

# FAA Regional Air Service Demand Study

Summary Report  
May 2007

## *Port Authority of New York & New Jersey*



**JFK -**  
John F. Kennedy  
International Airport



**LGA -**  
LaGuardia Airport



**EWR -**  
Newark Liberty  
International Airport

## *New York State Department of Transportation*



**SWF -**  
Stewart International  
Airport



**HPN -**  
Westchester County  
Airport



**ISP -**  
Long Island  
MacArthur Airport

## *Delaware Valley Regional Planning Commission*



**ABE -**  
Lehigh Valley  
International Airport



**ACY -**  
Atlantic City  
International Airport



**TTN -**  
Trenton Mercer  
Airport

SPONSORS:



# *FAA Regional Air Service Demand Study*

Summary Report

## *Acknowledgements*

### **Study Sponsors**

The Federal Aviation Administration  
The Port Authority of New York and New Jersey  
The New York State Department of Transportation  
The Delaware Valley Regional Planning Commission

### **Consultant Team**

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*Introduction*

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# I. Introduction

John. F Kennedy International (JFK), LaGuardia (LGA), and Newark Liberty International (EWR) airports, all operated by the Port Authority of New York & New Jersey, collectively served over 100 million annual passengers in 2006. All three airports face increasing delays and congestion. If passenger growth continues and new facilities cannot be provided, these airports will no longer have the capability to meet the region's demand for passenger air service. Given the key role these airports play in the overall economic health of the entire New York and New Jersey Metropolitan area, it is essential to develop alternative strategies and policies that address this forecasted demand, while providing a level of airport service that retains the region's overall competitive edge.

In order to address these issues, the study sponsors (The Federal Aviation Administration, the Port Authority of New York and New Jersey, The New York State Department of Transportation and the Delaware Valley Regional Planning Commission) joined forces to prepare the "FAA Regional Air Service Demand Study". This study examines the three Port Authority of New York and New Jersey commercial service airports along with six of the larger region's smaller airports, including Stewart International (SWF), Westchester County (HPN), and Long Island/MacArthur (ISP) Airports in New York State; Trenton Mercer (TTN) and Atlantic City International (ACY) Airports in New Jersey, and Lehigh Valley International Airport (ABE) in Pennsylvania. Future demand for each of the nine airports was forecasted to determine the availability of any underutilized capacity. To some degree, the service areas of the six small hub airports overlap those of the Port Authority airports. It is therefore important to determine if these outlying airports can provide significant capacity relief. This knowledge will provide key decision makers in the region with the ability to make airport improvements at the right time and in the right place.

# A Preview of Key Study Findings

The Study's air passenger survey revealed that in 2005, approximately 50% of the region's air travel demand originated within New York City, and an additional 35% of air trips originated in 10 central counties that surround New York. While it is anticipated that outlying counties will grow at a faster pace than those in the region's core, the total growth, in absolute terms, of the region's core is projected to be far greater than in its periphery.

Overall, during the 20-year study period, the region is projected to experience robust growth in air travel, growing from its 2005 level of 105 million annual passengers (MAP) to 157 MAP by 2025. This 50% increase in demand in a 20-year period will drive the need for major capital investment in the airport infrastructure (landside, terminal, airfield) needed to serve those travelers.

By about 2010, however, the airfields of EWR and JFK will be approaching capacity, and the options for expanding airfield capacity are very challenging. The proposed addition of Stewart International as the PANYNJ's 4th commercial airport will contribute to regional needs, but more capacity is required.

Additional future regional aviation capacity will likely result, therefore, from a combination of:

1. increasing capacity in place at the PANYNJ airports
2. increasing the passenger handling infrastructure (landside, terminal, airfield) at the region's small hub airports to match demand, and
3. making the necessary ground transportation improvements required to efficiently bring passengers to the airports where available airfield capacity already exists.

In summary, it is judged that accommodating the forecasted increases in regional demand will require capacity improvements at the large hub Port Authority airports (where the bulk of the airline service and current facilities exist) and timely investments at the smaller regional airports.

# System Planning Process

## Task A

More than 21,000 passengers at all nine airports responded to a survey that asked (among other questions) where they came from in the region, why they chose the airport they used, what other airports they considered using for the trip and what mode of transportation they used to travel to the airport? Information from the surveys was used to determine airport service areas and propensity to travel.

## Tasks B, C & D

*Unconstrained* forecasts of passenger travel and aircraft operations were developed based upon regional economic databases and survey information. Optimistic and pessimistic scenarios evaluated the region’s propensity to travel against varying economic growth rates, air fares, and airline service offerings. Airport usage was allocated back to each county based on survey results, travel times to each airport, population, employment, income, and supply of hotel rooms.

## Task E

The capacity of each airport to accommodate *unconstrained* growth was assessed. Development needs for airfield, passenger terminals, parking and access roads (both on and off-airport) were identified.

## Task F

This study has identified the development needs for the nine airports. Potential future study phases will define an optimum usage of each of the region’s airports to foster regional economic growth.

	Basic Data	Analysis	Conclusions
<b>Task A</b> Passenger Surveys	21,000 Passengers Business Users	Local Origin of Trips	Airport Service Areas
<b>Tasks B, C &amp; D</b> Airport Forecasts	Demographic Data Aviation Databases	Regional Propensity To Travel	Baseline Aviation Forecast Scenarios
O&D Forecasts	Demographic Data Regional Transportation	Local Propensity To Travel	Optimistic/Pessimistic Forecast Scenarios
<b>Task E</b> Capacity Assessments	Airport Data Master Plans	Comparison To Forecast Demand	Development Needs for Unconstrained Demand
<b>Task F</b> Regional Summary	Study Conclusions From Tasks A – E	Agency Consensus	Future Analysis Direction





*Introduction*

*Description of the Region*

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*The Airports*

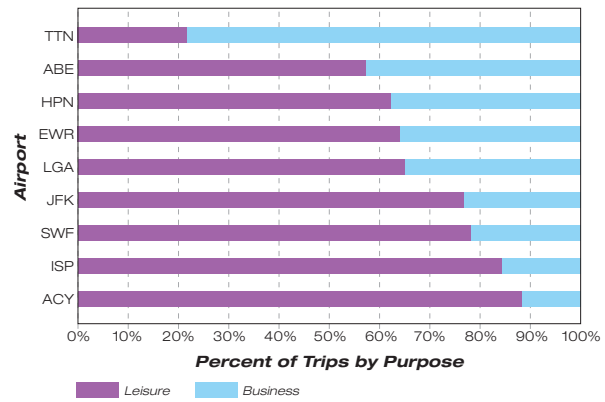
*Regional Summary  
of Findings*



## II. Description of the Region

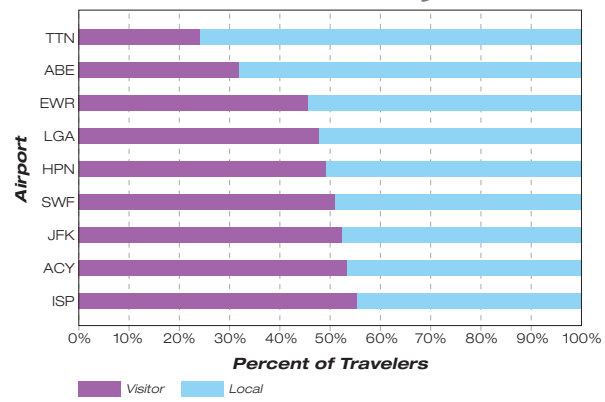
### Where Each Surveyed Passenger Started Their Trip to the Airport

*Trip Purpose*



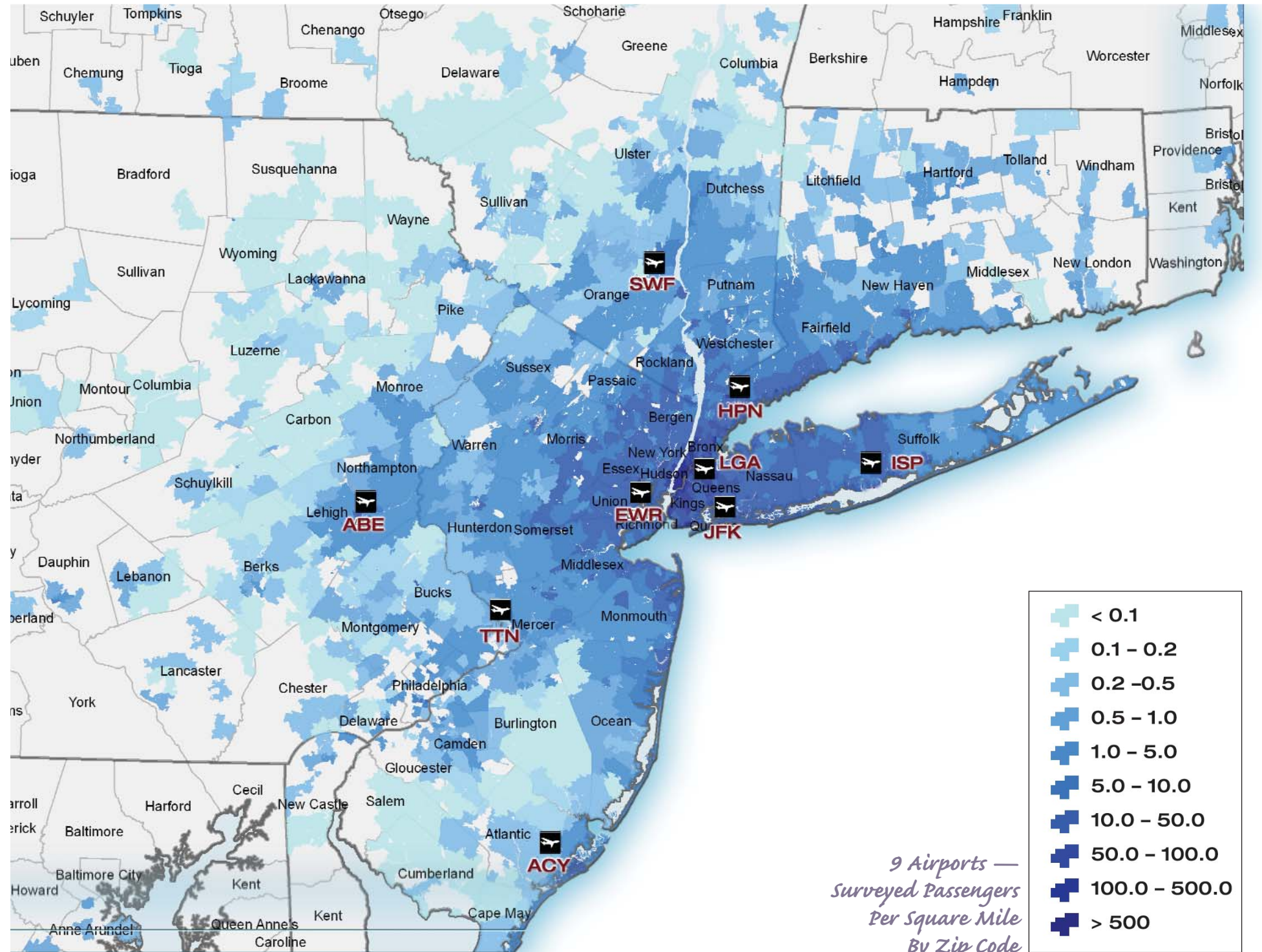
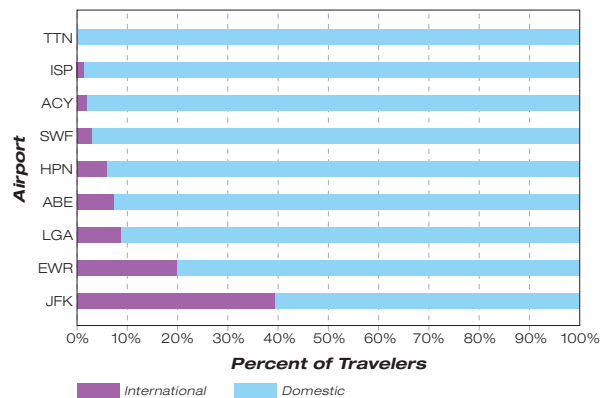
- Trenton and Lehigh Valley have the highest proportion of business travel
- Atlantic City and Islip have the highest proportion of leisure travel

*Local – Visitor Split*



- Trenton and Lehigh Valley have the highest proportion of local travelers

*Domestic vs. International Destination*





# The Passenger Survey

Our passengers most frequently chose their airport of departure because of the availability of direct (non-stop) air service or because flight departures were at convenient times. Travel times to the airport, especially from home, were the next most frequently cited reasons for choosing an airport. Ticket prices were less important. Only at Kennedy did passengers choose prices as being more important than travel time to the airport.

Convenient auto parking was important at Stewart and Trenton. Being familiar with the airport was important at Lehigh Valley and Stewart.



**Passengers chose SWF (Stewart International):**

- time to airport
- flight schedules
- auto parking
- familiar airport

**Passengers chose ABE (Lehigh Valley International):**

- time to airport
- flight schedules
- familiar airport
- direct flights

**Passengers chose HPN (Westchester County):**

- time to airport
- flight schedules
- direct flights
- ticket prices

**Passengers chose ISP (Islip Long Island MacArthur):**

- time to airport
- direct flights
- flight schedules
- ticket prices

**Passengers chose TTN (Trenton Mercer):**

- direct flights
- time to airport
- auto parking
- flight schedules

**Passengers chose ACY (Atlantic City):**

- direct flights
- time to airport
- ticket prices
- flight schedules

**Passengers chose LGA (LaGuardia):**

- direct flights
- flight schedules
- time to airport
- ticket prices

**Passengers chose EWR (Newark Liberty International):**

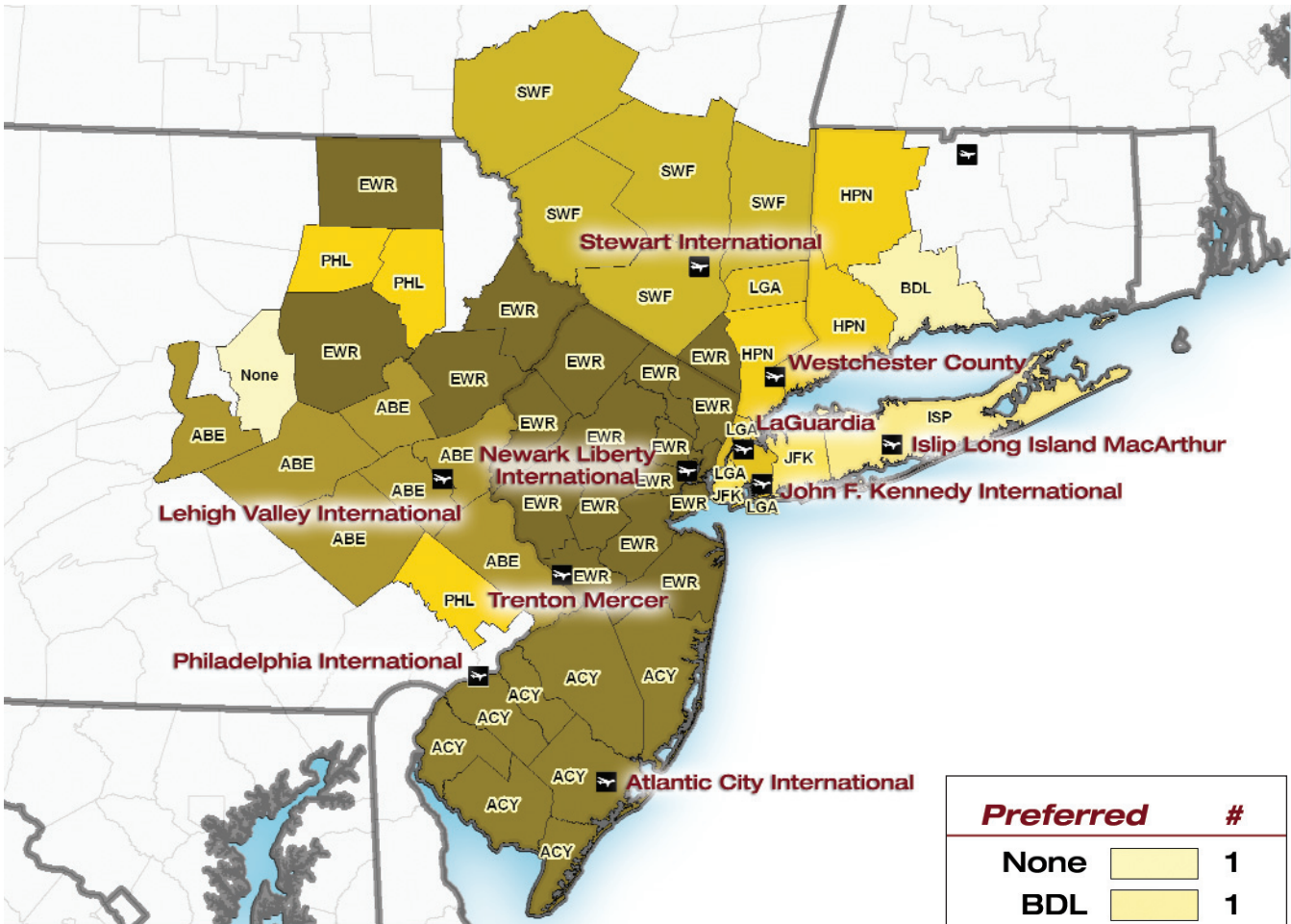
- direct flights
- flight schedules
- time to airport
- ticket prices

**Passengers chose JFK (John F. Kennedy International):**

- direct flights
- flight schedules
- ticket prices
- time to airport



*Air service being equal,  
passengers will choose  
the closer airport.*



<i>Preferred</i>	#
None	1
BDL	1
ISP	1
JFK	2
HPN	3
PHL	3
LGA	4
SWF	4
ABE	7
ACY	8
EWR	19

# Regional Study Area

*Nine airports serve fifty-four counties in four states*



## Study Area      2005 Population

Entire Area .....	27.3 million
New York State .....	13.3 million
New Jersey .....	8.8 million
Pennsylvania .....	3.6 million
Connecticut .....	1.9 million

## Study Area      2005 Employment

Entire Area .....	15.5 million
New York State .....	7.3 million
New Jersey .....	4.9 million
Pennsylvania .....	2.1 million
Connecticut .....	1.2 million



# Port Authority of New York & New Jersey Study Area

*Three airports serve  
thirty-five counties in four states*



Study Area	2005 Population	Study Area	2005 Employment
Entire Area	27.3 million	Entire Area	15.5 million
New York State	13.3 million	New York State	7.3 million
New Jersey	8.8 million	New Jersey	4.9 million
Pennsylvania	3.6 million	Pennsylvania	2.1 million
Connecticut	1.9 million	Connecticut	1.2 million

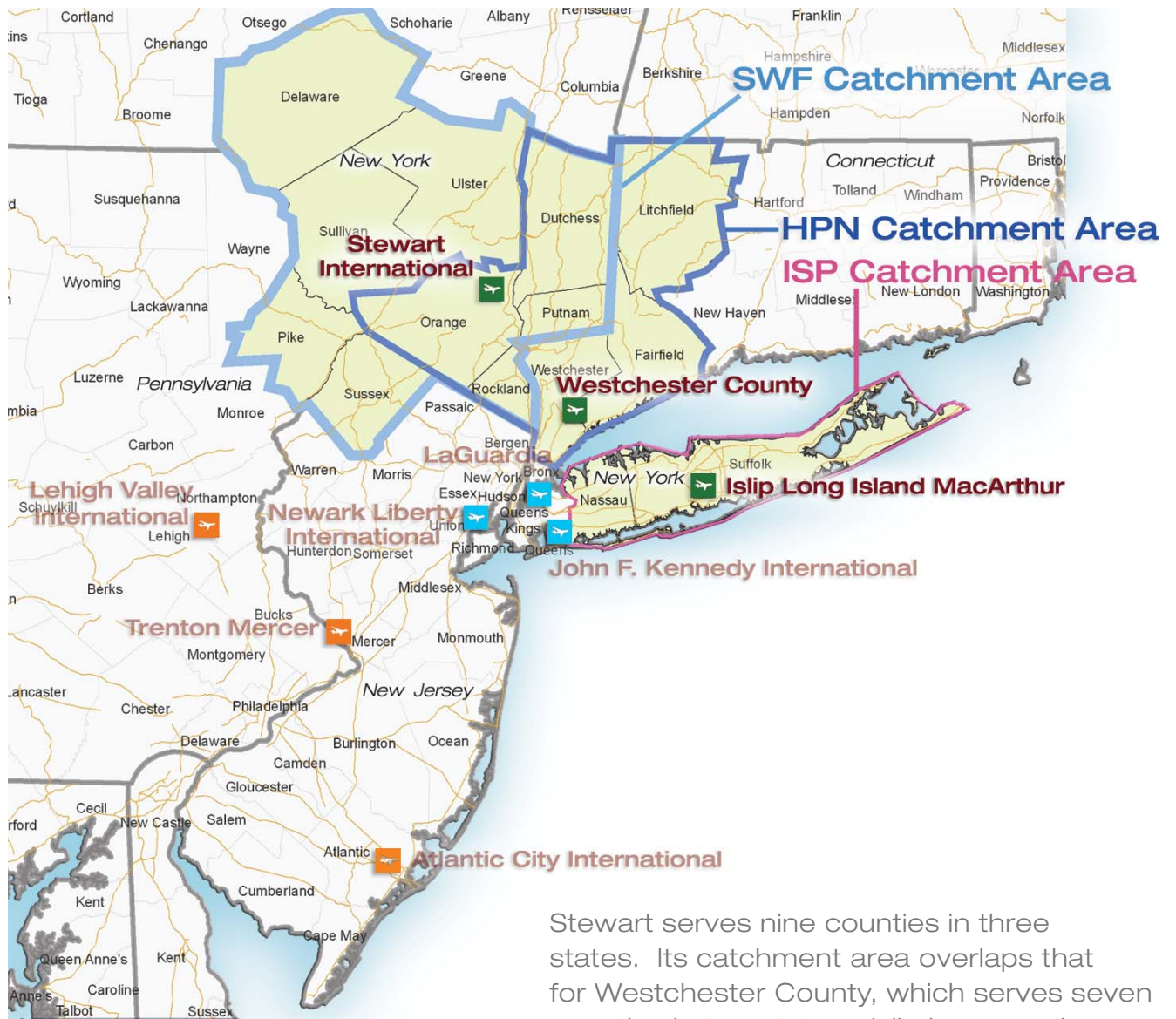
# Delaware Valley Regional Planning Commission Study Area

Atlantic City and Lehigh Valley have unique catchment areas based on the passenger surveys. Trenton Mercer has a catchment area defined by drive times. Its catchment area overlaps those of Atlantic City and Lehigh Valley.



# New York State Department of Transportation Study Area

*Three airports serve fourteen  
counties in four states*



Stewart serves nine counties in three states. Its catchment area overlaps that for Westchester County, which serves seven counties in two states. Isip has an unique catchment area that serves two counties on Long Island. All six of the regional airports have catchment areas that overlap those of the Port Authority airports.

*Introduction*

*Description of the Region*

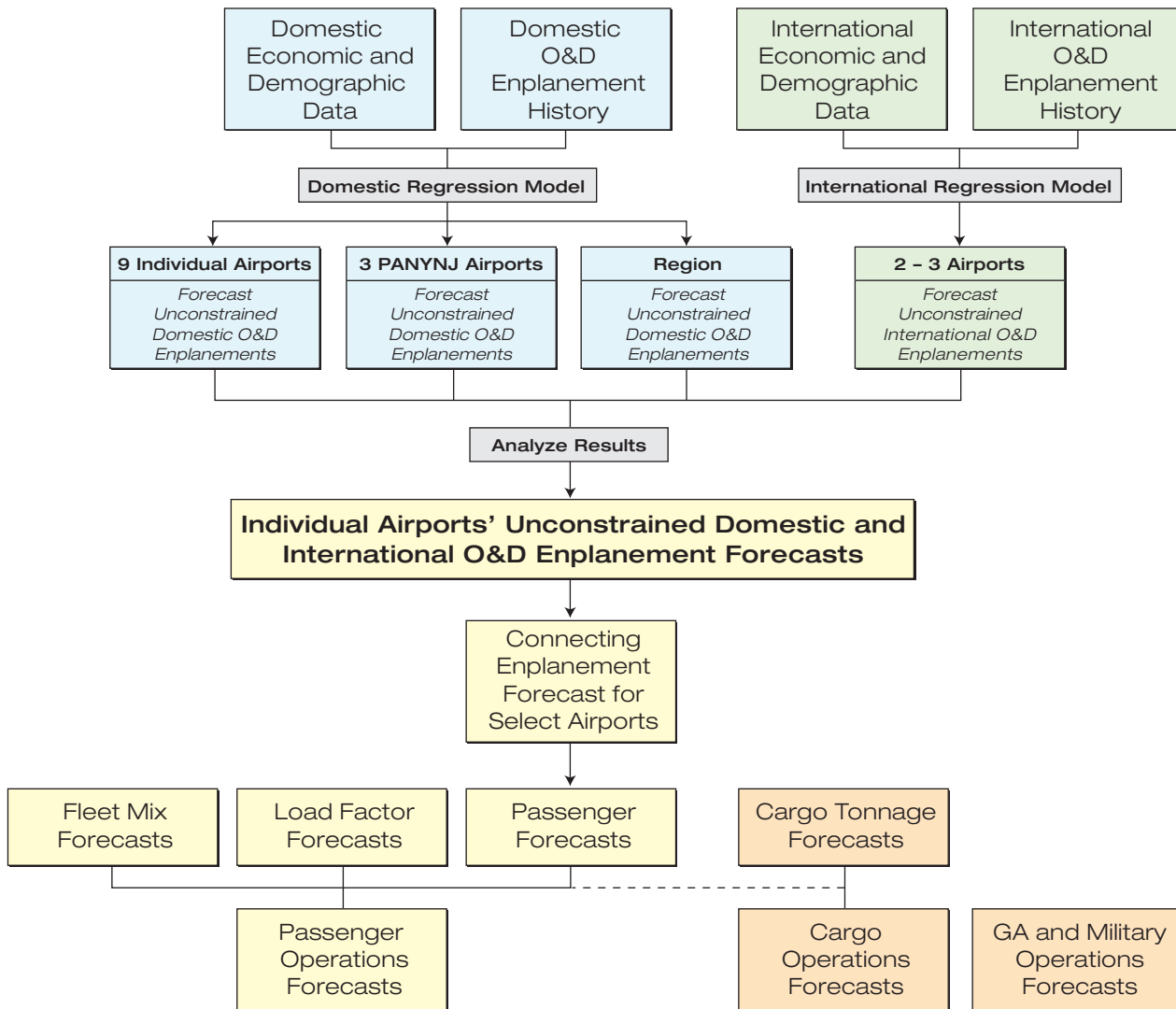
*Forecasts of  
Airport Activity*

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# III. Forecasts of Aviation Activity



# Methodology

The forecasts were developed based on a regional approach. First, historical and forecast demographic and socioeconomic data were collected and analyzed.

