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:
- Federal Aviation Administration
- The Port Authority of NY & NJ
- New York State Department of Transportation
- Delaware Valley Regional Planning Commission
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
PB Americas, Inc.
Landrum & Brown
Airport Interviewing & Research
Hirsh Associates
SIMCO Engineering
InterVISTAS
Clough Harbour & Associates
Hamilton, Rabinowitz & Alschuler

The Preparation of this document was financed in part through a planning grant from the Federal Aviation Administration (FAA) as provided under Vision 100 — Century of Aviation Authorization Act. The contents reflect the opinion of the preparer and do not necessarily reflect the official views or policy of the FAA.

Grants

PANYNJ: 3-36-0066-111-02
NYS DOT: 3-36-0000-002-03 (Phase I); 3-36-0000-04-05 (Phase II)
DVRPC: 3-42-0125-003-03 (Phase I); 3-42-0125-005-05 (Phase II)
# Table of Contents

## I. Introduction
- Study Goals .................................................................................................... 1
- Preview of Study Findings ............................................................................... 1
- System Planning Process .................................................................................. 3

## II. Description of the Region
- Passenger Survey ............................................................................................ 5
- Regional Study Areas ...................................................................................... 7

## III. Forecasts of Airport Activity
- Methodology ..................................................................................................... 12
- Independent Variables ...................................................................................... 13
- 2005 Originating Passengers .......................................................................... 15
- Forecast of Annual Enplaned Passengers ....................................................... 17
- Forecast of Annual Aircraft Operations ........................................................... 18
- 2025 Net Growth of Annual Originating Passengers ...................................... 19
- High and Low Forecast Scenarios ................................................................... 21
- Airport Choice .................................................................................................. 23
- Effects of Airside and Landside Congestion .................................................... 25
- Airline Industry Outlook ................................................................................... 30

## IV. The Airports
- John F. Kennedy International ....................................................................... 32
- LaGuardia ......................................................................................................... 36
- Newark Liberty International ........................................................................... 40
- Stewart International ....................................................................................... 44
- Westchester County .......................................................................................... 48
- Long Island MacArthur .................................................................................... 52
- Lehigh Valley International .............................................................................. 56
- Atlantic City International ............................................................................... 60
- Trenton Mercer ................................................................................................ 64

## V. Regional Summary of Findings
- Port Authority of New York & New Jersey System Summary ......................... 68
- Regional Airport System Summary .................................................................. 69
- Future Opportunities and Challenges .............................................................. 71
- Changes in Regional Air Service Since 2005 .................................................. 75
Introduction

Description of the Region

Forecasts of Airport Activity

The Airports

Regional Summary of Findings
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.
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.
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.
II. Description of the Region

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

Where Each Surveyed Passenger Started Their Trip to the Airport

9 Airports —
Surveyed Passengers Per Square Mile
By Zip Code
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 JFK (John F. Kennedy International):
- direct flights
- flight schedules
- ticket prices
- time to airport
Air service being equal, passengers will choose the closer airport.
Nine airports serve fifty-four counties in four states.

Regional Study Area

Study Area 2005 Population

<table>
<thead>
<tr>
<th>Study Area</th>
<th>2005 Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entire Area</td>
<td>27.3 million</td>
</tr>
<tr>
<td>New York State</td>
<td>13.3 million</td>
</tr>
<tr>
<td>New Jersey</td>
<td>8.8 million</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>3.6 million</td>
</tr>
<tr>
<td>Connecticut</td>
<td>1.9 million</td>
</tr>
</tbody>
</table>

Study Area 2005 Employment

<table>
<thead>
<tr>
<th>Study Area</th>
<th>2005 Employment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entire Area</td>
<td>15.5 million</td>
</tr>
<tr>
<td>New York State</td>
<td>7.3 million</td>
</tr>
<tr>
<td>New Jersey</td>
<td>4.9 million</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>2.1 million</td>
</tr>
<tr>
<td>Connecticut</td>
<td>1.2 million</td>
</tr>
</tbody>
</table>
Three airports serve thirty-five counties in four states.
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.
Stewart serves nine counties in three states. Its catchment area overlaps that for Westchester County, which serves seven counties in two states. Islip 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

The Airports

Regional Summary
III. Forecasts of Aviation Activity

Domestic Economic and Demographic Data
Domestic O&D Enplanement History
International Economic and Demographic Data
International O&D Enplanement History

