

# *Nantucket Memorial Airport Master Plan Update*

## CHAPTER 5 - AVIATION ACTIVITY FORECASTS

*-REVIEW DRAFT - SUBJECT TO CHANGE-*



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# Nantucket Memorial Airport Master Plan

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### Forecast Summary

A number of both internal and external factors impact demand for air services at Nantucket Airport (ACK). Chapter 4, Aviation Activity, discussed a number of the internal and external factors that affect demand at ACK, as well as the unique characteristics of the Island and its travel market. Forecasts try to account for the various factors and assess their potential impact on demand for aviation services (Section 5.03).

The following section presents the highlights of each of the forecast scenarios, and in particular the potential risks to each of the forecasts. The likelihood that any particular factor or risk will occur, or what specific impact it may have on air service at ACK, is difficult to quantify. A number of the factors and risks identified below represent industry trends that may impact service at ACK, or may possibly have little or no impact. As a result, it will be necessary to continually monitor aviation activity levels and trends and compare them against these forecasts to assess the validity of the assumptions used as well as the anticipated growth rates. For example, if one or more of the risk factors identified below occur – such as, if avgas fuel prices were to increase suddenly due to restricted availability – then those activities reliant on avgas, including the year-round short-haul air carriers and owner-flown general aviation aircraft, should be monitored very closely for changes in activity.

As discussed below, there are many internal and external factors that impact demand for aviation services, and it is difficult to anticipate potential changes in all of those factors. The preferred scenarios identified below are based on recent historic trends, input from industry representatives, and outlooks of various external factors such as regional economic conditions, etc.

- *Passenger enplanements on year-round, short haul scheduled air service* by Cape Air, Nantucket and Island Airlines are anticipated to experience slow growth through 2030. The air carriers have indicated they will continue to operate their current fleet, primarily the Cessna 402, and Island will gradually increase the number of Caravans operated. It is possible that new non-stop markets such as ACK-ALB (Albany NY) may be served, although Cape Air has established a hub operation at Boston Logan and has code share and interline agreement with Jet Blue and United. As a result it is likelier that new service to/from ACK will go through BOS or perhaps PVD (Providence). This scenario assumes continued availability of 100LL avgas and prices will not rise faster than the overall rate of inflation. Risks to the forecast include:
  - Increased competition from high-speed ferry service, particularly if additional ferry capacity is added and the fare differential between air and ferry service widens;
  - Upgrading the current fleet (i.e. replace the Cessna 402s) in a short period of time due to sudden changes in the price and/or availability of 100LL avgas or increased maintenance costs on the C-402. A fleet change (e.g. replacing all of the C-402s with Caravans) would result in higher operating costs and higher ticket prices, increasing the fare differential with ferry service. Replacing the C-402s with larger turboprops such as the Beech 1900 or DH-8-300 would require even higher acquisition and operating costs, including compliance with federal aviation regulation (FAR) Part 121;
  - The Essential Air Service (EAS) program loses federal funding, which Congress has debated previously. While ACK, BOS, HYA, EWB and PVD are not EAS airports, Cape Air has developed a large regional and national network based on serving EAS airports. The discontinuation of the EAS program would have a significant impact on Cape Air, which would also likely impact its service on the Cape and Islands. Island Airlines does not serve EAS airports.



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- Increased airport and/or airspace security procedures, such as additional passenger screening and/or greater use of temporary flight restrictions could make other modes of travel more attractive;
  - Extended downturn in the statewide and/or national economy, particularly another recession similar to the one from Dec. 2007-2009<sup>1</sup>, that changes visitor travel patterns to the Cape and Islands.
- *Scheduled air service by major airlines during the summer season to hubs* in New York, Washington D.C., and Boston will continue to increase gradually through 2030, and exhibit steady growth. There is a possibility of new service to one or more hubs from ACK, and as well as service being shifted from an existing hub (such as DCA in Washington DC) to Philadelphia, a major US Airways hub. If Cape Air were to discontinue ACK-BOS service, it is possible that Jet Blue could provide summer-only ACK-BOS service with ERJ-190 regional jets, which it has done in recent years. Risks to the forecast include:
    - Rapidly rising aircraft operating costs result in higher ticket prices and ancillary fees, reducing the financial viability of serving relatively small seasonal markets;
    - Replacing 50-seat aircraft with larger 70 to 100 seat aircraft results in reduced frequency of service to ACK, which lowers passenger enplanements, eventually making some routes uneconomical;
    - Airline industry consolidation results in a change in marketing and operating strategy;
    - Increased airport and/or airspace security procedures make other modes of travel more attractive;
    - Downturn in the statewide and/or national economy, particularly another recession.
- *Corporate aircraft and on-demand air taxi activity* will continue to grow throughout the forecast period. That traffic segment rebounded at ACK after the decline in the 2008 to 2010 period, and is showing long-term growth potential both regionally and nationally. Risks to the forecast include:
    - Stagnant economy, including another economic recession similar to late 2007-2009, with a declining stock market and lower corporate profits;
    - Rapidly rising fuel prices (Jet A fuel);
    - Increased airport and/or airspace security procedures, such as passenger screening and/or more temporary flight restrictions for example, make other modes of travel more attractive;
    - Sharp decline in property values on the Island.
- *General aviation activity* – the Master Plan forecast assumes that if a variety of factors remain positive (e.g. if the price of 100LL avgas increases at or less than the overall rate of inflation, among other factors) then GA aircraft operations at ACK will remain stable. As defined here GA is predominantly owner-flown piston-engine aircraft, including some owner flown turboprops (such as the TBM-700 and Piper Meridian) and small business jets (Cessna Citation CJ-1 and Mustang, Embraer Phenom 100, etc.) Overall GA activity has been declining in Massachusetts and the U.S. as a whole since 2000 for a variety of reasons, including the rapidly rising cost of aircraft ownership and operation. The FAA does not anticipate a strong rebound in piston-engine aircraft activity locally, regionally, or nationally (see Appendix 5.1 and 5.2). There are plans to resume flight training at ACK which would stimulate local aircraft activity. However, there are a number of risks to the forecast:
    - Aircraft ownership and operating costs continue to rise much faster than the overall rate of inflation due to factors such as higher fuel prices, higher maintenance costs, potential user fees;

<sup>1</sup> As defined by the Bureau of Economic Analysis (BEA)



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- No viable replacement for 100LL avgas is found and the fuel is discontinued. Worst case scenario would be that the supply of 100LL fuel is disrupted suddenly.
  - The economy stagnates and personal disposable incomes remain flat or decline in real terms;
  - Increased and/or new airport and/or airspace security procedures, particularly those targeted at GA activity similar to ones proposed three years ago by TSA for corporate aircraft, and those currently in place around Washington DC<sup>2</sup>;
  - The government imposes user fees to cover some of the cost of providing ATC and airmen support services. In 2013 FAA imposed special fees to provide ATC services for airshows and other special aviation events.
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- Public Service, Government, and Military traffic has represented a small percentage of the total activity at ACK between 2000-2012. No significant changes are anticipated through the end of the planning period 2030. For example, no military or State Police units will be based at ACK, and the Coast Guard will continue to operate from CGAS Cape Cod. Each of the government agencies and private companies such as Boston MedFlight, will continue to fly into ACK on as-needed basis for public service missions.

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<sup>2</sup> Source: [http://www.faa.gov/news/updates/adiz\\_frz/media/DC\\_ADIZ-FRZ\\_Advisory.pdf](http://www.faa.gov/news/updates/adiz_frz/media/DC_ADIZ-FRZ_Advisory.pdf)



## Nantucket Memorial Airport Master Plan

### 5.0 Introduction

Forecasts of aviation demand are a key element of the Airport Master Plan. As noted in Chapter 4, Aviation Activity, existing and future aviation activity has a direct impact on every aspect of Nantucket Airport management, operation, finances, and planning. Future aviation activity also directly impacts much of the Island in terms of providing a critical transportation link to the mainland, supporting economic development, providing emergency services, as well as environmental conditions. As noted by the FAA in their Advisory Circular, *Airport Master Plan*:

“Purpose of aviation forecasts – Forecasts of future levels of aviation activity are the basis for effective decisions in airport planning. These projections are used to determine the need for new or expanded facilities. In general, forecasts should be realistic, based upon the latest available data, be supported by information in the study, and provide an adequate justification for airport planning and development. Any activity that could potentially create a facility need should be included in the forecast.”

The FAA produces its own forecasts of aviation demand both on the local as well as regional and national level, which are discussed in more detail below. The FAA reviews the Master Plan forecasts in relation to their Terminal Area Forecast (TAF) for Nantucket Airport.

As noted in the FAA AC, *Airport Master Plan*:

“The general requirement for FAA approval of the master plan study’s forecasts is that they are supported by an acceptable forecasting analysis and are consistent with the TAF. Master plan forecasts for operations, based aircraft, and enplanements are considered to be consistent with the TAF if they meet the following criteria:”

#### “2) Other Commercial Service Airports

- a) Forecasts differ by less than 10 percent in the 5-year forecast and 15 percent in the 10-year period, or
- b) Forecasts do not affect the timing or scale of an airport project, or
- c) Forecasts do not affect the role of the airport as defined in the current version of FAA Order 5090.3, *Field Formulation of the National Plan of Integrated Airport Systems.*”

The Master Plan forecasts were compared against the FAA’s Terminal Area Forecast (TAF) for Nantucket Airport, and the two forecasts were within the FAA’s range for passenger enplanements, as well as air carrier and general aviation aircraft operations (Table 5.0).



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Table 5.0

<i>Airport Master Plan &amp; FAA TAF Forecast Comparison</i>			
<i>Passenger Enplanements</i>			
	<u>FAA TAF</u>	<u>AMP</u>	<u>% Diff.</u>
2018	211,484	196,996	-6.8%
2023	244,150	215,326	-11.8%
<i>Air Carrier + Commuter (Air Taxi) Ops</i>			
	<u>FAA TAF</u>	<u>AMP<sup>1</sup></u>	<u>% Diff.</u>
2018	107,258	101,754	-5.1%
2023	118,425	108,185	-8.6%
<i>General Aviation Aircraft Ops</i>			
	<u>FAA TAF</u>	<u>AMP</u>	<u>% Diff.</u>
2018	37,270	37,270	0.0%
2023	37,580	37,580	0.0%

AMP = Nantucket Airport Master Plan  
 FAA TAF = FAA Terminal Area Forecast  
 1. AMP operations include both scheduled + on-demand air taxi activity

## 5.0.1 Aviation Activity Forecasts

Nantucket Airport accommodates a wide variety of aviation activity. Each type of activity is examined and projected based on the factors relevant to that type of activity.

- Air Carrier
  - Year-round Short-Haul Service
  - Seasonal Hub Service
  - Non-scheduled / On-demand Air Taxi Service
  - Peak Season / Peak Month / Average Day /Peak Hour
- General Aviation
  - Piston Engine / Owner Flown
  - Corporate / Professional Crew
  - Local / Training
  - Peak Season / Peak Month / Average Day /Peak Hour
  - Based Aircraft
- Government Agency/Public Service/Military
  - Public service
  - Other missions (e.g. VIP)

## 5.0.2 Master Plan Forecast Periods

The Master Plan forecast period extends from 2013 to 2030. As discussed below, a number of public agencies and private companies forecast aviation activity and each uses a different forecast period based on their particular requirements. The most recent FAA Terminal Area Forecast (TAF), for example, extends between 2012 and 2040.