A 20-year history of traffic and yields at each airport, the nine-airport region, and the three-airport Port Authority region was also reviewed and analyzed.

Historical scheduled passenger traffic was examined. A multi-linear regression model was used to quantify the relationship between the variable being forecast (local passengers) and the independent variables.

The regression model was used to project O&D demand for the entire nine-airport region and the three-airport Port Authority region to determine a baseline level of future demand. The model was also used to develop individual airport forecasts for each airport. The results of the regional models were compared to the results of the individual airport models to determine the appropriate level of O&D activity for the 20-year forecast horizon.

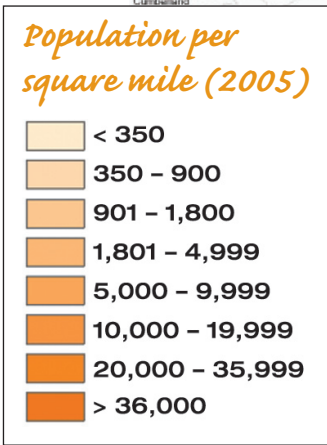
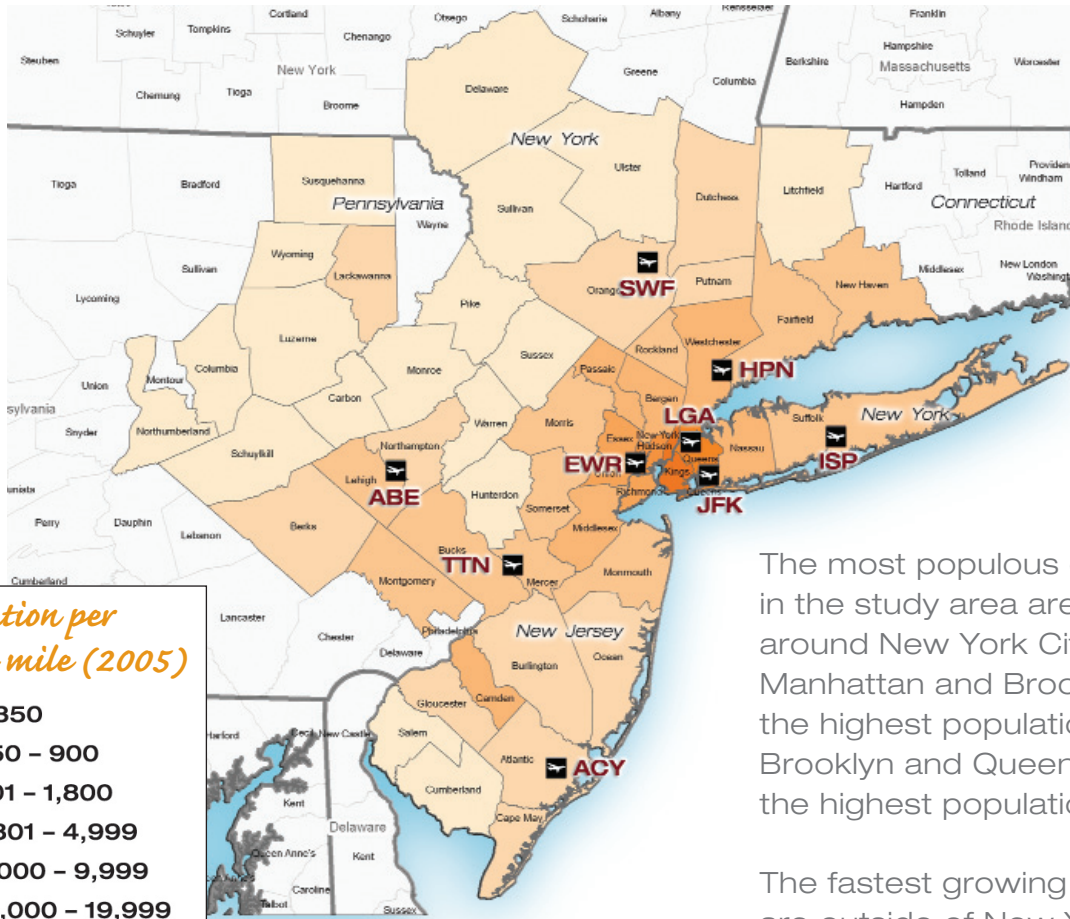
Historical connecting passengers were examined for each the three Port Authority airports in order to project future connecting passenger levels. The sum of the O&D and connecting passenger demand yields the total enplaned passenger forecasts for each airport.

Forecasts of aircraft operations were developed from the passenger traffic forecasts. Since carriers have a wide choice of aircraft and experience different load factor levels, many different volumes of operations can correspond to one set of passenger forecasts.

The forecasts of operations were developed from information about airline fleet plans, scheduling strategies at down-line hubs, current and projected load factors, and assumptions about mergers and competitive strategies.

# Independent Variables

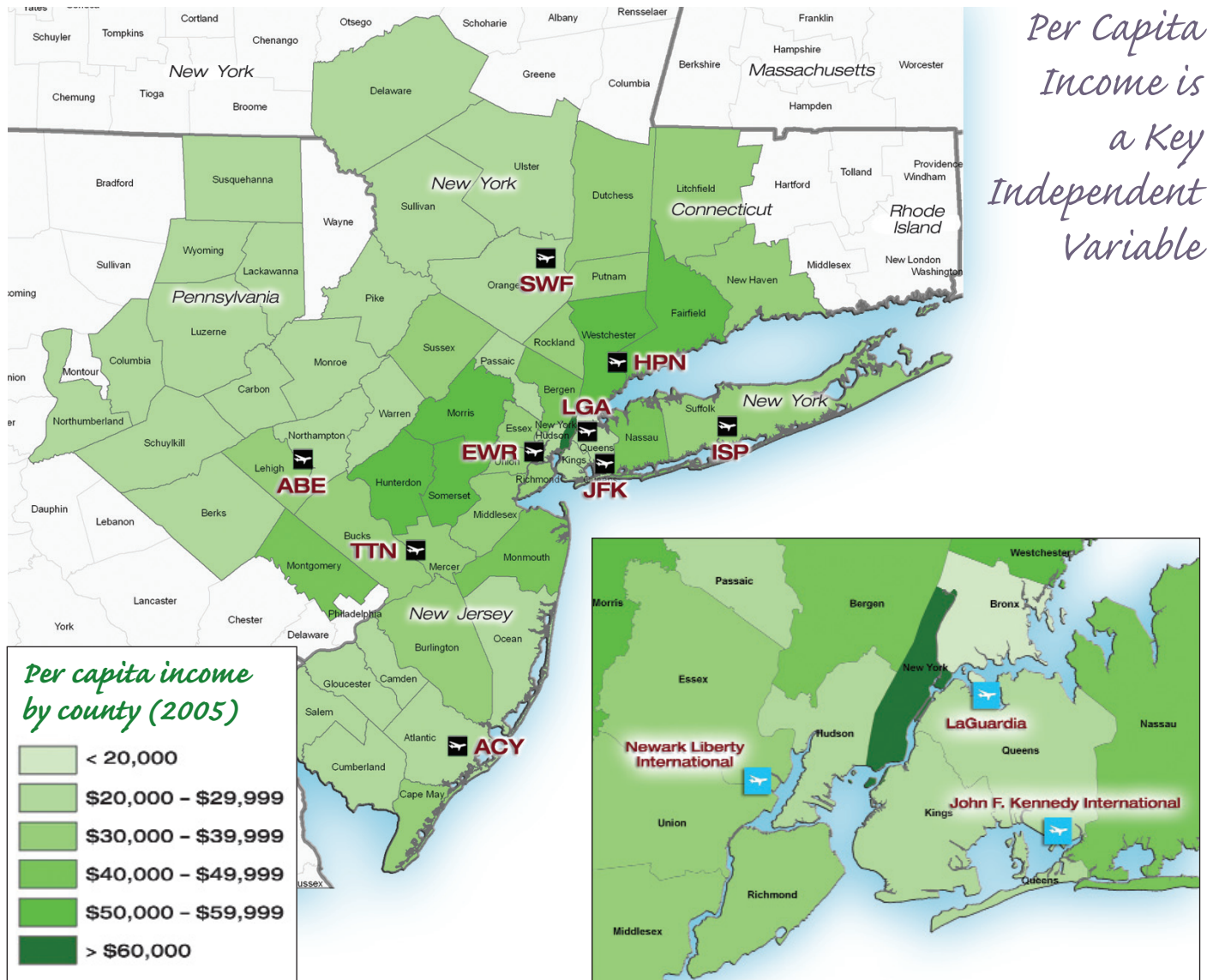
*Population is a key independent variable*



The most populous counties in the study area are centered around New York City. Manhattan and Brooklyn have the highest population density. Brooklyn and Queens have the highest populations.

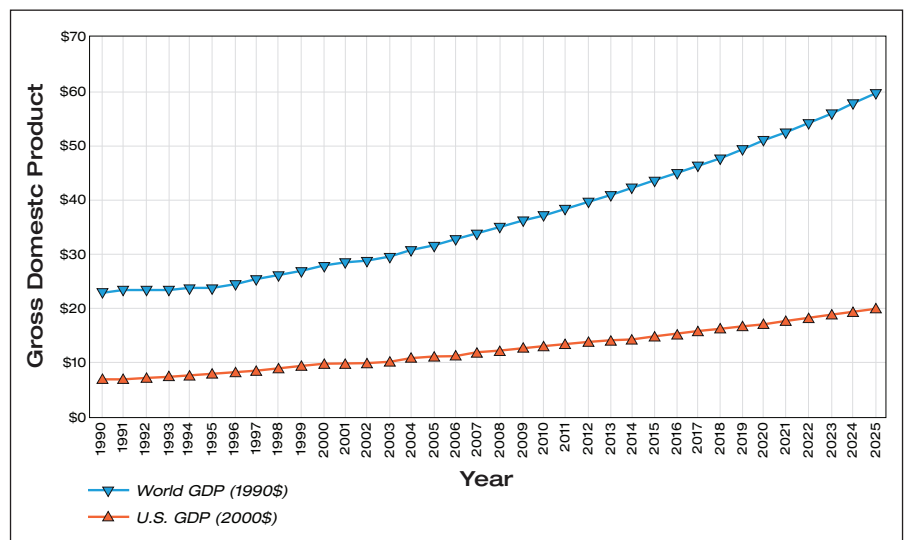
The fastest growing counties are outside of New York City. Westchester and Dutchess Counties in New York, Fairfield County in Connecticut and Morris, Hudson and Bergen Counties in New Jersey are forecast to have slower growth in 2005 through 2015 than they had from 1995 to 2005. Long Island counties will continue growing at rates consistent with recent history. Overall, the region's population is forecast to grow at a rate of 0.6 percent annually, which is fairly consistent with the rate of growth from 1985 though 2005.





Traffic at JFK, LGA, and EWR has increased as a result of national and regional economic growth. U.S. GDP has historically outperformed world GDP (3.0 percent versus 2.2 percent annually from 1990 to 2005). U.S. GDP is forecast to continue see 3.0 percent average annual growth through 2025. World GDP is expected to grow faster than U.S. GDP, at 3.2 percent annually through 2025

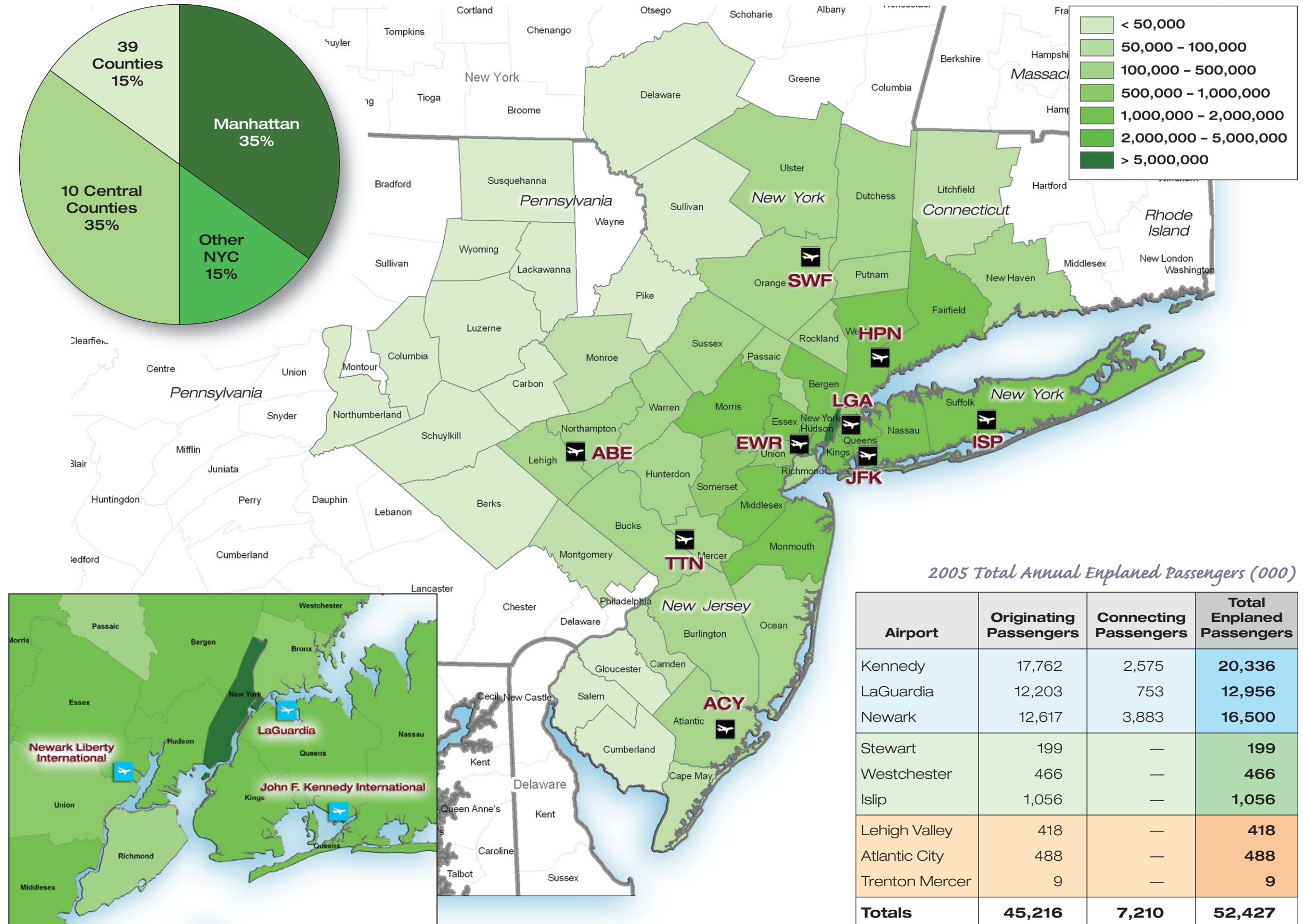
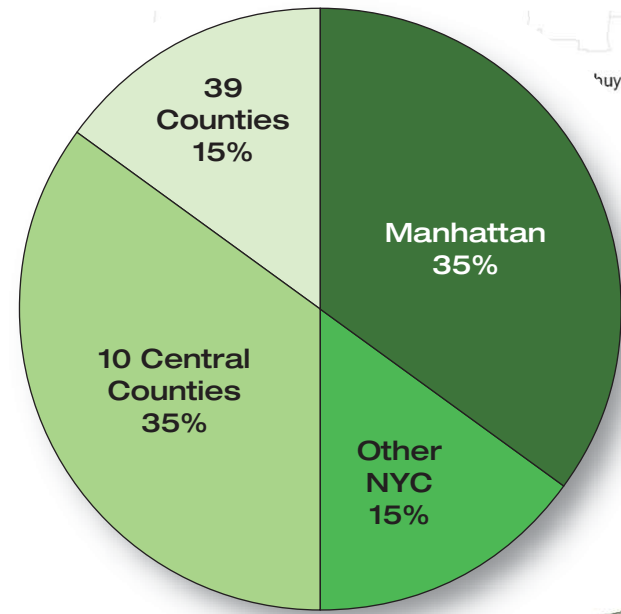
*World vs. U.S. GDP (\$ billions)*





# 2005 Annual Originating Passengers

- New York City generates half of region's existing demand
- New York City and 10 other surrounding counties have 85 percent of region's demand
- The region's passengers use multiple airports
- No one airport captures the majority of its catchment area passengers
- Airports draw passengers from outside their catchment areas
- Passengers will bypass a closer airport to use an airport that has direct, conveniently timed air service



2005 Total Annual Enplaned Passengers (000)

Airport	Originating Passengers	Connecting Passengers	Total Enplaned Passengers
Kennedy	17,762	2,575	20,336
LaGuardia	12,203	753	12,956
Newark	12,617	3,883	16,500
Stewart	199	—	199
Westchester	466	—	466
Islip	1,056	—	1,056
Lehigh Valley	418	—	418
Atlantic City	488	—	488
Trenton Mercer	9	—	9
<b>Totals</b>	<b>45,216</b>	<b>7,210</b>	<b>52,427</b>



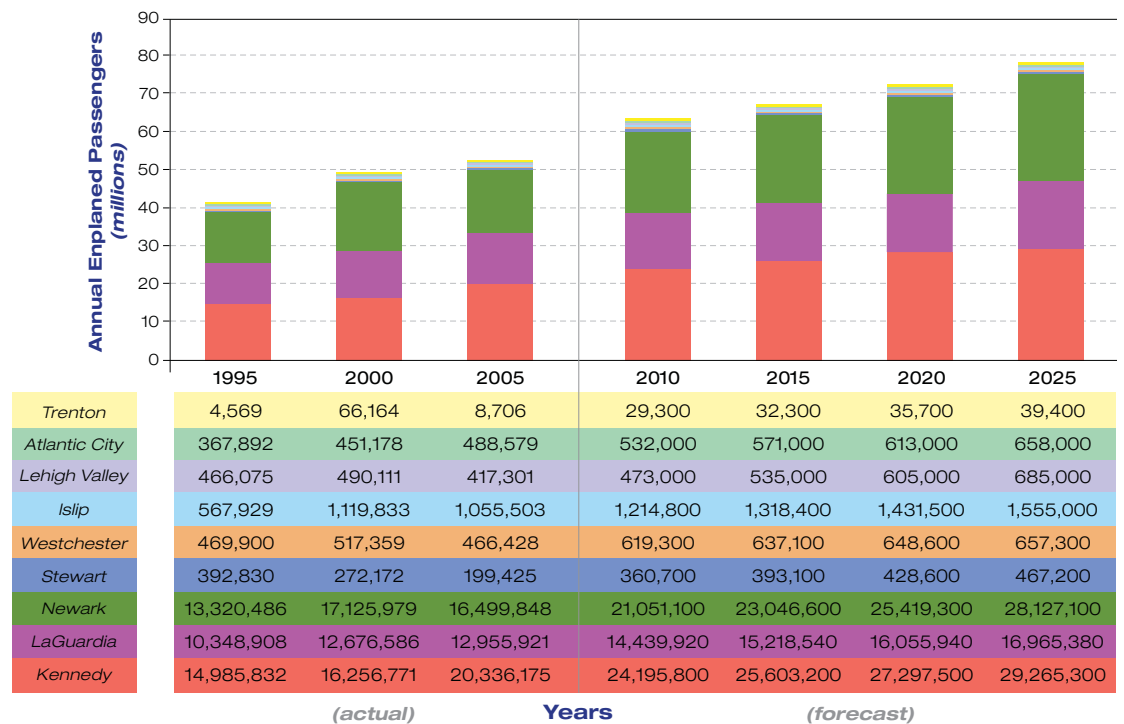
# Forecast of Annual Enplaned Passengers

Over the past five years passenger activity has become more concentrated at the three Port Authority's airports. Airlines reduced their operating costs (in the face of record losses) by consolidating air service to serve the region's demand from fewer airports.

With the end of the recession and with the financial recovery of the airline industry, it is expected that the service consolidations seen over the past five

years will be reversed. In addition, low fare carriers have initiated air service at many of the region's smaller airports, and this trend is expected to continue.

Higher overall growth rates for Newark, Stewart, Trenton and Lehigh Valley reflect local demographic trends that show that areas south, west and north of the region's core will have the highest population growth. Short-term growth in population is higher than long-term growth.



## Growth Rates

Year	Kennedy	LaGuardia	Newark	Stewart	Westchester	Islip	Lehigh Valley	Atlantic City	Trenton	Total
1990 - 2005	2.4%	0.9%	2.7%	0.4%	1.8%	4.4%	-0.1%	0.5%	-0.7%	<b>2.0%</b>
2005 - 2015	2.3%	1.6%	3.4%	7.0%	3.2%	2.2%	2.5%	1.6%	14.0%	<b>2.5%</b>
2015 - 2025	1.3%	1.1%	2.0%	1.7%	0.3%	1.7%	2.5%	1.4%	2.0%	<b>1.5%</b>
2005 - 2025	1.8%	1.4%	2.7%	4.3%	1.7%	2.0%	2.5%	1.5%	7.8%	<b>2.0%</b>

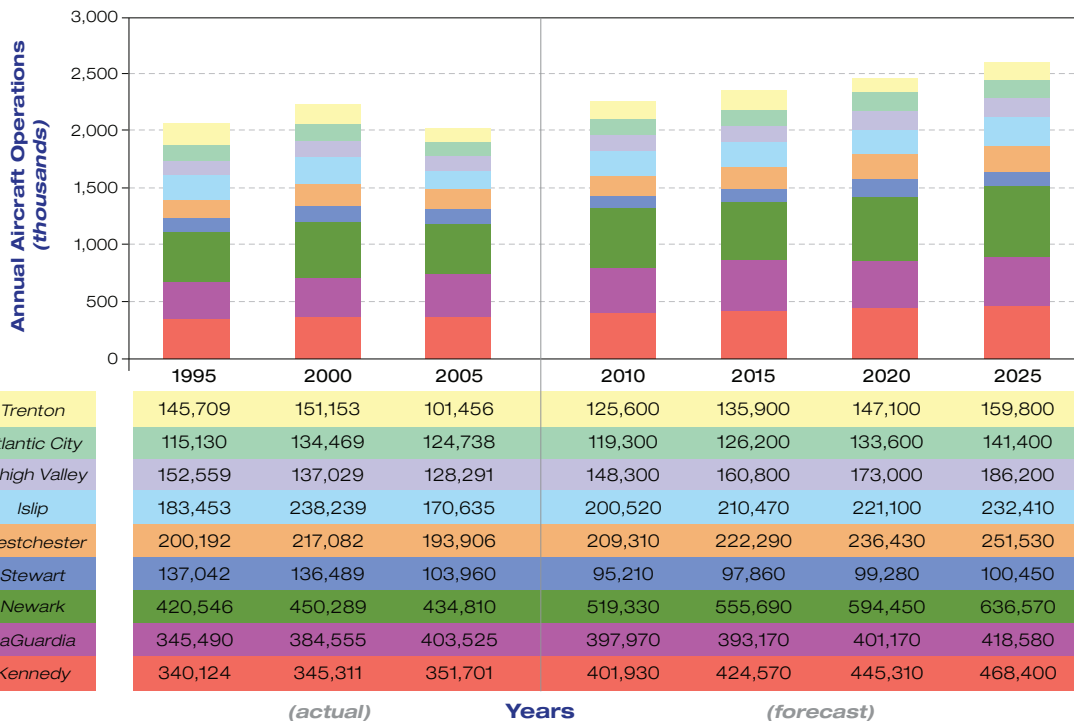
# Forecast of Annual Aircraft Operations

Over the past ten years aircraft activity has become more concentrated at the three Port Authority airports. Airlines consolidated air service to serve the region's demand from fewer airports.

Most aircraft activity at the region's six smaller airports is by private aircraft or "general aviation". Private aircraft are either owned by individuals, flight schools, corporations, air charter services, or by fractional ownership partnerships.

General aviation aircraft activity by smaller aircraft declined, while activity by larger corporate and fractionally owned aircraft grew.

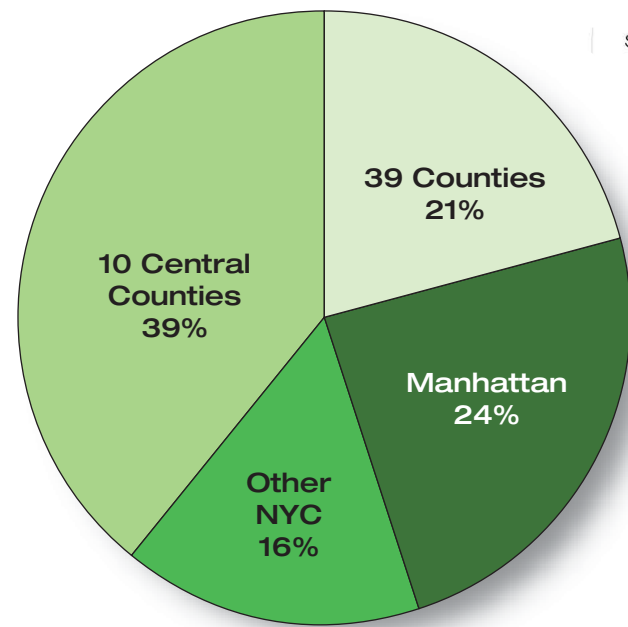
American and Delta have both announced plans to expand their international air service offerings from Kennedy, and Continental has announced plans to expand their international air service from Newark. As a result, it is expected that fares will decline for international service and demand will be stimulated.



