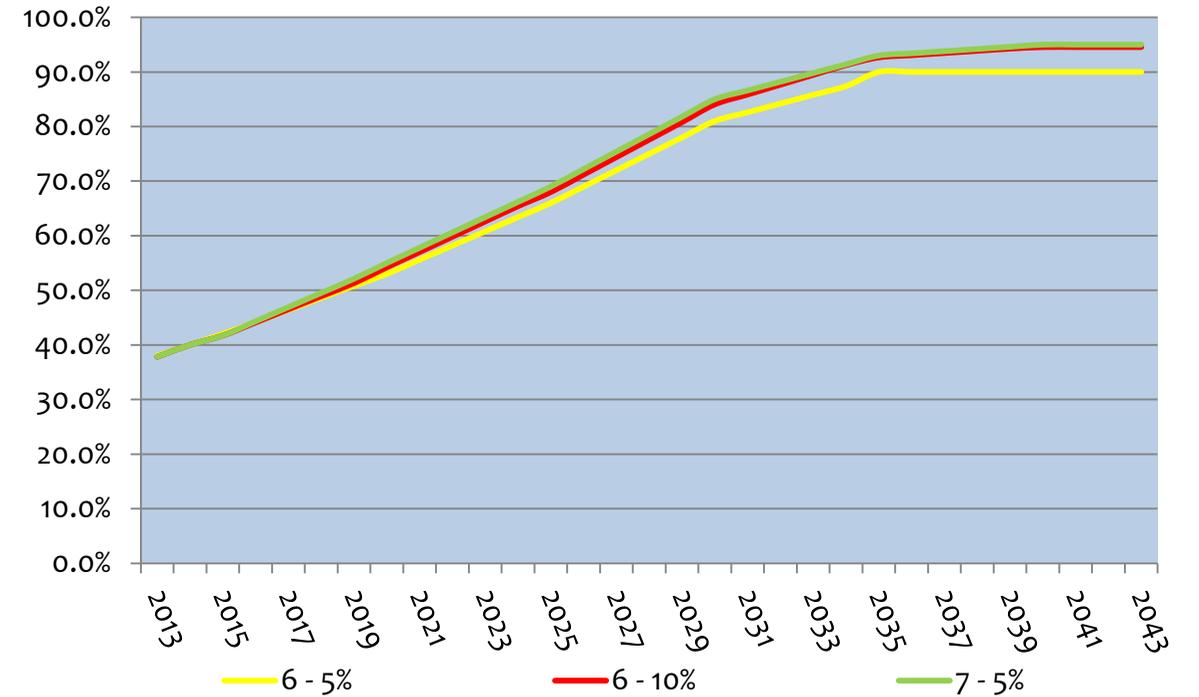
Figures A-39 and A-40 provide two ways to visualize the cruise fleet into the long-term in terms of air draft. These graphs show the overall composition in terms of the existing fleet minus the withdrawal of older vessels as they reach their life expectancy. Then, new ships that are currently in the marketplace (built within the past five years) with higher air drafts and the cruise vessels on order (likely trending into the future) continue to build a larger fleet of cruise ships with more overall tonnage, higher passenger volumes, lengths and increased air drafts.

Figure A-38: Forecast of North American cruise fleet above 180 feet in air draft



Source: Bermello Ajamil and Partners, Inc.

Figure A-39: Forecast of North American cruise fleet above 180 feet in air draft



Source: Bermello Ajamil and Partners, Inc.

In Figure A-40 the expressions illustrate the following:

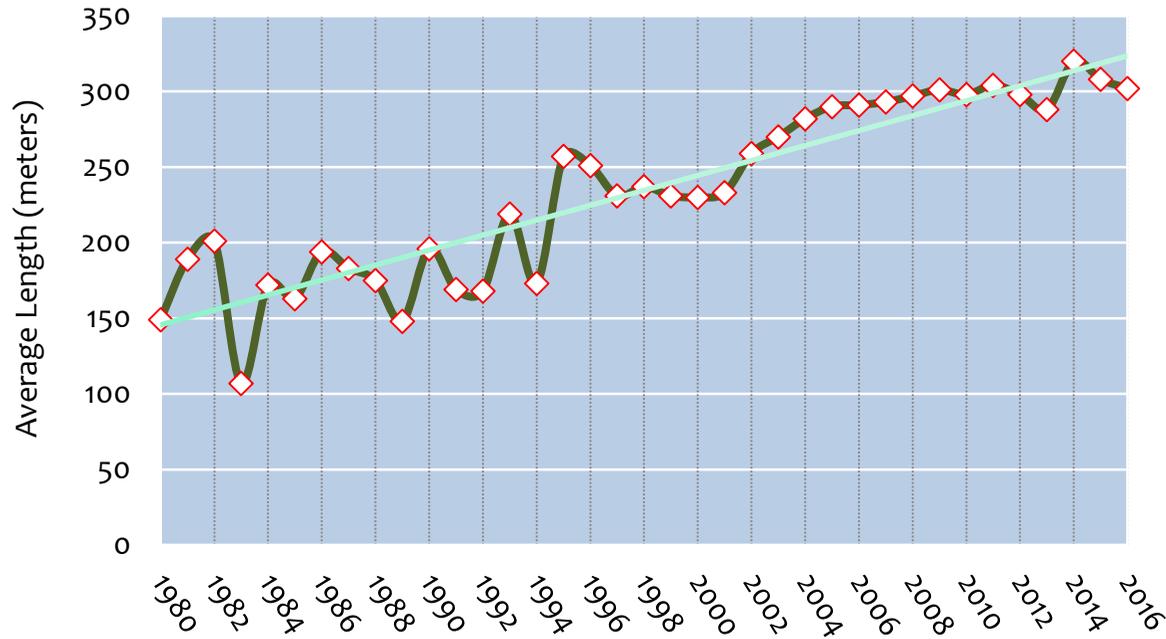
- The first number, i.e. the 6, or 7, are the estimated number of new ships delivered from here on out through the projection period on an annual basis; and,
- The second number (%) is out of those new ships the percentage that will be less than 180 feet in air draft.

Length Overall

As illustrated, the lengths and beams of cruise vessels are also increasing over time to accommodate the increased passenger capacity, cabin configuration and on-board revenue source accommodations.⁷

Figure A-41 shows the length of vessels in meters by year of construction hovering at more than 300 meters.

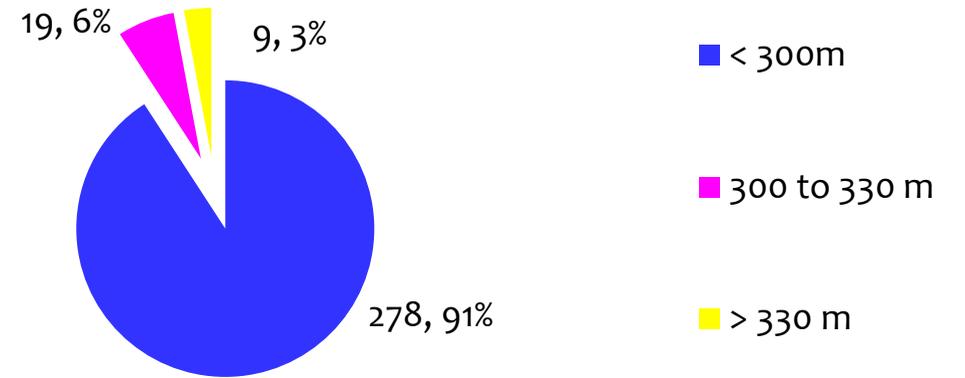
Figure A-40: Average LOA of ships by year of construction, 1980 – 2016



Source: Bermello Ajamil and Partners, Inc.

Figures A-42 through A-44 illustrate the trend of the worldwide fleet size expanding. The current fleet has 9% of the fleet at more than 300 meters. See **Figure A-42**.

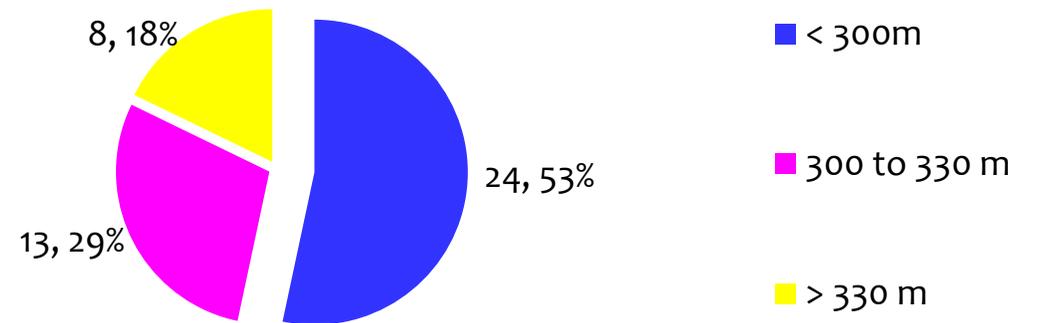
Figure A-41: Current world cruise fleet size distribution, 2013



Source: Bermello Ajamil and Partners, Inc.