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The FAA recommends that airport master plans and their activity forecasts be updated on a regular basis, including whenever a significant change is occurring or anticipated to occur. As a result, the Master Plan forecasts should be reviewed annually and checked against actual activity trends, and updated at least every five years, and more frequently if unforeseen changes occur.

### 5.0.3 Relevant Forecast Factors

There are several key points regarding aviation forecasts in general that are applicable to this Master Plan:

1. Aviation is a means to an end. The large majority of people use airplanes as a mode of transportation to move themselves, others, and cargo between different points. As a result, demand for aviation services fluctuates based on the need for transportation, which varies based on a variety of external factors (such as economic and demographic factors). A large percentage of travelers between Nantucket and the mainland, both on the ferry and by air, are discretionary – i.e. non-resident visitors and second home owners.
2. Aviation activity does not happen in a vacuum. External factors such as economic conditions, federal regulations, local and regional demographic trends, environmental constraints, etc., all have a direct bearing on demand for aviation services.
3. Forecast reliability, whether it be for aviation activity, economic conditions, the weather, etc., all have similar limitations:
  - a. the level of reliability (i.e. statistical level of confidence) is inversely proportional to time – i.e. forecasts grow less reliable the further they extend into the future;
  - b. external variables are more difficult to predict/anticipate – for example, what will competitive modes of transportation do to increase market share, and what will the price of aviation fuel be in 2015 and 2020, etc.;
  - c. all forecasts need regular benchmarking against current conditions to ensure that the assumptions remain valid, or are adjusted so that anticipated activity matches reality.
4. While recent historic trends provide useful guidelines for future aviation activity, it cannot be assumed that those historic trends will continue indefinitely. For example, total aircraft operations at ACK have declined between 2000 and 2012, but have also shown cycles in which activity increased and then decreased. While it is important to examine whether such trends will continue and for how long, it is also important to identify possible changes that could alter that dynamic.

As discussed in Chapter 4, there are five distinct and separate travel markets on Nantucket: year-round residents; second home owners; seasonal residents (primarily employed in the hospitality and retail trade industry); non-resident visitors (short-term, typically two weeks or less); and short-term workers (daily and weekly commuters). Each market has different travel needs, price and schedule requirements, and each responds to different external market factors.

Economic and demographic characteristics have a significant impact on demand for air travel. Nantucket's economy is heavily dependent on summer tourist travel, followed by other special events (e.g. the tulip festival in spring, Christmas walk, etc.) The year-round population is relatively small (less than 11,000), and primarily employed in the hospitality, retail trade, and construction industries. The summer population increases to 50,000 – 60,000. As a result the primary users of air service are visitors to Nantucket vs. year-round residents.





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Nantucket has limited total land area, a large portion of which is protected. It also has among the highest average property and housing prices in the country, as well as insufficient affordable housing to meet year-round and seasonal demand. As a result, the potential for future growth of population and commercial/residential development is extremely limited, and those characteristics are not expected to change during this forecast period (through 2030).

As a result, increased demand for future aviation services will be limited unless a shift were to occur in the future in which existing ferry passengers were to use air service instead. However, in order for that to occur, passengers would want additional jet service to ACK from the New York metro region and Boston, as well as upgrade of aircraft type in the Hyannis-ACK market, and at a price that is competitive with ferry service.

Aviation activity at Nantucket Airport (ACK) falls within several broad categories that respond to different external and internal factors; scheduled and non-scheduled air passenger service; general aviation and corporate activity; and government agency and public service missions. There are also sub-segments within each of those three broad categories, and each aviation category is forecasted separately.

### 5.0.4 Forecast Scenarios

To address the variety of factors, this Master Plan developed and presents a range of future scenarios based on a number of external variables, such as fuel prices, scheduling by airlines, fleet and equipment choices, competition from other travel modes, economic conditions, airport and airspace security regulations, etc.

Because of the wide variety of factors that impact demand for aviation services and the uncertainty governing the future occurrence of certain events, three forecast scenarios were developed for each segment of the aviation market at Nantucket Airport. Each scenario encompasses relevant factors based on historical as well as industry-wide trends. Each scenario also includes external factors such as economic conditions, fuel price, competitive modes of transportation, etc. The three scenarios are:

- **Status Quo:** the relevant factors that have impacted each type of aviation activity in the recent past will remain relatively constant throughout the forecast period. For example, this scenario assumes that demographic conditions on the Island will remain relatively constant throughout the forecast period.
- **Downward Pressure:** certain factors adversely impact aviation activity. For example, in this scenario possible future scarcity of 100LL aviation fuel could adversely impact both piston engine GA activity, as well as service by Cape Air/Nantucket Airlines and Island Air.
- **Upward Trends:** a variety of factors could stimulate further aviation activity at ACK, reversing recent downward trends. For example, in this scenario the regional and national economy continue expanding, aircraft operating costs rise at or below overall rate of inflation, tourism in Massachusetts and the Cape and Islands increases, and demand for aviation services increases.

In addition to describing each scenario, this analysis also estimated the relative likelihood of each scenario occurring. It is important to note that any of the external factors, and combination of factors



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described below, may occur. But it is difficult to quantify the likelihood of their occurrence, or even the exact impact it may have on activity at ACK.

In addition, factors not anticipated by any analyst may also impact aviation activity at ACK. Two recent examples of external factors that were not anticipated but that had significant impacts on worldwide air travel were the outbreak of the Severe Acute Respiratory Syndrome (SARS) between November 2002 and July 2003, and the eruption of the volcano (Eyjafjallajökull) in Iceland in 2010. Both events greatly impacted domestic and international air travel, both were unplanned, and aviation authorities could not predict how long each event would last or what the long term impact would be. In the U.S., the single greatest unanticipated event that impacted domestic and international aviation were the attacks on 9/11/2001.

### 5.1 Scheduled Air Carrier Forecasts

Air carrier activity encompasses three distinct types of commercial passenger service at Nantucket Airport:

1. Year-round service provided by Cape Air/Nantucket Airlines, and Island Air. These carriers operate under Federal Aviation Regulation (FAR) Part 135 as scheduled air taxi. They operate 9-passenger seat aircraft (Cessna 402 and Cessna 208 Caravan) in short-haul, high-frequency network.
2. Seasonal hub oriented service provided by major airlines (Jet Blue, United, Delta, and US Airways), and their regional partners. Operating under FAR Part 121, they operate regional jets and turboprops to JFK, Newark, and Washington Reagan Airports.
3. On-demand non-scheduled air taxi service provided by a variety of operators, operating under FAR Part 135.

Each of these three commercial operations serve different travel needs, have unique operating characteristics, and respond to different external market forces.

#### 5.1.1 Year-Round Short-Haul Scheduled Air Service Forecast

The type of high-frequency, short-haul scheduled passenger service provided by Cape Air/Nantucket Airlines and Island Air dates back to the 1960s starting with Provincetown-Boston Airlines (PBA). As discussed in Chapter 4, their primary short-haul markets to/from Nantucket are Hyannis and Boston, followed by Providence, New Bedford, and White Plains, NY. As discussed in Chapter 4, Aviation Activity, the year-round short-haul service is very different than the summer season, hub-oriented air service at ACK.

The largest single passenger market is Nantucket-Hyannis. Particularly during the summer season the three carriers offer shuttle-like service between Nantucket and Hyannis, and Cape Air to Boston Logan Airport, although there are indications that some characteristics of that service pattern are changing. The primary competitors on the Nantucket-Hyannis route are the Steamship Authority (SSA) and Hy-Line Cruises, particularly the high-speed ferry service.

Year-round scheduled passengers on Cape/Nantucket/Island declined by 21% between 2009 and 2012. At the same time, passenger enplanements on summer season hub service has increased by almost 28% over the same period.



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Table 5.1

Passenger Enplanements 2009-2012 Nantucket Airport			
C.Y.	Year-Round Pass.	Summer Season Pass.	Total Pass. Enplanements
2009	173,870 (85.3%)	29,916 (14.7%)	203,786 (100%)
2010	168,470 (83.5%)	33,168 (16.5%)	201,638 (100%)
2011	143,988 (80.3%)	35,422 (19.7%)	179,410 (100%)
2012	137,185 (78.2%)	38,235 (21.8%)	175,420 (100%)
Percent Change			
2009-2012	-21%	27.8%	-13.9%

Notes: Data source: Nantucket Airport. Summer season typically provided between June-September. Year-round service provided by Cape Air, Nantucket Airlines, and Island Airlines. Summer season service provided by a number of regional airlines operating under contract to major airlines (US Airways, United, Delta). JetBlue operates own regional service. Different hub destinations were served between 2009-2012

Factors in the recent decline in year-round passenger enplanements include the economic recession between late 2007 and 2009 as well as competition from the ferry service, noted above. The increase in passengers since 2011 is consistent with the improving economy, both regionally and nationally.

Three forecast scenarios were developed for year-round air service, and the underlying assumptions used in each scenario are described below. It should be noted that any combination of the circumstances (factors) described below may occur in the future, and each one by itself or in combination with other factors (e.g. such as rapidly rising avgas fuel prices combined with new FAA & TSA security regulations), would have a different impact on air passenger demand.

- Forecast Scenario 1 - Status Quo:
  - The three carriers, Cape Air, Nantucket Airlines, Island Airlines, will continue to operate their existing short-haul, high-frequency network throughout the forecast period.
  - The carriers will continue to operate 9-passenger seat aircraft such as the Cessna 402 and Cessna Caravan. As noted previously, the federal aviation regulations allow them to operate as scheduled air taxi carriers with 9 passenger seat aircraft. As noted in Chapter 4, the cost to acquire and operate turbine engine Caravans is higher than piston-engine C-402s, so a rapid change from C-402s to Caravans would likely require higher operating costs and ticket prices. Such a change is not anticipated in this scenario, but is considered in Scenario 2. If the carriers operate larger aircraft such as the DH-8-200 (50 pass. seat) or Beech 1900 (19 pass. seats), they would be required to operate under FAR Part 121, which is much more stringent and more expensive than Part 135. In order to continue operating the Cessna 402 this scenario also assumes that 100LL avgas will continue to be available at a reasonable price, or a drop-in replacement unleaded fuel.
  - No new markets will be served by the three carriers from Nantucket, but they will continue to improve service in terms of frequency to existing markets such as Hyannis, Boston, Providence, and White Plains, NY.
  - Airline ticket prices will increase no more than the average rate of inflation, and the difference in price between air and ferry tickets, particularly on the Hyannis-Nantucket route will remain relatively constant.
  - In this scenario it is anticipated that level of enplanements will fluctuate between 140,000 and 170,000 throughout the forecast period.