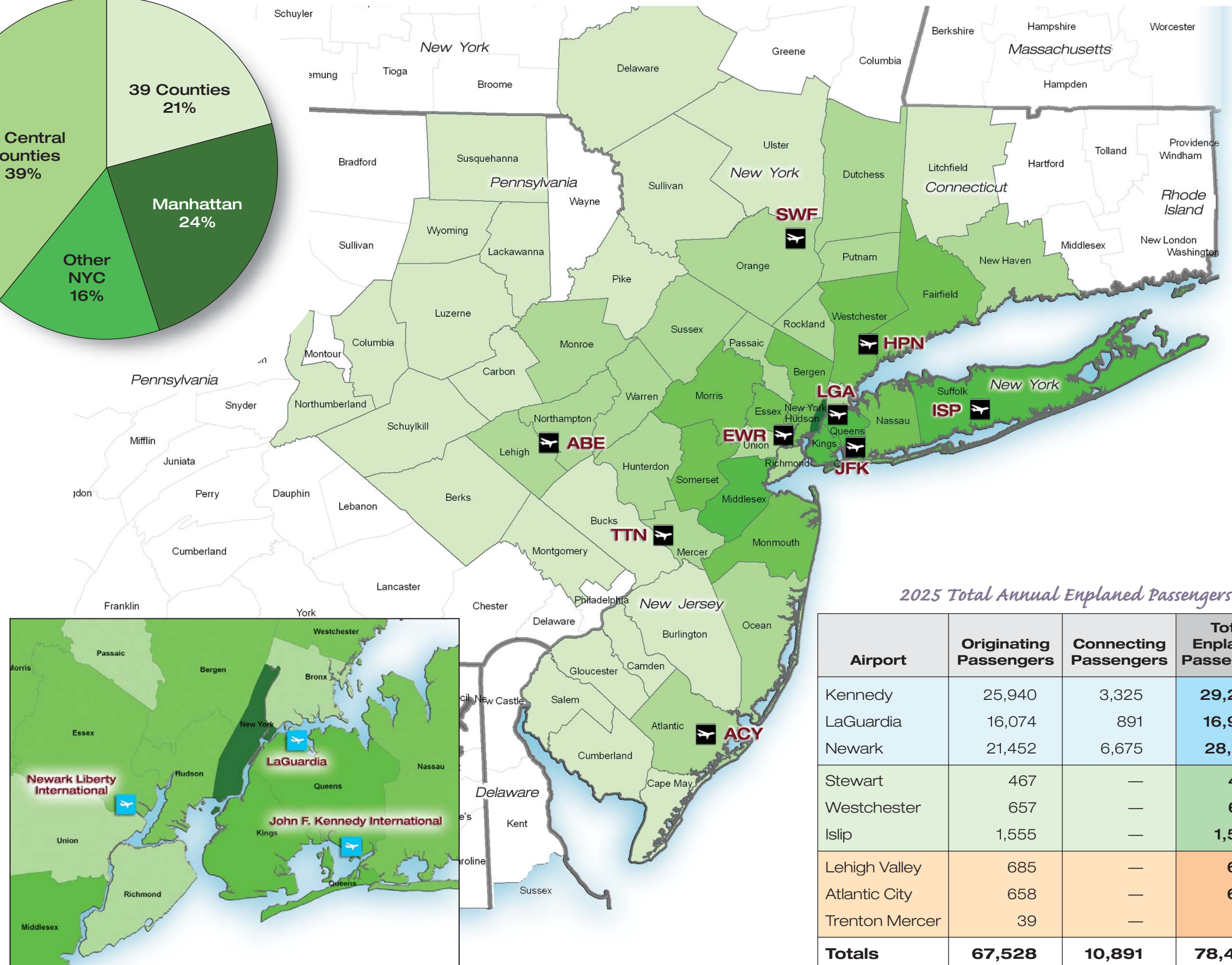
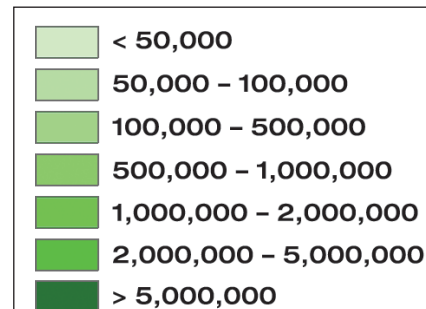
## Growth Rates

Year	Kennedy	LaGuardia	Newark	Stewart	Westchester	Islip	Lehigh Valley	Atlantic City	Trenton	Total
1990 - 2005	0.3%	1.6%	0.3%	-2.7%	-0.3%	-0.7%	-1.7%	0.8%	-3.6%	<b>-0.1%</b>
2005 - 2015	1.9%	-0.3%	2.5%	-0.6%	1.4%	2.1%	2.3%	0.1%	3.0%	<b>1.5%</b>
2015 - 2025	1.0%	0.6%	1.4%	0.3%	1.2%	1.0%	1.5%	1.1%	1.6%	<b>1.1%</b>
2005 - 2025	1.4%	0.2%	1.9%	-0.2%	1.3%	1.6%	1.9%	0.6%	2.3%	<b>1.3%</b>

# 2025 Net Growth of Annual Originating Passengers



- New York City has 40% of region's new demand by 2025
- New York City and 10 other surrounding counties have 79% of region's new demand
- The region's passengers will continue using multiple airports
- Greatest absolute growth occurs at the region's core
- Region's six smaller airport catchment areas will have a greater share of regional traffic



2025 Total Annual Enplaned Passengers (000)

Airport	Originating Passengers	Connecting Passengers	Total Enplaned Passengers
Kennedy	25,940	3,325	29,265
LaGuardia	16,074	891	16,965
Newark	21,452	6,675	28,127
Stewart	467	—	467
Westchester	657	—	657
Islip	1,555	—	1,555
Lehigh Valley	685	—	685
Atlantic City	658	—	658
Trenton Mercer	39	—	39
<b>Totals</b>	<b>67,528</b>	<b>10,891</b>	<b>78,420</b>



# High and Low Forecast Scenarios

Airport	Reasons for <i>Optimism</i>	Reasons for <i>Pessimism</i>
<b>Kennedy</b>	<ul style="list-style-type: none"> <li>• Success of international air service expansions by American and Delta</li> <li>• Continued expansion of Jet Blue</li> <li>• Success of A-380/Growth of aircraft gauge</li> </ul>	<ul style="list-style-type: none"> <li>• Less successful international air service expansions</li> <li>• Less expansion by Jet Blue</li> <li>• Less growth in aircraft gauge</li> </ul>
<b>LaGuardia</b>	<ul style="list-style-type: none"> <li>• Growth of aircraft gauge</li> </ul>	<ul style="list-style-type: none"> <li>• Less growth in aircraft gauge</li> </ul>
<b>Newark Liberty</b>	<ul style="list-style-type: none"> <li>• Success of international air service expansion by Continental</li> </ul>	<ul style="list-style-type: none"> <li>• Less successful international air service expansions</li> </ul>
<b>Stewart</b>	<ul style="list-style-type: none"> <li>• Expansion of catchment area to south and east</li> </ul>	<ul style="list-style-type: none"> <li>• Less expansion of catchment area</li> </ul>
<b>Westchester</b>	<ul style="list-style-type: none"> <li>• No high scenario because airport activity capped by legislation</li> </ul>	<ul style="list-style-type: none"> <li>• Little change expected</li> </ul>
<b>Islip</b>	<ul style="list-style-type: none"> <li>• Success of new air service markets</li> </ul>	<ul style="list-style-type: none"> <li>• Less successful new air service</li> </ul>
<b>Lehigh Valley</b>	<ul style="list-style-type: none"> <li>• Expansion of catchment area to south and east</li> </ul>	<ul style="list-style-type: none"> <li>• Less expansion of catchment area</li> </ul>
<b>Atlantic City</b>	<ul style="list-style-type: none"> <li>• Success of new low-fare carrier markets</li> </ul>	<ul style="list-style-type: none"> <li>• Less successful new air service</li> </ul>
<b>Trenton</b>	<ul style="list-style-type: none"> <li>• Introduction of new air service</li> <li>• Expansion of catchment area in all directions</li> <li>• More use by visitors to region</li> </ul>	<ul style="list-style-type: none"> <li>• Less successful new air service</li> <li>• Less expansion of catchment area</li> <li>• Less use by visitors</li> </ul>
<b>All</b>	<ul style="list-style-type: none"> <li>• Expansion of low-fare carrier air service</li> <li>• Better than expected economic growth</li> <li>• Lower jet fuel prices</li> </ul>	<ul style="list-style-type: none"> <li>• Less low-fare air service</li> <li>• Less economic growth</li> <li>• Higher jet fuel prices</li> </ul>

# 2025 Forecast Scenarios

## 2025 Low Scenario

- Less economic growth
- Less expansion of catchment areas
- Less low-fare air service
- Less growth in aircraft size

Not all airports will follow low scenario

Airport	Aircraft Operations	Enplaned Passengers
Kennedy	423,670	26,314,600
LaGuardia	391,070	15,822,200
Newark	558,220	24,510,100
Stewart	96,690	218,500
Westchester	246,480	582,000
Islip	227,790	1,346,500
Lehigh Valley	183,200	542,000
Atlantic City	141,400	586,000
Trenton Mercer	159,800	14,400

## 2025 Baseline

- Follows independent forecasts of socio-economic growth
- Implementation of airline growth plans at JFK and EWR
- New low-fare air service at ABE, SWF, TTN and HPN
- No change in airport catchment areas
- Increases in aircraft size

Baseline forecasts sum to regional forecast

Airport	Aircraft Operations	Enplaned Passengers
Kennedy	468,400	29,265,300
LaGuardia	418,580	16,965,380
Newark	636,570	28,127,100
Stewart	100,450	467,200
Westchester	251,530	657,300
Islip	232,410	1,555,000
Lehigh Valley	186,200	685,000
Atlantic City	141,400	658,000
Trenton Mercer	159,800	39,400
<b>Total</b>	<b>2,595,340</b>	<b>78,419,680</b>

## 2025 High Scenario

- More economic and population growth
- Expansion of catchment areas
- More low-fare air service
- More growth in aircraft size

Not all airports will follow high scenario

Airport	Aircraft Operations	Enplaned Passengers
Kennedy	541,990	33,729,400
LaGuardia	483,170	19,695,200
Newark	736,460	32,396,000
Stewart	113,440	1,866,400
Westchester	251,530	657,300
Islip	246,860	2,205,800
Lehigh Valley	195,200	1,741,000
Atlantic City	149,500	1,664,000
Trenton Mercer	161,700	644,100

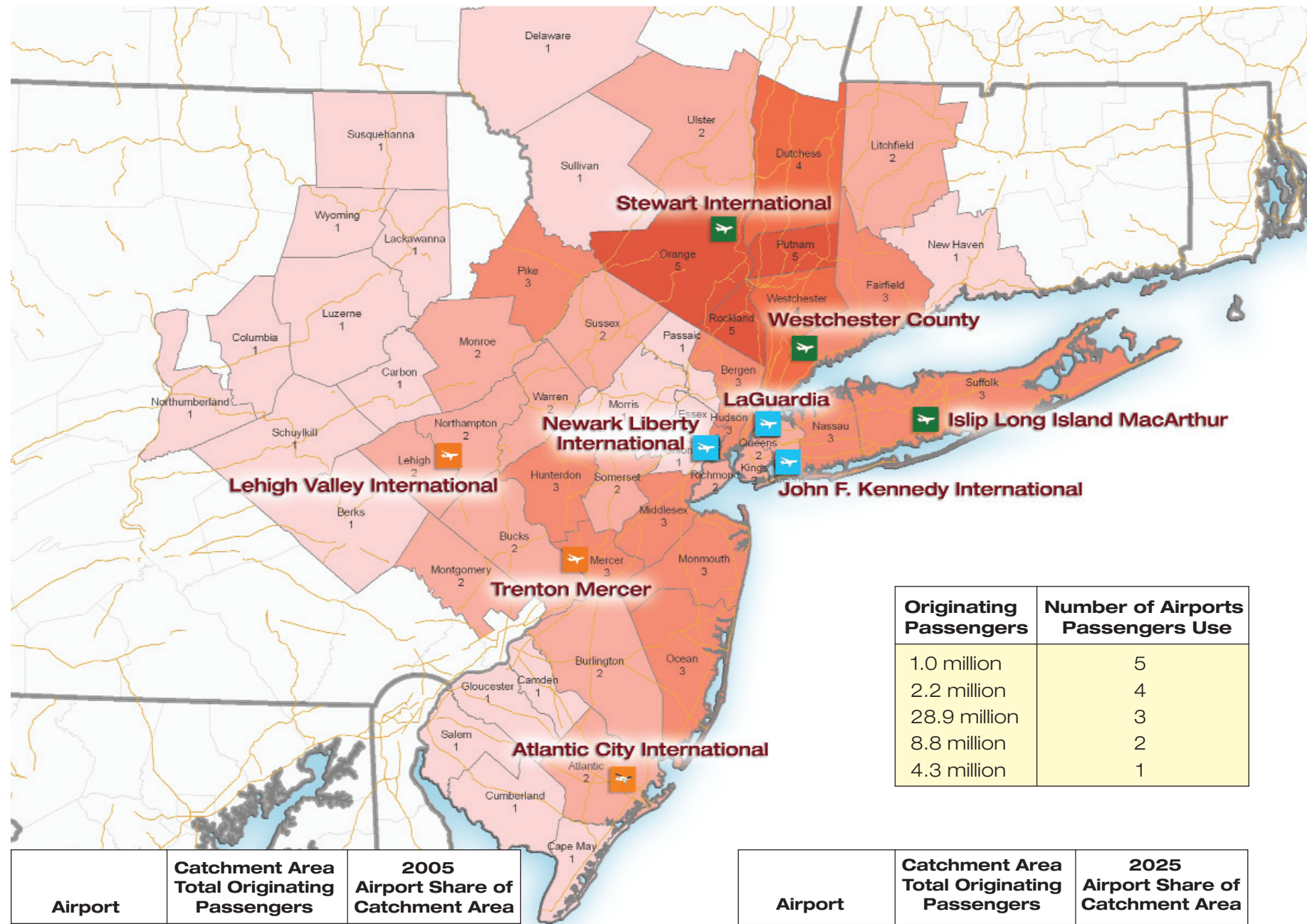


# Airport Choice

Most passengers in the region choose among several airports when planning their trips. Their choice depends upon where they are going, which airports they are near, and the price of the ticket.

The survey shows that the majority of passengers are choosing among at least three airports. As shown on the map to the right, passengers from Rockland, Orange and Putnam County choose from as many as five airports. Virtually all passengers from north-central New Jersey use only Newark Airport.

As a result, no one airport captures the majority of passengers within its catchment area. As shown below, Kennedy captures the greatest percentage (46%). It has the greatest diversity of non-stop destinations and airlines, along with the greatest number low-fare domestic air service destinations. By contrast Trenton-Mercer has only one destination and captures a very small percentage of its catchment area's passengers.



Airport	Catchment Area Total Originating Passengers	2005 Airport Share of Catchment Area
Kennedy	36,994	46%
LaGuardia	34,801	34%
Newark	29,757	39%
Stewart	1,448	13%
Westchester	4,947	9%
Islip	5,184	18%
Lehigh Valley	1,263	32%
Atlantic City	2,426	19%
Trenton Mercer	4,419	0.2%

Airport	Catchment Area Total Originating Passengers	2025 Airport Share of Catchment Area
Kennedy	53,498	46%
LaGuardia	49,679	31%
Newark	44,235	44%
Stewart	2,513	17%
Westchester	7,505	8%
Islip	7,373	19%
Lehigh Valley	2,282	29%
Atlantic City	4,123	15%
Trenton Mercer	7,902	0.5%

# Future Airport Choice

The forecast shows that outlying counties are growing faster than counties in the region's core. However, the total growth of the region's core, in absolute terms, is far larger than its periphery. Thus, (as shown in the table below) forecast 2025 patterns of airport choice will be similar to those of 2005.

The baseline analysis assumes that no changes in airport catchment areas will occur. The optimistic forecasts for Stewart, Lehigh Valley, and Atlantic City reflect expansions of their catchment areas to include additional counties. The Trenton catchment area already reflects an expanded area, so the optimistic forecast shows a greater capture of catchment area passengers. These changes would occur with the addition of new low-fare air service destinations at those airports.

Islip has little opportunity to expand its catchment area due to the physical geography of Long Island. Westchester has no optimistic forecast due to its legislated capacity cap.



## *Airside Congestion*

The Port Authority's airports have recently experienced a surge in aircraft activity, especially at JFK. Although major portions of the incremental flights were accommodated during periods of the day where unused capacity existed, congestion and potentially significant delays could follow. If the incremental services are sustained the increasing delays will happen sooner than forecasted. This is so because the bulk of the demand is in the counties surrounding the Port Authority's airports.

Airfield delay increases the total trip time, making air travel a less attractive mode of transportation. While small delays are unlikely to have an effect on total air passenger demand, large and consistent delays can become a noticeable factor when passengers plan their travel. Passengers can respond by choosing a different mode of travel, choosing a less congested route through different airports, or by combining trips and making fewer but longer trips.

The changes in security procedures imposed in response to the events of September 11, 2001 had the effect of increasing travel time by air transportation. The passenger survey data from this study shows that the average arrival time to the airport prior to departure is approximately 30 minutes longer than comparable data from prior studies. While the time required to wait at the checkpoints and baggage screening sites is quite variable, the data show that passengers plan for these activities to add approximately 30 minutes to their trips.

This 30 minute increase in travel time by air transportation has had a noticeable effect on demand. This study compared total travel by domestic air market from the three Port Authority airports in the 3rd quarter of Years 2004 versus 2000. The total number of trips increased 7 percent from 2000 to 2004. However, air trips of less than 250 miles decreased 28 percent while air trips of less than 500 miles decreased 4 percent. By contrast, travel greater than 500 miles increased by 13 percent. These data show that 30 minute travel delays (incurred in the airport) considerably depressed short-haul travel, but appeared to have no effect on longer haul demand.

# Effects of Airside and Landside Congestion

## *Effects of Airside and Landside Congestion (continued)*

In many respects this change in travel time through the airport is the equivalent of 30 minutes of airfield congestion delay. The only real difference is that the passenger is waiting in the airport (either in line or in a waiting room) versus waiting on the airplane itself.

Short-haul air transportation has competition from surface transportation modes. The marginal travel time savings by higher-speed air transport is less on a short trip than on a long trip. Delays degrade or eliminate the marginal travel time advantage for air transportation on short trips and reduce the value received for the premium cost of air travel. Passengers have responded by choosing other modes of transportation for short-haul trips. By contrast, the marginal travel time advantage of air transportation for longer trips remains largely intact, even with a fairly large (30 minute) delay. Thus, passengers will continue to choose air transportation for longer trips since even the delayed trip still provides the fastest travel option.

Thus, increasing airside congestion at the Port Authority airports will likely only reduce short-haul demand. As airside congestion increases, airlines will respond as they have in the past, by increasing the travel time in the schedule. While this increases airline costs, it tends to hide the extent of the congestion problem since airlines still strive to maintain an 85 percent or better on-time performance. In addition, airlines will also increase time between flights so that delays on one flight have no effect or only a limited effect on the next flight.

Use of alternative airports to avoid delays could be a passenger response to increasing delays at large airports. However, the passenger survey has shown that the availability of air service and the timing of flights are the two most important factors in choosing an airport to fly from. Thus, it is reasonable to expect passengers to consider an alternative airport only if there is air service from that airport to their destination. Given the great variety of destinations available from the Port Authority airports and the relatively few destinations available from the other airports, the opportunities for passengers to consider and use an alternative airport are currently limited to a few air markets.

## *Effects of Airside and Landside Congestion (continued)*

### *Access Regulations at LGA, JFK and EWR*

Currently, hourly operations by commercial aircraft at LGA are limited to 75 per hour. While the rules under FAR Part 93 expired on January 1, 2007, the FAA imposed an interim rule that effectively extended the existing limits. Any replacement rule is anticipated to keep the 75 operations per hour limit. Thus, these forecasts reflect application of a 75 operations per hour cap on commercial operation through 2025. Similarly, operational limits imposed by FAR Part 93 at JFK expired at the end of 2006. This forecast assumes that the FAA will not impose new limits at JFK. This forecast assumes that no new rule would be imposed at EWR.

### *Access Regulations at HPN*

Westchester County imposed restrictions on the number of commercial flights at Westchester County Airport in September 2004 that formalized voluntary restrictions in place since 1984. The intent of the County legislation is to balance the needs of the flying public with the environment of the community, providing a good neighbor policy for the airport.

The legislation provides the following:

- A maximum of four scheduled commercial aircraft may enplane or deplane per half hour,
- On average, there may not be more than 240 scheduled passengers per half hour (either arriving or departing),
- Continuation of the lottery allocation system for flights, to determine what airline can use the airport at what time, and
- County control of ramp operations.

### *Landside Congestion*

The passenger surveys have demonstrated that travel time to the airport, especially from home, is an important factor for airport choice. Given equal air service quality and similar pricing, passengers will choose the closer airport. Some passengers will choose the closer airport, even when the air trip is longer or costs more.

## *Effects of Airside and Landside Congestion (continued)*

As ground transportation congestion increases it has the net effect of increasing the length of the trip made by air travel, thereby reducing the net travel time savings gained by using air transportation. In short-haul travel, where alternative modes of transportation exist, air travel may lose demand to other modes of transportation. In long-haul travel, where air travel is frequently the only mode of choice, air travel will still be used. Thus, increased levels of ground transportation congestion will reduce demand for short-haul travel, but will not likely significantly change demand for long-haul travel.

From more distant locations, the increased congestion will become a factor in airport choice. To the extent that ground transportation congestion increases unequally among the airports, airport choice decisions will change. However, airport choice will only change if comparable air service (destination and price) is available at the closer airport.

Thus, increases in ground transportation congestion could change passenger demand at the smaller regional airports in a manner similar to the changes that would result from air side congestion:

- In air trips of less than 500 miles to an un-congested airport, where comparable (competing) air service already exists at the smaller airport.
- In trips where the origin of the passenger trip was substantially closer to the smaller airport and the where competing connecting service already exists through an un-congested hub airport.

In the past, airlines tended to specialize at one or more of a region's airports rather than providing service to all of them. Most domestic legacy airlines serve all three of the Port Authority airports and some of the other regional airports as well. It is not clear whether these airlines are changing service patterns within the system of airports in response to ground transportation issues or primarily for competitive reasons. Often it takes a new entrant airline to establish service within a regional airport system to prompt incumbent carriers to expand their service.

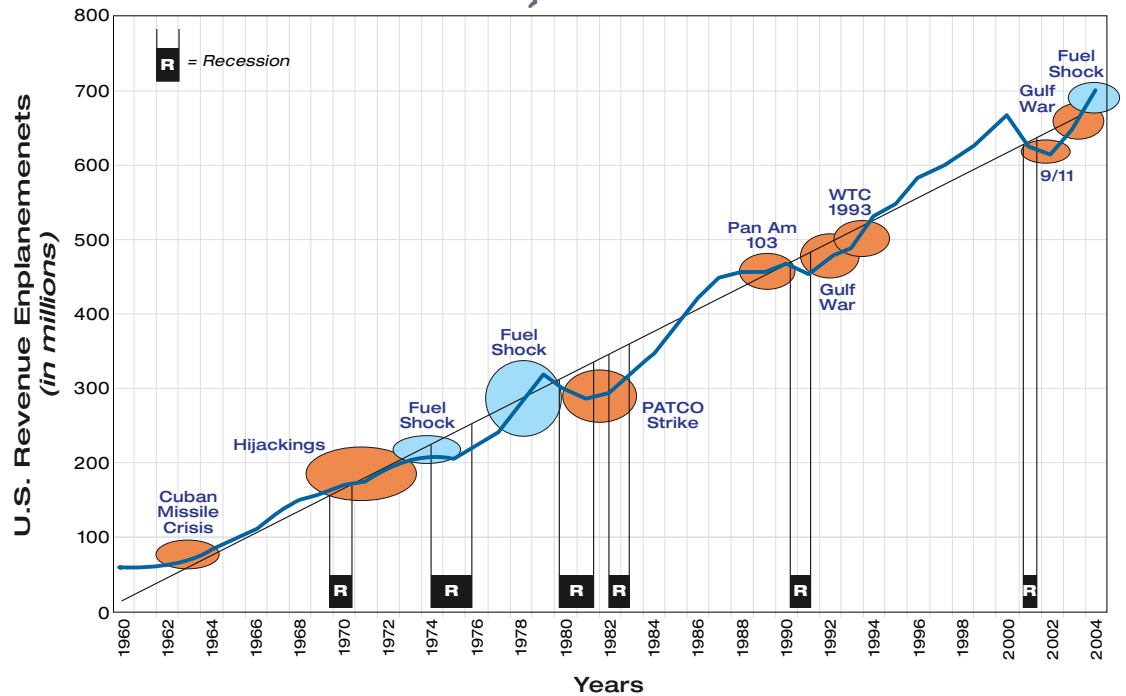
*Effects of Airside  
and Landside  
Congestion  
(continued)*

Point-to-point rail service only increases access to areas that have convenient access to stations. Further, rail service must be conveniently timed with flight arrivals (including delayed arrivals) and departures and have airport station facilities that promote an easy transfer between rail and air. If park-and-ride concepts are used at out-lying stations, security must be provided for over-night parking and rates must be comparable to airport rates.

Generally, the survey has found that the great majority of passengers use airports that are within 60 minutes of their local trip origins. Thus, rail access must provide a maximum of a forty to fifty minute travel time to the airport from the furthest station (allowing for some travel time to the station).

# Airline Industry Outlook

*Airline Industry Shocks and Recoveries (1960 – 2004)*



## Bankruptcies

The past five years have witnessed dramatic changes to the overall financial health of the airline industry, with four legacy airlines entering bankruptcy at least once. Continued operation of an airline during bankruptcy tends to depress pricing and stimulate demand. After bankruptcy, pricing tends to stabilize (often at a higher level), which can reduce passenger travel. This forecast assumes that the legacy airlines will weather current financial problems that thrust them into bankruptcy and will emerge as lower cost competitors.

## Outlook

The ability to pass on higher fuel prices as fare increases and improvement of legacy carrier cost structures during bankruptcy protection will improve airline economics in the future. This forecast, assumes that:

- The industry will continue to replace smaller regional jet aircraft with larger regional jet aircraft that have lower operating costs per passenger mile.
- More narrow-body aircraft will enter the fleet.
- More wide-body aircraft on international routes.
- The overall financial health of the industry will improve with increasing fares. However, real fare levels are unlikely to increase to Year 2000 levels.