Domestic Regression Model
International Regression Model

9 Individual Airports
- Forecast Unconstrained Domestic O&D Enplanements

3 PANYNJ Airports
- Forecast Unconstrained Domestic O&D Enplanements

Region
- Forecast Unconstrained Domestic O&D Enplanements

2 – 3 Airports
- Forecast Unconstrained International O&D Enplanements

Analyze Results

Individual Airports’ Unconstrained Domestic and International O&D Enplanement Forecasts

Connecting Enplanement Forecast for Select Airports

Fleet Mix Forecasts
Load Factor Forecasts
Passenger Operations Forecasts
Cargo Tonnage Forecasts
GA and Military Operations Forecasts

Passenger Forecasts
Cargo Operations Forecasts
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.
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 through 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.
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)

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

<table>
<thead>
<tr>
<th>Year</th>
<th>Kennedy</th>
<th>LaGuardia</th>
<th>Newark</th>
<th>Stewart</th>
<th>Westchester</th>
<th>Islip</th>
<th>Lehigh Valley</th>
<th>Atlantic</th>
<th>Trenton</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990 – 2005</td>
<td>2.4%</td>
<td>0.9%</td>
<td>2.7%</td>
<td>0.4%</td>
<td>1.8%</td>
<td>4.4%</td>
<td>-0.1%</td>
<td>0.5%</td>
<td>-0.7%</td>
<td>2.0%</td>
</tr>
<tr>
<td>2005 – 2015</td>
<td>2.3%</td>
<td>1.6%</td>
<td>3.4%</td>
<td>7.0%</td>
<td>3.2%</td>
<td>2.2%</td>
<td>2.5%</td>
<td>1.6%</td>
<td>14.0%</td>
<td>2.5%</td>
</tr>
<tr>
<td>2015 – 2025</td>
<td>1.3%</td>
<td>1.1%</td>
<td>2.0%</td>
<td>1.7%</td>
<td>0.3%</td>
<td>1.7%</td>
<td>2.5%</td>
<td>1.4%</td>
<td>2.0%</td>
<td>1.5%</td>
</tr>
<tr>
<td>2005 – 2025</td>
<td>1.8%</td>
<td>1.4%</td>
<td>2.7%</td>
<td>4.3%</td>
<td>1.7%</td>
<td>2.0%</td>
<td>2.5%</td>
<td>1.5%</td>
<td>7.8%</td>
<td>2.0%</td>
</tr>
</tbody>
</table>
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.
2025 Total Annual Enplaned Passengers (000)

- 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

<table>
<thead>
<tr>
<th>Airport</th>
<th>Originating Passengers</th>
<th>Connecting Passengers</th>
<th>Total Enplaned Passengers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kennedy</td>
<td>25,940</td>
<td>3,325</td>
<td>29,265</td>
</tr>
<tr>
<td>LaGuardia</td>
<td>16,074</td>
<td>891</td>
<td>16,965</td>
</tr>
<tr>
<td>Newark</td>
<td>21,452</td>
<td>6,675</td>
<td>28,127</td>
</tr>
<tr>
<td>Stewart</td>
<td>467</td>
<td>—</td>
<td>467</td>
</tr>
<tr>
<td>Westchester</td>
<td>657</td>
<td>—</td>
<td>657</td>
</tr>
<tr>
<td>Islip</td>
<td>1,555</td>
<td>—</td>
<td>1,555</td>
</tr>
<tr>
<td>Lehigh Valley</td>
<td>685</td>
<td>—</td>
<td>685</td>
</tr>
<tr>
<td>Atlantic City</td>
<td>658</td>
<td>—</td>
<td>658</td>
</tr>
<tr>
<td>Trenton Mercer</td>
<td>39</td>
<td>—</td>
<td>39</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>67,528</strong></td>
<td><strong>10,891</strong></td>
<td><strong>78,420</strong></td>
</tr>
</tbody>
</table>
## High and Low Forecast Scenarios