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- The Steamship Authority and Hy-Line Cruises will continue their ferry services between Hyannis and Nantucket, but will not significantly increase their fast ferry service, or lower their ticket prices.
- The Status Quo scenario is considered to be the likeliest of the three.
- Forecast Scenario 2 - Downward Pressure:
  - 100LL avgas becomes scarce and fuel prices rise faster than the average rate of inflation. No drop-in unleaded fuel replacement is available. In addition, aircraft maintenance costs increase significantly for the C-402, and the airplane becomes unviable to operate economically.
  - All three carriers (Cape/Island/Nantucket) convert their Cessna 402s to Cessna Caravans, a 9-seat turboprop that uses Jet A fuel. Island Airlines currently operates three Caravans. The cost to acquire and operate new turboprop aircraft such as the Caravan require increasing ticket prices, thereby making ferry service more attractive for price-sensitive passengers, and increasing the market share captured by SSA and Hy-Line between Hyannis and Nantucket. If the C-402s were completely replaced by Caravans in a short period of time (e.g. less than one calendar year), the increased operating costs and resulting rising ticket prices would increase the fare differential with ferry ticket prices to the point that the share of traffic on ferry service could increase rapidly.
  - Implementation of new federal fees and taxes, such as increased airport security fees, and/or new ATC charges (similar to fee structures in Canada, Australia, and Europe), could increase aircraft operating cost and ticket prices, and increase the fare differential with ferry ticket prices. Nantucket Airport is in the process of implementing Passenger Facility Charges (PFC). PFCs are commonly charged by commercial service airports across the U.S., and most airports have imposed the maximum allowable fee of \$4.5 per passenger. The Government Accountability Office determined that imposing PFCs had little or no impact on passenger enplanements, and that the improved facilities resulting from the additional revenue actually increased enplanements.<sup>3</sup>
  - The regional and national economy fluctuates between growth and stagnation, including future recessions. Disposable personal and average family incomes remain stagnant, the rate of overall inflation increases, and overall tourist travel throughout the Northeast declines.
  - There is a correlation between corporate aircraft activity and the performance of stock market indices (DJIA, NASDAQ, etc.) as well as corporate profits<sup>4</sup>. If the stock market declines and corporate profits do not increase, then corporate aviation activity will remain flat or decline.
  - A large part of Cape Air's existing network is Essential Air Service (EAS) airports throughout the Northeast and other parts of the U.S. If Congress eliminates funding for the EAS program, as has

<sup>3</sup> GAO/RCED 99-138, 1999, *Passenger Facility Charges, Program Implementation and Potential Effects of Proposed Changes*. "GAO developed a model to estimate the potential impact of higher fees on passenger levels, using historical data on the relationship between prices and passenger levels. GAO's model estimates the effect of changing the passenger facility charge independently of other factors that may occur simultaneously. These other factors could enhance or offset the effect of changing the passenger facility charge, making the net effect difficult to determine. For example, data on enplanement levels at individual airports indicate that enplanements have both increased and decreased following the initial imposition of passenger facility charges by airports. GAO's analysis based on its model suggests that raising the fee by \$1, if applied by all participating airports, would reduce passenger levels by 0.5 to 1.8 percent, with a midrange estimate of 0.85 percent. Based on the midrange estimate, less than one passenger in one hundred would be affected by a \$1 increase in the passenger facility charge. In the short term, forecast growth in passengers would overcome the midrange estimate of losses unless the fee exceeded \$7. On the other hand, in the long term, any improvements in passenger safety and comfort that may result from airport improvements could stimulate the demand for air travel."

<sup>4</sup> The Bureau of Economic Analysis (BEA) noted in December 2013: "Profits from current production (corporate profits with inventory valuation adjustment (IVA) and capital consumption adjustment (CCAdj) increased \$39.2 billion in the third quarter 2013, compared with an increase of \$66.8 billion in the second. Profits after tax with IVA and CCAAdj increased \$39.5 billion, compared with an increase of \$56.9 billion."



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- been proposed previously, then Cape Air would need to significantly decrease the size of its company which could increase its cost to do business, and which could adversely impact its service to non EAS airports such as Nantucket, Hyannis, and Boston.
- The current average load factors on Cape Air, Nantucket and Island Airlines is lower than airline industry average – on some routes it averages below 60%. Previous scheduled service by Cape Air to markets such as Providence generated relatively little demand. As a result in this scenario it is assumed that if Cape Air, Nantucket and/or Island Airlines curtail any of their services due to declining market share and/or rising operating costs, the only market that would see replacement service by a larger regional carrier would be Boston-Nantucket during the summer months.
  - In this scenario passenger enplanements would continue to fluctuate but gradually decrease throughout the forecast period, and by 2030 would equal approximately 100,000 enplanements, from 137,100 enplanements in 2012. Depending on the combination of downward pressures and the viability of replacing the C-402 with Cessna Caravans, the number of enplanements could be lower by 2030.
- Forecast Scenario 3 - Upward Trends:
    - The regional and national economy continues to expand, and personal disposable and family household incomes increase as well.
    - Tourist travel in the Northeast continues to increase beyond pre-recession levels (2004-2007).
    - 100LL avgas prices remain stable, and the three carriers continue to operate their existing fleet of aircraft. A viable drop-in replacement of unleaded fuel becomes available.
    - The carriers provide beyond service to other Northeast markets such as Albany, Teterboro (currently served by Tradewinds), Burlington VT, etc., from Nantucket through Providence and Boston. This scenario assumes that Cape-Nantucket-Island Air will develop new routes at service levels and fares that will stimulate traffic.
    - Both Island and Cape Air provide additional interline agreements with other major airlines at Boston Logan Airport, and including serving other terminals at Logan such as A (Delta) and B (US Airways and American), in addition to Terminal C (Jet Blue).
    - Competition from ferry service remains constant throughout the forecast period, i.e. no major expansion in high-speed ferry service or significant changes in ferry ticket prices relative to air tickets.
    - By the year 2030 the three carriers combined would enplane approximately 270,000 passengers at Nantucket. This level of activity is equivalent to FAA's Terminal Area Forecast (TAF), discussed below.

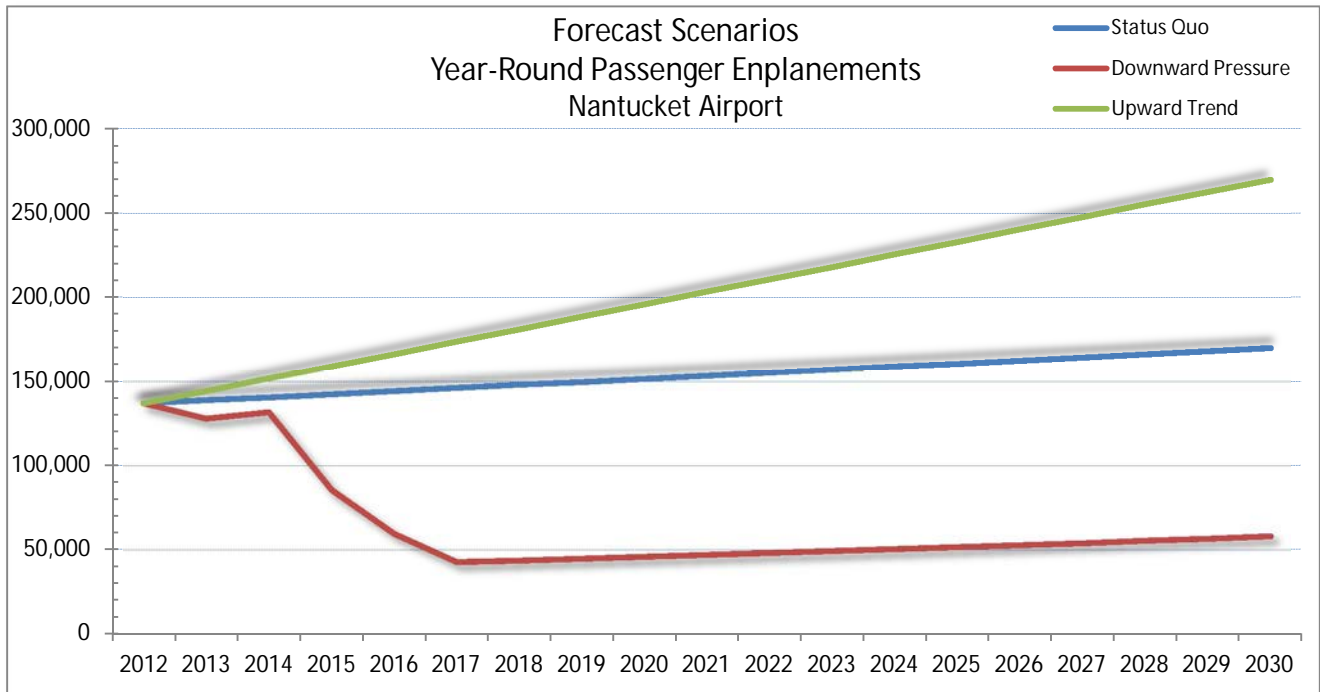
The three forecast scenarios are illustrated below. Based on recent trends the Status Quo scenario has the highest likelihood to occur. Significant events such as another major economic recession, or significant changes to airport and airspace security, for example, could adversely impact future passenger enplanements at Nantucket, but those events are not included in the scenarios because it is extremely difficult to anticipate when or if they will occur.

Future aircraft operations will fluctuate in each scenario at the same rate as passenger enplanements, because the three carriers will continue to operate 9-passenger aircraft, even if the Cessna 402 is replaced by the Cessna Caravan. If the carriers were to operate larger turboprop aircraft such as the DH Dash 8, for example, they would need to operate under Federal Aviation Regulation (FAR) Part 121, vs. their current FAR Part 135.



## Nantucket Memorial Airport Master Plan

Chart 5.1



Such a change would significantly increase their operating costs, in addition to the cost of acquiring and operating a larger turboprop, which would result in significantly higher ticket prices. That would make the short-haul air service network non-competitive with ferry service.



## Nantucket Memorial Airport Master Plan

Table 5.2

<i>Year-Round Passenger Enplanements Nantucket Airport</i>			
	<u>Scenario</u>		
	Status Quo	Downward Pressure	Upward Trends
2013	138,833	127,985	144,389
2014	140,666	131,668	151,778
2015	142,499	85,691	159,167
2016	144,332	59,870	166,556
2017	146,165	43,049	173,945
2018	147,998	44,059	181,334
2019	149,831	45,093	188,723
2020	151,664	46,151	196,112
2021	153,497	47,235	203,501
2022	155,330	48,345	210,890
2023	157,163	49,481	218,279
2024	158,996	50,645	225,668
2025	160,829	51,837	233,057
2026	162,662	53,057	240,446
2027	164,495	54,307	247,835
2028	166,328	55,586	255,224
2029	168,161	56,896	262,613
2030	170,000	58,238	270,000
2013-2030	22.9%	-54.5%	87.1%



# Nantucket Memorial Airport Master Plan

## 5.1.2 Summer Season, Hub-Oriented Air Service Forecast

Summer season, hub-oriented, scheduled passenger service is provided by four major airlines and their regional partners.

Table 5.3.1

<i>Airline (regional partner)</i>	<i>Hub Airport</i>	<i>Aircraft (pax seats)</i>
Jet Blue	Boston Logan (BOS) and JFK New York (JFK)	ERJ-190 (100)
United (Commutair)	Newark NJ (EWR)	Dash 8-Q300 (50)
Delta (Chautauqua)	JFK New York (JFK)	CRJ-200 (50)
US Airways (Air Wisconsin)	Reagan National Washington DC (DCA)	CRJ-200 (50)

US Air previously served ACK - LaGuardia and Philadelphia. United, Delta, and US Airways use regional partners for service to ACK.

In recent years Jet Blue also served ACK-Boston with ERJ-190s, although the Nantucket - Boston route is primarily served year-round by Cape Air with C-402s through the interline agreement with Jet Blue. Interestingly, Jet Blue offered lower fares on ACK-BOS route than Cape Air. If Cape Air were to discontinue ACK-BOS service it is possible that Jet Blue could replace them with ERJ-190s in the summer.