*Introduction*

*Description of the Region*

*Forecasts of  
Airport Activity*

*The Airports*

*Regional Summary  
of Findings*



*Port Authority of New York & New Jersey*

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**JFK -**  
John F. Kennedy  
International Airport

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**LGA -**  
LaGuardia Airport

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**EWR -**  
Newark Liberty  
International Airport

*New York State Department of Transportation*

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**SWF -**  
Stewart International  
Airport

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**HPN -**  
Westchester County  
Airport

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**ISP -**  
Long Island  
MacArthur Airport

*Delaware Valley Regional Planning Commission*

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**ABE -**  
Lehigh Valley  
International Airport

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**ACY -**  
Atlantic City  
International Airport

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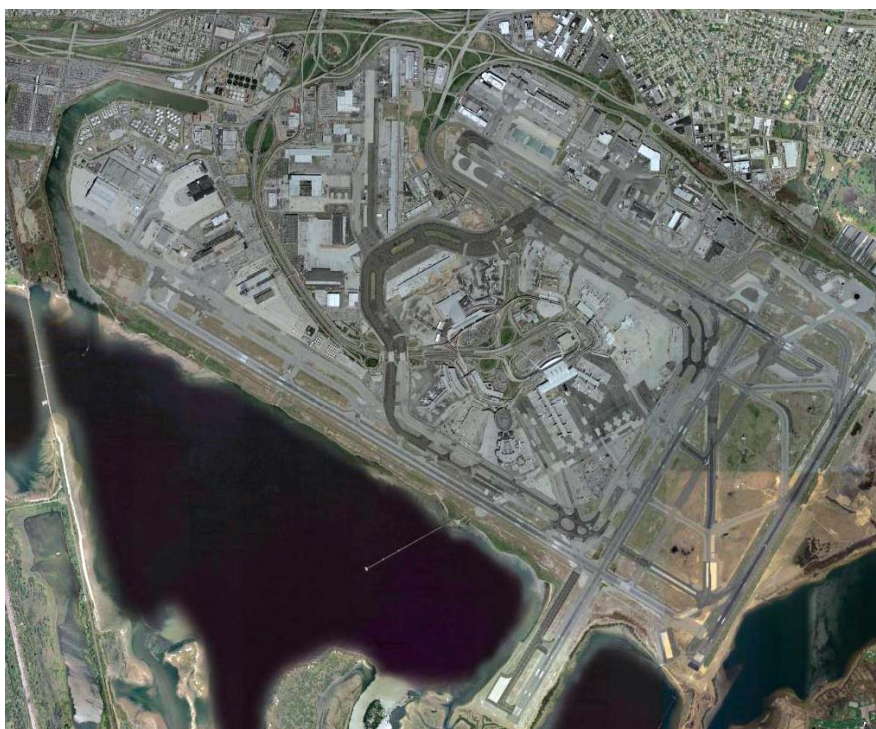


**TTN -**  
Trenton Mercer  
Airport

# John F. Kennedy International

## Airport Facilities Snapshot

Land Area.....	4,930 acres
<b>Runway and Length (in feet)</b>	
4L-22R.....	11,351
4R-22L.....	8,400
13L-31R.....	10,000
13R-31L.....	14,672
<b>Terminal and Number of Gates</b>	
Terminal 1.....	10
Terminal 2/3.....	31
Terminal 4.....	16
Terminal 5/6.....	33
Terminal 7.....	12
Terminal 8.....	32
<b>Total Gates.....</b>	<b>134</b>
<b>Curb Frontage (in feet)</b>	
Terminal 1.....	1,497
Terminal 2/3.....	3,815
Terminal 4.....	4,067
Terminal 5/6.....	1,900
Terminal 7.....	1,852
Terminal 8.....	3,344
<b>Total Frontage.....</b>	<b>16,475</b>
Auto Parking.....	10,360 spaces

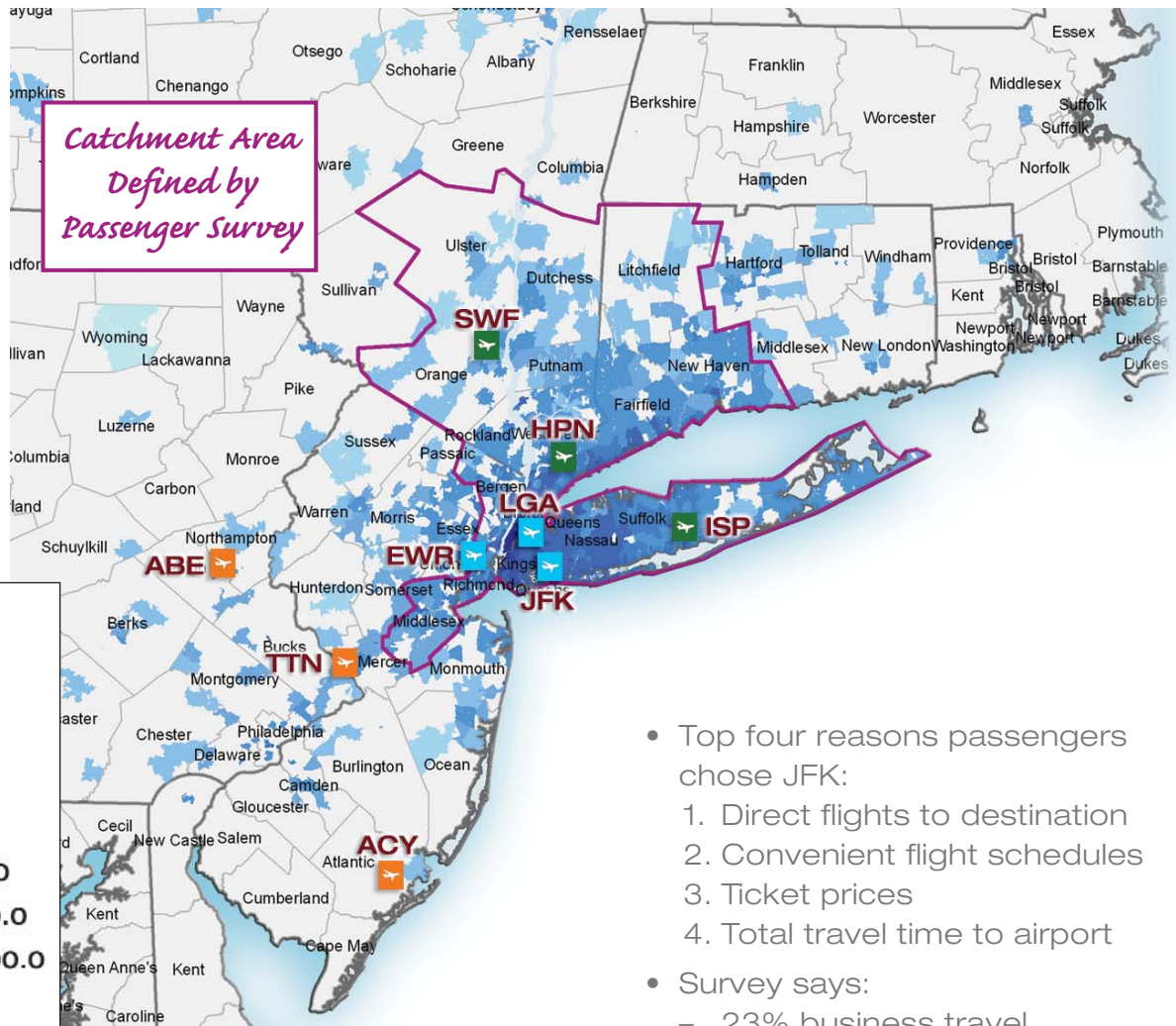


## Airport Traffic Facts and Figures

2005 Enplaned Passengers.....	20,336,175
2005 Aircraft Operations.....	351,701
Airlines.....	90
Non-stop Destinations.....	133
Connecting Passengers.....	16%

# Airport Profile

*JFK –  
Originating  
Passengers per  
Square Mile  
by Zipcode*

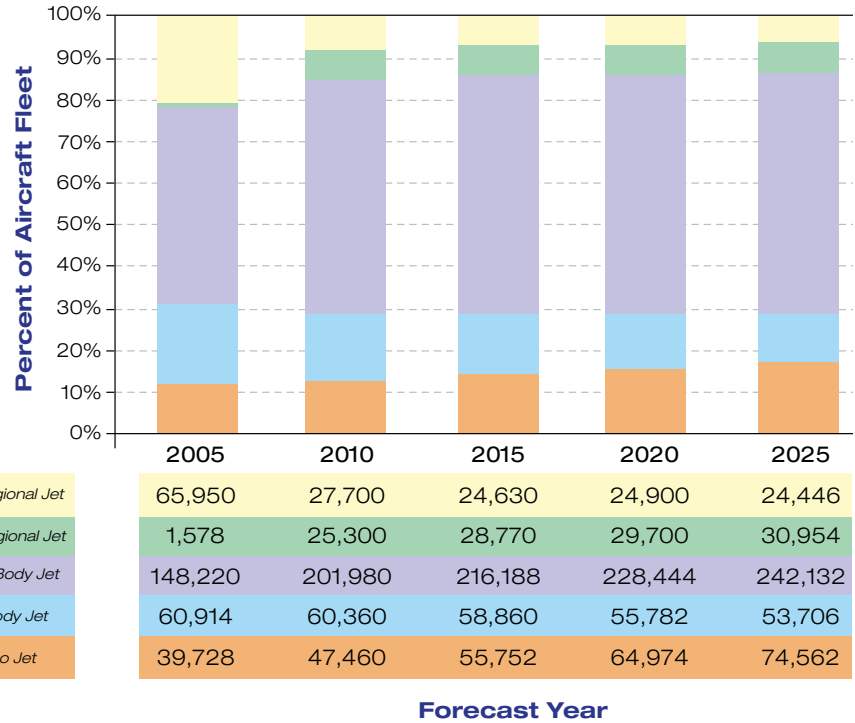


- Top four reasons passengers chose JFK:
  1. Direct flights to destination
  2. Convenient flight schedules
  3. Ticket prices
  4. Total travel time to airport
- Survey says:
  - 23% business travel
  - 52% visitors to the area
  - 39% final destination international
- 2005 Passenger origins:
  - 43% Manhattan
  - 64% New York City
  - 86% New York State
  - 7% New Jersey
  - 7% Connecticut
- Regional perspective
  - 39% of total study traffic
  - 46% catchment area market share

## New York John F. Kennedy International (continued)

### Aircraft Fleet Forecast

The proportion of wide-body aircraft in the JFK fleet is expected to remain constant. However, the size of these aircraft is expected to increase. Several airlines have announced that A-380 aircraft will use JFK. The proportion of RJ aircraft in the fleet is expected to decline and the remaining RJ aircraft are expected to be larger.



### Airside Capacity Needs

By 2025 JFK will need two fully airspace independent parallel runways, plus a third runway to accommodate peak flow conditions. While these runways already exist at JFK, the ability to operate them independently without interference from LGA airspace does not yet exist. Additional research into air traffic control and aircraft guidance technology is required to further help mitigate delays.

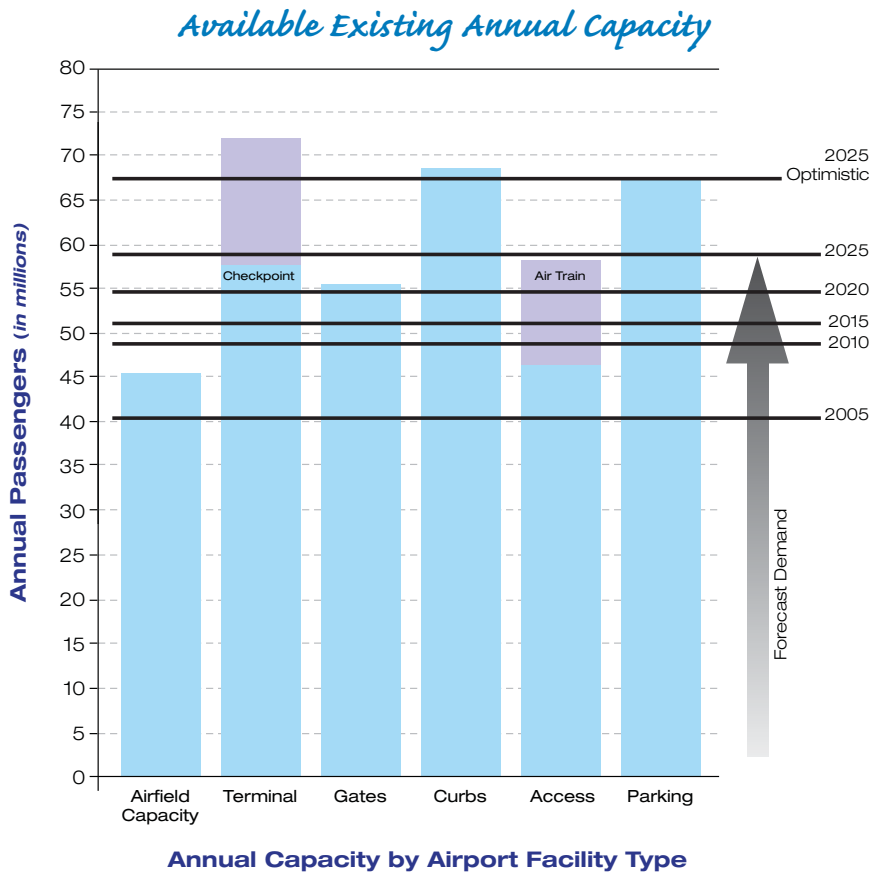
*Future Unmitigated Arrival and Departure Delays*

Average Delay Per Aircraft (min.)	2004	2015	2025
Arrivals	9	41	67
Departures	16	29	46

*Future Runway capacity Needs to Maintain Existing Levels of Delay (Hourly Aircraft Operations)*

	2004	2015	2025
<b>Balanced Flow (2004 and 2015 — One Arrival and One Departure Runway)</b>			
Arrivals	34	40	48
Departures	36	40	48
<b>Total</b>	<b>70</b>	<b>80</b>	<b>96</b>
<b>Arrival Preference (Additional Flow Provided by Second Arrival Runway)</b>			
Arrivals	47	60	60
Departures	36	40	48
<b>Total</b>	<b>83</b>	<b>100</b>	<b>108</b>
<b>Departure Preference (Additional Flow Provided by Second Departure Runway)</b>			
Arrivals	34	40	48
Departures	44	60	60
<b>Total</b>	<b>78</b>	<b>100</b>	<b>108</b>

# Forecast Airport Capacity Needs



## Capacity Opportunities

The greatest capacity opportunity at JFK is to more fully use the airport across the operating day. Recent airline schedule changes at JFK take advantage of this opportunity by introducing new domestic air service during morning, early afternoon and late evening hours. While this new service has increased aircraft activity expected in 2008 to levels forecast for 2025, delays have only increased to levels forecast for 2009. FAA air traffic control has started to change runway operating procedures to use three runways more often to further mitigate increases in delays.

The existing runway system at JFK also has capacity to deliver additional passengers if aircraft size increases to meet future passenger demand.

## Terminal Capacity Needs

- Lobby Area (Terminals 4 and 8)
- Security Screening Checkpoint Lanes and Area
- Checked Baggage Screening Area
- Secure Area Concessions & Circulation
- Restrooms
- inals 1,3,7, and 8)
- International Baggage Claim (Terminals 7 & 8)
- Domestic Baggage Claim (Terminal 7)
- Border Control and Customs Counters (Terminals 2 and 3)

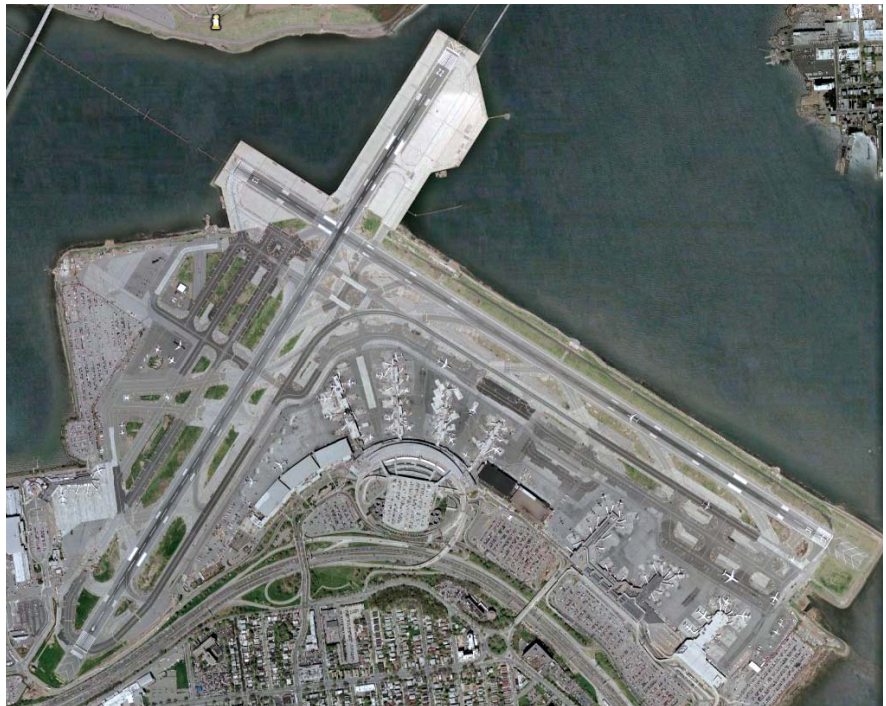
## Landside Capacity Needs

- Van Wyck Expressway Ramps
- Eastbound Nassau Expressway Ramps
- JFK Expressway Ramps

# LaGuardia Airport

## *Airport Facilities Snapshot*

Land Area .....	680 acres
<b>Runway and Length (in feet)</b>	
4-22 .....	7,000
13-31 .....	7,000
<b>Terminal and Number of Gates</b>	
Marine .....	6
Central .....	35
US Airways .....	22
Delta Air Lines .....	10
<b>Total Gates .....</b>	<b>73</b>
<b>Curb Frontage (in feet)</b>	
Marine .....	977
Central .....	2,893
US Airways .....	2,137
Delta Air Lines .....	1,696
<b>Total Frontage .....</b>	<b>7,703</b>
Auto Parking .....	9,145 spaces



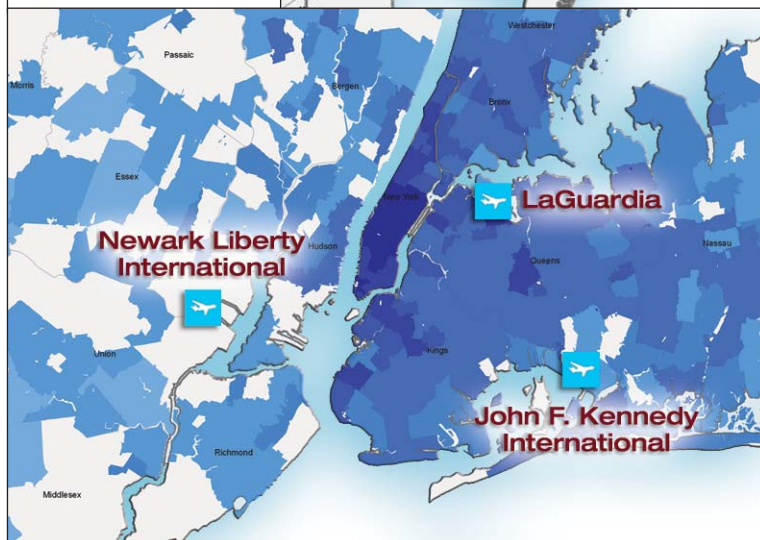
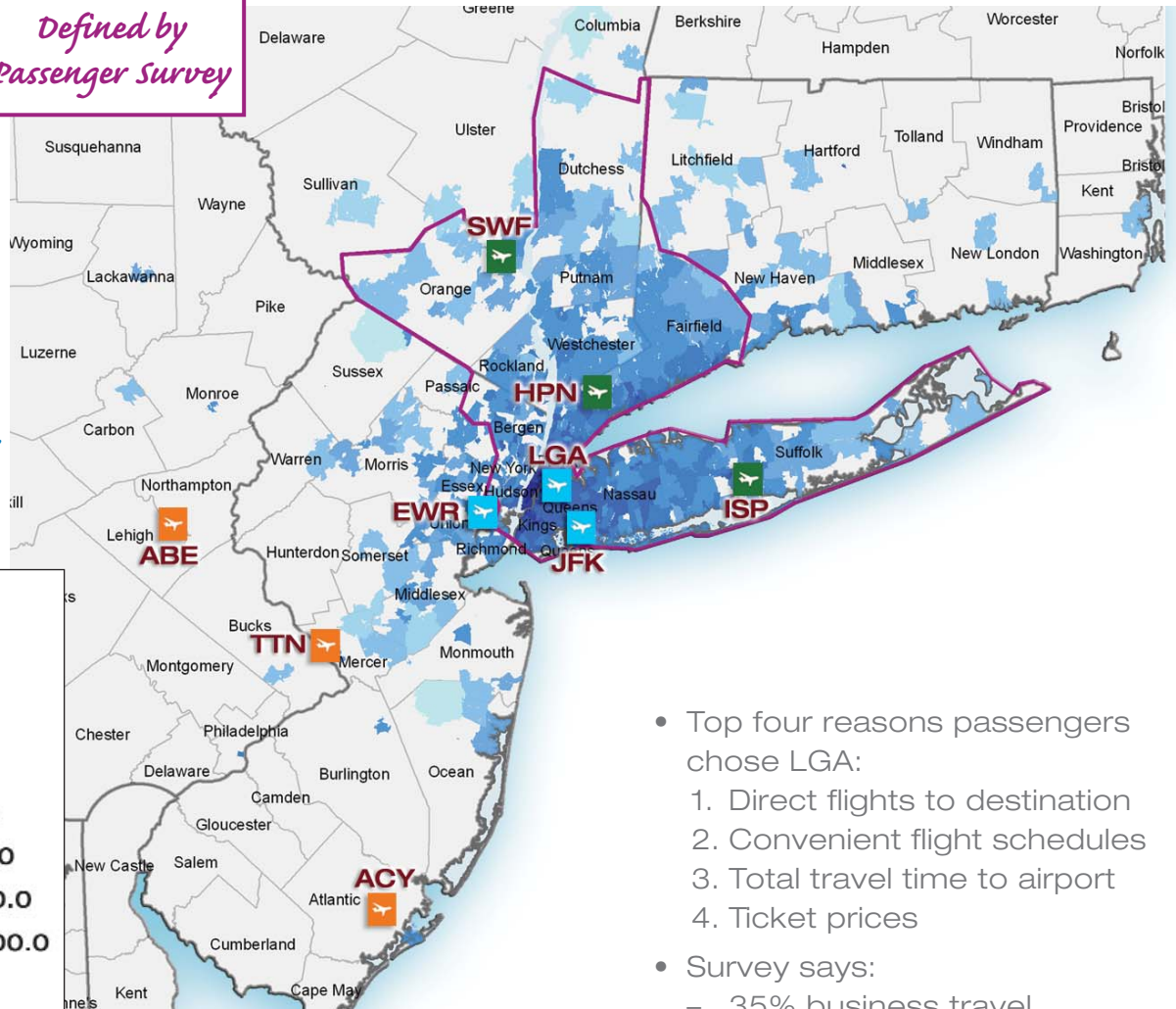
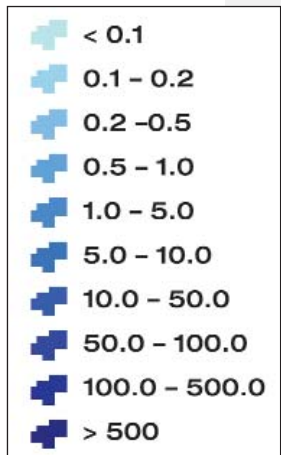
## *Airport Traffic Facts and Figures*

2005 Enplaned Passengers .....	12,955,921
2005 Aircraft Operations .....	403,525
Airlines .....	15
Non-stop Destinations .....	75
Connecting Passengers .....	2%

## Airport Profile

*Catchment Area Defined by Passenger Survey*

*LGA - Originating Passengers per Square Mile by Zipcode*



- Top four reasons passengers chose LGA:
  1. Direct flights to destination
  2. Convenient flight schedules
  3. Total travel time to airport
  4. Ticket prices
- Survey says:
  - 35% business travel
  - 47% visitors to the area
  - 9% final destination international
- 2005 passenger origins:
  - 48% Manhattan
  - 68% New York City
  - 88% New York State
  - 6% New Jersey
  - 6% Connecticut
- Regional perspective
  - 27% of total study traffic
  - 34% catchment area market share



## New York LaGuardia Airport (continued)

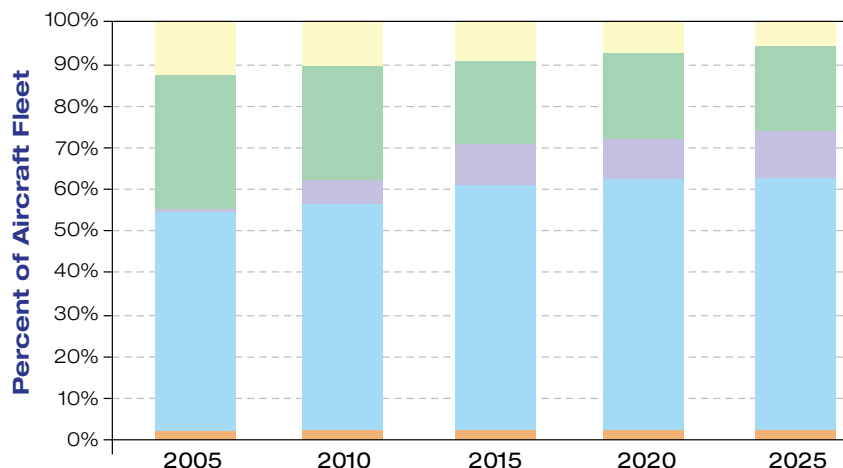
### Aircraft Fleet Forecast

The aircraft operations forecast assumes that existing limits on hourly aircraft operations will continue to constrain growth in total aircraft operations. Over time, the proportion of RJ aircraft is expected to decline and the remaining RJ aircraft are expected to be larger.