<table>
<thead>
<tr>
<th>Airport</th>
<th>Reasons for Optimism</th>
<th>Reasons for Pessimism</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kennedy</td>
<td>• Success of international air service expansions by American and Delta&lt;br&gt;• Continued expansion of Jet Blue&lt;br&gt;• Success of A-380/Growth of aircraft gauge</td>
<td>• Less successful international air service expansions&lt;br&gt;• Less expansion by Jet Blue&lt;br&gt;• Less growth in aircraft gauge</td>
</tr>
<tr>
<td>LaGuardia</td>
<td>• Growth of aircraft gauge</td>
<td>• Less growth in aircraft gauge</td>
</tr>
<tr>
<td>Newark Liberty</td>
<td>• Success of international air service expansion by Continental</td>
<td>• Less successful international air service expansions</td>
</tr>
<tr>
<td>Stewart</td>
<td>• Expansion of catchment area to south and east</td>
<td>• Less expansion of catchment area</td>
</tr>
<tr>
<td>Westchester</td>
<td>• No high scenario because airport activity capped by legislation</td>
<td>• Little change expected</td>
</tr>
<tr>
<td>Islip</td>
<td>• Success of new air service markets</td>
<td>• Less successful new air service</td>
</tr>
<tr>
<td>Lehigh Valley</td>
<td>• Expansion of catchment area to south and east</td>
<td>• Less expansion of catchment area</td>
</tr>
<tr>
<td>Atlantic City</td>
<td>• Success of new low-fare carrier markets</td>
<td>• Less successful new air service</td>
</tr>
<tr>
<td>Trenton</td>
<td>• Introduction of new air service&lt;br&gt;• Expansion of catchment area in all directions&lt;br&gt;• More use by visitors to region</td>
<td>• Less successful new air service&lt;br&gt;• Less expansion of catchment area&lt;br&gt;• Less use by visitors</td>
</tr>
<tr>
<td>All</td>
<td>• Expansion of low-fare carrier air service&lt;br&gt;• Better than expected economic growth&lt;br&gt;• Lower jet fuel prices</td>
<td>• Less low-fare air service&lt;br&gt;• Less economic growth&lt;br&gt;• Higher jet fuel prices</td>
</tr>
</tbody>
</table>
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

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

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

<table>
<thead>
<tr>
<th>Airport</th>
<th>Aircraft Operations</th>
<th>Enplaned Passengers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kennedy</td>
<td>423,670</td>
<td>26,314,600</td>
</tr>
<tr>
<td>LaGuardia</td>
<td>391,070</td>
<td>15,822,200</td>
</tr>
<tr>
<td>Newark</td>
<td>558,220</td>
<td>24,510,100</td>
</tr>
<tr>
<td>Stewart</td>
<td>96,690</td>
<td>218,500</td>
</tr>
<tr>
<td>Westchester</td>
<td>246,480</td>
<td>582,000</td>
</tr>
<tr>
<td>Islip</td>
<td>227,790</td>
<td>1,346,500</td>
</tr>
<tr>
<td>Lehigh Valley</td>
<td>183,200</td>
<td>542,000</td>
</tr>
<tr>
<td>Atlantic City</td>
<td>141,400</td>
<td>586,000</td>
</tr>
<tr>
<td>Trenton Mercer</td>
<td>159,800</td>
<td>14,400</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2,595,340</strong></td>
<td><strong>78,419,680</strong></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Airport</th>
<th>Aircraft Operations</th>
<th>Enplaned Passengers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kennedy</td>
<td>541,990</td>
<td>33,729,400</td>
</tr>
<tr>
<td>LaGuardia</td>
<td>483,170</td>
<td>19,695,200</td>
</tr>
<tr>
<td>Newark</td>
<td>736,460</td>
<td>32,396,000</td>
</tr>
<tr>
<td>Stewart</td>
<td>113,440</td>
<td>1,866,400</td>
</tr>
<tr>
<td>Westchester</td>
<td>251,530</td>
<td>657,300</td>
</tr>
<tr>
<td>Islip</td>
<td>246,860</td>
<td>2,205,800</td>
</tr>
<tr>
<td>Lehigh Valley</td>
<td>195,200</td>
<td>1,741,000</td>
</tr>
<tr>
<td>Atlantic City</td>
<td>149,500</td>
<td>1,664,000</td>
</tr>
<tr>
<td>Trenton Mercer</td>
<td>161,700</td>
<td>644,100</td>
</tr>
</tbody>
</table>
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 are very small percentage of its catchment area’s passengers.