There is sufficient passenger traffic for Jet Blue to generate load factors of 80% + during summer months if they replaced Cape Air and offered an average of 2 to 3 flights per day. And if they offered similar fares to those in 2012 and 2013, it is possible that Jet Blue could attract a number of ferry passengers, which would increase their load factors. However, at 80 miles the ACK-BOS leg is very short for an RJ, so it is not certain that would be a viable long-term service pattern. In addition, Jet Blue is postponing accepting any more ERJ-190s for at least several years and concentrating instead on increasing their fleet of Airbus A-320s and 321s, which are too large for the ACK-JFK or ACK-BOS market.

Although a number of different hub airports have been served from ACK over the last 10 years, the majority of the summer season service in terms of passengers and available seats has been and continues to be to the New York metro region.

The four major airlines that serve ACK - Jet Blue, United, US Airways and Delta - enplaned approximately 38,000 passengers in the summer of 2013, and that number has increased by almost 28% since 2009. In 2013 the major airlines enplaned almost 22% of all passengers at Nantucket. As discussed in Chapter 4, a number of significant changes are occurring in the major airlines, as well as their regional partners, that could impact service to ACK in this forecast period:

- Industry consolidation: US Airways-American is the latest merger by major airlines. Previously Delta acquired Northwest, United acquired Continental, and Southwest acquired AirTran. Each merger has resulted in changes to some of the markets served by the combined airline in terms of frequencies and equipment type, including service changes at some of their hub airports. It is difficult to anticipate exactly how the US Airways-American merger will impact Nantucket, since the new company has not announced any specific changes as a result. US Airways gave up slots at Washington Reagan Airport which may impact the ACK-DCA route. If US Airways discontinues the ACK-DCA route they could replace it with service to PHL, which would provide better access to US Airways domestic and international route network.





## Nantucket Memorial Airport Master Plan

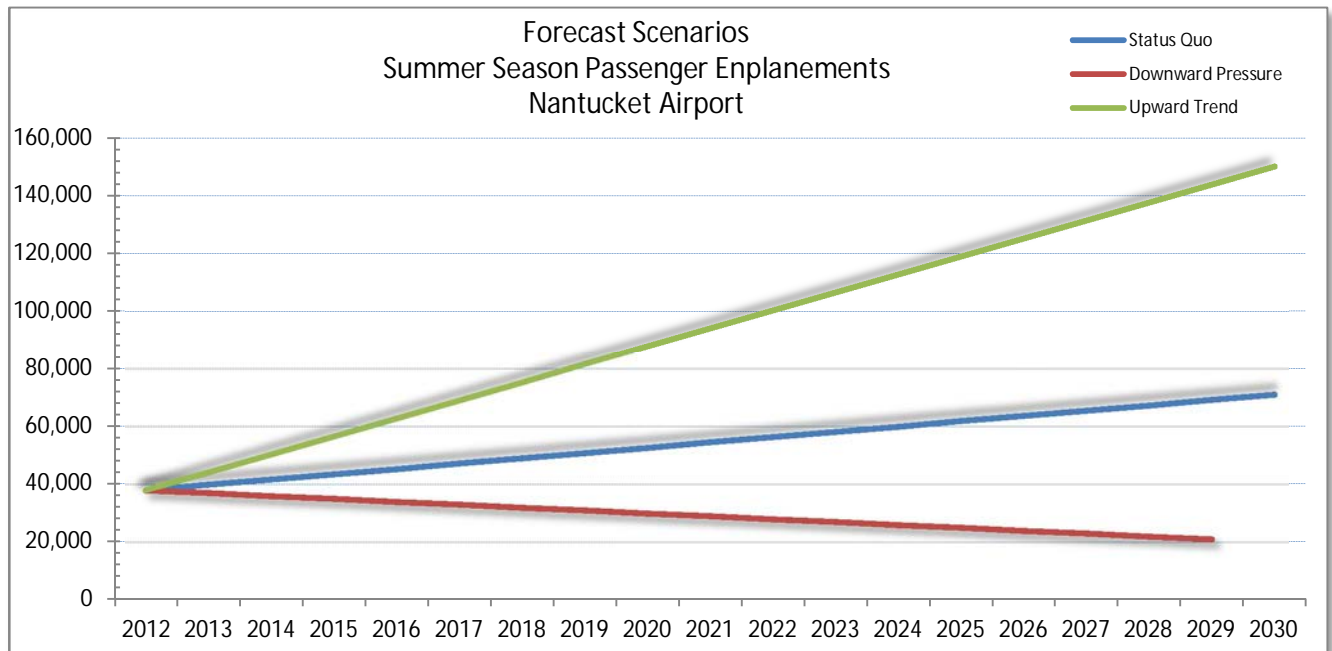
- Airlines are replacing their 50-seat regional jets and turboprops with larger 70 – 100 seat aircraft. At the same time airlines are also constraining capacity growth (i.e. maintaining the same number of seats available) by reducing the total number of regional aircraft operated. That change in equipment may impact ACK with a fewer number of flights, although the number of available seats is not anticipated to decrease. If the same number of flights per day are maintained to ACK that could result in more available seats per week, which might stimulate more enplanements.
- Major airlines have implemented a series of ancillary fees which have greatly enhanced revenue but have increased the cost of air travel for consumers. Unlike the short-haul, high-frequency market served by Cape and Island Air, the ACK to hub summer service does not compete against ferry service, and passengers are relatively less price sensitive in the hub markets. As a result, yields are higher which makes ACK an attractive summer market.
- Forecast Scenario 1 - Status Quo:
  - In this scenario it is assumed that the recent upward trend in summer season passengers will continue.
  - The four major airlines (Jet Blue, Delta, United, US Airways) will continue to provide summer service between Nantucket and JFK, Newark, and Washington Regan Airports (possibly substituting Philadelphia for DCA).
  - The carriers will upgrade their aircraft from 50 to 70 and 100 seat equipment, similar to the ERJ-190 that Jet Blue currently operates at ACK.
  - The carriers will provide more seats per week while maintaining the same number of flights per day.
  - ACK imposing PFC and TSA imposing new security fee
  - The number of seasonal passenger enplanements will increase at a similar rate as they have been since 2008.
  - The mergers between major airlines will not result in loss of service to existing hub airports. Additionally, no new hub service is anticipated in this scenario, although it is possible that US Airways could shift service from Washington Reagan to Philadelphia or New York LaGuardia, which it has served previously.
  - This is considered to be likeliest scenario to occur given trends in the major airline industry and the Island's demographics.
- Forecast Scenario 2 - Downward Pressure:
  - In this scenario mergers between major airlines would result in loss of service to at least one hub airport without replacement service to another hub.
  - Airlines replace their 50-seat regional jets and turboprops with 70 and 100 seat aircraft and reduce the frequency of daily service to ACK. Even though the number of seats offered remain relatively constant, passengers concerned about reduced frequencies and lack of back-up options for cancelled or delayed flights use other modes of travel.
  - Major airlines financial performance result in negative profits for an extended period due to rapidly rising costs. As a consequence they reduce capacity and service to smaller markets such as ACK.
  - Airlines raise both fares and ancillary fees faster than the overall rate of inflation.
  - This scenario is considered the least likely of the three to occur.



## Nantucket Memorial Airport Master Plan

- Forecast Scenario 3 - Upward Trends:
  - Major airlines experience continued profitability, and as a result expand domestic service, particularly their hub-feed networks into JFK, Newark, Philadelphia, and Washington.
  - Airlines replace their 50-seat regional jets and turboprops with 70 – 100 seat aircraft, and maintain at least two flights daily between ACK and four hub airports (JFK, EWR, PHL or DCA, and LGA).
  - Jet Blue implements long-term regular summer service to BOS from ACK with ERJ-190s.
  - Possibly service to a new hub is implemented by 2020, such as Toronto.
  - Airline ticket prices and ancillary fees increase below the average rate of inflation.
  - The percentage increase in passengers projected in this scenario between 2012 and 2030 (almost 295%) appears high, but the base year starts with only 38,000 passenger enplanements.

Chart 5.2





## Nantucket Memorial Airport Master Plan

Table 5.3.2

### Summer Season Passenger Enplanements Nantucket Airport

	<u>Scenarios</u>		
	Status Quo	Downward Pressure	Upward Trends
2013	39,833	37,000	44,222
2014	41,666	36,000	50,444
2015	43,499	35,000	56,666
2016	45,332	34,000	62,888
2017	47,165	33,000	69,110
2018	48,998	32,000	75,332
2019	50,831	31,000	81,554
2020	52,664	30,000	87,776
2021	54,497	29,000	93,998
2022	56,330	28,000	100,220
2023	58,163	27,000	106,442
2024	59,996	26,000	112,664
2025	61,829	25,000	118,886
2026	63,662	24,000	125,108
2027	65,495	23,000	131,330
2028	67,328	22,000	137,552
2029	69,161	21,000	143,774
2030	70,994	20,000	150,000
2013-2030	78.0%	-45.9%	239.2%



## Nantucket Memorial Airport Master Plan

### 5.1.3 Scheduled Air Service – Combined Forecast Summary

Combining the likeliest forecast scenario for year-round and summer season air carrier service results in the following forecast of passenger enplanements and aircraft operations:

Table 5.4.1

<i>Scheduled Passenger Enplanements Nantucket Airport</i>			
	Year-Round	Summer Season	Total Pax. Enplanements
2013	138,833	39,833	178,666
2014	140,666	41,666	182,332
2015	142,499	43,499	185,998
2016	144,332	45,332	189,664
2017	146,165	47,165	193,330
2018	147,998	48,998	196,996
2019	149,831	50,831	200,662
2020	151,664	52,664	204,328
2021	153,497	54,497	207,994
2022	155,330	56,330	211,660
2023	157,163	58,163	215,326
2024	158,996	59,996	218,992
2025	160,829	61,829	222,658
2026	162,662	63,662	226,324
2027	164,495	65,495	229,990
2028	166,328	67,328	233,656
2029	168,161	69,161	237,322
2030	170,000	70,994	240,994
2013-2030	22.4%	78.2%	34.9%



## Nantucket Memorial Airport Master Plan

Table 5.4.2

<i>Scheduled Aircraft Operations Nantucket Airport</i>						
	Year-Round A/C		Summer Season A/C		Total A/C	
	Deps.	Ops.	Deps.	Ops.	Deps.	Ops.
2013	23,139	46,278	1,165	2,331	24,304	48,608
2014	23,444	46,889	1,199	2,398	24,643	49,287
2015	23,750	47,500	1,234	2,468	24,984	49,967
2016	24,055	48,111	943	1,886	24,998	49,997
2017	24,361	48,722	985	1,970	25,346	50,691
2018	24,666	49,333	1,010	2,021	25,677	51,354
2019	24,972	49,944	1,037	2,073	26,008	52,017
2020	25,277	50,555	1,064	2,127	26,341	52,682
2021	25,583	51,166	1,091	2,182	26,674	53,348
2022	25,888	51,777	1,119	2,239	27,008	54,016
2023	26,194	52,388	1,149	2,297	27,342	54,685
2024	26,499	52,999	1,178	2,357	27,678	55,355
2025	26,805	53,610	1,209	2,418	28,014	56,028
2026	27,110	54,221	1,240	2,481	28,351	56,701
2027	27,416	54,832	1,272	2,543	28,688	57,375
2028	27,721	55,443	1,304	2,608	29,025	58,050
2029	28,027	56,054	1,337	2,673	29,363	58,727
2030	28,333	56,667	1,370	2,740	29,704	59,407
2013-2030	22.4%	22.4%	17.5%	17.5%	22.2%	22.2%

Note: the forecast of aircraft departures and operations were developed based on the forecast of passenger enplanements. Aircraft operations represent both arrivals and departures, and were projected as double the anticipated aircraft departures.