### Airside Capacity Needs

To maintain existing levels of service and runway delays:

- Regain the 2 operations per hour capacity lost since 2004
- Regain the 2% of capacity (2 operations per hour) lost to wake-turbulence separations for B-757 and heavy jet (and smaller prop and jet aircraft) or,
- Increase taxiway capacity to accommodate departure queues on all runway operations for 30+ aircraft



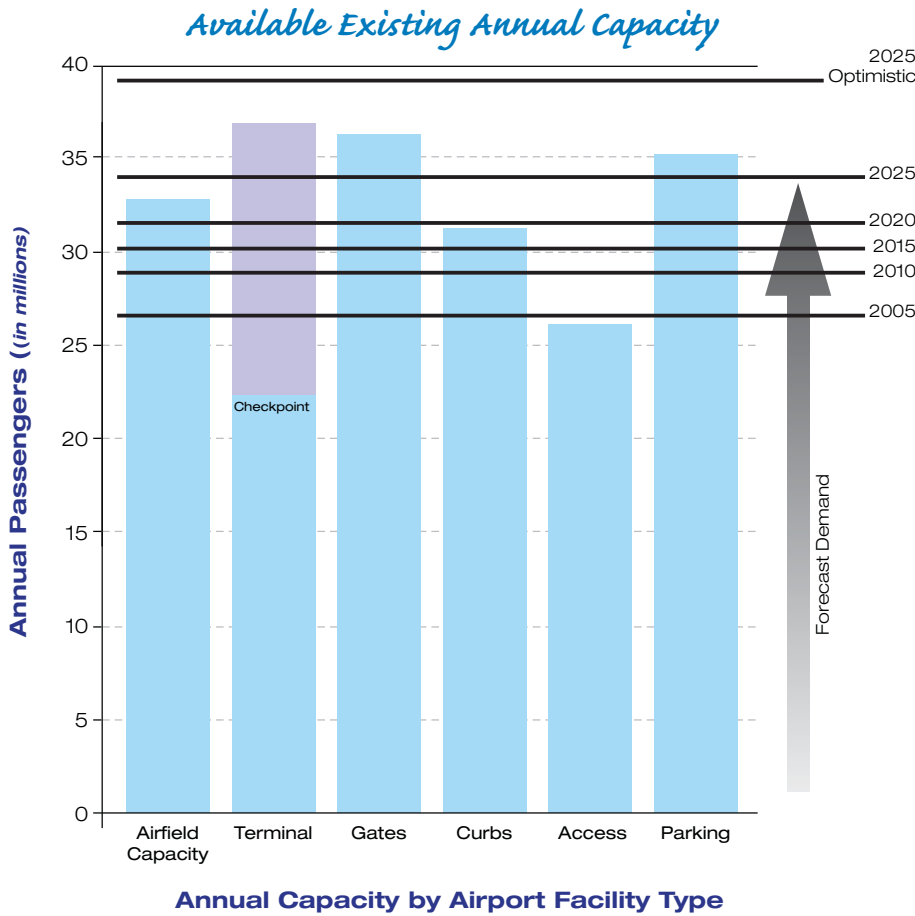
	2005	2010	2015	2020	2025
Turboprop	50,401	37,224	30,140	26,980	25,164
Small Regional Jet	125,140	103,620	85,451	80,992	79,134
Large Regional Jet	3,015	25,429	31,782	37,036	45,422
Narrowbody Jet	206,230	212,815	225,163	234,893	246,887
Widebody Jet	4,433	4,112	5,465	5,700	5,993

**Forecast Year**

### Future Unmitigated Arrival and Departure Delays

Average Delay Per Aircraft (min.)	2004	2015	2025
Arrivals	16	21	21
Departures	19	30	30

# Forecast Airport Capacity Needs



## Terminal Capacity Needs

- Lobby Area
- Security Screening Checkpoint Lanes and Area
- Checked Baggage Screening Area
- Secure Area Concessions and Circulation
- Restrooms

## Landside Capacity Needs

- Grand Central Parkway ramps to East Terminal
- Arrival curbs
- Long-term parking

## Capacity Opportunities

The runway system at LaGuardia Airport has the capacity to deliver the forecast volume of passengers as long as aircraft size increases to meet future passenger demand. The runway system will deliver more aircraft movements and passengers when the future aircraft fleet contains the greatest proportion of narrow-body aircraft. If the volume of heavy and B-757 aircraft increases, however, runway capacity will decline since these aircraft need more time between successive movements.

# Newark Liberty International Airport

## *Airport Facilities Snapshot*

Land Area.....	2,027 acres
<b>Runway and Length (in feet)</b>	
4L-22R.....	11,000
4R-22L.....	10,000
11-29.....	6,800
<b>Terminal and Number of Gates</b>	
Terminal A.....	29
Terminal B.....	24
Terminal C.....	61
<b>Total Gates .....</b>	<b>114</b>
<b>Curb Frontage (in feet)</b>	
Terminal A.....	1,976
Terminal B.....	3,697
Terminal C.....	3,872
<b>Total Frontage .....</b>	<b>9,545</b>
Auto Parking.....	22,534 spaces



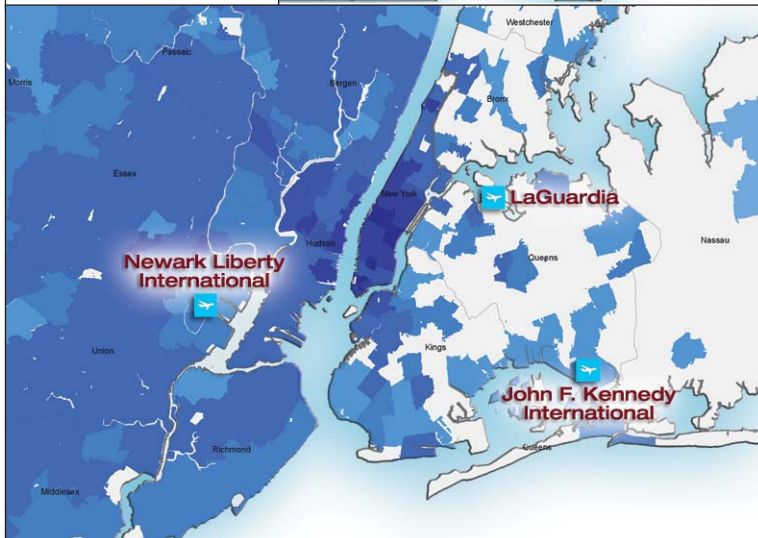
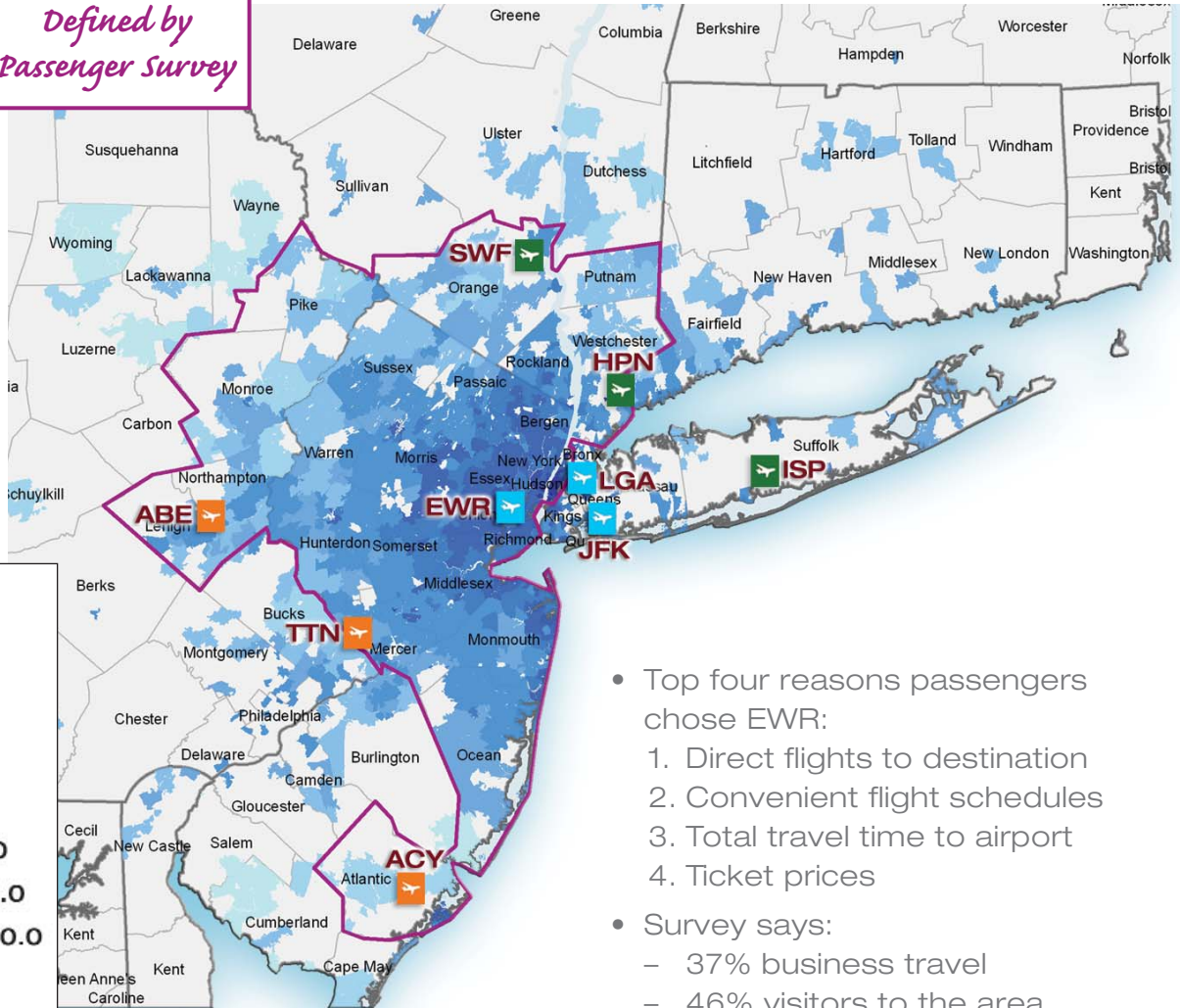
## *Airport Traffic Facts and Figures*

2005 Enplaned Passengers.....	16,499,848
2005 Aircraft Operations.....	434,810
Airlines .....	40
Non-stop Destinations .....	156
Connecting Passengers.....	24%

# Airport Profile

*Catchment Area Defined by Passenger Survey*

*EWR – Originating Passengers per Square Mile by Zipcode*

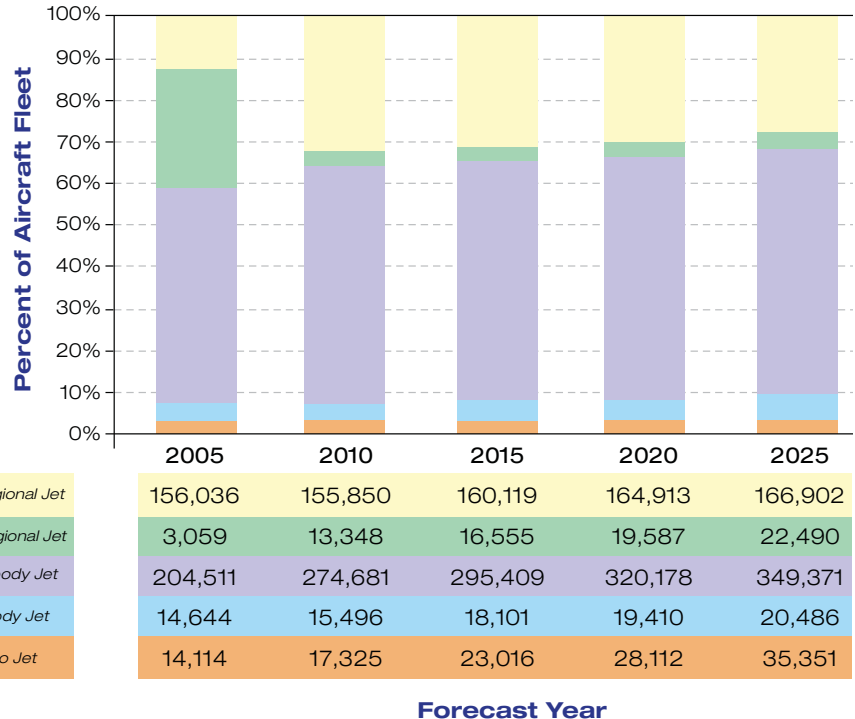


- Top four reasons passengers chose EWR:
  1. Direct flights to destination
  2. Convenient flight schedules
  3. Total travel time to airport
  4. Ticket prices
- Survey says:
  - 37% business travel
  - 46% visitors to the area
  - 20% final destination international
- 2005 passenger origins:
  - 17% Manhattan
  - 20% New York City
  - 25% New York State
  - 71% New Jersey
  - 3% Pennsylvania
  - 1% Connecticut
- Regional perspective
  - 31% of total study traffic
  - 39% catchment area market share

## Newark Liberty International Airport (continued)

### Aircraft Fleet Forecast

The proportion of wide-body aircraft is expected to increase slowly during the forecast period. The proportion of RJ aircraft is expected to decline and smaller RJ aircraft will be replaced by larger equipment. Narrow-body aircraft are expected to become a more predominant portion of the aircraft fleet.



### Airside Capacity Needs

Capacity required to maintain existing levels of service:

- In the event that existing runway utilization rates at EWR cannot be increased, the taxiway system must accommodate a total departure runway queue of 35 to 50 aircraft
- By 2025 EWR needs two fully airspace independent parallel runways, plus a third runway such as Runway 11/29 to accommodate peak flow conditions to accommodate this level of activity.

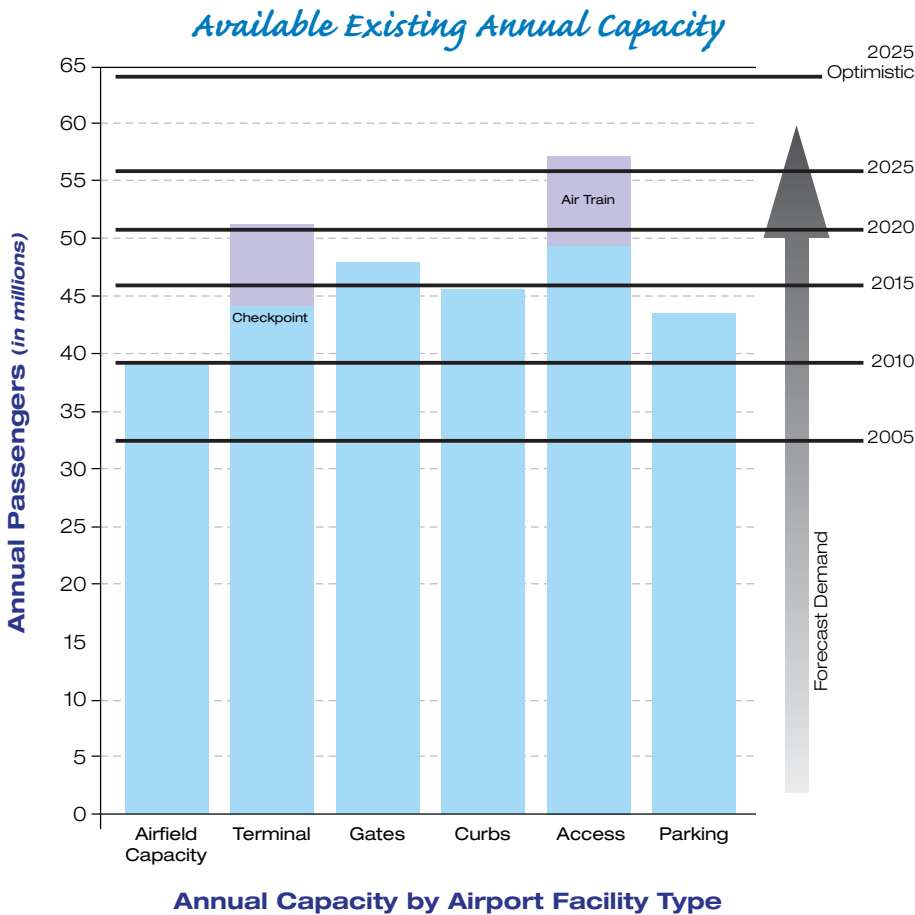
*Future Unmitigated Arrival and Departure Delays*

Average Delay Per Aircraft (min.)	2004	2015	2025
Arrivals	18	61	124
Departures	19	48	92

*Future Runway Capacity Needs to Maintain Existing Levels of Delay (Hourly Aircraft Operations)*

	2004	2015	2025
<b>Balanced Flow</b>			
Arrivals	42	48	60
Departures	43	48	60
<b>Total</b>	<b>85</b>	<b>96</b>	<b>120</b>
<b>Arrival Preference</b>			
Arrivals	49	60	67
Departures	40	40	40
<b>Total</b>	<b>89</b>	<b>100</b>	<b>107</b>
<b>Departure Preference</b>			
Arrivals	38	38	38
Departures	50	60	67
<b>Total</b>	<b>88</b>	<b>98</b>	<b>105</b>

# Airport Capacity Needs



## Terminal Capacity Needs

- Lobby Area
- Security Screening Checkpoint Lanes and Area
- Checked Baggage Screening Area
- Secure Area Concessions and Circulation
- Restrooms
- Gates
- International Baggage Claim (Terminal C)

## Landside Capacity Needs

- Arrival curbs
- Long-term parking

## Capacity Opportunities

The existing runway system at Newark Liberty has capacity to deliver additional passengers if aircraft size increases to meet future passenger demand. In the short-term, additional capacity to meet peak hour demand is available from Runway 11/29. Of the three Port Authority Airports, Newark Liberty has the best ground transportation access.

# Stewart International Airport

## Airport Facilities Snapshot

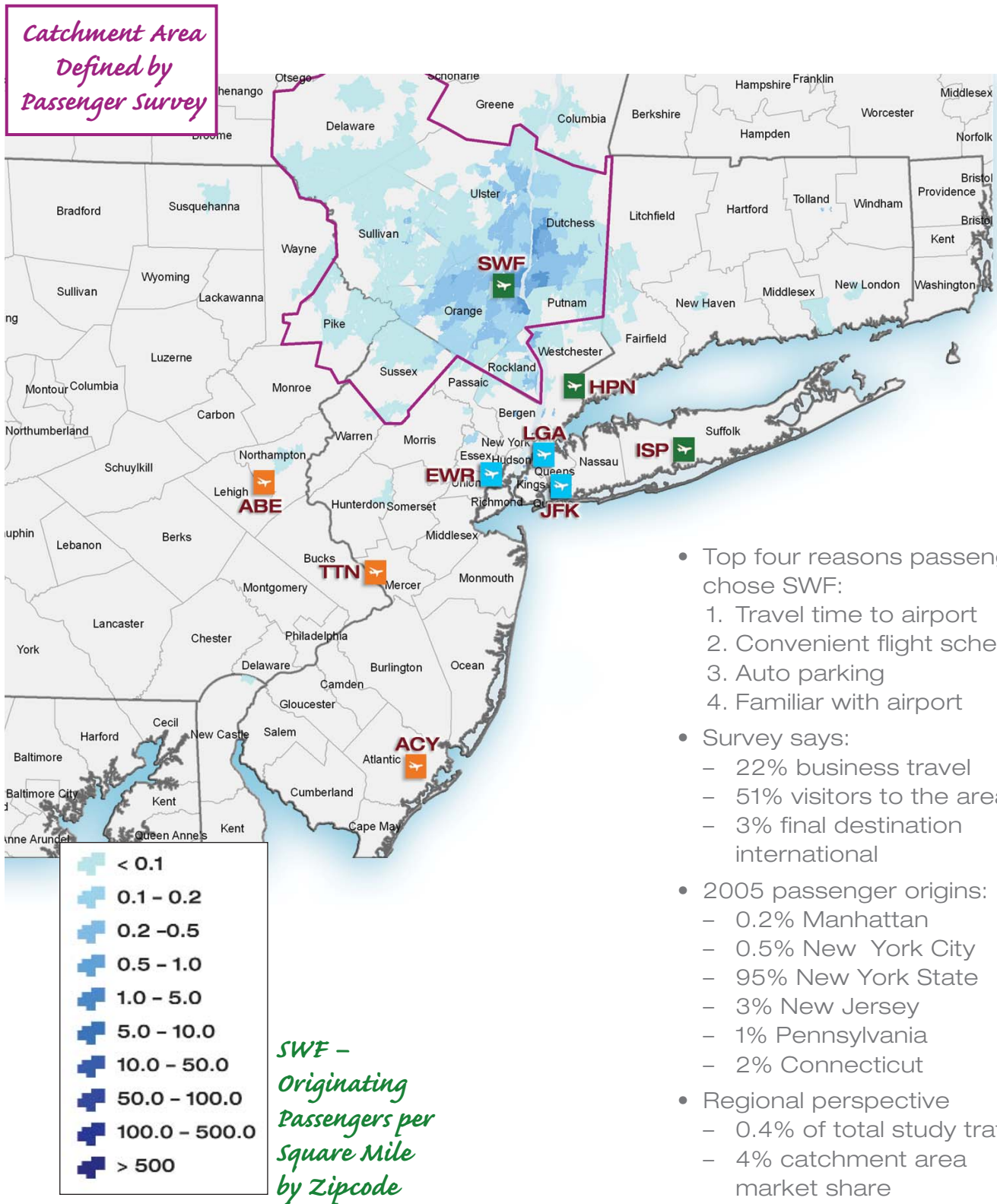
Land Area .....	2,220 acres
<b>Runway and Length (in feet)</b>	
9-27 .....	11,818
16-34 .....	6,006
<b>Number of Gates .....</b>	<b>7</b>
<b>Curb Frontage (in feet) .....</b>	<b>510</b>
<b>Parking Spaces .....</b>	<b>1,147</b>



## Airport Traffic Facts and Figures

2005 Enplaned Passengers .....	199,425
2005 Aircraft Operations.....	103,960
Airlines.....	5
Non-stop Destinations .....	6
Connecting Passengers .....	0%

# Airport Profile

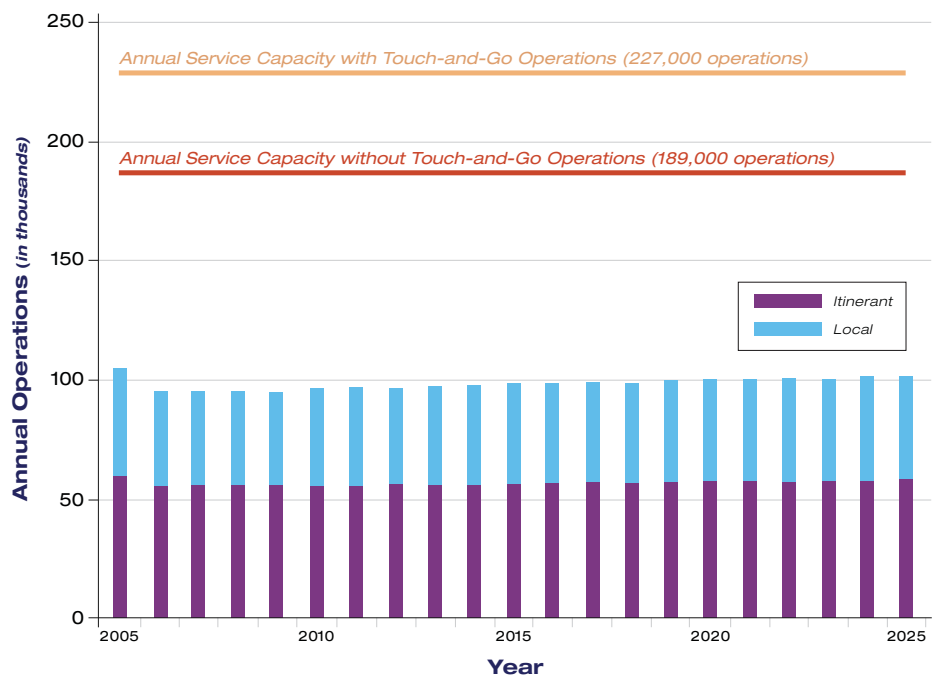
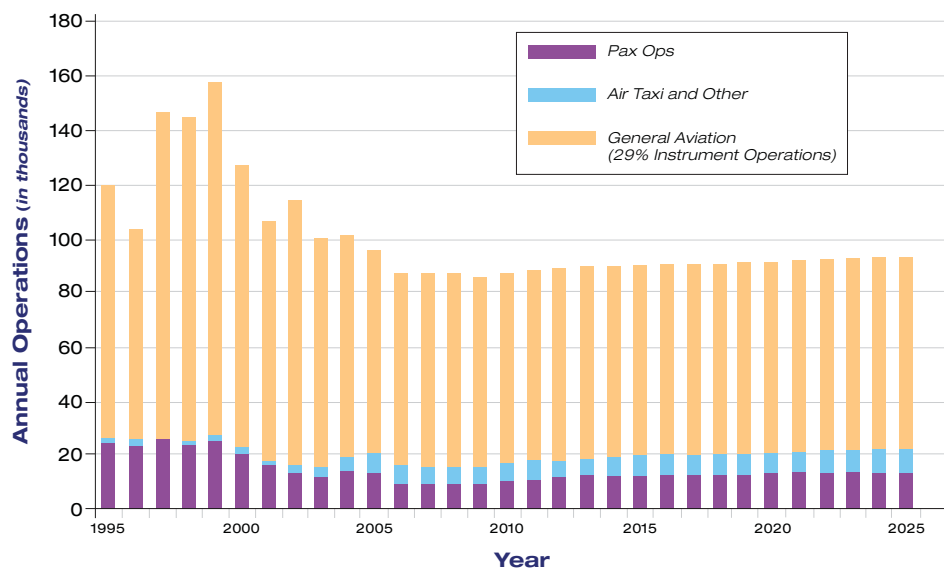




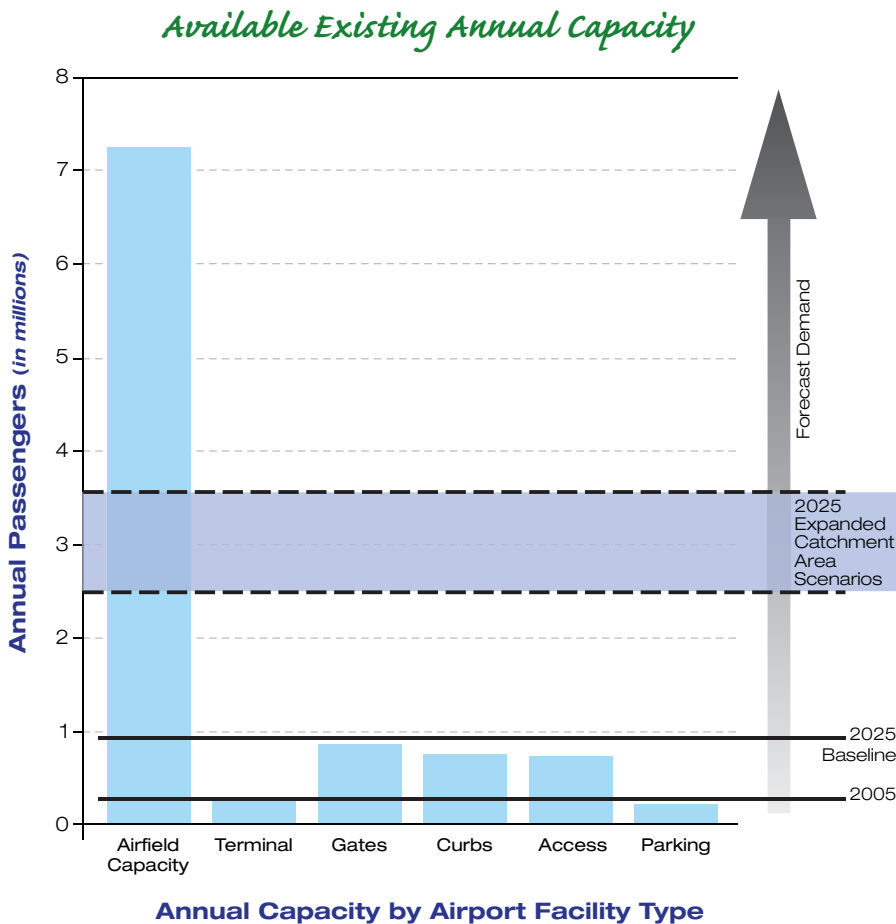
## Stewart International Airport (continued)