Of the ships built in the last 5 years 47% are more than 300 meters in length. See **Figure A-43**.

Figure A-42: Ships built in the last 5 years, 2013

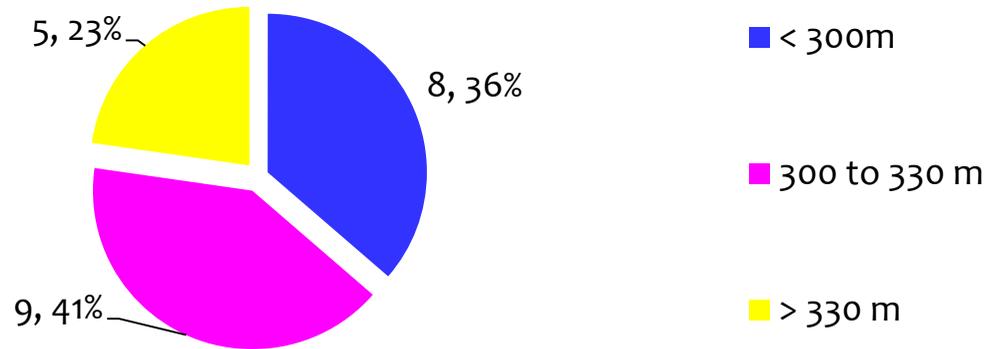


Source: Bermello Ajamil and Partners, Inc.

⁷ On-board Revenue Source Accommodations are spaces built into the vessels whereby revenues can be generated inclusive of bars, casino, retail outlets, spa facilities, specialty restaurants, etc. Larger vessels have more spaces for these types of revenue producing amenities.

Moving forward from 2013, 78% of the vessels on order are more than 300 meters long. See **Figure A-44**.

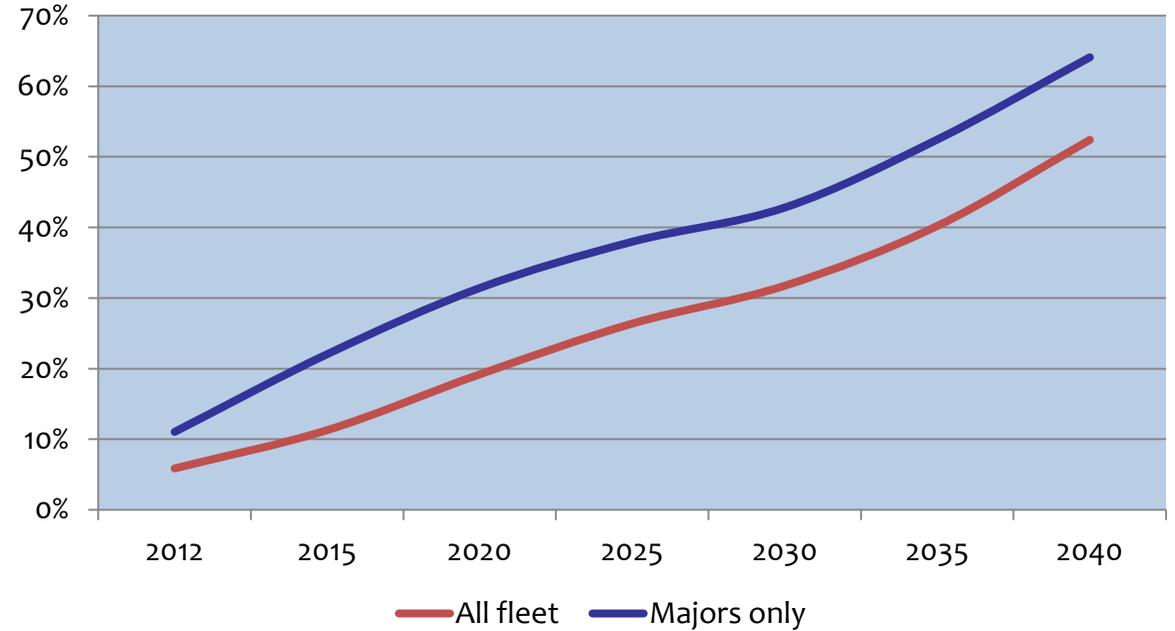
Figure A-43: Ships currently under construction, 2013



Source: Bermello Ajamil and Partners, Inc.