For year-round airline service by Cape Air, Nantucket and Island Airlines, it was assumed that there will be an average of 6 passenger enplanements per departure. For a 9-passenger aircraft such as the Cessna 402 and Caravan, that represents an average 66.7% load factor.

For summer season service by major airlines and their regional partners (Jet Blue, United, US Airways, and Delta), it was assumed there would be an average of 37 passenger enplanements per departure (for a 50-seat regional jet and turboprop that represents an average load factor of 74%).

In 2016 it was assumed that most airlines would have converted to larger 70 and 100 seat aircraft, and that average passenger enplanements per departure would increase to 50 passengers, which would represent an average of approx. 60% load factor, assuming that the airlines maintained same number of available seats.



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### 5.2 On-Demand (Non-scheduled) Air Taxi Service Forecast

This segment of activity at Nantucket Airport is complex because it involves a variety of carriers. Operating under Federal Aviation Regulation Part 135, carriers such as Island Airlines and Cape Air provide charter (on-demand non-scheduled) air taxi services. Island Airline owns several Beech King Airs that are used primarily for charters. Corporate aircraft operators also provide on-demand air taxi service under FAR Part 135. Almost every major airline including Jet Blue, United, US Airways, and Delta offer aircraft for on-demand (non-scheduled) charter services, which are operated under FAR Part 121 or Part 125. Some major airlines, including Delta and Lufthansa for example, created their own corporate aircraft air taxi division for their elite customers<sup>5</sup>.

Larger corporate air taxi companies include NetJets, FlexJets, Citation Shares, etc., some of which have fleets of more than 100 aircraft operating both domestically and internationally. Each of those large air taxi operators fly into ACK, some on a regular basis. There are also a large number of smaller air taxi charter companies operating under FAR Part 135 as well. Some of those companies operate turboprops and even piston engine aircraft. It is difficult to track passenger enplanements by on-demand air taxi companies because they are not required to report that data to the FAA or to airports.

In addition, corporate air taxi companies operate the same type of aircraft as non-commercial private owners, and park on the same aprons and use the same FBO facilities. As a consequence, when there are GA aircraft on the ramp, airport staff frequently cannot identify every airplane that is operating as a commercial air taxi and which one is privately owned and operated non-commercially.

In general, on-demand charter activity follows the same patterns as corporate aviation as a whole, which tracks closely to such indicators as the stock market and corporate profits. During the recession of 2008 to 2010, both corporate aviation and air taxi activity declined sharply. It has since rebounded in terms of aircraft operations, but has not returned to levels experienced in 2004 – 2007, even though the stock market has recently reached new highs. Many companies and high net worth individuals that use corporate aircraft, both private and charter aircraft, have limited their travel expenses compared to pre-recession levels.

The primary users of corporate and charter aircraft at Nantucket are second home owners, followed by non-resident high net worth individuals (visitors). Almost all of the corporate and air taxi aviation activity at ACK is discretionary/personal travel vs. business related. Since the second home market on the Island is relatively stable, it is anticipated that corporate and air taxi aviation activity will continue to increase gradually throughout the forecast period. As noted previously, the limited land area available, the high cost of property, and environmental constraints on future development will significantly limit the growth of second home owners, and as a result limit the growth rate of corporate and air taxi aviation activity.

Between 2010 and 2013 corporate jet activity at ACK increased at a modest pace, but some smaller and mid-size jets (such as Cessna Citations, Learjets, and Hawkers, for example) have been replaced with larger jets such as the Falcon 7X, Global Challenger, and Gulfstream G-550. In addition, some airliners such as the Boeing 737-700 and -800 and Airbus A319 have been converted to corporate and airtaxi aircraft, and some high net worth individuals (such as the founders and owners of Google) operate much larger airplanes such as the B-767, B-747, and the new B-787 aircraft.

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<sup>5</sup> Delta Private Jets <http://www.deltaprivatejets.com/>, and Lufthansa Private Jet Service <http://www.lufthansa-private-jet.com/#/en/home>



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The demand for air taxi services respond to similar factors as corporate aircraft activity, i.e. there is a high correlation with the performance of the stock market and corporate profits. Overall corporate and air taxi activity have recovered from the decline experienced in 2008 – 2010, and it is anticipated that air taxi activity will continue to increase gradually assuming that there are no sudden fluctuations in the economy or aircraft operating costs.

Table 5.4.3

<i>Scheduled + On-Demand Air Taxi Aircraft Operations Nantucket Airport</i>			
	Scheduled	On-Demand Air Taxi	Total
2013	48,608	47,300	95,908
2014	49,287	47,920	97,207
2015	49,967	48,540	98,507
2016	49,997	49,160	99,157
2017	50,691	49,780	100,471
2018	51,354	50,400	101,754
2019	52,017	51,020	103,037
2020	52,682	51,640	104,322
2021	53,348	52,260	105,608
2022	54,016	52,880	106,896
2023	54,685	53,500	108,185
2024	55,355	54,120	109,475
2025	56,028	54,740	110,768
2026	56,701	55,360	112,061
2027	57,375	55,980	113,355
2028	58,050	56,600	114,650
2029	58,727	57,220	115,947
2030	59,407	57,800	117,207
2013-2030	22.2%	22.2%	22.2%



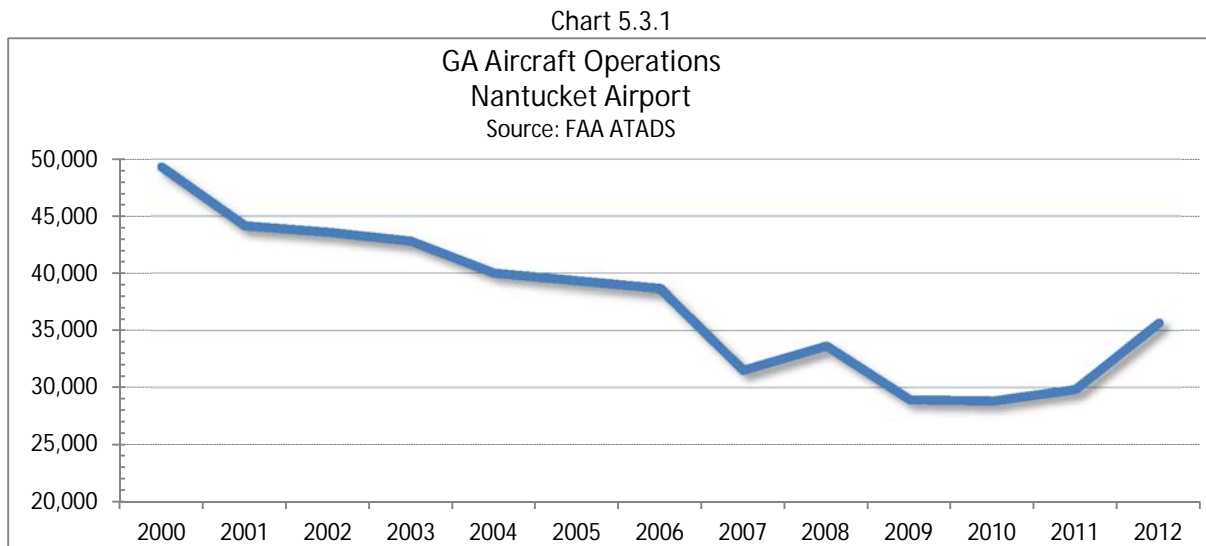
## Nantucket Memorial Airport Master Plan

### 5.3 General Aviation Activity Forecast

General aviation is a term that encompasses a very broad range of activity. GA is defined as all civilian aviation activity other than the airlines. Between 2000 and 2012, transient GA aircraft operations (those arriving from another airport or departing ACK to another airport) declined by 15.6%. All GA operations combined at ACK declined by 27.7% over that period.

It should be noted that a number of airports in Massachusetts, New England, and the U.S. have seen similar declines in GA activity. Also, the declines in GA activity began before the economic recession of late 2007 – 2009, although the economic downturn exacerbated the drop in activity at many airports. A variety of factors contributed to the decline:

- Rapidly rising cost of aircraft ownership and operation
- Stagnant disposable personal income levels
- Decline in airline pilot hiring
- Airspace security regulations, particularly the increased use of temporary flight restrictions



At Nantucket Airport, GA activity falls into three broad categories:

- Owner-flown aircraft. These are predominantly piston-engine airplanes, although there are also some turboprops and small corporate jets that owner-flown as well. These airplanes are operated primarily for personal non-commercial purposes. There are 24 aircraft based at ACK, most of which are owner flown. A larger volume of owner-flown aircraft fly into ACK from the mainland, and most of the pilots and passengers are visitors, including some second home owners. Since airplane owners are not required to report the number of passengers carried, that activity data is largely estimated. The air traffic control tower personnel count airplane takeoffs and landings (operations), so that is primary measure of GA activity.
- Flight training activity. There are no flight schools currently operating at ACK, although there are plans to offer flight and ground pilot training at the airport. Local operations at ACK (primarily training aircraft takeoffs and landings) experienced the largest decline between 2000 - 2012. However, many airports across New England and the U.S. have also experienced extended declines in flight training activity for a number of reasons: the high cost of aircraft operations; the lack of





## Nantucket Memorial Airport Master Plan

hiring by major and regional airlines; stagnation in personal disposable and household incomes; the economic recession of late 2007 – 2009; airport security measures that limit access by potential students, are all factors in the decline. In addition, both the military services and large aeronautical universities are developing extensive training programs for operators of unmanned aerial vehicles (UAV) separate from current flight training programs.

- Corporate aviation – encompasses primarily turboprop and jet aircraft, most of which are flown by professional pilots. As discussed above and shown in Chart 5.4, corporate aviation and air taxi activity at ACK have experienced modest increases since 2010, but have not rebounded to levels experienced in 2004 – 2007. However, the average size of corporate airplanes is growing larger.