# Airport Operations Forecast

*Airside has available capacity for the baseline and optimistic forecasts*



# Airport Capacity Needs



## Terminal Capacity Needs

- Terminal needs an additional gate for existing conditions
- Terminal curb frontage and access road needs additional capacity to meet baseline forecasts
- Security checkpoint and checked baggage screening

## Landside Capacity Needs

- Auto parking needs immediate attention

**All terminal and landside facilities need additional capacity for the optimistic forecasts**

## Westchester County

### Airport Facilities Snapshot

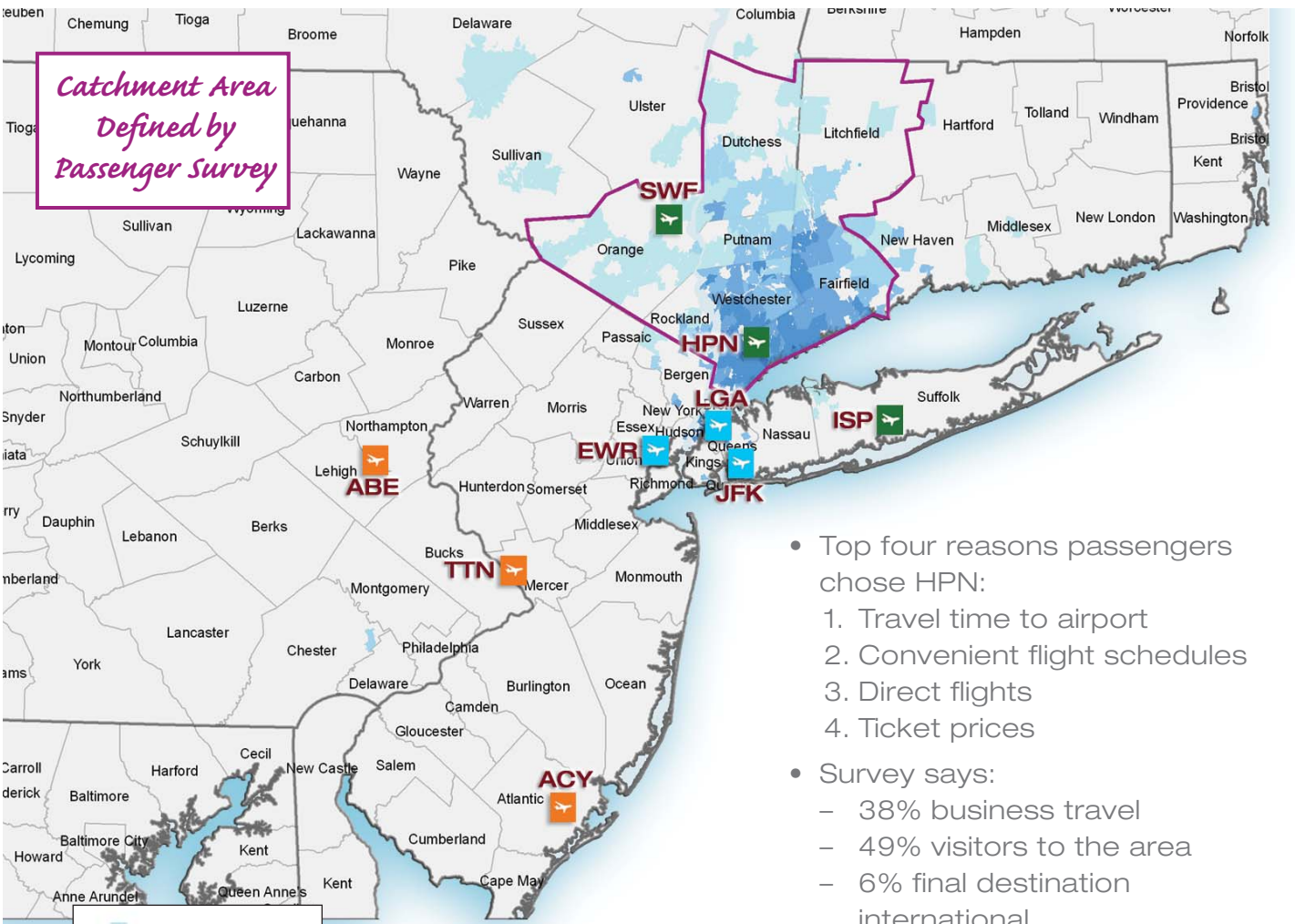
Land Area .....	703 acres
<b>Runway and Length (in feet)</b>	
11-29 .....	4,451
16-34 .....	6,548
<b>Terminal Gates .....</b>	<b>4</b>
<b>Curb Frontage (in feet) .....</b>	<b>716</b>
<b>Parking Spaces .....</b>	<b>1,100</b>



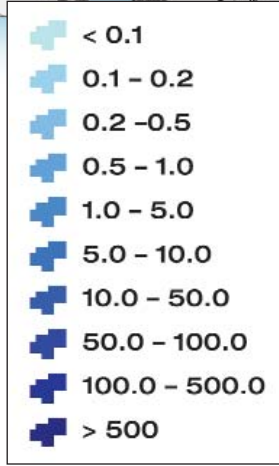
### Airport Traffic Facts and Figures

2005 Enplaned Passengers .....	466,428
2005 Aircraft Operations .....	193,906
Airlines .....	8
Non-stop Destinations .....	15
Connecting Passengers .....	0%

# Airport Profile



*Catchment Area Defined by Passenger Survey*



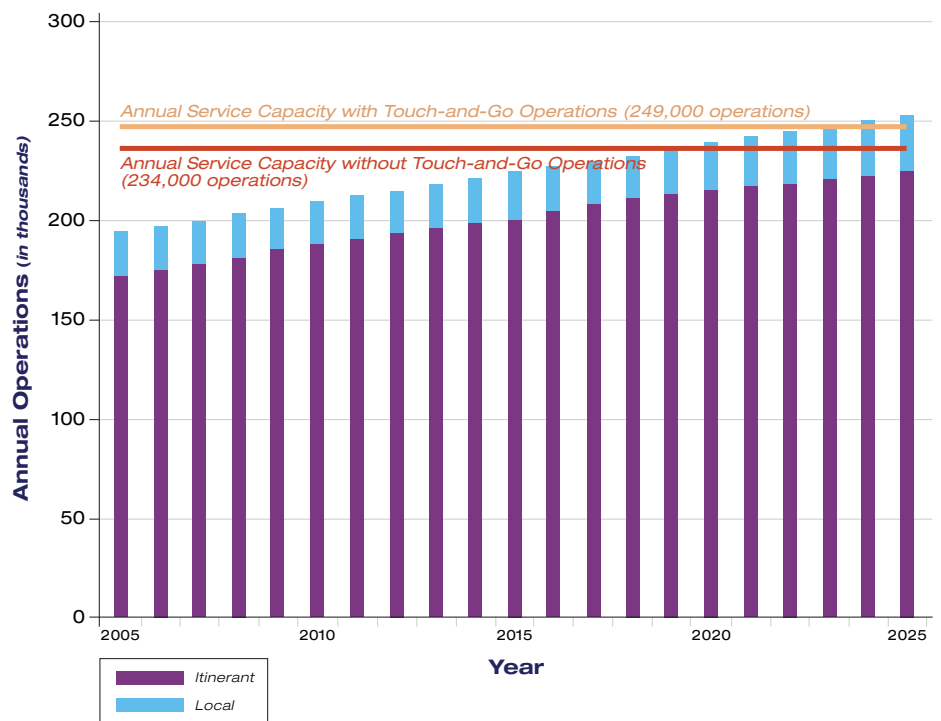
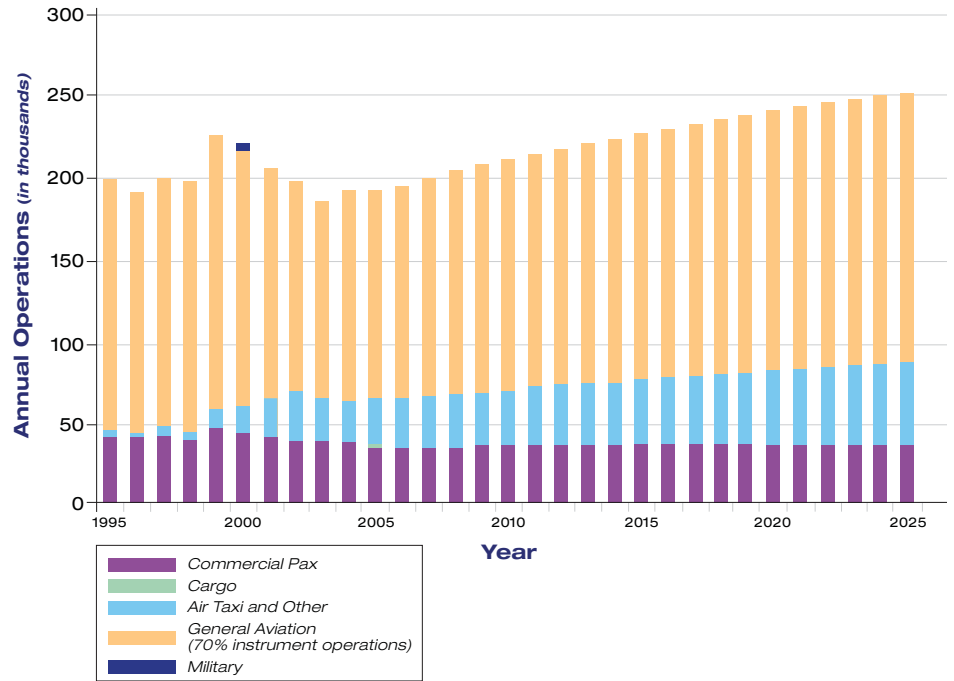
*HPN - Originating Passengers per Square Mile by Zipcode*

- Top four reasons passengers chose HPN:
  1. Travel time to airport
  2. Convenient flight schedules
  3. Direct flights
  4. Ticket prices
- Survey says:
  - 38% business travel
  - 49% visitors to the area
  - 6% final destination international
- 2005 passenger origins:
  - 1.5% Manhattan
  - 2.5% New York City
  - 55% New York State
  - 1% New Jersey
  - 0% Pennsylvania
  - 44% Connecticut
- Regional perspective
  - 1% of total study traffic
  - 9% catchment area market share

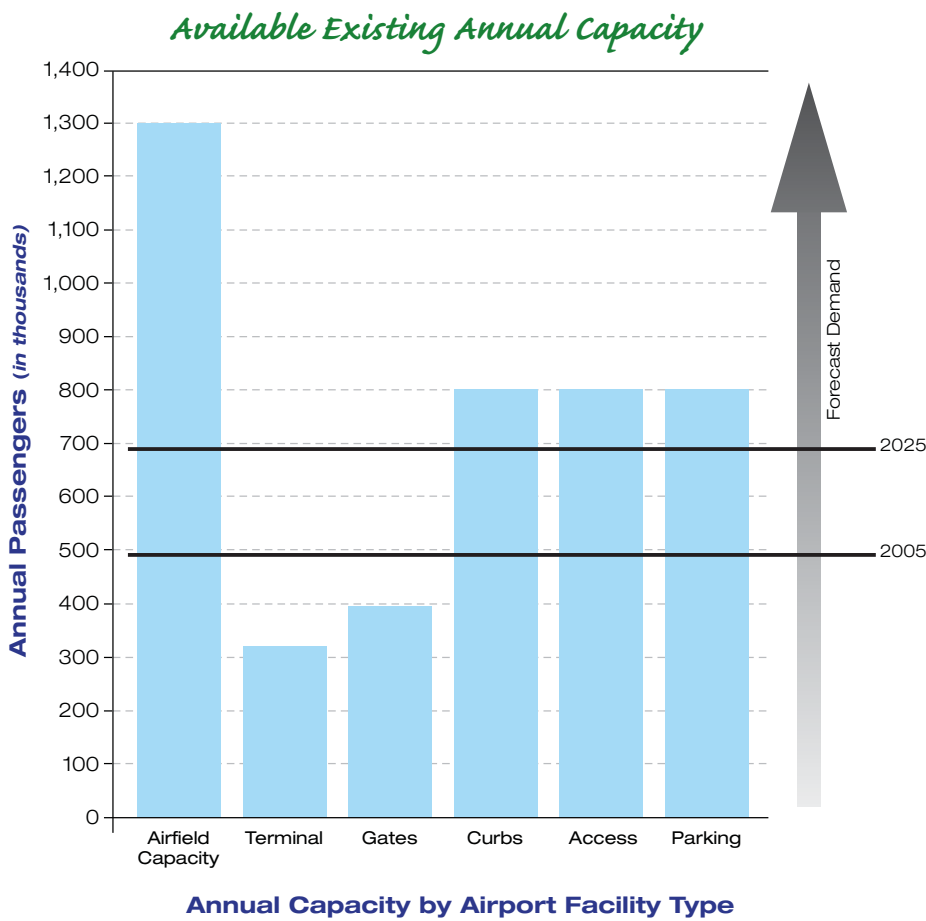
Westchester County  
(continued)

## Aircraft Operations Forecast

*Airside has capacity for all operations until 2020 and has capacity for itinerant operations until 2025*



# Airport Capacity Forecast



## Terminal Capacity Needs

- All departure areas have immediate needs
- All arrival areas have immediate needs
- Terminal needs additional gates

**Landside has excess capacity**

**Airport has no optimistic forecast because of legislated capacity cap**

## Long Island MacArthur

### *Airport Facilities Snapshot*

Land Area .....	1,310 acres
<b>Runway and Length (in feet)</b>	
6-24 .....	7,006
15R-33L .....	5,186
15L-33R .....	3,175
10-28 .....	5,034
<b>Terminal Gates .....</b>	<b>14</b>
<b>Curb Frontage (in feet) .....</b>	<b>707</b>
<b>Parking Spaces .....</b>	<b>4,653</b>

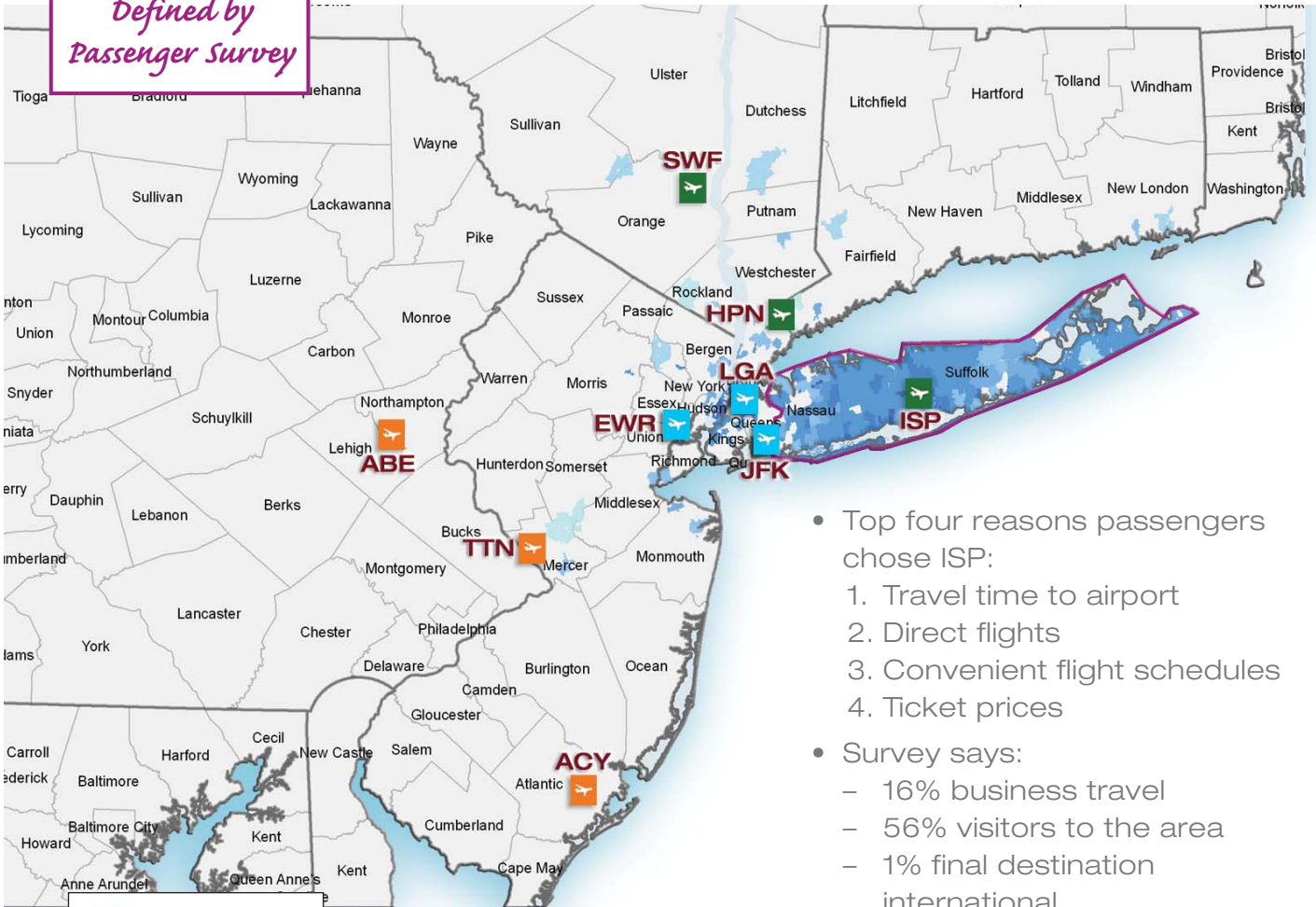


### *Airport Traffic Facts and Figures*

2005 Enplaned Passengers .....	1,055,501
2005 Aircraft Operations .....	170,635
Airlines .....	4
Non-stop Destinations .....	12
Connecting Passengers .....	0%

# Airport Profile

*Catchment Area  
Defined by  
Passenger Survey*



*ISP -  
Originating  
Passengers per  
Square Mile  
by Zipcode*

- Top four reasons passengers chose ISP:
  1. Travel time to airport
  2. Direct flights
  3. Convenient flight schedules
  4. Ticket prices
- Survey says:
  - 16% business travel
  - 56% visitors to the area
  - 1% final destination international
- 2005 passenger origins:
  - 6% Manhattan
  - 9% New York City
  - 99% New York State
  - 1% New Jersey
  - 0% Pennsylvania
  - 0% Connecticut
- Regional perspective
  - 2% of total study traffic
  - 18% catchment area market share

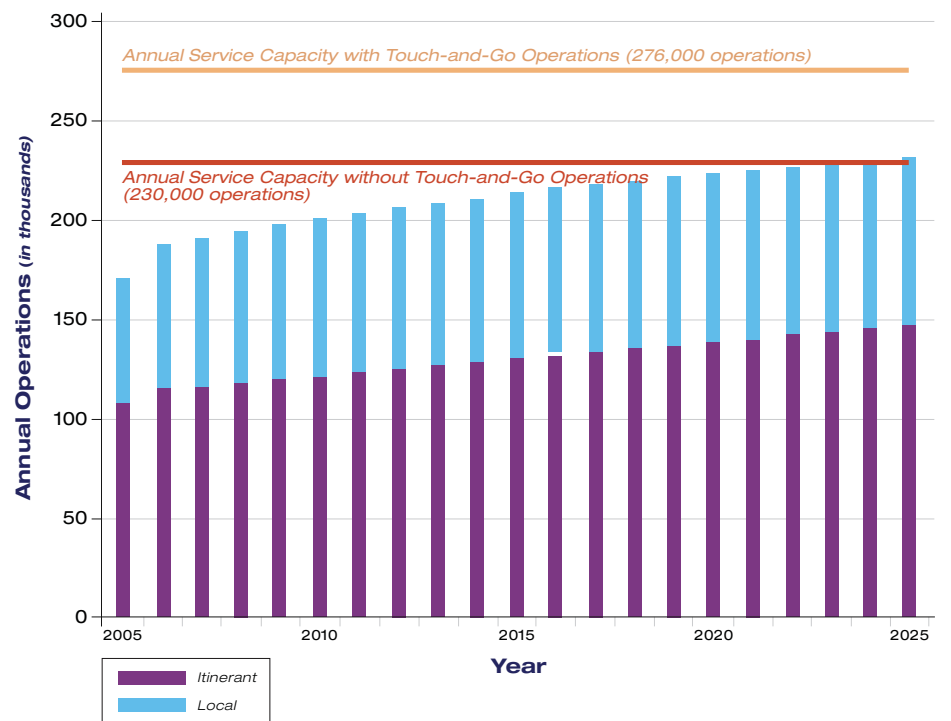
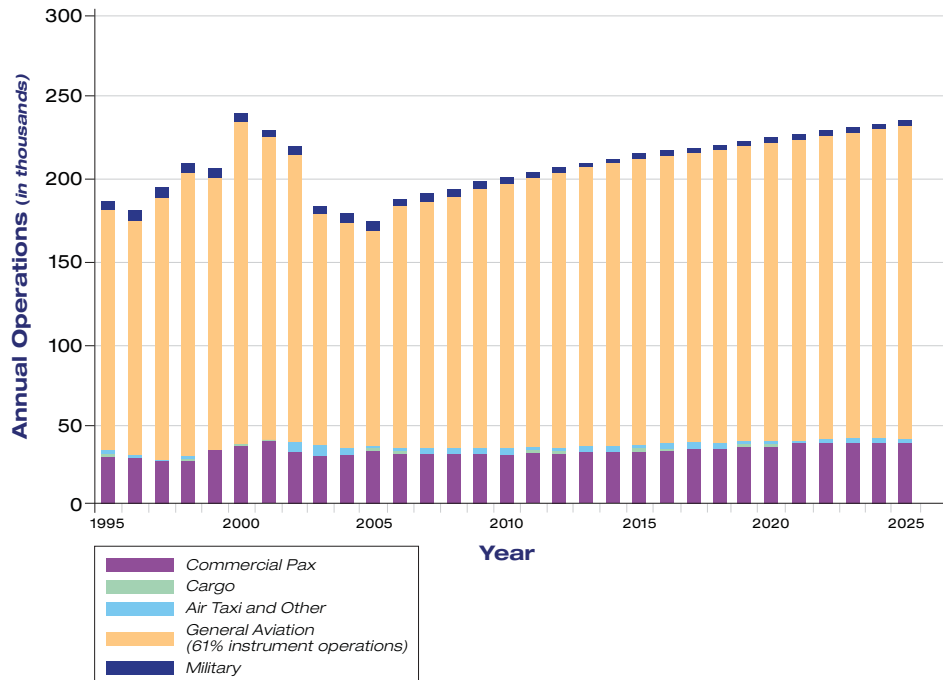


Long Island MacArthur  
(continued)

## Aircraft Operations Forecast

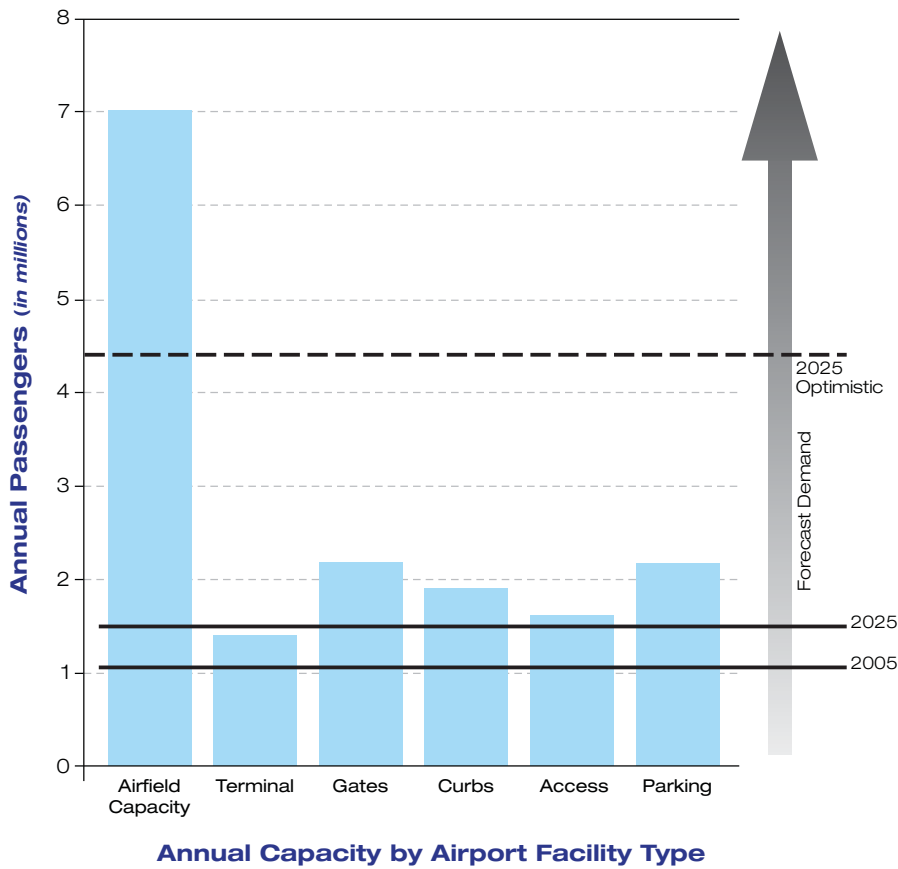
*Airside has capacity for all operations until 2025 for the baseline forecast.*

*Airside has capacity for itinerant operations for the optimistic forecast*



# Airport Capacity Forecast

## Available Existing Annual Capacity



## Terminal Capacity Needs

- Checkpoint
- Baggage screening
- Concessions
- Public seating

**Landside has excess capacity**

**All terminal and landside facilities need additional capacity for the optimistic forecast**

## Lehigh Valley International

### *Airport Facilities Snapshot*

Land Area .....	2,629 acres
<b>Runway and Length (in feet)</b>	
6-24 .....	7,600
13-31 .....	5,797
<b>Terminal Gates .....</b>	<b>20</b>
<b>Curb Frontage (in feet) .....</b>	<b>458</b>
<b>Parking Spaces .....</b>	<b>2,711</b>