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 (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.
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.
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.
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

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.
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
John F. Kennedy International

**Airport Facilities Snapshot**

<table>
<thead>
<tr>
<th>Land Area</th>
<th>4,930 acres</th>
</tr>
</thead>
</table>

**Runway and Length (in feet)**

<table>
<thead>
<tr>
<th>Runway</th>
<th>Length (in feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4L-22R</td>
<td>11,351</td>
</tr>
<tr>
<td>4R-22L</td>
<td>8,400</td>
</tr>
<tr>
<td>13L-31R</td>
<td>10,000</td>
</tr>
<tr>
<td>13R-31L</td>
<td>14,672</td>
</tr>
</tbody>
</table>

**Terminal and Number of Gates**

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Number of Gates</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>2/3</td>
<td>31</td>
</tr>
<tr>
<td>4</td>
<td>16</td>
</tr>
<tr>
<td>5/6</td>
<td>33</td>
</tr>
<tr>
<td>7</td>
<td>12</td>
</tr>
<tr>
<td>8</td>
<td>32</td>
</tr>
<tr>
<td><strong>Total Gates</strong></td>
<td><strong>134</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Curb Frontage (in feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Terminal 1</td>
</tr>
<tr>
<td>Terminal 2/3</td>
</tr>
<tr>
<td>Terminal 4</td>
</tr>
<tr>
<td>Terminal 5/6</td>
</tr>
<tr>
<td>Terminal 7</td>
</tr>
<tr>
<td>Terminal 8</td>
</tr>
<tr>
<td><strong>Total Frontage</strong></td>
</tr>
</tbody>
</table>

**Auto Parking**

| 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

- 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.
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 (Terminals 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**

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

**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%
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
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

### Future Unmitigated Arrival and Departure Delays

<table>
<thead>
<tr>
<th>Average Delay Per Aircraft (min.)</th>
<th>2004</th>
<th>2015</th>
<th>2025</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arrivals</td>
<td>16</td>
<td>21</td>
<td>21</td>
</tr>
<tr>
<td>Departures</td>
<td>19</td>
<td>30</td>
<td>30</td>
</tr>
</tbody>
</table>
Forecast Airport Capacity Needs

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.

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
Newark Liberty International Airport

Airport Facilities Snapshot

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

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%
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

<table>
<thead>
<tr>
<th>Forecast Year</th>
<th>2004</th>
<th>2015</th>
<th>2025</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arrivals</td>
<td>18</td>
<td>61</td>
<td>124</td>
</tr>
<tr>
<td>Departures</td>
<td>19</td>
<td>48</td>
<td>92</td>
</tr>
</tbody>
</table>

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

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

<table>
<thead>
<tr>
<th>Facility</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land Area</td>
<td>2,220 acres</td>
</tr>
<tr>
<td>Runway and Length (in feet)</td>
<td></td>
</tr>
<tr>
<td>9-27</td>
<td>11,818</td>
</tr>
<tr>
<td>16-34</td>
<td>6,006</td>
</tr>
<tr>
<td>Number of Gates</td>
<td>7</td>
</tr>
<tr>
<td>Curb Frontage (in feet)</td>
<td>510</td>
</tr>
<tr>
<td>Parking Spaces</td>
<td>1,147</td>
</tr>
</tbody>
</table>

Airport Traffic Facts and Figures

- 2005 Enplaned Passengers: 199,425
- 2005 Aircraft Operations: 103,960
- Airlines: 5
- Non-stop Destinations: 6
- Connecting Passengers: 0%
Top four reasons passengers chose SWF:
1. Travel time to airport
2. Convenient flight schedules
3. Auto parking
4. Familiar with airport

Survey says:
- 22% business travel
- 51% visitors to the area
- 3% final destination international

2005 passenger origins:
- 0.2% Manhattan
- 0.5% New York City
- 95% New York State
- 3% New Jersey
- 1% Pennsylvania
- 2% Connecticut

Regional perspective:
- 0.4% of total study traffic
- 4% catchment area market share
Stewart International Airport  
(continued)

Airport Operations Forecast

Airside has available capacity for the baseline and optimistic forecasts.