Chart 5.3.2



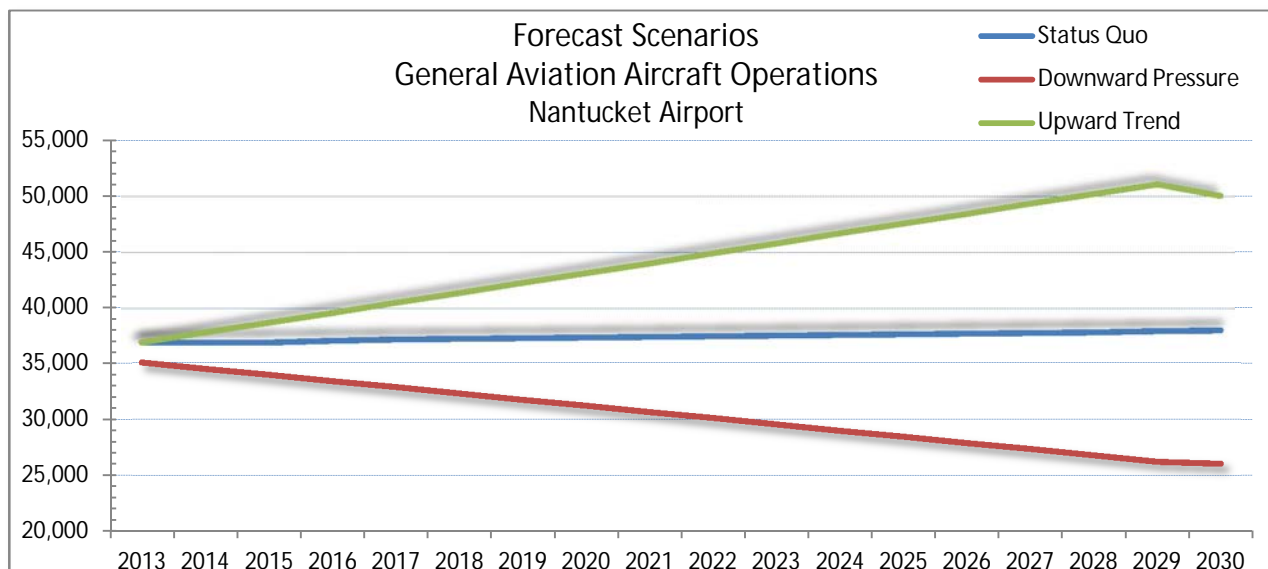
- Forecast Scenario 1 - Status Quo:
  - In this scenario it is assumed that overall GA activity will stabilize at current levels.
  - Aircraft operating costs, including fuel prices, will increase only at or below the average rate of inflation.
  - The local and regional economy will expand slowly, with no major recessions. Personal disposable and average family household income will increase equivalent to the rate of inflation.
  - No new airport or airspace security restrictions will be imposed.
  - New flight and ground training programs are offered at ACK, generating local operations.
  - Overall GA operations will increase by approximately 3% by 2030, which matches the FAA's Terminal Area Forecast (TAF). While the growth rate is modest, it represents a reversal of recent trends in activity.
  - This is likeliest scenario to occur, although a number of factors described below are also possible.



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- Forecast Scenario 2 - Downward Pressure:
  - This scenario assumes that aircraft operating costs, including fuel prices, will increase faster than the overall rate of inflation.
  - New airport and airspace security regulations will be imposed. In 2008 and 2009, the TSA proposed new security regulations for GA pilots and passengers that included screening and background checks. While that proposal was dropped, if similar measures are passed in the future, it would discourage GA activity.
  - In the worst case scenario 100LL avgas would disappear without a 'drop-in replacement' available. There have been extensive discussions about the future of 100LL, the only leaded fuel allowed in the U.S. If 100LL were to be discontinued without a viable replacement a large percentage of the existing GA fleet of aircraft would be grounded.
  - In this scenario, the stock market and corporate profits would remain flat or fluctuate within narrow cycles, so that corporate aviation activity would also remain flat.
  - This is considered the least likely scenario, but some of the conditions described above have been discussed in industry trade publications.
- Forecast Scenario 3 - Upward Trends:
  - GA aircraft operating costs remain level, and only increase below the average rate of inflation.
  - New flight and ground training programs are offered at ACK, generating local operations.
  - Both regional and major airlines expand services and need to hire large numbers of pilots. Airlines have had similar hiring peaks previously, in the late 1960s and the mid-2000s, and with fewer military pilots available demand for GA pilots would increase.
  - Both the stock market indices and corporate profits continue to increase, thereby stimulating corporate aircraft activity.
  - No new airport or airspace security regulations or restrictions are imposed, and the number of Temporary Flight Restrictions (TFR) imposed by the FAA significantly decreases.
  - A viable drop-in replacement for 100LL avgas is found at an equivalent cost to current 100LL fuel.

Chart 5.4





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Table 5.5

	<i>General Aviation Aircraft Operations Nantucket Airport</i>		
	<u>Scenarios</u>		
	Status Quo	Downward Pressure	Upward Trends
2013	36,964	35,000	36,964
2014	37,025	34,450	35,882
2015	37,086	33,900	36,764
2016	37,147	33,350	37,646
2017	37,208	32,800	38,528
2018	37,270	32,250	39,410
2019	37,332	31,700	40,292
2020	37,394	31,150	41,174
2021	37,456	30,600	42,056
2022	37,518	30,050	42,938
2023	37,580	29,500	43,820
2024	37,642	28,950	44,702
2025	37,704	28,400	45,584
2026	37,766	27,850	46,466
2027	37,828	27,300	47,348
2028	37,890	26,750	48,230
2029	37,953	26,200	49,112
2030	38,016	26,000	50,000
2012-2030	2.8%	-25.7%	35.3%



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### 5.4 Public Service, Government, and Military Aviation Activity Forecast

A variety of civilian government agencies, the military, as well as private companies provide public support missions at Nantucket Airport. The missions include medical services and evacuation, disaster relief, search and rescue, as well as law enforcement.

Agencies such as the Massachusetts State Police, MassDOT, U.S. Homeland Security including U.S. Coast Guard, Customs and Border Patrol, as well as the Massachusetts Army National Guard, among others operate at Nantucket Airport on as-needed basis. There are no government or military aircraft based at ACK, and none are anticipated to be based at ACK within the forecast period.

In addition, private companies and individual aircraft owners including Boston Medflight, Angel Flights, and Corporate Angel Network also provide medical transportation to and from Nantucket on an as-needed basis.

There are also government VIP flights, including Vice-President Joseph Biden and Secretary of State John Kerry, who visit Nantucket regularly. Typically when VIPs visit ACK the FAA imposes a Temporary Flight Restriction (TFR), which impacts all other aircraft operations while the TFR is in effect (i.e. during the period when the VIP is on the Island). See Chapter 4 for a discussion of TFRs. Secretary of State John Kerry occasionally visits ACK in private aircraft (he and his wife are second home owners on the Island), and TFRs are not always imposed for his visits. Martha's Vineyard has been the venue for a number of presidential summer vacations, and TFRs have been imposed around MVY during those visits, some for as long as two weeks. TFRs around MVY also impact traffic to ACK even though they do not directly overlie ACK. A number of GA aircraft operators are concerned about the consequences of any inadvertent violation of protected airspace and therefore cancel flights until the TFR is discontinued.

It is not anticipated that the number of operations by public service agencies or the military will increase significantly over the forecast period, although they will respond in times of emergency on an as-needed basis. In 2012 there were approx. 1,100 total military aircraft operations, which comprised less than 1% of total aircraft operations at ACK.

Other government and public service missions generated approximately the same number of operations (estimated at approximately 1,000 operations per year or less), which combined with military activity represents a small percentage of total activity at the airport. In part because no military or government agencies are expected to base aircraft at ACK in this planning period, it is not anticipated that their share of total activity at ACK will increase, except in response to specific public service needs.



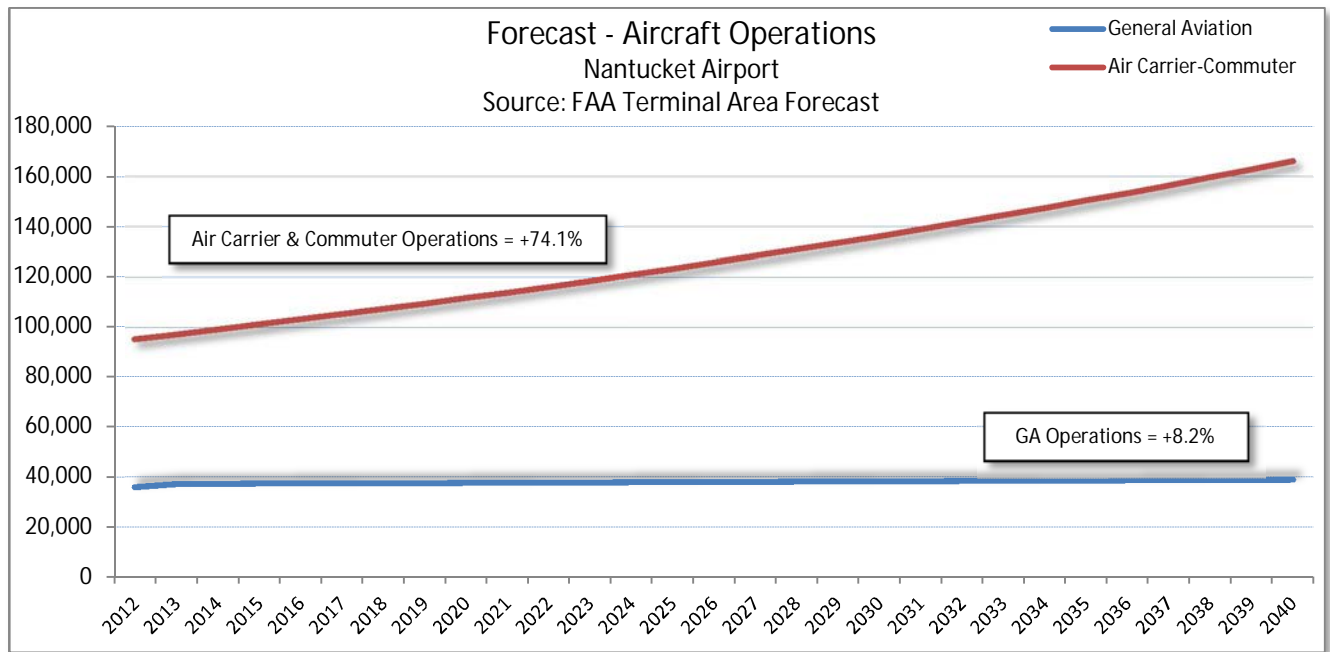
# Nantucket Memorial Airport Master Plan

## 5.5 Federal Aviation Administration (FAA) Terminal Area Forecast (TAF)

The FAA released their latest Terminal Area Forecast (TAF) for Nantucket Airport in January 2013. The TAF uses the federal fiscal year (October 1 – September 30) versus the calendar year, and forecasts traffic through 2040. In addition, FAA categorizes airline service as commuter (i.e. Cape Air, Nantucket Airlines and Island Airlines) and air carrier (Jet Blue, United, US Airways, Delta).

The FAA predicts that total aircraft operations will increase by 55.4% between 2012-2040; air carrier and commuter operations combined will grow by 74.1%; and GA operations will increase 8.2%.

Chart 5.5.1



The FAA TAF does not identify the factors or rationale behind their projected growth rates, nor does the TAF identify different forecast scenarios. As a result, it is difficult to compare the opportunities and challenges for each segment of traffic at ACK and compare different forecast assumptions.

The FAA forecast projected both air carrier (i.e. summer seasonal service) and commuter (i.e. year-round air taxi) activity separately. FAA projected that commuter (also referred to as air taxi) passenger enplanements would increase by more than 141% by 2040, while they projected that air carrier enplanements will remain flat. The FAA did not explain the factors behind their forecast.