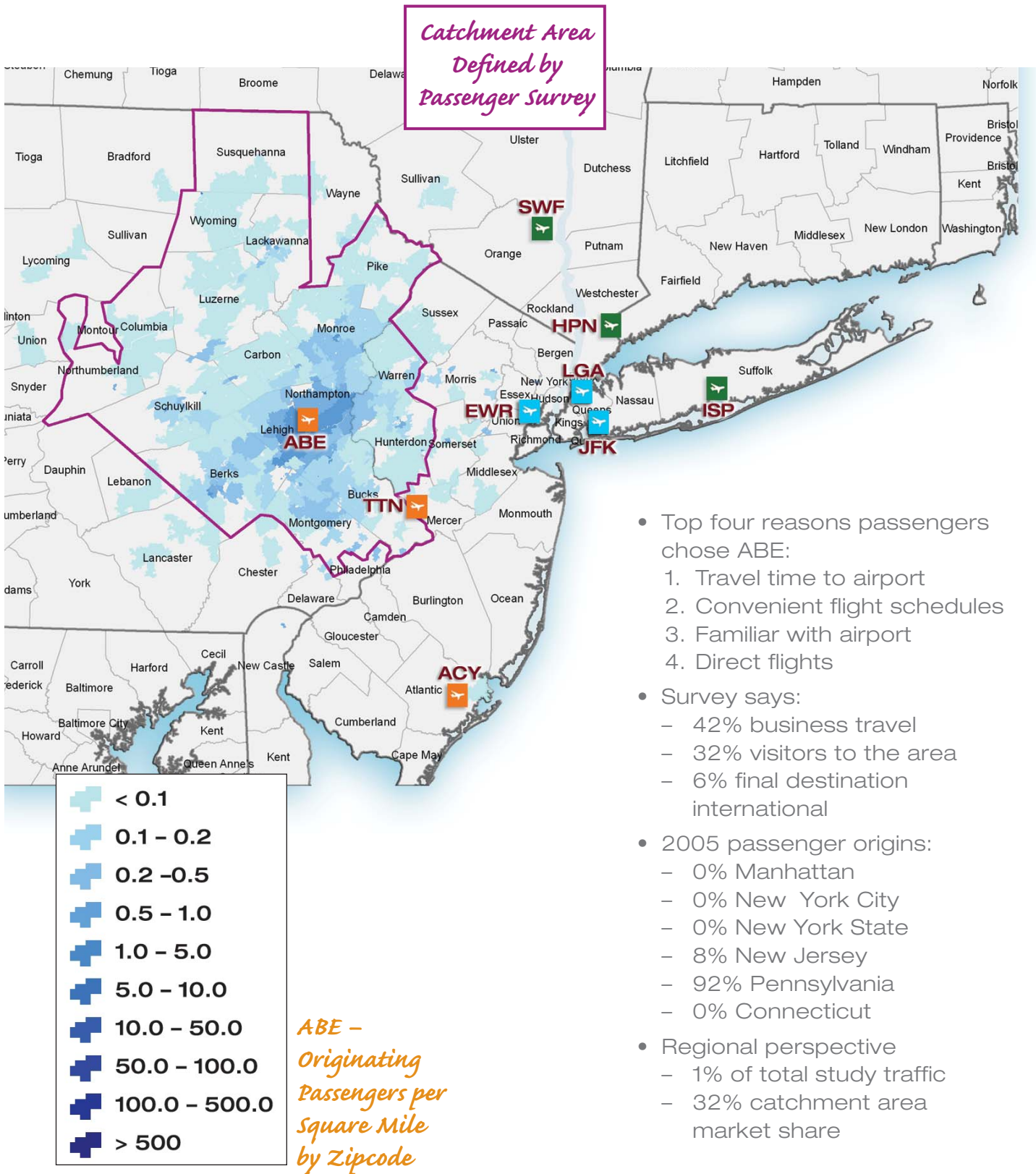


### *Airport Traffic Facts and Figures*

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2005 Enplaned Passengers .....	417,301
2005 Aircraft Operations .....	128,291
Airlines .....	8
Non-stop Destinations .....	13
Connecting Passengers .....	0%

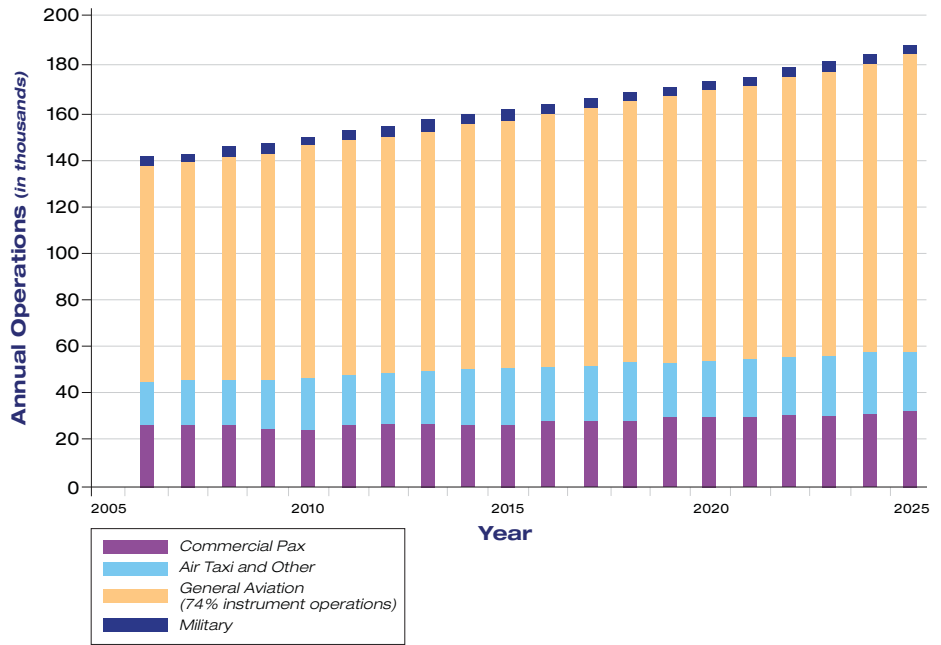
# Airport Profile



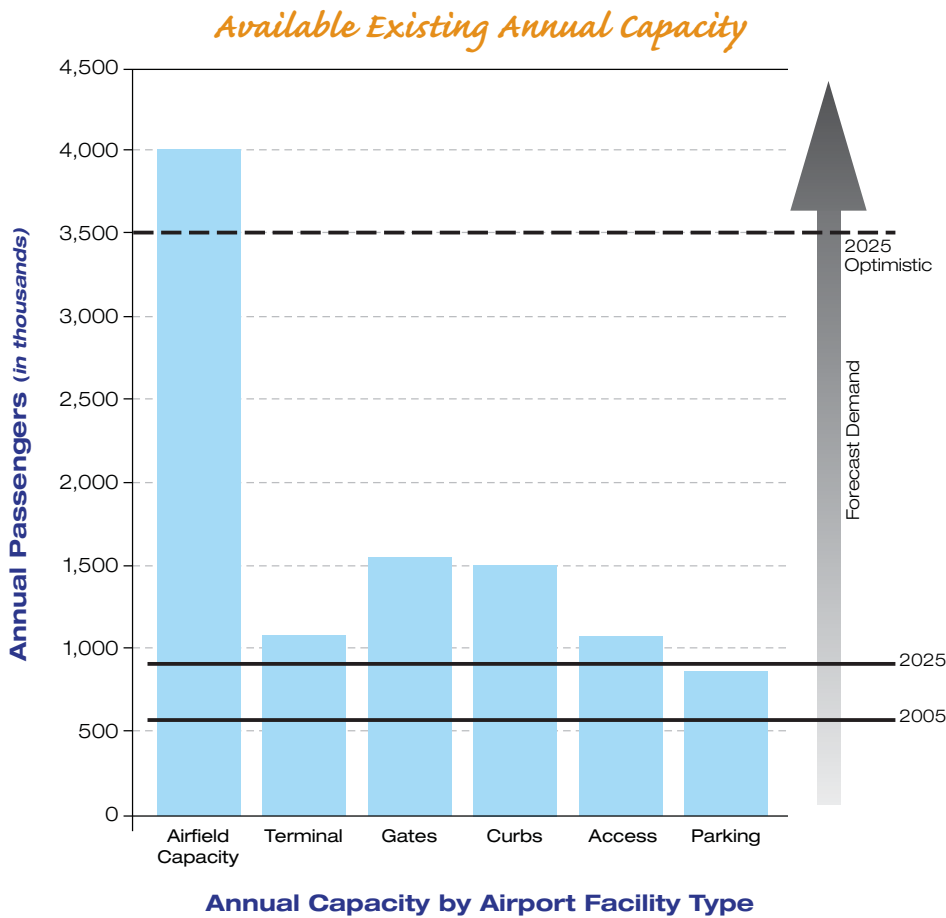
Lehigh Valley International  
(continued)

## Aircraft Operations Forecast

*Airport has available capacity for the baseline and optimistic forecasts*



# Airport Capacity Forecast



## Terminal Capacity Needs

- Secure circulation
- Baggage screening
- Concessions
- Public seating

## Landside Capacity Needs

- Auto parking

**All terminal and landside facilities need additional capacity for the optimistic forecasts**

# Atlantic City International

## Airport Facilities Snapshot

Land Area .....	2,200 acres
<b>Runway and Length (in feet)</b>	
3-21 .....	6,144
13-31 .....	10,000
<b>Terminal Gates .....</b>	<b>8</b>
<b>Curb Frontage (in feet) .....</b>	<b>920</b>
<b>Parking Spaces .....</b>	<b>3,992</b>

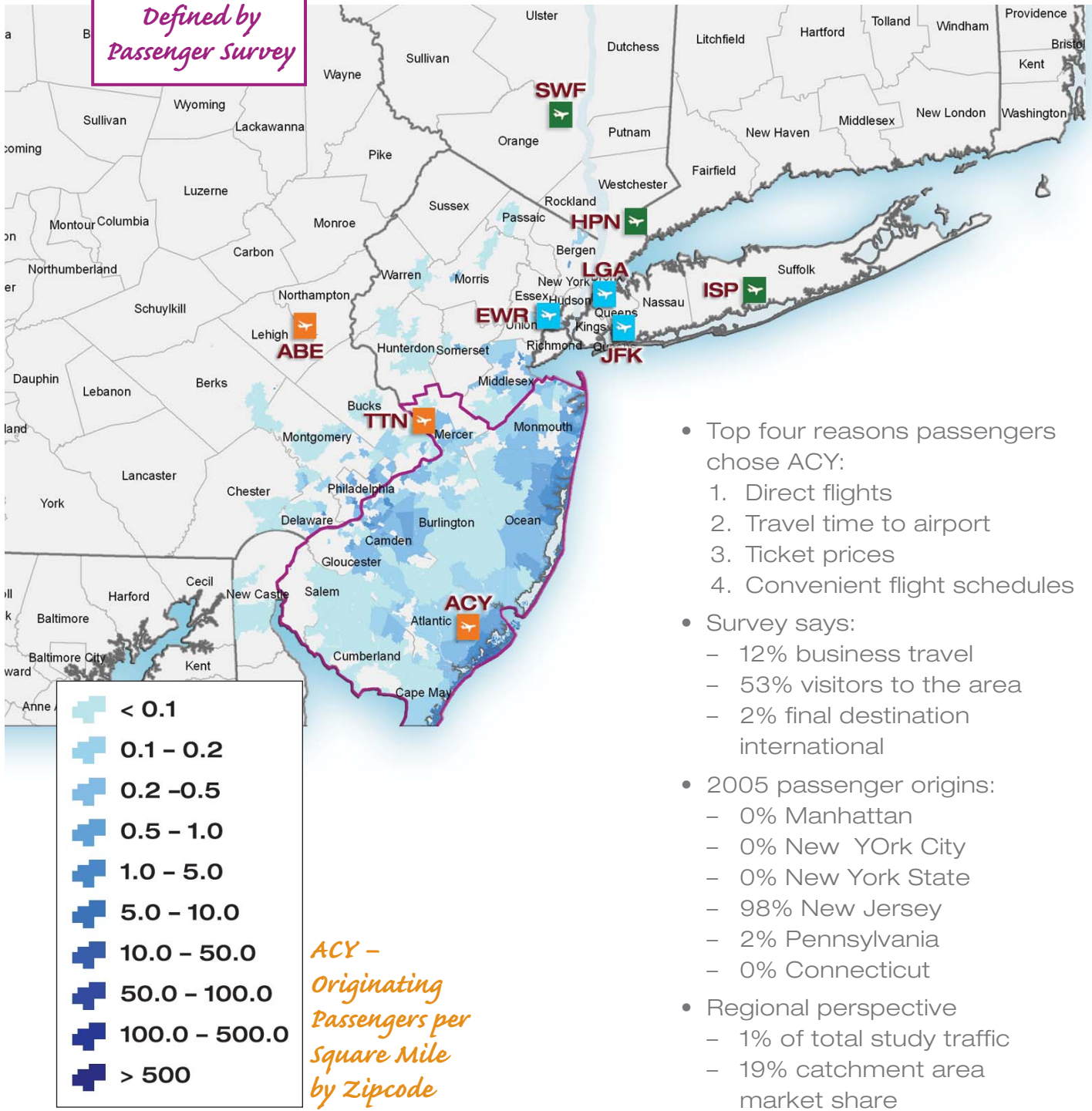


## Airport Traffic Facts and Figures

2005 Enplaned Passengers .....	488,579
2005 Aircraft Operations .....	124,738
Airlines .....	2
Non-stop Destinations .....	10
Connecting Passengers .....	0%

# Airport Profile

*Catchment Area Defined by Passenger Survey*



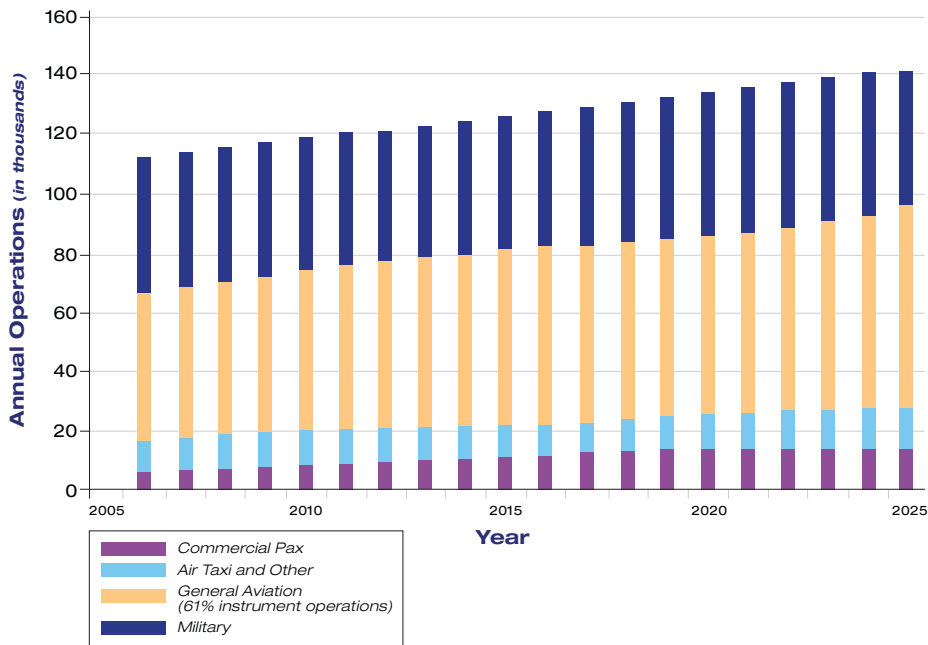
- Top four reasons passengers chose ACY:
  1. Direct flights
  2. Travel time to airport
  3. Ticket prices
  4. Convenient flight schedules
- Survey says:
  - 12% business travel
  - 53% visitors to the area
  - 2% final destination international
- 2005 passenger origins:
  - 0% Manhattan
  - 0% New York City
  - 0% New York State
  - 98% New Jersey
  - 2% Pennsylvania
  - 0% Connecticut
- Regional perspective
  - 1% of total study traffic
  - 19% catchment area market share



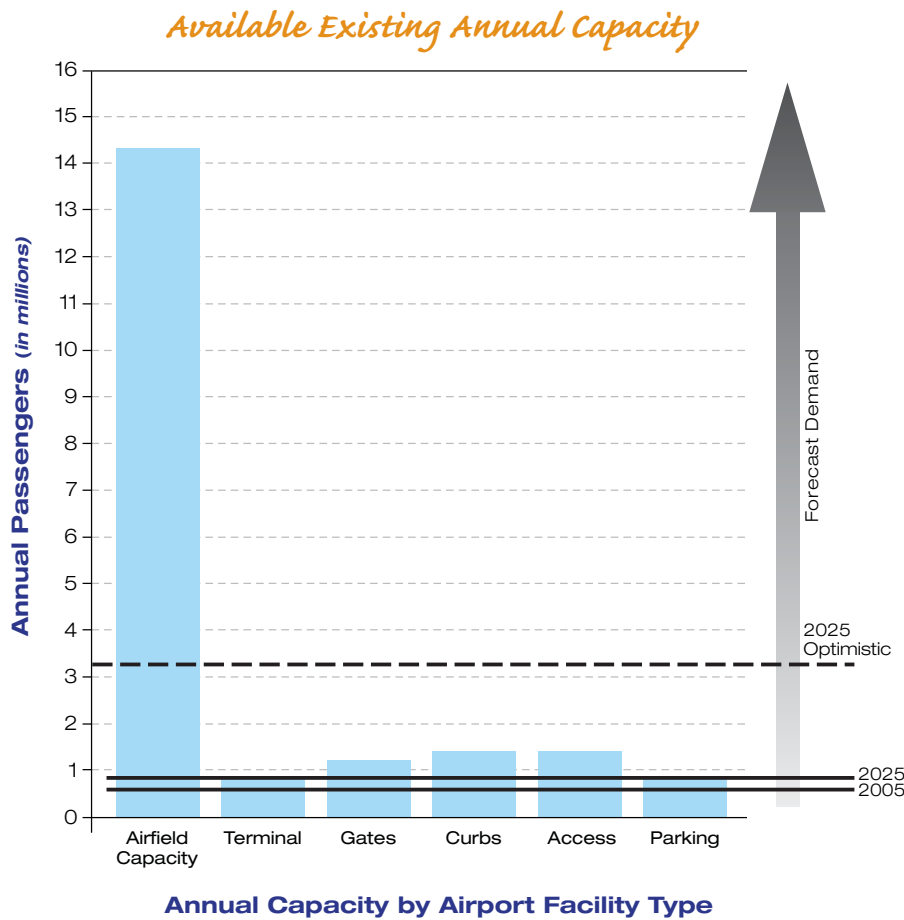
Atlantic City International  
(continued)

# Aircraft Operations Forecast

*Airport has available airside capacity for the baseline and optimistic forecasts*



# Airport Capacity Forecast



## Terminal Capacity Needs

- Ticketing lobby
- Baggage claim
- Concessions
- Circulation

**Landside has capacity until 2025**

**All terminal and landside facilities need additional capacity for the optimistic forecasts**

## Trenton Mercer

### Airport Facilities Snapshot

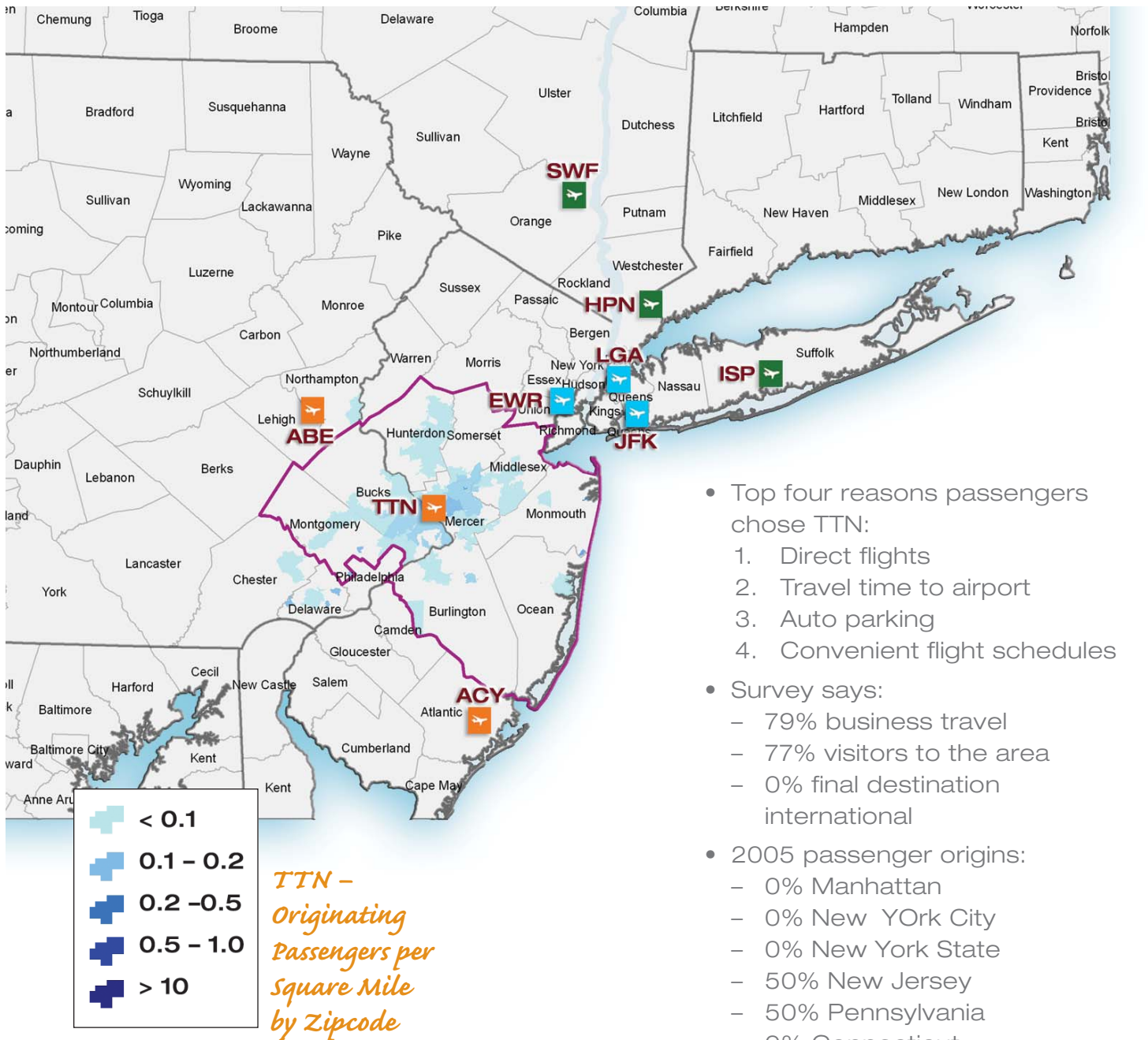
Land Area .....	1,345 acres
<b>Runway and Length (in feet)</b>	
6-24 .....	6,006
16-34 .....	4,800
<b>Terminal Gates .....</b>	<b>2</b>
<b>Curb Frontage (in feet) .....</b>	<b>200</b>
<b>Parking Spaces .....</b>	<b>643</b>



### Airport Traffic Facts and Figures

2005 Enplaned Passengers .....	8,706
2005 Aircraft Operations .....	101,456
Airlines .....	2
Non-stop Destinations .....	3
Connecting Passengers .....	0%

# Airport Profile

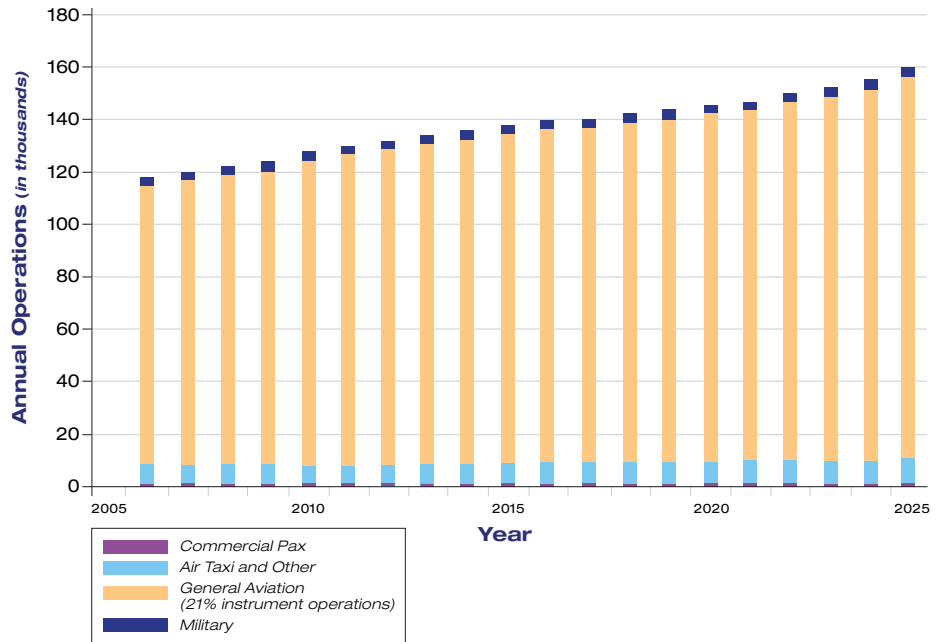


- Top four reasons passengers chose TTN:
  1. Direct flights
  2. Travel time to airport
  3. Auto parking
  4. Convenient flight schedules
- Survey says:
  - 79% business travel
  - 77% visitors to the area
  - 0% final destination international
- 2005 passenger origins:
  - 0% Manhattan
  - 0% New York City
  - 0% New York State
  - 50% New Jersey
  - 50% Pennsylvania
  - 0% Connecticut
- Regional perspective
  - 0% of total study traffic
  - 1% catchment area market share