<table>
<thead>
<tr>
<th>Year</th>
<th>Pax Ops</th>
<th>Air Taxi and Other</th>
<th>General Aviation (29% Instrument Operations)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2005</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2015</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2020</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2025</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Annual Service Capacity with Touch-and-Go Operations (227,000 operations)**

**Annual Service Capacity without Touch-and-Go Operations (189,000 operations)**
Annual Capacity by Airport Facility Type

**Available Existing Annual Capacity**

- **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**

**FAA Regional Air Service Demand Summary / May 2007**
Westchester County

Airport Facilities Snapshot

<table>
<thead>
<tr>
<th>Category</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land Area</td>
<td>703 acres</td>
</tr>
<tr>
<td>Runway and Length (in feet)</td>
<td></td>
</tr>
<tr>
<td>11-29</td>
<td>4,451</td>
</tr>
<tr>
<td>16-34</td>
<td>6,548</td>
</tr>
<tr>
<td>Terminal Gates</td>
<td>4</td>
</tr>
<tr>
<td>Curb Frontage (in feet)</td>
<td>716</td>
</tr>
<tr>
<td>Parking Spaces</td>
<td>1,100</td>
</tr>
</tbody>
</table>

Airport Traffic Facts and Figures

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

Available Existing Annual Capacity

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**

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

**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%
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.
Annual Capacity by Airport Facility Type

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

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Land Area</td>
<td>2,629 acres</td>
</tr>
<tr>
<td>Runway and Length (in feet)</td>
<td></td>
</tr>
<tr>
<td>6-24</td>
<td>7,600</td>
</tr>
<tr>
<td>13-31</td>
<td>5,797</td>
</tr>
<tr>
<td>Terminal Gates</td>
<td>20</td>
</tr>
<tr>
<td>Curb Frontage (in feet)</td>
<td>458</td>
</tr>
<tr>
<td>Parking Spaces</td>
<td>2,711</td>
</tr>
</tbody>
</table>

Airport Traffic Facts and Figures

2005 Enplaned Passengers ...........................................417,301
2005 Aircraft Operations ...........................................128,291
Airlines ...........................................................................8
Non-stop Destinations ..................................................13
Connecting Passengers ..................................................0%
Top four reasons passengers chose ABE:
1. Travel time to airport
2. Convenient flight schedules
3. Familiar with airport
4. Direct flights

Survey says:
- 42% business travel
- 32% visitors to the area
- 6% final destination international

2005 passenger origins:
- 0% Manhattan
- 0% New York City
- 0% New York State
- 8% New Jersey
- 92% Pennsylvania
- 0% Connecticut

Regional perspective
- 1% of total study traffic
- 32% catchment area market share
Lehigh Valley International
(continued)

Aircraft Operations Forecast

Airport has available capacity for the baseline and optimistic forecasts
Airfield Capacity

Capa
t
t

Annual Capacity by Airport Facility Type

Available Existing Annual Capacity

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

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Land Area</strong></td>
<td>2,200 acres</td>
</tr>
<tr>
<td><strong>Runway and Length (in feet)</strong></td>
<td></td>
</tr>
<tr>
<td>3-21</td>
<td>6,144</td>
</tr>
<tr>
<td>13-31</td>
<td>10,000</td>
</tr>
<tr>
<td><strong>Terminal Gates</strong></td>
<td>8</td>
</tr>
<tr>
<td><strong>Curb Frontage (in feet)</strong></td>
<td>920</td>
</tr>
<tr>
<td><strong>Parking Spaces</strong></td>
<td>3,992</td>
</tr>
</tbody>
</table>

Airport Traffic Facts and Figures

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

Annual Capacity by Airport Facility Type

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

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

Airport Traffic Facts and Figures

2005 Enplaned Passengers ..................8,706
2005 Aircraft Operations ..................101,456
Airlines .....................................2
Non-stop Destinations .....................3
Connecting Passengers ......................0%
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
Airport has available airside capacity for the baseline and optimistic forecasts
Airport Capacity Forecast

Available Existing Annual Capacity

Annual Passengers (in millions)

12
11
10
9
8
7
6
5
4
3
2
1
0

Available Existing Annual Capacity

Annual Capacity by Airport Facility Type

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
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
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

Islip Long Island MacArthur
- ISP runways provide only a limited addition to system capacity
- ISP needs additional improvements for the runway to reach its potential
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.*
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
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.
Terminal, gate, curb 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?
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.
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

<table>
<thead>
<tr>
<th>Forecast Case</th>
<th>Arrival Delay Per Aircraft (minutes)</th>
<th>Departure Delay Per Aircraft (minutes)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2015</td>
<td>2025</td>
</tr>
<tr>
<td>Regional Forecast</td>
<td>41</td>
<td>67</td>
</tr>
<tr>
<td>2007 PANYNJ Forecast</td>
<td>45 – 50</td>
<td>90 – or more</td>
</tr>
</tbody>
</table>
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.