# Nantucket Memorial Airport Master Plan

Chart 5.5.2

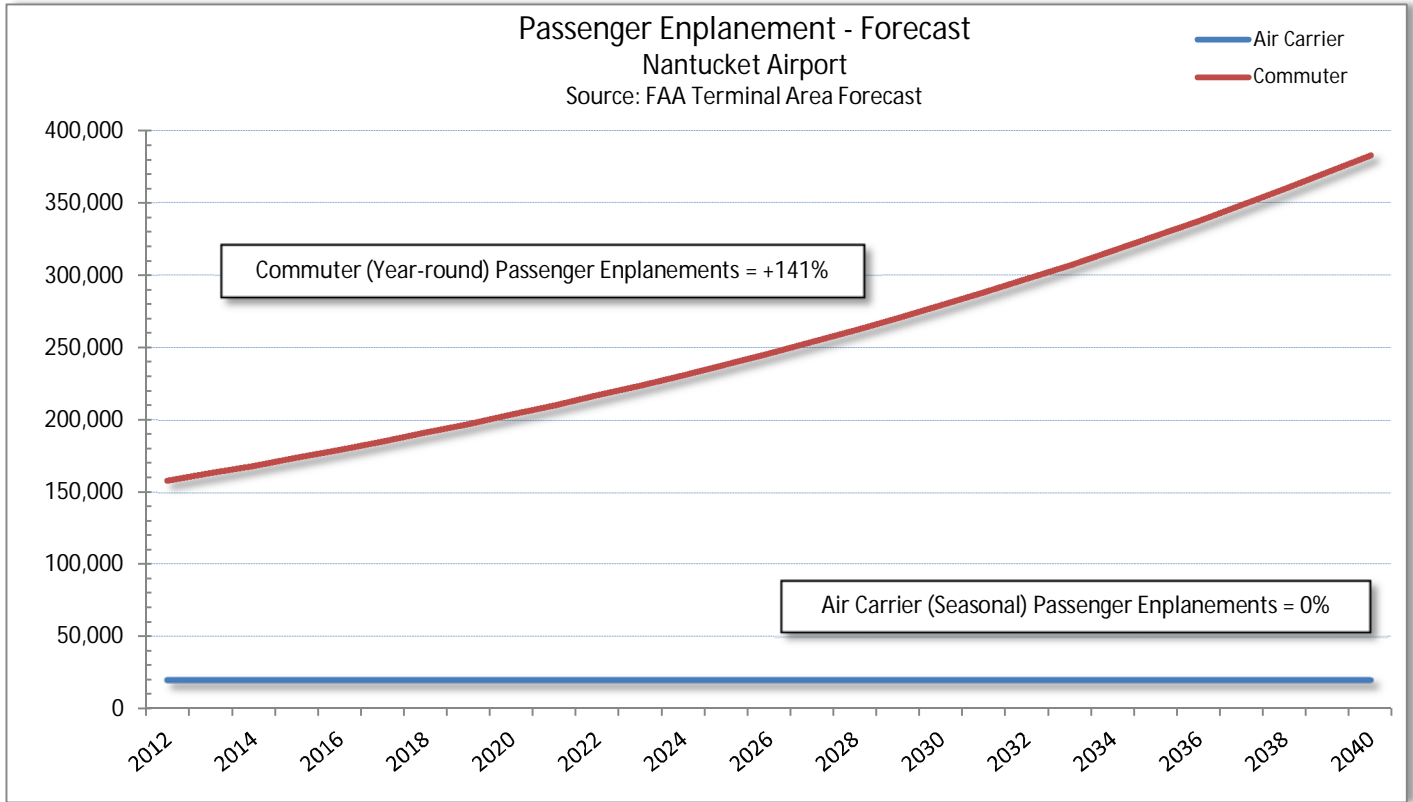
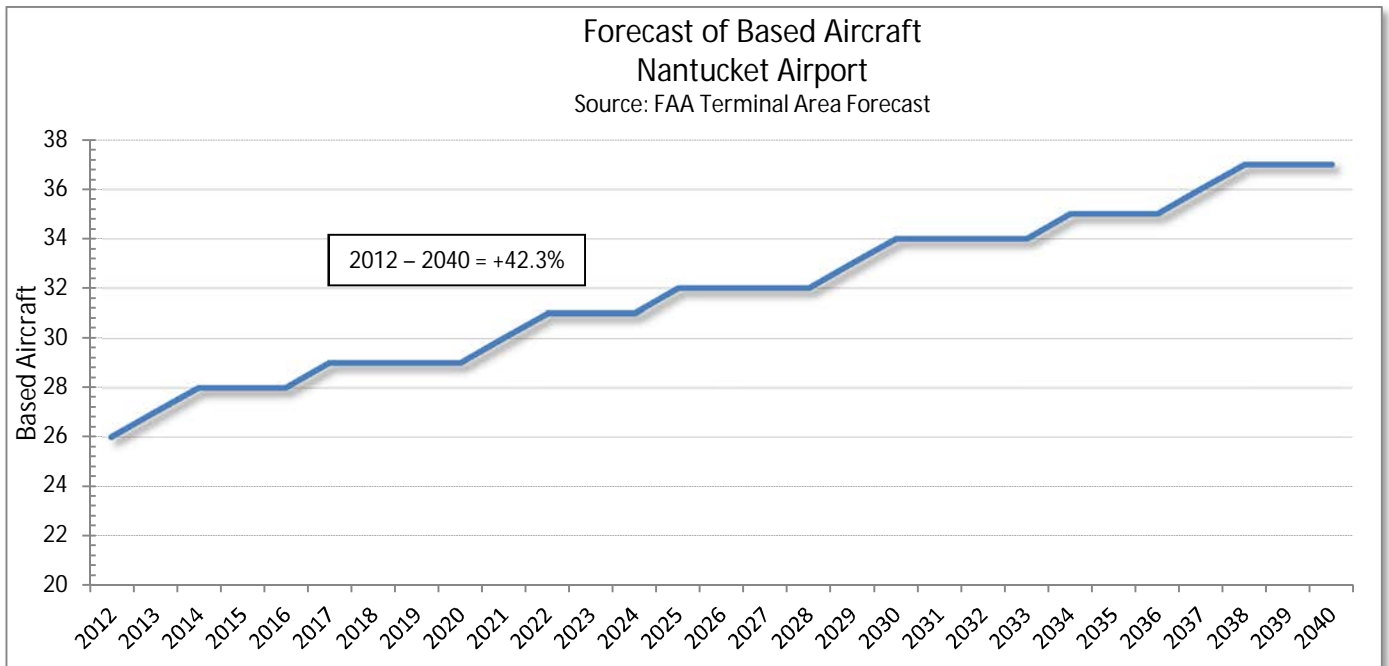


Chart 5.5.3





## Nantucket Memorial Airport Master Plan

### 5.6 Massachusetts Statewide Airport System Plan – MassDOT 2010 Forecast

The Massachusetts Statewide Airport System Plan was prepared by the Louis Berger Group, and was completed in 2010. The Statewide Plan included a number of elements such as inventory, forecasts of aviation activity, existing and future airport roles, as well as facility requirements for each of the public-use airports in the Commonwealth, including Nantucket.

The System Plan forecast of aviation activity at ACK extended through 2030. The MASP forecasts are higher than FAA's TAF both in terms of the starting activity levels, as well as the projected rate of growth.

#### Based Aircraft Forecast

Airport City	Airport Name	2009	2015	2020	2030
Nantucket*	Nantucket Memorial Airport	37	47	57	84

2009-2030 = +127%

#### Annual Aircraft Operations Forecast

Airport City	Airport Name	2008 <sup>1</sup>	2015	2020	2030
Nantucket* ^	Nantucket Memorial Airport	150,200	167,169	182,766	218,461

2009-2030 = +45.4%

Source: The Louis Berger Group Calculations (See Appendix B)

<sup>1</sup> 2008 is the last full year operations data was available for all airports.

\* Master plan forecasted growth rate utilized.

^ Airport has an air traffic control tower.

#### GA Airport Enplanement Forecast

Airport City	Airport Name	2008 <sup>1</sup>	2015	2020	2030
Hyannis	Barnstable Municipal-Boardman Polando Field	191,837	215,863	234,846	277,967
*Nantucket	Nantucket Memorial Airport	257,755	272,540	283,618	307,142
New Bedford	New Bedford Regional Airport	13,990	14,850	16,801	21,508
*Provincetown	Provincetown Municipal Airport	11,468	12,042	12,469	13,370
Springfield/Chicopee	Westover Air Reserve Base/Metropolitan	15,437	1,336	1,336	1,336
Vineyard Haven	Martha's Vineyard	40,892	44,189	45,306	47,622
Westfield /Springfield	Barnes Municipal Airport	301	387	387	387
*Worcester	Worcester Regional Airport	685	107,686	144,262	270,800
System Totals:		532,365	668,894	739,025	940,132

Source: FAA TAF, Airport Master Plans and The Louis Berger Group Calculations (See Appendix B)

<sup>1</sup> 2008 is the last full year operations data was available for all airports

\* Airport master plan forecasted growth rate utilized.

As portrayed, enplanements at study airports are projected to grow from 532,365 to 940,132 over the 20-year forecast period. This is an average annual growth rate of 3.6 percent for the airport system.

Source: Massachusetts Statewide Airport System Plan, 2010



## Nantucket Memorial Airport Master Plan

### 5.7 FAA Aerospace Forecasts FY 2013-2033

The FAA publishes annual forecasts of aviation activity for the U.S. based on industry trends and economic projections. The forecasts are broken down by mainline carrier (domestic and international), regional carrier, and general aviation activity. The latest forecast period covers 2012-2032. National trends are useful to examine to determine if local growth rates are consistent with those trends, or if there are significant differences to identify what factors account for the differences. In general, FAA's TAF for Nantucket is consistent with their national aviation activity projections.

- Domestic mainline air carrier passenger enplanements nationally are projected to increase by a total of 58.7% over the 20-year period, from 487 million in 2012 to 773 million enplanements by 2032. Available domestic seat miles (ASM – a measure of system capacity) are projected to increase by 65% over the same period, and system-wide load factors are also anticipated to increase from 84% in 2012 to almost 86% by 2032. By comparison, in the year 2000 system-wide domestic load factors averaged 71%. The increase in load factors is due to both rising number of passenger enplanements and limited capacity growth (i.e. available seats).
- Regional (domestic) passenger enplanements nationally are projected to increase by almost 67% over the 20-year period, from 2012 to 2032. Domestic revenue passenger miles (RPM), which accounts for trip lengths and enplanements, is projected to increase 100% by 2032, which indicates that the average trip length will increase at an even faster pace than passenger enplanements. Those trends are consistent with airlines' recent moves to replace their 35 and 50 passenger aircraft (such as the Canadair CRJ-200 and ERJ-145) with larger regional aircraft such as the CRJ-900, ERJ-190, etc. JetBlue presently serves ACK with ERJ-190 aircraft, while Delta and US Airways serve ACK with CRJ-200 aircraft.
- Active general aviation aircraft are projected to decline nationally between 2012 and 2032. The largest drop (2.4%) is anticipated in piston-engine aircraft (from 153,335 to 149,690 airplanes), with multi-engine pistons experiencing the largest decline. Turbine powered aircraft are projected to increase by almost 79% over the 20-year period (from 28,495 to 50,930 aircraft), with corporate jets to experience the highest growth of almost 124%. In terms of projected hours flown, piston engine aircraft are anticipated to remain relatively flat, while corporate jet aircraft hours flown are projected to increase by 147% over the forecast period.