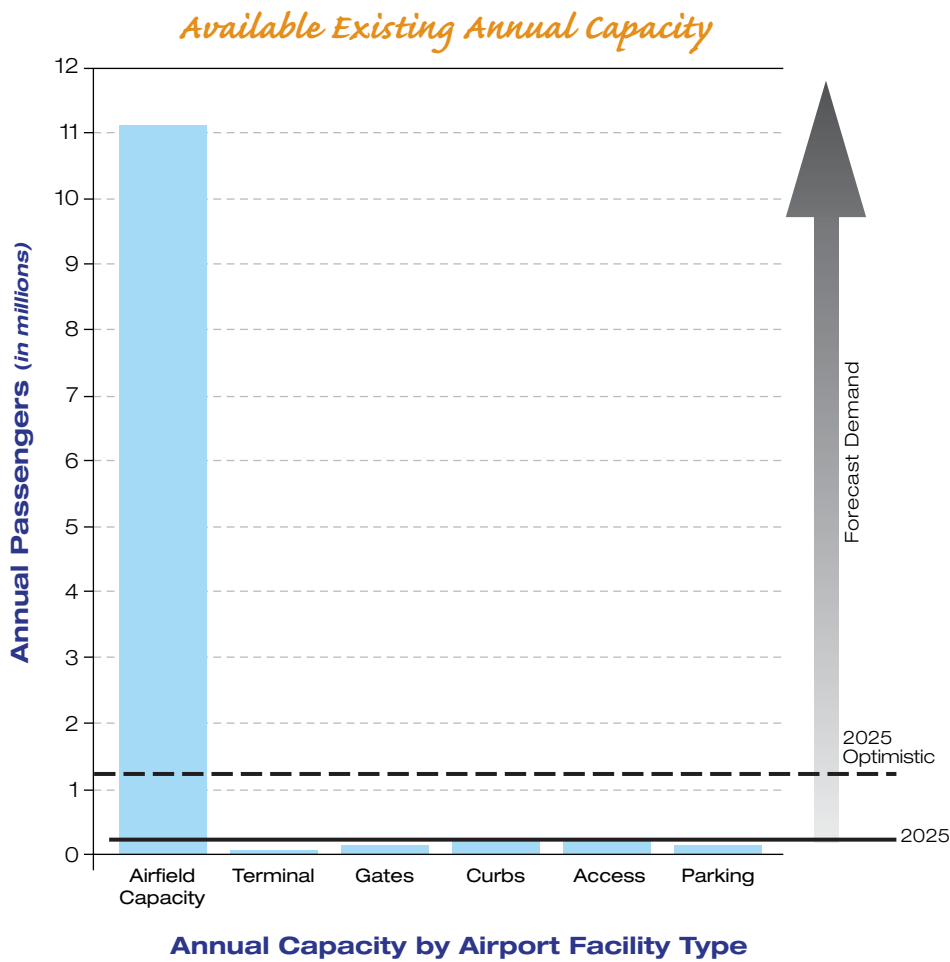
Trenton Mercer  
(continued)

## Aircraft Operations Forecast

*Airport has available airside capacity for the baseline and optimistic forecasts*



# Airport Capacity Forecast



## Terminal Capacity Needs

- Departures
- Arrivals
- Concessions

**Landside has capacity for 2025**

**All terminal and landside facilities need additional capacity for the optimistic forecasts**

*Introduction*

*Description of the Region*

*Forecasts of  
Airport Activity*

*The Airports*

*Regional Summary  
of Findings*



# Port Authority of New York & New Jersey Airports

## New York John F. Kennedy International

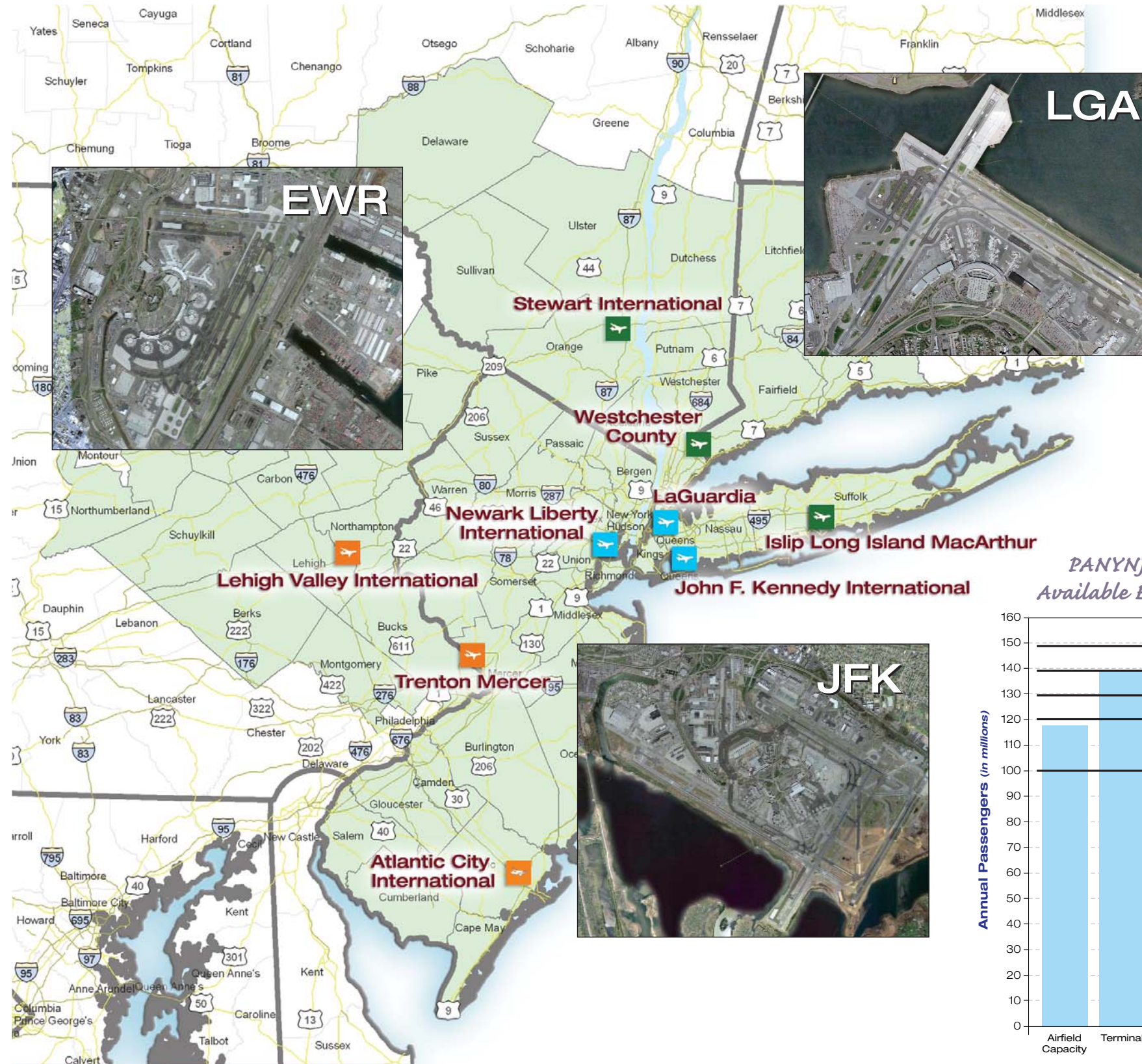
- Airspace changes required to make full capacity of runways available
- Passenger capacity of existing airspace can only grow beyond 2010 through increases in aircraft size beyond those of the baseline forecast
- Additional terminal gates required to accommodate growth beyond 2020

## New York LaGuardia

- Government regulation limits growth of aircraft operations
- Growth in passenger volume can be accomplished solely through increased aircraft size
- Terminal improvements, including additional checkpoint and baggage screening capacity, needed immediately

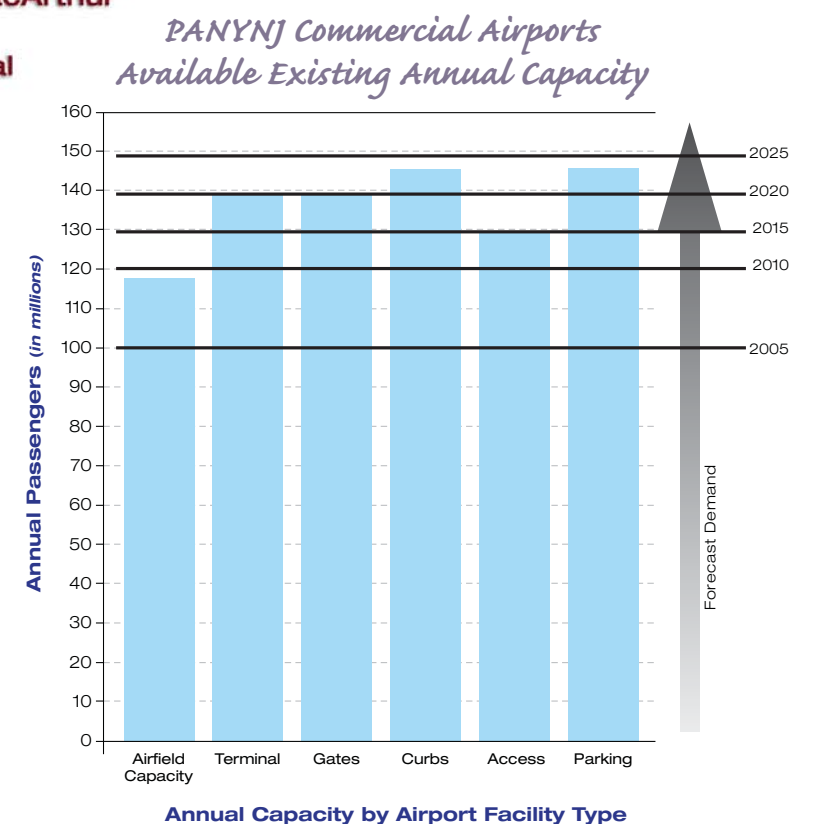
## Newark Liberty International

- Passenger capacity of airfield can only grow beyond 2010 through increases in aircraft size beyond those of the baseline forecast
- Improvements to terminal capacity needed to provide passenger capacity beyond 2015
- Additional auto parking required for growth beyond 2015

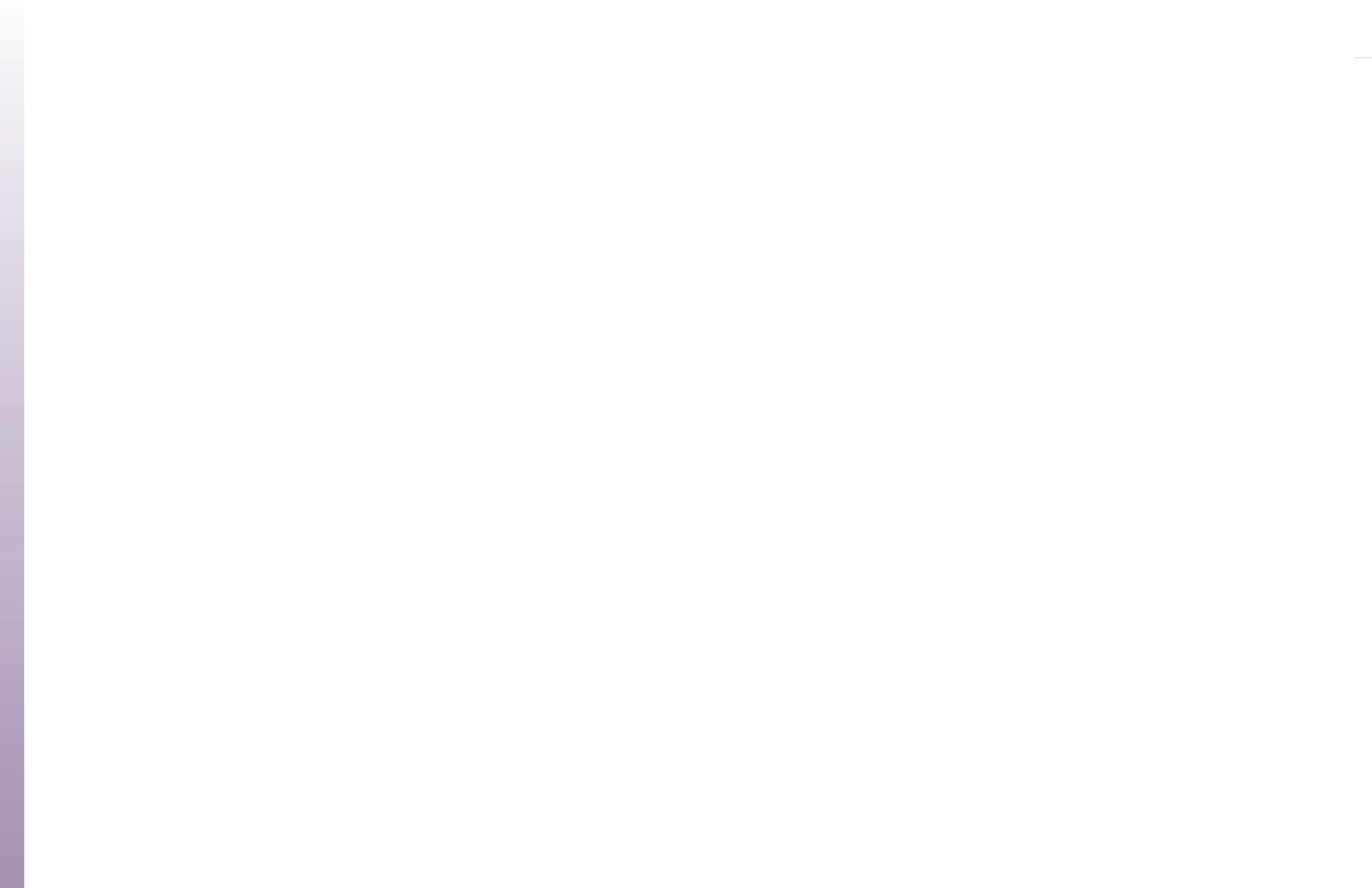


# System Summary

- By about 2010, the PANYNJ airports will need additional runway capacity to continue serving the region as they have in the past
- PANYNJ airports need other facility improvements to balance demand and capacity among the various terminals







# Regional Airports

## Stewart International

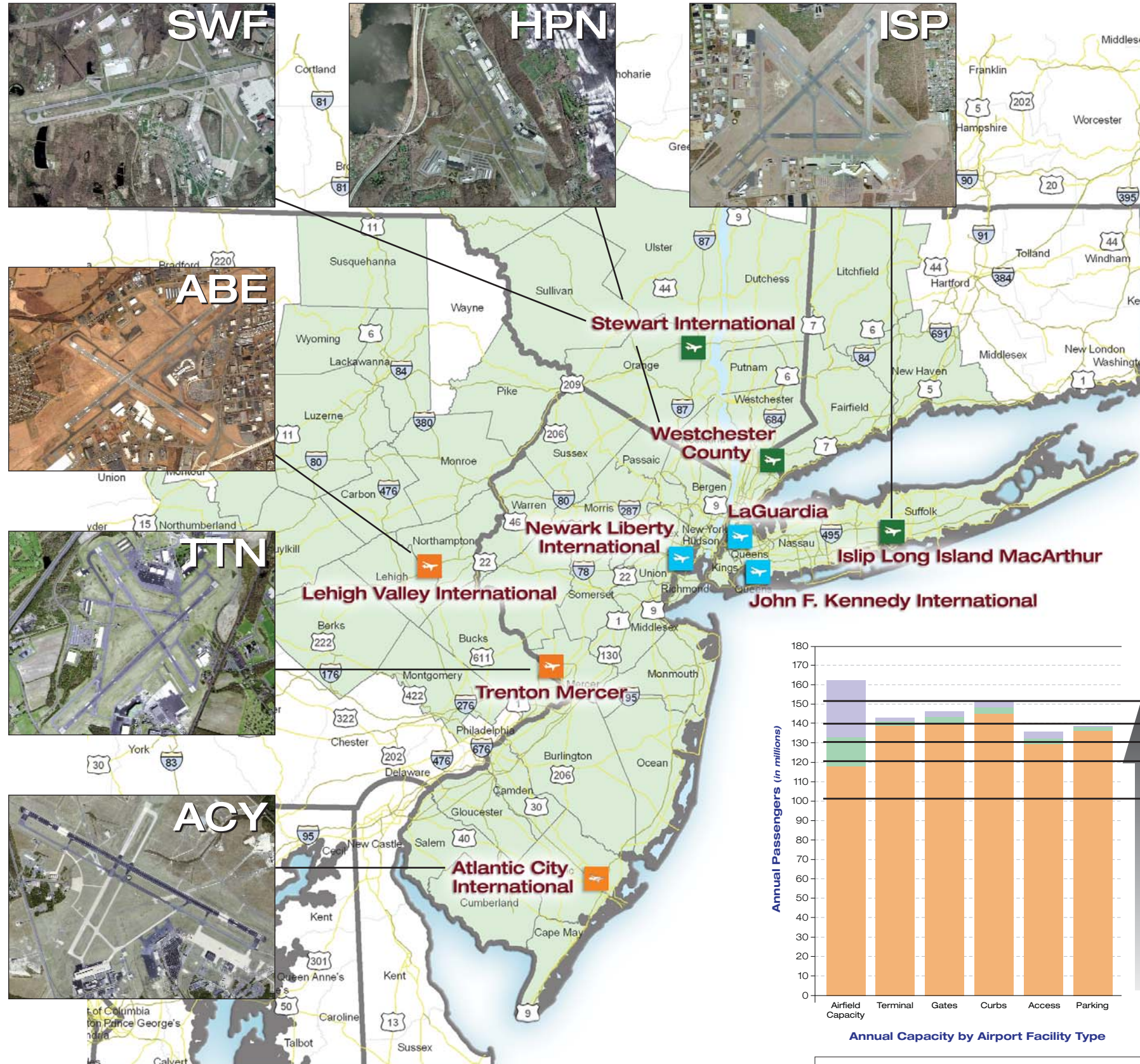
- SWF runways provide a significant contribution to regional capacity
- SWF needs additional improvements for the runway to reach its potential
- Regional access needs additional improvements for the region to take full advantage of SWF capacity

## Lehigh Valley International

- ABE runways provide a significant contribution to regional capacity
- ABE needs additional improvements for the runway to reach its potential
- Regional access needs additional improvements for the region to take advantage of ABE capacity

## Trenton Mercer

- TTN runways provide a significant contribution to regional capacity
- Runway length may limit weight of aircraft in longer haul markets
- TTN needs additional improvements for the runway to reach its potential



## Atlantic City International

- ACY runways provide a significant contribution to regional capacity
- ACY needs additional improvements for the runway to reach its potential
- Regional access needs additional improvements for the region to take advantage of ACY capacity

## Westchester County

- Capacity cap inhibits growth
- No optimistic case forecast
- HPN runways do not have long-term available capacity
- Terminal needs immediate improvements

## Isip Long Island MacArthur

- ISP runways provide only a limited addition to system capacity
- ISP needs additional improvements for the runway to reach its potential

*New York Regional Airport System Available Existing Annual Capacity*



# Future Opportunities & Challenges\*

A primary focus of the FAA Regional Air Service Demand Study was to generate the necessary baseline information required to assist future studies of plans, policies, investment decisions and other strategies needed to meet the demands forecasted for the Study airports. This baseline information will help inform and guide future capital planning and budgeting processes and assist in the development of programs that would result in the highest levels of service for the region's commercial airport customers.

In order to fully leverage this baseline information, and optimize the utilization of the region's aviation resources, three broad, inter-related areas or categories of analysis will be required:

- Alternatives analyses for addressing the needs defined in the Study
- Systems analyses of the regional aviation system, to identify and evaluate various development scenarios — and define the optimum utilization of scarce aviation resources
- Analyses of alternative strategies, policies and institutional/regulatory elements required to achieve an optimum regional aviation system.
- Each of these strategies is discussed in the following sections.

## Alternatives Analyses for Addressing the Needs

The evaluations conducted in the FAA Regional Air Service Demand Study focused on a determination of overall needs or deficiencies, established by calculating future infrastructure requirements for each of the nine study airports, and comparing those future requirements with existing facilities (including those under construction). The differences between the estimated future requirements and existing infrastructure represent the future deficiencies or needs during the 20-year study period.

*\* The findings and conclusions of the FAA Regional Air Service Demand Study were finalized prior to the announcement in late January 2007 that the PANYNJ would be acquiring SWF. The Study does not, therefore, reflect that change in status of the airport.*

## *Regional Airport Summary/ Future Opportunities & Challenges (continued)*

A future study could address the alternative means of meeting those needs, including capital and operational improvements required to address the capacity deficits that have been identified.

With respect to capital improvements, future studies should address whether needs should be met by expanding existing facilities or building new ones. Where there are terminal gate deficiencies, for example, can and should more gates be provided at the specific facility being analyzed — or should one or more terminals be constructed nearby?

Assessing alternative means of addressing future needs will also require a careful evaluation of the potentially critical role of operational improvements in augmenting capacity and level of service. For example, airspace modifications allowing for enhanced parallel runway operations and significantly greater airfield capacity at JFK are primary examples of the tremendous potential of operational enhancements.

### **Systems Analyses of the Airports**

The Study forecasts are demand-based, and unconstrained for each of the Study airports. In other words, it was assumed that all the facilities required at each of the nine study airports will be in place to accommodate the projected future growth of air traffic at a suitable level of service. By definition, this approach did not explicitly address the possibility that the needs at any particular airport could be accommodated at one or more alternative airports. In addition, the study did not address how airlines would react to capacity constraints or high operating delays. Would airlines schedule larger equipment to meet higher demands under a constrained demand scenario?

Therefore, future studies should seek to address the question of what the optimum solution is from a systems perspective. Not only should future studies identify an optimal solution for meeting future demand, these future studies should also

## *Regional Airport Summary/ Future Opportunities & Challenges (continued)*

explore how this optimal solution changes within the various and considerable airport development constraints that exist at each airport.

The systems study should also conduct a more in-depth evaluation of the surface transportation networks that serve each of the study airports, i.e. — which specific improvements are required to enhance ground access? What is the best role for transit access, and what level of service is required — in terms of frequency and travel times — to maximize the potential of all of the region's airports?

A primary objective of a possible future study should also be an evaluation of the interrelationship between delay and demand. If facilities are not implemented in timely fashion at any one of the study airports, how could that affect the overall distribution of passenger and cargo demand throughout the region?

### **Alternative Strategies, Policies and Institutional Arrangements**

As was noted in the report, there is a clear need for capital investments (physical upgrades) and operational improvements to meet the projected demand for air travel. In addition, realizing the full potential of the region's aviation system will also require a comprehensive evaluation of the institutional and regulatory framework that governs the provision of airport capacity or manages airline activity.

### **What is it that the small hub airports really offer?**

As was shown in the graphical summaries of annual airport capacity for the study airports, it is the airfield capacity of the PANYNJ airports that is reached earliest in the 20-year study period. In addition, ground access represents a major capacity challenge, especially at LGA.

*Regional Airport Summary/  
Future Opportunities &  
Challenges (continued)*

Terminal, gate, curbside and parking needs will also emerge during the 20-year timeframe, but it is judged that it is feasible to readily address those needs within the framework of the existing PANYNJ airports.

It is the airspace/airfield needs at the PANYNJ airports that pose the most difficult and complex challenge.

In contrast, it is the airfield capacity of the six regional, small hub airports that represents the most underutilized regional aviation resource.

In simple terms, therefore, the primary challenge facing the region's executives and planners is how can the relatively untapped potential of the regional airfields be utilized in the future, as required? Is it more feasible to increase the airspace/airfield capacity of the PANYNJ airports — or to provide the needed ground transportation and airport infrastructure to bring passengers to and from the regional airports? What is the availability of airspace to handle the projected increased demand?

# Changes in Regional Air Service Since 2005

The demand forecasts for this study are based on 2004 and 2005 data. Since that time, several significant changes to regional air service have occurred. These changes create short-term variances between actual 2006 and estimated 2007 activity and those forecast in this document. In addition, the FAA has published its 2006 Terminal Area Forecasts (TAF) which reflects many of these air service changes made in 2006. As a result, the FAA forecast shows considerably higher growth for JFK than does this regional study. Had this information about the new air service been available for this study, the short-term forecasts for the JFK in this study might have also been higher.

The most significant of these air service changes is the creation of a short-haul domestic air service element to the Delta Air Lines hub at JFK. The forecasts for this study reflect the previously announced Delta Air Lines business plan for significantly expanding its international gateway hub at JFK. The actual implementation of the plan included a significant portion of morning flights that do not have an international air service element. Most of these new morning flights are by regional jet and prop aircraft. Simultaneously, with these new flights, Delta Air Lines continued its previously announced phase-out of its low-cost subsidiary — Song. The phase-out of Song was included in the forecasts for this study.

In 2007, the Port Authority prepared new forecasts for JFK. The table below summarizes a comparison of these forecasts to those of this study.

Year	Annual Enplaned Passenger Forecasts		Annual Aircraft Operations Forecasts	
	Regional Study	2007 PANYNJ	Regional Study	2007 PANYNJ
2006	21,381,200	21,314,704	359,075	378,410
2007	22,031,300	22,997,921	368,590	465,228
2010	24,195,800	25,762,077	401,930	502,047
2015	25,603,200	28,997,358	424,570	542,681
2020	27,297,500	31,529,455	445,310	583,029
2025	29,265,300	33,956,103	468,400	605,984

*Comparison of Regional Study and New Port Authority Forecasts*



## Changes in Regional Air Service Since 2005 (continued)

As shown, the Port Authority has revised their forecast so that it shows that passenger volumes originally forecast in this study for 2015 will now occur by 2010. 2015 passenger activity will be near the values originally forecast for 2025. Aircraft activity volumes originally forecast for 2025 will now be exceeded in 2008.

### Effect of New JFK Service Patterns on Airfield Delays

Some of the new flights at JFK were added in the peak hours, where they provide connections to international air service. However, a major portion of the new flights were added during other times of the day when unused airfield capacity was available. Thus, it is not possible to directly correlate the increased airfield operations counts to the forecasts of future delays presented in this study. 2008 airfield operations counts are expected to exceed the volumes forecast for 2025. However, delay levels recorded by the FAA in the ASPM databases during the first few months of this new activity only reach the delays levels originally forecast for 2009. Since the initiation of the air service changes, FAA air traffic controllers at JFK have responded by changing the operating procedures used during off-peak hours to procedures that are similar to procedures used during peak afternoon and evening hours. These changes are likely to further mitigate higher delays. Thus, if the increased activity at JFK remains sustainable and profitable and there is no service shifting

*Implications of Revised JFK Aircraft Operations Forecasts on Future Average Delay Levels*

Forecast Case	Arrival Delay Per Aircraft (minutes)		Departure Delay Per Aircraft (minutes)	
	2015	2025	2015	2025
Regional Forecast	41	67	29	46
2007 PANYNJ Forecast	45 - 50	90 - or more	35 - 40	50 - 60

## *Changes in Regional Air Service Since 2005 (continued)*

to LGA or EWR, the delay levels are more likely to change as shown in the table below, which indicates a range of possible delays for 2015 and 2025.

### **Other Regional Air Service Changes**

In addition to the air service changes at JFK, AirTran Airways initiated new service at HPN and SWF, Allegiant Airlines started service at SWF and ABE, JetBlue started service at SWF, and Delta Air Lines started service at SWF and TTN. Allegiant has since discontinued its service at SWF, and at LGA there has been some recent loss of service resulting in a temporary decrease in passengers. While these service changes at the region's airports have produced changes in the regional supply of air service, it is too early to determine which of these new services will be financially successful and sustained for the long-term. Many of these competitive service changes were announced nearly simultaneously, and the market may not support them.

Overall, the recent changes to regional air service have increased the supply of air service at several of the region's airports and have resulted in lower air fares. It is reasonable to expect that the lower fares will stimulate travel and divert passengers from one airport to another, at least temporarily. However, it is too early to determine whether actual demand has been sufficiently stimulated to sustain all the additional air service at profitable fare levels, and whether these changes will remain throughout the forecast period.