Thus, looking over the long-term in **Figure A-45** it is assumed that of the total worldwide fleet more than 50% of all cruise vessels will be greater than 300 meters in length in 2040.

Figure A-44: Projected percentage of ships over 300 meters (1,000-foot plus), 2012 – 2040



Source: Bermello Ajamil and Partners, Inc.

Observations based upon the air draft vessel analysis

Over the next 10 to 15 years the Sunshine Skyway Bridge will impede growth to the Tampa Bay region due to the air draft limitations for cruise vessels entering the Bay. This is a limiting factor today and will be a further limiting factor for cruise vessel deployment to the Tampa Bay area into the future. Cruise lines will respond, and have done so already, by placing smaller older ships into the regional market. The air draft impediment has already cost the region cruise vessel deployments as they are not able to accommodate larger cruise vessels with air drafts of more than 180-feet.

It is estimated that in 15 years cruise traffic to the Tampa Bay region will fall significantly as 90% of the world cruise fleet will not be able to enter Tampa Bay due to the height restriction of the Sunshine Skyway Bridge (180 feet). This would then reduce the importance of the Tampa Bay as a cruise homeport. Only smaller older vessels in the fleet would be deployed to Tampa Bay into the long-term.

This would cause a substantial negative economic impact to the community over the period as the numbers of cruise ship calls and passengers decline.

Current Tampa Bay Cruise Activity

Cruise vessels using the Tampa Bay cruise facilities in 2013 included the following:

- Carnival Cruise Line:
 - *Carnival Paradise* – 2,040 lower berths, 177.1-ft. air draft on 5, 5, 4-day sailings with 76 calls (built 1998); and,
 - *Carnival Legend* – 2,100 lower berths, 173.0-ft. air draft on 7-day sailings with 25 calls (built 2002).



- Holland America Line:
 - *Ryndam* – 1,266 lower berths, 156.5-ft. air draft on 7-day sailings with 15 calls (built 1994).
- Royal Caribbean International:
 - *Jewel of the Seas* - 2,110 lower berths, 173.9-ft. air draft on 5, 5, 4-day sailings with 28 calls (built 2004); and,
 - *Brilliance of the Seas* – 2,112 lower berths, 173.9-ft. air draft on 5, 5, 4-day sailings with 11 calls (built 2002).

- Norwegian Cruise Line:
 - *Norwegian Dawn* – 2,224 lower berths, 170.6-ft. air draft on 7-day sailings with 24 calls (built 2002).

In Fiscal Year 2013, Tampa hosted some 826,000 cruise passengers on 179 cruise calls. It is anticipated that in 2014 almost 1.1-million cruise passengers will sail from Tampa Bay on 239 cruises to the Caribbean, Bahamas, Panama Canal and other destinations throughout the region and hemisphere.

Tampa Bay Design Vessels

Multiple brands and vessel types servicing several different itineraries are within Tampa Bay’s potential market sphere. They include the North American market, which typically offers newer larger vessels, greater passenger capacity, higher air drafts, LOAs and beam. These have typically been the newer vessels in the worldwide fleet. Mid-size and small vessels are also a potential opportunity based upon the geographic position of Tampa Bay in relation to the Western Caribbean and the Panama Canal.

See the **Table A5** design vessel template for Tampa Bay.

Table A-5: Design vessel template

Type	Design Vessel 1 (Panamax)	Design Vessel 2 (post-Panamax)	Design Vessel 3 (super post-Panamax)
Passengers	2,000 to 2,600	2,600 to 4,000	4,000 to 5,400 +
Crew	850	1,200	+1,200
GRT / Displacement Tons	Up to 100,000 / + 50,000	+ 100,000 / + 50,000	+ 150,000 / + 70,000
LOA (ft)	900 - 985	985 - 1,100	1,100 +
Beam (ft)	118	Over 118 (gen.130 - 165)	150 +
Draft (ft)	28 - 36	28 - 36	28 - 36
Air Draft (ft)	Less than 178	178 to 208 +	208 +

Source: Bermello Ajamil and Partners, Inc.