# *Nantucket Memorial Airport Master Plan*

## APPENDIX 5.1

### FAA TERMINAL AREA FORECAST (TAF)

#### Nantucket Airport



# Nantucket Memorial Airport Master Plan

## FAA APO TERMINAL AREA FORECAST - NANTUCKET MEMORIAL AIRPORT Forecast Issued January 2013

Fiscal Year	Enplanements			AIRCRAFT OPERATIONS									Based Aircraft
	Air Carrier	Commuter	Total	Itinerant Operations			Local Operations			Total	Total Ops		
				Air Carrier	Air Taxi & Commuter	GA	Military	Total	Civil	Military	Total	Total Ops	
2012	20,015	158,497	178,512	725	95,244	35,393	800	132,162	335	110	445	132,607	26
2013	20,015	163,569	183,584	725	97,147	36,571	800	135,243	393	110	503	135,746	27
2014	20,015	168,804	188,819	725	99,090	36,632	800	137,247	393	110	503	137,750	28
2015	20,015	174,205	194,220	725	101,072	36,693	800	139,290	393	110	503	139,793	28
2016	20,015	179,782	199,797	725	103,094	36,754	800	141,373	393	110	503	141,876	28
2017	20,015	185,533	205,548	725	105,154	36,815	800	143,494	393	110	503	143,997	29
2018	20,015	191,469	211,484	725	107,258	36,877	800	145,660	393	110	503	146,163	29
2019	20,015	197,598	217,613	725	109,403	36,939	800	147,867	393	110	503	148,370	29
2020	20,015	203,921	223,936	725	111,592	37,001	800	150,118	393	110	503	150,621	29
2021	20,015	210,447	230,462	725	113,826	37,063	800	152,414	393	110	503	152,917	30
2022	20,015	217,183	237,198	725	116,102	37,125	800	154,752	393	110	503	155,255	31
2023	20,015	224,135	244,150	725	118,425	37,187	800	157,137	393	110	503	157,640	31
2024	20,015	231,307	251,322	725	120,793	37,249	800	159,567	393	110	503	160,070	31
2025	20,015	238,708	258,723	725	123,209	37,311	800	162,045	393	110	503	162,548	32
2026	20,015	246,345	266,360	725	125,673	37,373	800	164,571	393	110	503	165,074	32
2027	20,015	254,227	274,242	725	128,188	37,435	800	167,148	393	110	503	167,651	32
2028	20,015	262,362	282,377	725	130,751	37,497	800	169,773	393	110	503	170,276	32
2029	20,015	270,757	290,772	725	133,366	37,560	800	172,451	393	110	503	172,954	33
2030	20,015	279,422	299,437	725	136,032	37,623	800	175,180	393	110	503	175,683	34
2031	20,015	288,362	308,377	725	138,753	37,686	800	177,964	393	110	503	178,467	34
2032	20,015	297,589	317,604	725	141,528	37,749	800	180,802	393	110	503	181,305	34
2033	20,015	307,111	327,126	725	144,359	37,812	800	183,696	393	110	503	184,199	34
2034	20,015	316,939	336,954	725	147,245	37,875	800	186,645	393	110	503	187,148	35
2035	20,015	327,082	347,097	725	150,190	37,938	800	189,653	393	110	503	190,156	35
2036	20,015	337,546	357,561	725	153,194	38,001	800	192,720	393	110	503	193,223	35
2037	20,015	348,347	368,362	725	156,258	38,064	800	195,847	393	110	503	196,350	36
2038	20,015	359,493	379,508	725	159,383	38,127	800	199,035	393	110	503	199,538	37
2039	20,015	370,996	391,011	725	162,571	38,191	800	202,287	393	110	503	202,790	37
2040	20,015	382,867	402,882	725	165,823	38,255	800	205,603	393	110	503	206,106	37
<b>2012-2040</b>	<b>0.0%</b>	<b>141.6%</b>	<b>125.7%</b>	<b>0.0%</b>	<b>74.1%</b>	<b>8.1%</b>	<b>0.0%</b>	<b>55.6%</b>	<b>17.3%</b>	<b>0.0%</b>	<b>13.0%</b>	<b>55.4%</b>	<b>42.3%</b>



# *Nantucket Memorial Airport Master Plan*

## APPENDIX 5.2

### FAA AEROSPACE FORECASTS FY 2013-2033



## **FAA AEROSPACE FORECASTS FISCAL YEARS 2013 – 2033**

Developing forecasts of aviation demand and activity levels continues to be challenging as the aviation industry evolves and prior relationships change. In times of amplified volatility, the process is filled with uncertainty, particularly in the short-term. Once again, the U.S. aviation industry has shown that the demand for air travel is resilient as it rebounds from its most recent downward spiral caused by the Great Recession. As 2013 begins, lingering questions remain. Are the U.S. and global economies on firm ground? Have the structural changes undertaken by the industry over the past 5 years revamped the industry from one of boom-to-bust to one of sustainable profits? Will industry consolidation continue?

Given the current instability in the global economy, there is much uncertainty as to the timing and strength of a recovery in aviation demand. Nevertheless, the FAA has developed a set of assumptions and forecasts consistent with the emerging trends and structural changes currently taking place within the aviation industry. The intent of these forecasts is to accurately predict future demand; however, due to the large uncertainty of the operating environment, the variance around the forecasts is wider than it was in prior years.

The commercial aviation forecasts and assumptions are developed from econometric models that explain and incorporate emerging trends for the different segments of the industry. In addition the commercial aviation forecasts are considered unconstrained in that they assume there will be sufficient infrastructure to handle the projected levels of activity. These forecasts do not assume further contractions of the industry through bankruptcy, consolidation, or liquidation. They also do not assume any drastic changes in federal government operations.

The commercial aviation forecast methodology is a blended one. The starting point for developing the commercial aviation forecasts (air carriers and regionals) is the future schedules published by Innovata. To generate the short-term forecast (i.e., one year out) current monthly trends are used in conjunction with published monthly schedules to allow FAA forecasters to develop monthly capacity and demand forecasts for both mainline and regional carriers for fiscal and calendar years 2013-14. The medium to long-term forecasts (2014-2033) are based on the results of econometric models.

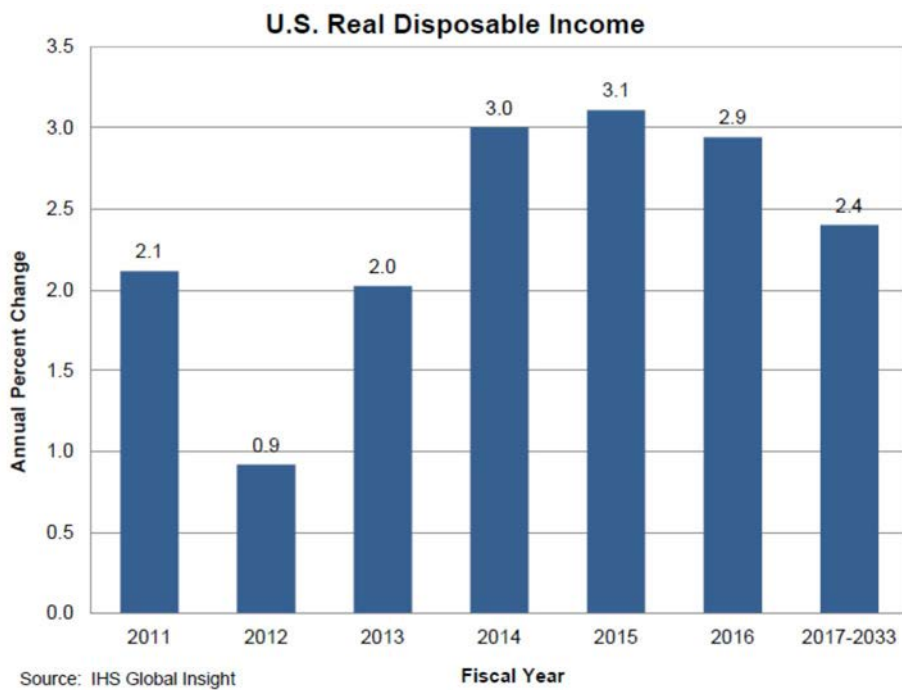
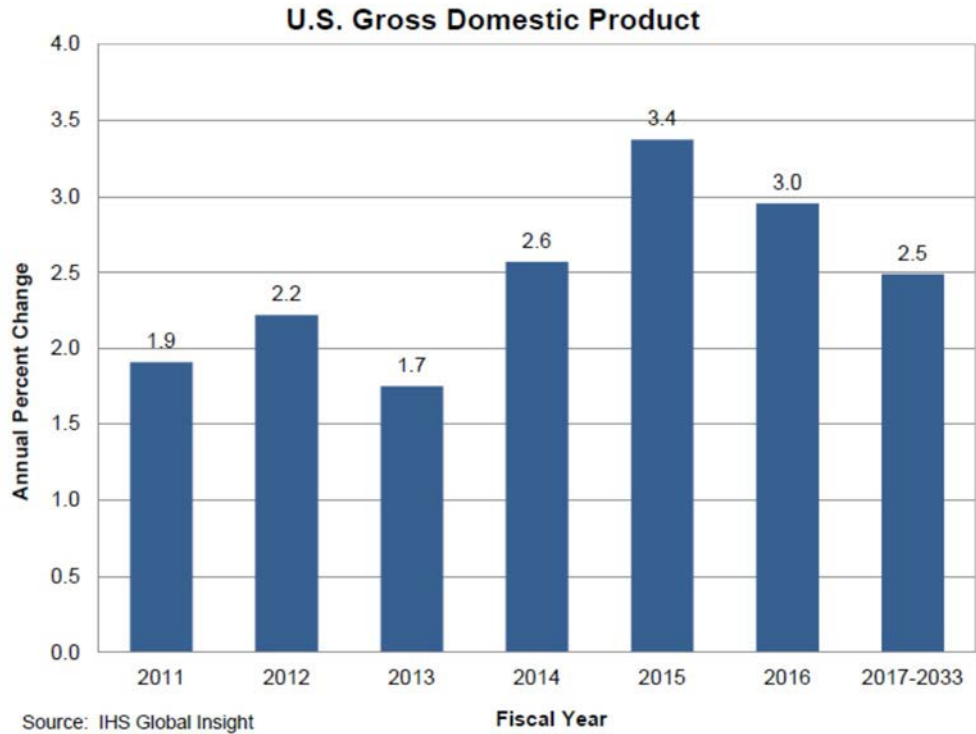
This year, FAA has changed its model for the U.S. domestic market from a GDP based model to a model based on real disposable personal income (DPI). FAA believes that aviation demand is a derived demand – that is, aviation demand depends upon the level of business and leisure activity in the economy. The level of business and especially leisure activity in the economy is driven in large part by the amount of disposable income (income after taxes) that is in the economy. As the U.S. economy recovers from the great recession, GDP growth may come from areas that don't necessarily translate directly into income growth (inventory accumulation or a reduction in imports). Furthermore, any changes in future tax policy that impact individual taxes will be more directly reflected in changes to DPI as opposed to GDP, and as such, FAA believes that disposable income, rather than GDP, is a better metric to use for forecasting future demand. The result of this change is the forecast growth in domestic enplanements is lower by approximately 0.4 percent a year over the forecast horizon.

The general aviation forecasts rely heavily on discussions with industry experts conducted at industry meetings, including four Transportation Research Board (TRB) meetings of Business Aviation and Civil Helicopter Subcommittees in May 2012 and January 2013 along with estimates of the fleet from the FAA civil aircraft registration database. The assumptions have been updated by FAA analysts to reflect more recent data and developing trends, as well as further information from industry experts.

The FAA also presents the forecasts and assumptions to industry staff and aviation associations, who are asked to comment on the reasonableness of the assumptions and forecasts. Their comments and/or suggestions have been incorporated into the forecasts as appropriate.



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